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FEBRUARY 2016 ISSUE 219 £4.95

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Rail Professional welcomes contributions in the form of articles, photographs or letters, preferably by email. Original photographs may be submitted, but, while every care will be exercised, neither the editor nor the publisher take responsibility for loss of, or damage to, material sent. Submission of material to *Rail Professional* will be taken as permission for it to be published in the magazine.

ISSN 1476-2196

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editor's note

“Welcome to this first issue of Rail Professional in 2016. I forgot last year to say a big thank you to all my contributors in 2015. Their intelligence, expertise and passion for rail were impressive to behold.

Talking of contributors though, I was disappointed that two leading charities campaigning for better access in rail couldn't find the time, or in one case respond at all, to a request for a feature that would sit in front of the Toc managers and owning groups they are trying to reach.

Network Rail is in the good books after Christmas and there seems to be a genuine shift in seeing the way forward as involving greater degrees of collaboration within the industry and beyond, and better planning. Long may this warm feeling continue...we're going to need it.

With maybe too much fat in my bloodstream after the Christmas break, I sat at my desk daydreaming that as a large employer, I'm pleased that certain senior management applicants have their 'passport' now, and are free to express their interest in all future vacancies without enduring a second interview, having submitted their CV. This will drive innovative thinking and delivery from them and keep the jobs market fresh and dynamic, so it's a 'hugely positive step'. I am especially pleased, as it means I will be freed up to focus on managing long-serving staff, and encouraging more employees from the UK and overseas to work for my company, and I do hope we won't continue to clash over salary and benefits demands. To be clear, none of that means I simply don't have the time, budget or real expertise to manage a complex application process each time, that might lay me open to getting sued. Nor does it reflect the fact there are too few potential employees of the kind I'm seeking, and I'm worried they'll be put off by all the effort.

This year I've noticed that the people who work for my senior employees, the middle managers, have hit an eight year low in terms of performance. One in particular needs to stop hanging around the biscuit tin and get their act together, as they recorded the worst punctuality figure for more than a decade. A member of their own team was issued with a verbal warning for consistently being late for work recently, not that they seemed that scared. But a new development means that if they are fired, we will use trusted external workers as 'expert support when required', which takes a lot of pressure off me and completes my determination to keep things totally private.

One middle manager who had their contract confirmed in 2014 based on past excellent performance, is now p*\$\$!ng off their clients for reasons nobody can quite fathom. When asked they talk about modelling and passenger growth, but the changes are too extreme given their current resources.

Many of the middle managers are inflexible and still charging their own clients for days when they don't use their services, and that needs to stop. There are rumours that the London office will be taking over some of the middle managers, and it must ensure it doesn't get too 'political' about it. The other good news is that more and more are getting directly involved with their area head offices...so let's hope they'll be better at handling potentially 'difficult' employees. I'm off for a relaxing break.

Lorna Slade Editor

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News in brief...

ITT issued

London Underground has issued an ITT for the design and build of the New Tube for London, set to come into service from the early 2020's.

Five pre-qualified manufacturers – Alstom, Bombardier, CAF, Hitachi and Siemens – can now proceed to the next stage of the formal procurement process. The New Tube will mean faster, more frequent and more reliable journeys for passengers on the deep-level Piccadilly, Waterloo & City, Bakerloo and Central lines.

North south divide

Transport for London should be given control of suburban railways across south London to boost capacity and improve the service according to a study by the Centre for London think tank. The report predicts that demand for rail services, as more Londoners move south, will increase by 100 per cent by 2050. The authors suggests ministers hand powers to TfL for services which terminate inside or just outside the southern boundary, as existing franchises expire from 2018 onwards.

Hub approved

Transport Secretary Patrick McLoughlin has given the go ahead to the East Midlands Gateway Rail Freight Interchange, near East Midlands Airport. An independent planning committee had recommended the scheme be refused. Opponents said they were 'devastated' and would consider applying for a judicial review. Developer Roxhill said the hub will create 7,000 jobs handling the equivalent of up to 1,800 lorries a day and act as an 'inland port'. →

New era for urban transport

pteg has changed its name to the Urban Transport Group, a move that heralds the first body that brings together all the largest urban areas on transport. Formerly, pteg represented the six passenger transport executives and successor bodies, but with governance change in the city regions, and with Transport for London joining as a full member recently, the group decided the time was right for a new name to reflect its new role.

The group will also be broadening its focus, by strengthening the work it does in areas beyond its former public transport role – including on strategic highways, active travel, and freight and logistics. It will also aim to enhance existing relationships with the EU in terms of legislative and funding opportunities, as well as build stronger links with counterparts in other European countries and with the Union of International Public Transport (the global public transport network).

TfGM chief executive, Dr Jon Lamonte, who chairs the group, said: 'There is a consensus now around the power of investing in cities and as a single voice on urban transport we will be able to make a strong and effective case for how transport can support the growth of those economies. Transport for London joining us will ensure that the Urban Transport Group really is the UK's voice on urban transport, as well as strengthening our professional network so we can all make the most from the opportunities that arise from accelerating devolution.'

He continued: 'As a united body we will also be able to significantly enhance our work with government, the wider industry and our stakeholders to ensure an informed debate about urban transport priorities, followed up with cost-effective delivery of real improvements for transport users in ways which will also meet the challenges of delivering economic growth, cutting carbon and air pollution, and facilitating greater housing provision. In developing this role our door is always open to discuss with transport authorities elsewhere the potential for joining our growing network.'

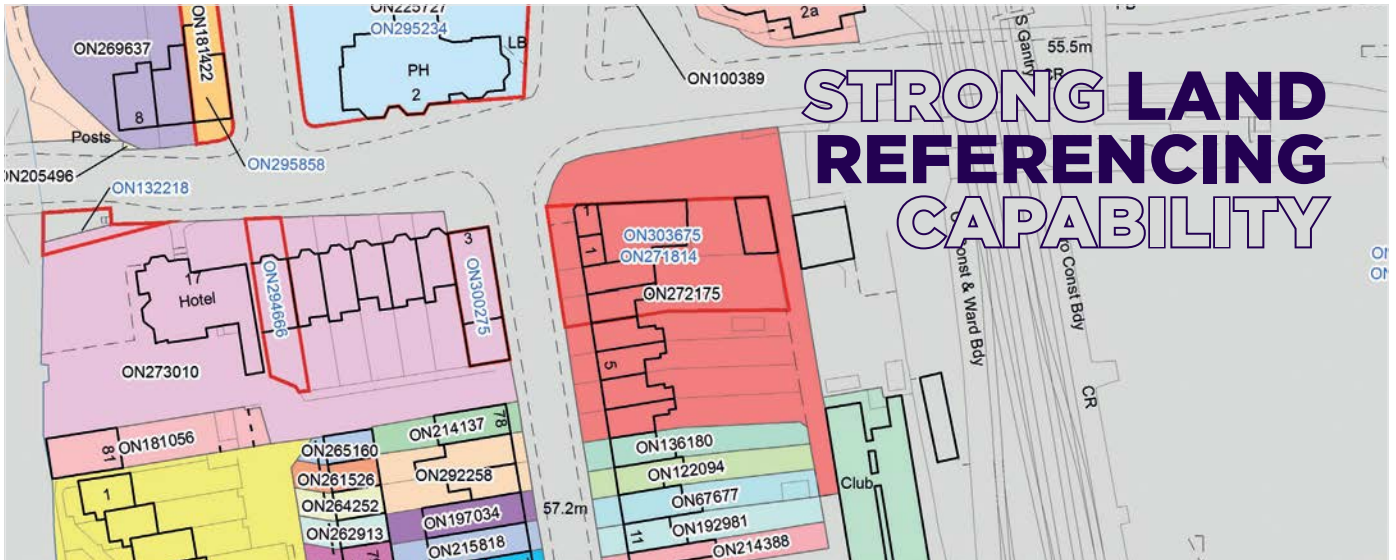
Mike Brown MVO, London's Transport Commissioner, said: 'We're delighted to be joining forces with other strategic bodies as part of the Urban Transport Group. Together, we serve 20 million people and we will make the case for sustained transport investment in city regions right across the country.'

'We will share our experience of running a devolved, integrated transport network that has delivered smart-ticketing, joined-up information and open data, and will work with other cities to improve the services that millions of customers rely on every day.'

Chief executive of UITP (the global public transport network), Alain Flausch, said: 'For the last few years we have noted that the UK has become one of the few, if not the most progressive country, in terms of public transport development and modernisation.'

The seven full members of the Urban Transport Group are TfL, South Yorkshire PTE, Merseytravel, North East Combined Authority, Centro, West Yorkshire Combined Authority, and Transport for Greater Manchester. There are three existing associate members – Strathclyde Partnership for Transport, Bristol and the West of England Authorities, Nottingham City Council.





Carter Jonas is expanding its land referencing capability at just the right time as HS2 starts to tie down the majority of the industry's capacity at the expense of other nationally important infrastructure projects. In the last 6 months the growing team has successfully delivered services to 6 projects covering 80 track miles and a city centre station, referencing over 2,600 land interests.

For more information on how Carter Jonas can help you, please get in touch.

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News in brief...

More devolved

The leader of Manchester council has said North Wales needs more devolution if it is to benefit from the Northern Powerhouse. Sir Richard Leese said North Wales could benefit from better transport links and enormous growth potential but, he said, the region 'needed more freedom'. 'Devolution to Wales has to go beyond the Welsh assembly' he told BBC Wales.

A million swipes

The number of contactless journeys on the Tube made with Visa surpassed one million for the first time in a single day in the lead up to Christmas. The use of contactless Visa increased 166 per cent annually in December alone and commuters spent £339 million taking 7.75 million Tube journeys using it in 2015. 'There have been more than 250 million journeys made using cards from over 80 countries,' said TfL's Shashi Verma.

A deep story

TfL has secured planning permission and listed building consent from Lambeth Council to bring a Grade II World War Two shelter back to life. The park-side rotunda near Clapham South Tube will be turned into a new restaurant or café, and facilities will be shared with the London Transport Museum for use as part of its Hidden London tours of the rotunda's deep-level shelters. An exhibition space telling the history of the tunnels will be displayed when the tours are not running.

If walls could talk

The first retailing Smart Wall for rail customers in the UK has been launched at Northern Rail's Harrogate station. Designed by →

King's Cross most crime-ridden station

A Freedom of Information request to the British Transport Police has revealed that 457 crimes were recorded at the station in the year to December 1 2015, a far higher figure than at London's other rail hubs.

Among those were 87 violent incidents, 65 public order offences and 25 sex crimes over the year. There were also more than 200 thefts of passenger property, as well as fraud, drugs offences and criminal damage.

Oxford Circus and Stratford stations recorded 344 crimes each in the same period, with Victoria close behind on 308.

Central London stations Green Park and Holborn recorded 193 crimes each, with Leicester Square seeing 190 and a further 184 at London Bridge.

London's 10 most crime-ridden stations are:

King's Cross :	457
Oxford Circus:	344
Stratford:	344
Victoria:	308
Liverpool Street:	235
Bank:	228
Green Park:	193
Holborn:	193
Leicester Square:	190
London Bridge:	184

The Bakerloo line's North Wembley station saw just two crimes in the year – graffiti vandalism and solitary theft.

A spokesman for the BTP said the picture is complicated and crime across the network in 2014/15 was actually at its lowest level for more than a decade, despite a rise in passenger journeys: 'The tube network is a CCTV-rich environment and we deploy uniformed officers every day to patrol stations on

the tube network to reassure passengers.

'Over the course of 2014/15, BTP recorded more than 9,000 offences across the London Underground network and 46,000 across England, Scotland and Wales as a whole. This was our lowest recorded level of crime nationally in more than a decade and makes it very clear that the chances of becoming a victim of an offence are minimal.

'Currently, crime is at a low of 6.8 offences per million passenger journeys across London Underground, a figure being maintained and an improvement on the eight offences per million journeys recorded in 2013/14. This is even more impressive when you consider the increase in passenger volume, with 27 million more passenger journeys taking place than last year. In 2014/15, we recorded 12.4 per cent fewer offences on the Underground in total, which represents 1,359 fewer victims, making the tube network an even safer place to travel.'

BTP stressed the importance of viewing any statistics in the context of their surroundings. 'Many of these stations are very busy hubs with huge numbers of people passing through, so numbers of offences are always likely to be higher than at smaller stations. Larger, busier stations also have a higher police presence, so more offences are likely to be recorded as a result of police-generated activity.

'Some locations will have specific reasons for the apparent high numbers, and some serve as the 'end of line' reporting location for offences which take place on board trains, or on neighbouring services, which contributes to the figures.'



News in brief...

Northern and Parkeon it features facial detection technology to sense when a customer is approaching and move the interactive ticket touchscreens to their eye level; a video screen that could be used to link to a virtual call centre; large video screens with information on trains, the latest on social media, news headlines, weather and local area information.

Safe guards

82 per cent of weekly users would have concerns about travelling on Merseyrail's new driver only-trains, according to an RMT poll. Nearly three quarters of over-55 respondents said they would feel less safe and 56 per cent of those aged 18-34 agreed.

General Secretary Mick Cash said: 'We have made it clear that we will not accept the dilution of safety that the removal of guards would mean, and Merseyside cannot afford to lose more than 200 skilled guards' jobs.'

Virgin on glamorous

Virgin Trains east coast has unveiled the first of its newly refurbished trains as part of a near £40 million makeover. £21 million has been earmarked for enhancing interiors, including leather seats to First Class, new carpets and fittings throughout.

£16 million is to be spent on new diesel engines and exterior re-branding ahead of the arrival of Virgin's new fleet in 2018.

Time running out

Simon Green, Sheffield City Council's high speed rail expert has warned the chancellor is likely to make a decision on whether HS2's Sheffield station will be built in the city centre or outside at Meadowhall in →

Stagecoach Group appointment

Stagecoach Group has appointed Tim Shoveller as managing director of its UK Rail division.

Shoveller, who has been managing director of South West Trains for the past four years, will report directly to Stagecoach Group chief executive Martin Griffiths and have responsibility for the management of the Group's existing rail businesses and new business development opportunities.

Stagecoach's UK Rail division includes South West Trains, East Midlands Trains, Virgin Trains East Coast and the Supertram light rail network in Sheffield.

Shoveller joined Stagecoach Group in 2007 from Virgin Trains where he played a key role in the success of Virgin Trains West Coast. Before that he was operations director at Midland Mainline and has also held a senior position at Eurostar. He is also a Fellow of the Institution of Railway Operators.

Christian Roth, fleet director at South West Trains will succeed Shoveller as MD of the franchise. He joined South West Trains in December 2008, following three years heading up the UK rail business for Siemens

Stagecoach Group chief executive Martin Griffiths said: 'These new appointments will put us in a strong position as we seek to transform the travel experience for our customers, grow our business and develop a strong bid for the new South Western rail franchise in 2017. I would like to wish Tim and Christian well in their new roles.'

Both appointments are effective from 1 February 2016.



Tim Shoveller

Christian Roth

Connectivity key to vision for the North

The government's vision for the North as an economic powerhouse will not be fully realised without significant improvements in connectivity, according to the Institution of Civil Engineers (ICE).

In its response to the National Infrastructure Commission consultation on connecting northern cities, ICE's Northern Powerhouse Panel welcomed the drive to boost growth in the North, the progress on devolution, and the growing success of individual northern cities. But it said the North would struggle to compete internationally as single economic zone without faster, more frequent transport services between cities and within cities, and better connections to outer city areas where universities, science parks and manufacturing bases are located.

The panel backed a mix of small scale investments and more transformational transport projects to address the North's connectivity weaknesses, but warned against progressing individual projects

in isolation. It urged the government to adopt a 'whole network' approach, where investment is based on a comprehensive, integrated strategy.

It also suggested the government reviews the appraisal methods used to determine whether a transport project delivers value for money, to capture the real economic impact on a region.

Richard Threlfall, chair of the ICE panel and head of infrastructure at KPMG, said: 'The growth opportunity for the North of England is huge, but it will simply not fully prosper as one economy without significant improvements in connectivity. There is much to be done – spend on new transport infrastructure in the North has lagged behind London and average spend across the UK regions for decades. But it's not just about investment; we need to think differently about how and where investment is allocated, we need to adopt a more strategic approach which considers the entire network and delivers maximum benefit.'



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News in brief...

the spring – month's ahead of an official deadline in October. Green believes HS2 planners need to consider economic growth primarily, and if the station is built in the centre it will create 6,000 more jobs.

Sheffield Hallam MP Nick Clegg agrees and has written to the transport secretary saying a hub at Meadowhall will be less beneficial to the economy.

Will this pledge fly?

Lib Dem London mayoral candidate Caroline Pidgeon has promised if she is elected in May she will halve Tube and rail fares for journeys before 07:30am. Labour's Sadiq Khan has pledged to freeze fares until 2020, and Conservative Zac Goldsmith said he would 'bear down' on travel costs.

Green candidate Sian Berry wants to scrap travel zones and introduce a flat fare across the city. Pidgeon's proposal would apply to all trips using the Underground, DLR, Overground and TfL rail and 'really help some of London's lowest paid workers who have to work unsocial hours. This is 'a genuine fare cut that can be delivered immediately' she said.

Progress for Powys

A 14-year campaign to reopen a railway station which closed in the 1960's on the Aberystwyth to Shrewsbury line has taken a step forward. Transport minister Edwina Hart has confirmed Arriva Trains Wales and Network Rail have broadly agreed with an independent report recommending opening a station at Carno in Powys. Local people have been campaigning for the move since 2002. A new station would need to be built as the old one is privately owned. →

Mixed reaction to Hynes continuing at Northern

■ The next owner of the Northern Rail franchise, Arriva, has appointed current MD Alex Hynes as managing director of Arriva Rail North Ltd, set up to operate the new nine-year franchise from 1 April.

Hynes, who has been managing director of the Serco/Abellio-owned franchise since August 2013, will lead Northern's 5,500 employees and deliver Arriva's plans to transform rail travel for customers across the North of England – with an extensive investment programme promising new and refurbished trains, extra services, increased capacity and a variety of station and ticketing improvements.

Chris Burchell, managing director of Arriva's UK Trains Division said: 'Alex has led Northern for almost three years and has introduced a wide programme of improvements.

'He is respected by local authorities and partners because he understands the huge importance of the Northern network to towns, cities and local communities. He brings continuity and is the ideal person to lead Northern into its next exciting chapter which will see the biggest transformation of services in a generation.'

Alex Hynes added: 'I am delighted to have the opportunity to continue to lead the business and the fantastic team we have built. Arriva brings a wealth of knowledge and expertise to Northern through its successes here in the UK and across mainland Europe. To be part of that, and the plans to vastly improve services, capacity and stations for customers, is hugely exciting for me.'

The news has not been well-received by the RMT, which will now be 'stepping up the fight for jobs, services and safety across the region' as a result. The union believes that despite Hynes claiming two years ago that there were no plans to axe guards on Northern, the Deutsche Bahn bid 'has exactly that model right at its very core'.

RMT general secretary Mick Cash, said: 'Mr Hynes has presided over atrocious industrial relations. The theme of his leadership has been one of tarnished arrogance, and while RMT members jobs are under threat he has succeeded in protecting his own position very nicely indeed.'

Arriva will make further announcements on the wider Northern leadership team in the coming weeks



Merseyrail shortlist announced

■ The shortlist of bidders that will go through to the next stage of procurement for new Merseyrail trains has been announced.

The initial tender process, launched in October 2015, saw bidders assessed in areas such as their capacity to deliver the work, their expertise and track record. The next stage of the process will see them make submissions specific to details of the Merseyrail project.

The five shortlisted bidders are: Bombardier, CAF, Mitsui, Siemens, Stadler.

Cllr Liam Robinson, chair of Merseytravel said: 'We are extremely pleased that our project has attracted the interest of leading names in the industry. 'Now we want the bidders to use their expertise to help shape our vision, demonstrating innovation and a real

understanding of the importance of the network to the Liverpool City Region. As part of the process we'll be interested in how the bidders may be able to tap into the local labour market and make the most of UK-based opportunities.'

The bids are due back by the end of April. It is expected that a preferred bidder will be identified towards the end of 2016, when city region leaders, through the Combined Authority, will be asked to commit to the project going ahead.

The current Merseyrail fleet at nearly 40 years old is among the oldest in the UK. New trains by the early 2020's are considered the best option in meeting growing demand on the network and in supporting the city region's economic ambitions, while also presenting the best value for the public purse.



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News in brief...

London tops station league again

London stations continued to be the most heavily used in Britain between April 2014 – March 2015 according to the ORR.

Waterloo remained top of the list, clocking more than 99 million passenger entries and exits – an increase of 0.7 million over the previous year.

The total number of entries and exits across Britain in 2014-15 increased by more than 119 million, and Stratford station entered the top 10 list with a 17.4 per cent increase.

Zoning in

Several Tube stations in east London have been rezoned to recognise the capital's 'shifting economic map'. Eight stations including Stratford and West Ham have been rezoned from Zone 3 to Zone 2/3. It means the stations will be regarded in Zone 2 or 3 depending on which way the passenger is travelling, giving the cheapest travel option for the journey.

The Mayor of London hopes 100,000 people per week will benefit from the change.

Nothing heavy

RailQwest, the West of Scotland rail lobby group says the announcement that a Tram-Train best serves the new connection to Glasgow Airport is 'nothing more than a sham'.

The Airport Study Group declared the Tram-Train performed best from a range of options and was to be put forward for funding by the £1.3 billion City Deal fund. But RailQwest has prepared a report claiming the figures used for the heavy rail option had been deliberately skewed to present it as a high cost option. →

RDG to act without privatisation 'bias'

■ The Rail Delivery Group has agreed to act with 'propriety' and curb any 'political bias' after complaints from Labour that it sent a 'barrage' of pro-privatisation emails and attacked the party's policy during its conference.

As a result, the Department for Transport has drawn up new communications rules with the RDG, which represents the train operators and Network Rail.

Philip Rutnam, the DfT's permanent secretary, intervened after Lilian Greenwood, the shadow transport secretary, raised concerns over the RDG's use of public funding to promote rail privatisation. Half the RDG's costs are now met by publicly owned and funded Network Rail, after they were increased to £1.3 million in 2014-15 from £240,000 the year before, to allow the group to take charge of drawing up and communicating policy for the entire rail industry – which included a series of emails to journalists arguing that Britain's railways had prospered since privatisation in 1994. In a letter to Greenwood, Rutnam said the RDG had now 'adopted a communications protocol ... ensuring political impartiality in its communications activity'.

The rules include a commitment to 'at all times demonstrate propriety in communications activity, ensuring it is objective in both tone and content'. The RDG must also take caution 'not to communicate in ways that could give rise to criticism of party political bias or that public resources are being used for party political purposes'.

Greenwood said: 'It's long been suspected in the rail industry that the Rail Delivery Group was displaying a political bias and I'm grateful to [Rutnam] for providing such an unambiguous clarification. It was clearly inappropriate that train companies were using taxpayers' money to fund pro-privatisation publicity drives, especially when they have a direct financial interest in maintaining the status quo.'

She continued: 'If the train companies want to make the case for rail privatisation then they should not use public funds to do so. I suspect that passengers would be particularly surprised to learn of this arrangement ahead of the fare hikes in January, especially as they were always told that rising ticket prices were paying for investment and not political activity.'

An RDG spokesman said: 'Our organisation exists to help the different parties involved in running the railway to tackle the most difficult issues affecting the whole industry so that services can be improved for passengers, freight users and the economy. Everyone working on the railway recognises the need for further improvements but we should also use objective and independent data to celebrate the industry's successes for passengers and rail workers.'

Come work with me

■ Virgin Trains has been recognised as one of the best companies to work for in the UK.

Ahead of British Airways, EasyJet and Transport for London, Virgin Trains' east coast business was ranked second out of all transportation and logistics companies, and 43rd overall in an independent UK-wide survey of 1,600 companies.

The Bloomberg-sponsored survey, which lists the top 400 employers in the UK, questioned 15,000 UK employees about their employer.

Clare Burles, people director for Virgin Trains on its east coast route, said: 'We're absolutely delighted to feature so highly in this list. It's our people – both customer-facing and behind the scenes – and their commitment, skills and personality that drive our amazing business.'

Since it launched in March 2015,

the Toc has introduced new uniforms, revamped staff benefits and initiated a Red Hot awards ceremony to recognise the work of its customer-facing, operational and engineering employees.

A new recognition scheme, Virgin Stars, has also been launched to celebrate the company's best people, and examples of customer service. Meanwhile, Newcastle Driver, John Scott was awarded an MBE in the New Year Honours.





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News in brief...

Make the flight

A new rail route linking Heathrow with London Waterloo, via Hounslow, is a real possibility according to a report commissioned by Hounslow Council.

The £894-936m route would stretch from the existing Waterloo-Windsor line to Terminal 5 at the airport, via a new station in Bedfont. There would be two trains an hour between Feltham and T5, with that journey taking around 13 minutes. Passengers leaving from Waterloo could be at the airport in 43 minutes, if travelling via Richmond, and 56 minutes via Hounslow.

Dud bullet

Plans for a high-speed rail link between Glasgow and Edinburgh have quietly been put on hold. In November 2012, Nicola Sturgeon said the Scottish government would 'not wait' for Westminster. But Lib Dem MSP Tavis Scott who questioned why there was no mention of it in the 2015 Infrastructure Investment Plan, was told the plan will have to wait until a cross-border link with England has been identified. Said Scott: 'They conned everyone into thinking they would build this bullet railway from a blank page, and now they have tried to keep their cancellation secret.'

Coventry-Nuneaton upgrade

Two new stations have opened as part of a £13.6m investment to improve rail services between Coventry and Nuneaton. The Bermuda Park and Coventry Arena stations are the first part of a plan to develop the route from Nuneaton to Coventry and Coventry to Leamington Spa. The investment will give better rail access to jobs, retail, leisure and education across Coventry and Warwickshire while reducing road congestion.

Birmingham New Street supporting record growth

Network Rail says the £750 million redevelopment of Birmingham New Street station is helping to support record growth for the City, with almost one million visitors a week in the lead up to Christmas.

Brighter, de-cluttered platforms, improved entrances, a range of new facilities and an abundance of natural light over the five times larger concourse, is turning the station into a retail destination in its own right, attracting new brands and modern, high-specification fit-outs.

The station, opened in September 2015, now features 43 shops at concourse level – including new brands for the region such as Oliver Bonas. Opening of the new

concourse-based retailers led to a significant increase in pre-Christmas retail sales, which were 63 per cent higher than Christmas 2014.

Tim Hollidge, COO at Oliver Bonas said: 'We had a strong Christmas at our new store with sales in December up 73 per cent from November and we welcomed many old friends, and new customers.'

Evidence is demonstrating, says Network Rail, that its investment in the station is also providing



a major catalyst for wider regeneration in Birmingham, supporting up to 30,000 new jobs and opening up the south side of the City for up to £2 billion in investment.

Total retail sales across NR's managed stations increased by four per cent in the Christmas period, a steady rise on record sales in 2014.

Gold standard for Siemens Rail Systems

Siemens Rail Systems has been awarded the Investors in People Gold Award, given to organisations which demonstrate excellence in developing their staff.

The company now joins the top one per cent of UK organisations that have achieved the highest ranking from the accreditation body.

The company has put in place a number of processes to better engage and involve staff members, including annual managers' conferences and an internal social network. The commitment to promoting fair and equal opportunities in the workplace, which includes involvement with both the Women in Rail and Women in Transport forums, was also highlighted in the assessor's final report.

In addition, on-the-job training and continued employee development were cited as a major benefit, with employees saying they felt involved in decision making at various levels. The recently launched National Training Academy for Rail (NTAR) in Northampton (*see page 80*) features as an example of Siemens

Rail Systems' continued investment in both its current staff and future generations of rail technicians.

Managing director Steve Scrimshaw said: 'Our people are always at the heart of everything we do and this award goes some way to recognising the huge efforts made by everyone across the team to ensure a fair and enjoyable working environment.'



Steve Scrimshaw



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In the passenger seat David Sidebottom



Not too much to ask

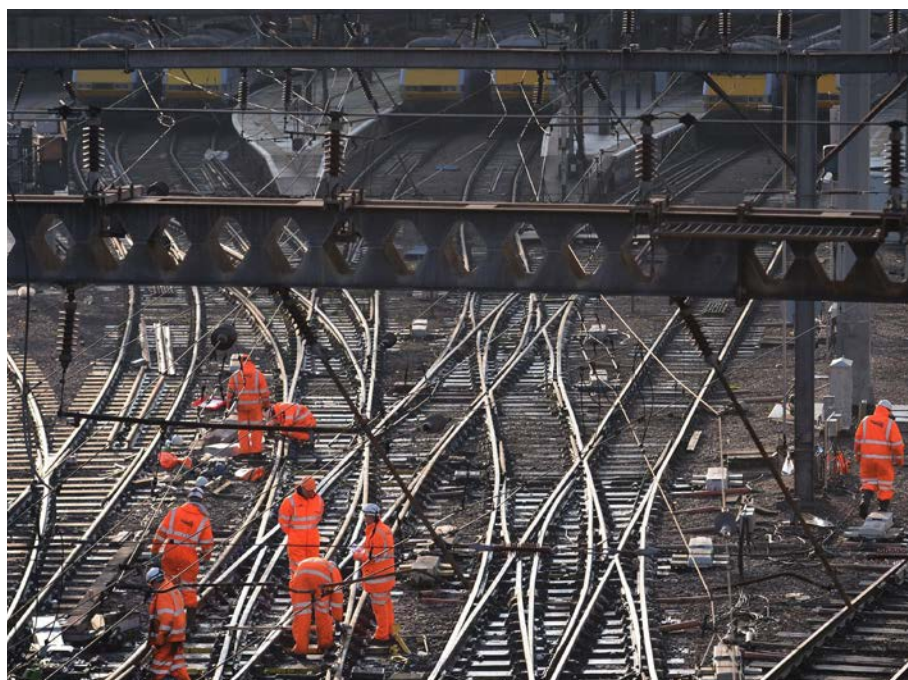
When it comes to planning engineering works, passengers say: 'talk to me clearly, early and often' according to **David Sidebottom**

It's a great relief that this year's Christmas rail engineering works were completed on time. This is in stark contrast to the delays which caused travel chaos 12 months ago.

Network Rail delivered upgrades across Britain on schedule, allowing the railways to return to service as normal. Considering the challenging weather conditions for much of the time and the scale of the projects across the country, this was no mean feat.

The work included cutting passengers off from two of Britain's busiest airports. The West Coast Main Line was also suspended between Crewe and Stafford, while passengers travelling to the South West and South Wales from London endured longer journeys because of the line closures.

'The fact that every project and the associated disruption is different means the onus is on train companies and Network Rail planners to know what their passengers want and understand how a specific project will affect different passenger types'



In December 2014 engineering works on the lines from London King's Cross and Paddington drastically overran. Passengers were stuck in the cold or on stationary trains, prevented from visiting family or friends and generally left feeling abandoned by the rail industry.

So what made this year's engineering works different? Quite simply the rail industry spoke to passengers and had a plan B in place if the works overran.

Throughout this year, including the bank holidays and in the lead up to Christmas we have shared our research with Network Rail and operators, highlighting passenger experiences and priorities during engineering works, to help shape the information that went out to passengers. We also highlighted

the importance of passengers being able to easily find out what the works would mean for them.

The work went much more smoothly this year, with Network Rail completing the work to deliver new station facilities, longer platforms, extra tracks and more reliable equipment. Feedback so far seems to show train operators got the message out early enough to ensure passengers were fully aware of the potential disruption to their journeys.

What does it mean for my journey?

Our latest research hopes to build on what we have learnt from recent engineering works to help reduce the impact of disruption for rail passengers. The message from passengers to train

'If the rail industry is to retain the confidence and trust of its passengers, it is vital that it takes full account of their needs when planning engineering work'

companies is: 'talk to me clearly, early and often'. Ultimately passengers told us that they need to know 'what it means for my journey'. This does not mean that there can be a one-size-fits-all plan for every set of engineering works. Far from it, it indicates the need for a flexible approach to communications planning in the build up to planned disruption.

The fact that every project and the associated disruption is different means the onus is on train companies and Network Rail planners to know what their passengers want and understand how a specific project will affect different passenger types.

The report *Planned rail engineering work: the passenger perspective* looks at passengers' experiences from two sets of planned works, at Reading and Bath Spa, in 2015. We were reassured that Great Western Railway (GWR) is committed to understanding more about its customers' needs and worked with us on this research. Projects including the electrification currently underway on the Great Western Main Line promise improved journeys and stations as well as less crowded, more frequent trains.

Passengers welcome investment in the rail network. Over the next few years more than £38 billion is being spent to upgrade lines, stations and trains, improving journeys across the country. There is never a 'good time' to do engineering work because someone will always lose out. While most passengers understand that it is necessary, many will also have to endure disruption to their journeys while these much-needed, long-promised benefits are delivered.

Given that many passengers face several years of disruption to their journeys it is reassuring to see that GWR is willing to respond to what passengers say they require.

We now expect the industry to listen to the very obvious but important

message from passengers – 'provide me with clear information about how my journey will be affected, how it will impact on me, alternative travel arrangements, and be there when I need you to support me as I complete my disrupted and potentially unfamiliar journey.' Not too much for a passenger to ask?

With so much work coming up across Britain, and on a daily basis many passengers still reporting that they get poor and unhelpful information, it is key that the whole of the rail industry listens to this message.

If the rail industry is to retain the confidence and trust of its passengers, it is vital that it takes full account of their needs when planning engineering work.

Want to understand how passengers will be affected by engineering works or future station upgrades? Get in touch with me if you would like to discuss how we can help you hear what passengers really think.

David Sidebottom is passenger director at Transport Focus
Email: communications@transportfocus.org.uk

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A fundamental difference

Don't compromise the UK's freight trade links in rail reviews says **Chris MacRae**

The Freight Transport Association (FTA), in our response to the Bowe and Hendy Reviews, has warned that reviews of the railway industry in Britain and of railway infrastructure enhancement projects must take into account the needs of freight as part of the UK's international and domestic supply chains.

Responding to the publication of the Bowe Review into the planning of Network Rail's Enhancements Programme, FTA has commented that it is vital that Network Rail, the Office of Rail and Road (ORR) as regulator, and the Department for Transport (DfT), learn the lessons as to why the current enhancement schemes, including for the Strategic Freight Network, have gone over budget and been delayed. Managing the delivery of what are increasingly complex network enhancement projects is a very challenging task. But it is

A key challenge currently is for Network Rail to manage, within time and within budget, the delivery of increasingly complex multi-disciplinary network enhancement projects dealing with capacity, train lengthening and train journey time improvements on an end to end corridor basis for freight

essential that Network Rail understands what has led to the delays and cost overruns so that it can avoid repeating the same mistakes on forthcoming projects. A key challenge currently is for Network Rail to manage, within time and within budget, the delivery of increasingly complex multi-disciplinary network enhancement projects dealing with capacity, train lengthening and train journey time improvements on an end to end corridor basis for freight, interacting with other route wide schemes where scheme output interdependencies exist. It is vitally important that these projects are seen to deliver optimal outcomes for the public expenditure that they represent,

and in doing so to deliver benefits for the British economy and trade connectivity.

Hendy deferred some schemes

At the same time, the Hendy Review of current Network Rail infrastructure enhancement projects has deferred certain freight schemes currently in development. The Strategic Freight Network Fund plays an essential role in enhancing Britain's mixed traffic railway network to meet the needs of freight so as to help improve economic competitiveness and connectivity of the British economy. Projects delivered under this fund in the previous Control Period have helped to remove some of the



Nicola Shaw: must ensure that planning and delivering 'cross-boundary' services is made easier

‘The review of the shape and financing of the infrastructure provider and its roles must ensure that planning and delivering ‘cross-boundary’ services is made easier, not harder’

constraints on rail freight and Britain’s supply chains – for example loading gauge clearance for the increasingly common 9’6” shipping containers on main and diversionary routes into and out of the major haven gateway ports which have delivered growth in rail freight with attendant economic and societal benefits.

Looking ahead to the Shaw Review of longer-term future shape and financing of Network Rail, due to report in the spring, we must remember that government has a stated objective to increase the amount of freight which goes by rail – something which FTA wholeheartedly supports. But if industry is to deliver this, it is essential that the needs of freight users

– which are fundamentally different to those of passenger services – are not overlooked. Rail freight routinely operates across existing Network Rail geographical route boundaries, for example Southampton to Crewe or Southampton to Coatbridge intermodal trains. The review of the shape and financing of the infrastructure provider and its roles must ensure that planning and delivering ‘cross-boundary’ services is made easier, not harder. Likewise it is important that any consultation on the system operator role of any Network Rail restructuring recognises that there are issues regarding how that would tie up with disruptive engineering possession planning and diversionary routing, as well as contingency planning across route borders for example.

The report from Sir Peter Hendy to the Secretary of State for Transport on the re-planning of Network Rail’s Investment Programme is available at: www.networkrail.wpengine.com/wp-content/uploads/2015/11/hendy-report.pdf

Report of the Bowe Review into the planning of Network Rail’s Enhancements Programme 2014-2019 is available at: [www.gov.uk/government/uploads/system/uploads/attachment_data/file/479560/](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/479560/bowe-review.pdf)

[bowe-review.pdf](#)

The Shaw Report (scoping document with final report due in early 2016) is available at:

www.gov.uk/government/collections/shaw-report-into-network-rail

The Freight Transport Association (FTA) is one of Britain’s largest trade associations and uniquely provides a voice for the whole of the UK’s logistics sector. Its role, on behalf of more than 14,000 members, is to enhance the safety, efficiency and sustainability of freight movement across the supply chain, regardless of transport mode. FTA members operate more than 200,000 goods vehicles – almost half the UK fleet – and some one million liveried vans. In addition they consign over 90 per cent of the freight moved by rail and over 70 per cent of sea and air freight. FTA works with its members to influence transport policy and decisions taken at local, national and European level to ensure they recognise the needs of industry’s supply chains.

For further information, contact as below.

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A concerted approach

Rail minister Claire Perry recently stated that rail freight is 'at the heart' of plans to make the biggest investment in the network since the Victorian era. **Keir Pimblett** and **Doug Johnston** explore exactly where this could be made

Since its introduction in 2007, the Strategic Freight Network (SFN) concept has shaped the government's approach to improving the core rail freight network. A £260 million SFN fund financed a number of key projects during Control Period 4 (2009-2014), delivering:

- intermodal gauge enhancements (such as those on the Southampton W12 diversionary route);
- capacity improvements (for example, on the Nuneaton North Chord); and
- train lengthening works (such as those at Ipswich Yard).

Despite setbacks to electrification works on the TransPennine and Midland Main Line, the outlook for CP5 is positive provided the current delivery plan is maintained. The recent Hendy review confirmed that key capacity improvement projects such as the Felixstowe to Nuneaton programme and Southampton to WCML freight train lengthening are still set to go ahead.

In parallel, Network Rail (NR) has completed its acquisition of more than 100 leasehold sites from freight operators. This consolidation is hoped to deliver key benefits to freight operators, both streamlining access procedures and adding capacity by improving traffic management at critical points on trunk routes such as the East Coast and West Coast main lines.

Current opportunities and challenges

Strategic Rail Freight Interchanges (SRFI)

The availability of a network of rail-connected distribution parks has often been identified as key to achieving greater modal shift from road to rail. As a result, SRFI's, in particular those that increase capacity at key freight terminals such as Felixstowe North and London Gateway, are an acknowledged priority.

However, despite industry and government support, there remain a number of obstacles, not least local opposition to planning proposals. For example, the proposed SRFI at Radlett has only recently been given the go-ahead following a seven year court battle,

however the Secretary of State has now given development consent for the East Midlands Gateway project.

European Rail Freight Corridor

The formal opening of the UK section of the European Rail Freight Corridor (ERFC), established by Regulation EU 013/2010, is scheduled for November 2016. This will complete the 'North Sea – Mediterranean' corridor, facilitating a continuous rail freight connection between the UK and continental Europe via the Channel Tunnel.

Analyses carried out on behalf of Network Rail estimate that the potential 'through-rail' freight market using the ERFC could be between 3.1 million and 12 million tonnes of rail freight per year, a significant increase from the current 1.3 million tonnes. Preparations have already been made to the UK regulatory landscape in order to accommodate the ERFC initiative. These include:

- safeguarded time slots for international freight services; and
- the creation of a One Stop Shop (OSS) in the UK, providing a single point of contact for network access to international path requests and performance review.

In addition, it is anticipated that a corridor management board will be established, to put in place traffic management and performance management measures. The scope for expansion is, however, constrained because:

- outside of the core HS1 infrastructure, freight does not currently run on European gauge on the UK network; and
- HS1's status as 'specialised infrastructure' means that international high speed passenger services are prioritised, limiting freight capacity.

As a result, the main short-term opportunities available to freight operators will be found in maximising the additional capacity as it becomes available.

Keir Pimblett



Doug Johnston



HS2

As with Crossrail, implementation of the HS2 project will create a number of opportunities for rail freight operators to work with contractors, both in moving supplied to work sites and removing material.

In the long-term, once operational, Phase 1 of HS2 should free up capacity on the classic network. It is expected that between 20 and 26 additional rail freight paths per day may be made available.

In the short to medium-term, the challenge will be to manage the increase in freight traffic generated by the works. This can be supported by continued investment in SFN infrastructure, particularly on the Willesden EuroTerminal and Ruislip routes, to minimise disruption to other commercial rail freight operations.

Electrification

While the Hendy report confirmed that the Electric Spine Project will continue (albeit with delays), some potential benefits of the project may not be realised without sufficient electrified rolling stock. At present, no high-powered electric freight locomotive suitable for operation in the UK is available and, as rail freight operators have highlighted, only a large order of electric locomotives is likely to make the cost of designing and testing a new electric locomotive affordable.

The challenge for the industry will, therefore, be structuring and managing investment in new vehicles and engagement with manufacturers to procure them. In the absence of a coherent industry approach, DfT may have to consider whether it wishes to make a rare foray into the freight sector to incentivise the investment.

Regulation and access rights

The complexity and lack of long-term certainty over access charges are recognised issues within the industry. The Rail Freight Group describes the system as a 'hugely complicated beast', noting that 'the spreadsheet of track access charges has 4,000 entries for freight'.

In addition, as the Transport Select Committee noted, it has been suggested that the current access charging system was set up without a suitable mechanism to incentivise Network Rail to take a long-term view and invest in durable track more appropriate for freight traffic, reducing replacement costs and potentially allowing for a reduction in track access charges.

With the planned closure of several coal-fired power stations and uncertainty in the UK steel sector, a fall in demand from traditional customers is anticipated, freeing up not only rolling stock and drivers, but also access paths. While the freight operators will no doubt be looking to redeploy the staff and the stock elsewhere, given the demand for train paths from the passenger sector on key routes (witness recent open access applications) there is a risk that the redundant paths are lost permanently to the passenger operators. The ORR

has always had a difficult balancing act, reconciling the competing requirements of the freight and passenger sectors and the freight operators (and their customers) will no doubt hope that the ORR takes a long-term view on the (re-) allocation of these paths.

It's not all doom and gloom: as noted above, the regulatory changes implemented in June 2015 to reflect the UK's membership of the European Rail Freight Corridor should bestow (limited) benefits on the freight sector.

European Rail Traffic Management System (ERTMS)

The NR-funded ERTMS system will replace traditional lineside railway signals with a computer display inside every train cab. Once up and running it is hoped that additional freight capacity will be delivered through increased line speeds and decreased headway, while the safety and interoperability of freight vehicles will also be improved. However, given that freight trains tend to 'roam' the network rather than stick to specific routes as with passenger services, it is not yet clear at what stage the rail freight industry will be able to take full advantage of these benefits.

The East Coast and Great Western

mainlines will be among the first to be upgraded. As a result, it is estimated that up to 250 of the approximately 850 freight locomotives currently in operation will require fitment during CP5.

In the medium-term, the freight operators will want to progress the fitment programme, which is being managed with key input from the Freight Stakeholders Group (FSG). It is vitally important that the FSG continues to engage with NR to agree suitable timelines to minimise disruption. It will also be important to ensure that Foc's have sufficiently robust contractual relationships with the fitment and maintenance companies.

The importance of the rail freight industry to the UK's environment and economy are well-recognised and the government has great ambitions for its development. In order to capitalise on the opportunities available, a concerted approach will be required to address the many challenges facing the industry.

Keir Pimblett is an associate and Doug Johnston is a senior associate at Dentons UKMEA LLP



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Andy McDonald
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Laying down the law

Martin Fleetwood



Not a risk worth taking

The rail sector simply cannot commercially or morally afford to ignore the Modern Slavery Act 2015, says **Martin Fleetwood**

Under the Act, any company supplying goods or services, and with a turnover of £36 million or above which carries on a business or part of a business in any part of the UK must publish an annual statement setting out either: (1) what they are doing to ensure that modern slavery and human trafficking is not taking place in any of their supply chains or (2) that their organisation is taking no such steps.

Businesses are not required to guarantee their entire supply chain is slavery free. What is important is to be transparent about the steps it has taken in relation to any part of the supply chain.

At first glance this might seem like a simple enough task, but in an industry where supply chains can be highly complex there will be many challenges for the rail sector in providing clear statements of compliance. Even businesses that are below the £36 million threshold are facing questions from the larger organisations they supply about the steps they have taken to comply with the Act. The ripple

‘...in an industry where supply chains can be highly complex there will be many challenges for the rail sector in providing clear statements of compliance’

effect of the Act is likely to be widespread.

I believe the sub-sector that will be hit the hardest is contractors. Companies that employ casual and short-term workers will need to take steps to ensure that workers in their supply chain are not being exploited.

Not always easy to identify

For many the word slavery conjures up images of victims that have been brought from overseas as well as vulnerable people in the UK being forced to work against their will, but the reality is that modern day slavery is not always that easy to identify.

In my view there is a lack of proper knowledge in the sector of what modern slavery is and what constitutes a situation to be classified as slavery. This could include workers being paid inadequately, having ID documents withheld, having restrictions placed on freedom of movement or communication or living in sub-standard accommodation as part of their remuneration.

This, combined with getting the information they need from smaller sub-contractors, who do not meet the threshold and therefore are not facing the same reporting regulations, will be the contractor's biggest challenge.

For example, how easy is it to ensure that the living and working conditions of the contractors employed to work on your construction projects are not breaching their human rights? At the end of the day, how can you be sure that they are not living in overcrowded accommodation provided by their employer and that they have freely chosen to be employed in the first place?

Pressure on suppliers

Businesses in the rail sector need to put pressure on their suppliers to get the information they need and also to ensure that their contractual arrangements enable contracts to be terminated should

modern slavery be found within the supplier's organisation. It is important to remember, however, that the statutory guidance which accompanies the Act recommends that termination should be a last resort taken only after a collaborative approach to remedy the situation has been attempted.

The legislation, which came into force last October, introduced criminal offences concerning the holding of persons in slavery, servitude, or compulsory labour, or arranging or facilitating the travel of another person with a view to that person being exploited.

In respect of the transparency in supply chain provisions, the failure to publish the required statement attracts a civil penalty. The requirement can only be enforced by the government taking out an injunction against the offending business requiring them to publish such a statement. Failure to comply with the injunction amounts to a contempt of court and is punishable by an unlimited fine.

Playing with fire

Businesses, which are sceptical about how stringent any checks into compliance will be, are playing with fire. There is a high brand association risk. In my opinion, it's not just the government that will be keeping a close eye on this, although there is a suggestion that they will name and shame those who drag their heels on this issue. Consumer groups, the Anti-Slavery Commissioner and the media could be looking to make an example of high profile companies who are failing to take action – and that's not a risk that I would be prepared to take.

The new provisions are indicative of the growing importance of corporate and social responsibility and the high expectation from both government and corporate stakeholders that businesses will make a stand in the fight against modern day slavery.

The statement must be approved by

the board of directors or an equivalent management body and signed by a director or equivalent. If the organisation is a limited liability partnership it must be approved by the members and signed by a partner. Once completed, the statement must be published on the company website and include a link to the statement in a prominent place on that website's homepage.

The government has clearly taken this route in the expectation that enforcement will not be necessary because pressure groups and consumers will look for such statements on company websites. Although financial penalties could arise if an injunction is breached, the real penalty, which should be enough of an incentive for businesses to take notice, will be the impact on reputation that will be most damaging and certainly harder for them to recover from.

As an industry that employs a significant number of manual workers, particularly in construction, there are many opportunities for exploitation. The rail sector needs to take action now to avoid being made an example of in the future.

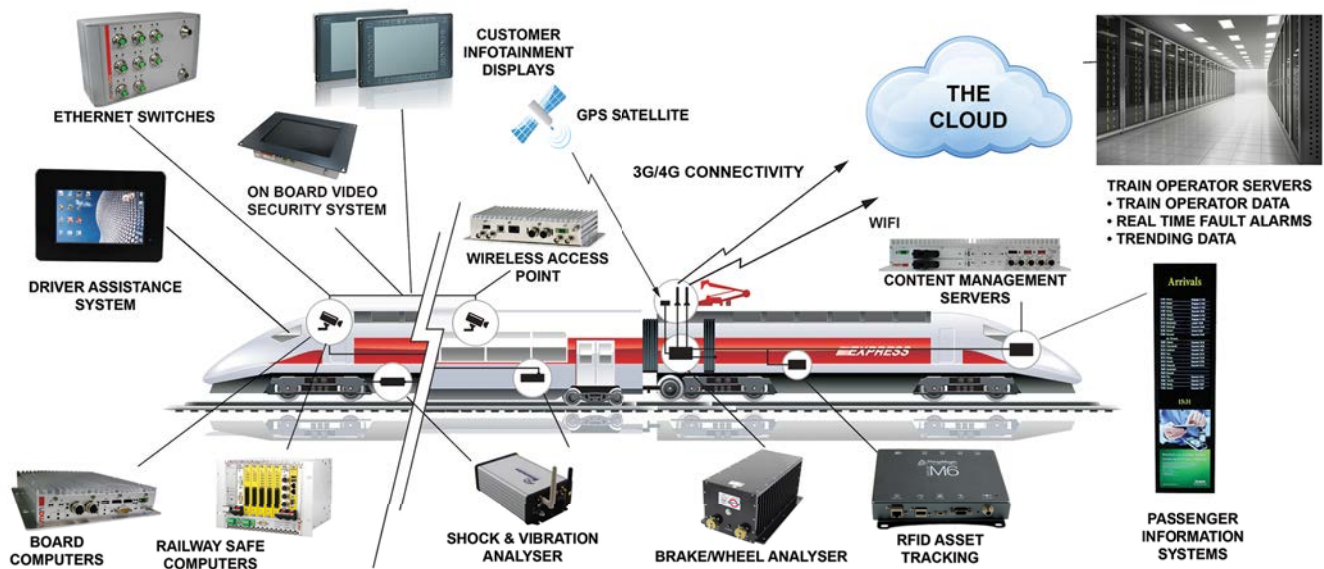
Martin Fleetwood is corporate partner, Shoosmiths. For advice on how the act affects the rail sector email him at: martin.fleetwood@shoosmiths.co.uk

Top Tips

Businesses should take the following practical steps now:

1. decide what sort of statement your organisation wants to make
2. appoint a senior person within the organisation to be responsible both for establishing Modern Slavery Act compliant policies and tracking effectiveness of those policies going forward
3. begin the process of gathering information about the supply chain to enable the organisation to prepare a draft statement
4. carry out a risk assessment as to the likelihood of there being modern slavery within the business's supply chain. Once that is done then proportionate steps can be taken to investigate, remediate and mitigate the risks identified
5. amend your terms and conditions to ensure that your contractual arrangements with suppliers enable you to terminate your contracts should modern slavery be found within the supplier's organisation. It should also be made clear that you only allow subcontracting with companies having a zero tolerance to such practices
6. if you already have an approved supplier's list with regular audits of suppliers then compliance with these issues should be added to that audit regime
7. train your employees who are likely to encounter victims of modern slavery directly (e.g. buyers and auditors) in spotting the signs of modern slavery and asking the right questions of workers. They will need to know how to report instances and the action the organisation will take
8. have an action plan so you know what to do if modern slavery or human trafficking is spotted
9. ensure that your stance with regard to modern slavery and human trafficking is covered in your organisation's corporate social responsibility policy
10. amend your whistleblowing policy so that concerns about slavery or human trafficking can be raised. Consider implementing a procedure for workers to report through a helpline.

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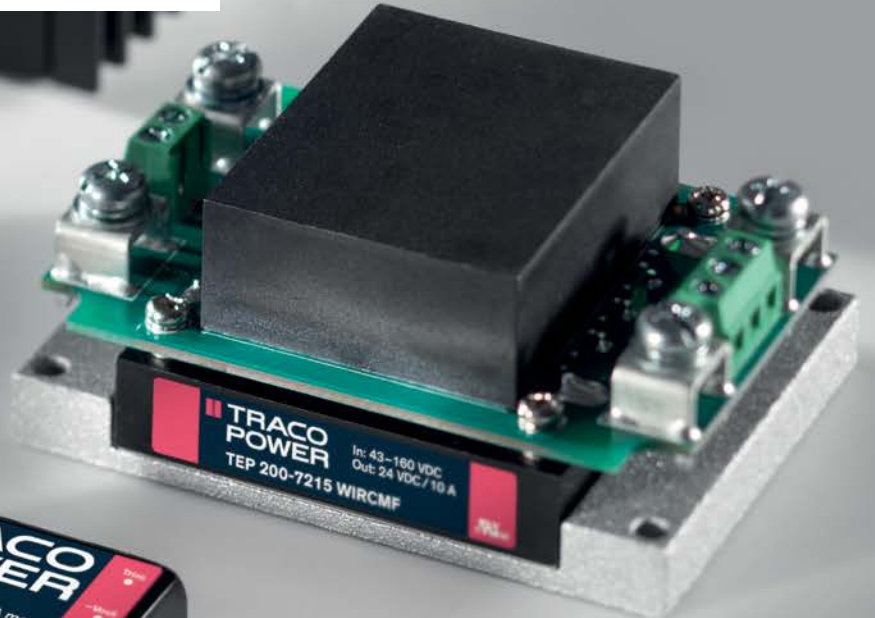


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ORR: no need to take a Bow(e)?

After the Bowe Review, the 'role and responsibilities of ORR' are being 'fundamentally reviewed'¹ by the Department for Transport. Thinking how ORR might behave if merged with other economic regulators produces some interesting perspectives, says **Andrew Meaney**

The five year periodic review process of Network Rail's (NR) income and expenditure has served the industry well, especially since the Railways Act 2005 placed an explicit requirement on funders to set out how much money they want to spend on rail and the outputs they want to buy. A mixture of rail being good politics and good business (tax payer investment in rail tends to make money for government through future fares income and general taxation due to increased economic growth), and the ability of NR to raise debt finance from private capital markets, saw the 2013 review enable £38 billion to be spent by NR during the current five-year period.

However, we now know that when the recent five-year agreement hit the reality of Network Rail's post re-classification 'hard' budget constraint (it agreed to borrow a maximum amount from DfT, rather than a flexible amount from private capital markets) and costs were predicted to rise considerably on key enhancement schemes, that agreement was unable to survive.

In the aftermath, Dame Colette Bowe was given the task of investigating what caused the 2013 agreement to break down, and to make recommendations regarding how DfT, ORR and NR should develop policy and processes for future decisions on rail enhancements. She found that 'the problems that have arisen with rail infrastructure investment in CP5 are, plainly, significant and of deep concern... but they are tractable.'²

Her recommendations focus on ensuring there is clarity of responsibilities between ORR, DfT and NR; better programme governance and oversight of the enhancements planning process; due attention paid to the skills base required to deliver major schemes; and, helpfully borrowing from standard practice in other infrastructure sectors, (albeit in

a somewhat muted way focusing on delivery, rather than choice of scheme) incorporating the views and needs of users.

A wider look helpful

Barring increased user engagement, these are (consistent with Dame Bowe's brief) government policy and process solutions to the issues that have emerged. A wider look at how other infrastructure sectors are delivering enhancements with limited government oversight provides some helpful sense-checks.

Regulators in energy and water, for example, ensure there is customer agreement with what companies are planning over the coming five years, regulate total expenditure (rather than separating enhancements from other expenditure) and reward companies for deliverable business plans (which they

are able to benchmark against other companies in the sector). Shareholders bear the risk of underperformance and company boards are responsible for delivering the deal with customers and the regulator.

The ORR is now having its role and responsibilities in rail fundamentally reviewed—significantly, not just with respect to enhancements, according to the Secretary of State's announcement, and DfT published a call for evidence in early December³. This could go a number of ways, including:

- a slimmed down economic regulation role for ORR, monitoring Network Rail's efficiency and access agreements for operators, similar to the role the same organisation now plays in relation to Highways England. However, the new arrangements

Dame Colette Bowe: problems with rail infrastructure enhancement are tractable



‘...moving ORR’s economic regulation powers into a new cross-sectoral regulator would open up a quite different set of options from those emerging from the Bowe Review’

for roads have yet to bed in and the context is very different with ORR not setting prices in that sector, unlike rail

- continuing much as now but with a major projects process removed from the periodic review cycle, potentially to enable direct government funding and accountability for delivery. This is probably what DfT has in mind at the moment, with the secretary of state’s response to the Bowe Review

envisaging the planning and delivery of enhancements being brought together under a director of Network Services. However, this direct accountability to government for the scope of all current and future enhancements goes a long way beyond historic government involvement in rail and ministers may find this uncomfortable. Nevertheless, to the extent this enables taxpayer funding to focus on enhancements, while leaving NR’s remaining expenditure privately funded by passengers and freight customers (as happens in Germany at present), this would open up new financing and ownership models

- beefing up the rail regulatory process under a combined multi-utility regulator, using a number of approaches adopted by other regulators in recent years to overcome issues with enhancement programmes in their sectors. As mentioned above, moving ORR’s economic regulation powers into a new cross-sectoral regulator would open up a quite different set of options from those emerging from the Bowe Review. As a new body, it would be likely

to give ministers the ability to state that something is being done, while a large multi-sector regulator would provide balance against the substantial influence that DfT now has over the sector (despite its relatively limited role in funding it). And it would give any future private-sector investors in rail infrastructure confidence that their investments are overseen by an independent voice.

Andrew Meaney is partner and head of Oxera’s Transport Team

McLoughlin, P. (2015), ‘Response to the report of the Bowe Review into the planning of Network Rail’s enhancements programme 2014-2019’, p2, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/479773/bowe-response-letter.pdf

²Bowe, C. (2015), ‘Report of the Bowe Review into the planning of Network Rail’s Enhancements Programme 2014-2019’, November, para 6.32.

³ Department for Transport (2015), ‘Rail Regulation: Call for Evidence’, December.

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Christmas cheer

GWR managing director **Mark Hopwood** was heartened last Christmas to be involved in collaborative working of a kind the industry needs to see more of

As we seek to build a railway fit for the 21st century, and fit for the legacy the Great Western beholds, the year has started where the previous year ended; with Network Rail conducting significant improvement works on many parts of our route.

Despite the complexity of the work and more than 500 other projects nationwide, I was delighted that Network Rail was able to deliver across the Great Western on schedule and on time, while simultaneously tackling widespread damage to the wider rail network caused by consecutive, and in parts devastating, storms.

At GWR we were able to learn from last Christmas and the summer work to Box Tunnel and vicinity, improving our communication, train and bus plans to be able to better inform customers and to provide the best level of service possible during the period.

Our long distance High Speed Trains, soon to be replaced with the Super Express Trains and AT300s, once again proved to be the grand workhorses they are and instead of serving Paddington were re-planned to serve Marylebone and Waterloo. Local journeys in the West London and Thames Valley areas were facilitated by moving passengers to High Wycombe to board Chiltern services or join London Underground services at

'The industry needs to see more of this sort of collaborative working if we are to really push the railways back into the hearts of our passengers. I believe this Christmas we and Network Rail have set an example to the rest of the industry how to do things'

Hillingdon – and all supported by good communication with passengers, before the work began and with extra staff on the ground during the period.

The work at Christmas was a great example of the industry working together, putting passengers at the heart of what we do to ensure we can keep them moving, while at the same time conducting the necessary engineering work to make the improvements we know they wish to see – longer, faster and more reliable trains and all backed up by good customer information when things do go wrong.

As I was out and about at stations and on trains over the festive period, I took enormous pride from seeing the efforts being made on behalf of our existing passengers and for those using the network in the future who have yet to travel with us. Network Rail's 'Orange Army' had once again given up time with their families to deliver the more visible projects, such as new track layouts; new bridges; overhead gantries and helping to modernise more than 100 year-old stations to serve the needs of 2016 and beyond.



More collaborative working

Working together as an industry, we had agreed with Chiltern Railways and South West Trains that some of their paths would be surrendered to give our GWR trains access to Marylebone and Waterloo





and, in exchange, we carried their passengers from Banbury and Basingstoke respectively, to London. We at GWR also had Freightliner drivers conducting our own GWR drivers over unfamiliar routes.

The industry needs to see more of this sort of collaborative working if we are to really push the railways back into the hearts of our passengers. I believe this Christmas we and Network Rail have set an example to the rest of the industry how to do things. Transport Focus has supported and endorsed the approach and it's one we commend to others in the rail industry.

As we work hard with Network Rail it has also been important for us to ensure we deliver improving punctuality and reliability to our customers. Over the

last year we have seen our punctuality at GWR gradually improve as our efforts with Network Rail to focus on delivering infrastructure improvement plans have hit the mark – in more ways than one. Mark Langman, who joined Network Rail Western as its new Route Managing Director last September, has made a visible impact in his first six months. It's very easy to criticise Network Rail when things go wrong, but it is also important to recognise success, and it has been remarkable to see the impact a change of leadership can make in driving delivery of good performance.

As this edition goes to print the latest National Rail Passenger Survey will have been made public and, no doubt, it will reinforce the vital role played by

punctuality and reliability, and passenger information during disruption, in determining overall passenger satisfaction with train operators.

There is no doubt the UK rail industry needs to work harder to meet the aspirations and expectations of customers. Recent trends in rail punctuality nationally have not been positive, but this hides some varying trends and results from different operators and networks.

With so much future promise on the Great Western network, it has never been more important for us, despite the challenges the electrification work will bring, that we deliver improving punctuality and reliability to our customers.



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Women in Rail

Show and tell

What can you do to improve gender diversity, asks **Jodi Savage**

At the end of last year, Women in Rail held its annual conference at the offices of Berwin Leighton and Paisner in London. The event was attended by more than 100 rail industry professionals, from train drivers and engineers to lawyers, senior managers and civil servants. The audience was largely female however there were more men at this than any of our previous events.

We were absolutely delighted that transport minister Claire Perry was able to attend the event. Claire gave an impassioned speech about gender diversity in the rail industry and took away a number of comments and suggestions about how government could help to influence a change in the gender balance.

Anna Walker, chair of the ORR, revealed the results of Women in Rail's recent study into the male:female ratio which, disappointingly, shows that only 16 per cent of the railway workforce is female.

Malcolm Brown, CEO at Angel Trains, invited the audience to 'bring a man' to future Women in Rail events as we cannot change the diversity picture without the support of the majority. Malcolm explained that we need to harness the support of those who already agreed with



the objectives of Women in Rail and convert those who don't!

I had invited Liam Slater from RGS Executive (one of the sponsors of the conference) to attend. When I asked him how it felt to be one of the few men at an event attended predominantly by females, he admitted that it was quite strange and that he felt a little intimidated. I explained to him that this is what it is like

for women who attend most rail industry events – we are the minority. Liam found the concept very interesting and a bit of an eye opener.

At the end of the presentations the panel took questions from the audience. The questions were varied and covered a number of topics, but one which resonated with me was 'What can we do, as individuals or as a business, to improve this situation?' I think this might be a question which a lot of people have asked – I know it's something I often think about.

So, what can we do? A few ideas from me...

Talk about rail. Talk to your friends, your family, people you meet at networking events who aren't in the rail sector. Spread the word that rail is interesting, full of potential, varied, growing, challenging and rewarding. You never know whose interest you might pique.

Encourage the young people in your life – sons, daughters, nieces, nephews, grandchildren, godchildren and friends' children – to take an interest in rail and engineering and in making things in general. I had picked out some pretty outfits for nieces for their Christmas presents but after the conference I



‘Everyone likes to think he or she is open-minded and objective, but unconscious bias affects every area of our lives’

changed my mind. I have bought my youngest niece a track which you build and various types of vehicles to push around it. I have bought my older niece a starter science kit. I was actually a little bit ashamed that as a proud ambassador for the rail industry and an advocate of improving gender diversity that I don't do more activities with my nieces which are based on engineering principles.

Remember that unconscious bias exists and try to override it. Everyone likes to think he or she is open-minded and objective but unconscious bias affects every area of our lives. Unconsciously, we are more inclined to like people who have similar looks, similar interests and come from similar backgrounds. One of the best ways to eliminate a bias is to prove it wrong through personal experience

and engagement. Draw on other people; engage in a conversation with someone different from yourself. Get to know other people as individuals and take note of how they can dispel the biases we might hold.

If you have any involvement in recruitment then challenge yourself, your headhunter, recruitment partner or HR department to include women on the shortlist or interview list, or at least think about how they market the vacancy and ensure that it appeals to a diverse range of people. This could be as subtle as adding photographs to the vacancy advert which shows a diverse team.

Make something happen. There are a lot of people in the industry who are passionate about our sector and just as passionate, if not more so, about encouraging young people into this industry. Or at least show young people that the rail industry is exciting and so give them the knowledge such that they can make an informed choice about their study subjects and potential career options. Women in Rail, along with other businesses and groups, is looking at ways which we can reach out to as many young people as we can. But don't wait for a big industry-wide programme to make this happen. Perhaps your husband, wife, sister, brother or friend is a teacher. If

Women in Rail's steering committee



so, speak to them about arranging a talk or being present at a careers event. Then speak to Women in Rail and we can make this happen with the support of our members across the country.

One of the most memorable events I have been to is a careers event at a school in Tottenham for seven to nine-year olds. It was arranged by a teacher whose friend had told her about Women in Rail. She got in touch with us and we, in partnership with the Young Rail Professionals, attended the careers fair and talked to these enthusiastic children about rail. They were fascinated and it was such a rewarding experience.

I'm sure that many people have other ideas about what we can each do to improve the gender balance in the rail industry and I would love to hear them. Please email womeninrail@angeltrains.co.uk or tweet @WomenInRail with your thoughts.

Jodi Savage is sales account manager at Wabtec Rail and a board member of Women in Rail

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Any more fares, please?

The really clever train operators will be the ones that can get growth in yields to match price increases or – even better - from within the existing price structure

A combination of low inflation and a government commitment to eschew real-term increases in regulated fares during this parliament meant that the cash increase was, at 1.1 per cent, among the lowest for several years.

Even so, there was the usual negative media coverage and the usual round of protest demonstrations on the first day back to work. This year, they were attended by both Labour leader Jeremy Corbyn (taking a, no doubt welcome break from constructing the longest reshuffle in history) and Labour's London Mayoral candidate Sadiq Khan.

Those with longish memories might just recall that Mr Kahn was a junior transport minister in the dying days of the Brown government. Those were the days when the government and the DfT was committed to a policy of ensuring that the public paid a greater proportion of the cost of running the railways through fares, to be achieved through above-inflation price increases. But then consistency from politicians – especially after the switch from government to opposition – is a very rare thing.

It is, though, interesting to reflect that the latest quarterly statistics show that income from passengers has risen by more than 20 per cent in real terms since he left office. The latest quarterly statistics published by the Office of Rail and Road (ORR) show that total revenue in the year ended 31 October was just over £9 billion, compared with £6.4 billion in 2010. Adjusting for inflation, that's just over £7 billion at today's prices – giving a real increase of 22.1 per cent – a compound annual growth rate of just over five per cent.

However, what is really interesting is that over that same period, patronage on the system has grown by no less than 28.9 per cent, so that the income the industry earns from each passenger on the railway has actually fallen, going from £5.43 per trip in 2010 down to £5.40. It is the volume growth that has delivered more revenue for the system, rather than price increases. The problem comes, though, when huge sums have to be expended on expanding capacity to accommodate the increases in demand. This is a particularly difficult issue

where, as on large parts of the regional networks, fares income covers such a low proportion of total costs.

This question of difference between headline fare increases and the revenue they actually yield is not a new one and afflicts all public transport operators who need to maximize their revenue.

In the case of the railways, this is evident from the fact that the average fare paid in 2015 is actually lower in real terms than it was at the turn of the century (£5.46 against today's £5.40). The figure then fell over the following few years so that in 2004 it stood at £5.20. During the aftermath of the recession it fell even lower, going down to £5.16 in 2012 and 2013.

Of course, rail travel is a hugely diverse market, which at the very minimum needs to be looked at in terms of long distance intercity routes, commuter routes into and out of London and the regional services. And sure enough, the trends do differ between sectors.

The table below shows the shift in average fare paid since 2004 compared with the ORR's figures on ticket price increases.

As can be seen, the longer distance routes have seen a small fall in average fare, compared with a 16.4 per cent increase in ticket prices. In London and the South East, prices have risen by 22.7 per cent in real terms, but earnings per passenger have only risen by 2.9 per cent. Only on the regional services has the increase in the amount earned from each journey matched the changes in price.

This question of difference between headline fare increases and the revenue they actually yield is not a new one and afflicts all public transport operators who need to maximize their revenue

Year to 31 March	2004 (£)	2015 (£)	% change	% change in ticket prices
InterCity	22.85	22.69	-0.7%	16.4%
London & SE	3.81	3.92	2.9%	22.7%
Regional	3.25	3.76	15.8%	5.5%
National	5.20	5.40	4.0%	18.6%

Adjusted to 2015 prices using RPI. Source: ORR Statistics



Real Term Changes in Earnings per Passenger Kilometre 2004-2015

Year to 31 March	2004(£)	2015(£)	% change	% change in ticket prices
InterCity	0.142	0.146	3.1%	16.4%
London & SE	0.131	0.153	16.3%	22.7%
Regional	0.105	0.113	7.5%	15.5%
National	0.130	0.143	10.4%	18.6%

Adjusted to 2015 prices using RPI. Source: ORR Statistics

There are all sorts of reasons for this: the shift to advance purchase tickets, the growth of off-peak travel and shorter average journey lengths are but three. One means of capturing some of these changes is to look at earnings (or yield) per passenger kilometre rather than per journey. Here, the figures look rather different, as the table above, shows.

As can be seen, the long distance routes have seen an average real-term ticket price increase of 16.4 per cent, but yields have only risen by 3.1 per cent. On the London commuter routes, the gap is narrower, as price rises of 22.7 per cent have earned a yield increase of 16.3 per cent.

The regional services have seen yields grow by 7.5 per cent, around half the rate of increase for advertised ticket prices. As

a result, the differentials in the revenue earned from local passengers in London and regional cities have not only remained substantial, but the gap has widened even further. In 2004, the average regional passenger paid 10.5p per kilometre against 13.1p in London and the South East - 24.7 per cent less. By 2015, that differential had risen to 35.6 per cent - 11.3p in the regions and 15.3p in London.

This very low yield on regional routes is one reason why subsidies or cross-subsidies for these routes remain so high. In looking to the future of the rail network in the Northern Powerhouse, the new strategists at Transport for the North might find that the revenue raised from narrowing or even closing that gap would be of enormous use in delivering service improvements in their area over the next

‘In 2004, the average regional passenger paid 10.5p per kilometre against 13.1p in London and the South East - 24.7 per cent less. By 2015, that differential had risen to 35.6 per cent - 11.3p in the regions and 15.3p in London’

few years.

Meanwhile, the whole of the industry is faced with the difficulty that the price increases for which they take so much flak every January do not actually deliver equivalent growth in revenue per journey or revenue per passenger kilometre. The really clever train operators will be the ones that can get growth in yields to match price increases or – even better – from within the existing price structure.

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Held at the Glasgow Royal Concert Hall, the ceremony allowed graduates to mark this achievement and milestone as they walk across the stage, shake the chancellor's hand and receive their certificate. We would like to congratulate the graduates listed below all the best for the future.

Certificate:

David Abel (GB Railfreight), Naina Bhuvu (Network Rail), Jeremy Grimshaw (Isle of Man Public Transport), Charles Harmer (Transport for London), Ryan Jones (Great Western Railway), Veronica Morrissey (Iarnród Éireann), Liz Walker (Institution of Railway Operators), Robbie Walsh (Iarnród Éireann).

Diploma:

Stacey Adriaanse (Iarnród Éireann), Patrick Allinson (Great Western Railway), William Brady (Iarnród Éireann), Paul Buckley (Iarnród Éireann), Colin Craig (ScotRail), Adrian Dolan (Iarnród Éireann), Robert Evans (Chiltern Railways), Laurence Howard (Iarnród Éireann), Ide Leonard (Iarnród Éireann), Jane Linskey (Translink), Brendan Mackin (Iarnród Éireann), Jim Mason (Chiltern Railways), John Melville (Virgin Trains), Feargal Morrin (Iarnród Éireann), Walter Morrissey (Iarnród Éireann), Brenda Mary Orr (Translink), Victoria Osborne (Translink), Aaron Penfold (Network Rail), Richard Redfern (Network Rail), Jodi Rogers (Great Western Railway), Tom Silsbury (CrossCountry), Marc Silverwood (Northern Rail), Craig Simmonds (Network Rail), Scott Storey (ScotRail).

Degree:

Anthony Monaghan (Iarnród Éireann), Declan Monahan (Iarnród Éireann).



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Looking to the future: a talk on interoperability

At a recent North East Area event Chris Carson, head of business change, Virgin Train East Coast (VTEC) gave a presentation to members about the VTEC response in preparation for the Digital Railway and ERTMS/ETCS. Chris explained in considerable detail how VTEC is contributing to the development of the future national control and management systems and ensuring that this business initiative will benefit its customers.

The East Coast Main Line (ECML) is a Trans-European Networks (TEN's) route and as such is subject to European Interoperability legislation. It is also important to encompass national legislation such as Railway Safety Regulations 1999, and Railway Operability Regulations 2006 which mandate the progressive adoption of a European Standard operations and safety system, known as European Rail

Traffic Management System (ERTMS), which combines advanced Signalling, Train and Traffic Control, (ETCS), Global Communications (GSM-R) and European Operating Rules.

The ECML will be an early cut over to ERTMS with significant changes in how trains will be controlled and operated from 2018 through to 2024. This will see the actual removal of lineside signals on the south end of the ECML including the complex of Kings Cross, which will be the first such application in Europe at a major station.

The presentation went into great detail about how the project was being taken forward, the human and technical factors that needed to be considered, and the decision making processes being used. VTEC has set up a dedicated team to prepare for this. This team has already interfaced with other present and future users including European Railways, Network Rail and other operators in the UK and their own staff including the Trade Unions.

One key initiative already taken has included the supply of iPad's to drivers to acclimatise them to the Driver Machine Interface (DMI).

The training element is likely to be a major factor with more than 50,000 staff needing ETCS training.

Following this Chris then gave an overview of the whole Digital Railway project, which is moving forward and evolving all the time. The IRO would like to thank Chris Carson for his time and for sharing this valuable presentation with members.

By David Monk-Steel



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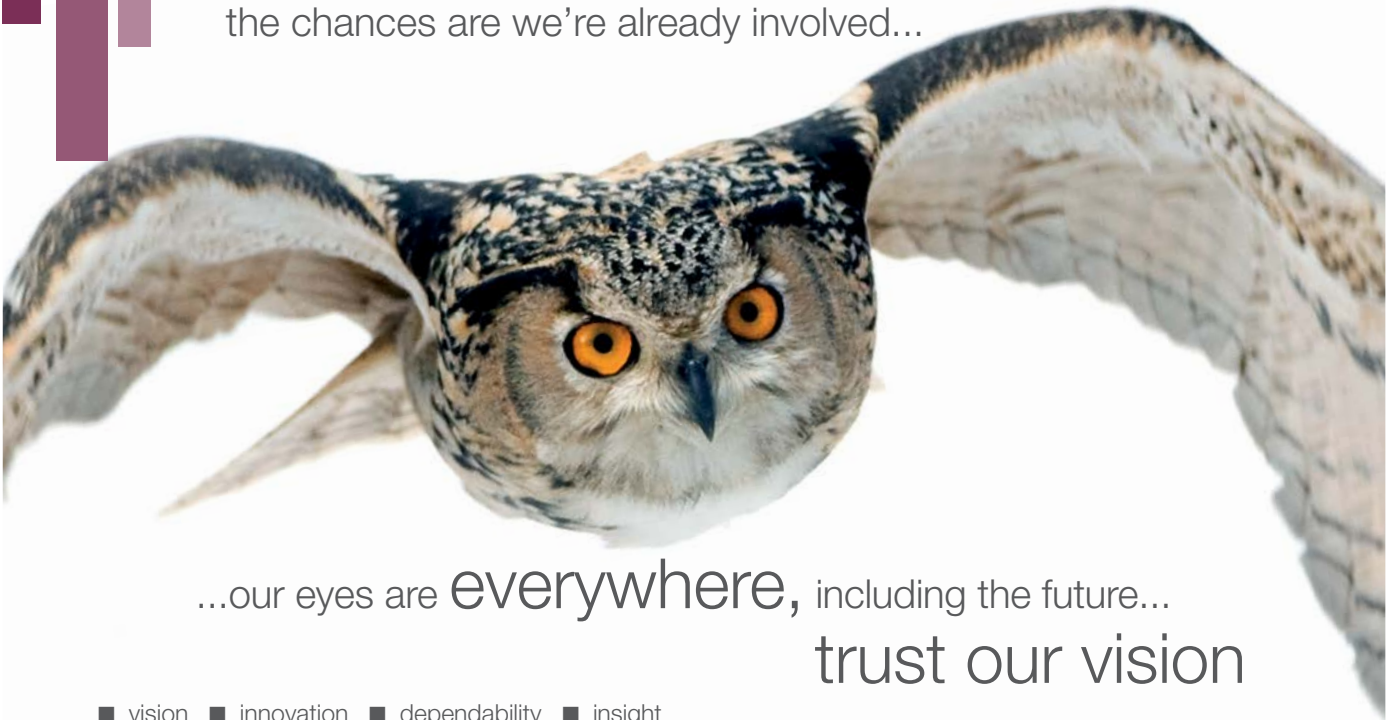
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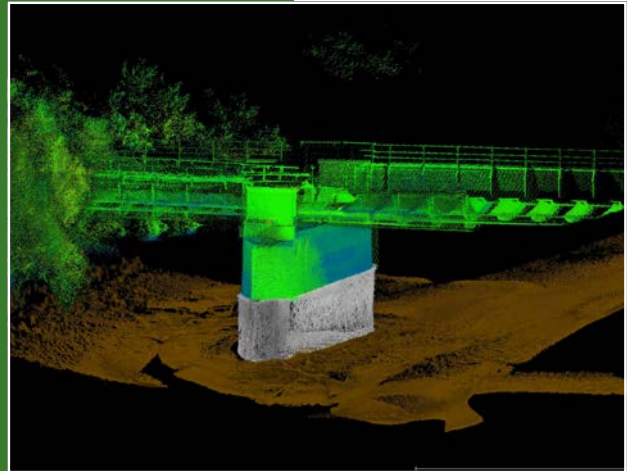
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Let's get radical

The Hendy Review is a first step in right direction, says **Dan Lewis**. But we must go further to ensure the industry's future

The stunning growth in train usage since rail privatisation has unfortunately been matched by rotten financial management at Network Rail. With £38 billion of net debt – forecast to rise to £50 billion by 2020 – and interest repayments taking up a staggering third of the budget by 2029, something had to be done. So the Hendy Review is to be welcomed as the first step towards giving our rail network the hope of a financially sustainable future.

But we must go further and faster to ensure the train industry's future. So what can be done?

No one really saw the doubling of passenger usage since 1997 coming. Back then, trains were the past, not the future. Would this have happened if we didn't have a property price boom, necessitating more commutes by train or without vehicle fuel and insurance prices doubling?

We will never know, but what is clear is that Network Rail was structurally flawed and ill-equipped to deliver cost-effective rail infrastructure. As is common with monopolies, working in a vacuum of competitive pressure led to higher costs and poor delivery by Network Rail.

Sir Peter Hendy is therefore absolutely right to recommend selling off £1.8 billion of depots, arches and station shops to help plug a £2.5 billion funding gap by 2019.

Apart from the showcase redevelopments of Britain's biggest train stations, Network Rail's property

'Right now, 20 years after privatisation, all my local station has to show for it is new paintwork, wheelchair access to one platform and occasionally open toilets'



No trains here. Is this a vision of the future perhaps?

management has been poor to non-existent in a record period of property price growth. All stations, not just the big ones could be attractive hubs of commercial and residential activity. If the train operating companies were allowed to own the stations outright, they might also even introduce and acquire additional cheap parking to encourage more people to use the trains.

Right now, 20 years after privatisation, all my local station has to show for it is new paintwork, wheelchair access to one platform and occasionally open toilets. This is a common experience, making it no wonder that so many passengers remain unimpressed.

However most of the Hendy Review appears to endorse the existing array of rail upgrades, many of which continue to be late and over-budget, hitting the taxpayer and the passenger twice, as noted by the Public Accounts Committee in its review of Network Rail's CP5 delivery plan last November.

Scratch below the surface

Cutting investment is one way of helping to balance the books. But scratch below the surface and there are a whole load of efficiency savings to be realised. A common error is for governments to only take into account the initial capital costs of infrastructure. For any project, the really big number tends to be the lifetime costs, which could be four or five times as much. Policy-makers have to be clear about whether a project will deliver capital deepening – and so more self-sustaining revenue earning activity.

Knowing this, it's a mystery to me why the digital railway is on the backburner. Digitising air traffic control in the 1980's led to a 60 per cent growth in air traffic. We need to do the same to the signalling system connecting the 20,000 miles of railway track. Bizarrely, the plan is only to upgrade to digital as existing systems expire, meaning that it will not be complete until the 2060's. By then, who knows what transport will look like?

‘Again, aviation shows the way. Airlines have become very adept at filling up seats by varying prices on a minute-by-minute basis. Too many of our trains and tracks are empty too often’

It probably won't involve many trains like today – I'd be amazed if they had not all become self-driving by then. Perhaps, as some futurologists believe, we may even have mastered Star Trek-style teleportation - making all known transport modes redundant.

And then there's ticketing. You can't help but be impressed by companies like thetrainline.com and the potential for growth when 87 per cent of tickets are still purchased at the station. And yet on ticketing, so much more could be done. Again, aviation shows the way. Airlines have become very adept at filling up seats by varying prices on a minute-by-



minute basis. Too many of our trains and tracks are empty too often. The freedom to explore pricing algorithms would give the train operating companies the ability to maximize train use off-peak and to find other ways to sell services to customers. Just as cinemas can only break even on the popcorn, let's allow the train operating companies to see what they can do beyond fare revenues.

The bottom line is that government and industry can't afford to be complacent. Self-driving cars, ultrafast internet and virtual reality are on the way and constitute an existential threat to public transport over the next two

decades. That's why the Shaw Review must be radical, including considering breaking up Network Rail, introducing more competition and selling off many assets. The clear aim must be to make the railways subsidy-free, regulation-light and a welcome home to entrepreneurial market innovators.

The alternative is to run into escalating funding crises and the last thing Britain needs is more debt.

Dan Lewis is senior infrastructure adviser to the Institute of Directors
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What's down the line?

2016 looks set to be an interesting year for rail, believes **Martin Abrams**

Nationwide smart ticketing seems to be as far away as it has ever been, important franchises are up for renewal and the very existence of Network Rail is in question, so this year could be a very mixed bag for passengers.

Ticketing

With the government's South East Flexible Ticketing (SEFT) programme in tatters – despite almost half of the £80 million earmarked for it having been spent – and 'new' paperless ticketing now being mooted instead, passengers can be forgiven for feeling frustrated. Smart tickets, contactless payments, paperless tickets, call them what you will, what passengers want is less talk and more action. The rail minister Claire Perry MP has now seemingly admitted defeat with the Department for Transport's flagship SEFT programme and instead has issued 'a

challenge to the rail industry to modernise and simplify the ticketing system'.

Questions will need to be answered by the government on what has gone wrong with smart ticketing and how almost £40 million of public money has been wasted.

London's Oyster scheme clearly shows that simplified and flexible smart ticketing is popular and increases the number of people using public transport and the number of journeys they take. Most other European countries have had similar nationwide schemes in place for years so the need for the UK to catch up is becoming ever more overdue. It is especially important for the eight million plus part-time workers who would benefit from flexible part-time season tickets.

The Office of Rail and Road (ORR) is due to publish the final recommendations from its review into the ticketing market in the spring. The objective of the review is to make ticketing more competitive, improve performance and push down



Claire Perry: seemingly admitted defeat over SEFT



ticket prices. The ORR is also likely to demand reductions in the charges train operators make in return for access to fares data. Either the ORR or Department for Transport will then take a hands-on role in moderating the market that results. That seems fair, and may generate some benefits at the margin, but it's unlikely to mean significantly reduced ticket prices and the main gains will be for companies trying to get a slice of the ticket sales business.

Rather than obsessing about markets, the government, regulators and operators need to work on a single network-wide, multi-modal smart ticket that automatically gives you the best price for your journey. This is not rocket science and it is vital for government and the rail industry to get their collective acts together and show that they really can work jointly for the benefit of passengers.

Franchising

Three franchises are up for grabs this year – South West, West Midlands and West Coast – providing a perfect opportunity to increase investment in those lines. The opportunity for the travelling public to influence the outcome of these franchise renewals is happening now with the winning bids being announced in 2017. All eyes will be on the West Coast franchise competition after the debacle in 2012 and there is huge pressure on the Department for Transport to ensure the bidding and

decision making processes are watertight this time around. Elsewhere, the electrification of the Great Western Main Line, if it can be delivered on time and on budget (and it's a big 'if') will provide more seats and quicker journey times, while reducing carbon emissions.

New TransPennine and Northern franchises start this year, promising big upgrades to rail services. We welcome the commitments to buy new trains, something we championed through our *Right Track North* campaign against strong opposition from government officials. This is long overdue and passengers in the north of England will be pleased to hear they will no longer have to endure the 30 year old Pacer trains. There are also the promises of extra services and better stations with more staff and we're pleased that the 'Rail North' grouping of councils will get some control over the new franchises. However, this should only be the start as the north of England deserves a truly modern, electric rail network, with fast and frequent trains between the cities, London-style smartcards and integration with buses and other transport.

We will keep up the pressure to make sure these commitments become reality and that the North gets the transport network it deserves - only then will the

government's 'Northern Powerhouse' rhetoric really mean something.

Devolution

The Cities and Local Government Devolution Bill will pass into law this year with the potential for it to improve rail travel in the devolved regions. We welcome this move towards more devolution of transport powers. Local control over transport and spending can bring real benefits to passengers, with local authorities better able to plan for their local rail, road and bus needs. Devolving transport investment away from Westminster can kick-start not just the creation of a modern, integrated transport network, but also one which is genuinely sustainable - reducing the reliance on cars and the need for controversial and environmentally damaging road projects.

Network Rail

The Shaw Review, due to be published in the spring, will complete the trilogy of Network Rail reviews. This one has the potential to be the most controversial as it looks at how Network Rail should be funded in future, with some suggesting full re-privatisation. Any enthusiasm for this will be tempered by Railtrack's toxic legacy, characterised as prioritising profit

over passenger satisfaction and safety, and the outsourcing of technical skills needed to run the railways.

Given Nicola Shaw's experience in the rail industry, it is highly unlikely that she will recommend the recreation of an organisation similar to Railtrack, but we are concerned that the option is still on the table. There are, however, plans to increase Network Rail's income generation. This will be through efforts to increase retail income, with stations having more shops and building high density housing around railway stations, a move likely to benefit sustainable transport.

The government is set to receive a windfall in premium payments this year and our recent research conducted by Credo shows that by 2020, government income from the railways could increase threefold from £1.1 billion today to £3.5 billion, enough to reduce public spending on the railways by a quarter. These figures prove that it's time money was invested to benefit passengers now, not in ten years' time, and more than ever the onus is on the government and the rail industry to stop fare rises and give passengers what they want: an affordable and reliable railway for everyone.

Martin Abrams is public transport campaigner for Campaign for Better Transport

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‘We’ve got to get the surface access right and the rail connectivity right to make sure that people can get to the airport and that they’ll come back again’

Robert Eaton

More Birmingham Airport passengers use public transport to get to the terminal than any other regional UK airport. Its head of planning development and infrastructure, Robert Eaton, spoke to **Dave Songer** about its aims to improve, the impact of devolution and the arrival of HS2

The interview with Robert Eaton took place in an office that overlooked Birmingham Airport’s recently-extended runway. The huge floor-to-ceiling windows provided an uninterrupted view and he told me to brace myself if a plane comes in to land. Unfortunately for me though, no plane was forthcoming.

I began by asking Eaton for some details on his role. ‘I’m head of planning development and infrastructure and basically responsible for – as the title suggests – planning, specifically built development and town planning. I deal with any developments on the airport that need planning permission and even for those that don’t, which still have to go through Solihull Council’s procedures.

‘Part of my role is to do with the setting up of current projects and also looking at future planning and masterplanning. We’re currently working to our masterplan, which sets out where we’re going until the year 2030.’

As for the development aspect of his job, ‘that’s to do with actually implementing work on the site. Upon approval, it’s down to us build and project manage it and to ensure that the infrastructure is linked in and maintained properly’.

Surface transport ‘for everything into and out of the airport’ also makes up a major part of Eaton’s job. ‘That’s not just done internally, it’s to do with managing all the relationships we’ve got externally with all the various bodies, local authorities and so on,’ he told me.

On the masterplan, he explained that it involves ‘a whole raft of information’ that includes transport and surface access but ‘the most important bit’ is that it will show what the airport can be expected to look like.

Increasing passenger numbers

Eaton told me that Birmingham Airport was planning to greatly increase its passenger numbers over the next two decades and in order to be able to cope, he revealed that

it was about to embark on a new, updated version of the masterplan, covering the period up to around 2040. ‘It will look at where everything will go and what we will need to be on site in order to operate a 15, 20 or even 25-million-passenger airport. It’s about making sure that in 15 years’ time when we need that development we can deliver it.

‘Surface access transport into and out of the airport will be among the changes. The airport currently serves around ten million passengers a year and we’re beginning to creak: roads are congested and trains services could be better. Once we’re at 15 million – a 50 per cent increase – we’re going to have to make sure that the surface access is better to cope with that extra demand.’

One of the ways of delivering that better connectivity is through devolution, a major theme for the day at AirRail 2015 (page 67) at which Eaton was a key speaker. What were his thoughts on the threats and opportunities related to devolution? ‘I think it’s more a case of opportunities. As far as we’re concerned, devolution basically gives the power to the west Midlands and, more importantly, the power to deliver regional strategies that enables things to be delivered holistically.

‘There are a few regional strategies: Midlands Connect and the West Midlands Integrated Transport Authority. The latter has just issued their transport strategy, but they still rely on central government funding to help deliver that. If the funding is devolved to the regions it makes it a lot easier for them to implement their strategies. From our point of view we’re in those strategies and we recognise the importance to the economy, so anything that helps deliver the surface access improvements to the airport is a good thing.’

What is Birmingham Airport’s contribution to the midland’s economy? ‘It’s huge,’ he proudly told me. ‘York Aviation, the air transport consultants, has just completed a report and the headline statistic is £1.1 billion in GVA (Gross Value Added) (the airport’s worth to the midland’s economy) and about 25,000 jobs directly and indirectly. If we can





improve the connectivity to the airport it would increase the number of passengers, which in turn increases the economic impact we have on the economy.'

Despite registering his obvious positivity for devolution, I asked if it is something he's in favour of. 'Oh yes, absolutely, but the region has got to make sure is that it doesn't go off alone devising regional strategies that don't fit into the national strategy; it's got to dovetail. But on the whole it should work really well.'

Getting the message across

Good connectivity is not much use without passengers, what more could the industry do to tempt more people to use the train to get the station? Initially answering from the point of view of airports, Eaton said that it was doing all they could to encourage more people to use sustainable transport and improve connectivity. Setting him straight, I told him I did in fact mean the rail industry. His response was more measured.

'There are certainly things we'd like to see but as far as we're concerned we've got infrastructure in place – the station you just arrived at is on the West Coast Main Line and connected to the airport by a rail link that gets you to the terminal in less than 90 seconds.'

However, it is services at less friendly hours that Eaton would like to see. 24-hour trains? 'Certainly early-morning trains that get in at around 4am,' he said. 'We have planes taking off and arriving early in the morning and a significant number of passengers won't be able to use the train, they'll have to use the car. So it seems a bit of a wasted opportunity.'

Getting back to the airline industry, what has Birmingham Airport done to increase the use of trains? 'To a point there's only so much we can do. We engage with all the train operators and the relevant bodies and we're involved in a Surface Access Group that meets on a regular basis – made up of about 16 representatives from transport providers, train companies, local authorities and other related organisations. It gives members

“The station is called Birmingham International but if it had airport in the title, would people think: there's a station close to the airport and maybe we should use it?”

the platform to engage and to improve the level of marketing to a point where more people know about it.

'If Birmingham Airport wasn't served by a train station I'd be saying that we need X billion pounds to build one, but we've got it, we've got the infrastructure and we just need to get the message out.'

Surface Access Strategy

As part of the aforementioned expansion drive, Birmingham Airport has initiated a five-year plan to improve transport into and out of the terminal, otherwise known as the Surface Access Strategy. 'The report is an essential commitment if the airport is to continue to grow sustainably, reduce carbon output and minimise the impact on the surrounding road network,' explained Eaton. 'It's got our modal share targets – existing and proposed – and it's also got a section on rail and what we intend to do in terms of rail strategy.'

Also covered in the ten-page document, 'made deliberately slim so it can be easily updated', is the push by the airport to improve connections to some of the more remote areas in the region, something of obvious importance to Eaton.

'Improved east-west connectivity, in terms of trains, is something else we would like to see. The West Coast Main Line is brilliant for going to Birmingham and the north west

and London but there is bit of a gap for the east and the east Midlands and beyond in the north east.'

To reinforce this point, he referred me to the Civil Aviation Authority's (CAA) most recent survey. 'It questioned passengers at all airports and found that far more passengers living in the east and travelling from Birmingham Airport use their cars to reach us. So, if you can improve that connectivity and have direct services,' he reasoned, 'then suddenly you greatly increase potentially the number of people who use the train'.

Naturally, franchises have a big say in how services operate and some speakers at AirRail 2015 expressed regret that franchises weren't better geared towards airports. Eaton also thought there could be improvements and he revisited his point about the importance of improving east-west connectivity.

'We asked York Aviation to investigate a number of scenarios related to the impact on passengers. It came back with a figure showing that it would increase passenger numbers by around nine per cent. That's nearly one million extra passengers. That sort of increase would have a knock-on effect not just for the local economy but the region as a whole.'

There was, however, a more fundamental change that Eaton wanted to see: an update of the station's name. 'It's down to marketing. The station is called Birmingham International but if it had airport in the title, would people think: there's a station close to the airport and maybe we should use it? It's little things like that really, but the infrastructure is in place it's just getting the services and the marketing to make the most of it.'

Reducing congestion

Of the regional airports, Birmingham has the highest proportion of passengers using public transport. What impact would a bad rail connection have to Birmingham Airport?

'Traffic,' Eaton responded almost immediately. 'If we didn't have Birmingham International station, congestion would be much worse. The M6 is bad but another hotspot for traffic congestion is junction six on the M42.' The junction that serves the airport, he told me, seemed to have got worse in the two years that he'd been in the job. He pushed a print out of one of the slides from his AirRail 2015 talk to back up his claim.

'There will be around 7.6 million people a year coming into the HS2 station at the beginning and that will increase to around 9.8 million. The nearby leisure complex, hotel and designer outlet centre, ResortsWorld, thinks it will get two million people a year and the National Exhibition Centre 2.1 million. That's around 21 million, not including Jaguar Land Rover, all using one junction of the M42. Congestion is a nightmare if there is an accident, a lane's down or there's an event at the NEC.'

'At the moment roughly 20 per cent use trains to get to Birmingham Airport and if it's a struggle to get here then they won't come back again. It really is in everyone's interest to get it right.'

It certainly is in Eaton's best interests to reduce congestion on the surrounding roads, for he lives in Herefordshire and commutes in every morning. 'The powers that be might suspect



something if I suggest a direct rail link between Herefordshire and Birmingham Airport', he joked.

For others like him that use their cars to reach the airport, it's vital that there are adequate parking facilities. Glyn Jones, Southend Airport's chief executive, said at AirRail 2015 that rail connections that are too good could affect its car park revenues – a major revenue stream for the Essex airport. To what extent is this true for Birmingham Airport?

'It's true; we do get substantial revenue from car parking. We've got more than 12,000 spaces on site which are full at times – last summer we were getting close to capacity.' Isn't it then in Birmingham Airport's interest to build more and more car parking spaces? 'Not really,' he said matter-of-factly, 'because of the problem around congestion on the roads. We've got to get the surface access right and the rail connectivity right to make sure that people can get to the airport and that they'll come back again.'

Confirming that there will always be provision for those who choose to drive, Eaton said: 'It's common for all airports. I think they appreciate that they can't rely on the rail network to get all their passengers to the airport.'

London Midland and Virgin

What about the Toc's that serve the airport, what dealings does Birmingham Airport have with them? 'Well, London Midland attends all the Surface Access Group meetings, which is a good way of making sure there is clear communication between us. We've also been doing work with Virgin,' which runs rather than owns Birmingham International, 'relating to marketing and raising the station's profile.'

'There's a train every 20 minutes from London to here, but is everyone aware of that?' he asked.

One method of raising the airport's profile was launched in November 2015 when Virgin introduced through ticketing, which combines rail and plane tickets. 'It's early days at the moment and only on offer at selected stations but it makes it much easier for people. It helps them realise that they can actually travel by train. It's convenient and provides a total journey. So, hopefully we'll see some positive feedback and results from that but the plan is that that scheme is expanded to include more stations.'

Faster connections

The improved rail connections that Eaton craves could be delivered with HS2 and the current plans of Birmingham Airport's long-awaited arrival see the interchange station nearly three kilometres away from the airport. How does Eaton feel about that? 'Yeah', he smiled as he passed me another slide to explain. Though quick to tell me how Birmingham Airport has always supported HS2, which will 'help to rebalance the economy and enable around 30 per cent of the UK to be within an hour of Birmingham Airport', it's fair to say he has reservations about the two-station plans.

'The current plan makes us the first station outside London, which is fantastic, but the station itself is 2.4km away from the airport. It's important that the connectivity between the two points is good and good enough to not put people off using the airport.' Eaton quoted Lord Deighton's words in his report into HS2, High Speed 2: Get Ready: A report to the Government by the HS2 Growth Taskforce, on the importance of the final leg of the passengers' journeys.

'HS2 is a once-in-a-generation opportunity and action needs to be taken now to get it right. Not getting this right risks creating physical barriers and blocking regeneration. This is true for both the station and the route. The last kilometre will matter the most.'

Eaton first acknowledged that the gap between the HS2 station, Birmingham Interchange, and Birmingham Airport is a little longer than Deighton's one kilometre and then outlined how he would like to see it done. 'Logically we'd like to have a stop directly above the station so there is connectivity between

the airport, Birmingham International and HS2. They haven't done that.

'At the moment they've got two stops about 140 metres either side, so not only is there an additional stop because of that, which slows things down, there's also connectivity needed between the HS2 people mover and Birmingham International station as well. It's not ideal.'

According to HS2, Eaton told me that it effectively means there is a six-minute journey time from the proposed station to Birmingham Airport.

'They've also said that in a worst case scenario there could be a 15 minute delay getting onto it if there is an event at the NEC, so that's 21 minutes. Let's assume that it takes five minutes to get off the train get to the people mover and board it – that's now 28 minutes and it's only taken 38 minutes to get there from London. We just want to try to make sure that connectivity is as good as possible and to maximise it.'

Birmingham Airport and the region have always supported a single stop, a step that would 'take a couple of minutes off the journey time and also improve and speed up the connectivity'. 'We're currently in negotiations with HS2 to try to deliver that that single stop and we've effectively got until June 2016 to find the funding and get a scheme approved,' he said.

Will the proposed link between the HS2 station and

'HS2 is a once-in-a-generation opportunity and action needs to be taken now to get it right'

Birmingham Airport be similar to the sky train-style transport that is already in use here? 'It will be bigger and faster. The HS2 link will have a top speed of around 90kmh,' a speed Eaton thinks will be difficult to achieve, 'what with it stopping and starting every kilometre, but that's what HS2 has said.'

'At capacity the rail link will be able to carry up to 2,100 passengers every hour and will plug into the terminal at either end, an approach that will work very well from our point of view.'

Safeguarding the future

Before HS2 comes on line, what is being done to safeguard the current surface transport? Eaton told me about the agreement formulated with the local council to secure the airport's surface rail transport.

'The Section 106 agreement was created following the construction of the 400-metre runway extension that now allows long-haul flights to use the airport.'

'We have a legal agreement with the Solihull Council planning authority and one of the commitments within that is a car park levy. It secures 20p from every car parking space for investment into public transport and rail, which means we're committed to improving local transport, rail and sustainable transport.'

'We have a framework in place, with the Section 106 agreement, the Service Access Strategy and our masterplan, to try to increase public transport and rail connectivity so there's a lot we can base it on and there are a lot of targets we set ourselves.'

So that's what's going to happen but, I wondered, what does Eaton's ideal air-rail connection look like? He told me it is much like this one. 'Infrastructure wise it's there; we've got a train station and we've got an air-rail link. The east-west connectivity and the 24/7 services, as I said, need looking at but that will get better when HS2 comes along. We'll be the first and only airport to have that direct link into HS2 and that will be brilliant for us.'

A book for all readers

Professor **Paul Salvesson** reviews *Disconnected – Broken Links in Britain's Rail Policy* by Chris Austin and Richard Faulkner

This is an extremely important book which sheds much light on the unsavoury goings-on within the British Railways board and government in the 1960's and 1970's. It makes a convincing case that far bigger cuts to the network were only narrowly averted, often by the intervention of 'whistle-blowers' within BR and government. The book offers insights which are both historical and contemporary. The introductory chapter on *The Policy Gap* in the 1960's and 1970's is a very useful scene-setter and would make a good major stand-alone paper in its own right.

The authors are well-fitted for the task. Both 'did time' at senior levels in the British Railways board. Chris Austin transferred over to the Strategic Rail Authority and then the Association of Train Operating Companies. He remains active in the Association of Community Rail Partnerships and Railfure. Richard Faulkner is a Labour peer and chairs the All-party Parliamentary Group on Railway Heritage.

Faulkner and Austin cut their political teeth in the hard times (for railways at any rate) in the 1960's and 1970's. I think this leads them to make the mistake of transplanting government thinking of those times to the present-day in making a case against a return to state ownership. Though I'm not a fan of 'state ownership' *per se* I don't think their argument is particularly strong given how the policy and political landscape has changed so much since then. Though Faulkner is the 'politician' among them, Austin is an astute political analyst. The downside of that is that Faulkner's political universe is highly Westminster-centric and downplays the importance of grassroots action – an issue which also came across in their previous book, *Holding the Line*.

The Settle-Carlisle line would have closed if it hadn't been for broad-based community action, involving thousands of campaigners, parish councils,

businesses, unions and the occasional dog. Portillo, for all his hype about being 'the man who saved the S&C' would have signed the closure order as quick as you could say 'Beeching' if it hadn't been for that mass opposition.

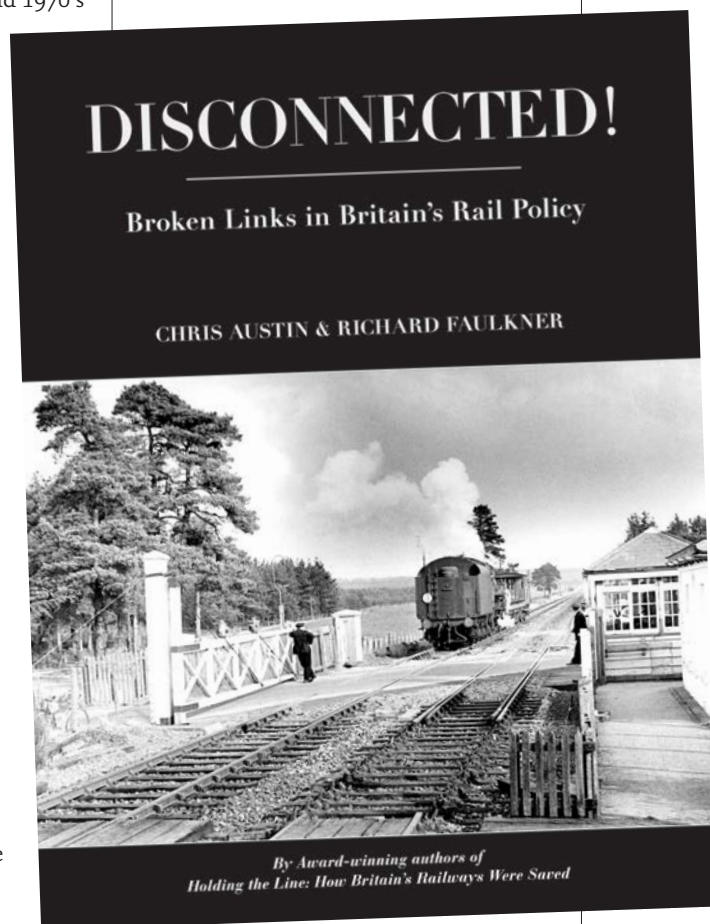
What is very clear from Austin and Faulkner's research is that there was an unspoken cross-party consensus between Labour and Conservative back then which was hostile to rail. What's also very interesting is the extent to which the

but there are many more, such as Bude, Padstow, Fleetwood (also a major port), Hornsea and Withersea. This isn't a criticism. It's actually very helpful having a small number of more detailed case studies.

'Beeching' is often seen as a cull of mainly rural lines. That was not the case and the authors devote a chapter to the many urban commuter lines which were cut. Not surprisingly, most of these would be of enormous benefit to towns and cities struggling with huge traffic problems, had they survived. The Edinburgh – Corstorphne, Bristol – Frome and Henbury Loop, Leeds-Wetherby and several more are singled out for more detailed examination. For my money, Leeds – Wetherby was one of the most short-sighted closures. Re-instatement has been made difficult, at least in conventional heavy rail terms, by re-development of the formation.

One of the (few) shortcomings of the book is a lack of consideration of alternative options such as tram-train. Could this well-established technology be able to offer a cost-effective alternative to heavy rail? It's ironic that most of the new tram routes in the UK have been conversions of existing heavy-rail lines rather than re-instatements of closed railways. That is beginning to change with proposals in the West Midlands for disused rail formations to be converted to tram-train. Edinburgh has of course opted for entirely new formation and I think

in the next 20 or 30 years we need to avoid being too fixated on re-instating long-closed routes which might not go to where people want to go any more. A case in point is the Dumfries – Stranraer 'Paddy' route. As well as being a very long and winding road it often contrived to miss (in the case of Gatehouse of Fleet by about six miles) the towns it might have served. There might be a case for a new route that would help support economic



drive for closures was led not just by civil service mandarins but also by senior BR managers.

The authors devote a full chapter to the many seaside towns which lost their rail link. Some, like Whitby, survived by the skin of their teeth, many others didn't and their economies suffered as a result. Towns like Clevedon, Ventnor, Hunstanton are used as case studies

“What’s also very interesting is the extent to which the drive for closures was led not just by civil service mandarins but also by senior BR managers”

regeneration in Dumfries and Galloway but one hopes it would take a more suitable route.

Not just ‘history’

While Austin and Faulkner have a lot to say on the machinations of civil servants and BRB officers, they don’t ignore the role of the unions in building a broader opposition to closures. They mention the highly effective ‘Save Our Railways’ campaign led by the NUR in 1975, which this reviewer played a modest part in, as a union activist in Lancashire.

The book isn’t just ‘history’. It includes

a substantial amount of text on lines which have potential for re-opening and this is probably where controversy will arise. Settle-Carlisle was the last of the major closure attempts; the defeat of the proposal was followed by a gradual process of development in the 1980’s and after which – though not exactly a flood – has seen many Beeching closures being reversed. The most spectacular example – and one of the most recent – has been the Borders Railway from Edinburgh to Tweedbank. This was one of the most malicious Beeching closures and the immediate success (almost too successful, with severely over-crowded trains) demonstrates the stupidity of the original closure in 1969.

The authors produce a list of lines which would be strong contenders for re-opening as well as a list of routes which would be difficult if not impossible to re-open. I admire their bravery. I think their list of potential re-openings is pretty well spot on but if I was them I wouldn’t dismiss the prospects of Carmarthen – Aberystwyth (for example). What might seem a no-hoper could become a strong contender if it has political and community support, so I wouldn’t dismiss that (and one or two others) out

of hand. The re-openings scene is rapidly changing and some new campaigns may well develop momentum, including Levenmouth Rail Campaign (www.lmrc-action.org.uk/) promoting the re-instatement of Thornton to Leven, which gets scant (though positive) mention.

Austin and Faulkner highlight the enormous change that has taken place in public and political attitudes towards rail. If there is a cross-party consensus on rail now, it is very pro-rail, though there are big emerging differences on the most appropriate ownership structures.

The book will be of interest both to people with an interest in railway policy and history but should also be read by a wider audience. The early chapters in particular offer a fascinating glimpse of how politics actually operated in the 1960’s and should be of great interest to politics students. It would be a shame if the readership was confined only to railway people.

Disconnected – Broken Links in Britain’s Rail Policy published by Ian Allan 2015 price £25.00 ISBN 978-0-86093-664-0

Paul Salveson is visiting professor in Transport and Logistics at the University of Huddersfield and group advisor (community rail) to Arriva UK Trains

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Come fly with me

Devolution, franchising and the needs of the passenger were the prominent themes at a conference dedicated to passenger connectivity between air and rail, AirRail 2015, as **Dave Songer** reports

The chair of the Transport Select Committee, Louise Ellman, has called for a national strategy to improve rail access to regional airports and help grow the local and national economy.

Speaking at AirRail 2015, the Liverpool and Riverside MP said that there needed to be a national strategy on the issue, with local devolution one viable method of delivering it. However, she warned that devolution was not currently a coordinated policy and that there was no one size fits all solution.

Ellman said that regional airports have long been sidelined and that if the government's most prominent devolution plan, the Northern Powerhouse, is to go ahead then airport access needs to be addressed in a more direct way.

Referring to airports as 'centres for growth', Ellman used Stansted and Manchester as examples of terminals that had made changes to improve air-rail connectivity but said much work needed to be done at Bristol and Leeds Bradford, neither of which are served by rail.

Luton Airport

Echoing Ellman's thoughts on the need for a national strategy was Nick Barton, CEO of London Luton Airport, which embarked upon a £110 million redevelopment programme in 2015. Barton took part in a panel discussion with other speakers following his talk, which focused on the airport's investment that over the next five years would see the introduction of Oyster in 2016; 18 million passengers a year by 2019; and a fixed rail link between Luton Airport Parkway station and the terminal building, planned for 2020.

Franchises

Taking on the subject of franchising and how they can be better designed to include air-rail links was Jonathan Pugh from the Rail Delivery Group. Manager of strategies and rail franchising at the RDG, Pugh highlighted the importance of getting the balance right to allow air-rail connections to prosper on a network with finite capacity. In a wide ranging talk, Pugh spoke with optimism



Nick Barton, chief executive officer of London Luton Airport, alongside David Innis, commercial director of Govia Thameslink Railway



Transport Focus's passenger director, David Sidebottom, said that air-rail travel was generally highly thought of by passengers



Chair of the Transport Select Committee, Louise Ellman, said a coordinated policy for devolution was needed

about upcoming franchises that have 'significant air-rail interfaces built into them' and said that franchises provided an excellent opportunity for them to be reviewed, ensuring that passenger services are appropriate for the future.

For any air-rail links to be successful, however, Pugh said it was vital that airports and the rail industry, which don't always agree, work together.

Increasing passenger numbers

Speaking up for passengers, David Sidebottom from Transport Focus took the floor for a 15-minute talk that covered the current experiences of those using trains to get to airports, and the barriers that prevent more people from doing the same.

Sidebottom headed up his talk by quoting a section of the Airports Commission's 2013 report that warned poor surface transport to the airport sends out the message that it is second best – passengers today don't think of just airborne travel, they include the whole journey in their plans, it said.

The passenger director also included statistics in his presentation that revealed a positive position for air-rail travel, with overall satisfaction at 90 per cent compared to 'standard' rail travel, and 72 per cent with the information provided about tickets.

According to Transport Focus' findings, the primary barriers to more people using trains to get to the airport were convenience, cost and journey time, though the provision of step-free access, first to last staffing at the station and sufficient facilities for luggage is also very important to passengers.

Southend

Offering a different perspective, Glyn Jones, Southend Airport's Chief Executive, said that while effective air-rail links were important, in the case of Southend, which relies on car park revenues, they also had to work alongside road transport.

Jones said that a 'significant number' of people that use Southend Airport, which saw passenger numbers rise in three years from 4,000 a year to around one million, still want to use their cars and it was important to continue to include them in its plans.

Ending his talk, Jones said that building rail links was not just the government's responsibility and that while devolution was an important consideration, it's also important to consider the investors' concerns that there are long-term returns in the project. 'Policy takes forever to develop but has a very short life. Don't wait for policy, just get on with it!'

Southend Airport extended the rail track and built a new train station directly alongside the airport and was funded by private investors. It led to the airport being voted the UK's best by *Which?* in 2014, thanks largely to its air-rail connection.

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Next stop - RailTech!

River Tamoor Baig looks at how HackTrain is bringing tech innovation to the UK's railways

Something big is coming to the railways this year – something which presents the opportunity to make the UK's railways the best in the world. I'm talking about RailTech.

So what exactly is RailTech, and why do I think that everyone in the rail industry should get excited about it? On a simple level, RailTech is the development of new software solutions to the old problems of the rail industry. This could mean a smartphone app which improves the customer experience, a new algorithm for optimising train schedules in the wake of delays, or a new data input system to create data which computers can more easily manipulate and make useful. Pretty much any aspect of the railway industry can be innovated using RailTech.

Why rail?

You might already be thinking that RailTech is nothing new, and in a sense you're right. There have been new technologies and innovations in the rail sector for as long as there have been railways. What is different about RailTech now, however, is the pace of change which software and mathematical modelling can bring. Unlike in the past when most innovation in the railways came from either the government or, more recently, from the train operating

companies, RailTech is now being adopted by small businesses and start-ups. These mostly young innovators have identified an industry which everyone uses, but which has suffered from a lack of innovation. These people, much like me, have seen a real opportunity and a space in which to innovate and where there is so much potential.

People always ask me then – why rail? Why such a highly regulated industry? Surely it's never going to happen? The truth is that something similar already happened in an industry with lots of parallels with the rail industry a decade ago. Anyone looking for inspiration should look to the evolution of FinTech in the financial services and banking sector. With the tight regulation and relatively small number of players in the industry, very few people would have predicted the huge leaps which have been made in the industry, whether it be mobile banking, online trading, or currency swapping. New businesses such as PayPal and TransferWise saw an industry which could benefit from innovation but which faced many barriers to entry, mainly due to the closed nature of the biggest banks and regulators. It wasn't long though before financial institutions realised that they could turn the enthusiasm of young innovators into a huge advantage. In some cases



innovators were hired directly into big banks, while in others start-ups were funded or bought outright.

What has stood in the way of innovation?

As far as I see it, there are currently two key barriers to major technological innovation in the rail industry. The first of these is the length of the procurement cycle – it's far too long to keep start-ups both interested and financially afloat. Young tech entrepreneurs can use their skills to disrupt almost any industry and will not wait around for the six to 18 month procurement cycles that the rail industry currently operates with. After all, the average 15 month procurement cycle might not seem like much, but this is a full five per cent of a 25 year old's life. Faced with this lengthy wait, young innovators will simply abandon the sector and head for greener pastures elsewhere. That's why we want operating companies who are serious about RailTech to commit to shortening their cycles to just four to 12 weeks. Our hope is that this will soon become the new industry standard.

Secondly, operating companies need to accept that not all of their technology can come from the hiring of agencies. Not to say that design agencies are unimportant – over the years they have been absolutely critical in building websites and apps for the rail industry and have successfully integrated large parts of the rail industry into the internet and mobile ages. However due to their nature, agencies will always work towards the brief given to them and will rarely inject any real innovation themselves. Start-ups, though, are a different breed. Their main objective is to identify a single problem and then innovate in order to solve it. Their focus is on improving their product and their product alone. Unlike with agencies, which will get paid for doing what the train operating company wants, start-ups



The launch of HackTrain's 48-hour hackathon at the St Pancras Renaissance Hotel on Friday 20th November 2015

will only succeed if they create a product which customers ultimately want and which the industry genuinely needs.

What is the HackTrain Accelerator?

HackTrain was set up to try to overcome many of these barriers and become the real driver of innovation in the UK's rail industry. We're passionate about this country's railways and we want others to be too. That's why we're launching the HackTrain Accelerator programme, the world's first accelerator initiative for RailTech small businesses and start-ups.

Along with the winner of our 48 hour hackathon last year, Disruption Feed, ten new companies will join the accelerator's first wave. As well as financial support and access to office space, all of our chosen companies will have ongoing access to industry experts from the biggest train operating companies. This will stop them from chasing a dead end and help them to develop solutions that the rail industry actually wants solved and would genuinely want to buy. Think of it like in-house market research rolled together with top class mentoring and the ability to make hugely influential connections right at the top of the industry from day one. Finally, all of our

teams will work in the same co-working space and collaborate – after all, we want all of our teams to learn from each other and do amazing things that make the UK's railways the best in the world.

What this means for you?

So how might this affect those already in the rail profession? For one, it's time to spread the word about RailTech.

Innovation and disruption is coming to the rail industry and companies that get on board early will benefit the most. Secondly, prepare for an influx of excited young innovators into the rail sector and make the most of them. Our HackTrain Accelerator teams have already shown that they are keen to learn from those working in the rail industry, and there's every chance you might learn something from them too.

Finally, we want you to get involved



River Tamoor Baig, co-founder of HackTrain

and to be excited about RailTech. We ultimately want to help you to deliver an even better service and help people to fall in love with the railways. Big and small can co-exist, and we have so much to learn from each other. I'm very excited about the future of innovation in the rail sector, and with the enthusiasm and amazing ideas I've already seen from our HackTrain teams, you should be too.


River Tamoor Baig is co-founder of HackTrain
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Mind the gaps

Richard Robinson says there is a clear need for a more integrated approach across the full spectrum of infrastructure projects

The government's pledge to invest more than £100 billion in infrastructure by 2020 was welcome news for industry in 2015, providing increased certainty around the delivery of the UK's ambitious pipeline of major projects. After years of underinvestment the rail sector was further boosted by the additional funding available to Network Rail that was announced in the Hendy Review in November. While government has undoubtedly created good momentum for infrastructure, the focus now must turn to delivery.

However, bringing the UK's much-needed rail upgrades to fruition at a time of departmental revenue cuts and increased pressure on skills will not be without challenges. And with transport at the sharp end of the chancellor's cuts announced in November's Comprehensive Spending Review, a key challenge will be for government to continue to play its role in delivery as the number of public servants contracts. This will no doubt necessitate new ways for government to engage with the private sector across all phases of the delivery process – from governance and procurement through to design and build.

The reality of delivering major programmes of work in these skills-deprived, operationally challenging times could be an opportunity for the public and private sector to collaborate and innovate as never before. Indeed, Sir Peter Hendy is right in his review about the need for the delivery of rail projects to be viewed holistically with Network Rail's supply chain rather than planned in isolation. A better understanding of potential capacity gaps across the supply chain will be critical to addressing the resource requirements for Network Rail's enhancements portfolio. But surely it is equally important

that integrated planning takes place not just with Network Rail but across the entire pipeline of major infrastructure programmes in the UK. There is a range of mega schemes being progressed, from Highways England and Transport for London projects to Tideway in London. These projects draw on similar areas of the supply chain and this must be recognised and planned for.

Some parts of the industry have already taken steps to address specific resource gaps. Take the Tunnelling and Underground Construction Academy (TUCA) started by Crossrail in 2011. TUCA provides specialist training in the necessary tunnel excavation and underground construction skills to work underground on Crossrail and other infrastructure schemes. TUCA works with employers across the tunnelling industry, from large multinationals to small and medium-sized enterprises, to boost the UK's tunnelling expertise. Similar initiatives that facilitate collaboration between the public sector, businesses and their supply chains may be required to increase the availability of other specific resources.

Indeed collaboration is seen by business as crucial to helping deliver the skills the UK needs, according to the CBI/AECOM Infrastructure Survey 2015 published in October. 71 per cent of respondents to the survey see greater business-to-business collaboration as key to boosting skills. However, the survey also indicates that a greater understanding of the skills required to deliver the national pipeline of infrastructure projects is still needed. In particular, 86 per cent of construction firms say this is a key factor in allowing them to upscale skills in the workforce.

Government must work with industry on skills

The National Infrastructure Plan for Skills should go some way towards informing companies' recruitment strategies, allowing industry to map expertise against pipeline projects. But given the sheer scale of proposed work in the UK, further support for the development of skills is critical. Current infrastructure plans are likely to apply pressure across the supply chain for the next 15 years, so government and industry must work together to develop the necessary skills.

With apprenticeships a critical part of



delivering rail upgrades, it remains to be seen whether the Apprenticeship Levy that comes into effect in 2017 could be punitive to some of the companies taking the lead in developing the future workforce. It's important it doesn't discourage employers from limiting the number of apprentices they hire at the very time industry needs more apprenticeships. With 81 per cent of firms in the CBI/AECOM Infrastructure Survey arguing that improved apprenticeship funding from government is the most important factor in addressing the skills challenge, more detail is needed about how the levy will work in practice. We'd like to see greater collaboration between government and industry as the initiative evolves.

In addition to technical skills, government support for the development of the supply chain's organisational skills is required. Encouraging delivery models, such as joint ventures, partnerships and alliances will play a pivotal role in the UK's ability to deliver major schemes. There is a clear need for a more integrated approach across the full spectrum of infrastructure projects.

After all, delivery is far more complex than shovels hitting the ground.

Richard Robinson is chief executive – civil infrastructure, Europe, Middle East, India and Africa at AECOM





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“We believe that the Rail plus Property model we have been using in Hong Kong for 40 years could be used in many countries around the world to help deliver a world-class railway service and optimise the use of land above and around stations, giving maximum benefit to local communities”

Jeremy Long

Jeremy Long, CEO European Business, MTR Corporation spoke to *Rail Professional* about keeping passengers happy, and how its more diversified operations model in Asia might be applied globally

What constitutes success on the railways MTR runs? Operating a railway is a constantly challenging and interesting task, and there are many factors which contribute to its success – indeed we are always searching for new ways of improving our services. First and foremost must be safety. Having said that, you could broadly boil success down to two overriding questions – do the trains run on time, and are passengers satisfied using them? We always try to keep those considerations at the front of our minds, and I’m pleased to say that according to our latest punctuality and customer satisfaction data the answer to both questions across all our services is a resounding ‘yes’.

Even with an ongoing concern about fare levels in the UK? Passengers tend to protest about fare levels most when they feel they aren’t getting value for money. The fares structure on our trains is set by government, but it is our job to provide a service that passengers feel delivers good value. Our latest

customer satisfaction scores have been very healthy – London Overground scored a record 85 points on TfL’s latest Customer Satisfaction Survey, and MTR Crossrail last year surpassed its 80 per cent Customer Satisfaction Score target by four points. Our customers certainly do seem happy with the service we’re providing.

What do you put that down to?

Punctuality and satisfaction go hand in hand – most passengers won’t be happy if their train doesn’t arrive on time. MTR has built a reputation over many years in Hong Kong and China by delivering extraordinarily reliable services, and that’s a key element of MTR’s service that we have been focused on maintaining through expansion into Europe and across the world. Since we began operating London Overground as co-owners, punctuality has improved to more than 94 per cent. Punctuality figures for TfL Rail services are already at 95 per cent, up from 89 per cent on the same period in 2014, and we have recorded similarly impressive scores on our Swedish networks.

On-track testing of trains is underway for the South Island Line (East)





The Stockholm Commuter Rail Systems (Stockholm Pendeltåg) connects Sweden's capital city with surrounding towns in Stockholm County along 241 km of track. It is the second largest railway franchise in Sweden after the Stockholm Metro



So it's as simple as making sure the trains aren't late?

Not quite. Our other key focus is on improving the overall passenger experience, whether that means the quality of the stations, the customer information, or the rolling stock. This is one of the biggest challenges for any rail operator, and will be a key requirement of the next London Overground concession, for which MTR is a shortlisted bidder. This is an area in which we have a great deal of experience having already successfully introduced 244 new Bombardier vehicles as part of our LOROL joint venture between 2009 and 2011.

We've also worked over many years to develop industry-leading staff engagement programmes. We know that our staff are a major factor in our ability to deliver such a high level of customer service and they are also essential in making our passengers feel valued. Last year we launched a state-of-the-art driver training centre in Sweden, including simulators of the entire 100km Stockholm Metro system. Such high-level training not only ensures new drivers are properly prepared to enter service, but also ensures that existing drivers can be taught to handle any scenario that they might face. In the UK, the MTR Crossrail training programme is the most comprehensive and diverse yet, with a strong focus on technology-based learning and interactive learning.

During a recent recruitment drive we received 530 applications in just four days – many of them from people without prior experience in the rail industry – so it's clear to us that people already recognise the strength of the training programme we've put in place. This positive attitude will help us deliver a better service for customers.

Tell us about your background in improving customer experience?

I have been involved in customer service businesses for my whole career. My first jobs were part-time, while I was studying – in a succession of front line roles in retail leisure and hospitality businesses. As a manager I have been involved

in the improvement in service delivery of a wide range of retail and hospitality businesses for over three decades. I decided to become involved in railways in 1995 when the UK government first began the privatisation process – and the challenge of improving the quality of services in railways attracted me. I set up GB Railways with two former colleagues, and we won the Anglia Railways franchise in 1997, and followed that up by launching GB Railfreight and Hull Trains, where we pioneered the open access model which aimed to deliver a better service for customers. We were also early adopters of Rail plus Property investments at stations, and what we now call alliancing, then with Railtrack. The company was acquired by FirstGroup in 2003, and soon afterwards I was approached by MTR to lead their expansion into Europe.

What are the most significant challenges you face over the next year?

We are currently delivering four major rail expansion projects in Hong Kong, which collectively will increase route length by 25 per cent and ensure that, six years from now, 70 per cent of people in Hong Kong will live within walking distance of an MTR station. Our work will include the opening of new lines, and upgrading existing lines with new trains, new signalling and improved station facilities. The projects present a major logistical challenge, but work is already underway and we have so far been able to maintain a punctuality record above 99 per cent.

In Europe, we are preparing to take over operation of Stockholm's Pendeltåg commuter rail network in December. We were awarded a ten-year franchise shortly before Christmas, and will be responsible for train operations, station management and rolling stock maintenance. We will be working hard to ensure we can deliver a smooth and high-quality service in each of these areas, and immediately begin to deliver improvements on existing services, as we have already done on the Stockholm Metro.

Pendeltåg will be your first commuter rail service in Sweden – do you feel prepared to deliver it?

Our other Swedish operations are the Stockholm Metro and the MTR Express, an intercity service, so we will now operate in three different markets in Sweden. As such, we have significant experience of operating in the Swedish regulatory environment, and also have built up a very effective working relationship with the national transport infrastructure provider, Trafikverket.

Our strong experience and track record of commuter service delivery in markets around the world should stand us in very good stead to hit the ground running. When we needed to introduce new rolling stock on the MTR Express, for example, we were able to call on our own expert engineers, who have introduced more than 300 train sets in the past six years in Hong Kong, Beijing, Hangzhou, Shenzhen, London and Melbourne. This applies across the whole of our business, not just to rolling stock – our experience and capabilities developed in Hong Kong have been instrumental in successfully opening brand new train lines and improving the performance of existing networks across the world.

What have been the biggest differences between the Asian markets you operate in, and European markets – there must be some challenges in adapting from one to the other?

The Swedish winter is certainly more severe than Hong Kong, which brings its own challenges for rail operators. Of course each country has its own logistical, regulatory and even cultural challenges, but the key is to form productive relationships with regulators, network operators and other partners in each country to ensure you work with your new environment, rather than against it. That's the reason MTR Express – a completely new service – was able to outperform its more established rival and deliver a punctuality score of 93 per cent after just six months of operation, along with a best-in-class customer net promoter score of 89.

Using our experience of working with Hong Kong authorities as a template, we worked quickly to build relationships with the Swedish Approvals Body, Transportstyrelsen, and establish that our Norwegian-designed trains could be operated on the Swedish network without the usual phase of in-service reliability growth. We have also recently worked closely with Trafikverket, and a Swedish-based company, SolliQ, in order to test and deliver a pioneering new de-icing solution this winter – something that native operators had never tested along the route.

To what extent can operations in Hong Kong and China really add-value to procurement and commissioning processes half way around the world?

There's a very good example of that – our consultancy project for Metro Rio in Brazil which resulted in the delivery of a new fleet of 19 six-car trains to passenger service to Rio de Janeiro between August 2012 and March 2013. The scope of the project involved designing the new rolling stock to specifications provided by Metro Rio, supervising the manufacturing 17,000km away in Changchun in north-eastern China, and then delivering, testing and commissioning them back in Rio.

We were able to support the procurement and development of the trains in China, including the selection of a supplier and negotiation of the contract, using our considerable experience of operating in the Chinese market. We had technical teams on the ground in China and in Rio to support on train design, production supervision, testing, inspection and commissioning, to reduce the risk of problems with introducing the fleet and ensure it could become operational as soon as possible.

In Europe, your work is focused on rail operations but in Asia you're also involved with wider sectors such as property development and management. Have you any plans to diversify your European operations?



The MTR Express service is run with a total of six brand new FLIRT trains built by Swiss manufacturer Stadler. Each train has five carriages and can carry 244 passengers

We've certainly found that our new PPP models in China have delivered significant benefits for all parties. We're involved in four PPP investments for metro lines in Beijing, Shenzhen and Hangzhou. The deals mean transport authorities can benefit from our operational expertise while retaining control of the project, and are able to ensure the construction takes into account future operational challenges and maintenance requirements.

Our Chinese projects have established that the model works, and we've since struck a similar deal for the North West Rail link in Sydney where the removal of construction from the PPP arrangements allowed Transport for New South Wales to lower debt and financing costs. They were also able to offer a shorter concession as a result – 15 years rather than the 25 or 30 year PPP deals which were common in the UK – meaning they will be able to re-tender the operating franchise at an earlier stage and putting greater pressure on MTR to ensure we keep delivering to the highest possible standard. We feel that this is a model which works, one that we have experience of operating within, and we'd certainly argue that it is a viable option for the UK and other European governments on major rail infrastructure projects that can deliver whole-life benefits and savings.

What about Rail plus Property models, which you also use in the Far East?

We believe that the Rail plus Property model we have been using in Hong Kong for 40 years could be used in many countries around the world to help deliver a world-class railway service and optimise the use of land above and around stations, giving maximum benefit to local communities. It allows us to gain land development rights alongside railway alignments, meaning we can build new homes, offices, shops, schools, green spaces and other public facilities in conjunction with other construction projects such as stations and depots.

This is an approach that TfL has already pioneered in the UK on the Crossrail project on its larger station developments. Take for example Old Oak Common, where it is planned that a major new rail interchange will go hand in hand with improvements to station access, local transport infrastructure and significant development for the wider local area as a whole.

The benefits are obvious. Not only can the model help to fund the construction of new infrastructure and the improvement of railway operations, but the holistic approach to planning can also allow local communities to grow in a way which allows residents the best possible access to railway services and other facilities.

The insider challenge

While protecting new digital networks from attack and disruption will be a priority for most Toc's this year, they must not overlook the cyber threat to other areas of their business, says Jens Puhle

The looming threat of cyber attacks became almost inescapable in 2015, with high profile incidents impacting household names everywhere from telecoms companies to pubs. However, while almost every industry is at risk from hackers seeking lucrative financial data, the rail industry is one of the few where a breach can pose a real risk to human life.

The industry has made great strides in modernising and assimilating new digital technology, catching up with air and road travel and driving efficiency. Progress such as doing away with mechanical signal boxes in favour of digital signals comes with a new set of risks though, granting a way in for hackers. New digital signalling systems use the GSM-R mobile network, and hackers could potentially break in to cause serious havoc by sending false signals. At worst this could cause major accidents, or could easily bring the entire network to a standstill.

Threats increase as automation continues

Groups including the cyber security arm of advisory firm KPMG warned that the industry must do more to manage the risks that come with new technology. Peter Gibbons, head of cyber security at Network Rail, also previously stated that the threat against the industry was growing as automation continued, especially around the new European Rail Traffic Management System digital signalling technology.

The danger of criminal or terrorist attacks may be the most eye-catching cyber threat, but rail companies also face the much more common, if comparatively mundane, risks to their data shared by all companies. Customer data is especially at risk, especially financial information, names and addresses, along with other data such as corporate strategy and intellectual property.

Operators are also facing increasingly serious punishments from regulatory bodies if they are judged not to have



done enough to prevent a major breach. The European Commission is drafting new legislation that will place more responsibilities on the transport industry and other areas of key infrastructure, requiring them to take extra measures in defending its data, as well as reporting breaches to the national authorities.



'The danger of criminal or terrorist attacks may be the most eye-catching cyber threat, but rail companies also face the much more common, if comparatively mundane, risks to their data shared by all companies. Customer data is especially at risk...'

Even stricter punishments on security failures were also agreed by the EU at the end of 2015, with large organisations which fall short, potentially being hit with fines of up to four per cent of their entire global turnover. Any firm that handles consumer data on a large scale could face fines running into the billions.

Wide open to internal data breach

While companies are usually focused on external threats against their data, research from PwC found that 81 per cent of companies who had suffered a breach reported that their own staff were involved in causing it, whether maliciously

or by accident.

Simple human error is still the biggest cause of a data breach, but while accidents do happen, organisations must ensure they have safeguards in place to reduce the chances, as well as training to raise awareness of the consequences of a leak.

One of the most effective ways to prevent accidental data breaches is to limit access to sensitive data in the first place. It is still surprisingly common for most companies to give their employees unfettered access to their databases, often setting up new starters as administrators because it's faster and easier. Best practice should always be for all new users to only be given as much access as required for their roles, as the fewer people that can access sensitive data, the less likely it is for accidents to occur.

Because of the way the native Windows Active Directory system works, many system administrators find proper due diligence in managing access management for every new starter to be too time-consuming, especially if they have large numbers of staff joining at once due to a merger or large project.

Poor access rights management also leaves an organisation open to malicious activity from an insider, with valuable information stolen for sale to criminal

gangs or rival organisations, or posted online as purely to harm the company.

Even when it comes to large organisations, many still have little idea who is able to access vital assets such as customer financial data and intellectual property, leaving them wide open to an internal data breach.

Insider leaks can be particularly difficult to detect or guard against because the perpetrator is usually legitimately cleared for access as part of their job role. To address this challenge, firms should ensure they have systems in place that will alert them whenever certain files or folders are accessed. In addition, more advanced access rights management systems can send real time alerts specifically for when information is accessed outside of usual parameters, preventing data from being copied unobserved from remote locations out of office hours.

While protecting new digital networks from attack and disruption will understandably be a priority for most rail operators this year, they must not overlook the cyber threat to other areas of the business. While not as overt as a major rail disruption, the increasing financial and reputational damage of a major breach can be enough to cripple a business.

Jens Puhle is UK managing director of 8MAN

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Less is more

NSARE has now become NSAR – the National Skills Academy for Rail

At its AGM late last year, held at the National Training Academy for Rail in Northampton and attended by delegates from more than 50 member organisations, the National Skills Academy for Railway Engineering (NSARE) changed its name to the National Skills Academy for Rail (NSAR) to reflect that its service now extends to the whole rail industry, including operations, service delivery, digital technology and skills ambassadors.

Neil Robertson, NSAR CEO said: 'This is not a strategic shift - NSAR will continue to focus on our pressing engineering skills shortages, providing skills intelligence, quality assurance services, supporting apprenticeship standards, and offering strategic advice on skills and workforce development. We are grateful for the generous support we have already received from RDG, individual Toc's and the ROSCO's. Rail now has the single focal point on skills

it needs and deserves.' NSAR's new enhanced membership scheme embraces RDG members, Toc's, ROSCO's, Network Rail and TfL, as well as maintaining the current membership scheme with over 360 companies throughout the industry.

Chris Fenton who succeeded Terry Morgan as the chairman of NSAR in 2014 said: 'The National Training Academy in Northampton says more about our ambition, about how we think about the railway and training. We really are equipping the next generations of engineers, leaders and skilled professionals in the rail industry.'

Rebranding as industry authority

Jointly funded by NSAR and Siemens, NTAR is a world-class academy which currently specialises in traction and rolling stock engineering courses, and will train thousands of students using digital, 3D and virtual reality equipment – giving them the hi-tech skills they need to work in the rail industry.



NSAR will be gradually phased in over the next 12 months as the body looks to rebrand itself as the industry authority on training quality and standards. NSAR will also be implementing the government's and industry's skills strategy and will continue to provide skills intelligence, quality assurance services, develop apprenticeship standards, curriculum development, policy and strategic advice on skills and workforce development.

Skills agenda

The event was also used to talk about the industry skills agenda and to present a new piece of research, commissioned by NSAR and carried out by Atkins, that suggests that the skills gap could cost the industry £316 million a year and government £381 million if it's not addressed.

Terence Watson, Rail Supply Group industry co-chair, the keynote speaker at the NSAR Skills Update said: "The products and technologies of the rail industry are delivering huge benefits for society through faster, more frequent, increased capacity and more energy efficient solutions."

Watson believes that growing the sector in the UK is critical for the economy, however, 'the rail industry faces

a challenge to up-skill its workforce with the development of new technology.'

Neil Robertson added: 'Ensuring that our rail network remains safe, effective, reliable and productive is vital to our national prosperity. The whole rail industry, government and informed commentators recognise that rail faces a shortage of skilled people. A significant proportion of experienced rail staff will retire and leave at exactly the time when investment in rail and demand for rail services are at their highest for nearly a century.'

Around 55,000 people will need 'some degree of retraining' as part of the Digital Railway programme – a fact highlighted by Network Rail's head of professional development and training, Guy Wilmshurts-Smith who said: 'Even finding people to deliver this retraining is a big challenge at times, and Network Rail, like the whole industry, is having difficulty recruiting skilled trainers.'

'It's all about apprentices, however' – Robertson told NSAR Members. 'You should practice talking about apprenticeships and the new levy announced by the government, as well as find the best way to attract young generations into rail industry.'

From 2017, businesses with a payroll of

more than £3 million will have to pay a levy¹. The government has said that companies who commit to developing their apprenticeship programme will be able to get more out of the levy that they pay in. The levy will coincide with the creation of the Institute for Apprentices, an independent body which will regulate the quality of apprenticeship schemes.

Neil Roberson concluded: 'NSAR was glad to work with an industry group to submit a strong response to the levy consultation. The government has responded in the autumn statement. There were some crucial policy announcements in relation to skills and sector policy, particularly the introduction of the UK wide Apprenticeship Levy in April 2017. The next step is a further consultation and NSAR will convene a similar group. NSAR is also offering free individual company advice on the likely implications for all of NSAR Members.'

¹The government announced that by 2019-20 spending on apprenticeships, including income from the new apprenticeship levy, will double the level of spending in 2010-11 in real cash terms.

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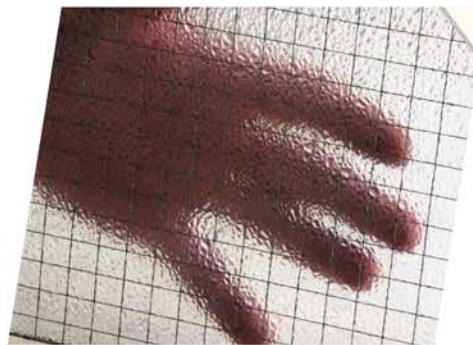
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A crucial role

Lee Taylor looks at the Stoke Gifford IEP Train Maintenance Centre – held up as an example of best practice in the construction industry

Complex systems are underpinning many of the major rail infrastructure projects across the country and none more so than on the ambitious InterCity Express Programme (IEP).

IEP is a £5.7 billion investment by the Department for Transport into new rolling stock, comprising the design, build and introduction into service of 122 new trains to replace the InterCity 125 and 225 fleets on the Great Western and East Coast Mainlines. Also included in the programme is a state-of-the-art train manufacturing facility in the North East and investment in new and refurbished train maintenance centres across the country.

The IEP is different from other UK rolling stock procurements, with delivery risks and costs remaining in the rail industry. The Department for Transport (DfT) signed a contract with Agility Trains (a consortium of Hitachi Rail and John Laing) placing significant importance on running quality train maintenance centres, which will be responsible for maintaining the new rolling stock for the next 27.5 years.

The latest IEP train maintenance centre to be completed is the Stoke Gifford facility in Bristol, which will support and maintain the Class 800/801

trains Hitachi Rail Europe is delivering for the Great Western Main Line from 2017.

NG Bailey – the UK's largest independent engineering, IT and facilities services business – is supporting main project contractor, VolkerFitzpatrick in building the state-of-the-art, technologically-advanced facility, improving operational efficiency and costs. NG Bailey has been quietly carving out a strong reputation in the rail industry for its work on train maintenance centres, including projects in major rail hubs across the UK, such as North Pole, Hornsey and Three Bridges.

Tasked with housing and maintaining the IEP fleet, the Stoke Gifford facility will play a crucial role in ensuring the new rolling stock delivers the optimum level of service to passengers on the route.

Once completed, it will comprise a maintenance shed, wheel lathe building, office, staff and cleaners' accommodation space, stabling and servicing roads, and a carriage wash facility.

Benefits of off-site manufacture

NG Bailey's work began two years ago when it was appointed by VolkerFitzpatrick to assist in the design and planning phase for the £80 million redevelopment of the site.

NG Bailey's contract covers the design and build of all mechanical and electrical



'Tasked with housing and maintaining the IEP fleet, the Stoke Gifford facility will play a crucial role in ensuring the new rolling stock delivers the optimum level of service to passengers on the route'

services for the site, including HV infrastructure, power, lighting, heating and ventilation and domestic services. It is also providing all the security and communication systems (such as the fire alarms, CCTV, intercoms and infra-red cameras) internally and externally to all buildings.

One of the key aspects of its provision is that NG Bailey is able to produce some of the new systems via its offsite manufacturing facility. This enables completed systems to be delivered directly to site, saving a significant number of man-hours and therefore reducing the



overall project time and the resources required on site. The benefits of offsite manufacture also include improved quality by allowing the distribution board sections to be assembled under factory conditions. Equally importantly, it also cuts safety risks by reducing the number of workers on site.

The Stoke Gifford project has been held up as an example of best practice in the construction industry, receiving one of the highest Considerate Constructors Scheme scores in the UK.

The transformation of the huge site is a complex project and has necessitated detailed planning and co-ordination with everyone on site to keep the plans on track. Having worked on other sites, including Hitachi's IEP depot at London North Pole, as well as Three Bridges and Hornsey, we were able to apply best practice to make sure the work at Stoke Gifford was completed to a high standard, while still meeting challenging timescales.

By using the combined strengths of our rail and engineering teams we were able to take an engineering approach to the construction contract, implementing various labour-saving methods and using different materials for fittings, such as using a push fit and crimped pipework system over a more traditional screwed

system, making installation quicker and simpler whilst still maintaining functionality and quality for the end users.

Certainly, the manufacturing of brackets and distribution board's offsite saved significant amounts of time on site, and also dramatically reduced wastage. NG Bailey has provided all the mechanical, electrical, plumbing, and heating and ventilation systems at Stoke Gifford, including diesel and fume extraction for the 30m x 280m maintenance shed, which will house two 10-carriage trains or four five-carriage formations.

When the facility comes into operation, staff will be able to monitor all security and building functions from the central control centre. This provides uniform control and monitoring to the many different sub-systems, essential for running a modern transport and maintenance hub.

One of the largest challenges faced is ensuring the triangular site, which is approximately 16 ha (40 acres), formed by boundaries created by three railway lines, remains secure. The site is monitored by more than 64 high-resolution CCTV and infra-red cameras along with an access control system, all operated via the site-wide IT network. This gives full surveillance of the boundaries, sheds and

office areas, which can be monitored 'live' by staff at the control centre.

NG Bailey also provided the internal and external lighting at Stoke Gifford, utilising expertise from across its MEP design team.

A key aspect of the company's approach was to exchange the relatively inefficient light sources used for the external bollards and high-bay lighting to LED. This will save 111 tonnes of CO₂ per year from the external bollards, and approximately 96 tonnes of CO₂ per year from the high-bay lighting.

As well as the carbon reduction benefits, the use of LED lighting will generate an energy cost saving of more than £1 million over the 27-year life of Hitachi's lease on the Stoke Gifford facility.

This is a project we are incredibly proud of and very excited about. It's part of one of the most significant programmes in the UK and a great example of how collaboration and expertise across specialists teams can improve rail infrastructure and support a greener, more efficient and reliable rail network for the future.

Lee Taylor is director of rail at NG Bailey



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Connecting outside the home

Transport for the North holds significant opportunities for transport authorities and operators, but they must be integrated into its blueprint, says **Jason Cotterrell**

The potential of the North of England as an economic centre has been discussed at length for many years, with successive governments placing priority on its advancement. Transport stands as one of the biggest drivers of this potential, facilitating greater economic growth through mobility and tourism. For this to truly be a success, it is imperative that from the very outset revenue drivers – such as advertising and sharing data – are built into its very fabric.

The government's recent Autumn Spending Review marked an important step forward in the realisation of this potential, with the chancellor George Osborne confirming the establishment of Transport for the North (TfN) – a blueprint for the future of travel and a profoundly important advancement in the prosperity of the northern economies, as well as that of the UK as a whole.

A key pillar in the government's Northern Powerhouse strategy, the move to create TfN as a statutory body was initially announced in the 2015 Budget. As part of the Spending Review the government has committed £50 million in funding to the body, which will be used to manage operating costs as well as develop a northern transport strategy, including improved rail links and smart ticketing solutions.

TfN, as an alliance of government and transport providers working together to build joined up infrastructure that keeps pace with growing demand, will ultimately improve the passenger experience through greater streamlining of services. It brings together bodies such as South Yorkshire Passenger Transport, Transport for Greater Manchester, Nexus, Metro, Centro, and Merseytravel, who have recognised the power of a joined-up vision and strategy and have aided its development.

Revenue opportunities for transport authorities and operators

The relationship between public

transport and Out-of-Home (OOH) advertising is entirely complementary. The public tells us they welcome advertising in this environment. In the London Underground, for example, 87 per cent of commuters said they preferred having ads present – hardly surprising when commuters spend an average of three minutes on the platform, and then 13 minutes in a carriage. This finding is supported by a Road to Enlightenment study, which found 79 per cent of bus users across the UK prefer buses with adverts.

For transport authorities and operators, the benefits of advertising are unequivocal. Advertisers spend significant sums for OOH advertising space and the ability to engage with potential customers when they are most receptive to their marketing message. Advertising spent on buses, at railway stations, on street furniture and some roadside bill boards is shared with operators and authorities who in turn reinvest in services, transport networks, job and wealth creation.

The increasing digitisation of travel that's inherent in TfN's plans also brings opportunities for advertisers



to better connect with commuters. Through partnerships with transport authorities, operators and data-driven businesses, advertisers are able to harness vast amounts of data that can then be integrated into campaigns.





and bus shelter maintenance costs for authorities and operators.

A future built on partnerships

Fundamentally, the development of TfN is about a vision for the future of transport: an organisation that can create true and engaging partnerships. An enhanced and integrated service bringing together all of the various partners, including government and local authorities, transport authorities, operators, local businesses, and advertisers, that together contribute to making the experience of travel less complex and more enjoyable and inspirational for commuters.

We believe that OOH advertising has an important role to play in the realisation of a joined-up transport network. It enables our advertisers to better engage with the continually growing numbers of transport users and create unique, engaging and valuable experiences for rail and bus users. Through ensuring that advertising and data opportunities are optimised from the outset, we can fulfil our duty to maintain and further invest in the transport environment in order to support TfN in achieving its true potential.

Jason Cotterrell is managing director of Exterior Media

Exterior Media, for example, has a partnership with Telefónica which provides access to anonymous data from 24 million O2 customers. This ability to better understand and target commuters has the cumulative effect of encouraging advertisers to invest a greater percentage of their marketing budget in OOH – a key driver in the OOH industry’s 3.9 per cent growth prediction for 2015.

More broadly, it is in the best interests

of OOH businesses and the wider community, to invest in surrounding infrastructure that enhances the environment and, therefore, visual experience, for commuters. Posterscope predicts that media owners will invest more than £75 million in digital infrastructure alone. This helps to create an environment where commuters feel a more intimate connection to brands, while also reducing metro/railway station

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A whole lot more than dust

The rail industry must continue to look into ways of reducing exposure to RCS, says **Keith Morey**

Exposure to Respirable Crystalline Silica (RCS) is currently a major occupational health issue, with nearly 800 people a year in the UK dying from exposure to it.

Silica is defined by the Health and Safety Executive as a natural substance which can be found in most rocks, sand and clay and in products such as bricks and concrete. It is also used as filler in some plastics.

In the workplace these materials create dust when they are cut, sanded, carved and so on. This dust may be fine enough to breathe deeply into your lungs and cause harm to your health. RCS is a very fine version of this dust. In fact, it is too fine to see with normal lighting.

Exposure to RCS can have a serious impact on someone's health, particularly their lungs. It can cause silicosis (scarring of the lungs), lung cancer and chronic obstructive pulmonary diseases.

It is difficult to break down how many railway workers have been affected by

exposure to RCS, as it gets included in overall construction industry data. What we do know is that it is something which must be considered.

One of the most common causes of RCS dust is drilling and sanding of concrete products, along with their demolition. With many projects taking place to repair or alter station buildings, this type of work is common.

How can RCS exposure be controlled within our industry?

The common immediate response at the mention of Silica dust within the railway environment is: 'That's ballast dust, we have that well-managed'. While it is ballast dust, it is also a whole lot more, and something which needs to be recognised.

Ballast dust has been a major consideration for some time. In 2010, it was identified by unions to the Office of Rail Regulation (ORR) as the biggest risk in the rail sector. They were concerned that dust was not being managed in



line with the Control of Substances Hazardous to Health regulations (COSHH). This was followed up by the ORR and HSE and highlighted to the Infrastructure Safety Liaison Group (ISLG) back in 2011.

The result of this was the establishment of a Ballast Dust Working Group (BDWG), led by Network Rail, with the aim of promoting best practice and technology throughout all the main contracting companies on the railways. The group is an association of eight ISLG members with the common goal to protect the health, safety and welfare of all employees and other people who might be affected by ballast handling activities within the rail industry. Their work is published on Safety Central to make it available to all.

Is ballast dust that well-managed across the industry?

Despite knowledge and information being available, an improvement notice was issued against a contractor during track renewal work in August 2014, when it was found about 25 operatives were exposed to ballast dust. After a rejected appeal, the contractor complied with the improvement requirements.

As we look ahead, we must continue

to look into ways of reducing exposure to RCS. Simply fencing off the area in question will not suffice. Proper watering or damping down needs to be an early consideration.

This is also true with trough routes. With the recent restrictions, more troughs are being cut to reduce manual handling, which in turn introduces a dust risk. How many disc cutters on the railway are fitted with water suppression and how easy is it to obtain water in the middle of the night? Or out in the countryside?

This is made worse when in confined spaces or in places such as tunnels or shafts, where access to power to vacuum up the dust is very rare, leading to the dust being left to be distributed by trains and natural ventilation or drafts. This can also affect more people who will not have access to PPE.

No matter what the industry someone works in, they should be covered by a culture of care which includes not being exposed to dust like Silica which can lead to life-limiting illnesses.

The Institution of Occupational Safety and Health (IOSH) is running a campaign, called *No Time to Lose*, to raise awareness of work-related cancers and offer free advice to companies on how they can

protect their staff.

I was out on site over Christmas, witnessing track re-laying, and it was good to see all the operatives wearing dust masks even though it was raining. But what happens when the sun shines? How easy is it to protect machine operatives, train drivers and even the general public? And more importantly how quickly as an industry can we do it? This year, IOSH's Railway Group is looking to produce specific information for the rail sector to raise awareness of the risks that workers face.

Materials relating to the *No Time to Lose* campaign can be found at www.notimetolose.org.uk, while the HSE has some great information at www.hse.gov.uk/dust

The BDWG also has information available on Safety Central at www.safety.networkrail.co.uk/Home/Toolbox-for-Supervisor/National-Supply-Chain-NSC/Ballast-Dust-Working-Group

Keith Morey is chair of IOSH's Railway Group and construction, design and management integration manager at Network Rail



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Is a black swan in flight?

Chris Langer outlines ten safety lessons from Fukushima that can be applied to the rail industry

The UK rail industry is very safe by European standards, but that doesn't mean we should ever become complacent. We can learn from other accidents around the world, even if they are from different industries. Once such – which has plenty to teach the railway industry – is the nuclear accident at Fukushima in March 2011.

When a 15-metre high earthquake-induced tsunami hit the Daiichi nuclear plant at Fukushima, it caused a station blackout and led to the meltdown of three reactors. It may have been triggered by a massive earthquake, but even the Japanese admitted it was a disaster 'Made in Japan'. The government-mandated, independent commission investigating said the disaster was preventable and the result of wilful negligence. So what safety lessons can we learn from the world's worst nuclear accident since Chernobyl, and how do we apply them to the rail industry?

1. Think 'black swan'

It was off the risk management radar: an earthquake, followed by a tsunami striking a nuclear power plant on a particular stretch of coastline that had never seen one before. Such an event is what Nassim Taleb (2007) calls a 'black swan' – in other words, an extreme, highly improbable event with far reaching consequences. If we don't plan for black swans, we risk massive failure in the face of adversity. The complex disaster that unfolded at Fukushima never even made it to the risk register. We could all learn to think the 'unthinkable' so we are far better prepared when it does happen – you must assume that it will, even in the UK rail industry where there hasn't been a passenger fatality in a train accident since Grayrigg in 2007.

2. Think independently

The Tokyo Electric Power Company (TEPCO), the nuclear plant's operator, refused to accept the independent, scientific advice flagging up the significant risk of a tsunami. The



management were unwilling to prepare for an event that hadn't yet happened, but was well within the realms of scientific possibility. Locked in to their collective mind-set, they allowed biased assumptions to distort the picture of true risks. Blinkered management thinking can create huge risks of its own. The antidote is to surround yourself with independent views and thinking.

3. Debate the risks

Some cultures like our own encourage debate, whether it be at Prime Minister's Question Time or over a pint in the pub. Though not everyone likes a debate, when it comes to safety, stifling debate can drastically increase the chances of an accident. Debates provide the right environment for a critical, questioning attitude. Cultural conventions prevented an open debate about the risks of nuclear power in Japan. Obedience to authority, and a reluctance to question the status quo, played their role in hampering the debate about risk. If you want to have a handle on the real safety risks, never stifle the debate.

4. Pay attention to emergent risks

We need to keep on asking ourselves if emergent risks require a fundamental re-think of operational safety. The Fukushima Daiichi plant had been built

in the 1960's, just 10 metres above sea level, with the sea water pumps a mere 4m above sea level. According to the World Nuclear Association, the original assessment for siting the plant relied on data from the Chile earthquake of 1960, factoring in a tsunami threat of just 3.1 metres, hardly a whopper by tsunami standards. But there were tsunamis in 1983 and 1993, with maximum heights of 14.5 and 31 metres respectively. These tsunamis should have forced a complete re-think on the safety risk to nuclear operations (even if they didn't hit the same coastline around Fukushima). Emergent risks can put a massive hole in safety defences that once seemed adequate, so pay attention to them if you don't want to get caught out.

5. Don't believe in myths

Japan created its own myth around nuclear power after the oil shocks of the 1970's. Seen as the cornerstone of energy security, nuclear power became an 'unstoppable' force. The myth became increasingly difficult to question, packaged up with an exaggerated sense of national pride and self-confidence. The government bureaucracy responsible for promoting the nuclear industry also regulated it, creating a huge blind spot. Ultimately, safety was severely compromised by a nuclear myth that went largely unchallenged. Challenge such myths wherever possible, because behind them may lurk safety risks which urgently need attending to.

6. Don't just ignore warnings

TEPCO described the tsunami at Fukushima as 'unprecedented'. The truth, however, is that they had been warned about the dangers many times over, but failed to act. The International Atomic Energy Agency (IAEA) recommended more effective provision to fight the threat of high tsunami levels way back in 2002. There was no response. In 2008, two and a half years before the disaster, internal documentation shows that TEPCO executives discussed the necessity

‘Imagining the worst possible disaster scenarios is absolutely essential to having the best possible emergency preparations – ideally, the imagination of Hollywood scriptwriters with an apocalyptic vision is needed’

of coastal defences to protect against tsunamis higher than previously recorded in the region. Ignore credible safety warnings at your peril.

7. Drill for complex disaster

No-one expects a massive earthquake, tsunami, and nuclear meltdown in the same afternoon. But that’s exactly what they got in Japan. Imagining the worst possible disaster scenarios is absolutely essential to having the best possible emergency preparations – ideally, the imagination of Hollywood scriptwriters with an apocalyptic vision is needed. There was a clear failure by the authorities to plan for a complex disaster on an unprecedented national scale. Though nuclear disaster drills did take place, they seemed to be performed for cosmetic purposes. Evacuation plans for the public were poorly developed and

executed, creating massive confusion after the accident.

No-one expected the massive collision between trains and fire at Ladbroke Grove in 1999, but that didn’t stop it from happening. So drill for disaster, then drill again for complex disaster.

8. Prioritise safety (and mean it)

‘Safety first’ has to be more than a management slogan. TEPCO’s management started to emphasise cost-cutting more as the nuclear power business became less profitable over the years. Safety began to suffer, opening up a gulf between the public relations exercise and the reality. New safety regulations were actively opposed by TEPCO, who feared it would weaken their stance in potential lawsuits. Even basic safety information, such as proper diagrams of piping and other instruments, was not available at the time of the accident, delaying the emergency response. A higher level of knowledge, training, and equipment inspection would also have enabled a more effective accident response. Safety has to be ‘earthquake-proof’ from every angle, even in the UK rail industry where large earthquakes are far less of a risk.

9. Build a strong safety culture

The importance of safety culture has been recognised in the rail industry for a long time. If you value safety, it follows that a strong safety culture should be modelled by those in authority. The nuclear administration clearly lacked a safety culture mind-set before the accident at Fukushima. The regulator instead prioritised institutional well-being over public safety, and there was an obvious failure of safety culture at TEPCO. There were no concerted efforts to improve the

safety culture at TEPCO, either, since recommendations to bring safety up to international standards were habitually shelved. It is impossible to build a good safety culture if those in authority don’t demonstrate it in their actions

10. Embrace independent, third party reporting

There was a lack of public disclosure by TEPCO and the regulator on the need to re-evaluate the tsunami defences. They had been cosily discussing the issue among themselves since 2006, but it all happened behind closed doors. Independent, third party reporting could have broken this stranglehold on information, allowing for a far more open discussion in the public domain. Confidential reporting schemes, for example, often highlight safety risks to generate more transparent discussion. Shine a light on hidden risks with independent, third party reporting and there’s a good chance an accident will be prevented. This applies in the rail industry as much as anywhere else.

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Chris Langer is scheme intelligence manager, CIRAS



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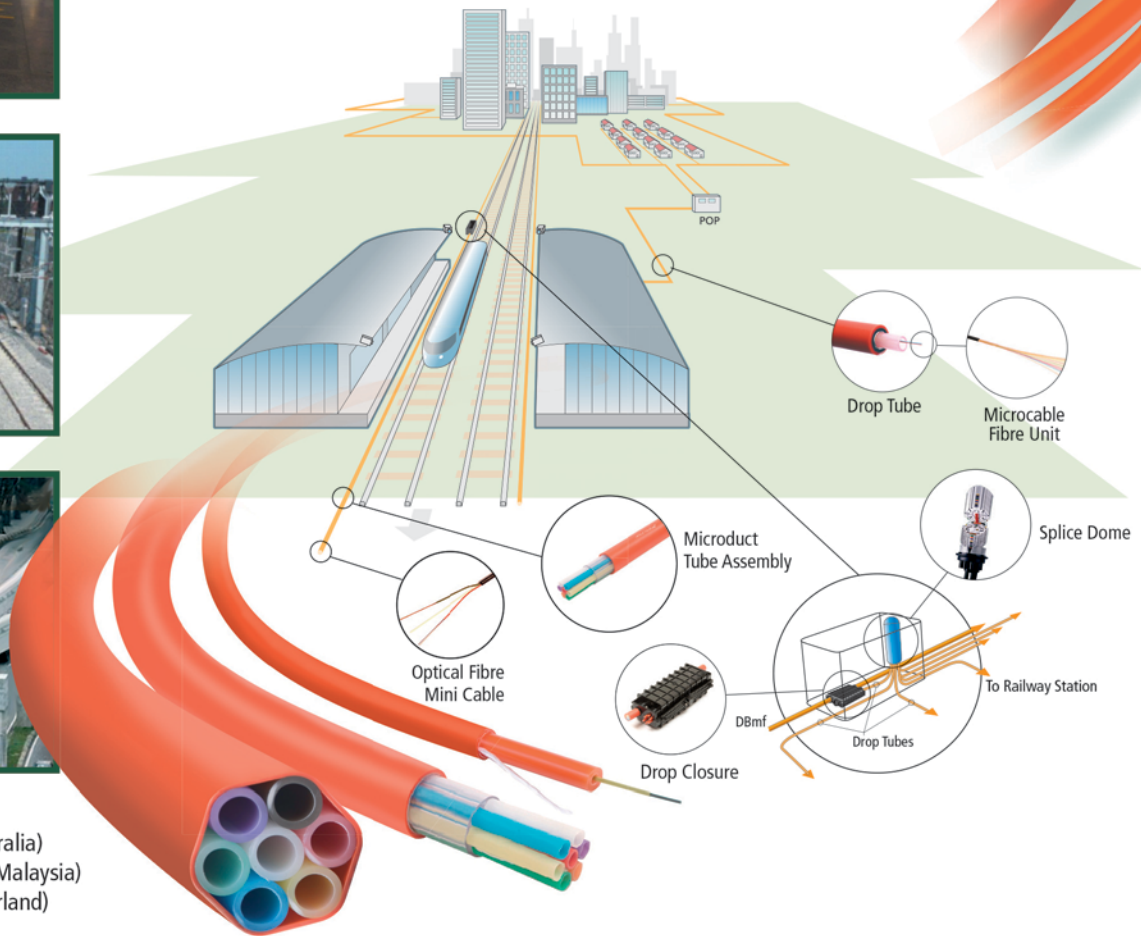
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On time with innovation

Matthew Bromley assesses recent innovations from LOROL and their potential impact on communication for the wider industry

London Overground Rail Operations Limited has invested in a range of innovations to enhance passenger communications and customer service, particularly during times of service disruption. In September 2015, it was the first UK Toc, and one of the first customer service businesses, to introduce interactive 'smartwatches' to frontline customer service ambassadors (CSAs) as part of a wider programme of customer service innovations.

The Pebble Time smartwatches connect to the CSA's iPhones via Bluetooth and display on the screen email, SMS, and other notifications providing the CSA's - mobile staff frequently based on busy platforms - with 'at a glance' disruption information on their wrists without having to constantly reach for their phones. We are also working on a watch app which will utilise the iPhone's GPS to geo-locate where the member of staff is working and display for them upcoming departures from their platform and local line status and disruption information.

The watches give CSA's really targeted information in a way that is hard to miss - something that will undoubtedly aid communication with customers during times of disruption and ensure that, even in the most challenging circumstances, our frontline teams can maintain customer service standards.

Following the Smartwatch rollout, Lorolpedia was launched in October 2015. Lorolpedia is a searchable customer service knowledgebase that holds all the information staff need to do their jobs well. It includes everything from announcement scripts and complaints management to fare evasion and ticket office processes. There is a web version for office based staff and iPhone and iPad apps for the CSA's, revenue protection inspectors and other mobile customer service staff who do not have access to a desktop computer.

Lorolpedia is an evolving

communication channel that is already transforming the way information is shared between Overground employees. Just like Wikipedia, staff can take part in writing information for Lorolpedia, and are encouraged to recommend topics that aren't yet covered. Feedback has been really positive and the business is confident about the impact it will have on customer service delivery.

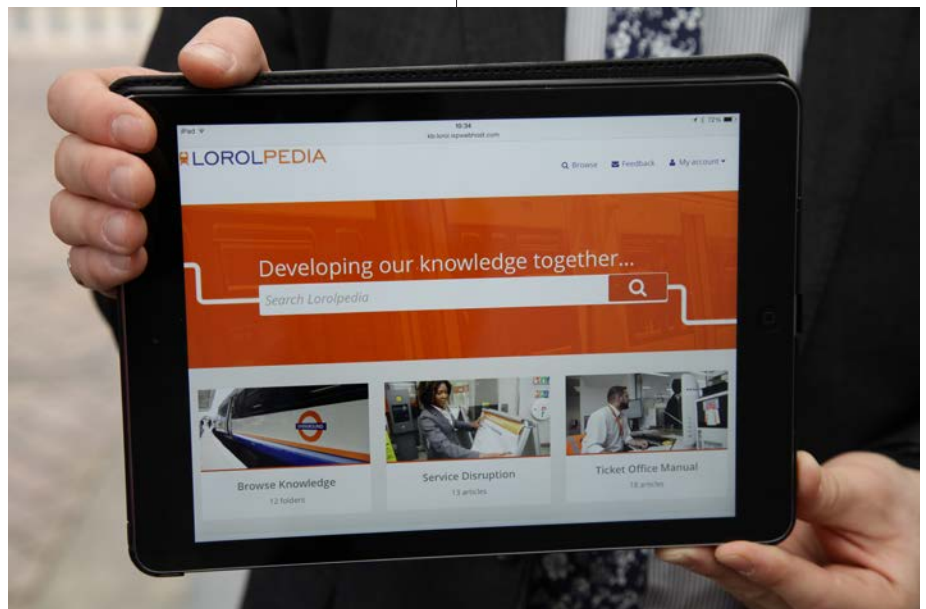
And during disruption

In November 2015 LOROL started using Orinoco which sets a new standard for passenger information during disruption.

Orinoco is a new control information system and app for frontline staff that is designed to improve communication during disruption by providing controllers with an intuitive system that is easy to use, and customer-facing staff with a simple and informative app that will enhance levels of customer service. The app includes a number of innovative features that are new to UK Rail including a live map that plots the real-time location of all the National Rail, Overground, London Underground,



London Buses, Tramlink and even London river boat and Emirates Airline services! Orinoco, developed in partnership with HaCon, the specialist software developer for the traffic, transport and logistics industries, has been designed for LOROL to supersede the industry's standard



'For specific passenger groups, such as the 11,000 mobility impaired passengers (MIP's) who travel on the Overground annually, Orinoco will help staff to provide better journey advice'

control communication system Tyrell IO.

It works by combining the latest open data from Transport for London and National Rail Enquiries and overlays it with disruption information from the LOROL control room to give staff access to the timely and accurate information about all transport modes in London.

For specific passenger groups, such as the 11,000 mobility impaired passengers (MIP's) who travel on the Overground annually, Orinoco will help staff to provide better journey advice. The app will hold information on, for example, lift improvement works that have the potential to impact on MIP journeys.

Orinoco creates more efficient ways of working for the business by reducing



the amount of duplication that was previously required to prepare disruption information emails. It empowers controllers to do what they are there to do: manage incidents rather than focusing on repetitive data entry. And for our employees on the frontline, Orinoco means that they have accurate and reliable information at their fingertips. It is a big step forward and a revolution in customer communication that has the potential to change the way we communicate as an industry.



At the forefront

The rail industry is often accused of being slow to adopt new technologies but with these three innovations - Smartwatches, LoroLpedia and Orinoco - LOROL is at the forefront of cutting edge technology. We are confident that together with a new training programme for all customer-facing staff this will enable us to deliver even greater levels of customer service.

Matthew Bromley is customer service project manager at LOROL

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Benefits

Rapid changeovers

With its high capacity tool magazine and machining heads all 'on board', the Uniport 7000 is capable of extremely fast changeover times. Add component loading from the side – thanks to the accessible machine bed – and you'll see why production times with this machine are really short, keeping productivity high.

High accuracy

The portal construction, with its guideways and drive system on both sides, provides real stability, while work-piece clamping is performed easily – mostly in the assembly orientation. This ensures a high level of accuracy. The wide choice of spindles and machining heads extends the flexibility of this machine enormously.

Fewer setups

The 5-sided machining, even inside the component, reduces the number of setups required in the Uniport 7000. And since the machine is built into the factory floor, it's easy for operators to step onto the table to change clamps and workpieces.

Technical specifications

The Uniport 7000 can be configured in several ways including as a high-rail gantry machine, so there are different models to choose from. Similarly, there's a huge selection of options, including spindles and machining heads as well as a carousel turning station for added turning capability.

Machine applications

The flexible Uniport 7000 is at home producing a wide range of demanding applications. Components produced by this machine can be found in industries as diverse as: Aerospace, Construction, Defence, Energy, Marine, Offshore, Power generation and Printing/paper.

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A knowing approach

A unique insight into employees' skills, knowledge and confidence levels is helping to mitigate 'people risk' in rail safety, explains **Mary Clarke**

Britain's railway system continues to be one of the safest in Europe according to the Office of Rail and Road's (ORR) latest annual safety report¹ - however, the regulator also says that improvements in safety have plateaued and there is a now a need for operators to take a more proactive approach to managing safety on the rail network.

The report highlighted that there has been reduced passenger harm in the past ten years and that it's the eighth consecutive year without any train accident-related passenger fatalities. It is also the second consecutive year without any train derailments.

However, despite these successes, ORR points out that the industry's level of management maturity showed only gradual improvements. It's still some way from the excellence in health and safety and asset management culture that is central to high reliability organisations. They advise that the industry must work harder to predict and prevent problems, focus on worker health and integrate safety by design.

Increased pressure as railway gets busier

One of the main concerns about safety in the future is the increased pressure on the network from growing passenger numbers - 1.6 billion mainline journeys were made in 2014/15, an increase of four per cent from the previous year². Other safety risks included signals being passed at danger (299 mainline signals were passed at danger in 2014/15), as well as risks in terms of station safety, mainline workforce safety and electrical safety.

Network Rail³ plans to spend £37.5 billion on running and expanding Britain's railway over the five years to 2019. This investment in new infrastructure will make a real difference by boosting capacity at key pinch points on the network, providing 170,000 extra commuter seats at peak times by 2019. However, a busier network means statistically the chance for accidents could increase and rail companies must take a proactive approach to maintain and improve their safety records in light of this growth. One accident is one too many, and one signal passed at danger

is another disaster waiting to happen. Incidents like this have the potential to cause crashes and derailments that could lead to serious injuries and even deaths, and are most of the time caused by human error.

Mitigating against human error

Over the last decade, investigations into major rail accidents have highlighted human error as one of the major causes. If employees misunderstand their roles or make an error such as passing through a signal, it can lead to safety breaches that can result in injury or in the worst case scenario, deaths.

Such errors can be caused by someone's error of judgement, their lack of knowledge, a lapse in concentration, even possibly intentional mistakes - as can happen on the roads where someone feels they have just enough time to get through a red light. To help prevent such incidents, rail bosses need a better understanding of their employees and their likely behaviour on the job and confidence in performing their jobs.

In recent years, rail companies have been required to have a formal competency management system in place for those responsible for safety critical work and a key part of this is maintaining and assessing the competence of operators responsible for safety-critical work.



Such systems not only enable companies to demonstrate competence and ensure staff compliance but they also help identify any knowledge gaps or issues in performance, competence or qualification and address these gaps with the right interventions.

In regulated industries like rail, the ability to prove compliance and



**‘Using my*KNOW;
these companies have
insight not only into how
knowledgeable a person
is but how they might act
when performing their
jobs and the decisions
they might make – even
under pressure’**

the competence of each individual at a specific time and date, is critical in meeting industry regulatory standards and also in reducing the significant cost, time and resource involved in any incident related litigation or enquiry.

Network Rail and Eurostar

Cognisco has been working with both Network Rail and Eurostar for several years to implement penetrative situational judgement assessments which

are delivered through a competency management system called my*KNOW. Both companies have benefited from having unique insight into their employees’ skills, knowledge and confidence levels and it is enabling them to demonstrate and prove the compliance and competence of staff members consistently.

Using my*KNOW, these companies have insight not only into how knowledgeable a person is but also into how they might act when performing their jobs and the decisions they might make – even under pressure. The system allows for various methods of proving competence, compliance and personal development, such as observations, training interventions and assessment, and allowing staff members to allocate self-evidence of competency which can be recorded, audited and reported on.

The assessments ask employees a series of multiple response questions based on common ‘on the job’ scenarios. These include specific ‘at risk’ circumstances and the answers can’t be guessed, unlike multiple choice assessments. The results reveal how competent a person is in all aspects of their role and highlight any knowledge gaps and where confidence might be an issue or pose a risk. This

allows organisations to target training to a person’s needs, rather than taking a ‘one size fits all’ and giving everyone the same training regardless of their requirements.

Having a better understanding of how employees behave performing in their jobs is essential for minimising people risk, improving health and safety and ensuing regulatory compliance. These types of assessments get to the root causes of human behaviour and have a crucial part to play in improving health and safety on the rail network and using a competency management system like this is one solution for making sure Britain continues to have a good safety record on the rail network.

Mary Clarke is CEO of Cognisco

- 1 <http://orr.gov.uk/news-and-media/press-releases/2015/britains-railways-now-safest-in-europe%2c-but-regulator-highlights-priorities-for-improvement>
- 2 <http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/monitoring-and-reporting/health-and-safety-annual-report-2015/director-of-railway-safety-overview>
- 3 <http://www.railtechnologymagazine.com/Rail-News/network-rails-375bn-spending-plans-for-cp5>



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Fugro survey equipment being mounted on a train

Fugro's survey says yes

Network Rail has awarded Fugro a contract for survey and design works to support its High Output Track Renewal Programme for 2016/17 in Scotland.

Fugro will use its train-mounted RILA and RAIL-MAP products to deliver highly accurate rail infrastructure information with additional ground survey services. This approach will enable a phased and controlled transfer from conventional survey methods to a system that delivers information critical to track renewal schemes.

The new technology will bring about health and safety benefits for Network Rail by greatly reducing the requirement for survey personnel to be on or near the track during the collection of data.

It will also enable Network Rail to carry out high output track renewals, helping it to replace more track while allowing trains to run safely on adjacent lines, thereby minimising disruption to services.

Visit www.fugro.com/rail

Amber means go

The Institution of Mechanical Engineers (IMechE) has bought training company Amber Train in a move to help tackle the engineering skills shortage.

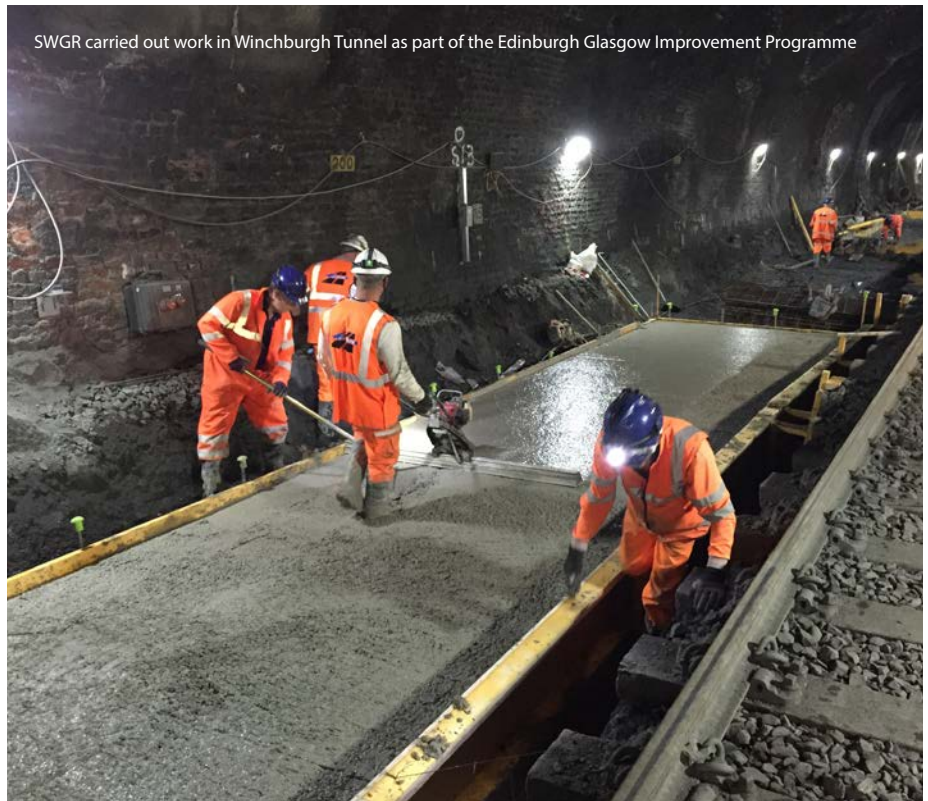
Amber Train provides traineeships and apprenticeships to those just out of education or towards the end of prison sentences. Trainees are equipped to work on the tracks for Network Rail's subcontractors and are trained to achieve City and Guilds qualifications.

Once Amber Train trainees have completed an initial training programme they are placed with an employer and supported until completion of an NVQ Level 2 apprenticeship.

The chief executive of IMechE, Stephen Tetlow, said: 'This move will allow us to build on the company's work, expanding not only into the rail industry but also into other engineering sectors where there are critical shortages.'

'It will also allow Amber Train to benefit from the huge resources and network of the Institution and its membership.'

Visit www.imeche.org/ www.ambertrain.co.uk



SWGR carried out work in Winchburgh Tunnel as part of the Edinburgh Glasgow Improvement Programme

Electric developments

Network Rail has commended 53 workers from rail resourcing company SWGR for their 'vital' track and slab work on the recent Winchburgh Tunnel project.

Winchburgh Tunnel is a key link in the Scottish government's Edinburgh Glasgow Improvement Programme (EGIP), which will deliver 150km of electrified railway. The project involved lowering the tracks to provide room to put the overhead electrification system in place through the tunnel, as well as installing a slab track system.

900 people worked on the tunnel and completed the project in 44 days.

Paul Cook, operations director for SWGR, said: 'The entire team can take credit for such a high-quality and intensive period of workmanship.'

Cook, who was particularly pleased with Network Rail's commendation, also thanked passengers for their patience during the blockade who could look forward to 'a far better rail experience when the Edinburgh Glasgow Improvement Programme is finished.'

The investment in an electrified railway between the two cities has already delivered a new-looking Haymarket station. The completion of Winchburgh Tunnel is another integral part of the programme.

Visit www.sw-gr.com

Leading the way

Blind and partially-sighted people are trialling new technology for the first time ever at a London Underground station that navigates them through and around urban environments.

The Wayfindr digital navigation system, which will be launched in early 2016, has been used at Euston, giving audio directions from a prototype smartphone app that interacts with beacons installed throughout the station.

The technology was pioneered by the Royal London Society for Blind People's (RLSB) youth forum and digital product studio, Ustwo, and uses beacon technology to guide vision-impaired people through built-up environments.

LU commissioned the trial to find out if the system can work reliably across the Tube network and to test and refine Wayfindr's standards for audio navigation, building on a pilot project at Pimlico station in early 2015.

Mayor of London, Boris Johnson, said: 'I look forward to the results of this hugely exciting trial, which is making use of the latest smartphone technology to help vision-impaired people get around our city more easily.'

Visit www.wayfindr.net

ESG DESIGNED TO DELIVER

Keeping the passenger informed

Rolling stock consultancy, ESG Rail, has been awarded a contract by Bombardier to help with a programme of work on 40 Class 365 units owned by the Eversholt Rail Group.

ESG will supply installation designs, installation instructions, technical approvals and on-site support for the replacement of the passenger information system (PIS), which will be supplied by TELEVIC.

Work on the four-car units, which are currently being operated by Govia Thameslink Railway, will be carried out at Bombardier's Ilford depot, with design work due for completion in spring 2016. Installation is due to begin in summer 2016.

ESG managing director, Martin Horsman, said: 'This contract will allow us to further strengthen our relationship with Bombardier and is a vote of confidence in both our PIS and project management experience.'

Visit www.esg-rail.com

Mapping the network

NM Group is nearing completion of an aerial mapping project that covers more than 16,000km of the UK's rail network – the largest survey of its kind in terms of scale and accuracy

NM Group was recruited to map rail assets with a mix of state-of-the-art laser measurement and imaging equipment. The work was part of a groundbreaking project to improve asset maintenance, operational effectiveness, efficiency and safety.

Using a mix of Light Detection and Ranging (LiDAR) and high resolution multi-angle cameras mounted on helicopters, the company carried out aerial operations and ground control activities over a four-month period.

The survey information is being processed at NM Group's Technology Centre in North Yorkshire, where a team of specialists is converting nearly a petabyte (1,000 terabytes) of raw data into a wide range of terrain, asset and imaging outputs. The data will facilitate more efficient maintenance, allowing crews to identify and access assets more safely and efficiently than in the past - via apps on mobile devices.

NM Group's CEO, Kevin Jacobs, said he was proud of how the team responded to the project, completing the data capture within an unprecedented timescale and producing data 'that will serve the rail network for years to come'.

Visit www.nmgroup.com

NM Group maps rail assets with a mix of state-of-the-art laser measurement and imaging equipment



Healthier infrastructure

A partnership has been formed between innovation centre, Transport Systems Catapult (TSC), and research and technology company, TWI, to focus on condition and structural health monitoring in transport infrastructure.

The partnership will see a new smart asset management business unit set up under the TSC brand that will be based at TWI's facilities in Cambridge.

TWI's expertise will be used to develop self-sustaining transport infrastructure and technology, with both companies using the Internet of Things as well as TWI-developed monitoring technology.

TSC is in the process of incorporating a wide range of data into city-scale digital models to aid transport planning, including traffic flow, pedestrian simulations and pollution sensors.

Chief executive officer of TSC, Steve Yianni, said it is developing intelligent mobility where 'journeys are seamless, transport is smart and connected and delays and



Fatigue testing in action at TWI

congestion are a thing of the past'. 'A vital component in achieving this is the long-term maintenance of the system, and the partnership with TWI will strengthen what we can offer and allow us to develop sustainable and cost-effective solutions in this area.'

Visit www.ts.catapult.org.uk / www.twi-global.com

Digitising the network

Alstom's signalling business, Signalling Solutions Limited (SSL), has signed a contract with Eversholt Rail Group for the design and installation of its on-board European Train Control System (ETCS) system, Atlas 200.

Alstom's system has been installed on a Class 365 train that's currently operated by Govia Thameslink Railway (GTR) on the East Coast Main Line, the first route to be equipped with ETCS Level 2 without lineside signals. Works are due to be completed by 2020.

This first train will serve as a prototype for the system design and integration that will be rolled out on the full fleet. The installation will be completed at Alstom's Wembley Traincare Centre.

The fitting of ETCS, which forms part of the Digital Railway vision that will help to deliver additional route capacity on the network, follows the contract that SSL and Alstom completed in 2012 on a Class 313 train.

Visit www.signallsolutions.com

In it for the long haul

Rail Operations Group (ROG) has become the first UK Toc to modify locomotives specifically for the routine movement of electric multiple unit (EMU) trains.

Although a small number of locomotives have been modified in the past for rescue purposes, this is the first time one has been modified for regular, locomotive-hauled EMU services. The first of ROG's modified locomotives began operations on its class 375 Electrostar service.

The modification programme sees the fitting of drop-head Dellner couplers and electronic translating equipment to allow through control of the EMU brake system and other safety systems.

The system has been future-proofed to enable additional systems and a variety of other EMU classes to be hauled by ROG's locomotives. The next similarly modified locomotive is due to enter service in early 2016.

Visit www.railopsgroup.co.uk

A bright future

Transport for London (TfL) has launched its first range of safety clothing designed specifically for women, as part of its commitment to supporting an increasingly diverse workforce.

Created specifically for TfL, the new range underwent a six-week trial and includes a wider range of high-visibility jackets, trousers, gloves and adjustable eye protection, with safety boots set for introduction in 2016.

A personal protective equipment (PPE) tailoring service is also available to combat the problem encountered by universally-sized PPE (personal protective equipment). Standard-sized PPE can present difficulties for female staff who often have to use safety pins or roll up trouser legs to get the best fit.

Melanie Ogden, a Northern line extension project manager, said: 'A one-size-fits-all approach for men and women hasn't worked. Taking part in the trial to source new women's PPE has resulted in comfortable clothing that allows us to move more freely and work more effectively.'

Miles Ashley, London Underground's construction programme director, said: 'London will need more engineers by the end of the decade, so it's important that we take every step we can to make construction a more welcoming environment for all.'

Visit www.tfl.gov.uk

Two become one

The UK's first tram-train vehicle has arrived in Sheffield following its delivery from the Vossloh factory where it was built.

The fully constructed 37-metre long Citylink Class 399 vehicle will have the signalling, power supply, control and telecommunications technology to run on both street tram lines and the rail network.

The UK's first tram-train will run on Sheffield's Supertram network and the national rail network between Sheffield and Rotherham from 2017, allowing passengers



The tram-trains will be introduced on the Supertram network in May 2016

to make a single journey between tram stops and conventional rail stations.

The first of seven tram-train vehicles to arrive, the units will be introduced on the Supertram network in May 2016. They will begin operations as part of a two-year pilot scheme that, if successful, would see the Spanish-built units used on a permanent basis.

Transport Minister, Andrew Jones, said the pioneering vehicle would create 'better journeys for passengers in South Yorkshire' and also help 'boost the economy of the local area and beyond'.

Visit www.supertram.com

fusion

Connecting people

High speed Fusion

Three major infrastructure companies have officially announced the name of their joint venture for HS2 that will include enabling works, surface route, viaducts, tunnels, and stations.

Called Fusion, the joint venture between Morgan Sindall, BAM, and Ferrovial combines each company's expertise in design, construction and innovation that will help it deliver the complex infrastructure and community solutions needed for the high speed line.

Fusion's ultimate aim is to connect people and communities to support and stimulate business growth, both through HS2 and other infrastructure programmes.

The Fusion partners' records include the delivery of high speed rail in Spain, UK (HS1), Holland and Belgium, as well as the maintenance of significant elements of the Spanish and Dutch high speed network.

Visit www.fusion-jv.com

Animal-friendly developments

Atkins ecologists have pioneered a project-wide mitigation licence that protects species including great crested newts and badgers on the Midland Main Line electrification route.

The ecologists' work will enable Network Rail to make significant cost savings over the life of the eight-year electrification scheme.

Sir Peter Hendy identified the obtaining of consents from authorities as a key risk to the delivery of the rail investment programme because of delays resulting in work having to stop in locations where protected species haven't been recorded.

Previously, a protected species mitigation licence has only been granted for discrete zones or in areas where protected species have already been recorded.

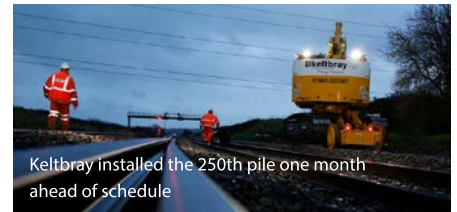
Atkins ecologists said the likelihood of encountering protected species on the 150km route – an area they haven't recorded – is high, which would result in likely delays to the delivery programme and increased costs. Atkins estimates the costs associated with delays due to the discovery of protected species without a licence on the line would be £10-20,000 a night.

The new licence minimises the risk and associated delay of encountering protected species by obtaining consent to deal with them as they are encountered, rather than work having to stop once found.

Visit www.atkinsglobal.com



ISS Labour has opened a training centre in Salford



Keltbray installed the 250th pile one month ahead of schedule

Upskilling the workforce

ISS Labour has invested in a training centre in Greater Manchester to support Network Rail's £25 billion GP5 investment in the UK rail network.

The first of its kind in the north of England, the facility in Salford aims to address the current skills shortage across the rail industry by providing the facilities required to train and develop engineers.

Network Rail is committed to a programme of investment in rail infrastructure between now and 2019, calling for qualified linesmen to deliver electrification projects across the UK to meet rising demand for rail services.

Expected to train more than 10,000 people by 2020, the training hub will feature a twin-track replica of the West Coast Main Line including flat bottom rail, bullhead rail, third rail, wooden timbers and concrete sleepers.

Simon Higgins, chief executive officer at ISS Labour, said: 'The state-of-the-art training centre enables us to upskill our own workforce, meeting the needs of our overhead line electrification customers, and also to provide a training service for external customers working across the industry.'

Visit www.isslabour.co.uk

Express recruitment

Berry Recruitment Group (BRG) is no longer operating its Mainline Resourcing brand and is instead diverting all rail recruitment through its Express Rail Services division.

BRG purchased the brands last year. Mainline Resourcing operates in the construction, service maintenance and telecoms sector and Express Rail works purely in the rail industry.

Mainline's operations are now being channelled through Berry's specialist technical and construction divisions.

Express Rail Services' clients include Abellio Greater Anglia, South West Trains, GTR, London Midland and Grand Central.

Following Chancellor George Osborne's recent plans for capital investment in rail, Express Rail Services is well placed for businesses seeking staff.

The company has around 200 workers in a variety of roles including customer service personnel and cleaners through to train dispatchers and engineering staff.



Justin Ayling

Justin Ayling, who in 2002 founded Express Rail Services which later merged with Mainline, said: 'With the Berry Group behind us we are well placed to take advantage of the anticipated growth within the industry.'

Visit www.berryrecruitment.co.uk

Top of the pile

As part of Network Rail's Great Western Route Modernisation (GWRM) Keltbray Rail, working with ABC Electrification, has installed the 250th pile for Network Rail Wales.

The latest pile was installed on the Bristol to Severn Tunnel stretch one month ahead of schedule, and is a significant milestone in the programme to provide electrification of the railway to Wales.

The company is supporting the Network Rail and ABC Electrification teams by contributing to installation of electrification on the South Wales Main Line from the Severn Tunnel, through Newport and Cardiff, and then to Swansea.

The five-year contract is worth up to £100 million involves the delivery of conventional concrete auger and CHS piled foundations, followed by the installation of the new Series 1 overhead line equipment.

Keltbray Aspire, part of the Keltbray Group, has a team of 25 employees engaged on the contract to manage, plan and execute the works, during weekend and midweek night possessions to minimise disruption for passengers.

Visit www.keltbray.com

A stronger Crew

Plans to bring HS2 further north six years early have taken a step forward following the appointment of consultants to provide detailed structural design and environmental services on the route between Birmingham and Crewe.

The firms will also help HS2 Ltd prepare a second hybrid bill to provide the powers to bring the new rail link as far as Crewe by 2027, one year after the rest of Phase One.

'Bringing HS2 to Crewe six years early will dramatically boost connectivity and improve journeys for millions of people travelling between London, the Midlands and the major cities of the north,' said Simon Kirby, chief executive of HS2 Ltd.

Accelerating construction of the line was a key recommendation of HS2 Ltd Chairman Sir David Higgins, in his 2014 report, HS2 Plus. The appointed companies are Ove Arup & Partners International, civils and environmental services; WSP Parsons Brinckerhoff, railway systems; Mouchel, site access, land referencing and stakeholder engagement services.

Visit www.hs2.org.uk



All in knots

A group of experts has joined forces to combat Japanese knotweed, the invasive plant that can grow through tarmac, concrete and structural work.

The National Knotweed Survey was launched in response to increasing reports of toughening legislation, lawsuits, insurance claims and lost business as a result of damage from the aggressive weed.

Not just affecting man-made structures, Japanese Knotweed also chokes plant growth and causes erosion to riverbanks that leads to flooding.

Less than 0.7g of the subterranean stem is needed for a new plant to take root, which can grow at a rate of up to 40mm a day but take up to two years to fully decompose.

It has been estimated to cost the British economy more than £160 million a year but the National Knotweed Survey thinks the threat level is much higher.

Founder and managing director, Will Sillar, has warned that 'rail operators, contractors, commercial lenders, land agents, solicitors, insurers and anybody managing or buying and selling land or property', were all at risk from the weed that was brought to these shores in Victorian times.

The National Knotweed Survey is set to create a definitive central resource on the weed, with two main objectives: to define a universally recognised surveying report template and to create a comprehensive database of where the plant is or might be.

Visit www.nks.org.uk

Production-enhancing technology

Hitachi Rail's manufacturing facility in Newton Aycliffe has awarded a Tyneside IT firm a contract to provide information technology.

Advantex Network Solutions is supplying the infrastructure to deliver enterprise-grade IT services and wireless internet connectivity for the £82 million facility.

Featuring audio-visual, Wi-Fi and network-switching technology, Advantex's system is designed to accommodate future upgrades and will provide flexible site-wide voice and data services.



A key feature will be the installation of wireless technology that will enable production staff and engineers to complete inspection and audits using portable handheld devices during the production of train cars.

Opened by Prime Minister David Cameron in September 2015, the facility will employ 730 people working on the production of the new InterCity Express trains (IEP) for the East Coast Main Line and Great Western Main Line, as well as Hitachi's AT200 commuter trains for Scotland.

Hitachi Rail Europe's IT manager at Newton Aycliffe, Malcolm Brown, said: 'Advantex impressed with their expertise and ability to deliver on time and to budget in complex engineering environments. The Advantex team has a solution that will reflect the scale and ambition of a state-of-the-art, multimillion pound train facility.'

Visit www.advantex.uk.com

Enjoy the TRIP

TRIP, the European Commission's Transport Research and Innovation Portal, has been improved to give users greater control over projects.

The work involved the migration of the portal's database to a more efficient and secure management system. Users familiar with the portal will be faced with the same layout but will benefit from much greater control over the projects they submit via a new user interface.

Improvements have also been made to the site's search function to make it easier to find relevant information.



TRIP has more than 7,700 research projects across 24 transport themes, including intelligent transport systems and infrastructure. Project information submitted to the portal is then available to Europe's researchers and policy makers, within an easily accessible and searchable database that receives more than 10,000 visitors per month.

By providing this free resource, the European Commission hopes to encourage more impactful research by building on the successes of existing findings and enabling policy-makers to benefit from sound evidence and research.

Visit www.transport-research.info



An estimated 2.5 million trees grow at the lineside

The root of the problem

The UK's largest independent provider of vegetation management has been awarded nationwide contracts by Network Rail to help with the effective management of trees and plants that line the rail network.

Ground Control will support Network Rail across their routes with the national vegetation management programme over the next four years. The company's Arb Rail (Arboricultural Services) team will be carrying out the works.

There are an estimated 2.5 million trees growing at the lineside. Unmanaged trees and plants can cause serious safety problems for the railway by covering up signals or falling on to tracks and overhead power lines.

The company said the contract win, which has an estimated contract value of more than £40 million, was its largest single contract to date and would help the company grow its rail business.

Visit www.ground-control.co.uk

A push for Europe

Eaton has appointed AE Petsche as its rail-specialised partner for rolling stock applications to help build better and safer trains.

The power management company is working with AE Petsche in the UK with the expectation that it could expand to cover larger territories like Germany and eastern Europe during 2016.

Delphine Clement, rail segment manager at Eaton, said: 'The reasons for this partnership become clear when you consider the combined offering that Eaton and AE Petsche can offer the rolling stock industry.'

With a focus on building better and safer trains, the appointment of AE Petsche allows customers to access a broad range of Eaton products and solutions that are fully supported by Eaton experts.

'Our partnership with Eaton allows us to specify and engineer a range of technologies that provide our customers with a reduced total cost of ownership,' said Geraint Davies, business development manager at AE Petsche.

Visit www.eaton.com/rail



The two-company union aims to create better trains

'A commitment to the UK market'

As part of a planned growth strategy, SYSTRA has acquired JMP Consultants, a move that will substantially increase SYSTRA's transport planning and engineering resource in the UK.

The combined entity brings significant additional capability and expertise to both SYSTRA in the UK and the wider SYSTRA Group. It will substantially expand the company's services across a combined client base, presenting new opportunities and delivering good value to all stakeholders.

The acquisition of the London-based company could make SYSTRA on the top five UK transport planning companies in the UK in terms of turnover.

Through this acquisition, SYSTRA will now benefit from a global presence covering all areas of UK with 12 offices across the country and new regional locations as well as additional local projects in Bristol, Leeds, Liverpool, Newcastle and Reading.

SYSTRA chief executive officer, Tim O'Neill, said: 'The acquisition is a critical element of SYSTRA's overall growth plan and demonstrates our commitment to the UK market. Our combined entity will maximise future opportunities by providing diversification to projects and clients.'

Visit www.systra.co.uk

SYSTRA

Recent New Members of the Rail Alliance as at end November 2015

iLine Technologies: Trenchless rehabilitation provider that offers clients a range of products and technical advice, including CCTV surveys, pipe cleansing and GRP structural segmental lining
www.iline.uk.com

Oxford Plastic Systems: Provider of plastic and composite products for the construction and rail industry, currently developing a composite cable-carrying sleeper
www.oxfordplastics.com

Heinrich Georg (UK): Designer, manufacturer, builder, installer and servicer of turnkey test rigs and special purpose machining equipment for the rail industry
www.georguk.com

Revaluetech: RSSB and BSI-appointed designer and developer of process technology to manufacture inert composite polymer products in place of concrete, hard and soft wood
Website under development

Fabrikat (Nottingham): Designer, manufacturer and supplier of street lighting columns; traffic management and telecommunication structures; pedestrian guardrail; parapet; fencing and street furniture
www.fabrikat.co.uk

Svenska Handelsbanken: Swedish bank that provides personal and corporate banking services across the UK and worldwide
www.handelsbanken.co.uk/doncaster

The Imagination Factory: Design engineering provider that offers a human-centred design approach to achieve a risk-managed process
www.imaginationfactory.co.uk

Nottingham Trent University: Provider of management education, research and consultancy that includes local and regional development, sustainable business practices, marketing and HR
www.ntu.ac.uk/nbs

Stadium IGT: Provider of Human Machine Interface (HMI) control panel and keypad assemblies equipped with the latest technology, including LED illumination, membrane keypads and display overlays
www.stadium-igt.com

Responsive Engineering: Cutter, profiler, fabricator, welder and machiner of a wide range of steels, aluminium and super alloys. The company also offers a complete and comprehensive inspection, assembly and test service
www.responsive-engineering.com

MacRail Systems: Provider of site access control, reporting and document management services to

the UK rail industry
www.macrail.co.uk

Transport Design International (TDI): Industrial design and engineering consultancy specialising in bespoke solutions for rail. The company designs and supplies products, systems and complete vehicles
www.tdi.uk.com

Xrail Solutions: Rail engineering company with a team that includes system engineers, project managers, signalling design and assurance consultants
www.xrailsolutions.com

The Global Management Group: Designer and producer of individual electro-mechanical assemblies through to complete containerised communication systems
www.theglobalmanagementgroup.com

Recent New Members of the Rail Alliance as at end December 2015

SL Transportation: Transport engineering company that designs and manufactures services in the light urban, leisure and resort transport environments
www.severn-lamb.com

Lanes Group: Provider of railway services including platform/coper replacement, track drainage, 24/7 reactive maintenance, fencing,



vegetation management and station roof and gutter maintenance
www.lanesfordrains.co.uk

Trufab: Stainless steel fabricator that also offers laser cutting, press braking, beadblasting and polishing
www.trufab.co.uk

MCL Group Industries: Manufacturer of composite access chambers that also offers composite road plates, footway boards and ramps
www.mcl-grp.co.uk

Aspin Group: UK supplier specialising in the design and installation of foundations for trackside structures on rail infrastructure
www.aspingroup.com

Von Roll UK: Supplier of products for electrical power generation, power transmission and industrial applications, as well as composite materials and machined parts
www.vonroll.com

Harting: Manufacturer of industrial connectors, device connectivity, jumper cables, Ethernet switches and RFID systems for the rail industry
www.harting.co.uk

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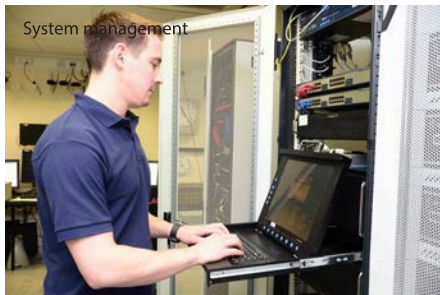
Section edited by Dave Songer

Shifting responsibilities

As internet-based technology and software systems play an increasing role in asset management, longer-term responsibility for assets can be taken by systems experts, explains telent

When the same experts that take responsibility for assets also supply maintenance as well as the design and installation of a system, whole-life management becomes a reality, bringing benefits for both sides. Telent has first-hand experience of the growing trend for whole-life contracts.

telent first offered a whole-life approach in February 2005 for the design, installation and ongoing management of station communication and control systems on 100 London Underground stations. The 15-year contract with Transport for London saw telent take on full responsibility for the assets and included the cost of replacement and performance failures.



Reg Cook, director of asset management, explained why this is an appealing option for customers: 'By managing the whole life of an asset, we can offer our clients significant reductions in total costs and improved performance.'

'Our whole-life approach seeks to optimise the primary components of costs: the cost of failure, running costs and capital costs. By using our own systems to monitor asset performance we can intervene at optimum times.'

'By accepting full responsibility for the service from design, installation and commissioning through to ongoing maintenance, service provision, obsolescence management and targeted refresh of assets, we're able to offer complete peace of mind to the client, as well as cost savings over the life of the contract.'

Obsolescence management

'A whole-life contract reduces risk for the customer too,' added Cook. 'We



assess operating costs and risks, such as obsolescence, contrasting those risks with capital expenditure and potential performance benefits of replacement. When replacement is the best approach, we evaluate new technology and optimise the design to produce the best balance of performance and capital to operating spend.'

Asset condition monitoring

By monitoring asset behaviour at component level, we're able to predict and prevent breakdown, then schedule maintenance interventions at the optimum time, further enhancing our ability to offer responsibility for service continuity. The role of asset condition monitoring systems in maintenance and whole-life contracts is continuing to increase dramatically: as the technology continues to evolve, so the cost-effectiveness increases.

A growing trend

Stephen Pears, managing director at telent, said: 'We're definitely seeing a growing trend towards more whole-life contracts. The guarantees we offer with regard to service continuity, combined with the total cost savings, offer much greater peace of mind for the client.'

'Most recently, we have agreed a 14-year contract with National Express c2c, to provide and maintain its driver only operated trains. The project covers 211



CCTV cameras and 247 monitors across 60 platforms at 25 stations.

'The contract covers work already undertaken to design a replacement system, as well as installation, ongoing support and maintenance and a refresh of the assets, all for a monthly fee with no upfront capital expenditure.'

'Similarly, for another client, having developed, installed and maintained a track-to-train CCTV system for the past 15 years, we have now taken on the obsolescence management of the system in order to extend the life of the system by another 15 years.'

'Working this way makes a lot of sense. Not only do the business benefits speak for themselves in terms of client cost, due to there being less management time, but if we have the systems and technology to monitor, maintain and upgrade in order to keep a service running, it makes sense that we offer that responsibility as a service'

Tel: 0800 783 7761

Email: services@telent.com

The right person for the job

Celebrating a decade in recruitment, **Spectrum** operates nationally and prides itself on supplying the right people for the right job on multiple rail projects and contracts

Spectrum launched its specialist rail division in January 2014, however, the management team alone has more than 50 years of recruitment experience, coupled with a decade of track experience, enabling them to go from strength to strength in a short timescale.

Spectrum Rail supports and works collaboratively with a number of principal contracts on rail infrastructure. Priding itself on helping to deliver high quality projects safely within individual client specifications, the company offers a national network of offices and can present a solution to any scaled resource requirement.

Strategically located in the north west, Yorkshire, Midlands and the south east, they are well equipped with both clients and candidates to meet the needs of both singular and joint venture projects, giving a complete solution to any rail recruitment needs.

Safety is always a priority
Operating in all aspects of rail

recruitment and always innovating in terms of service and a commitment to safety, Spectrum Rail has a dedicated compliance team located at their Manchester head office. The team strives to champion safety within the industry and to become a leader for other agencies to follow.

Spectrum offers training courses in health and safety, supervisory courses as well as leadership and management training for both clients and candidates. If required, Spectrum Rail conducts health and safety site audits to ensure that they provide the highest standards of service possible to all of their clients.

In the last 12 months, Spectrum Rail has safely supported various projects across the country, successfully resourcing the Liverpool to Manchester Electrification, The East West Rail Link, the Bicester to Oxford and Manchester Victoria station remodelling and the Farnworth Tunnel. It was also involved in the ABC PSU contract for the upgrade of the West Coast power supply.



Collaborative ways of working

Focusing on working closely with its clients, Spectrum Rail maintains a strong reputation from the solid partnerships that it creates. The company keeps things simple, with attention to detail ensured first time and every time.

The team provides integrated services, advice, and resources in all aspects of the rail industry, from PTS (personal track





safety) operatives through to white collar technical placements and site engineers, all backed up by Spectrum Rail's full support and reliability commitment.

Lee Harrison, project manager at Construction Marine, testified to this support. 'Spectrum Rail is definitely one of the most reliable agencies I have had the pleasure to use. The team is always on hand to help around the clock and has assisted us on a nationwide basis. We have used them on some important projects over the years and I would most definitely give my nod of approval to anyone thinking of using Spectrum Rail for any rail associated staff.'

Lynne McLean, rail assistant manager at TXM Plant, said: 'Spectrum Rail is a very friendly and reliable company that clears hurdles by thinking outside the box. I have never been disappointed with their service and their staff are very professional, always arriving on time. Nothing is ever a hassle to the Spectrum Rail team. I have used other companies

in the past, but since using Spectrum I have no reason to look elsewhere. The company is efficient, reliable and very easy to deal with.'

Innovative ways of working

Due to its proactive and friendly approach with both clients and candidates, Spectrum Rail generates fresh ideas along with new and innovative ways of working to not only fulfil their client expectations but to ensure all expectations are exceeded.

Mal Palmer, general foreman, Buckingham Group Contracting, also had praise for the team. 'Spectrum Rail is definitely one of the best agencies I have worked with in my time in the industry and I have always found the team to be honest, professional and committed to ensuring that our needs are met and jobs completed at all times.'

'The staff they provide are always well qualified, equipped and reliable and nothing is ever too difficult. I will continue to use them for the foreseeable future as they never fail to fulfil my requirements or my expectations.'

Company highlights of 2015

Spectrum Rail not only builds strong

relationships with its clients and candidates, it also supports charities. October 2015 saw the company sponsor a team of volunteers to scale Mount Kilimanjaro in aid of the Steve Prescott Foundation. The team, which included Great Britain rugby league players and Spectrum's managing director, Neil Farrow, broke the world record for the world's highest rugby league game.

2015 also saw BBC's DIY SOS draft Spectrum employees in for six weeks to work on its largest project to date, with HRH Prince Harry and HRH Prince William, the Duke of Cambridge, paying a visit to the site.

The future

Following Spectrum's continued success over the last two years, it looks like exciting times are ahead for them in 2016. With plans to expand the business by opening further bases in both Scotland and London, Spectrum aims to make its specialist rail team even more accessible to a national audience this year.

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Under a watchful eye

21st Century's products provide 24-hour surveillance of the tracks and surrounding area, such as its on-board CCTV to its fixed-site Advanced Monitoring System

Anyone who has ever used the rail network is well aware that it takes just one problem on the line for delays to escalate and have far-reaching consequences. The UK's rail companies spend millions of pounds ensuring that their services run on time but, with nearly 10,000 miles of track to maintain and keep clear and more than a billion rail journeys annually, problems are inevitable.

Now, thanks to the SmartTrain and other-rail specific innovations from 21st Century, rail companies have additional methods of monitoring the lines and identifying problems, either before they occur or immediately as something goes wrong.

It would take tens of thousands of fixed-point cameras to cover the full length of track in the UK, so rail companies are looking at installing cameras onto the trains to act as a constant, mobile surveillance system.

On-board CCTV

Many of the UK's trains have on-board CCTV cameras and many more are located at stations and depots. However, rail operators looking for a cost-effective solution to managing the network are utilising their rolling stock as a mobile monitoring system with forward and rear-facing CCTV. These cameras give companies the ability to monitor and record events outside of the vehicles with a driver's-eye view.



21st Century Technology's AMS operates in real time via a network of video analytic-enabled HD cameras

They're invaluable in the event of an incident, enabling operators to view and download live and recorded video footage remotely. The latest technology provides footage that is full HD, allowing images to be viewed in detail, even at very high zoom levels, enabling details such as signal numbers to be verified at varying distances.

The technology provides remote access to the on-board systems for live viewing and access to stored video images, which are downloaded wirelessly over 3G/4G or via a Wi-Fi network when the train enters the depot. In order to retrieve

images, the user simply enters the date and time of an incident and the footage is automatically downloaded. The latest in software developments mean that this can be carried out over a 3G/4G/Wi-Fi network even if the signal is interrupted, as the software holds its place during the process.

Due to there being several types of trains in use on the UK network, engineers have to adapt the systems and in some cases design bespoke cameras and housings to suit each one.

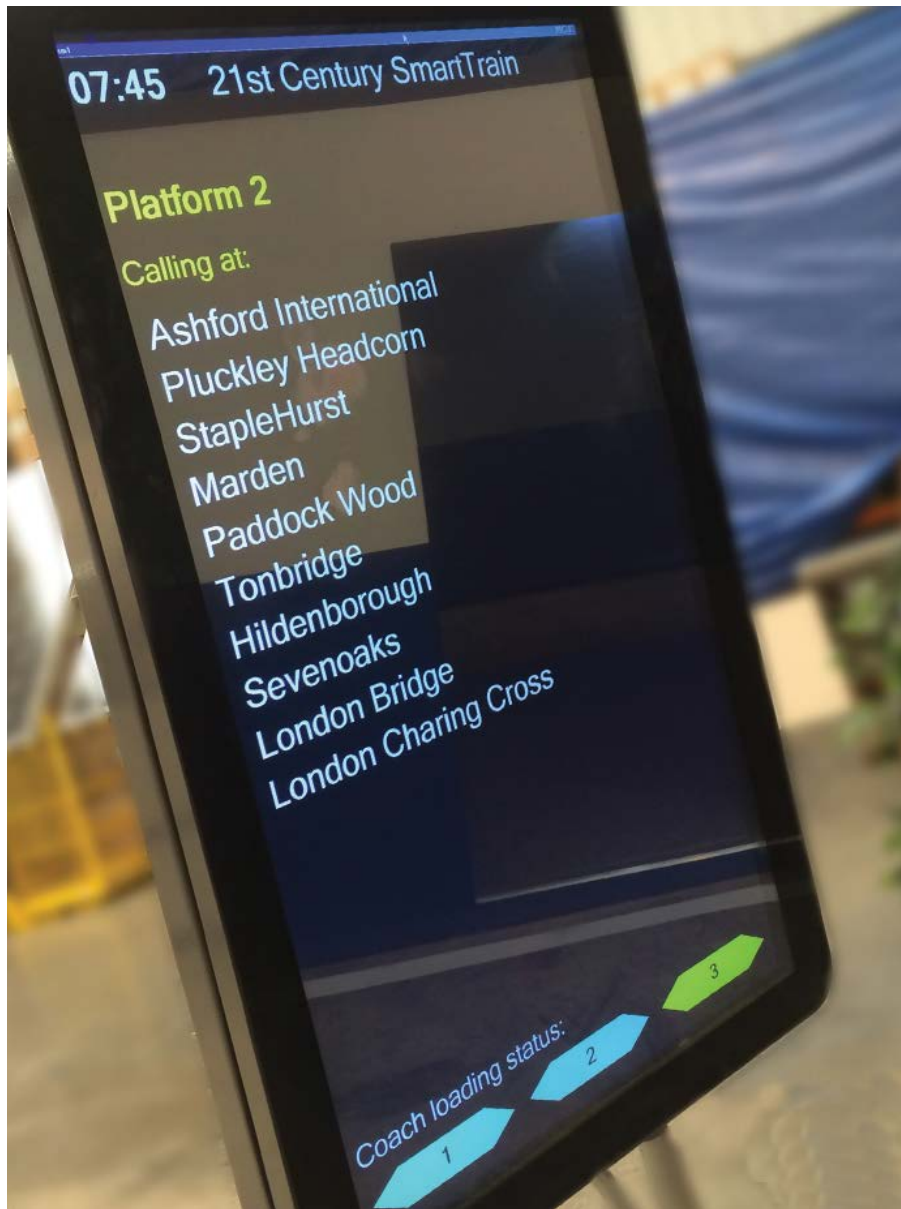
It is vital for any CCTV system to be 100 per cent operational and maintenance and monitoring is essential. Live monitoring enables engineers to view the current status: the minute there is a problem with any parts of the system this is flagged automatically and if it is not possible to rectify the problem remotely an engineer can be dispatched to the exact location of the fault.

Constant recording

These systems do much more than provide vital video evidence to help deal with incidents such as incorrect signal sequences, they also record signals passed at danger, dangerous obstructions on the line and infrastructure failure. Recording constantly, the cameras provide images for vegetation surveys and driver route training as well as supporting trackside maintenance and monitoring the location of equipment. They also provide evidence in cases of trespass and vandalism, or



Footage is downloaded wirelessly over 3G/4G or via a Wi-Fi network when the train enters the depot



systems offer benefits to both Toc's and passengers. 21st Century has been able to take the data from the passenger counting system and display the load status of a train on the passenger information screens, both on the train itself and to the displays mounted at upcoming stations. By highlighting where there is space on a train prior to its arrival at a station, passengers are able to move to less congested areas, reducing dwell times.

Fixed-site cameras

It's not just mobile technology that 21st Century Technology offers. Protection is also extended to platforms and premises through fixed-site cameras with the same quality of footage, download and retrieval facilities.

The same goes for the 32,000 km of track, sidings and embankments, including some of the most remote and hazardous locations on the UK's rail network. 21st Century Technology's Advanced Monitoring System (AMS), which operates in real time via a network of video analytic-enabled HD cameras can support rail networks in allocating resources to problem areas quickly and efficiently.

The system, designed and installed by 21st Century, was conceived to operate in remote areas, under difficult working conditions, with no mains power and be easily deployed under extreme time pressures.

21st Century engineers designed AMS as a bespoke landslip monitoring system for the replacement tracks near Dawlish, which were destroyed during the February 2014 storms. The system consists of a network of cameras along the track connected to a recorder which operators can access round the clock.

One of the cameras provides a constant live view of the entire length of vulnerable track. Two additional smart cameras are configured to detect any land slips or ground movement and send an instant alarm to the back-office. Due to the site being located two miles from the nearest buildings, it was not possible to supply the system with mains power. Therefore the entire system had to be powered via solar panels supported with batteries and a back-up system.

CCTV and the connected systems featured on 21st Century's SmartTrain can enhance rail companies' passenger experience by getting data to the people who need it, how they need it and when they need it.

Tel: 0844 871 7990
 Email: info@21stplc.com
 Visit www.21stplc.com

accidents and fatalities.

Each year brings greater improvements to the quality of images and the storage and retrieval of footage, along with increased capacity and reliability of the mobile network. This means that the technology can be deployed in more and more applications across the rail network, improving efficiencies and providing an extremely cost-effective solution to minimising delays.

The forward facing GCTV (FFCCTV) technology can also be integrated onto 21st Century Technology's SmartTrain,

which allows fleet operators to use the latest technology across a single communications platform. In addition to the obvious installation and maintenance benefits of having a reduced infrastructure on the train, the connected systems will allow train operators to be more flexible with the data collected, and deliver the data to more stakeholders in ever-more efficient ways.

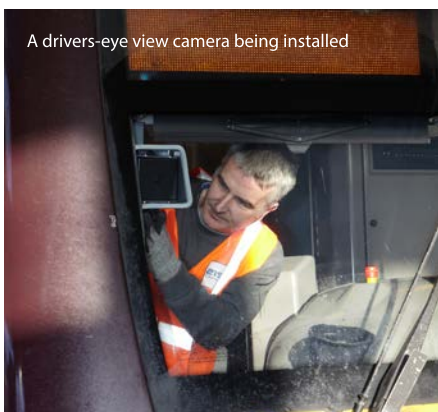
Three-carriage demonstration

To demonstrate the potential of SmartTrain, 21st Century has developed a fully operational, three-carriage demonstration unit at its headquarters in London. It's now open for visitors to not only view the display but also hold discussions on how SmartTrain could be adapted to their specific needs.

The demonstration unit hosts a number of technologies from industry-leading manufacturers, incorporating HD CCTV for rail-specific purposes (FFCCTV, saloon CCTV, pantograph monitoring and driver-only operation), passenger counting, Wi-Fi, timetable information/Driver Advisory Systems and passenger information systems.

The SmartTrain shows how connected

A drivers-eye view camera being installed



Stopping smoke in its tracks

Low smoke density insulation materials are vital in allowing people to escape from rail carriages in the event of a fire. **Armacell UK's** Anthony Barnett looks at why latest legislation in this area will replace all national standards in March 2016

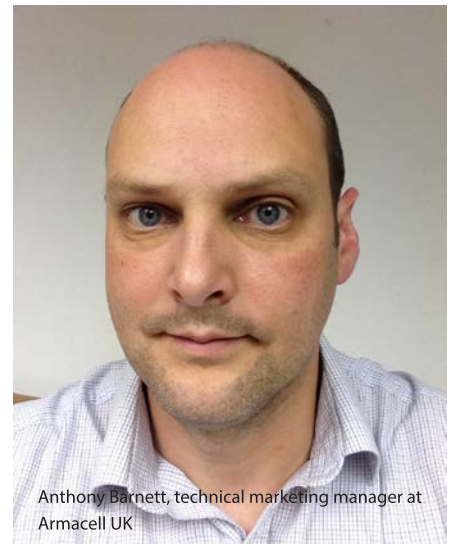
Although major incidents involving fires in carriages are rare, designing-in safety remains a key priority for the industry. The single largest issue is ensuring that people can escape to safety, and low smoke density insulation can make the difference between life and death in these situations. Closed-cell insulation products specified in the rail sector are used to protect refrigerant pipework, air ducts and other components against energy losses and condensation.

Maintaining low smoke density in a fire can be vitally important in allowing passengers and staff to escape, or be rescued quickly and safely. For this reason, the new European standard EN 45545-2 defines tighter requirements for the fire behaviour of materials and components. The fire protection standard came into force in August 2013. During

the transition period it applies alongside the national standards (such as BS 6853, DIN 5510, NF F-16101), which must be withdrawn by March 2016.

To achieve the highest possible level of safety in trains the materials and components must meet strict fire protection requirements under EN 45545. Depending on where they are used, materials are assigned to the categories R1 to R26 (R = Requirement Set). The various operating and design classes provide the basis for the hazard levels (HLs) which in turn define the requirements of the classification system.

There are a total of three hazard levels (HL1 to HL3). HL3 is the highest level and thus makes the greatest demands of the materials used. In accordance with their classification as R1 materials, technical insulation materials are tested under ISO 5658-2 (spread of flame); ISO 5660-1 (heat release, smoke development and mass loss



Anthony Barnett, technical marketing manager at Armacell UK

rate) and EN ISO 5659-2 (optical smoke density and smoke gas toxicity).

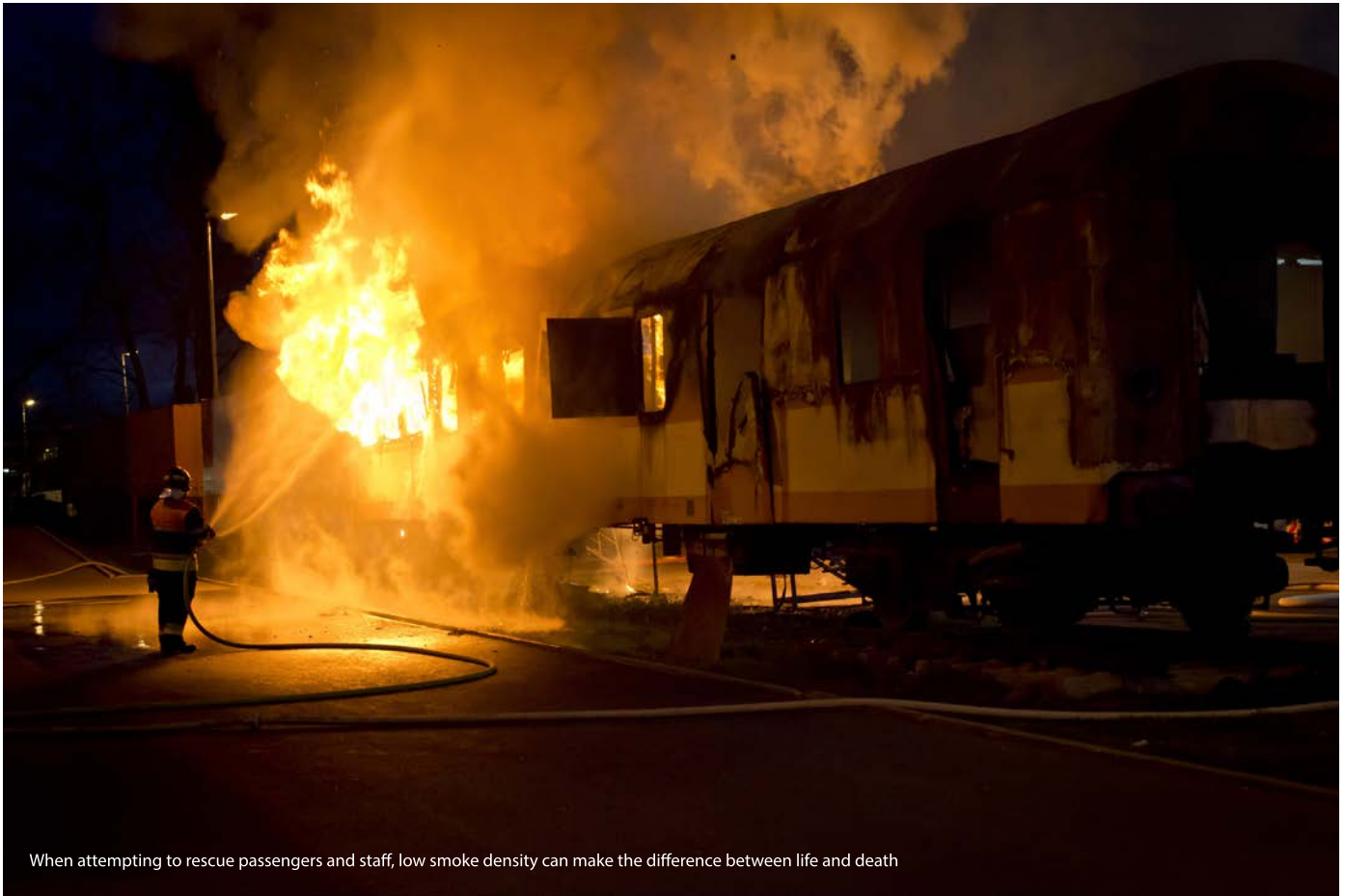
Material innovation

As a result of the new harmonised standards we have extended our range of flexible, closed-cell insulation materials for railway vehicle construction. These are able to achieve hazard level HL2 or 3 and can even be installed in sleeping cars and couchettes, which are operated on underground track sections or in tunnels. The range, which includes halogen-free and covered insulation materials, has very good fire properties and develops extremely little smoke.

As part of the development process we addressed specific issues faced by the industry such as how to minimize risk of secondary damage. This occurs when acidic fire gases cause damage to property leading to costs many times higher than those of the actual fire loss. In these situations, we have developed a halogen-free product that does not release corrosive gases which, in combination with the fire-fighting water, could form aggressive acids.



Armacell provides an extensive range of EN 45545-compliant insulation materials for railway vehicles capable of achieving hazard level HL2 or 3



When attempting to rescue passengers and staff, low smoke density can make the difference between life and death

For applications with the highest requirements, there is a solution that achieves hazard level HL3, R1 and can even be used in sleeping cars and couchettes which are rated operating class 4 and run on underground track sections or in tunnels. For all other applications Rail-SD (achieves HL2, R1 under EN 45545), or Rail SD-C (for use in areas requiring the highest hazard level – HL3), can be used.

Aside from meeting new safety standards, modern insulation materials need to perform physically too. This is because climate control is of great importance in modern rail vehicle technology due to high outdoor temperatures even in central and northern Europe and the greater comfort now expected by passengers. State-of-the-art air-conditioning technology is therefore essential in rail vehicle construction today. Depending on where the trains are operated, air-conditioning the passenger compartments can account for a significant amount of energy consumption. However, the energy required can be greatly reduced through intelligent climate control systems and efficient thermal insulation of the vehicles and installations.

Unlike conventional insulation materials, which have to be protected against moisture penetration with a separate vapour barrier, an elastomeric foam's resistance to water vapour

transmission is built up throughout the entire insulation thickness. This provides much more security than the diffusion barriers of open-cell insulation materials, which usually consist of aluminium foils and can easily be damaged during installation or maintenance work and then permit water ingress. Elastomeric insulation materials on the other hand ensure reliable long-term protection against condensation processes. Moreover, insulation materials with Microban® technology are available, which provide additional protection against harmful microbes such as bacteria and mould. When assessing and selecting technical insulation materials, installation aspects are as important as the physical-technical values. Depending on the complexity of the objects to be insulated, different requirements are made of the insulation material. The effort needed to install the insulation systems and the reliability of the installation are, therefore, particularly relevant. Even under difficult circumstances, it must be possible to carry out the installation in such a way that there are no weak points.

A great advantage of synthetic rubber materials such as elastomeric foams is the highly flexible nature of the material, which becomes apparent in the tight installation situations in rail vehicle construction. The homogenous, three-dimensionally linked structure of the elastomeric insulation allows the sheets to

be cut neatly without the release of dust or fibre particles that could pose a health risk if breathed in. The high flexibility of the material allows it to be fitted simply even on complex fittings and equipment. Application times can be further reduced by using self-adhesive sheets.

Tighter fire protection requirements for railway vehicles

Technical insulation materials have to meet many different requirements. They have to reduce energy losses and/or the transmission of structure-borne noise from the installations and prevent condensation on the surface of cold pipes and ducts, which could result in moisture penetrating the insulation material and adjoining components. In addition to these functional requirements, there are key safety considerations around fire and smoke, which also play a decisive role when selecting a product.

Looking to the future, the standards organisations have recognised that smoke represents a much higher potential risk than the fire itself. This is reflected in the latest revision of EN 45545-2, the new fire classification for European rail vehicle construction that takes effect in March 2016 and further tightens the requirements for smoke development and toxicity.

Anthony Barnett is technical marketing manager at Armacell UK

Visit: www.armacell.com

From strength to strength

Birley Manufacturing reveals its latest award-winning innovation – the Universally Accessible Toilet

Birley Manufacturing has a heritage of more than 140 years of production and has specialised in rail interior refurbishments for 25 years. It has a turnover of around £15 million and is the UK's largest undercarriage protective skirt and egress internal sliding door provider.

The company designs, manufactures, supplies and installs – with full accountability throughout every project – and produces for interiors from concept to supply. Its portfolio includes everything from luggage racks and stacks; interior panels; ceiling modules; vestibule partitions; through to toilet refurbishments; litter bins; tables; galleys and sleeper berths; cab back walls; equipment cupboards and platform-mounted ticket offices.

Birley Manufacturing's latest offering is the recently launched Universally Accessible Toilet Module (UAT), which has been approved and installed on Porterbrook's Class 144 evolution DMU. These new units are compliant with the new Persons of Reduced Mobility legislation (PRM-TSI) that requires all passenger rolling stock to comply with PRM-TSI accessibility regulations by the end of 2019.

Quick installation

The key benefit of Birley's UAT module is that the sealed one-piece base moulding prevents the egress of liquids and so reduces the risk of under floor corrosion. The main modules are preassembled and tested prior to delivery and fitment. This reduces the main module installation time to two days, reducing carriage downtime.

With the unit's high structural integrity, low water consumption vacuum toilet, lightweight no-planned maintenance door system and easy access to other equipment for servicing, the unit has significant design life cost benefits over existing designs currently on the market. All the main equipment has been selected for their proven reliability and technology that helps support reduced servicing and maintainability of the unit, giving a minimum design life of 25 years.

The 80mm-high slim door drive system is lightweight with no belt gearing,



Cardiff Central station ticket office

tightening or readjustment of switches, which eliminates maintenance costs. The UAT's aluminium-faced single door has a folded leading edge that eliminates the risk of delamination and has an easy-clean surface. The top and bottom door supports ensure that it's extremely robust and resistant to vandalism. To enable easy cleaning, the door runners push debris into a collection area that can be easily removed by cleaning staff, thereby eliminating the build-up of dirt.

High-pressure flush

The lightweight compact vacuum toilet is a proven and reliable system used worldwide. It weighs 15 kg, uses 12 watts of power for each flush and is controlled by a microprocessor with integrated fault detection and correction. The high-pressure flush system consumes 0.5 litres of water for each flush and the system is designed to reduce the build-up of limescale.

The hand cleaning system uses infrared detection to start the washing cycle; dispensing soap, then water before finally triggering the drier with a three-second delay until the next activation. The unit is easily accessible from both the toilet and a standing position.

The new UAT unit was awarded the



2015 Smart Product Award for Innovation in the regional heat of the BEEF Future Manufacturing Awards. Having seen the work put into the UAT for rail carriages, the judges announced Birley as the winner for the North East, Yorkshire and Humberside region. This victory now carries Birley Manufacturing forward to the national final that will be held in early 2016.

The award came during the



development of Great Western Railway's Night Riviera Sleeper mock up, which was officially launched by the Secretary of State for Transport, Patrick McLoughlin. It was GWR's brand launch and as part of this event Birley produced the RFM Catering Car galley. A 20m fully production-finished interior mock-up was required, trimmed into the style of the final berths and the RFM car (a cocktail bar, kitchen and shop) was fully stocked with drinks and snacks to provide a fully operational galley.

The in-house design team at Birley,

whose collective production knowledge means that it responds well to challenges, produced full-size prototypes for clients to see in situ at the company's factory in Sheffield. The refined prototypes allow thorough consideration of height and storage areas and enabled detailed checking and optimal positioning for the required catering equipment, such as coffee machines, water boilers, sinks, fridges and other ancillary equipment. The ergonomics were also tested and approved by staff and user groups to get full buy-in from all possible stakeholders.



Birley's toilet UAT module



'The in-house design team at Birley, whose collective production knowledge means that it responds well to challenges, produced full-size prototypes for clients to see in situ at the company's factory in Sheffield'

Steve English, Birley Manufacturing managing Director, said: 'It is an exciting project for us and we look forward to the actual units going into service.'

Replacement underskirts

The replacement underskirts that Birley produces are in service across the UK train network. Assembled from aluminum using coded welding and painted with a protective undercoat in the Sheffield factory, the underskirts are a tried and proven solution to prevent debris from being thrown up from the track. The company also manufactures internal sliding egress doors with a quick release pull-tab. The rubber seal can be ripped out so that the window panel can be removed to facilitate escape or rapid access in emergencies, both by passengers or emergency services.

Station-side, the company has many years' experience in both retail and commercial interiors. As a supplier to the major UK banks and supermarkets, it's well placed to complete large projects such as the recent installation of Cardiff Central station's ticket office. The job required a 15m-long counter equipped with security screens and disabled access counters. Birley also undertakes ticket work such as platform-mounted ticket booths and mobile information points. Birley has 25 years' experience in the rail industry, is a member of East Midlands Rail Forum and is RISQS (formerly Link-up) approved.

For more information contact James Taylor at Birley Manufacturing
Tel: 07909 928185
Visit www.birleym.com

A new ERA

Providing training and apprenticeships for the UK rail industry, **Enable Rail Academy** gives some details on what it can offer and hears from two of their successful students

Enable Rail Academy (ERA) started business as a professional railway training provider in November 2013. It offers a wide range of rail industry training courses to help employers establish and maintain the necessary professional learning and development for today's workforce, along with training future railway engineers through a 12 month apprenticeship programme.

Initially based in Scunthorpe, the apprenticeship programme rolled into action with more than 60 apprentices taking an NVQ diploma in Railway Engineering Track Maintenance Level 2. Within a year ERA had opened up a second site in the Wakefield area and was teaching more than 120 Apprentices at any one time.

ERA is now shifting its main focus and area of operations to Rotherham and the South Yorkshire area with the purchase of two new properties in the centre of the town. Both venues are easily accessible to students from all across Yorkshire due to being only a few hundred yards from Rotherham train station. The location also gives ERA's training staff the perfect operating point in which to provide competency training to companies across the UK.

Track Renewals qualification

Over the last two years ERA has worked alongside some of the UK's leading rail companies, such as Kingfisher Resource Management (KRM). The partnership was formed to deliver EAL's new QCF L2 Track Renewals qualification to 20 individuals of KRM's current workforce.



This equipped the students with the knowledge and skills of the track renewal process used on the UK's rail infrastructure, developed in consultation with the National Skills Academy for Railway Engineering (NSARE), training associations and the industry to ensure the qualification met the sector's needs.

KRM approached ERA for training and assessment solutions in 2014. EAL's Track Renewals programme was the perfect fit as it allowed for recognition of existing skills and the training of new relevant skills, ensuring KRM ended up with a more robust and flexible workforce. In addition to this, ERA also provided six items of plant competencies to 50 of KRM's rail operatives.

The partnership led to KRM becoming one of the first companies in the UK to undertake the ERA's track renewal qualification. In light of the successful partnership, KRM has now approached ERA to provide them with an apprenticeship programme to help bolster its future workforce.

ERA and KRM have recently recruited ten new railway engineering apprentices that are directly employed by KRM. The apprentices are based in the Doncaster area and are currently undertaking their apprenticeships, which will give each individual vocational and industry-based safety-critical competencies.

Case Studies

Mark Woffenden

Vocational supervisor for ERA

Mark Woffenden has been employed at ERA since June 2014; he initially joined the company as a trainee tutor/assessor and was based at ERA's Wakefield site. His journey began when he was trained by ERA director, Rob Clark, in 2008 and completed his training to become a railway engineer, providing him with the tools to build and develop his career.



Chainsaw training on cutting concrete



like sitting at a desk for six hours a day. *How is the apprenticeship with Enable Rail Academy going so far?*
 It's gone well. In the time I was there I learnt more than I did in five years of school because it was something I wanted to do and not something I had to do. *What are your aspirations after you complete your apprenticeship?*
 I want to get my HGV licence as soon as possible to enable me to a plant operator operating the road-rail vehicles, as I have a real interest in machinery. *Any other comments on the apprenticeship?*
 I am looking forward to completing it and furthering my career in the rail industry. I thought the training I received was good because it gave me the knowledge required in a number of disciplines. A safety-critical environment can be a dangerous one and after completion of my training I will feel safe to work.

Enable Rail Academy can provide training in the following competencies (*see box*) :



Mark Woffenden

Woffenden became a fully trained tutor/assessor after passing his Level 3 Certificate in Assessing Vocational Achievement in May 2015 and also progressed to become the Wakefield site manager. During this time, he oversaw and completed the training of more than 120 young adults taking the railway engineering apprenticeship. Following this, he was relocated to a new venue in Rotherham where he continued to progress with further training, becoming the vocational supervisor in December 2015.

'I would like to thank Enable Rail Academy for the opportunities they have presented me: I have received support throughout - from qualifications to teaching. The reward of up-skilling an apprentice to become a skilled and competent railway engineer is a fantastic feeling, knowing you have made an impact on the life of a young person wanting a career and an opportunity.

'My aim for the future is to continue to support the apprentices and give my knowledge and experience for them to create a brighter future,' said Woffenden.

Amy Fowler (KRM Apprentice)

Railway engineer apprentice

'I have passed my Personal Track Safety course, alongside a track induction that enables me to affect track geometry, and AC/DDGR, which allows me to work with overhead lines and conductor rails.



Amy Fowler

- Cobra TT
- impact wrench
- rail saw
- rail drill
- 110v Hilti and generator
- sleeper drill
- RD4000 – 8000 cat scan and generator
- iron-man
- brush cutter
- chainsaw
- small tools and jacks
- hand trolleys
- CBX (cold bolt expansion)
- abrasive wheels
- stressing kit
- alpha band saw
- Belle Minimix
- wacker (triple and single)
- various 110v tools
- Abtus' bond drilling machine
- track gauge and sighting boards
- cement poker and pig
- fire awareness
- manual handling
- IOSH (one day)
- first aid
- fast clipping machine

I have also undertaken several small plant competences that allow me to use equipment such as rail saws and drills and am currently working towards achieving my railway engineering track maintenance level 2.

What made you decide to take an Apprenticeship in Railway Engineering?

Sixth form wasn't for me so I started looking for apprenticeships and saw the railway engineer qualification, so I went for it. I am a hands-on person and did not

ERA is always keen to hear from interested parties or businesses in regards to up-skilling their workforce, whether help is needed through training, advice or consultation.

Tel: 01724 859859
 Email: enquiry@enablerailacademy.co.uk
 Visit www.enablerailacademy.co.uk

Putting the client in control

Currently within **Forbo Flooring System's** Flotex FR range is a library of more 500 design options. Should this not be enough, the client can become the designer

Custom design is desired more and more by brands in all industries and memorable branding is in demand more than ever. It's only natural that Forbo Flooring Systems' customers want their project to stand out, something that is now possible with Flotex FR.

Forbo Flooring Systems prints Flotex FR using two methods: rotary and digital. With rotary printing, existing designs can be recoloured to suit each project's requirements, but true flexibility lies within the digitally printed option. Customers can now take ownership of flooring designs, working with the

company's in-house design team to create something completely unique.

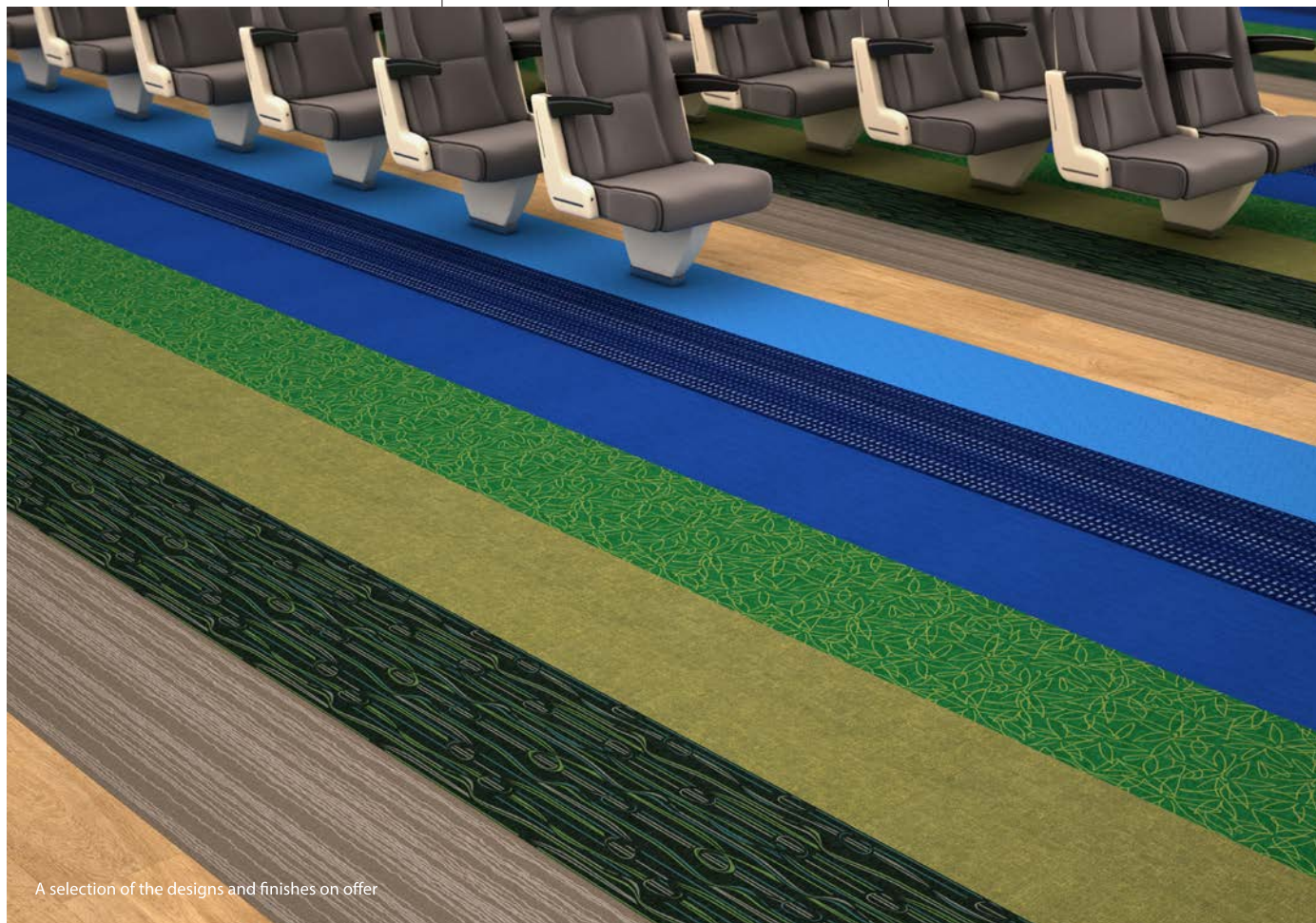
Using high standard printing technology, Forbo Flooring Systems' team in Chateau Renault, central France, can achieve high definition printing quality, giving its customers the ability to create detailed designs with endless colour options.

Flotex FR, uses a special fire retardant backing in order to meet the EN45545-2 safety certifications for rail vehicles. Forbo Flooring Systems recently completed a project with Translink NI Railways using a bespoke Flotex FR design.

Translink NI Railways

Translink NI Railways recently fitted 20 new Class 4000 train vehicles with a bespoke design of Flotex FR. The designs were fitted in 2012 and are in keeping with the interior's design enhancements and Forbo Flooring Systems specified the uniquely flocked product to meet the requirements for a design-led, high performance flooring. The digitally printed floor covering played a significant part in creating a welcoming, comfortable and distinctive interior environment for passengers.

Through working closely with DCA Design International and Translink NI



A selection of the designs and finishes on offer



‘Having complete design flexibility with Flotex FR enabled us to develop a cohesive, well-balanced interior colour scheme using our own colour specifications.’

Railways, Forbo Flooring Systems was able to create something totally unique. One of the specific elements of the design brief was to align the interior fittings, finishes and floor coverings with new livery and Translink NI’s latest corporate guidelines. Paul Rutter, senior design associate at DCA Design, said: ‘Having complete design flexibility with Flotex FR enabled us to develop a cohesive, well-balanced interior colour scheme using our own colour specifications.’

Not only did Forbo Flooring Systems achieve a contemporary and inviting design but Flotex FR also offered Translink NI Railways extensive cleaning and maintenance benefits. Explaining why he wanted to specify Flotex FR for the project, Rutter said: ‘It provides a very practical surface that can be easily cleaned and stays looking good regardless of the wear and daily use in wet and wintery conditions. Most carpets would have a short life if subjected to this sort of punishment but Flotex seems to thrive on it.’

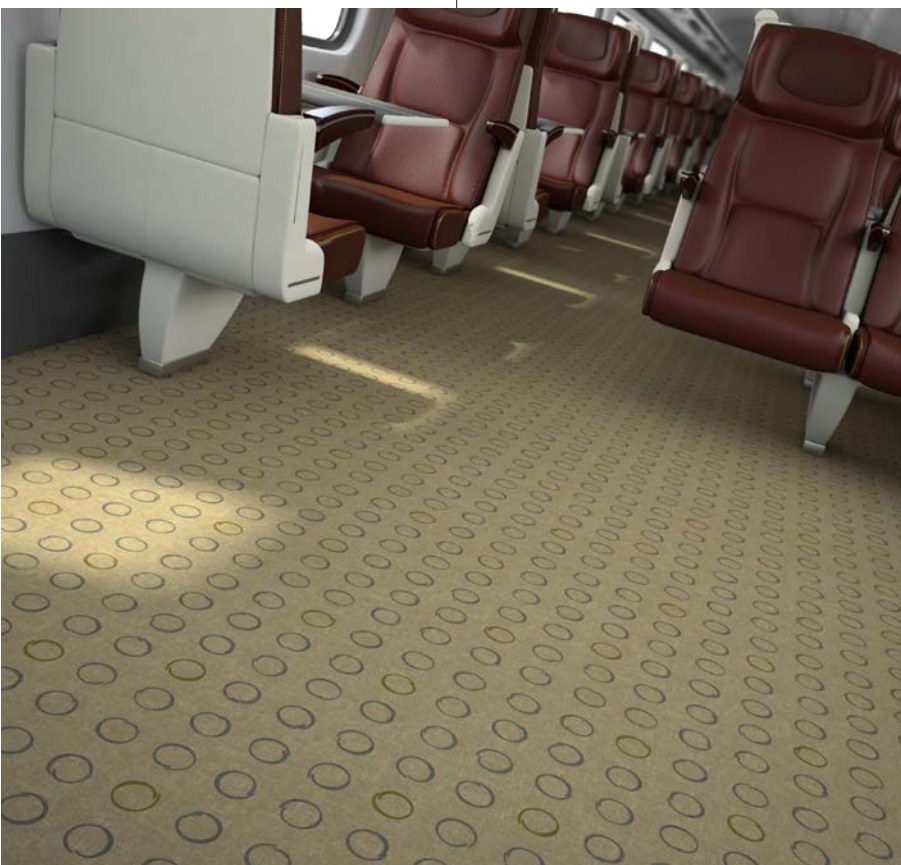
Less maintenance

Trains Two programme manager at Translink NI, James Erwin, said: ‘We wanted a textile floor covering on these trains for warmth and acoustic properties but we weren’t so keen on the cleaning and maintenance requirements associated with conventional carpets. Flotex offered us an ideal alternative.’

Translink NI Railways had already used Flotex FR on its trains in 2005, which are still in service today and performing well. ‘We would certainly use Flotex FR again on similar types of rail projects as the benefits are clear,’ concluded Erwin.

Contact Forbo Flooring Systems to find out more about Flotex FR
Tel: 01773 744121

Email: info@forbo-transportflooring.com
Visit www.forbo-flooring.com/transport



One-stop galvanizing

For fabricators looking for steel finishing treatments for the rail industry there is **Joseph Ash Galvanizing**, the UK's one-stop shop for galvanizing, shot blasting and powder coating services

Joseph Ash Galvanizing has six plants in the country and services all types of steel for a variety of railway projects; none more so than the company's largest plant, Joseph Ash Chesterfield, which underwent major redevelopment work in 2015.

A choice of plants

Joseph Ash Galvanizing has plants in Bilston, Bridgend, Chesterfield, Medway, Telford and Walsall and while each plant is equipped to galvanize most items of steel, Joseph Ash Chesterfield is particularly renowned for treating steel fabrications for the rail industry.

Next stop...Joseph Ash Chesterfield

Steel fabrications treated by Joseph Ash Chesterfield regularly include structures such as station canopies, gantries, overhead line equipment (OLE) steelwork, car parks, lineside cabinets, bridging, fencing, cantilevers, and CCTV posts.

Typically, these items are large and Joseph Ash Chesterfield, which is located near to the M1, is now more equipped to handle the steel after it underwent a major investment drive and facilities upgrade in 2015.

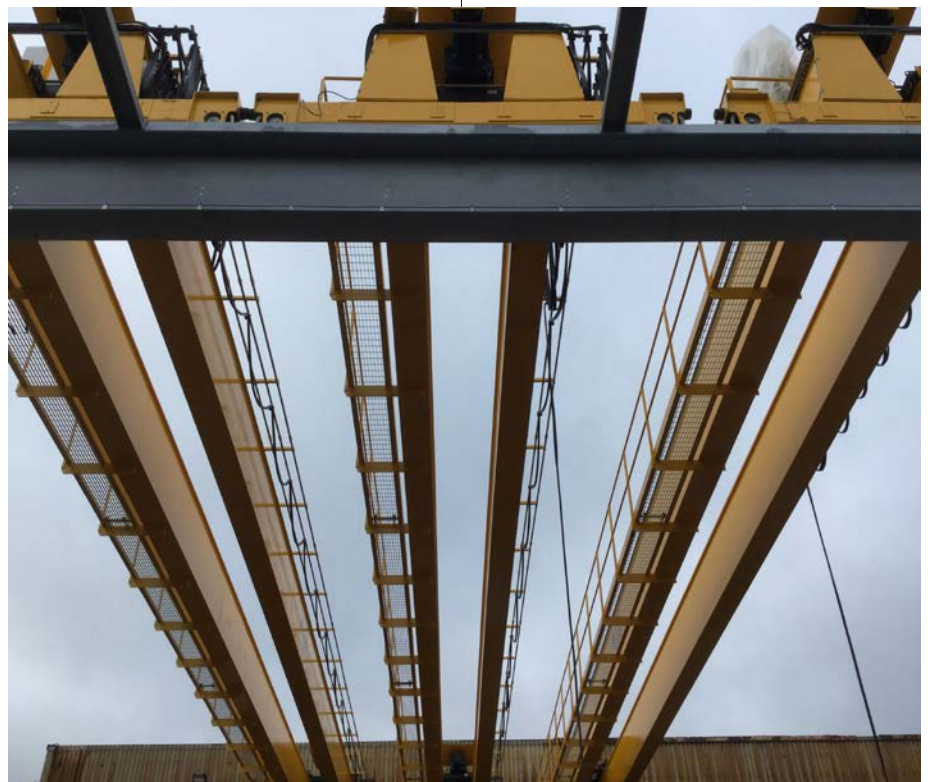
The plant was already Joseph Ash Galvanizing's largest single site and the works included the addition of another large hardstanding bay to the plant – an area that can house up to 100 trailers. The hardstanding also includes an area where railway fabricators and other Joseph Ash Galvanizing customers can carry out trial erections of their fabrications before taking them off-site and delivering them to the end user.

Further improvements included the addition of an extra crane gantry area that provides customers with the ability to load their own containers or to preassemble steel fabrications such as gantries or tracks, as well as other, non-railway steel fabrications. The gantry area also provides Joseph Ash Chesterfield with the ability to load several customers' vehicles or containers at a time.

A huge hardstanding area at Joseph Ash Chesterfield for loading containers or preassembly work



New overhead cranes at Joseph Ash Chesterfield





Stoke Gifford rail depot

As well as the new overhead cranes and hardstanding area at Joseph Ash Chesterfield, Joseph Ash Galvanizing also worked on the following:

- an extension of the forklift fleet
- new container loading facilities
- an MPI (magnetic particle inspection) crack detection (by prior arrangement)
- local overnight facilities and changing facilities for truck drivers
- factory space and offices (up to 1,200m² currently available) suitable for fabrication or assembly
- new offices and telecoms for customer use.

Joseph Ash Galvanizing believes in making life as easy as possible for its customers, and the extra space and facilities at Joseph Ash Chesterfield – particularly used by the rail industry – achieves this aim.

Contributing to UK rail

Over the last few years Joseph Ash Galvanizing – and most notably Joseph Ash Chesterfield – has played a part in providing treated steel for projects such as Bristol Parkway station, Hazel Grove station, Stoke Gifford rail depot, Birmingham New Street station, and the East and West Coast Line Electrification projects.

Joseph Ash Galvanizing plants

Joseph Ash Bilston

The company's semi-automatic state-of-the-art facility focuses on high volume repetitious products such as motorway guardrails, fencing products and industrial flooring.

Joseph Ash Bridgend

For service throughout Wales, this plant delivers a flexible and responsive transport operation, with a team that understands the need for fast and consistent, quality-assured galvanizing.

Joseph Ash Chesterfield

Perfectly suited for projects including structural sections and lighting columns, rail industry steel and fencing fabrications.

Joseph Ash Medway

For steel finishing needs in the south east, this plant delivers a one-stop-shop service of shot blasting, galvanizing, spin galvanizing and powder coating.

Joseph Ash Telford

Equipped with the widest bath in the UK, Telford supports major manufacturers in the fencing, agricultural, bridging and trailer sectors nationally, while providing a fast and efficient service to local engineering companies.

Joseph Ash Walsall

Located just off the M6, Walsall specialises in bridging, lighting and access support steelwork. They also offer a daily 'milk run' style service backed up by their large transport fleet.

Some of the customers the company serves who have also made big contributions to the rail industry include Lundy Projects, Bourne Steel, Reidsteel, Adey Steel and Dam Structures.

A passion for rail

2015 was a year of exciting changes and

projects for Joseph Ash Galvanizing, and the teams at Joseph Ash Galvanizing's sites look forward to assisting all works on the UK's railway in the years to come.

Tel: 0121 504 2560
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 Visit www.josephash.co.uk

The customer is always right

Mabey Hire explains how customer driven innovation has helped to deliver many benefits for the company, with the launch of a new and improved strut and shield system

Mabey Hire strives to listen closely to its customers. Naturally, this is good for customer relations but the company also knows that its customers know their business better than anyone. So when one of Mabey Hire's rail customers approached it with an urgent requirement for a new kind of strut and shield system to protect workers in a trench, the company listened to their specific requirements.

Unlike existing trench boxes or other strut and shield systems, the customer needed one that could afford access to the assets directly beneath the strut, mobile enough for a small team to manage and transport to remote trackside locations. It also needed to meet or exceed the existing load ratings required. Mabey Hire quickly realised that a lighter, more compact strut and shield system with these qualities would be tremendously useful to not only the rail construction industry, but the wider construction industry too.

The design stage

Following more detailed consultation with the client, Mabey Hire took the requirements to its development engineering team and literally sketched out a starting design. After a few attempts a design was created that would be light, strong, portable and compact. Having

agreed the fundamental design features, Mabey Hire created the detailed plans required to produce a full-scale prototype. It was then possible to fabricate the shield sections out of aluminium to keep the weight as low as possible. The strut components were designed to allow free access to the operational section of the trench, allowing work to take place along the full length of the shield.

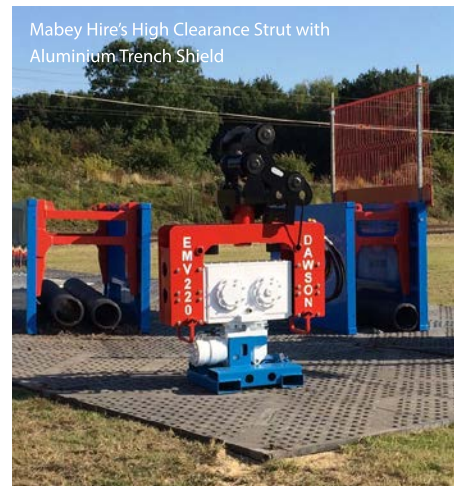
The end result proved to have advantages beyond Mabey Hire's initial expectations. Not only would the system save on transport costs due to its low weight and size, but the breadth of the trench required to install it was less than that of other strut and shield or box systems. Consequently, the prototype required less material to be excavated, which meant further savings in time and cost and the added advantage of using smaller excavation plant and equipment.

The new strut and shield system was tested at the Mabey Training Academy at the company's Garswood depot in Merseyside. It met or exceeded the functional specification for portability, with the heaviest individual components weighing in at less than the maximum recommended safe handling weight for a single person (25kg). The entire assembly could be easily moved within the trench, and passed the load tests with flying colours. Mabey Hire called the final

product the 'High Clearance Strut with Aluminium Trench Shield' but was later given the moniker: 'Hog Back Strut', owing to its distinctive shape.

The manufacturing stage

With the prototype tested and approved, Mabey Hire then moved to begin manufacturing the system and within six months of the initial



request the finished product was ready for deployment. The initial feedback was very promising, citing considerable savings in time and a boost in efficiency and speed. Mabey Hire's next step was to introduce it to its other customers at a safety awareness and excavation training course held at the Mabey Training Academy, where the system received considerable interest.

The strut and trench shield system has become a leading product amongst the Mabey Hire's rail customers. The company's construction customers are beginning to see the advantages inherent in the design too, making use of its cost and time-saving features.

When it was launched at RAIL 2015 in September 2015 the product was a major attraction, which led to the company securing several orders. Mabey Hire has now expanded the range into three sizes, suitable for drainage runs of pipes and UTX Ducting, from DNS225 up to DN450, while keeping each component under the safe manual handling weight for one person. Despite its size and portability it's still able to maintain a 20kN/m² aluminium trench shield capacity.

Tel: 0845 741 3040

Twitter: @MabeyHire

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A good Match for rail

Matchmaker CNC explains how expertise and technology can combine to meet the needs of rail

Matchmaker CNC is a supplier of machine tools. The company is focused on providing high precision CNC machines and flexible manufacturing systems for a range of industries including rail. With more than 40 years' experience providing machine tools to its customers, ranging from small precision subcontractors to blue chip manufacturers, it has developed a broad depth of knowledge regarding engineering solutions.

Within Matchmaker CNC's portfolio are machines for a wide range of applications and capabilities that can

machine both small and extremely large components. Typical of this is the Unisign range of machines, which will be of interest for those working in the rail industry.

Industry recognition

In addition to supplying new machine tools, Matchmaker CNC has a service and support team that holds stocks of spare parts valued at more than £500,000 at its Leatherhead headquarters to ensure that customers' machines are kept running at all times. This level of service was recognised in 2015, when the company was the recipient of a Corporate Excellence Award.



The award was in recognition of Matchmaker CNC's customer service and the time and level of support it gives its customers, whether large or small. 'It is a very nice feeling when something that we do as part of the normal routine for our business is recognised in this way. For this we're grateful to all of the team employed by Matchmaker CNC,' said the company's director, Mike Maskell.

Due to Matchmaker CNC's experience and industry knowledge, the company is



A railway bogie frame being machined on a UNIPORT7000 machine



The UNIPORT7000 portal machining centre is ideal for large voluminous components such as those found in the rail industry

able to tailor machine tool solutions to the needs of its customers and enhance their productivity through industry best practice. This ability is becoming ever-more valuable to its customers who operate in constantly changing environments with pressure to deliver on time at competitive prices.

Matchmaker CNC recognises the challenges faced by its customers and has the agility to react quickly to almost any situation that it's presented with. Throughout all of this, Matchmaker sticks to its philosophy of aiming to be the best.

UNIPORT7000

In this quest to be number one, Matchmaker CNC has the backing of its machine tool principals. A perfect example of this is Unisign, the Netherlands-based machine tool manufacturer that has carved out a reputation for manufacturing high performance machining systems for a wide range of applications, one of these being the rail industry. Such as its UNIPORT range of machining centres, which are equipped with a moving portal bridge on their x-axis that make them ideal for large and voluminous products, such as railway bogie frame machining.

Sitting in the middle of this range is the UNIPORT7000 with the option of five-axis operation. The design of the machine, which features a 'box in box' style construction, creates a highly rigid machining platform from which five-sided machining can be carried out. Furthermore, the scale of the machine, with its table measuring up to 18,000mm

long and 4,500mm wide, allows for large components to be mounted side by side to facilitate pendulum machining – further enhancing productivity through reduced changeover times.

Access to the workpiece is improved through the vertical ram design and the option of a variety of machining heads including a right angle head for horizontal machining operations, which offers the same power and torque as the vertical main spindle. A universal angular head is also available and allows tools to be positioned at almost any angle via the A- and C- axis movement. 'The UNIPORT7000 is one of the most versatile machines in the Unisign range and provides a cost-effective solution to the machining of large, difficult to access, components,' said Maskell.

The key benefits of the UNIPORT7000 are its ability to facilitate rapid changeover times due to it being equipped with a high capacity tool change system and an accessible machine bed that makes loading/unloading easy. In addition, the general construction of the machine ensures a stable machining platform, which in turn guarantees accuracy and performance. The ability to access five sides of the component inside and out in a single set-up also greatly increases up-time and eliminates the handling of large components. The machine bed is built into the factory floor, making access to the workpiece straightforward. The operator also has the ability to step onto the table – when safe to do so – to inspect the workpiece or make any required adjustments to the clamping.

Total flexibility

While rigidity is the name of the game when operating the UNIPORT7000, when specifying the machine, total flexibility is the operative phrase and the customer can specify the machine in many ways, including as a high-rail gantry machine. In addition, the bed length and table width can be specified to suit, from 4,000mm to 18,000mm on the X- axis and 2,500 mm to 5,000 mm on the Y- axis. In addition, there is a wide range of options to choose from such as spindles, machining heads, and a carousel turning station to add turning capacity to the machine.

With countries around the world looking to invest in rail infrastructure and, closer to home, the potential for significant investment that HS2 could bring, Matchmaker CNC is confident that the rail industry will provide great opportunities for its expertise and technical products. The company has a loyal customer base made up of those who have come to rely on the service and support that Matchmaker CNC provides.

Maskell believes that the future looks promising for the company; customer loyalty that has been generated through the excellent customer service that Matchmaker CNC provides. The company is confident that 2016 will be another positive year for it and its customers alike, albeit with a few challenges along the way, but with the resources available to Matchmaker CNC it believes it can meet those challenges and business will continue to grow.

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Driving depot development

Equipment produced by heavy lifting specialist **Mechan** is helping Siemens Rail Systems UK bring to life its vision for the future of train maintenance

Two bogie drops designed and built by the Sheffield manufacturer Mechan for Thameslink's Three Bridges depot are being used as the model for Siemens' projects worldwide. Two more have been supplied to the smaller Hornsey facility in north London as part of the same scheme.

Bogie drops are installed within the depot floor, enabling complete bogies and undercar modules to be removed or exchanged without lifting or splitting carriages. They make bogie changes feasible within two hours and can save time on other work, easing the pressure on maintenance providers to achieve faster servicing times.

Mechan supplies bogie drops with two types of mechanism: the traditional scissor action or a screw jack system, which offers a greatly reduced pit depth and minimal civil costs. In both cases, heavy duty actuator pins fitted to the drop latch into place when it is not in use, ensuring the road remains accessible. Like all Mechan equipment, its bogie drops are made to the client's requirements. They're available with a range of optional extras, such as a pit continuation for enhanced clearance under the bogie and side platforms to improve access to the item being changed, while adapters can also be added to enable any type of undercar module to be removed or replaced.

InterCity Express Programme

Drop systems have been a major component in Mechan's involvement in the InterCity Express Programme (IEP), with the company receiving orders from three of the four facilities it has supplied. Working with main contractor, Volker Fitzpatrick, an equipment drop with two bridges was delivered to the North Pole depot in west London, alongside 40 lifting jacks. As it is sited in the centre of the depot, its unusual configuration had to be designed to enable one of the bridges to retract into the pit, so it does not detract from other work and normal operations can continue when it is not in use.

Mechan has also developed two additional standard equipment drops for the new Stoke Gifford depot near Bristol. All three units use the same control philosophy to establish consistency and, if necessary, allow trained operatives to



15-tonne jacks at Alstom's depot



Equipment at Mechan HQ, destined for the North Pole depot

be moved between locations. Finally, a three road equipment drop is currently in production for Hitachi's new train maintenance facility being constructed in Doncaster. The drop will be installed soon, along with another 40 lifting jacks with a 15-tonne capacity and two bogie turntables.

Mechan chief executive, Richard Carr, said: 'To be playing such an integral role in these sophisticated maintenance

environments makes us very proud. Reducing servicing times while increasing safety is vital for depot operators and our products deliver both of these aims reliably, successfully and cost-effectively.' Work on the IEP has boosted Mechan's profile in the production of traversers and it is one of the few companies in the UK that can showcase its ability to design and build these large, bespoke installations for any size or weight of vehicle.



Mechan's traversers can be adapted to move vehicles of any size or weight



Newton Aycliffe

Hitachi's Newton Aycliffe facility in County Durham is using two 80-tonne traversers to help produce the new high speed trains for the IEP, moving vehicles between 33 tracks inside the facility and out to the test area. Without them, this sophisticated production line would have needed to be three-times longer.

Each traverser is different and the pair constructed for Hitachi was made to the client's specification. The internal unit has a special low-profile design and four-metre-long hydraulic ramps, to allow the pit to be used as a thoroughfare when the traverser is not in use. The external installation has a more conventional construction but was fitted with a canopy to protect new rail vehicles from the elements.

Despite recent interest in bogie drops and traversers, Mechan's lifting jacks remain at the heart of its operation. Vital for access to bogies, wheelsets and underfloor components, the jacks offer a reliable yet flexible way to lift a complete train without decoupling.

Boasting a design life of at least 25 years – far longer than other lightweight alternatives – Mechan's jacks will maintain a load even when power is lost. They can be modified to suit wide or tall

vehicles, moved around as necessary and configured to lift a train of any length.

In control

The firm's patented Megalink control system combines the latest technology and networking expertise to synchronise an unlimited number of jacks, while still producing a smooth and safe lift. The theoretical position of every unit in a chain is broadcast at regular intervals, so each one can make speed adjustments so precise they are undetectable to the eye, correcting any height deviations.

Megalink enables just one person to manage a lift, using a remote, full colour touch screen that displays useful data about maintenance and servicing and gives the operator a complete overview or the option to focus in on a particular jack, making it easier to diagnose faults. This commitment to innovation, build quality and safety are at the heart of Mechan's success and form the basis of all of its UK-built equipment. Thanks to continued investment in research and development, the firm's product range has expanded organically to cater for all types of underfloor lifting and handling, bogie storage, handling and replacement and vehicle component removal.

European innovations

In recent years, Mechan has looked to Europe to enhance its portfolio, forging links with a number of manufacturers that demonstrate a similar commitment to value and excellence. By doing this the company can bring a selection of third party products to the UK and Irish markets that complement its in-house capabilities.

Laser measuring is a must for checking wheel, brake disc and rail wear and Mechan represents two of the most advanced systems on the market.

The handheld CALIPRI system from NextSense uses three simple lasers to record all relevant wear parameters on wheelsets and tracks, whilst Visiona's fixed location wheel measuring device, Wheelpro, is ideal for predictive maintenance, enabling repairs and replacement parts to be anticipated and scheduled in advance.

Improving air quality and the depot environment is growing in popularity among maintenance providers looking to make cost savings through better recruitment and retention of staff. Again, Mechan has sourced a number of innovations offering clear environmental benefits, including Klein automated sandbox filling systems that use a pneumatic pipe to eliminate dust and flexible exhaust hoods from Blaschke guaranteeing the removal of diesel fumes at source.

A greener alternative to traditional shunters is also available to aid the movement of vehicles around a depot. Zwiehoff's award winning, Rotrac electric road and rail shunters are emission free, relying solely on battery power to trail loads of up to 500 tonnes.

This continued pressure to make handling equipment faster, cleaner and more efficient drives Mechan to find new ways to refine and enhance the way it services trains. By combining the best traditional engineering skills with the latest technological advances, the company is cementing its reputation as a market leader in depot maintenance and in Siemens' eyes at least, a role model at home and abroad.

Contact Mechan for further information about its standard and bespoke products.
 Tel: 0114 2570563
 Email: info@mechan.co.uk
 Visit www.mechan.co.uk

Weathering the storm

With a series of storms since November a record breaking December, the rail industry has taken a considerable beating; this article examines some of the events in the run up to 2016

December 2015 will go down in meteorological history as one of the wettest, and warmest, Decembers on record. It will also be remembered for the devastating floods in Cumbria, Lancashire, Yorkshire and Scotland. The extensive flooding of homes and businesses, loss of electrical power, major damage to roads and bridges, and of course, disruption to the rail network has caused great misery and UK businesses have incurred huge losses.

A stormy end to 2015

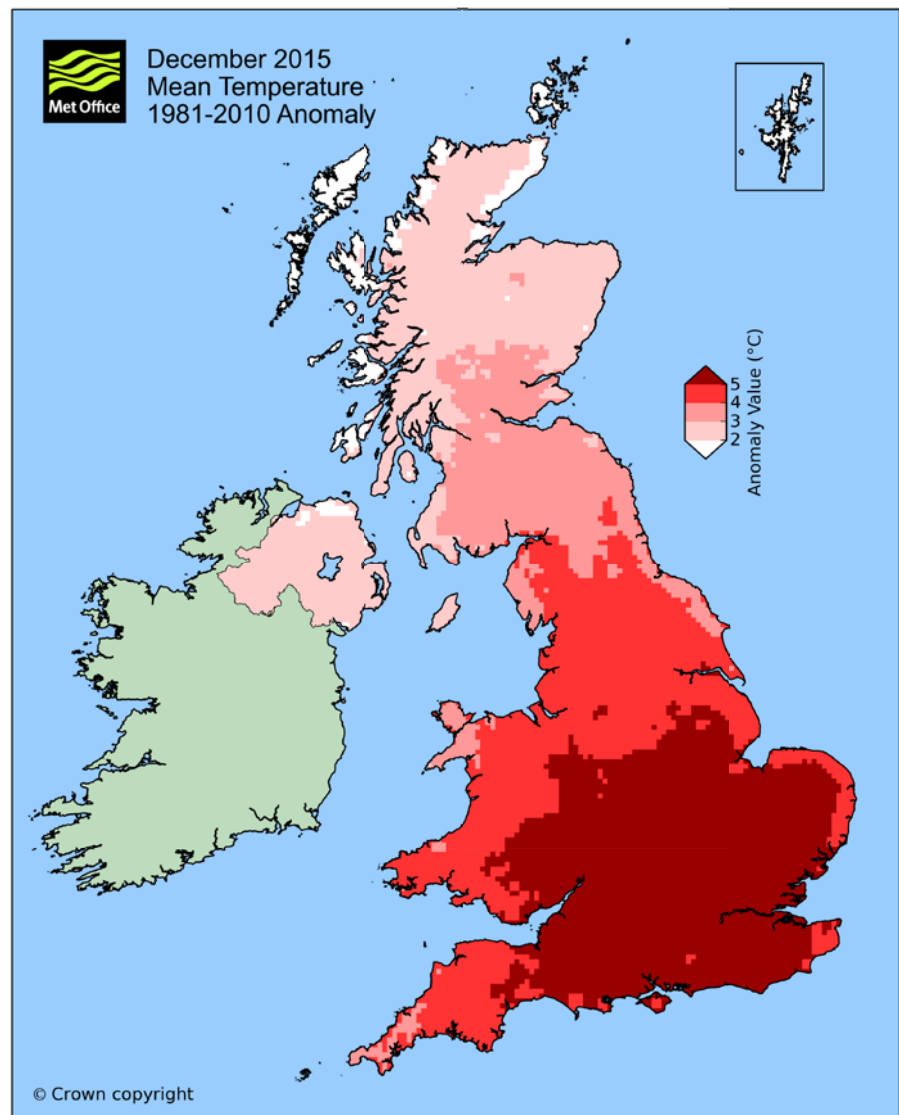
Mid-November 2015 saw the first 'named' autumn storm to affect the UK. From 12th to 13th November, storm Abigail tracked across northern Scotland, bringing gusts of 50-60 knots (Kt) in exposed coastal locations, including 73 Kt (84 mph) at South Uist, Western Isles and 70 Kt (81 mph) in Lerwick, Shetland.

This bad weather was followed by storm Barney from 17th to 18th November, which tracked across the UK with the strongest winds this time further south across Wales and central England. Aberdaron and Capel Curig (both Gwynedd) each recorded gusts of 74 Kt (85 mph).

After a brief interlude, on 29th November, storm Clodagh brought winds of 50-60 Kt in exposed coastal locations and 84 Kt (97 mph) at High Bradfield in South Yorkshire. Storms such as this are to be expected at that time of year, but were a contrast to the relatively quiet weather for much of autumn until then.

Wettest December since 1910

Storm Desmond arrived on 4th December, which brought heavy rainfall that led to widespread flooding in Cumbria and across other parts of northern Britain. The flooding resulted from some exceptionally high rainfall totals across the Cumbrian fells, exceeding 300mm and breaking existing UK rainfall records. The floods were a stark reminder to residents and businesses of the severe flooding that affected Cumbria in November 2009 and in Carlisle in January 2005. 341.4mm of rain fell at Honister Pass, Cumbria in 24-hours on 5 December 2015, a new UK rainfall record, while with 405.0mm, Thirlmere also set a new record for two consecutive days of rain (0900 - 0900 GMT).



This was then topped-off by storm Eva and, most recently, storm Frank at the end of December, which brought further heavy rain and strong winds across the UK and resulted in further flooding and considerable disruption to transport and infrastructure.

Impacts

The severe flooding was exacerbated by the already saturated ground conditions, partly as a result of storms Abigail, Barney and Clodagh. Many parts of north west Britain

had already recorded more than twice the monthly average rainfall during November. Across north west England and north Wales, November 2015 was the second wettest November in a series from 1910 – only November 2009 was wetter.

Several thousand homes and businesses were inundated with floodwater across Cumbria, with parts of Lancashire, Northumberland and southern Scotland also affected. Carlisle was worst hit by severe flooding from the River Eden, but many other towns and villages in the area

About the Met Office

The Met Office is a weather and climate service that works at the cutting edge of science and translates that knowledge and expertise into a practical and diverse range of services for governments, individuals and organisations throughout the world. Generating forecasts 24 hours a day, 365 days a year, the Met Office has been a pioneer since the late 19th century, and now as the UK's national weather service – and a Trading Fund within the government's Department for Business Innovation and Skills – plays a significant role in meeting today's economic and environmental challenges.



December 2015 was the wettest, and warmest, Decembers on record



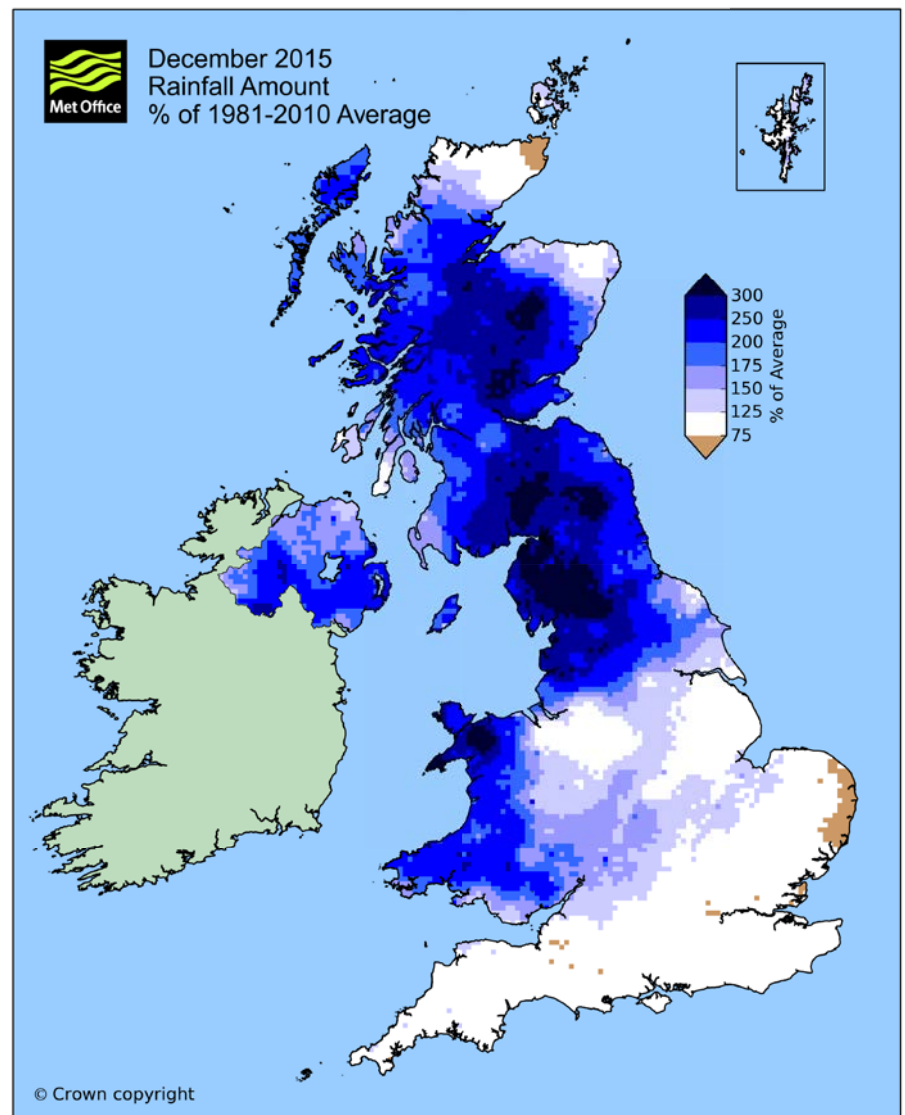
were also affected by flooding, and tens of thousands of homes across Cumbria and Lancashire were without power for several days. A number of bridges were swept away by floodwater, including Pooley Bridge, Ullswater, which was built in 1764.

Sadly, there were also two fatalities. Many road and rail links were cut, including the West Coast Main Line, and schools and hospitals were closed in the flood-affected areas. In the Yorkshire Dales, Malham Cove waterfall briefly flowed again for 'the first time in living history', according to The Yorkshire Dales National Park.

Storm Desmond caused considerable flooding problems elsewhere across parts of County Tyrone, County Fermanagh, and the Republic of Ireland. It also caused disruption with some very strong winds, gusting at 50 to 60 Kt in exposed coastal locations, but by far the greatest impact was from the flooding.

Preparing the industry for future challenges

The projected changes to the UK's climate – such as temperature increases, rising sea levels and potential increases in flooding



– could affect the resilience of the whole rail network, including track, structures, earthworks and rolling stock. Impacts could include track buckling, issues with scour and landslips as well as possible adverse health and safety impacts on railway workers and passengers.

The resilience of the UK rail network over the coming decades will depend on a range of considerations. Measures should include taking climate change into account when designing and siting new assets and reviewing existing standards and specifications to ensure their continued robustness. Effective and timely maintenance across the railway system will continue to be operationally critical and weather response plans will need to take into account the interdependencies between different parts of the railway system. While the life of a rail track was once around 25 years, this figure may well now be reduced with the increasing impacts of climate change.

To help the industry prepare, a consortium-led project named 'Tomorrow's Railway and Climate Change Adaptation' has been initiated. Phase 1 captured key

information about the GB rail network and phase 2 of the project has just been completed. This phase investigates the network's requirements for operational approaches in making cost-effective weather resilience and climate change adaptation decisions. While too early to comment on the findings, they will no doubt go some way to help transport practitioners plan for the future.

As well as the consortium, the Met Office can offer the rail industry bespoke scientific consultancy to help it be better prepared for what the future may bring. The Met Office also offers a training course specifically designed for the rail industry to help make operational decisions for better planning and resource management that could affect the safety and punctuality of travel.

Contact the Met Office for more information about its rail services
 Email: openrail@metoffice.gov.uk
 Visit www.metoffice.gov.uk/railways

Managing confined spaces

For more than 100 years, **Mines Rescue Service** has developed specialist skills, experience and knowledge gained from working in a difficult and potentially dangerous environment, to effect the rescue and escape of mineworkers from underground

Mines Rescue Service's (MRSL) employees have honed their inherent skills to provide health and safety/confined space training to industry, following National Occupational Standards. Working closely with a major rail company, MRSL has provided practical risk assessment training that has led to the company utilising MRSL for its future manual handling training.

What is a confined space?

Firstly, a confined space is not necessarily somewhere you have to 'squeeze' into. The key here is that the area would be

substantially enclosed and is *reasonably foreseeable* that it would or could contain a specified risk.

What is a specified risk?

- injury caused by fire or explosion
- loss of consciousness caused by an increase in body temperature
- loss of consciousness or risk of asphyxiation caused by gas, fumes, vapour or lack of oxygen
- the risk of drowning from an increase in the level of liquid
- the risk of asphyxiation caused by a free flowing solid or the inability to reach safety due to entrapment by a free flowing solid.

Therefore, for those who have an enclosed space with a specified risk, you must meet the requirements of the Confined Spaces Regulations 1997. It should be noted that the specified risk may not be indigenous and may be imported by the nature of the work, such as cutting, welding, grinding or even the gaseous products given off by a diesel locomotive.

Managing the confined space

A common approach for managers to manage confined spaces is to initially identify the enclosed and confined areas that they're responsible for. Having an understanding of the Confined Spaces



Bowshank Tunnel on The Border's Railway



Regulations is essential for managers if they are to identify and understand the differences between an enclosed area and confined spaces. Knowing the elements that turn an enclosed area into a confined space is fundamental to managing the hazards and risks associated with working within these areas. An example of this could be a railway tunnel; in normal use the area is enclosed but should the situation change where the work involves the production of a specified risk, this area may become a high risk confined space.

Developing a plan with the categorised confined space risks can help prioritise where resources are required. This is included not only for conducting a specific task within the space but also for entry requirements such as equipment, manpower and what detailed emergency arrangements would be required to extract someone who had become incapacitated.

Providing a suitable and sufficient risk assessment based on the INDG163 (rev4) guidance would ensure a risk-based approach is conducted. Correctly identifying associated hazards would ensure that the manager is better situated to provide the correct level of control measures, thus minimising the risk of injury. This would be the catalyst to ensure a suitable method of work is planned, which may also necessitate the need for a permit-to-work system to be in operation. It is very important that the safe system of work is thorough and includes all parties involved with the entry into the confined space.

Working in a confined space

When work is required to be conducted within a confined space, for example maintenance or repairs, the following question should always be asked: 'Do I need to enter the confined space to carry out the work?' Other methods should be looked at prior to committing workers into the confined space. These include, but are not restricted to:

- environmental monitoring – lower a monitor, draw a sample, use a probe or remote sampling
- use CCTV rather than employees.

Safe working in a confined space

If it has been established that a person must enter an area deemed a confined space, a safe system of work that identifies the risks and the control measures must be created. As a minimum, this will include a risk assessment and method of work. It may be necessary to employ the use of a permit-to-work system that is dependent on the identified hazards and risks.

Competencies of entrants must also be established prior to entry as confined spaces can quickly change from a relatively low-risk environment to one that is deemed to be high risk. Specific training concerns can be addressed if the correct level of confined space has been identified, this would be based on the recognised hazards for a particular confined space.

The correct level of training can only be provided if the manager has accurately categorised the confined space. Dependent on the type of industry, the confined space may have been identified, for instance, as per the water industry requirements, as an NC1-NC4 classification. However, many other industries prefer to use a more common approach, such as low/medium/high risk categories. The choice is with the client.

Correct selection of work equipment

Correct selection of equipment can seriously minimise the risks associated with working with tools. The atmosphere may be such that any electrical equipment is required to be intrinsically safe or tools used for digging and chopping may need to be of a non-sparking variety.

General equipment required in a confined space would be environmental monitors, some form of established communication with the outside and the usual personal protective equipment (PPE). However, specialist equipment may be required such as man-riding hoists, escape breathing apparatus and auxiliary ventilation. It is important, however, that the environmental monitor being utilised is capable of recognising the gases that have been identified as potentially present.

Simply employing a monitor that can

only sample for oxygen deficiency is not likely to afford the required protection for the entrants. A suitable example is the case of a disused railway tunnel/culvert; the atmosphere may show that the air is breathable but if silt/sludge underneath standing water is disturbed it could release hydrogen sulphide, creating a toxic atmosphere.

Emergency procedures

If employees are required to enter a confined space; there must be suitable and sufficient arrangements in place for their rescue. Very importantly, this is required even if the emergency is not brought about by a specified risk. The level of emergency arrangements will be dependent on the identified hazards and risks. It is worth noting that organisations cannot rely solely on the public emergency services as part of their emergency arrangements (ACOP 147).



With ongoing work it's a good idea for the manager to inform the relevant emergency service(s) of their individual circumstances (ACOP 160). However, the manager must ensure there is a planned method of removing a casualty(ies) and make sure an appropriate level of first aid (ACOP 159) is available.

Advanced first aid provision may also be identified, such as oxygen, pain relief and specialist stretchers. The communications adopted must be such that the emergency plan is put into immediate effect (ACOP 154). Having a dedicated rescue team positioned close to the point of entry may in certain circumstances be prudent, which would of course be dependent on the identified risks (ACOP 155).

In conclusion

On behalf of Mines Rescue Service, Bill Gundry would like to offer his thanks for taking the time to read through this information. He is happy to discuss it further should anyone require any clarification, and can be contacted using the details below.

Billy Gundry is manager at Mines Rescue Service in Kellingley

Tel: 01977 676700

Email: billy.gundry@minerescue.com

Visit www.minerescue.com

All the right signals

NuAspect celebrates ten years of providing technical consultancy and project delivery services to the rail industry

NuAspect started out as a railway signal engineering company and consultancy business in 2005, providing signalling resources to London Underground and its supply chain. It has supported the delivery of many major resignalling projects including the Victoria, Jubilee and Northern line upgrades, Neasden depot upgrade, as well as modifications to legacy signalling to enable the introduction of S Stock trains on the Underground network.



The Northern line upgrade programme

Photo by Kim Rennie

Since 2005, NuAspect has developed its capabilities across many aspects of railway engineering in terms of the services it provides, the scope of assets it covers and its client base.

The company now provides specialist technical and management resources and services for railway consultancy work and project delivery throughout the asset life cycle. These include railway asset management, bid management, project delivery and management, multidiscipline project engineering, signalling installation and testing supervision, logistical and access planning, signal testing and commissioning, maintenance management, and railway incident investigation and reporting.

Technical consultancy

NuAspect's technical consultancy has developed into a multidiscipline rail engineering and asset management capability that supports the development and delivery of projects, feasibility studies and scoping for tenders. The company is also involved in bid management, domain health and safety advice and independent incident investigation and reporting. In addition to specific signalling advice and input to London Underground projects, NuAspect now has detailed



knowledge and expertise on tramways through their involvement with London Trams and Manchester Metrolink.

'NuAspect has provided two comprehensive incident investigation reports for London Trams in the last year. On both occasions NuAspect was able to source specialist engineering experts to provide independent technical advice at short notice. Both reports were delivered on time and came with well thought out recommendations,' said Tom Breen, health, safety and environment senior manager at London Trams.

'Throughout London Trams busiest phase of construction since the network was opened in 2000, NuAspect has supported the London Trams' safety and projects team with specialist staff to ensure on-site safety compliance. London Trams projects have been delivered without any major injuries or serious accidents.'



NuAspect has provided two comprehensive incident investigation reports for London Trams

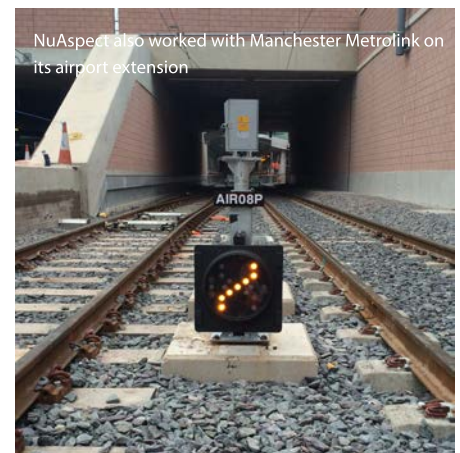
Project delivery

Signalling and control system projects are complex by their very nature. They require detailed planning and design to address not only the high safety integrity level standards demanded within the signalling discipline, but also the integration with other assets, legacy systems and operational requirements.

In addition, the demands to demonstrate economic and efficient delivery, as well as optimum whole-life cost, add pressure to project teams to choose, design, plan and implement

signalling systems in the context of the railway as a whole. In doing this it requires the teams to have knowledge of systems engineering, systems integration, risk management, asset management and operational management, as well as their core project and technical skills.

NuAspect has provided all of these skills through the provision of technical support, project resources and/or guidance and mentoring to existing project teams, to successfully deliver signalling systems in demanding circumstances.



NuAspect also worked with Manchester Metrolink on its airport extension

The future

NuAspect is developing collaborative working relationships with other specialist SMEs to build capabilities that can collectively provide efficient delivery-focused services to major rail infrastructure projects in the UK, including the Four Lines Modernisation (4LM) programme on London Underground, Crossrail, HS2 and the Northern line extension. This will build on the company's current capabilities in supporting the delivery of projects for LU, London Trams and Manchester Metrolink.

NuAspect is also developing its technical and management consultancy services to extend the provision of specialist engineering, health and safety and railway engineering management advice, capability and domain knowledge to new clients.

Tel: 0207 1010800

Email: enquiries@nuaspect.co.uk

Visit: www.nuaspect.co.uk

Making the switch

pbh rail has experience with all types of multidisciplinary services through all GRIP stages, including switches and crossings, remodelling, depots, platform rebuilds/ extensions, plain line and high output renewals

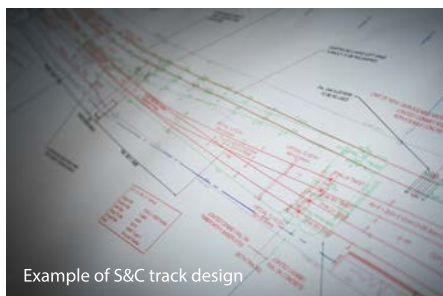
With the demand for a skilled workforce across all disciplines at a premium, pbh is committed to working closely with framework providers to give support across key areas, ensuring projects are delivered safely, efficiently and to the specified remits.

pbh rail has been established for 12 years and is fully RISQS (formerly Link-up) approved for survey, permanent way and overhead line equipment (OLE) design and consultancy. This enables an innovative, focused approach to the management of railway projects.

Rail

The company's permanent way team has an extensive knowledge base and the right industry skills earned through years of practical experience and training. It provides permanent way services for a number of different schemes:

- plain line renewals and S&C (switches and crossings) renewals/abandonments
- track removal/reinstatement associated with bridge renewal schemes
- platform refurbishments and extensions
- track enhancements
- gauge restoration projects
- track gauging analysis reports
- track renewals using the high output track relaying system.



Example of S&C track design

OLE

In 2014, pbh expanded its track division to incorporate OLE. Within OLE the company can provide a complete professional service that offers:

- GRIP (Network Rail's management and control process for delivering projects on the operational railway) 1-3 feasibility and option selection

- GRIP 4 outline design:
 - > site surveys
 - > OLE condition assessments
 - > major feeding diagrams
 - > section diagrams
 - > power feeding diagrams
 - > heights and stagger analysis
- GRIP 5 detailed design including:
 - > wiring layout design
 - > cross section production including structures, bridges and switching
 - > bonding plans
 - > isolation documentation updates
 - > material bills of quantity
 - > construction methodology and planning
 - > testing and commissioning documentation
 - > section proving - independent test engineer
- basic design production including foundations, main steelwork and SPS (small part steelwork)
- support services include:
 - > technical specifications
 - > in-house expert CAD services
 - > site construction support
 - > handover/handback



Example of Series 2 OLE designed by pbh rail

Survey

To complement pbh rail's track and OLE disciplines the company has a dedicated specialist survey team operating throughout the UK.

All lead surveyors hold a minimum of COSS/SWL competency, with a high percentage of staff qualified as protection controller and engineering supervisor, and the company's team provides the full spectrum of survey support services. pbh has a wealth of knowledge and experience within the survey team that enables it to plan, manage and execute surveys to maximise the tight time constraints on the railway, ensuring 'right first time' delivery.

The team is experienced in the delivery of coordinated survey data tied into local, national or bespoke railway control grids and can cater for surveys ranging from 300 yards to over 100 miles in length.

Services include:

- in-house planning
- control networks
- coordinated topographical track surveys – detailed S&C surveys
- 3D high definition laser scanning
- overhead line height and stagger surveys
- gauge clearances surveys
- datum plate surveys
- Global Navigation Satellite System (GNSS)
- in-house data delivery team.



Laser scanning at KEB Newcastle



PBH Surveys setting out at KEB Christmas 2015

Contact pbh rail today to discuss the timely and cost-effective delivery of your requirements.

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Surveying

Email: matt.chilton@pbhrail.com

Tel: 07487 717 900

Visit www.pbhrail.com

Working in Xtremes

Extreme conditions bring a range of challenges for rail operators to keep their components and systems operating. **Parker Hannifin** outlines some key considerations when selecting pneumatic solutions for extreme environments

Modern railway vehicles, whether passenger or freight train, metro car, track maintenance or tram, are expected to always operate and be reliable; often in some of the most challenging conditions. Indeed, it's crucial that these machines withstand extreme temperatures, attacks from aggressive contaminants as well as an ability to endure severe shock and vibration. It is a fundamental design prerequisite to ensure that the engineering technology selected is robust, dependable and delivers long-lasting reliability.

With extremes of weather come extreme challenges, from ice forming on rolling stock to equipment contamination from dirt – both of which contribute to unnecessary friction and increase the power required to deliver motion control. Maintenance technicians must be ready to deal with what happens when freezing conditions occur or when extreme pressure and temperature differentials create the potential for condensation, humidity and moisture within control systems. However, the correct selection of pneumatic equipment by vehicle manufacturers can significantly improve performance.

Manufacturers need to engineer vehicles designed to operate within these extremes. Traditionally, one approach that can be adopted is to place systems, or elements of systems, within cabinets that can then be preheated to create their own environments. This involves getting the train 'on power' to enable that preheating. To do this it may be necessary to turn preheating systems on around an hour before the systems and components achieve their operating temperature, introducing a potential delay to the vehicle schedule.

Environmental extremes

In modern rail travel train operators are looking for solutions to enable them to utilise a train immediately whenever and wherever they want – the traditional option is becoming less attractive. Additionally, a vehicle manufacturers' drive is not to increase cost but to use, wherever possible, readily available standard products that are suitable for



Viking Xtreme valves can operate in temperatures from -40 oC up to +60C



available. Having straightforward and modular solenoid valves and air cylinders help to make replacements an easy plug-in process.

Pneumatic product performance in extreme environmental conditions is also dependent on the quality of air being supplied. Parker also supplies air filtration and complete filtration and dryer packages for the rail industry, which have the capability to provide air to NF F11-100 air quality standards.

Complete system approach

In conclusion, the selection of the most appropriate pneumatic components contributes to a reduction in required maintenance activity and enhances life cycle costs of both equipment and vehicles. When considering the best solution, utilising a complete system approach – from air treatment through to components designed for extreme environments – promotes a long and reliable performance from each of the system elements.

Choosing from Parker’s range offers the additional significant benefits of availability of standard component ranges that can be integrated into existing systems. It also gives the peace of mind that comes from partnering with a reputable company with a proven track record.

Parker Hannifin is a global manufacturer that offers an extensive range of robust and durable pneumatic, fluidic and electromechanical motion control solutions. With more than 40 years’ expertise and experience of supplying products to the rail industry, Parker provides its customers with a wealth of product and application knowledge.

Contact Parker to see the benefit of working with the company’s transportation team; ready to respond to performance, application, cost, weight and space challenges.

Authored by Dave Walker, Parker Hannifin’s market development manager for rail
 Email: rail@parker.com
 Visit www.parker.com

frequently encountered environmental extremes.

Rail system suppliers now have to build to a specification that requires components to withstand -40 oC and beyond. For certain geographic areas with extreme environments, notably Russia and Canada, operating temperature ranges and storage temperatures can dip well below -50 oC, so selecting pneumatic components designed to cope with this is vital to ensure productivity is unaffected.

Parker designs and engineers its products to consider both extreme environments and how to meet relevant international standards. Specifically tailored for the demands of the rail market, products are manufactured to satisfy needs such as wide voltage tolerance, humidity extremes and are compliant with shock and vibration, IEC 61373:1999 Cat 1 Class B (shock and vibration).

Viking Xtreme

The Viking Xtreme range of pneumatic valves is a great example of a standard product range that can still deliver results in temperatures from +60C down to as low as -40 oC. The Viking Xtreme hard-wearing valves have also successfully passed in-service ‘winterisation’ tests, which demonstrated the valve’s effective operation when rapid temperature changes were applied to simulate thermal shocks from entering and leaving tunnels in cold environments.

Parker Xtreme valves are ideal for use in braking, coupling control, freight discharge systems and door control applications, as their low temperature capability gives the freedom to position control cabinets without the usual restrictions determined by adverse weather. With simplified integration and easier maintenance, Viking Xtreme can contribute to savings in overall installation costs.

P1D-X range

Alongside the Viking Xtreme valves, Parker also offers its P1D-X range of cylinders that, along with adhering to ISO15552, demonstrate proven capability from -40 oC up to +150 oC. The design combines features seal technology that provides low temperature pneumatic cylinders delivering high reliability, low leakage and long service life. The seals are specifically engineered for low temperatures and are designed for optimal performance when operating at -40°C to +80°C, due to the material retaining its elastic properties even at extremely low temperatures.

Available as standard production units, these extreme cylinders and valves are suitable for various applications and are readily available for maintenance or for direct replacement of existing components. With the population of skilled maintenance technicians declining, those that remain need components that are easy to use and easily

Where great minds come together

RDG Engineering is a civil, structural, temporary works, special access and mechanical engineering consultancy with over 30 years experience. We provide a wide range of engineering design, project management and advisory services spanning across various commercial and industrial sectors. Projects range from small temporary works to major construction and refurbishment schemes as well as major industrial and mechanical handling facilities.

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A powerful solution

PB Design has provided standby power systems for the rail industry for more than 35 years. Its portfolio includes batteries, chargers, UPS systems and system services for all AC and DC standby applications and is typically used to ensure continuity of power for track control systems

PB Design & Developments's reputation is built on quality. The first large-scale project the company was involved in for the rail industry was the construction of the Jubilee line in 1979 and since then, thousands of battery charger systems have been supplied for rail applications in the UK and internationally. The company has also supplied tens of thousands more for similar applications in industries that include electricity generation and distribution, telecommunications, processing, and commercial projects.

Standby power for railway track control is the backbone of PB Design's business, specialisation that has helped it to shape a unique corporate identity. The rail industry expects very long life cycles for infrastructure equipment. In the first instance this demands that the company's power standby systems have to be designed to be manufactured to the highest standards and extremely reliable. However, the longevity of systems, and the long-term support that this necessarily entails, also serves to influence the way that PB Design interacts with clients.

Building its knowledge base

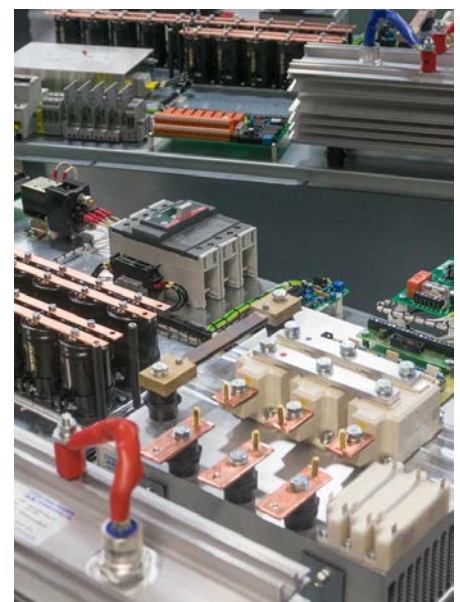
When dealing with applications and clients with such needs, a company can



only succeed if it gets repeat business. This has led to the development of a company philosophy where PB Design strives to build its knowledge base of end users' needs, in order to create better equipment that delivers long-term, trouble-free service.

This does not mean just meeting the standards that govern power standby equipment for rail applications. That is the bare minimum for suppliers. What PB Design tries to achieve is the provision of a layer of additional functionality and ergonomics beyond those specifications. This target manifests itself in a unique handbook of additional design and manufacturing specifications that PB Design has created. It represents the feedback of railway end users gained over more than three decades – gathered during factory acceptance tests and from end-user feedback.

Viewed in isolation, many of these added-value specifications are quite minor, such as preferences about front panel layout and labelling, locks and shielding. However, there are also many other preferences such as the way a charger operates when batteries are not connected and the avoidance of particular materials that represent



Design for reliability is a key facet of PB Design's approach. If used very carefully and operated conservatively, its standby power system components will work well within their performance limits

a potential hazard. When combined together, the feature set adds a valuable layer of added functionality that works



PB Design has produced tens of thousands of battery charging systems since its inception



to optimise performance throughout the system's operational lifetime.

Another facet of PB Design's approach is a focus on design for reliability. The company selects components very carefully, always operating them conservatively and well within their performance limits. PB Design is regularly asked to verify the performance of proposed equipment by producing computerised statistical evidence on both reliability and maintenance. This is something that the company can demonstrate theoretically, as well as by the real-life operational records of its equipment dating back more than 20 years.

Anticipating trends

The power standby equipment market for rail applications relies heavily on standards, and changes to these are the stimulus for most design upgrades.

However, PB Design has a history of initiating its own R&D projects alongside the necessary standards and applications-related work, ensuring that the company can play a leadership role in the evolution of the industry.

One current example is the development of new battery charging systems based on purely digital control techniques, which is happening in collaboration with the University of Reading's School of Systems Engineering, with financial support from the Knowledge Transfer Partnerships programme (KTP). KTP aims to help businesses to improve their competitiveness and productivity through the better use of knowledge, technology and skills that reside within the UK knowledge base. KTP is funded by Innovate UK along with the other government funding organisations.

A lot of the battery charging systems

that PB Design currently supplies to the rail industry are thyristor-based, which sit well with the industry's traditional long asset life expectancy. However, more and more users are starting to adopt switched-mode power supply-based chargers, which are considerably more efficient and smaller, but which have lower life expectancies.

PB Design surveyed both thyristor and switched-mode power supply users about their experiences, their design choices and what they would like to see in an ideal world. This research project is the result of these users' expressed requirements. Among the features of a proposed new generation of chargers will be high charging efficiencies when charging only a fraction of the 100 per cent system's target maximum load – a realistic picture of many real-world rail applications. Another key goal is increased life expectancy, which is being achieved by switching designs that impose less stress on their components.

Another generic design project currently underway is the provision of a smarter controller for battery charging systems, with more sophisticated alarm logging and communications capabilities. This is designed to help rail network controllers to anticipate problems and deal with faults more quickly and easily. The unit records all test and alarm information, providing the basis for predicting battery failures and lifetimes. Information can be stored locally – and accessed locally via a simple interface – or be communicated to a remote supervisory system. The first commercial version of this system is currently undergoing a long-term beta trial in the UK.

Corporate structure

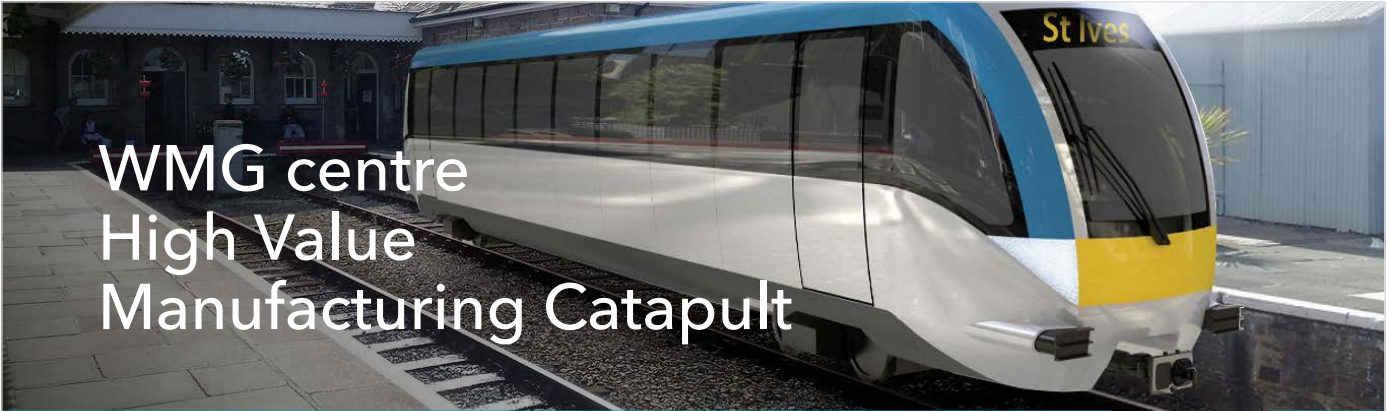
Finally, PB Design's focus on designing systems with long life cycles also has implications for the corporate structure of the company. How does any company assure its users that the company will still be around in 20 years to maintain and evolve equipment? No company can guarantee that of course, but PB Design has recently taken steps to put the company on a sound footing that is designed to foster successful generation-to-generation evolution – by becoming 100 per cent employee-owned. Motivating and empowering people who possess extended experience in designing, producing, applying and supporting power standby systems – and above all retaining them in the business – is a key goal of the ownership change.

Authored by Mark Crocker, managing director at PB Design & Developments

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Positive business

Hoppecke manufactures and services reliable power management solutions that keep trains moving, while also slashing maintenance costs

Hoppecke Industrial Batteries can provide the right battery for any application, whether nickel-cadmium (NiCd), nickel-metal hydride (NiMH), lead-acid or, indeed, lithium-ion (li-on). Across the globe, Hoppecke supplies a wide range of power management solutions for overground and underground rail networks. In the UK, Hoppecke's battery systems are used in around half of all rolling stock.

Siemens, one of the world's biggest manufacturers of rolling stock, uses Hoppecke batteries in nearly 75 per cent of its trains internationally, and in the UK the figure is nearer to 90 per cent. Hoppecke is also a preferred supplier of railway battery systems to train manufacturer Bombardier, with around 50 per cent of the company's trains – both in the UK and worldwide – fitted with Hoppecke batteries.

Paul Butchart, national sales manager, special and reserve power systems, at Hoppecke Industrial Batteries, said: 'A major reason that Hoppecke's batteries are considered to be the ideal choice for modern-day high-performance trains is that they're based on fibre structure nickel-cadmium technology (FNC), which was invented by Hoppecke and introduced to the world in 1983.'

Age-defying electrodes

A key feature of these batteries – of which more than 2.5 million have been supplied to date – is that their electrodes have a conductive nickel matrix, which means the electrodes won't age and the electrolytes will never need replacing. Furthermore, no other NiCd technology is better-suited for the production of special formats than the fibre structure

technology. Its enormous versatility enables Hoppecke to meet many individual customer requirements. Other features of Hoppecke's FNC cells include high cycle stability; low water consumption; maintenance intervals of up to two years; the ability to be 'cycled' more than 3,000 times; and a typical operational life of up to 20 years.

As well as FNC battery cells, the systems that have been delivered by Hoppecke include carriers or trays, a battery box or container, and electrical components such as fuses, switches and diodes that sit within the battery box or in a separate 'e-box'. Hoppecke has also provided chargers that can be installed inside or outside the battery box and an optional water refilling system.

Backed by this unique technology, combined with the ability to create sustainable energy solutions designed around each customer's requirements, Hoppecke continues to deliver low voltage power supply (LVPS) systems to some of the UK's largest rail networks.

Transport for London

Transport for London (TfL), the body responsible for most aspects of the capital's transport system, has recently commissioned Hoppecke Industrial Batteries to deliver a full overhaul, refurbishment and replacement programme for its on-board battery systems that operate on London's Jubilee and Central lines.

The Central line's rolling stock was built in 1992 and in mid-2015 Hoppecke was commissioned to check all 350 batteries that it previously installed, ensuring they were operating at the required level. This involved testing the battery cells and either overhauling them or replacing them with new units (and

Paul Butchart, national sales manager, special and reserve power systems, at Hoppecke Industrial Batteries



recycling the old) where required.

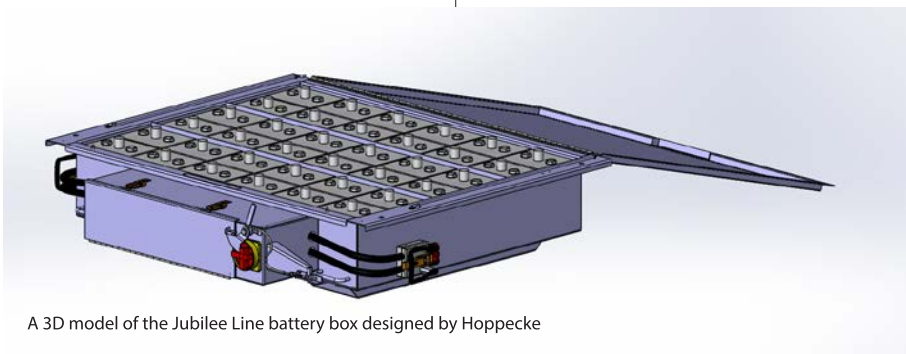
On the Jubilee line, where 118 Hoppecke batteries are in operation on rolling stock built 20 years ago, the contract involves not only checking and replacing the batteries but also upgrading every battery box to meet current standards. Following development of the new box's design, the first are due to be fitted from February 2016.

The overall contract for the Jubilee line train batteries and newly-designed boxes is valued at around £750,000. Upgrading the battery boxes is absolutely essential to the efficient running of this branch of the London Underground network, as well as ensuring the safety of personnel responsible for maintaining the batteries.

Efficient and reliable

The primary focus of the TfL contract is to upgrade rather than replace equipment, so Hoppecke has been working closely with TfL's engineers to address identified technical issues and deliver a much more robust box that is efficient and reliable. When checking batteries they must all undergo a capacity test. If battery capacity is under 90 per cent it has to be replaced, but if capacity is greater than 90 per cent the battery can be used for another 12 months, after which its capacity will be tested again.

If a Tube train stops in a tunnel due to any issues with the on-board battery, it can cost TfL millions of pounds and cause travel misery for thousands of passengers. When it comes to maintaining the



A 3D model of the Jubilee Line battery box designed by Hoppecke



A Hoppecke engineer working on FNC train batteries

batteries, it's much better if the batteries do not need to be removed from the train. It's for this reason that Hoppecke's new battery box design incorporates sliders similar to those used in filing cabinets, which speed up battery maintenance while also addressing all relevant health and safety issues.

Thameslink

Hoppecke has also recently won an order to provide energy management solutions to Thameslink, the 140-mile mainline railway service that runs from Bedford to Brighton via the capital, serving London Gatwick and Luton airports. The Desiro City trains are built by Siemens and all after-sales support, spare parts and warranty support services are to

be provided by Hoppecke Industrial Batteries.

What makes this contract so revolutionary is that the Desiro City train does not just use a battery fitted into a box as in most trains. Instead, the box incorporates chargers with switches and an electrical distribution system built in, ensuring power is distributed to where it's needed. With far more electronics in a battery box than ever before, Hoppecke's expertise in delivering complex and innovative, yet highly functional and cost-effective, solutions was crucial.

The heart of the Thameslink 108V power system is the Hoppecke rail power VR lead-acid battery with gel-ESS battery technology, which is patented based on grid electrodes and a fleece separator. This

technology possesses all the advantages of AGM (advance glass mat) batteries and those of gel batteries with an expected service life of six years. The battery tray is made of S355 steel, comes with a paint finish and is connected to the container by C-rails, enabling the tray to be pulled out to one side for maintenance purposes.

'Both the TfL and Thameslink contracts once again underline our capabilities as a leading solutions provider to the rail power sector,' said Jason Howlett, managing director of Hoppecke Industrial Batteries.

'Whether we're working with FNC or lead acid batteries, our systems are recognised by the biggest names in the business for their reliability and value for money and we're delighted to have been invited back to deliver what are some of the most complex and advanced rail transport power management systems in the world.'

'Hoppecke's versatility, which enables us to manufacture battery cells to any requirement and specification – and any shape and size – is unrivalled. Major players in the rail industry appreciate our capability to deliver bespoke power management solutions to fit virtually any application.'

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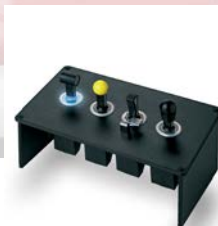
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Solid foundations

For nearly a century **Rawlplug** has been known for its products and technical expertise within the building and civil engineering industry, with its heavy-duty anchors specified for safety-critical applications on many major projects

Rawlplug is approved by London Underground and Network Rail. Its technical personnel liaise with construction professionals on a daily basis, ensuring that the most appropriate anchoring solutions are selected and that future product developments reflect the trends within the industry.

Rawlplug's focus is on delivering the highest quality products cost-effectively. Wherever its products are purchased in the world the quality remains consistent, enabling engineers to specify with confidence.

Whether specifier, contractor, distributor or a user of Rawlplug's products, the company is available for free advice in addition to site testing, product training and technical seminars.

Rawlplug was founded in the UK 97 years ago and today is one of the best known brands in the construction, trade and DIY industries. Its growth and developments, particularly in resin technology, has been significant and the Rawl range now includes three methods of resin delivery: capsule, cartridge and foil sausage.

Consider the range of structures that engineers and contractors have to work with and fix into: new and old, low and high strength, solid and hollow, overhead and horizontal, deep and shallow embedment, dry, dusty and damp or saturated substrates.

Rawlplug now offers a range of approved façade and roofing insulation fixings, self-drilling screws and direct fastening systems, which complement the company's existing products. All its products are fully supported by approvals, test data, and experienced engineers who can provide site testing and solutions for all applications.

Rawlplug's 2016 Design and Specification Guide and Design software is now available, covering the full range of anchoring products on offer from the company.

Latest product developments

Rawlplug has recently launched a new high performance mechanical anchor, SafetyPlusII, which has Option 1 ETA for

cracked concrete and seismic approval C1 and C2, the latest in a long line of innovative products from the oldest fixing company in the world. Full details on these, and all the products available, can be found in 2016's Rawlplug's Design and Specification Guide. The company also has a new, high quality concrete screw anchor that will be launched in 2016.

With recent developments of the Rawlplug R-KEX II Pure Epoxy cartridge system and the R-KER Vinylester cartridge system – both with ETA Option 1 for cracked concrete – and the CFS foil system, the range is comprehensive. These products can also be used overhead.

The new, environmentally friendly R-CFS is a cartridge-free system where the resin is contained in a foil sleeve. Three types of resin are available including Vinylester styrene-free and polyester styrene-free, depending on

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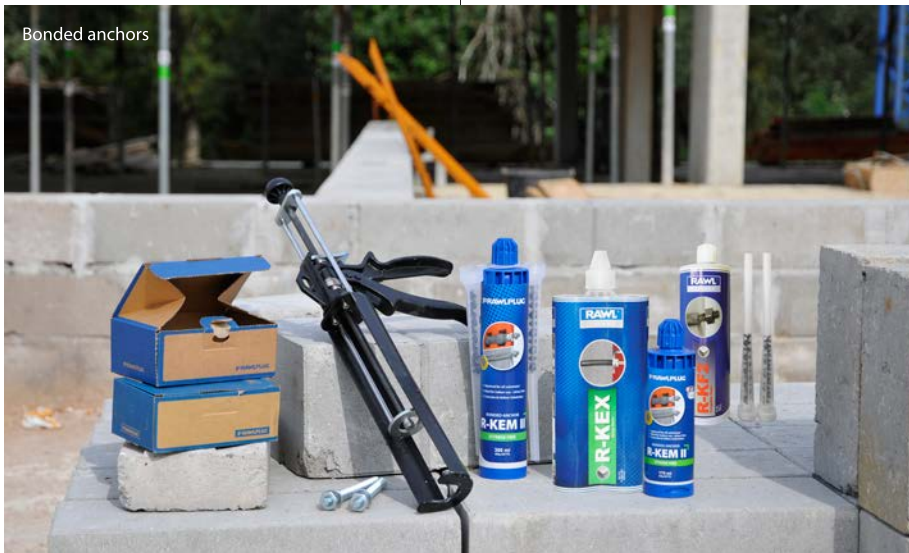
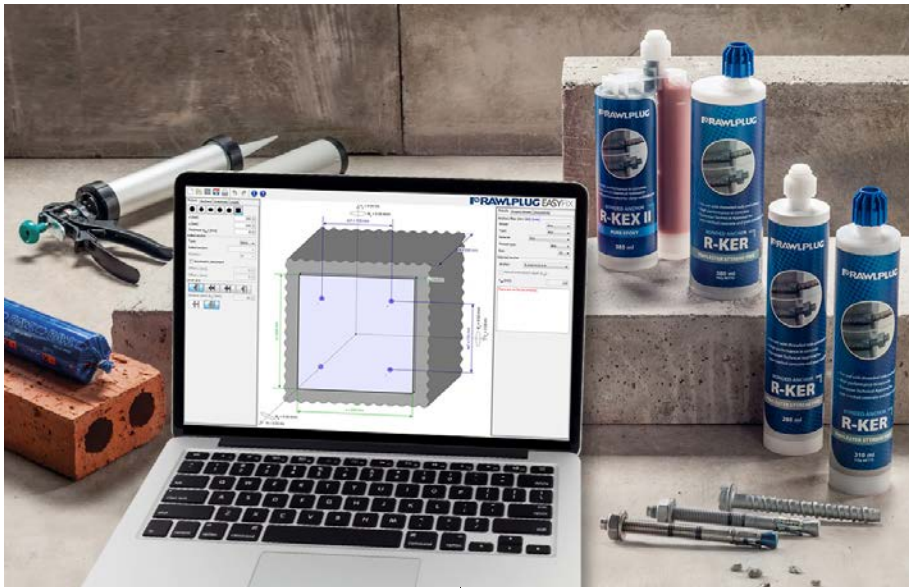
loading and structural requirements. It's an economical system due to the fact no plastic cartridge is required, so waste material is insignificant. A new improved gun is available that is easier and more comfortable to use.

Resin

Rawlplug's other recent development is a low temperature resin. The current R-KER Vinylester, styrene-free, 380ml cartridge system operates down to -5 °C, however, the company has now created R-KER-W, which can be used down to temperatures of -20 °C. With reduced curing time, R-KER-W is ideal for use as a fast-cure resin in warmer temperatures.

R-KER and R-KER-W are high strength resins that give maximum loads in concrete when used with threaded





Bonded anchors

studs or rebar. Embedments can be deeper to increase load capacities, and pumping is easy due to the resin's consistency.

Bonded anchor

Finally, there is the R-GAS Capsule system, the original bonded anchor that consists of glass capsule, resin, quartz aggregate and hardener. The capsule is placed in the hole (only for solid structures) and the stud is connected to a drilling machine and drilled through the capsule to the bottom of the hole, mixing all the components as it goes. This is a high performance system that cures quickly with absolutely no waste materials or pollution, even working well overhead.

For applications involving Rebar, the R-HAC Hammer Capsule is an easy solution. To install, simply drill the required hole, drop in a capsule and hammer the rebar in by hammer. For multiple capsules use a hammer action drilling machine.

Also included in the mechanical anchor range are SafetyPlusII, R-HPT

and R-XPT Throughbolts; the original Rawlbolt (now with Option 1 European Technical Approval); the general purpose Rawlok sleeve anchor and two types of Wedge Anchors, both with ETAs used especially for mechanical and electrical services.

Construction Fixings Association

Rawlplug is a founder member of the Construction Fixings Association (CFA), the body that represents major fixings suppliers in the UK. All full CFA members are committed to providing technically proven products manufactured to recognised quality assurance procedures. The products are backed up with comprehensive technical support services including performance data, anchor selection software, application advice, on-site testing and training in the correct use of Rawlplug's products.

The CFA is directly involved in the development of European and British standards, contributing to the development of European guidelines for the technical approval of anchors. The

CFA also ensures best fixings practice by publishing a series of free guidance notes. The notes include articles, news and technical advice and are available to download from the CFA website.

Technical Advisory Service

Rawlplug's specification team provides a complete package of technical support, from the design stage of a project to its completion. Provided nationally, Rawlplug's service involves the recommendation of an appropriate product taking into account the structure, life expectancy, location, load applied, and other related criteria.

The company is pleased to check the design and specification of any product from lightweight fixings to heavily-loaded safety-critical anchors. This ensures that the correct specification is written for any product and includes the required safety factors to ensure that the anchor works satisfactorily throughout its product life.

The company's technical advisory service, based in Glasgow, can be contacted from between 9.00am to 5.00pm and provides information, technical data and samples. It can also arrange for an engineer to visit offices or sites.

Technical seminars for all specifiers, including structural, civil and mechanical engineers, are conducted during lunchtime and subjects include the correct selection of mechanical and bonded anchors, with reference made to applications and case studies. Rawlplug also provides some details on its design software and new technical data. The seminar can be conducted for any number of people, is normally carried out at the clients' premises and focuses on relevant topics.

Rawlplug's newly-refurbished training centre in Glasgow enables groups of up to 12 people to be trained on the correct methods of installation and provided with technical knowledge and applications across the range of products.

Field engineers

Skilled professional technical engineers cover all of the markets that Rawlplug operates in and are available to offer fixing advice at company offices or building sites. The company's team of field engineers has many years of experience and offers a complete technical support service that includes:

- advice on anchor selection, usage and application
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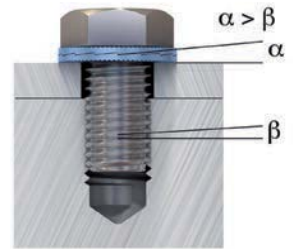
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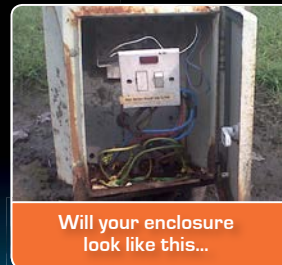
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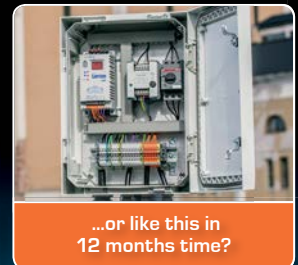
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Catering for the industry

Rail professionals get on track at the World Travel Catering & Onboard Services Expo

Set to reach new heights for its fifth anniversary, the World Travel Catering & Onboard Services Expo (WTCE®) returns to Hamburg on 5th-7th April as part of the Passenger Experience Week 2016. The exhibition will offer a unique platform for professionals from across the rail and air industries to meet more than 300 industry suppliers; source the latest products for travel catering; see the latest on-board retail and passenger comfort innovations; attend a wide range of networking events and view demonstrations from world-class chefs.

According to the latest World Travel and Tourism Council (WTTC) forecast, travel and tourism will grow by 3.7 per cent worldwide this year, exceeding a global economic growth forecast of 2.9 per cent. The WTTC predicts the sector's total contribution to the world economy will reach around £5,458 billion, or 10 per cent of global GDP, and travel will account for around 9.5 per cent of all jobs in the world.

For railway operators looking for a 'total railway catering solution' on trains, WTCE offers the ideal place to discover the latest in menu and product development, purchasing, logistics, onboard restaurant, café services and much more.



There will be live demonstrations from world-class chefs at this year's World Travel Catering & Onboard Services Expo

Global representation

Highlighting the ever-growing importance of onboard hospitality across the rail network, the International Rail Catering Group (IRCG), the trade association for the rail catering industry, will take its first stand at WTCE in 2016. The association, which has railway catering operators among its members that include Chef Express (Gruppo Cremonini), DB Fernverkehr AG, Elvetino and Rail Gourmet (SSP Group), recognised the benefits of exhibiting as the show focuses on some of the best in travel catering innovation.

Roger Williams, chairman of the IRCG, said: 'With an increasingly competitive modern-day travel environment, passengers are now looking for a catering service that fits in with their lifestyles, as well as trends for the wider use of smart technology for pre-ordering meals, on-board ordering apps and easy payment solutions like contactless.

'Now celebrating its fifth year, WTCE has established itself as an international hub where the rail and airline elite come together to discover the travel catering and onboard services industry's most significant trends and innovations.'

With industry experts sharing their insights on the rail industry, visitors will discover how to attract and cultivate



loyalty among new customers, boost profits and gain a competitive edge. Set to provide a thought-provoking presentation in the Taste of Travel theatre, David Small, rail chef consultant to the rail catering industry, will demonstrate how to cook up the perfect meal for passengers in first class. Visitors will also have an opportunity to explore new concepts and gain practical tips on embedding innovation into their rail businesses.

'A new focus on products'

'We have noticed a real increase in rail operator attendance at WTCE so are delighted that the IRCG will have a stand, and with speakers such as David Small, who will join us for our fifth anniversary show, will see an increased emphasis on the rail industry,' said Danielle Wolstencroft, WTCE marketing manager.

'Deutsche Bahn, Virgin Trains and Rail Gourmet will be among those attending the show and we're pleased to present a new focus on innovative products that are suitable for the rail industry, many of which will be featured on the 2016 'Rail Trail'.

'The fifth anniversary show is set to be the best yet with our biggest-ever focus on the rail industry, a more diverse exhibitor base and top industry speakers who will shape the future of rail catering and onboard services.'

Registration is now open for the World Travel Catering & Onboard Services Expo 2016.

Please visit: bit.ly/1XVNQmR and register today for the fifth anniversary show.

Visit www.worldtravelcateringexpo.com



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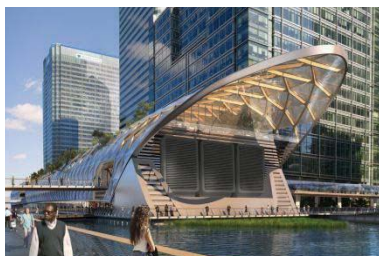


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ETCS: the future of signalling

The European Rail Traffic Management System (ERTMS) standard aims to establish rail network interoperability and ease cross-border operation. Alstom's signalling business, **Signalling Solutions**, explains

The European Rail Traffic Management System (ERTMS) initiative, launched in the early 1990s by the European Community, has now been adopted by more than 40 countries, many of which are outside Europe.

ERTMS is composed of the ETCS (European Train Control System), which is the control-command system, combined with GSM-R, the radio system for voice and data communication. Levels 1 and 2 have been implemented by suppliers while the specification of Level 3 is being finalised. The ERTMS standard allows train operators to install 'trainborne' ETCS equipment in their fleets and infrastructure managers to install trackside ETCS equipment on railway lines.

Worldwide, eight out of ten trains in revenue service operating in ETCS Level 2 use Alstom's European Vital Computer (EVC). As a result, major railway companies have selected Alstom's EVC to verify interoperability with other manufacturers' trackside systems. The Alstom EVC:

- allows optimum life cycle cost
- employs a fault-tolerant platform based on a two-out-of-three principle, allowing it to operate with one channel in default and thus ensuring the system's high availability
- is designed for easy configuration and adaptations for national specifications without compromising ERTMS compatibility.

The EVC is customised by data configuration without any software development for fast and easy upgrade of the installed base.

Alstom and ETCS

Alstom's signalling business, Signalling Solutions Limited (SSL), has been awarded the first retrofit contract in the UK for the installation of ETCS Level 2 Baseline 3 on passenger rolling stock.



Class 313 integrated desk with single 10" DMI.

There are currently several opportunities for the installation of ETCS in rolling stock across the UK passenger and freight fleets. The installation roll-out follows the planned installation of ETCS on the infrastructure starting with Great Western Main Line in overlay followed by the East Coast Main Line without signals after 2020.

Alstom Atlas Level 2 was put into operation ten years ago on the Rome-Naples high speed line. In addition, the Atlas solution has nearly a decade of in-service experience on the Betuweroute freight line (Netherlands to Germany) and on the Mattstetten-Rothrist (Switzerland) mixed traffic line that carry >100 and >200 trains a day, respectively.

ETCS provides an ideal signalling solution for high speed railway lines, as lineside signals that are difficult to see reliably at high speeds are replaced with the ETCS in-cab signalling system. ETCS Level 2 operation provides a

continuous fully supervised automatic train protection (ATP) system that is interoperable between different ETCS trackside suppliers' solutions.

ETCS allows for future enhancement through the application of Level 3, which further reduces the trackside infrastructure (removal/reduction of train detection equipment) while at the same time offering capacity improvements through moving block functionality. The migration from legacy infrastructure ATP systems has been successfully managed by Alstom through the application of STM (Specific Transmission Modules), which allow the train-borne signalling system to safely switch between ETCS and legacy ATP systems where ETCS-fitted trains also operate over non-upgraded lines.

The ERTMS standard, with its flexibility to operate as an overlay system with Level 1 (with no lineside signals); Level 2; and a future solution with Level 3, has led to it becoming a worldwide



standard. In February 2015, Alstom's Atlas platform became the first system to achieve Baseline 3 certification (the latest ERA specification).

ETCS in the UK

The introduction of ERTMS to the UK will provide a reduction in infrastructure costs (both capital investment and operating costs) by transferring part of the signalling system to the vehicle. The on-board equipment includes the safety computer, called the European Vital Computer (EVC), which controls the train speed and safety. In Level 2, the EVC receives the necessary movement authority information through the GSM-R system.

In the UK, the Atlas train-borne EVC has been used to verify interoperability with other manufacturers' trackside systems at the ERTMS National Integration Facility (ENIF) at Hitchin in Hertfordshire.

Project challenges

Signalling Solutions and Alstom are delivering the fitment of ETCS to existing trains as a turnkey project, where Signalling Solutions are solely responsible for the following:

- design (signalling and mechanical)
- product manufacturing
- ETCS integration into the vehicle (mechanical, electrical and software)
- installation, test and commissioning
- interoperability demonstration on the trackside
- approval and homologation.

One of the first challenges for a project will be to find suitable locations

to install the ETCS equipment on the train. The on-board equipment comprises of the EVC, the DMI (heads up display in the cab), the Doppler radar and wheel sensors and the Eurobalise antenna underneath the vehicle, plus all the interconnecting wiring. Each train class has its own restrictions and constraints, which are addressed as part of a first of class installation design.

Product information

Alstom's Atlas ETCS architecture is built up of major subsystems that have been designed in order to guarantee a high level of reliability of the whole system. The ETCS on-board subsystems comprises:

- European Vital Computer (EVC)
- odometry
- GSM-R mobile terminal
- DMI 2x8"
- EuroAntenna.

In order to optimise the installation, most of the products are assembled into a prewired and pretested cubicle kit solution, including cables, screws and relays, to perform the installation into the vehicle. Each kit is specific to each vehicle class and the exact bill of materials is determined during the first-in-class installation design.

EVC

Atlas is a two out of three (2003) EVC-Kernel architecture composed of 3 CORE board as SIL-4 Main processing unit using 3 TIU board as SIL-4 Train interface processing unit.

Odometry

The main function of the Odometry subsystem is to provide the following in

a safe way to the EVC-Kernel: the train travelled distance; the train running direction; the current train speed; the standstill detection; and the longitudinal acceleration.

The train motion sensing devices provide raw data to the odometry processing unit that computes the data mentioned above. The odometry module defines, for the data, error boundaries associated to a confidence level (safety level of the data).

GSM-R

The GSM-R/GPRS mobile terminal subsystem consists of a duplicated (for availability purpose) radio GSM-R/GPRS transmission system made of two mobile terminals and two roof-mounted antennas.

DMI 10" or 2x8"

The DM can be either 10" single screen or 2x8". The redundant DMI solution consists in a double 8.4" touchscreen unit, made up of a display and a CPU packed together. Both units are installed side by side, in portrait orientation, in order to get a ten inch display surface.

Eurobalise

The Trainborne Eurobalise subsystem is for the reception of track-to-train messages transmitted by the trackside balises and complies with the requirements for interoperability as defined in Subset-036 – FFFIS for Eurobalise. The Eurobalise antenna is part of the Trainborne Eurobalise subsystem.

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Half a century of lifting

Having served the rail industry for more than 50 years, **Street Crane** plant has been used for a diverse range of applications. Here, the company explains its involvement with assembling high speed trains

As the UK's largest crane and hoist manufacturer, Street Crane has been working with the rail industry for more than five decades. Its products can be seen across the UK, forming a key part of the industry by supporting the manufacture and maintenance of rolling stock of all sizes and types, as well as the construction of new railways and tunnels.

As rail technology advances, manufacturing depots rely on a broad range of efficient and reliable overhead crane systems and hoists to support all aspects of this work as quickly and effectively as possible. In response to the rail industry's need for the latest lifting technology, which combines leading levels of safety and reliability, Street continues to make significant and sustained investment in the research and development of its products.

The view of Dean Street ticket hall worksite, Tottenham Court Road



Building the next generation of trains

At Hitachi Rail Europe's new factory at Newton Aycliffe, County Durham, nine overhead cranes of varying capacities form part of an £82 million investment in the facility. These are being used to assemble high speed commuter trains, which will run on the East Coast Main Line from 2018 and the Great Western Main Line from 2017.

Two 40-tonne overhead cranes have been supplied to offload train carriages, which are made off-site. These are fitted to high-lift bogies, enabling them to be easily moved around the factory and also allowing equipment to be installed underneath. Street Crane has supplied fixed gantries along each production line so that all technicians have easy and safe access to the carriages for fitting out. Seven more cranes with ten and 15 tonne capacity have been installed primarily to handle sub-assemblies and components at individual workstations.

Crane speeds have been optimised for efficient product flow and to ensure load safety and stability. Anti-collision systems have also been provided where multiple cranes share the same track. Outdoor specification that includes a special paint system is provided on those cranes that are open to the elements.

All of the cranes are double-girder construction, meaning they have a higher hook position while maximising hook coverage and headroom within each bay. Each crane is fitted with Street's ZX wire rope hoists, which have been developed for maximum load safety and reliability with minimal maintenance requirements.

Crane installations in new depots require close liaison with the main building contractor to ensure the equipment is designed and specified to maximise productivity. It is also critical that the cranes are manufactured and delivered at the right time in the build schedule. Crane suppliers such as Street Crane must have strong project management skills which allow a flexible and professional approach to equipment supply in line with demanding 'new build' construction programmes.

For Hitachi, this meant that the cranes were installed before the final roof sheeting was fitted to the building, with measures in place to protect them from the elements. Final commissioning work was completed at a later stage in the build schedule.

Bespoke solutions

In addition to the production of the UK's most modern trains, Street Crane's overhead cranes and equipment are being used across the rail industry in a diverse range of applications. From the manufacture of freight trains through to the maintenance of steam locomotives and the construction of railways, there are many uses for advanced crane systems. In many cases, the system is bespoke and is designed in line with the specific requirements of the application, which could include anything from low-capacity



Street Crane also has lifting equipment at Edinburgh Tram's depot



Hitachi Rail Europe's latest facility in Newton Aycliffe, County Durham

workstation cranes through to heavy duty, high-capacity goliath cranes that can be used without a building structure.

In the case of Crossrail, for example, a 40-tonne Goliath crane was installed outside and was designed to operate 24/7, lifting and lowering spoil skips, tunnel segments and other pre-cast elements during construction of the new Tottenham Court Road Western Ticket Hall in central London.

In some instances, cranes are required for specific stages of the manufacturing process. At Bombardier's Derby factory, two overhead cranes are used in the final assembly of the Electrostar overground trains. These are used independently

during the assembly of the trains, but are designed to operate in tandem when lifting and moving train bodies. Safety is enhanced with optional equipment including audible alarms as the cranes move throughout the workshop and anti-collision devices when the two cranes are operated and moved independently.

Meeting growing demands

Due to the rail industry enjoying huge growth, with train orders on the rise, there is a growing need for lifting solutions to ensure the complex manufacture of trains is carried out as effectively and efficiently as possible.

Street Crane's continued investment

'Due to the rail industry enjoying huge growth, with train orders on the rise, there is a growing need for lifting solutions to ensure the complex manufacture of trains is carried out as effectively and efficiently as possible'

in its factories, including the opening of a new £3 million hoist factory in 2014, ensures that its products can meet the industry's growing demands. Over the next 12 months and beyond the company will continue to work closely with its rail clients to provide tailored solutions that can meet the most technically-demanding specifications, resulting in safe, continuous and flexible working in the most intensive production environments.

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Rail safeguards

Square Mile Broking explains the importance of having an effective insurance strategy and reveals how to reduce premiums and even earn a rebate

Working on or around the railway system is by its nature a risky business, so much so that the Health & Safety Executive (HSE) ceded responsibility to The Office of Rail and Road (ORR) in 2006 (www.hse.gov.uk/railway). This is also one of the reasons why Square Mile Broking has a special scheme, OnTrack, which is designed for firms working in this area.

Prevention is better than cure

Like the ORR, Square Mile Broking puts risk management at the forefront. The company makes sure that all of its clients have the right amount of cover to reflect the size and shape of their business. However, Square Mile also believes the starting point has to be prevention rather than cure – insurance should be the last line of defence not the first.

In addition, in the rail industry Square Mile thinks there is an intrinsic link



square mile broking
corporate insurance solutions

between the risk management and health and safety procedures a client has in place and the long-term premiums that they pay. If the right systems are in place they can reduce the chances of a claim and the premiums paid out in the longer-term.

This is why Square Mile offers all of its rail clients a range of services, including health and safety audits and risk assessments to support their long-term policy and premium stability. In fact, many of Square Mile's rail clients receive an annual rebate on their premiums because their claims experience is so good.

Fewer accidents, more prosecutions

The ORR has reported a general downward trend in workplace accidents in the rail industry as a whole. However, major injuries on non-mainline routes reached a record high of 65 in 2014-15, an increase of 14 per cent on 2013-14's figures. Also, workforce major injuries on non-mainline networks rose from 57 in 2013-14 to 65 in 2014-15. These incidents primarily involved track and other maintenance staff.

Add to this a trend in the wider industry, including with contractors, where there has been an increase in prosecutions and one realises that there is still work to be done to improve safety. This is why it's so important for firms in the rail industry to analyse if they're doing all they possibly can to demonstrate what actions they have taken to address potential health and safety hazards.

Two pillars to build a safe platform

In recent years a number of changes have placed the spotlight on health and safety issues for the rail industry and beyond. These range from the introduction of Fee for Intervention (FFI), the HSE's cost recovery scheme, to the rise of corporate manslaughter prosecutions and increased scrutiny of the actions of directors and officers.

Square Mile advises its rail industry clients to take two key steps:

1. proactivity – raising awareness about

health and safety will bring down the number of incidents

2. processes – a sound system of record-keeping to provide sufficient evidence in order to defend against prosecutions.

Defending oneself if the worst happens

Every company hopes that a claim will never happen, but if that was the case there would be no insurance market. In the event of an accident or injury making sure your business is on track becomes even more important.

Four steps a company needs to take:

1. culture – it's essential that a culture is fostered where everybody understands the importance of recording health and safety actions. Without this everything else is in danger of being a tick-box exercise

2. records – if there are no records of what has been done to mitigate health and safety risks, and a company's actions are called into question following an incident, the company may as well have done nothing. Also, good record-keeping can improve an organisation's ability to defend itself against claims and prosecutions

3. be specific – the type of records kept will vary from firm to firm, but as a minimum they should always include names, dates and signatures. Any other relevant information can only help

4. training – if staff have been given risk management training on a specific topic, records of the training should include not just the names of the employees and the date of the training, but also details about what the training involved.

Corporate manslaughter

Since 2008, firms have been subject to this offence. This is concerned with corporate liability and does not apply to directors or other individuals who have a senior role in the company or organisation. That said, existing health and safety offences and gross negligence manslaughter still apply. This means there can be prosecutions against individuals where there is

3 reasons for good risk management



Safer staff and customers

A clear audit trail helps firms to track their health and safety performance



If the worst happens

Sound records help you defend against claims and prosecutions



Tendering for business

Taking Health and Safety seriously could differentiate you when tendering for contracts



Major injuries

on the non-mainline reached a record high of 65



14% increase
on 2013-14

sufficient evidence.

If there is a fatality, the enormity of the human tragedy is impossible to estimate. On top of this the penalties include unlimited fines and publicity orders. There are many examples where the courts have required firms to publicise that they have been convicted, giving the details and the fine imposed. This is all sobering and serves as a reminder that a company's reputation and bottom line will also be hit.

A defence against a corporate manslaughter prosecution would be

helped if an organisation could clearly demonstrate how it had communicated health and safety messages from top to bottom, and record-keeping is integral to this. So again, companies need to have the right culture in place.

Directors can be personally responsible

The Institute of Directors recommends that directors protect themselves against the risks they face in director-level roles. However, without the right cover they face a number of risks – personally. Personal claims or proceedings against

directors or officers can arise from any decision made, or act carried out, in the workplace, however benign. Also, while it's clear who a director is, the definition of an officer is a grey area, covering a range of key managers.

It's no surprise then that we find this area of risk and insurance is one that directors take a keen interest in. Square Mile always recommends that companies discuss this in detail with their insurance broker, and if they can't help they should talk to Square Mile.

The good news is: aside from a moral and business need to reduce risk, it can also help companies win new business. Going beyond the minimum in terms of health and safety could help a company to tender successfully for rail contracts, as evidence of higher health and safety standards and development of improvement initiatives are often required in the tender process. These can present a company in a favourable light, and all companies need key differentiators to win new work in a competitive rail industry.

Authored by David Garrad, director of Square Mile Broking, who can be contacted for help or advice using the following details:

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Sending out an SOS

There are two varieties of head-mounted lights: one powerfully illuminates while the other leaves its users in the dark. Manufacturers of the former, **Unilite**, gives details on its products

Unilite prides itself as being one of those manufacturers that delivers in terms of build quality and lighting power and it has a range of products that can match and exceed industry's needs or personal specifications.

The rail industry is just one area that Unilite specialises in. The company saw there was a need for a robust, quality headlight that can cope with the adverse environments that the industry throws at it, leading Unilite to manufacture three USB rechargeable headlights.

Hivis HV-H5R

The first thing to notice about Hivis HV-H5R is its robust construction. Unilite understands that in rail, headlights will get knocked around and may have to encounter the occasional knock or fall. That's why its housing is constructed of industrial-strength copolymer, giving it an impact resistance of around two metres. However, the unit is likely to stay attached to the operator's helmet, thanks to its strong rubberised headband and



PS-H7R and PS-H10R lights



PS-H7R on Unilite's new SH-01 hardhat

optional 3M VHB adhesive mount.

The HV-H5R also boasts some impressive technical features. It has a 220-lumen output from its LG innotek LED and features a rechargeable and replaceable battery. The unit is also multifunctional, with six front lighting modes that give the user a wide variety of functional options. These applications will have a wide range of uses when used in the rail industry and the dim settings will help to preserve the unit's battery life for those long, dark shifts.

Prosafe PS-H7R

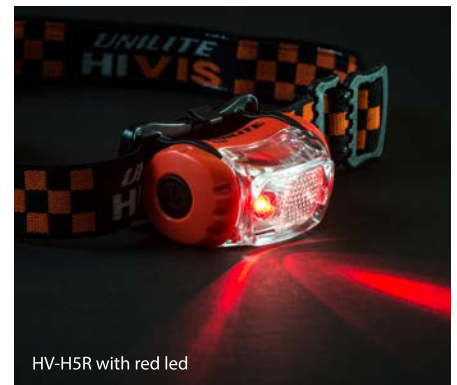
The Prosafe PS-H7R rechargeable headlight is multifunctional and powerful, with a 350-lumen output from its Luxeon LED. The PS-H7R also has six front lighting modes that can be easily switched between focused or flood light using the sliding diffuser. In addition to those lights it has a rear white light located on the battery pack, which also has a 2Hz safety mode that provides increased rear visibility.

The PS-H7R is fitted with Unilite's silicone rubberised non-slip headbands that, when combined with the equally weight-distributed front light and rear battery pack, provides a comfortable and controlled fit round the aperture of the user's helmet. If straps are not required, Unilite also includes 3M VHB adhesive front and back hardhat mounts, which enable it to be firmly affixed to work helmets without needing the headbands.

Prosafe PS-H10R

For those users that want a headlight that is a combination of powerful, multifunctional and durable, there is the ultra-tough and incredibly bright, Unilite Prosafe PS-H10R rechargeable headlight. Its power is delivered by its 1100-lumen output and its beam can reach up to 280 metres, thanks to its XM-L2 CREE LED.

The power of the Prosafe PS-H10R means that users will see clearly and also be seen – an incredibly important feature for rail workers. Further to this safety aspect, it has 3M reflective strips on the headbands for extra visibility and a white rear battery pack light that helps to evenly distribute the weight of the unit, while also adding a visible rear light for enhanced safety.



HV-H5R with red led



HV-H5R on helmet with USB lead

The PS-H10R has unique features that makes it stand out from other torches in its class. It has a three-stage dimming switch, as well three stages of flashing for extra safety – 8Hz, 2Hz and SOS. Its head rotates to a 90-degree angle for precision beam placement and is securely fastened with Unilite's silicone rubberised non-slip headbands. It also comes complete with helmet clips for added stability.

With safety and visibility always at the forefront in the rail industry, Unilite provides headlights that deliver time and again. Equipped with quality LED lighting chips, a robust construction and a variety of useful technical features, every Unilite headlight will guarantee to brighten up workers' nights and keep them safe on the job.

Tel: 01527 584344
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Fast, non-disruptive repairs

Uretek explains the time, money and disruption that can be saved on railway track, platform, yard and bridge repair by using its polymer injection system

Uretek's polymer injection processes support and relevel moving and sunken hardstanding, track, platforms, weighbridge areas and buildings.

With no excavations involved and no dust, mess or water; there is minimal disruption.

Large areas can be treated at a time, and work is carried out at night if required, reducing rail possession time (an important CDM consideration). The treatment is fast, most jobs are done in a day or two and the area is trafficable immediately after treatment.

The technique was originally invented by the Finnish company as a ground improvement solution for subsidence problems caused by the cycle of freezing and thawing, something that often weakens the ground in northern Europe. Since then, many more projects have benefitted from geopolymer injection, a treatment that fills microscopic voids in the ground to consolidate and compact it.

Uretek's processes include:

Slab lifting

A series of small holes are drilled through the slab into the underlying soil and geopolymer is then injected directly under the slab, with the expanding geopolymer then lifting the slab to the required level. Precise results are ensured by monitoring the lifting process with laser measurements.

Deep injection

A site investigation is usually carried out in advance to identify the ground conditions and the depth of any weak ground. A high density expanding resin is then injected to consolidate any weak ground. The system can also be used to improve the bearing pressure of the underlying ground where additional loads are being added.

URETEK®



PowerPile

A geopolymer is injected into a flexible and expanding PowerPile sleeve, through a small 30-50 mm-wide hole to create a polymer pillar. This sleeve is then expanded by up to a diameter of 330mm by the Uretek resin. This will compact the surrounding ground and can also be used to transfer the load of the structure to more competent load-bearing ground. Polymer injection has also been used for embankment strengthening, and the stabilisation of platforms, buildings and other rail infrastructure.

Tel: 0800 084 3503
Email: info@uretek.co.uk
Visit www.uretek.co.uk

Case study – Farnham rail depot

Summary

Settlement to base slabs at a rail depot in Farnham, Surrey, threatened to disrupt rail operations in south east England. The 60-year-old slabs had been settling for many years due to compaction of fill material, drainage and washout problems and the increased weight of modern rolling stock. The problem had reached a point where a 6,000 m² maintenance shed vital to timetable operations was at risk of closure due to unsafe ground. Uretek solved the problem with disruption to timetables.

Objectives

Base slabs more than 6,000 m² needed to be stabilised and also to raise the rails to level. Settlement of the slabs had led to speed restrictions for the locomotives, and fears of derailment. Adding ballast would have only been a temporary solution, and was unable to be completed quickly enough. Piling was ruled out due to its cost and breaking out and replacing the slabs was rejected due to the large area that needed to be treated.

Technology applied

Uretek's slab processes were applied to the 6,000 m² of slabs.

Outcome

Within a five-week period, 6,000 m² of slabs were stabilised and lifted to tolerances of +/- 10mm over a 10m² area, with no disruption to the operations of the shed.

Galvanizing the industry

Galvanizing is an effective way to prevent rust from damaging rail industry infrastructure. **Wedge Group Galvanizing**, largest hot-dip galvanizing company in the UK, explains why

Like many industries, rail is continually looking for more efficient, effective and commercially-viable ways of operating. As a result, a process which is becoming much more widespread is the use of galvanizing. Steel is a vital raw material used across the industry, from large-scale network infrastructure to smaller-scale elements including safety fencing, signage and access equipment. So, what is galvanizing, what is the technology behind it, and what projects within the industry is the process being used on?

Hot-dip galvanizing

Hot-dip galvanizing involves steel being cleaned and then dipped into molten zinc at temperatures of up to 450°C. A series of zinc-iron layers are formed by a metallurgical reaction between the iron and zinc, creating a long-lasting, durable coating. Due to it forming alloy

layers with the iron in the steel, hot-dip galvanizing is much more robust than other coatings, which only bond chemically or mechanically and can be easily damaged.

As a process, galvanizing really comes into its own when it comes to sustainability. A single treatment is able to coat a product inside and out, with any excess zinc left in the bath for reuse. It's able to protect steel for around 60 years, or longer if the conditions are right. Even in the harshest of environments galvanized steel can last two or three decades, and there are options for achieving a thicker coating that further extends its life. As a result, the whole-life costs of products protected by hot-dip galvanizing can be significantly reduced because there is no need for expensive down-time and the inconvenience of repeated on-site maintenance and repair: an appealing aspect for many rail operators.



Using Galvacoat®, colour can now be added to newly-galvanized steel

Open days

To showcase the real value of the process to the industry, Wedge Group Galvanizing regularly hosts open days for different industries, including rail. The events provide rail personnel, including buyers, inspectors and engineers, with a unique opportunity to see the galvanizing process up close – some of the most recent events have welcomed representatives from Network Rail and other major rail organisations.

The open days also give attendees the opportunity to ask any technical questions regarding the protection method, helping them to gain a real understanding of how it works, and why it plays a vital role in the rail industry now and in the future.

Members of the rail industry are also provided with valuable insight into how CE marking fits in with the galvanizing process, the correct venting procedures and best practice tips for inspecting galvanized steelwork once it's on site. Wedge Group Galvanizing is proud to be an approved audited supplier for the Railway Industry Supplier Qualification Scheme (RISQS), which ensures that any rail company dealing with Wedge can be assured of high quality galvanizing backed by excellent customer service.

Every Wedge plant operates a Class 1 galvanizing bath, which has agreed compositional limits and records of assessment retained for ten years, as well as more than 50 qualified personnel who are certified to the GA/BCSA Post-Galvanizing Inspectors Course.



Edinburgh's Haymarket station



Train buffers



Barnsley and Hull bridge

North of the border

Some of the rail projects Wedge has worked on include the £25million project to redevelop Edinburgh's Haymarket station into a major transport link, with more than 200 tonnes of steel galvanized for the canopies that now cover the station's newly-extended platforms. The G503 Crossrail Contract refurbishment works at London's Liverpool Street station also saw more than 100 tonnes of steel given long-term protection with hot-dip galvanizing.

In 2015, Wedge galvanized steelwork used to construct a multimillion pound development on the Midland Metro line between Wolverhampton and Birmingham. The purpose of the project

was to create a building in which the Metro's trams could be serviced and maintained. Structural steelwork for the project was used for external cladding, as well as for the building's curved roof extension.

Other projects included the refurbishment of the Hull and Barnsley railway bridge, which saw Wedge galvanize more than 25 tonnes of structural steel in order to strengthen the bridge and ensure the track remains operational. The company has also worked on the grade II Listed Silver Jubilee Bridge, one of the world's longest steel arched bridges that runs over the River Mersey, connecting Runcorn to Widnes and carrying around 80,000

motorists a day over it.

Wedge Group Galvanizing has also provided its corrosion protection treatment to more than 16 tonnes of structural steel that was used to create a complex double-flight passenger staircase for an upgrade and improvement project at a busy London Underground station. This diverse range of projects demonstrates the ever-growing popularity of galvanizing as a protective coating and also highlights the inherent qualities of the process, including its flexibility and sustainable qualities.

A touch of colour

Hot-dip galvanizing is among the most popular choice for corrosion protection but there are occasions when a touch of colour is required. This has previously thrown up practical issues when it came to applying paint to galvanized steel, with the biggest challenge being to achieve proper adhesion.

However, there is a solution.

Galvacoat® is a one-coat, two-component polyurethane-based paint that has been specifically designed for use on newly-galvanized steel. It eliminates the requirement for any special etch primers and gives GTO adhesion for the entire duration of its coating.

GTO adhesion is the British Standards test method for adhesion, classified GTO (BS 3900 Part 6 on galvanized steel). It also has excellent resistance to UV exposure, and is suitable to be applied as a topcoat for use on metals exposed to the elements.

The paint is available in all RAL and BS colours at different levels of gloss, allowing the end contractor a huge degree of design freedom, but just as important is that galvanizing provides an ideal primer for it. Galvacoat® is applied by brush, or by air or airless spray. For use in areas of low industrial output, a dry film thickness of 80 microns can last for a minimum of eight to ten years, not including the protection that galvanizing provides.

A thicker coating can lead to similar results even when used in particularly heavy industries or coastal areas, where high amounts of chemicals or salts can attack the coating. This drastically reduces, or eliminates completely, the need for repeated on-site maintenance and replacement costs. Wedge Group Galvanizing is the sole distributor in the UK for Galvacoat® and more information is available on Wedge's website.

Wedge is the largest hot-dip galvanizing company in the UK with 14 plants strategically located across the country. The company has the largest galvanizing bath in the UK, at 21m, as well as a spin facility that enables the galvanizing of nuts, bolts and other fixings.

Email sales@wedge-galv.co.uk
Visit www.wedge-galv.co.uk

A full depot service

Wilcomatic's rail division is a UK supplier of train cleaning systems but it is now diversifying into depot services of all kinds, particularly the Vogelsang CET system that it became the UK distributor for in 2013

When a passenger train pulls into a depot, effluent is automatically removed and clean drinking water is replaced in the fastest and most efficient way possible.

Two of the most important issues for train operators' trains are the provision of sanitary facilities acceptable for passengers and being able to have trains spending the least amount of time possible in maintenance depots. The Vogelsang automatic CET (controlled emission toilets) system helps with both. The Volgasand CET system's speed advantages over the alternatives mean that passenger trains can be returned to service much quicker than previously possible.

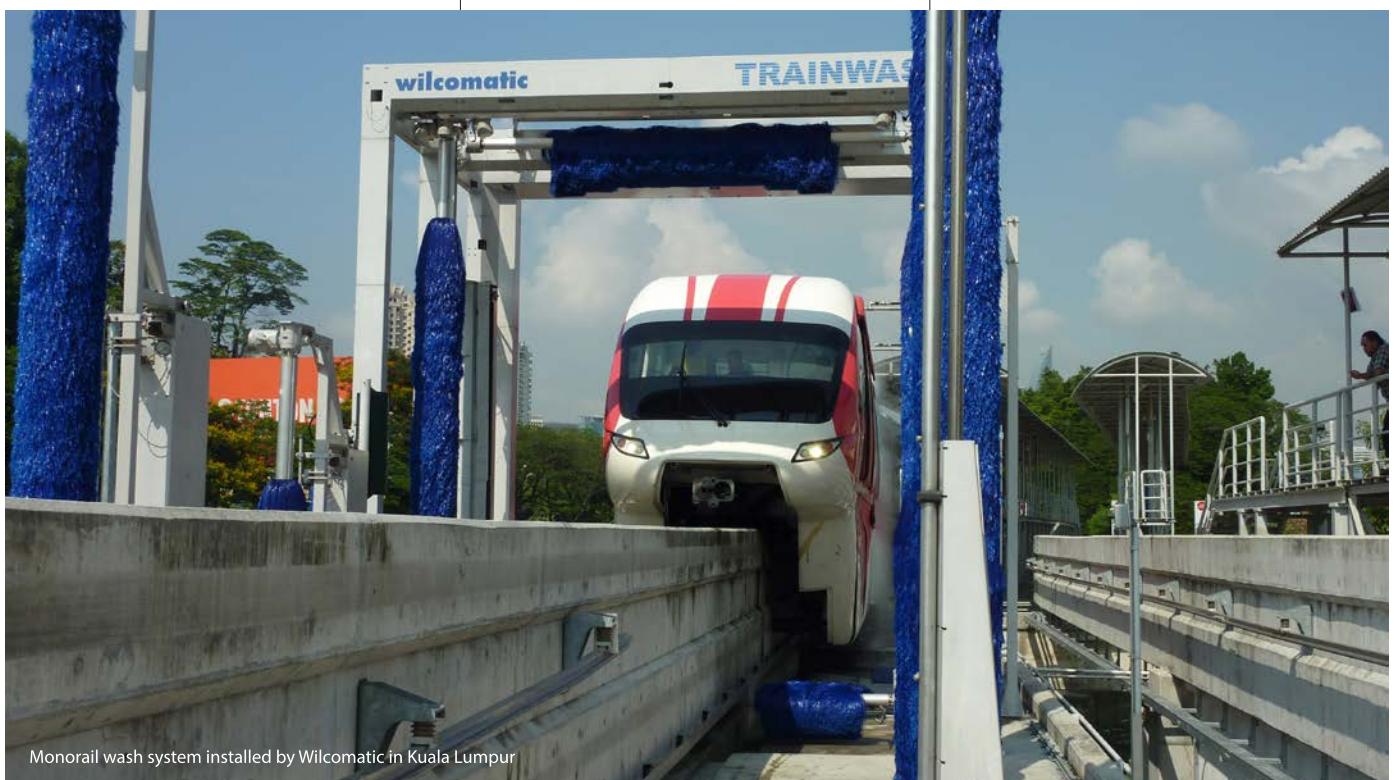
Insufficient supply of drinking water and disposal of faecal matter can lead to failure of the sanitary facilities. This results in customer dissatisfaction, potential additional workshop visits and possibly contractual penalties for

not reaching defined quality standards. Employing Volgasand CET's technology in this area avoids this situation and guarantees maximum system availability and quality.

Vacuum extraction

Manual supply and disposal systems are widespread but have a considerable potential for error. Compared to supply and disposal systems that are manually operated, the Vogelsang system uses a fully automatic flow-monitoring process. In this way, the vacuum extraction of the waste water tank using VacFlow, an optoelectronic flow system, for example, is monitored and controlled. In comparison to a conventional flow monitoring system, such as a magnetically inductive measurement procedure, the VacFlow also recognises multiphase flows.

The disposal process is reliably monitored in this way and is ended fully automatically as soon as the connected tank is drained. Excessive air intake is minimised, a process that can occur with



Monorail wash system installed by Wilcomatic in Kuala Lumpur



Bi-directional train wash in wash hall

time-controlled systems when partly-filled tanks are being drained. This guarantees the highest under-pressure availability and efficiency for the vacuum extraction system and leads to reduced energy consumption.

If a rinsing cycle with waste water drainage takes place in the disposal, then this is also carried out fully automatically using the corresponding programme selection. The operator does not need to take any more action. This allows individual employees to connect multiple systems at the same time and to operate them in parallel, without having to visually monitor and control the individual processes. As a result the system's efficiency is significantly increased, enabling significantly more carriages to be supplied and disposed of in the same time period.

Data collection

Authorisation and operating data collection is often essential if the supply and disposal infrastructure is used by different railway companies, as it means usage patterns and consumption are transparent and can be assigned to each company.

Every supply and disposal module receives an authorisation terminal for this purpose. The user is authorised using an RFID chip or password input and the system is enabled. In addition to the desired programme selection, the vehicle data of the railway company can be entered via the terminal for complete and automated creation of service documentation. In this way, service quality and acceptance are significantly improved.

Malfunctions can be recognised early on using online status monitoring of the individual modules via the VEBSys system. If a malfunction occurs, the responsible service centre is informed by telephone, SMS or email.

Wilcomatic Rail's recent diversification has also put it into many other areas of depot services, including

mobile paint spray booths and refuelling. The company's fuel and oil transfer systems range from simple mobile units to large multistation complex delivery systems with large storage tanks that again ensure a high speed servicing turnaround.

Worldwide operations

This work is in addition to Wilcomatic Rail's established rail wash operations, undertaking major contracts in Blackpool and as far afield as Indonesia, Egypt and India.

As well as washes for mainline trains, other types of rolling stock, such as monorails, trams and airport APMs have their own special requirements, so Wilcomatic has designed specialist wash systems to meet all these challenges. As well as washing the sides, front and rear, specialist brushes have been developed to wash the trailing edge of the vehicles and the underseal. The company has already installed washes of this type in Indonesia, Brazil, Saudi Arabia and Kuala Lumpur.

'The exciting thing about this job is working closely with our suppliers and customers to match their individual requirements. No two installations are ever the same,' said Mark Prockter, general manager of Wilcomatic's rail division.

'While we obviously use standard equipment on each contract, it varies widely on how it is configured, and we are constantly working with our main supplier, Otto Christ, to develop new equipment to match customer requirements.'

IEP

An example of this is the bidirectional wash configuration developed for the IEP (InterCity Express Programme) project, which Hitachi installed at its Northpole, Stoke Gifford and Doncaster depots. Usable from either direction, the wash has 28 pairs of brushes and also uses a warm water pre-spray to heat the surfaces of the train in winter to increase the



The Vogelsang CET (controlled emission toilets) system

effectiveness of the detergent. Skirt and eaves brushes mounted on the same support stand complete the thorough cleaning process. Train drying is aided by a rinse-aid to ensure the water sheets off the vehicle. The process is finished off by eight 5.5kW dryers and the whole assembly is housed in a 63m wash hall.

For other customers, the front and rear of trains, which are usually the first part of the train to be seen by passengers, are even more important than the sides, which is why Wilcomatic supplies special split front and rear brushes. The split brushes can be designed to pivot through 180 degrees, enabling different wash passes to ensure complicated shapes are washed thoroughly. Since the brushes are fully programmable, different train types can be washed automatically as long as there is a train recognition system.

'We have a unique product range and the size and flexibility to develop new systems to meet the needs of the industry, including innovative payment options,' said Prockter.

'Also, it's not just about selling systems, but providing the best possible support to our wide variety of customers in the UK and across the globe. We have trained engineers across the globe to ensure any problems cause machines to be off-line for as shorter period as possible.'

Within the Wilcomatic Group there are a number of sister companies, including Working Water, which specialises in water recycling reverse osmosis (to remove minerals from water) and rainwater harvesting. Working Water's expertise helps Wilcomatic Rail equip most of its new systems with a water-reclaim system, depending on the customer's requirements. Each of these systems enables the reuse of up to – and sometimes more than – 70 per cent of the water.

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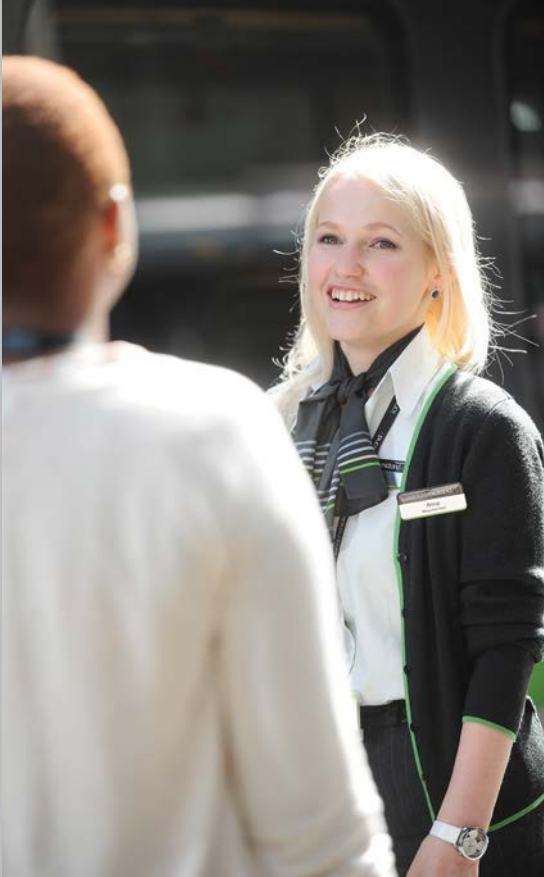
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The successful applicant will be required to work occasional weekends and nights depending on business requirements and particularly during introduction phase for EMUs will need to work away from Reading for extended periods of time. A recognized apprenticeship and / or NVQ3 in engineering or equivalent would be beneficial. Furthermore experience in EMUs, Training and Technical Authorship would be an advantage.



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Isle of Man Government – Isle of Man Railways



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Isle of Man Railways within the Department of Infrastructure are seeking a professionally qualified railway engineering manager to join the engineering management team and lead the maintenance of the track, structures, power supply, overhead line and associated infrastructure of the Isle of Man Steam, Manx Electric and Snaefell Mountain Railways to allow safe and effective railway operations.

The post holder will be the line manager for approx. 25 staff, with an annual budget of approx. £1.25m. The post holder will also be the technical head for Permanent Way or Electrical Engineering.

Applicants must hold an appropriate professional qualification in an engineering or safety discipline and have at least 5 years' experience in managing either permanent way or electrical related maintenance within a railway / tramway system.

The Isle of Man is a self-governing dependency within the British Isles. The post holder will enjoy the benefits of low income tax, high rates of personal allowance and a low crime rate. Other advantages include good sea and air links, excellent quality of individual and family life, superb scenery and excellent leisure facilities.

The Isle of Man is surrounded by beautiful beaches and enjoys a mild maritime climate. Situated between Ireland and England it is 40 minutes' flying time from London and has transportation links to other major UK cities. There are ferry services to Liverpool, Heysham, Belfast and Dublin. For further information about living in the Isle of Man and the Island's lifestyle visit www.visitisleofman.com

A generous relocation package will be available for the successful candidate relocating to the Isle of Man.

More details of the duties of the post can be obtained from Mr Jeremy Reece, Chief Engineer on 01624 697476.

An online application and job description can be obtained from: www.gov.im/jobs

If you have difficulties applying online please contact the Employment Services Team on 01624 686300 or by email at JobTrainHelpdesk@gov.im

The closing date for applications is Friday 26 February 2016.



New head of National Infrastructure Commission

The chancellor has appointed **Phil Graham** as CEO of the National Infrastructure Commission. He replaces Lord Adonis, who was chair on an interim basis. Graham joins from the Department for Transport, where he led the development of the government's high speed rail strategy, as well as leading the team supporting Sir Howard Davies' Airports Commission and working on the London Olympics. The Chancellor said: 'The NIC will provide expert, independent advice to the government on the most pressing infrastructure challenges facing the country. Phil's role as CEO will be vital in overseeing this work.' Lord Adonis described Graham as 'supremely qualified' for the role.

Change at the top of ORR

Richard Price, chief executive of The Office of Rail and Road (ORR) has stepped down from the role and is currently handing over to **Joanna Whittington**, who replaces him on an interim basis. Whittington joined the ORR board in March 2014 as executive director of railway markets and economics. An open competition for the role of chief executive will be advertised in due course. Price said: 'It has been a real privilege to work with so many talented people across the road and rail industries, as well as the ORR's own really outstanding staff.' Professor Stephen Glaister CBE was appointed chair of the Office of Rail and Road (ORR) for a 12-month term on 17th December 2015.

Eurotunnel Group appointment

Philippe de Lagune has been named as chief operating officer – safety and ethics. He was previously French safety coordinator for the London 2012 Olympic Games, responsible for the safety of the Channel Tunnel site. De Lagune joined the Eurotunnel Group in 2013 as safety and ethics director.



Managing director designate for TransPennine Express

As part of its plans for the mobilisation of the new TransPennine Express franchise, FirstGroup has named **Leo Goodwin** as MD designate and he will lead the new franchise from the launch date of 1 April. Goodwin has held several roles within FirstGroup, having joined in 1998 initially working at First Great Western. After the Group's successful bid for First TransPennine Express in 2003, he was part of the management team and later became commercial director. In 2013 he became commercial development director in the First Rail division. Liz Collins remains interim MD for First/Keolis Transpennine until the new franchise begins.

New president for Bombardier

Bombardier Inc. has appointed **Laurent Troger** as president, Bombardier Transportation. Troger, who had recently been promoted to chief operating officer of Transportation, succeeds Lutz Bertling, who is pursuing other career opportunities. 'Since joining Bombardier, Laurent Troger has continuously been one of our top executives, driving superior project execution and performance across the business,' said Alain Bellemare, president and CEO of Bombardier Inc. Troger joined Bombardier Transportation in 2004 as vice president, Services for Europe. Before that he worked for 15 years at Alstom Transport.



Ray O'Toole joins BTPA

The Department for Transport has appointed **O'Toole** as interim British Transport Police Authority member for a 12 month period.

O'Toole, who previously served as a member of the Authority from 2005 – 2009, will play a role in overseeing the work of the British Transport Police.

Andrew Figgures, chief executive of BTPA said: 'Ray's knowledge and passion for the rail industry will be invaluable as we guide the work of the nation's railways police.'

O'Toole is currently chief executive of Essential Fleet Services.

Senior Scottish positions filled

George Lowder MBE has been appointed chief executive of Transport for Edinburgh, and **Lea Harrison** will be general manager at Edinburgh Trams.

Lowder joins TfE from the military where he spent 35 years including two years as Commander of the Army in Scotland and laterally in a senior executive role with the Ministry of Defence.

Harrison will join TfE from Nottingham Express Transit where he is head of service delivery on the Phase Two project to extend the existing Nottingham Express Transit Line 1 by a further two lines.

Charles Monheim, chair of Edinburgh Trams and Transport for Edinburgh board member, said: 'Lea comes to Edinburgh Trams with a wealth of operational experience that stretches back to his days as a tram driver.' Details of start dates are yet to be agreed.



A new route for Susan Cooklin

Network Rail has named **Cooklin** as its route services director and she has joined the company's executive team. She was previously NR's group chief information officer and director shared services.

Mark Carne, chief executive, said: 'This new role, leading a new team, is another step towards delivering a better, more efficient national service to our route teams.'



Mott MacDonald appoints John Perry

The company has named **Dr Perry** as its group practice manager for transportation. He will be responsible for coordinating transport activities across the business.

Perry has been business development director for Mott MacDonald for the past five years, working on UK and international projects including Taiwan high speed rail. He said: 'I plan to build on our existing strength and determination to deliver world-class projects to the benefit of society.'

Shoosmith's partner joins tram board

UK law firm Shoosmiths' corporate partner, **Martin Fleetwood**, has been elected to join the UK Tram Board.

Fleetwood's role on the board will be as an independent member, holding the board to account; providing specialist advice on regulation, and supporting it in developing its strategy to expand tram systems within the UK.

Elizabeth de Jong joins RDG

The Rail Delivery Group has appointed **de Jong** as its new director of policy.

After joining RDG in April 2015 as head of policy, de Jong has been acting director of policy since mid-October 2015, following the departure of Nick Ellins.

She will continue to be responsible for rail industry reform, the planning of tomorrow's railway, disability and inclusion, integrated transport and business analysis.

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