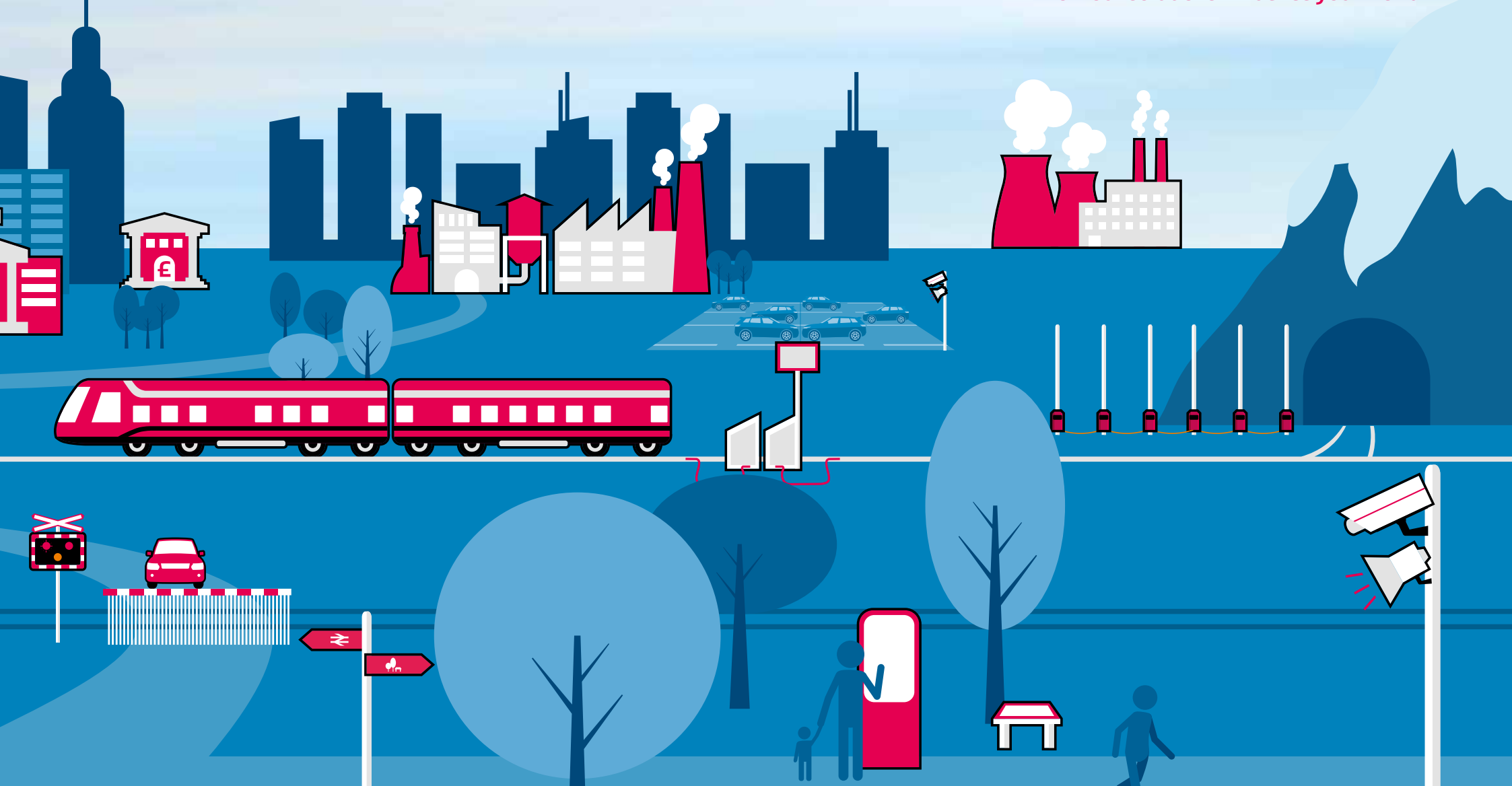

Velocity

ISSUE 4 SUMMER 2018

NEWS FROM L.B. FOSTER EUROPE

LBFoster®

FORWARD THINKING

OUR FIRST VELOCITY PUBLICATION, WHICH COINCIDED WITH INNOTRANS 2016, SHOWCASED OUR NEW L.B. FOSTER EUROPE BRAND EXPRESSION. AS BRAND LEADERS, WE CONSTANTLY KEEP OUR BUSINESS MOVING FORWARD TO MAXIMISE NEW MARKET OPENINGS.

We are committed to achieving excellence through traditional engineering solutions and the application of new technologies to conventional challenges. Our world class solutions have positioned L.B. Foster Europe favourably on the global rail supply chain. We have achieved this by listening to, and understanding, the requirements of today's modern railways.

Two years on and we are attending this year's trade fair in Berlin, Innotrans 18, with a very different ambition. As our organisation evolves, we are on a mission to position the business so customers can visualise and appreciate the full capability of L.B. Foster Europe.

In this edition of Velocity, we are introducing 'Your World', an infographic that will appear in many forms, explaining how our solutions directly influence the world of our customers, and their customers as well. You will read about the partnerships we are forming with global consultant firms who are also looking to the future and how technology innovation will make a difference to passengers and their journeys.

Like them, we are on a mission to discover what 'Your World' is going to look like in 20, 30 even 50 years. Looking forward to seeing you there!

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© Crossrail

Passenger numbers in the UK have doubled in the last 20 years, with a 16 per cent increase in London and the South East, where most passenger journeys are made. Now we eagerly await the much anticipated phased opening of the new Elizabeth line planned for December, adding much needed extra capacity.

The Crossrail Project is civil engineering on a scale seldom seen. When the new Elizabeth line service launches through central London, it will transform travel and increase choice for millions of passengers.

L.B. Foster Europe continues to play a pivotal role in this project. Our Telecoms team is hard at work fitting communications systems at new stations, whilst our Rail Technologies business has created bespoke friction management solutions adapted to the rigours and demands of Crossrail's tunnels. Technologies developed by L.B. Foster Control & Display Solutions and L.B. Foster Netpractise will keep people informed of disruption, help with onward journey planning and ensure signalling systems operate unnoticed. Within the year, the first passengers will travel through the Elizabeth line.

Around our business we keep moving ahead engaging new customers and creating exciting, new and inspirational engineering solutions. We are forward thinking and future facing, identifying new growth opportunities and we are always on the look out for better and smarter ways of doing things to deliver best value for our partners. That's the L.B. Foster way, always with both eyes fixed firmly on delivering for our customers.

Peter Jones
Managing Director

Our world

L.B. Foster Global

From over the pond

Senior executives from our parent L.B. Foster Company paid a visit to the UK business in spring this year, visiting all UK sites, as well getting an insight into the major projects in which we are involved.

With Crossrail due to start operating late in 2018, we treated Jim Maloney, Chief Financial Officer, John Kasel, Senior Vice President and Bob Ness, Business Controller, to a special site visit on one of our numerous Crossrail installations. The group got to see our Telecoms team in action as they prepare critical communications systems in readiness for the line's opening.

Other highlights included workshop projects on Lidar solutions involved in rockfall detection for North American railroads and the progress of the wall mounted friction management trackside lubricators destined for the tunnels taking Crossrail trains.

Telecoms, London

Meeting up with Skanska

In March L.B. Foster Europe hosted an event in London for Skanska, one of the world's leading project development and construction groups. Its UK operation is one of the country's top contractors.

A number of Skanska UK's project and management team joined us at the Cavendish Conference Centre in Marylebone for a presentation about our extended capability and how it can be applied on Highspeed 2 (HS2).

Simon Topping is one of L.B. Foster Telecoms' project managers for Crossrail. He explains: "We have worked with the team at Skanska on a number of contracts so this event was about updating them on what L.B. Foster Europe can bring to the table as part of a global rail supply business. The complementary skills sets that we have across the European business is unrivalled and provides us with a real point of difference in the market place.

"We are in a strong position to support Skanska. Our experience working on the Crossrail project has provided us with valuable learning and insight, especially around the areas of early contractor engagement and extracting value from the supply chain."

Calvin Duncan is Head of Rail Systems at Skanska UK: "What we were unaware of was the combined capability across the L.B. Foster Europe businesses. In the past we have tended to partition specific businesses for particular roles. What L.B. Foster Europe now offers is an end-to-end capability, which is a very attractive proposition as it streamlines management processes and supply chain."

in motion

Nottingham

Roll out the barrels!

We support a charity near Nottingham called Rumbletums. In April they had a nice windfall with donations totalling over £1000 raised from charity cake sales and garden planters.

Rumbletums provides real work experience opportunities to young people with learning and physical disabilities.

We had some old whisky barrels given to us as part of a test project. Ian Malson in our Nottingham office converted the barrels into beautiful garden planters, which proved phenomenally popular with staff.

Emma Salinger, Project Manager at Rumbletums, said: "L.B. Foster's generosity is quite overwhelming. We're hoping to buy a new cooker for the cafe so that we can continue to provide our young adults with fantastic, hands-on learning experiences."

www.rumbletums.org/cafe

Rail Technologies, Sheffield

Rail Live 2018 - Stand I9

Our Rail Technologies team attended Rail Live at Quinton Rail Technology Centre, just outside Stratford-upon-Avon in June.

We showcased our range of innovative onboard and trackside Total Friction Management solutions, including products to enhance friction and traction. Developed in our world leading Global Friction Management Laboratory in Vancouver, our research and development teams are expanding new technical capabilities in the fundamental understanding and management of friction at the wheel/rail interface.

We also displayed our high capacity, wall mounted PROTECTOR IV, which has been re-engineered for Crossrail to increase storage capacity. Rail Live was also an opportunity to introduce our new, improved ALLEVIATE traction enhancing material for combating both seasonal and all year-round adhesion issues.

Now organised by RAIL magazine in partnership with Rail Alliance, Rail Live 2018 was the largest, most comprehensive outdoor event for rail in the UK to date.

> "Our expert engineering team has applied all its experience to rationalise the range down to 170 full rail assemblies."

Network Rail Fishplate and Rail Joint Redesign

As one of Network Rail's approved suppliers, L.B. Foster Rail Technologies was briefed to undertake a major project to totally redesign the range of fishplates and rail joints used across the UK rail network.

Network Rail owns and operates over 20,000 miles of track across the UK. With such a vast network to manage, it is always on the lookout for ways to simplify and rationalise components.

Mat Holland is Head of Engineering at L.B. Foster Rail Technologies. He has been leading the project: "Network Rail commissioned us to do a thorough re-design of all mechanical, transition, emergency and insulated rail joints. These consisted of both four and six hole variants and were required across numerous rail sections and at 10 different 'lift' combinations for each. This resulted in a total requirement for 170 separate full rail assemblies to be modelled and drawn-up."

The main drivers for the work package were a move towards standardising the product on materials and thicknesses. There was also an interest in transitioning to a metric fastening standard, so all hole sizes and tolerances were subject to review.

Finally, there was a structural assessment required, which yielded a complex transient FEA model to enable design verification.

Mat continues: "L.B. Foster Rail Technologies is a world leader in the design, manufacture, and supply of high quality track products to the global rail markets. The outputs of this contract are comprehensive and as we now move towards receiving the supply tender, our design input places us in a strong bidding position."

Andrew Turner, Engineer, Switches & crossings, Network Rail, comments: "The standardisation and metrification of this product suite is a key initiative for Network Rail. We worked together with Mat and his team, managing to overcome a host of technical challenges in a timely manner with the minimum of fuss."

For more information
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Rail Technologies

TOR or gauge face?

Understanding the implications of modifying friction at the wheel/rail interface is the focus of detailed research by L.B. Foster Rail Technologies. This examines the benefits of trackside friction management solutions. Here Dave Harris, Trackside Lead - European Friction management, looks at different applications and what works best where.

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In the world of friction management we talk about what we do as the deliberate introduction of materials between the wheel and rail to influence friction. In simple terms, that is about increasing traction (grip) or modifying lubrication to effect the behaviour of passing wheels.

There are many reasons for applying friction products to the top of rail (TOR) or on the gauge face (GF), all of which are designed to improve performance, be that reduced noise, improved fuel efficiency, protection of rail assets or extended asset life. The returns are not just for network owners and operators. The human, social and community benefits of reducing noise caused by wheel squeal are incalculable and a hidden return often overlooked in favour of reduced capital outlay.

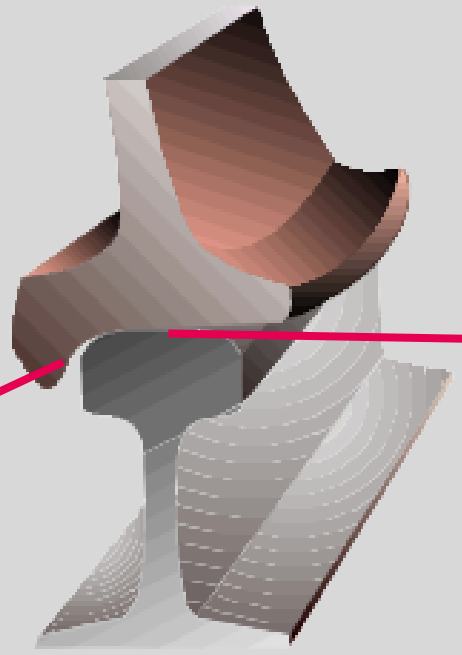
Top of rail or gauge face?
It is our mission to help specifiers and engineers understand the real advantages of installing friction management solutions. The reasons we apply friction products on the gauge face or top of rail - and in certain instances both - vary according to the location and track characteristics. That's why we advocate all installations have a thorough, specialist site survey conducted by our engineers. Our expert insight can save costs and ensure the right solution is installed first time.

On top of rail applications we use our configurable PROTECTOR® trackside system to distribute a friction modifying material, such as KELTRACK®, on the rail. A similar PROTECTOR® system is also deployed to apply gauge face grease. The smart bit is identifying when to apply friction modifier to the top of the rail or to the gauge face, and this is dependent on the unique characteristics of each installation.

Rail Lubrication	Grease PROTECTOR IV PW Hydraulic Gauge Face Check rail
Friction Management	KELTRACK® PROTECTOR IV Top of Rail Switch Protection
Adhesion Enhancement	ALLEVIATE® Traction Gel Applicator (TGA) Top of rail

Gauge face friction impacts:

- rail/wheel wear (gauge face and flange)
- Rolling Contact Fatigue (RCF) development
- fuel efficiency
- flange noise
- derailment potential (wheel climb)



Controlling friction at the wheel/rail interface

Top of rail (TOR) friction impacts:

- reduction in lateral forces
- rail/wheel wear (TOR, tread)
- Rolling Contact Fatigue (RCF) development
- fuel efficiency
- rail squeal noise
- flange noise (indirect)
- corrugation
- hunting
- potential derailment.

Rail Technologies

Fifteen million and counting

When considering the big numbers, with over 15 million sold, it's clear that KELSAN® Solid Stick friction management solution by L.B. Foster is the world's leading system for reducing wear at the wheel/rail interface.

The KELSAN® system is a 100% dry, onboard, self-regulating solution for passenger and freight rail environments.

The system consists of (hardware) applicators and friction management consumables for applications including:

- wheel flange lubrication
- top of rail/wheel tread treatment.

15m
sticks sold worldwide

50,000+
rail vehicles

500+
rail companies

40+
countries

Hardware
KELSAN® Solid Stick friction management solutions are individually designed for each vehicle application. Our team of technical specialists is trained and familiar with multiple vehicle types and designs and tests each system to meet the exacting needs of the onboard rail environment. All designs are supported with 3D modelling and robust Finite Element Analysis (FEA), replicating real-world forces, vibration and other physical effects before systems are fitted to vehicles.

Solid Stick friction management solutions are applied via a vehicle mounted, spring loaded applicator and bracket assembly, which intelligently applies friction modifier to the wheel when it is needed, providing a constant thin-film that delivers excellent network protection.

All hardware in Europe is manufactured and accredited to EN15085.

For more information and a copy of our new information leaflet contact Mike Hull mhull@lbfoster.com

Rail Technologies

Leaves on the line

Fact or friction?

Is the idea of 'leaves on the line' a myth perpetuated by the press or a mission critical issue for the rail network? Now our Traction Gel Applicator (TGA) and expertise in friction management are attracting attention from network operators and owners alike, with the goal of managing the impact of these slippery customers.

Wet leaves are sucked onto railway lines by the turbulence created from passing trains. This is a particular problem for the rail sector in autumn, when trees shed their leaves. Leaf fall is compressed by the weight of train wheels, depositing a thin, black layer of leaf residue on the rail. When this comes into contact with rain it becomes incredibly slippery, giving rise to the much derided issue of 'leaves on the line'.

The resulting impact of leaves on the line on rail services is lengthy delays and costly cancellations, as trains have to accelerate more slowly and decelerate over greater distances.

So what can be done to alleviate this issue?

Tony McEwen Sales Manager of L.B. Foster Rail Technologies, explains: "Adhesion between vehicle wheels and rail is dictated by top of rail surface conditions and contamination. Our Traction Gel Applicator (TGA3) distributes traction enhancing material directly to the position on the rail where it is required.

"Where you have an issue of low adhesion, such as leaves on the line, it results in braking and traction problems. This leads to potential signal failures caused by loss of track circuit detection, as well as station overruns and insufficient traction on inclines and declines.

"So far this year we have had unprecedented orders for our TGA3 from Network Rail for installation at locations across the UK. These are in readiness for all that the adverse autumn weather has to throw at the network.

"Furthermore, our team of friction management experts has developed ALLEVIATE®, a unique, traction enhancing material that combats both seasonal and all year round adhesion issues. In the autumn, loss of traction from seasonal leaf fall creates a slippery surface on running rails. But also throughout the year there are certain areas of track where traction is an issue; for example, wet rail syndrome or where vehicles have to travel up inclines/declines. Both these adhesion issues can result in train delays, operational disruption and wheel damage."

Our new formula ALLEVIATE® has been scientifically developed in partnership with The University of Sheffield for use in the L.B. Foster Rail Technologies' TGA3, as well as other systems such as Multi-Purpose Vehicles (MPVs).

The formulation of ALLEVIATE® is supported by extensive analysis at all stages of the development project, including field trials, laboratory study and performance testing on the SUROS twin disk machine at the University of Sheffield.

New to market is a special, high performance, low temperature formula called ALLEVIATE® LT. This is specifically for use in environments subject to extreme temperatures, as low as minus 15 degrees Celsius.

For more information
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L.B. Foster Netpractise is working with the Rail Delivery Group to investigate how wayfinding within stations can be improved for people with disabilities. Graham Kett, Technical Operations Manager at Netpractise explains.

Getting around stations for people with disabilities can often be an onerous and arduous task. So how do you go about improving that customer experience?

The Rail Delivery Group (RDG) was set up in 2011 to provide leadership to Britain's rail industry, bringing together the owners of passenger train operating companies, freight operators and Network Rail. Its goal is to deliver a better railway. Part of that better railway is to improve the user and journey experience for disabled travellers.

L.B. Foster Netpractise has previously successfully deployed a wayfinding solution at Birmingham New Street. The interactive customer information display application has been in operation for over five years. User data provided an excellent test case against which to develop a prototype app suitable for people with disabilities. Routes mapped for the app included walking and step-free routes to destinations in and around the station.

Working alongside RDG and station staff, we agreed a total of 10 destinations for the demonstration, chosen specifically for their popularity. These included typical onward destinations, such as the Bullring shopping centre and Moor Street station, as well as station welfare facilities and popular shops.

Our project team developed the interactive information app to add a new menu page showing the destination options and an on-screen keyboard for searching and filtering. The look and feel was consistent with existing functionality within the app, maintaining a consistent user experience.

The new app was premiered at a special test day held at Birmingham New Street station to demonstrate its enhanced functionality to the public and members of Rail Delivery Group's Access Forum.

Micky Ball, Head of Customer Service Centre at RDG said: "We are committed to improving the services we provide for all customers. This trial was all about improving the customer experience for people with disabilities.

"What really impressed us was that the unique wayfinding app did just that; simplifying the process of getting to a destination within Birmingham New Street station."

For more information
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Finding our way

Netpractise

Fingerprint

One of the biggest challenges for any organisation with a large asset portfolio, such as transport and fleet operators, building and utilities maintenance companies or construction and plant management businesses, is keeping track of assets and associated repairs and servicing records.

Over the last year L.B. Foster Netpractise has been working to tailor its Fingerprint asset maintenance software for property services specialist Liberty Group. Liberty manages over 220,000 properties for local authorities, housing associations, public sector and commercial enterprises.

Fingerprint is L.B. Foster's new asset maintenance software solution. It was previously developed in partnership with a major bus operator for use in the transportation market. Liberty Group has subsequently worked with L.B. Foster's software solutions team to further develop the system's capability, in terms of more advanced functionality, enhanced intelligence and increased data analytics.

Fingerprint provides base level root cause analysis for engineers and managers. Users record data on tablets, building a detailed picture of individual asset performance and maintenance.

Mark Sullivan, Group Director of ICT at Liberty Group says: "At Liberty we are on a journey to be the go to people for property services. We're investing in our people and our systems and providing the best tools, training and support for staff.

"We've invested in Fingerprint by L.B. Foster. It's a cutting edge IT system using an ultramodern, armoured tablet. Its robust design gives added peace of mind to users.

"Our repairs and maintenance teams can now see more detailed property and job history than ever before, all at their fingertips. So when we arrive at a property we can deliver the best service possible for customers and aim to achieve a first time fix."

Graham Kett, Technical Operations Manager at L.B. Foster Netpractise, says: "Aside from the technical development of the solution for Liberty, we also implemented a rigorous training programme for the repairs team, including a comprehensive User Manual."

Garry Miller is a Liberty service engineer: "One of the things that will make this system much better than our old system is the job history record actually on the tablet. Being able to see what has been done previously and what's been fitted helps you build a clearer picture of the overall issue. It also improves first time fixes."

For more information
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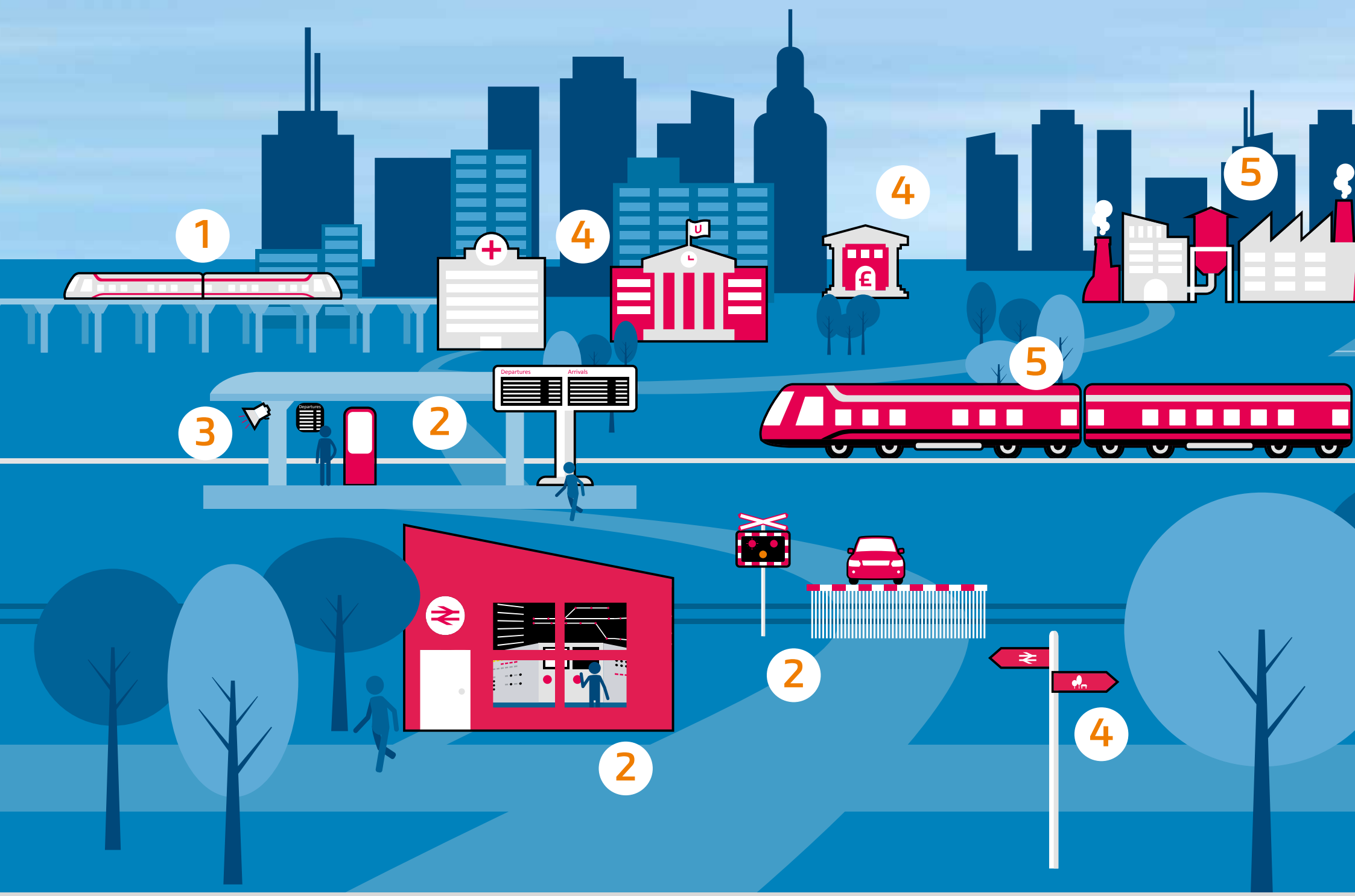
Liberty keeps house in order

LBFoster®

Keeping your world moving



Keeping your

How do the engineering solutions created by L.B. Foster influence the daily lives of people across Europe?

Our business competes on capability. That's our group capability, which gives us strength in-depth. We are a business that has at its core serious electrical and mechanical engineering experience that is applied expertly across the various markets in which we operate; rail, energy, transportation, infrastructure, automotive, food and beverage.

Our people are equipped with complementary skills. What L.B. Foster Europe does is unleash those skills, bringing together teams that draw on diverse experience in different markets. That unlocks the potential of our business and the solutions that we can create. Our software solutions engineers bring new thinking and new technologies, which our engineering experts apply to traditional engineering challenges. And all of this keeps our world moving.

1 Rail Technologies

Friction Management - trackside
Friction Management - on-board
Track Products

2 Control & Display Solutions

Rail Signalling control
Customer Information Systems
Disruption Management
Safety & Security
Control Room

3 Telecoms

Telecoms & security integrator
Station Information & security systems
Remote condition monitoring
Safety & Security

4 Software Solutions

Information display
Digital signage
Asset management
Customer flow and wayfinding

5 Automation & Materials Handling

Continuous automatic production
Automotive production solutions
Materials handling & transfer
Pallet management

world moving

In the transportation space, **L.B. Foster Netpractise, L.B. Foster Rail Technologies and L.B. Foster Telecoms** are working together to deliver new innovations. Think smart stations.

Our advanced wayfinding solutions make it easier to get around stations and CIS, PIS and disruption management help passengers plan journeys. PAVA, CCTV and ANPR are all designed with customer safety and security in mind.

Onward journeys are improved thanks to our track products. Total Friction Management improves the journey experience. Remote condition monitoring keeps a watchful eye on the rail network so that proactive actions can be taken to keep the network moving. We're in signalling too.

L.B. Foster Control & Display Solutions keep the lights on in our homes.

L.B. Foster Automation & Materials Handling solutions are all around you - controlling quality in cars to ensuring your online purchase arrives when you want it.

L.B. Foster Europe is everywhere. We're the hidden heroes delivering for you over and over.

Securing critical connectivity

Ensuring security of power supply to critical telecommunications infrastructure is essential for organisations like Arqiva, which transmits satellite and telecommunications all over the UK and Europe.

Arqiva provides infrastructure and services for television and radio channels in the UK and internationally. Its Chalfont Grove Media Centre at Chalfont St Peter in Buckinghamshire is one of a thousand Arqiva sites transmitting satellite and telecommunications all over the country.

Arqiva's Chalfont Grove facility has a history of failures or faults with the main power supply equipment. Any disturbance in supply results in service failures and disruption. L.B Foster's specialist Telecoms division was brought in by principal contractor RTK Instruments Ltd, to install a system with the capability to monitor all supplies and equipment to eliminate failures and improve response times.

Neil Sheffield, Managing Director, L.B. Foster Telecoms, says: "Our remit was to design, supply, install and commission a new site-wide Supervisory and Control Data Acquisition (SCADA) system, including a sophisticated, integrated monitoring suite for checking substations, transformers and other electrical assets.

"Understanding the scope of this project was key to its success. At the start we undertook an evaluation of the existing systems due for replacement. Our design team recognised that these could be re-engineered and integrated with the new system that we were installing. This delivered significant cost reductions and simplified the new installation from a total replacement to a less disruptive system modification."

A spokesperson from RTK Instruments, adds: "The cost savings identified by the team at L.B. Foster Telecoms demonstrated true initiative and value engineering.

"Identifying that the existing systems could be upgraded and integrated into the new solution meant that we were able to go back to Arqiva with good news about costs. It was this sort of blue sky innovation that shaped our positive relationship with the L.B. Foster Telecoms' team."

For more information
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Telecoms

Ebbsfleet International Station in Essex records almost two million passenger journeys per annum. Station users are regularly set down in a restricted parking area, with a number of near miss collisions. Now a new ANPR CCTV system is helping capture repeat parking offenders.

Improving safety at Ebbsfleet

Ebbsfleet International Station is one of the main railway stations on the prestigious High Speed 1 Eurostar cross channel rail link from London St Pancras to Paris. The station is owned by HS1 Ltd.

During busy periods passengers are often dropped off at the front of the station, despite the area being restricted to bus parking. A number of near misses have been recorded between vehicles and pedestrians. In an attempt to dissuade drivers from using this unsafe area to set down passengers, it was agreed that Automatic Number Plate Recognition (ANPR) technology should be installed. The presence of ANPR is to deter drivers, whilst enabling follow-up fines and actions to be taken against persistent offenders.

We were commissioned by WPB Contractors, on behalf of HS1, to design and install the new ANPR system to monitor vehicle activity in the busy area at the front of Ebbsfleet International Station.

The project specification required the installation of two ANPR cameras located on the approach road to the station, with surveillance and identification equipment monitored from the adjacent National Car Parks (NCP) control room.

Our design solution incorporated existing lighting columns to reduce the requirement for new civils bases and new cable ducting routes, as well as sourcing power for the cameras from the columns' electrical supply.

This further reduced the requirement for new power supplies. Only structural and cable/load calculations were required to confirm compliance for the additional loads being added to the existing assets.

A spokesperson from WPB Contractors, said: "The team at L.B. Foster Telecoms demonstrated a comprehensive understanding of the project's scope and came up with a smart solution that made best use of existing infrastructure. That meant less disruption around the station and a more cost effective delivery."

For more information
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"The new ANPR system has already delivered significant improvements in driver behaviours, which has resulted in a reduction in potential accidents. That means our customers are safer, which is our priority."

Whitechapel on the move

> "Our inspirational telecoms solutions keep the world moving for over seven million passengers using Whitechapel station each year, ensuring safer, more secure and easier journeys for all."

Whitechapel station is an important interchange for both the Hammersmith & City and District lines and London Overground. As part of the Crossrail project, the station is undergoing a major remodelling to accommodate the new Elizabeth line.

Crossrail is among the most significant infrastructure projects ever undertaken in the UK. There will be 40 Crossrail stations, including 10 new stations at Paddington, Bond Street, Tottenham Court Road, Farringdon, Liverpool Street, Whitechapel, Canary Wharf, Custom House, Woolwich and Abbey Wood.

During Crossrail's construction, an interim station at Whitechapel re-routes passengers out of the station. This is to ensure future engineering works take place in a safe environment, with minimal disruption to the existing Underground and Overground services.

A temporary ticket hall and London Underground staff accommodation and Communications Equipment Room (CER) opened in January 2016 at the junction of Court Street and Durward Street. The ticket hall's relocation enabled demolition of existing staff accommodation buildings containing the Station Supervisor's Office / Ticket Hall / Ticket Machines (POMs) / UTS Gate Line / Welfare / CER.

© Crossrail

L.B. Foster Telecoms was contracted by BBMV, the Balfour Beatty, Morgan Sindall, VINCI Construction joint venture, which is delivering the Crossrail Whitechapel Main Station Works contract (C512), to install and commission the new temporary ticket hall. Our works included new Station Information & Safety System (SISS), head end and control equipment, duplicating existing functionality within the old Whitechapel station.

Dave Cranston is a Project Manager at BBMV. He says: "Technical issues faced by the team included the migration of existing CER to the new CER within the temporary ticket hall, testing and commissioning, over and back testing, periodic migration works during possessions, plus countless other issues. Suffice to say they were all met 'head on' and resolved by the team at L.B. Foster Telecoms.

Dave adds "I have no hesitation in endorsing L.B. Foster for future works. Their professionalism, commitment, expertise in their field, ability to adapt as the project develops and most importantly to me, they have good people at all levels of the business representing them daily on the 'front line' with clients."

For more information
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Telecoms

Rocks on the line

In parts of the US, railroad lines run through areas subject to rocks falling from deep cuttings. The falling rocks can sit on the track causing a major hazard to trains. Traditional monitoring methods are inaccurate and labour intensive. Now L.B. Foster Control & Display Solutions is trialling a new way using existing LIDAR technology.

A North American Class 1 railroad company is currently working with L.B. Foster Control & Display Solutions on field trials using L.B. Foster's LIDAR (Light Detection and Ranging) technology for rockfall detection and Remote Condition Monitoring (RCM) sensors for detecting avalanches in the High Country.

Dr Mark Aston is L.B. Foster Europe's Chief Technical Officer. He explains about the challenge of safeguarding against rock debris on the line: "Conventional rockfall monitors use wires across the top of the track that break when a rock falls through them. The problem with this technology is that it does not indicate if the rock has ended up on the track or rolled off, plus it requires engineers to re-string the monitors each time they break.

"The classic L.B. Foster LIDAR heads used in the UK for level crossing safety are now being trialled in use on the rail itself. If a rock of sufficient size to pose a threat to a train is detected on the track, LIDAR technology remotely alerts controllers about the size and location of the obstruction, without an engineer ever needing to visit site and re-string a wire detector."

Avalanches of snow, mud and rock in the high country in the United States also present a risk to service that is difficult to monitor. Dr Aston continues: "The locations where these incidents occur are often remote, with no access to power. Our long-life battery-powered RCM tilt and position sensors are now being trialled.

"Sensors are attached to posts that will be swept along with an avalanche. When a change in their position is detected, data is relayed wirelessly to a local gateway receiver. This launches an avalanche alert over the local train communications network, potentially saving lives and costs.

"These small, inexpensive sensors have the potential to be used over hundreds of miles of susceptible track, in the same way that the rockfall LIDAR can monitor hundreds of miles of cuttings and rock faces adjacent to train lines."

For more information
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World class ATEX systems integrator

ATEX, the French acronym **AT**mosphere **EX**plosible, covers standards for both equipment and personnel in hazardous environments generated by gases and dust. The UK implementation is covered by the Dangerous Substances & Explosive Atmosphere Regulations (DSEAR)

Safely and reliably defining any system to meet ATEX requirements should be carried out by approved independent advisors and consultants and the resulting specification adhered to as part of process and project implementation.

L.B. Foster Automation & Materials Handling is an acknowledged system integrator, involved in a wide range of international industries including rail, nuclear power, oil and gas, food and drink and automotive production.

Alex Morgan is Technical Manager at L.B. Foster Automation & Materials Handling. He says: "As with other safety critical processes, such as specific aspects of CE marking, we know that it is more efficient and safer to consult specialists for their expertise where it is outside of our core competence, such as ATEX. We work with these consultants to develop the most appropriate client solution, rather than attempt to meet the necessarily high standards demanded by the regulations with our own in-house resources.

"Our real skill is knowing when to bring in external experts during a project and to sell that decision to our end customer as the best approach to a long and successful project outcome."

ATEX Levels – Zones

There are a range of ATEX levels for an atmosphere, split into those due to gases or vapours and those due to combustible dust, with equipment approved for one or the other, and potentially both. Within each, zones are specified based on the frequency of a particular situation occurring.

Briefly, a continuous occurrence or something that happens for long periods or frequently is classified as zone 0 for gases and vapours and zone 20 for combustible dust. An occurrence that occurs occasionally in normal operation is classified as zone 1 for gases and zone 21 for dust and an occurrence that is not likely to occur in normal operation is classified as zone 2 for gases and zone 22 for combustible dust.

There are further sub clauses for underground or above ground environments.

Equipment is classified into categories with category 1 referring to equipment usable in zone 0, category 2 for zone 1 and category 3 for zone 2. Additionally, the equipment is then rated for gas "G" or dust "D". For example, a motor suitable for use in zone 2 for defined flammable gases would be "3G".

The ATEX 137 Workplace Directive (Directive 99/92/EC) defines the standards that apply to workplace safety and Directive 94/9/EC deals with equipment within potentially hazardous environments. The critical point with this directive and associated directives is that it is not optional. If in doubt, consult an external independent consultant to review each application.

A further point is that many individual items of equipment, such as sensors and motors, are ATEX rated to different levels. However, unless the whole system is evaluated and approved as a system, having individual items approved is only part of the process.

There are other aspects covering the approved maximum temperature of operation, the type of gas environment and whether it is approved for above or below ground usage.

Therefore, while an environment will be classified as 0,1,2 for gases or 20, 21 or 22 for dust, the associated equipment suitable for use in these environments will have much more detailed approvals some of which will always require external independent approval and certification.

The effect of time

However, none of this addresses what happens with time. Does the process zoned as 22, have the potential for dust build up on hidden surface or in roof voids? Housekeeping processes and associated risk assessments become critical. Does the action of brushing up dust cause a cloud of dust or do compressed air blowers to clean one area move dust to another area that is not cleaned? Does that seemingly simple saving on frequent cleaning and housekeeping in the hidden areas of a process or facility store up a future with hidden dangers? Even the build-up of a very small amount of potentially combustible dust can be the source of a future explosion.

Summary

Alex Morgan, Technical Manager says: "L.B. Foster Automation & Materials Handling is a world class system integrator. We work with a customer project team as ATEX requirements are worked through and then collaborate to implement the agreed and defined project and its agreed ATEX Levels, ensuring that the necessary third party evaluations and checks are achieved."

For more information
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Automation & Materials Handling

Pallet Handling

A revolution in innovation

Plastic straps are used widely in the food and beverage industries to secure goods on pallets during transportation. Safely removing and disposing responsibly of the straps is a challenge facing the sector.

At L.B. Foster Automation & Materials Handling our debander solutions include custom-designed machines that remove pallet retaining straps both vertically and horizontally. Straps are located automatically, cut, removed and shredded for recycling.

A new marketing campaign promoting our innovative debander solutions is now running across the food and beverage industry. The campaign focuses on the benefits of debanders, including increased safety at work for operatives, improved efficiency and enhanced responsibility concerning plastic recycling.

Chris Brown is Head of Sales at L.B. Foster Automation & Materials Handling. He says: "The campaign is all about raising awareness of an engineering solution that really impacts on the bottom line efficiency of businesses handling large numbers of pallets with retaining straps.

"Not only does the debander make life easier for the operative who has to manually remove straps using a blade; debanders increase safety as the straps are often under a great deal of pressure and, when released, can cause whiplash injuries.

"The debander also removes and macerates removed straps, which can then be recycled. Add to that increased throughput and the benefits of investing in a fully automated solution makes sound business sense."

For more information
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Automation & Materials Handling

Our people matter

Based centrally at our European head office in Sheffield, our HR team lives the L.B. Foster values, regularly getting out and about the business to meet the people who keep our world moving.

Marilyn Coulton is our Head of Human Resources. She is also a member of the Chartered Institute of Professional Development (CIPD), the professional body for HR and people development. She is supported by HR Partner Jorja Brittle, HR Advisor Emily Kay and Senior Management Support Emma Addy.

Marilyn says: "We are an exceptionally busy team, always on the go, which is just how it should be. We're here to help everyone and we're making it our mission to open up new and innovative ways of sharing success from each of our businesses so that everyone has a better idea of what L.B. Foster Europe is achieving."

HR Handbook

Marilyn continues: "A first for the business is a new employee handbook. This brings together all company policies in a single publication, so that wherever you work the same common standards, expectations and policies are applied to all. It's part of what has come to be defined as 'L.B. Fosterness'."

The handbook is called 'Jump On Board' and is designed to provide everyone working at L.B. Foster Europe with the same advice, guidance and standards. Included in the book are sections on:

- When you're out of office
- Looking our for each other
- Our digital world
- Grievances
- Rewards.

What does HR do?

Marilyn says: "The Human Resources Department covers five key roles. At executive level, we are specialists in the areas that encompass Human Resources or people management. In our audit role, we check other departments and the business as a whole to ensure all HR policies, such as Training and Performance Reviews, are carried out in accordance with HR policy.

"We also fulfil a facilitator role, helping other departments to achieve the goals or standards as laid out in our HR policies. This involves training for issues that arise in areas relating to people management. As consultants, we advise managers on how to tackle specific managing people issues professionally, and in our service role we raise awareness and inform departments and functional areas on changes in policy."

IMechE Monitored Professional Development Scheme

Our goal at L.B. Foster is to provide unparalleled support and commitment to career development by enhancing skills. We have teamed up with the Institution of Mechanical Engineers (IMechE) committing the business to its Monitored Professional Development Scheme (MPDS). This is designed to enable our employees to take their experience to the highest levels of professional achievement; an ambition that should see them gain Professional Chartered status.

The MPDS is the Institution of Mechanical Engineers' quality controlled route for the Initial Professional Development of young engineers, leading to corporate membership of the Institution and registration with the Engineering Council as a Chartered Engineer or Incorporated Engineer.

Marilyn concludes: "It's my goal to ensure that not only do our Scheme members receive industry-leading professional development, but also the efforts of the line managers, mentors and administrators, which this scheme relies upon, are recognised and supported to the fullest extent. The business now has a great resource and through our energy, enthusiasm and expertise we are committed to providing first class HR support and advice to all our people."

Our HR team (left to right) Emma Addy, Jorja Brittle, Marilyn Coulton and Emily Kay

"A first for the business is a new employee Handbook, which brings together all company policies in a single publication, so that wherever you work the same common standards, expectations and policies are applied to all."

Our people make our business

Strengthening our team

As our business continues to grow, we are investing in new people to strengthen our capability and to bring new thinking and ways of doing things to our business. Alongside our new starters, we have promoted talent from within to provide the framework for the business's expansion.

Rail Technologies, Sheffield

Mike Hull has been promoted to Business Lead for Friction Management and Track Products at the Sheffield site.

Dave Harris takes up the position of Trackside Lead - European Friction Management. Dave will provide his valued technical leadership to the trackside product area.

New faces

Laura Powell joins as Sales Manager for Control & Display Solutions in Nottingham. Laura is joined in Nottingham by Hannah Rodger, who joins as Applications Engineer for Automation & Materials Handling. Hannah has a BSc in Product Design, studying Mechanical Engineering and Design Principles.

Paul Parkinson is a well-known name in the Rail Industry after spending some of his career at Telent, Siemens and Crossrail. He has now joined L.B. Foster Europe in a leading sales role looking at Cross divisional opportunities for the Rail Market.

Lee Stanley joins as Project Manager for Automation & Materials Handling. Lee is a highly experienced project manager, specialising mainly in mechanical handling, steel works and Nuclear and Energy. He is joined by Andrew Farr and Ajay Kareer as Account Manager.

Ajay has a background in automation and a degree in Product Design Engineering, whilst Andrew has a long career in project management.

Exciting times

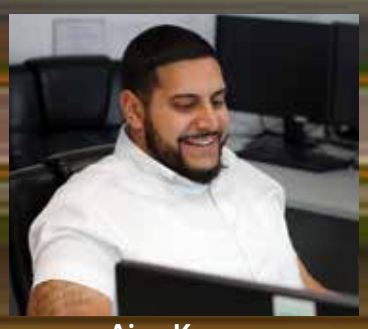
Not only are we are sending a warm welcome to our new employees, but working hard to attract new talent to help with the business growth.

Marilyn Coulton says " It's great to see our new colleagues settle into our sites across the UK and Europe but we haven't finished yet. We are always looking for new talent to fill available roles across the business. My team welcome CVs as the next few years looks to be an exciting time for recruitment."

For more information
contact Marilyn Coulton
ukcareers@lbfoster.com

Laura Powell

Carla Dent



Ajay Kareer

Paul Parkinson

Andrew Farr

Zoey McNeil

Lee Stanley

Mathew Law

Hannah Rodger

Brian Mwongera

A big welcome to all of our new faces, including:

Netpractice

> Andrew Gray, Client Support Engineer
> Michael Patchett, Client Support Engineer

Telecoms

> Natalie Melikian, Project Administrator

Automation & Materials Handling

> Daniel Morphus, Mechanical Build Engineer
> Lee Archer, Mechanical Build Engineer
> Adam Toth, Applications Engineer
> Matt Stephenson, Head of Projects
> Garreth Jones, Mechanical Design Engineer
> Lee Stanley, Project Manager
> Andrew Farr, Project Manager
> Hannah Rodger, Applications Engineer
> Ajay Kareer, Account Manager

Rail Technologies

> Carla Dent, Project Manager
> Lisa Williams, Production Operative
> Zoey McNeil, Account Management Support
> Jonathan Paragreen, Lead Applications Engineer
> Stephanie Turner, Buyer

Control and Display Solutions

> Laura Powell, Sales Manager
> Brian Mwongera, Applications Engineer

GmbH

> Sergei Manske, Design and Applications Engineer

Central Services

> Paul Parkinson, Head of Sales
> Mathew Law, Junior IT Technician
> James Feast, Senior Buyer
> Dawn Spencer, Purchase Ledger

Always forward thinking

At L.B. Foster Europe we are always looking to forge partnerships with brands and businesses that share our goals and ambitions. These are win-win collaborations that bring together expertise and capability to deliver excellence for customers.

The complexities of today's major infrastructure, construction and engineering projects mean partnerships and strategic collaborations are commonplace. As we continue to drive our business forward we are entering into both formal partnerships and less formal alliances, all with the shared goal of delivering the best for our customers.

As these collaborations take shape we are deepening our conversations to understand better our opportunities. These include access to tenders, contracts and projects, as well as widening our networks of contacts and delivering our brand message to new audiences.

Peter Jones is managing director of L.B. Foster Europe: "Our reputation for local excellence and global delivery is a great conversation starter with tier one consultants and organisations. Our joined up capability is something that is creating interest and excitement, both for us and for our partners.

"Collaborations are now taking shape with some of the most recognisable names in our markets, including AECOM, WSP and Skanska. This is great positioning for the L.B. Foster brand and no less recognition than it deserves."

WSP

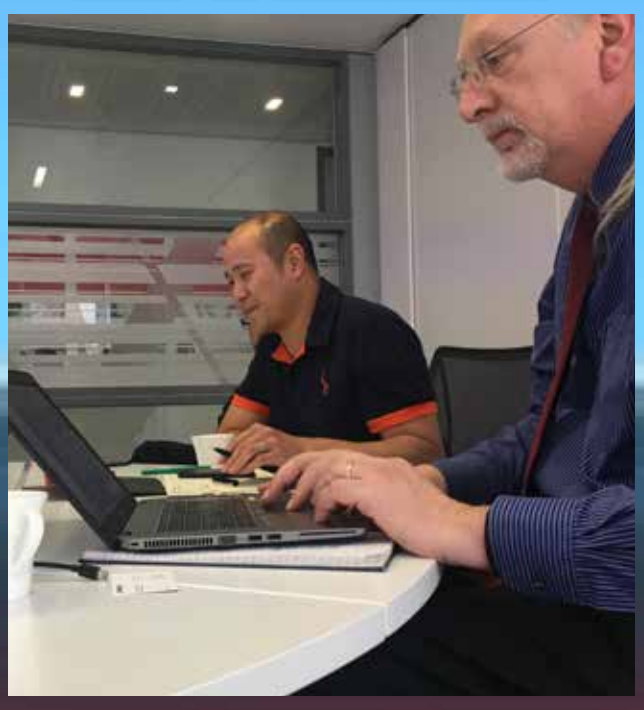
WSP is a globally-recognized professional services firm employing approximately 43,000 people. In the UK we are aligning our business with WSP on a number of major projects including HS2. Sherman Havens is a UK Technical Director at WSP. He says:"L.B. Foster is a great company and we have good experience working together. They posses specific telecoms expertise and experience that fits well with what we're doing. Innovations such as SMARTStation are very interesting too. It's these kind of emerging technologies that are both exciting and a challenge to our architects."

AECOM

We are now an official AECOM Innovation Partner. AECOM designs, builds, finances and operates infrastructure assets in more than 150 countries. The business is a global network of experts working with clients, communities and colleagues to develop and implement innovative solutions to the world's most complex challenges.

Skanska

Our collaboration with Skanska is embedded in the rail industry, working on projects including London Waterloo resignalling.



Informing customers at Colchester

When travellers experience disruption and delays on the railways it's a source of constant irritation, especially when there's no way of finding helpful information quickly. That's where Inform by L.B. Foster comes into its own.

ARR, part of the Abellio Group, ran a live trial of our fully mobile, wireless, battery powered portable disruption management information totem at Colchester station. Lisa Brown, Innovation and Development Support Manager at ARR explains: "Rail Replacement operations mean that ARR needs to look to provide customer information in areas of the station that would not traditionally have it, such as at service bus stops outside the station at Colchester.

"We needed an information solution which was portable, would work outdoors and allows us to customise information to each station. Inform by L.B. Foster met all those needs and so we're undertaking a live trial on station."

Paul O'Bentley is Business Support Manager at ARR. He adds: "We've trialed a range of different information on L.B. Foster's mobile totem, including live departure information, wayfinding, station information and video for customers showing the improvement work which is taking place on the railway during this closure.

"The feedback from customers and our staff has been really positive and we're grateful to L.B. Foster for working with us to bring this trial to fruition."

For more information
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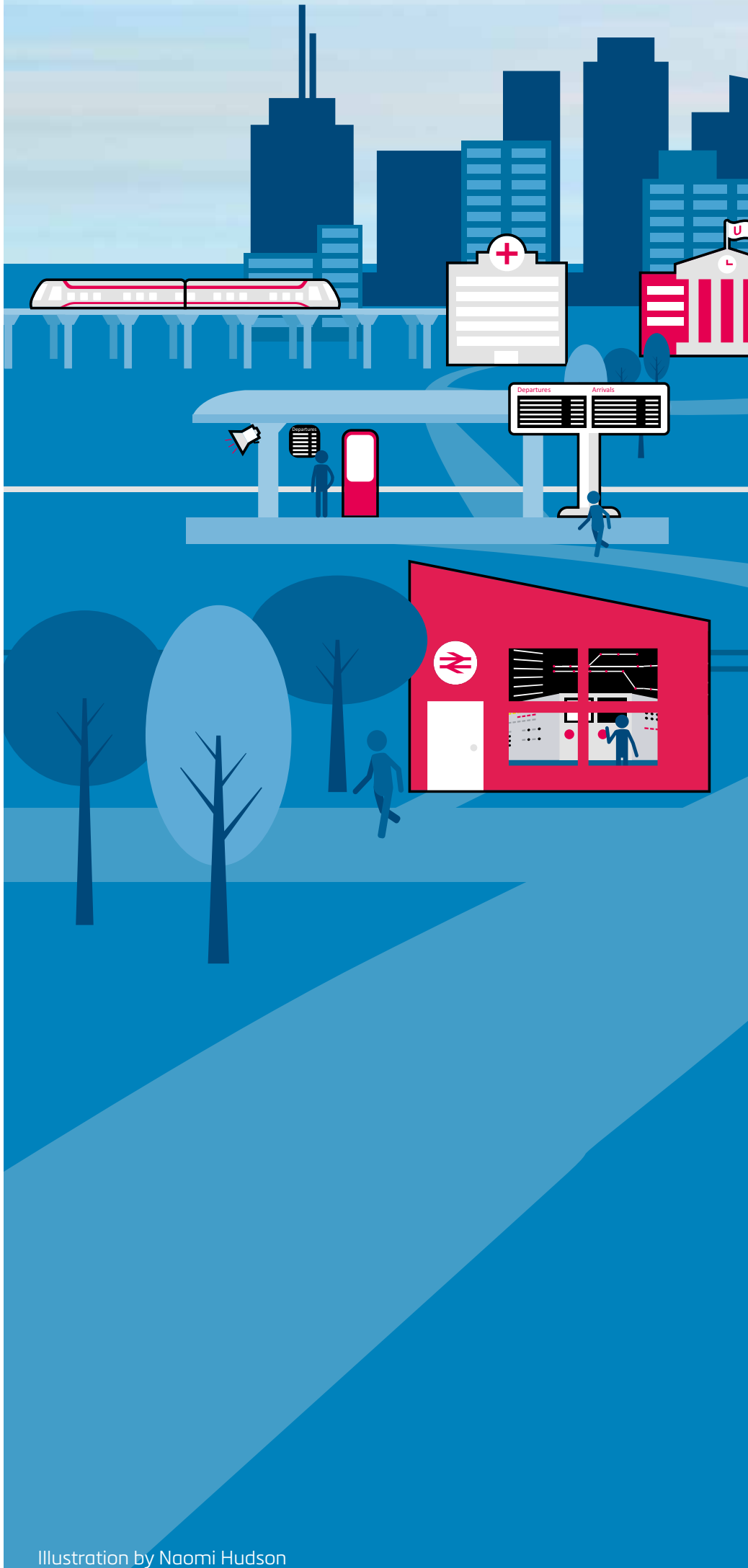

Illustration by Naomi Hudson