# Velocity

## INNOTRANS SPECIAL




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NEWS FROM L.B. FOSTER EUROPE


LBFoster®

## FORWARD THINKING

INNOTRANS 2016 IS THE PERFECT PLATFORM TO SHOWCASE OUR ENHANCED GLOBAL CAPABILITY TO THE INFLUENTIAL EUROPEAN RAIL SECTOR. THAT'S BECAUSE OVER THE LAST 24 MONTHS WE'VE BEEN ACTIVELY ACQUIRING INSPIRATIONAL ENGINEERING BUSINESSES THAT ARE SHAPING THE FUTURE OF RAIL.

**Global reputation**
The L.B. Foster brand enjoys a market leading reputation around the world for its high quality, high performance track components and innovative friction management solutions. As brand leaders, we constantly keep our business moving forward to maximise new market openings. We are committed to engineering excellence through traditional engineering solutions and the application of new technologies to conventional challenges.

Now our extended rail capability includes a wide range of additional products and services, from intelligent remote condition monitoring solutions using mobile, wireless and revolutionary low power technologies, to passenger information and customer information systems, LIDAR Obstacle Detection, Signalling Control and Display and Driver Only Operation CCTV systems.

This powerful combination of expertise, knowledge and innovation will be showcased to our customers for the first time at Innotrans. It's a new look L.B. Foster Europe that's bringing together the best of all our businesses and creating engineering solutions that keep our world moving.

**Peter Jones**
Managing Director
L.B. Foster Europe

**CONTENTS**



## L.B. FOSTER COMPANY

### TODAY'S INFRASTRUCTURE IS BUILT ON L.B. FOSTER'S LEGACY.

**Global reputation**
For more than a century, our company, headquartered in Pittsburgh PA, USA has provided the materials necessary to construct and maintain major transportation, construction, utility, recreation and agriculture projects. Our products recently contributed to the improvement of many landmark structures including the Panama Canal, Brooklyn Bridge and New Orleans flood walls.

We operate individual business units that specialise in rail, construction and tubular products. These groups manage manufacturing, distribution and sales facilities globally. Our European business – L.B. Foster Europe – embraces Lee Foster's original dedication to customer satisfaction, which is still at the forefront of the L.B. Foster customer service policy.

L.B. Foster Company was founded in 1902. We have always had a reputation for service excellence that is now being adopted into new global transit markets, including solutions such as Customer Information, Rail Technologies and Operational Asset Management for businesses including Arriva Buses in Europe.

We are a global company on a global stage. We think global but our expertise is very much locally focused through our common mission of "keeping our world moving".


We are a business that's committed to keeping ahead of the curve. Over the last two years we have successfully completed a series of key strategic acquisitions in the rail supply sector that now positions us as a total solutions supplier to the rail industry – from wheel/track interface to signalling, remote condition monitoring and customer information systems.
At the same time we have strengthened our capability in the buoyant industrial automation markets.

Our new engineering capability now comprises three core operating divisions that are delivering excellence as standard:

**LBFoster** Track Infrastructure

Innovative friction management and track components solutions for the rail sector

**LBFoster** Control, Display & Security

Innovative technology for the transit, control room and customer information and display sectors

**LBFoster** Automation

Innovative design, build and supply of systems and machines to precisely suit global manufacturing production sectors

**L.B. Foster Automation**
The third string in our bow is L.B. Foster Automation. We design, build and supply systems and machines to precisely suit global manufacturing and production demands. This is achieved through the intelligent application of materials handling and conveyor technologies, combined with automated assembly, test and robotic technologies.

Our core markets include automotive, food and beverage, manufacturing and warehousing and logistics around the world. So the next time you get in your car or open a beer the chances are they have been touched in some way along their journey by our automated engineering solutions.

**L.B. Foster Track Infrastructure**
L.B. Foster Track Infrastructure is a specialist, end-to-end supplier to the European rail sector. Our performance critical engineering solutions fulfil an essential role in maintaining the safe, secure and reliable daily operation of rail networks across the continent.

**Excellence in action**
We coordinate our European track infrastructure solutions from operational centres in the UK and Germany. These centres give us the agility to respond quickly to the demands of the dynamic continental rail markets so we're always in the right place at the right time with the right solution.

We are the market leaders in the supply of innovative rail friction management solutions and track component products to the global rail industry. Our on board and trackside innovations reduce rail maintenance and costs, increasing asset life and return on investment for network owners.

In Europe, our experience of high speed commuter, urban commuter, tram, metro and freight railway markets is unrivalled. Our credibility is the result of decades partnering Europe's leading railway infrastructure organisations to deliver excellence that keeps our railways moving.

**L.B. Foster Control, Display & Security**
L.B. Foster Control, Display & Security brings together under one operating division the combined vision, innovation and skills of three specialist businesses – TEW, TEW Plus and Netpractise – to deliver breakthrough technologies that keep our world moving.

**The best of three worlds**
We specialise in innovative engineering solutions for the transit, control room and customer information and display sectors. Our control panels are used daily by signalling control centres, as well as in critical infrastructure such as the oil, gas and power industries, including nuclear power station control and display. The TEW Mosaic Mimic System, with dynamic overview displays, is a world leading product and specified for use in numerous major control rooms across the globe.

We're delivering information, at all levels, in transit terminals for real-time information on arrivals/departures, wayfinding and information display for passengers and customers. And our specialist data collection and analysis capability is developing bespoke Operational Management Solutions for an ever expanding blue chip client base.

# Partnerships taking us all forward

**L.B. Foster Company**

2,000+
employees

$750m
sales

30
production sites

50
countries

**Knorr-Bremse**

24,000+
employees

€5,831m
sales

100
production sites

30
countries

**Knorr-Bremse**
L.B. Foster Bahntechnik and Knorr-Bremse, the world's leading manufacturer of braking systems for rail and commercial vehicles, signed an exclusive distribution agreement in 2015.

Our German track infrastructure business L.B. Foster Bahntechnik, based in the city of Herne, established a strategic partnership with Knorr-Bremse. Under the terms of the agreement Knorr-Bremse has exclusive sales and distribution rights for L.B. Foster's wheel flange lubrication systems and related consumable products.

Keith Churm is L.B. Foster Bahntechnik's Managing Director. Commenting on the strategic alliance, he says: "Raising the profile of L.B. Foster's market leading friction management capabilities and extending our reach is a pivotal component of how we keep our business growth moving in the right direction.

"This mutually beneficial agreement brings together two of the world's leading rail supply businesses working to improve the performance and reliability of rail networks. It's a perfectly aligned partnership: Knorr-Bremse enjoys a global reputation for its high performance braking systems; we're recognised for our innovative friction management solutions for the wheel rail interface. Creating a distribution model that provides customers with integrated solutions for braking systems and friction management is a win–win for the customers that we serve and the Knorr-Bremse–L.B. Foster partnership."

The exclusive sales agreement covers an initial period of five years for Germany , Austria, Switzerland, Poland and southern Africa.

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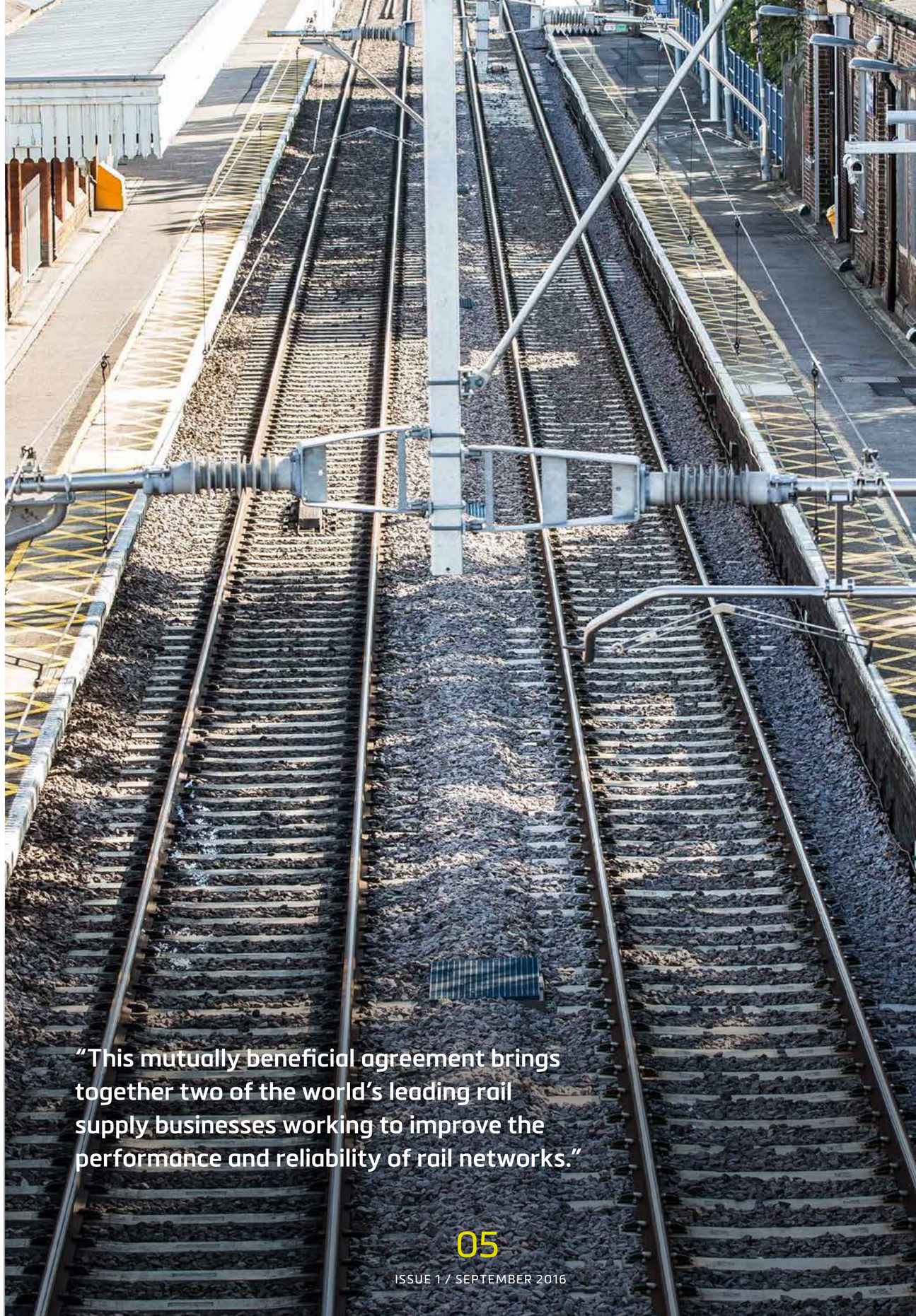



## Intelligent remote condition monitoring

Our unique ‘Railway of Things’ comprises various systems that can monitor any 'thing' that is important for the railway, and deliver information related to it in a way that the customer requires. **Dave Farman** talks about our solution.

The core components of L.B. Foster’s remote condition monitoring (RCM) systems include multiple wireless condition sensors that detect environmental changes such as ground movement, heat (rail expansion) or changes in water level. CCTV is used to evidence changes by providing visual verification.

Cutting edge battery technology means continuity of power supply even in inaccessible and off-grid areas, whilst intelligent solar powered systems supplement supply. Communications are via GPRS email/SMS and secure 3G mobile over a Virtual Private Network. Secure access portals provide users with instant online monitoring in real time.

Our intelligent RCM systems are designed to monitor, maintain and safeguard railway assets including:

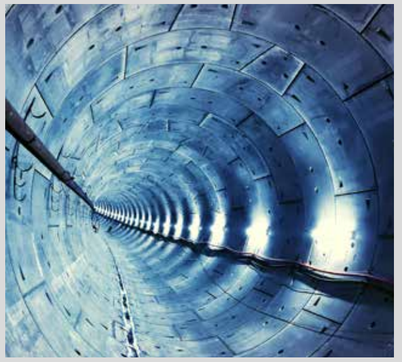
- remote flood monitoring
- monitoring trackside areas prone to movement and landslip
- tracking temperature
- weather conditions in inaccessible locations.

For more information contact Dave Farman dfarman@lbfoster.co.uk

# Keeping our world moving

# Improving customer journeys

The future of rail in London is Crossrail and L.B. Foster Control, Display & Security (CDS) is a big part of that future, with contracts secured worth over £15m. **Paul Unwin** explains.



We are aligning the future of our business with critical infrastructure projects, engineering new technologies and solutions that keep us moving forward. As Europe's largest civil engineering and construction project, Crossrail is a project in which everyone wants a part, and we're no different.

**Moving millions**

Paul Unwin, Director, L.B. Foster CDS explains: "Our smart technology solutions have a fantastic track record of achievement supporting major infrastructure such as London Overground and London Underground. Our involvement in Crossrail is a logical progression as our engineering capabilities are proven in service on some of the most demanding infrastructure anywhere in the world.

"We are installing essential Public Address Voice Alarm (PAVA) safety systems at Crossrail's main interface stations: Bond Street, Tottenham Court Road, Farringdon and Whitechapel. These safety critical systems have been developed to meet the highest demands of London Underground and are used across the capital's tube network.

"Alongside PAVA, we are also installing CCTV safety monitoring systems. Our systems enable centralised controllers to monitor, review and respond to incidents as they happen, as well as providing secondary reassurance to travellers that a watchful eye is ensuring their safe transit.

"And our design capabilities are being deployed in the new Building Management System at Whitechapel, Farringdon and Liverpool Street stations."

**Augmented reality**

Paul Unwin continues: "As a business we have further enhanced our capability with strategic acquisitions, including a technology-led partner that is now an integral part of L.B. Foster CDS. We can now deploy augmented reality help points, or 'virtual assistants', that provide travellers with advice on a range of travel-related matters, including the safe use of escalators. And our networked Digital Pro Media (DPM) solutions enable operators to change critical customer information across multiple screens and multiple locations quickly and efficiently – keeping customers up to date with travel news, as well as alerting them to future travel disruption.

"It's a fantastic testimony to the extraordinary people behind our business that our name and brand are associated with one of Europe's most prestigious engineering projects. It's a team of highly motivated designers, engineers and installers that works seamlessly to deliver on time and on budget, but which is always encouraged to ask questions and suggest solutions."

For more information
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## DRIVING ON

**Dagan Bradbury** talks about our DDO solution for the Elizabeth line.

Our research, design and development team in Nottingham jumped at the challenge of creating a robust CCTV structure for use on Elizabeth line platforms for Network Rail.

Dagan Bradbury, Project Manager, L.B. Foster CDS explains: "Network Rail's driver only CCTV stanchion presented us with a number of challenges. The structure needed to be robust enough to withstand the turbulence created by high speed trains, yet manoeuvrable enough to be lowered for maintenance without the need for costly special equipment.

"Our smart engineered solution was to incorporate a simple electronic mechanism that enabled the CCTV cameras to be lowered and serviced by maintenance staff on the platform. This is activated by a plug-in electronic actuator and for safety purposes can only be activated using our purpose designed plug-in control box. The result is being rolled out on Elizabeth line platforms across London."

The Retractable Mounting System (RMS) enables maintenance of DOO CCTV cameras at platform level, without the need for high level access equipment, possessions or isolations. The 24VAC cameras in operation are mounted at 750mm from the platform edge at a height of between 2.75m–3m from platform level. A maximum of two cameras (designated Camera A and Camera B) can be mounted on each RMS, which can be lowered from operational position for platform level maintenance 2.2m from the platform edge.

Lowering of cameras is facilitated by a retractable mounting arm, which is either stanchion or canopy mounted. The retractable mounting arm incorporates a 24VDC 500N linear actuator, which facilitates the lowering/raising of the cameras and sufficient force to lock the cameras rigid when in the operating/raised position. The retractable mounting arm can only be operated by the RMS control unit. This includes a test monitor and the facility to remotely focus and zoom the camera lens to allow set-up of the cameras without the need of accessing the camera in its operating/raised position.

For more information
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# Ideas that keep our world moving



**Saving lives on level crossings**
Over the period 2010-14 there was a sustained reduction in the number of near misses with both vehicle and non-vehicle users on UK level crossings. However, accidental fatalities and near misses continue.

L.B. Foster's intelligent Level Crossing Obstacle Detection system (LIDAR OD) detects objects of a predetermined size present on a level crossing and reports them to the signalling control centre. It can also be designed into an automatic signalling interlock system to enable fast and efficient communication to an approaching train driver, the automatic braking system or to the trackside signalling protecting the target crossing.

For more information
contact Dave Farman
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**Signalling Control and Display incorporating TEW mosaic mimic systems**
The Subklew SM24 is widely acknowledged as the world's leading mosaic mimic system.

The mosaic mimic system is the most cost effective solution for critical process control and visualisation applications. It is deployed widely across the UK rail network, providing assured performance 24/7/365 for signalling operators.

On show at Innotrans is a typical UK level crossing application. This demonstrates how CCTV integrates with our mosaic mimic system to record live activity on level crossings, ensuring safe and secure operation and monitoring of safety critical assets.

The advantage of the mosaic system is its ability to be changed with minimum disruption to normal operations in the control room. Virtually any device can be incorporated into the grid/tile system to provide an unambiguous representation of the rail network for signalling control.

For more information
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**Smaller, smarter TGA cabinet design**
The innovative new Network Rail approved TGA3 cabinet is smaller and lighter than previous models, whilst retaining the same operational capacity. The new design also features a revolutionary two pump arrangement, combining improved performance with reduced power consumption for increased battery life.

Now featuring two smaller pumps, the TGA3 offers operators improved efficiency and control. Each pump services a single rail, ensuring balanced and equalised gel output per rail and improved reliability. The smaller bore delivery pipe is more efficient and makes it more convenient to place. The optimised cabinet offers ease of maintenance access in its internal layout, including a hopper that can slide out horizontally.

For more information
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**Helping passengers on their way**
Our innovative Way Finder technology is an interactive media solution for displaying information to customers and passengers. The Passenger Information System shows National Rail Enquiries powered train times, Journey Planner and location maps live on a simple user interface. The Route Finding version shows customers how to get from a starting point to their destination on one or multiple floors. The whole design is exceedingly user friendly with big buttons, clear map designs and delivers real time information instantly.

For more information contact
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# Sign of the times

Delivering timely information to travellers across the rail network to help them on their journey is now a reality thanks to our innovative Digital Pro Media (DPM) solutions. Damian McCracken reveals our track record with Network Rail, amongst others.

Network Rail, South Eastern Rail and Birmingham New Street are just a few of the organisations helping inform customers using our Digital Pro Media solutions. Integrated with our Operational Information System (OIS), Network Rail keeps passengers informed across the rail network in real time – a major advantage in the event of adverse weather, incidents or major events.

Coordinated from a simple online portal, users of our DPM such as Network Rail can design, schedule and direct multimedia content to screens using familiar drag and drop methods in an easy to navigate system. The system can also be configured for simple full screen content display of images or videos, or for more complex multi-windowed display.

In addition to the DPM software that travellers see, L.B. Foster CDS provides and installs the screens in stations across the country. Shane Clowes, Project Manager of the hardware installation and maintenance says: "Our clients are reassured that a single company manages the whole project, from software support, installation of screens and hardware to screen maintenance. It's a great example of L.B. Foster delivering a complete solution that helps the railways keep moving."

**Messaging on the move**

Our unique, class leading mobile, battery-powered display unit is currently being considered for MTR Crossrail. The advantage of the unit's mobility is that it can be moved around stations as required, providing 'Service Disruption' notices to travellers without the need for power cables.

One of our biggest challenges to date was to keep people moving during the London 2012 Olympic and Paralympic Games and for the Queen's Diamond Jubilee. We designed and developed Network Rail's OIS replacement system installed in 77 stations across the rail network. Over 90% of the screens installed for this project are still in use, providing daily service quality information, security and safety advice and advanced warnings of engineering works.

Anthony Gough, Business Systems Specialist, Network Rail said: "Considering the Olympic scale of what was needed at very short notice for system design and implementation, in comparison to standard projects, these solutions were key to delivering the revised system in time; and they took to the challenge with enthusiasm."

For more information
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# Frictional benefits

Train operators in the UK already use L.B. Foster's KELSAN® solid stick LCF lubrication and solid friction modifier systems.

London Underground is a typical customer from the global metro market, while other deployments range from commuter rail fleets to freight wagons. All have the common aim of increasing wheel life through preserving wheel flanges.

Key drivers to on board deployment of friction management systems are the cost and safety aspects associated with upkeep and refilling. In particular, as track access time becomes more restricted, the option of refilling and maintaining equipment in depots has become increasingly attractive.

Enhancing our on board range now is L.B. Foster's KELTRACK® On Board (KOB) technology that delivers KELTRACK® friction modifier to the top of the rail to provide highly efficient, targeted enhancement of asset performance without compromising the traction or braking behaviour of the vehicle. The system can be controlled via GPS or directly by vehicle data, to allow application of the required amount of friction modifier in relation to speed and location.

Key benefits include mitigation against rail-head corrugation; combating curve squeal; and a reduction in horizontal creep forces between wheel and rail, leading to enhanced wheel and rail life.

**Switch protection**

Repair to damage caused at the thin end of the switchblade means cleaning, welding and grinding work, with a frequency that is unpredictable and disruptive. The damage itself is also critical, as fracture of a switchblade renders a junction impassable.

Improved steering behaviour was observed from the application of KELTRACK® to the top of rails in advance of junction. A trial application was deployed at Cemetery Junction in Nuneaton. Switchblades required repair after only three to four months and were being replaced in under two years. Following the KELTRACK® activation, no repairs were required for two years. The reasons were the change to the wheel contact path on the rail and the amount of contact being significantly reduced with the switch rail. We are currently working with Network Rail engineers to further improve understanding of how this really works and how best to deploy it elsewhere.

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# Our movers & shakers

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