

Railway-News

M A G A Z I N E

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Fire Suppression for Rolling Stock Depots and Train Stations

Mistral Data's Berth Maps – Creating Virtual GPS Berths for Granular Location Information

ISSUE ONE 2024



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Letter from the Editor



Dear Readers,

It's the start of a new year and we are kicking off this issue with a look at climate resilience. Green technologies are being promoted across the transport sector – from electric vehicles to alternative traction solutions. And of course decarbonising transport is a goal that we must continually work towards and in which the rail sector should play its part.

However, the impacts of severe weather events are already being felt around the world, putting all infrastructure, including the rail network at risk of damage, cutting people off from their usual transport links. Our writer Tiana May attended Rail Live! in Madrid at the end of last year, where the topic of rail resilience was much discussed. A key highlight was that infrastructure spending should not merely be reactive to extreme weather events, patching up damage as and when it arises; instead, planners should understand that climate change is not some thing that will affect us in

the future – the effects are already being felt today and with that in mind, we should focus on making our infrastructure resilient to the new, more extreme conditions.

This is actually a topic close to our hearts here at Railway-News, as we are based in the South West of the UK, in Exeter, and have therefore been significantly affected by the flooding and consequent closure of the only railway line into Cornwall.

Importantly, if passengers cannot rely on service availability, they will opt for another, more reliable mode of transport, and these passengers may not return after service resumes. A railway can be as green as it wants, it has no impact if it is not running or passengers don't trust it. A resilient railway is a sustainable railway.

If you would like our rail news straight to your inbox, make sure you're subscribed to us [here](#). If you want to be featured on our site or in our e-magazine, please [email](mailto:editorial@a2bglobalmedia.com) Andrew Lush or call +44 7432 725001.

We hope you enjoy this issue. As always, we welcome your feedback and insights, which you can send to editorial@a2bglobalmedia.com.



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COVER: Sea wall at Dawlish © Network Rail



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FOR TODAY'S AND FUTURE CHALLENGES

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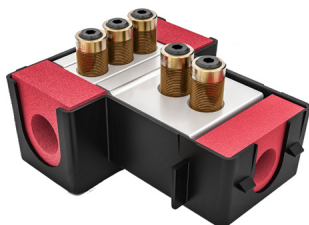
- Railway Catenary Systems
- Tensioning
- Insulation technology
- Power supply
- Safety equipment



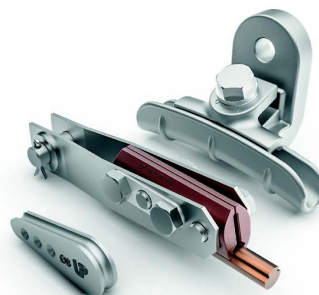
Insulators



Safety Equipment



Bonding Connectors



Catenary Clamps



Droppers

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Our journalist Tiana May attended Rail Live! in Madrid where one central discussion focused on the railways becoming more resilient in the face of more extreme weather events.

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Rail Resilience: Preparing for Trouble Down the Tracks

By Tiana May



Adrian Fernandez at Rail Live!

From 29 November – 1 December 2023, Rail Live! took place in Madrid, Spain. The event focused on key themes in the industry such as **safety** and **decarbonisation**. In addition, it recognised critical challenges faced by operators and infrastructure managers in the face of climate change and highlighted the need for long-term sustainability through climate adaptation.

With this focus in mind, Lisa Constable, Weather Resilience and Climate Change Adaptation Strategy

Manager at Network Rail stressed the importance of considering extreme weather in both near and long-term plans. Although legislation is currently prompting efforts to be directed towards electrification and decarbonisation, Constable argued that it was futile to look at electrifying a line that was, for example, at risk of falling into the sea.

What's more, Constable also noted that currently, a significant amount of funding was spent on being reactive to damage, rather than proactively preventing



Flooding at Clay Cross © Network Rail

the destruction from occurring. Consequently, Network Rail is in the process of developing 100-year future plans. This is arguably a required consideration for long-term sustainability due to the age of the UK's 200-year-old railway and the increased pressure it is facing from extreme weather and climate change.

Lisa Constable, Weather Resilience and Climate Change Adaptation Strategy Manager at Network Rail said: *“With decarbonisation being included in the legislation, there is a very significant focus on that, because we need to reduce emissions and thus reduce the scale of climate change. But with all of our efforts on sustainability without looking at how we are managing the impacts of extreme weather, we're not going to be able to achieve any of our targets. We spend hundreds of millions of euros every year on responding to the impact of weather, but we're very, very reactive and there needs to be a shift towards being much more proactive and doing much more long-term planning, looking at how we might need to transform the way we run the railway.”*

As a notable example in the UK, the Exeter-Plymouth line that connects the South West to the rest of the country, runs along the coastline in Dawlish. This has typically caused significant infrastructure damage and

service disruption during stormy weather. For example, in 2014, a series of storms and rough sea conditions resulted in an eight-week closure of the line and required 35 million GBP in repair works.

To prevent these disastrous events from reoccurring, Network Rail launched an 80 million GBP project to build a more resilient sea wall. Following its **completion in 2023**, the wall recently withstood 5-metre high-tide waves, wind speeds of over 80mph and driving rain during Storm Ciarán, which arguably mirrored the conditions faced in 2014. However, in contrast to 2014, the new wall effectively deflected large waves back to the sea, preventing damage to the railway line. This ongoing success therefore demonstrates the effectiveness of investing in resilient infrastructure and preventative measures.

Elsewhere in Europe, Spain's oldest railway also runs along the coast in Barcelona and thus likewise suffers from the negative effects of coastal erosion and rising sea levels. In January 2020, storm Gloria caused notable damage to the line, bringing it into the water.

At Rail Live!, Adrian Fernandez, Director Gerente of Fundacion De Los Ferrocarriles Espanoles (Foundation of Spanish Railways) therefore advocated for the need



2014 damage to the railway line at Dawlish
© Network Rail

“With decarbonisation being included in the legislation, there is a very significant focus on that, because we need to reduce emissions and thus reduce the scale of climate change. But with all of our efforts on sustainability without looking at how we are managing the impacts of extreme weather, we're not going to be able to achieve any of our targets.

Lisa Constable, Weather Resilience and Climate Change Adaptation Strategy Manager at Network Rail

for better coastal defences in the short term and the potential to design new tracks further inland for a more sustainable and resilient long-term solution.

What’s more, Fernandez spoke of the effects of other weather-related disasters on the nation’s railway in recent years. This included a heatwave with temperatures of 47.4°C in August 2021, leading to a freight train derailment; wildfires in August 2022; a blizzard in January 2021; and most recently, severe flooding in September 2023.

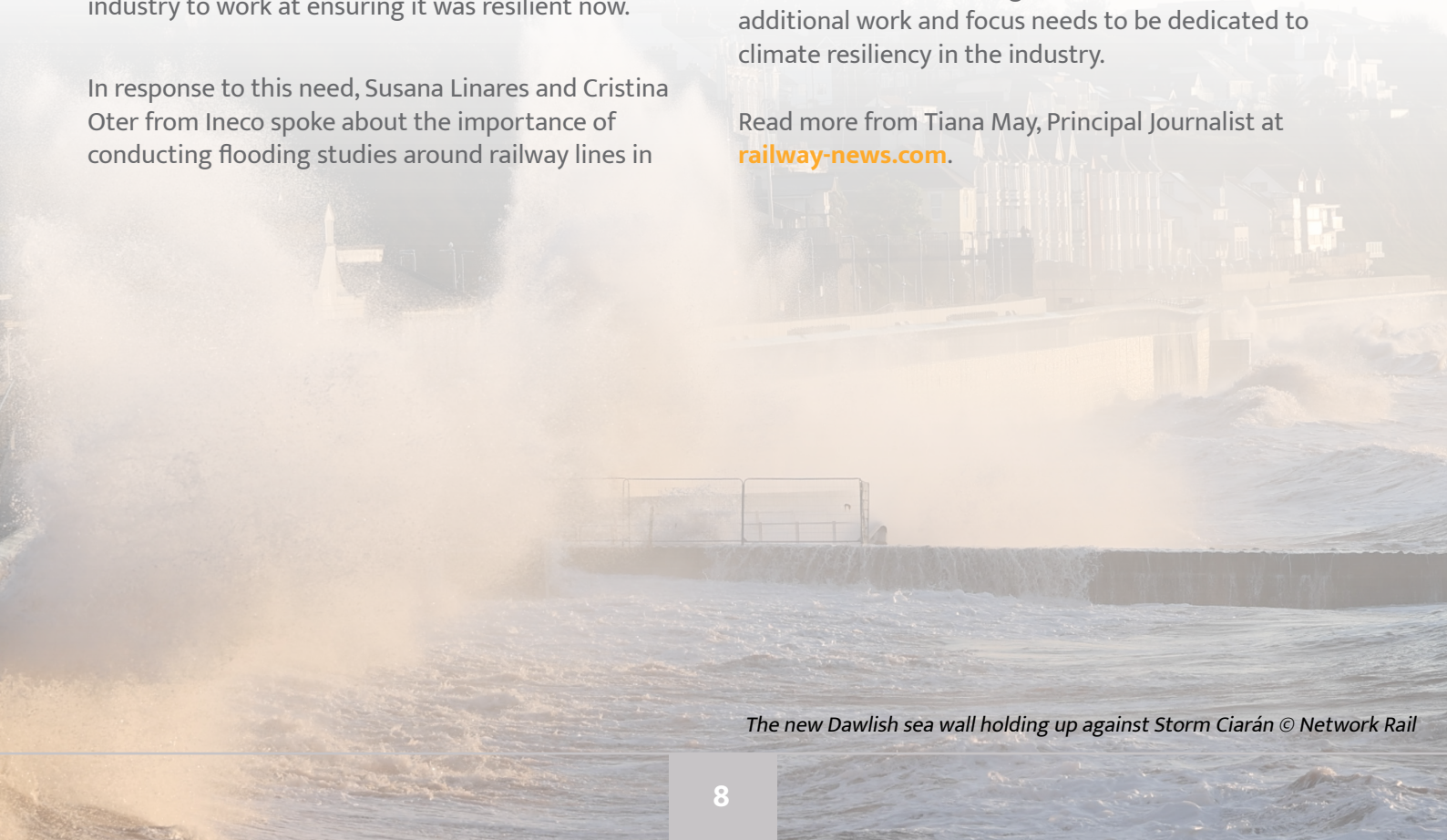
These events emphasise that the impact of extreme weather is a current issue, rather than simply a future one. As railways are essential for sustainable travel, Fernandez thus argued that it was paramount for the industry to work at ensuring it was resilient now.

In response to this need, Susana Linares and Cristina Oter from Ineco spoke about the importance of conducting flooding studies around railway lines in

Spain. By collecting and analysing data on potential flooding risks, Ineco aims to help effectively manage future issues and determine the potential impact of droughted land and increased precipitation on Spain’s high-speed rail network. For example, the company is producing 3D terrain maps for future projects and is rating the risks for current lines so that design criteria can be updated and necessary infrastructure can be implemented. This includes the installation of additional drainage and barriers where required.

As a result, alongside emphasising the need to protect railways from extreme weather and climate change, Rail Live! presented some of the current initiatives underway to tackle this issue. However, with extreme climate events set to continue becoming more frequent and more intense moving forwards, it is evident that additional work and focus needs to be dedicated to climate resiliency in the industry.

Read more from Tiana May, Principal Journalist at railway-news.com.



The new Dawlish sea wall holding up against Storm Ciarán © Network Rail

Upcoming Rail Events & Exhibitions

February 2024 – May 2024

Click here to see all of our event and exhibitions listings



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All the latest industry news and updates broken down in our directory categories which are: Digital Solutions, Bus Interiors & Design, Maintenance & Servicing, and Electrification & Power so you can easily find the items you're most interested in. Plus much more!

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Antonics GmbH

ANTONICS Technology for Wiener Linien



CNC milling machine at the ANTONICS factory © ANTONICS

Smart, extremely flat and made in Germany.

This describes the innovative ANTONICS antenna technology best. The leading German developer and manufacturer of innovative high-tech antenna system technology is based in Velten, near Berlin, and develops, produces and designs high-tech antennas in-house. With the planar antenna technology from ANTONICS, it is possible to use different communication systems, such as 5G, LTE, UMTS, GSM-R, FRMCS, TETRA, WLAN or GNSS, via a single, very flat antenna. ANTONICS antennas are used in Deutsche Bahn trains and on the trains and buses of numerous German and international long-distance and local transport companies.

Together with its Austrian sales partner Tomek GmbH, which has been active in industrial electronics since 1978, ANTONICS is supporting Vienna's trams and underground trains on their way towards the digital age. After an intensive testing phase, the project started in May 2022. By 2024, a total of 333 ULF trams, 117 Silberpfeil underground trains, 62 V-type underground trains and 144 T-type underground trains will be modernised including all the vehicles from Siemens and Alstom.

Equipped for the Future

Wiener Linien's objective is to find a future-proof solution over the coming years, which will cover many possible GPS, WLAN and mobile phone bands. *"We need a strong and competent partner for this kind of*

project,” says Martin Blemenschitz, Managing Director of Tomek GmbH. “Given that ANTONICS is known in the industry for developing innovative antennas tailored to customer requirements, the decision was made quickly.”

In total 700 OmPlecs®-TOP 200 AMR MF-05 -5- L1-L2 TO antennas will be installed. The antenna was developed in a short amount of time and meets all the specifications as set out in the project’s tender. The tender motivated the development of a high-precision, future-proof, yet small 5G antenna that enables precise positioning.

Low Height, Maximum Technology

The OmPlecs®-TOP 200 AMR MF-05 -5- L1-L2 TO generation of rail antennas is characterised by a low antenna installation height of only 60mm. Small and smart, this three-port antenna integrates various communication bands (open system for GSM, GSM-R, UMTS, LTE and 5G signals), WLAN 2.4/5.8 and satellite signals (GPS, GLONASS, Galileo and BeiDou). All these technologies are combined in just one single, flat antenna. Cost-intensive splitters are unnecessary due to the selective coupling of the respective frequency range via high-quality N and TNC-series connectors.

This makes the ANTONICS solution far more cost-effective.

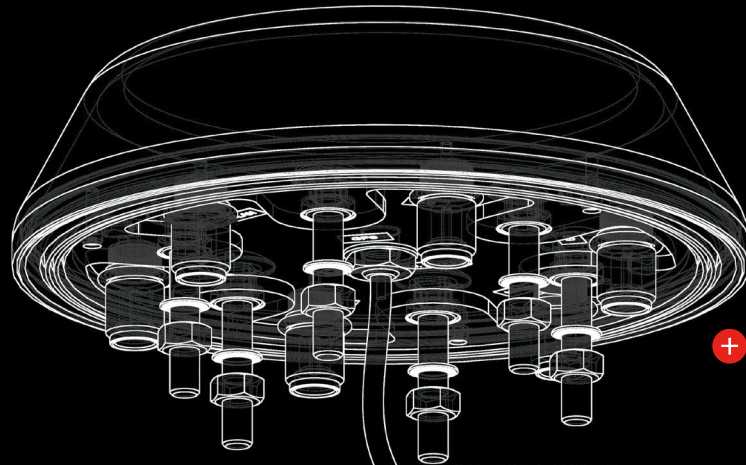
Digital Wireless for High Voice Quality, Fast Data Transmission, and More

With the switch to digital wireless, Wiener Linien is optimising the quality of vehicle announcements, among other things. Two million passengers will profit from the technology update every day. While the channels of analogue wireless are limited, far more calls can be made simultaneously via the digital route. Additionally, ANTONICS antennas support faster data transmission and easier software updates. This expands Wiener Linien’s service and contributes to the user satisfaction of public transport in Vienna.

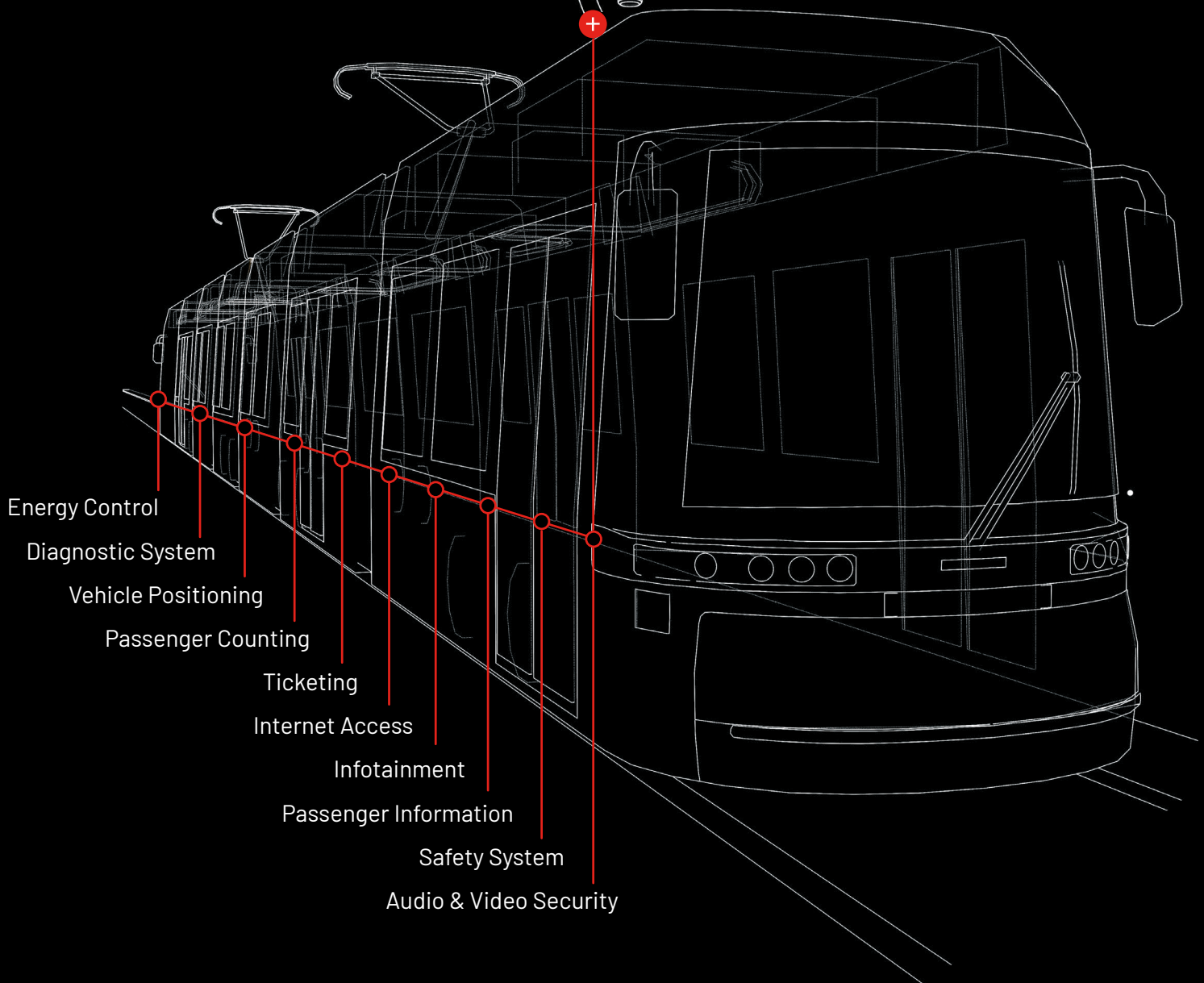
For more information visit our website
www.antonics.com/en.



Line 49 at Hütteldorf station
 © Wiener Linien / HELMER_M



+ 2 m-Band, 70 cm-Band, ISM, GSM, GSM-R, UMTS, LTE+, 5G, WLAN, WiFi-6E, GNSS



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Innovative solutions to enhance your
passenger experience and fleet management

Nomad Digital has over 20 years of experience in providing proven connectivity solutions and continues to innovate to meet that growing demand.

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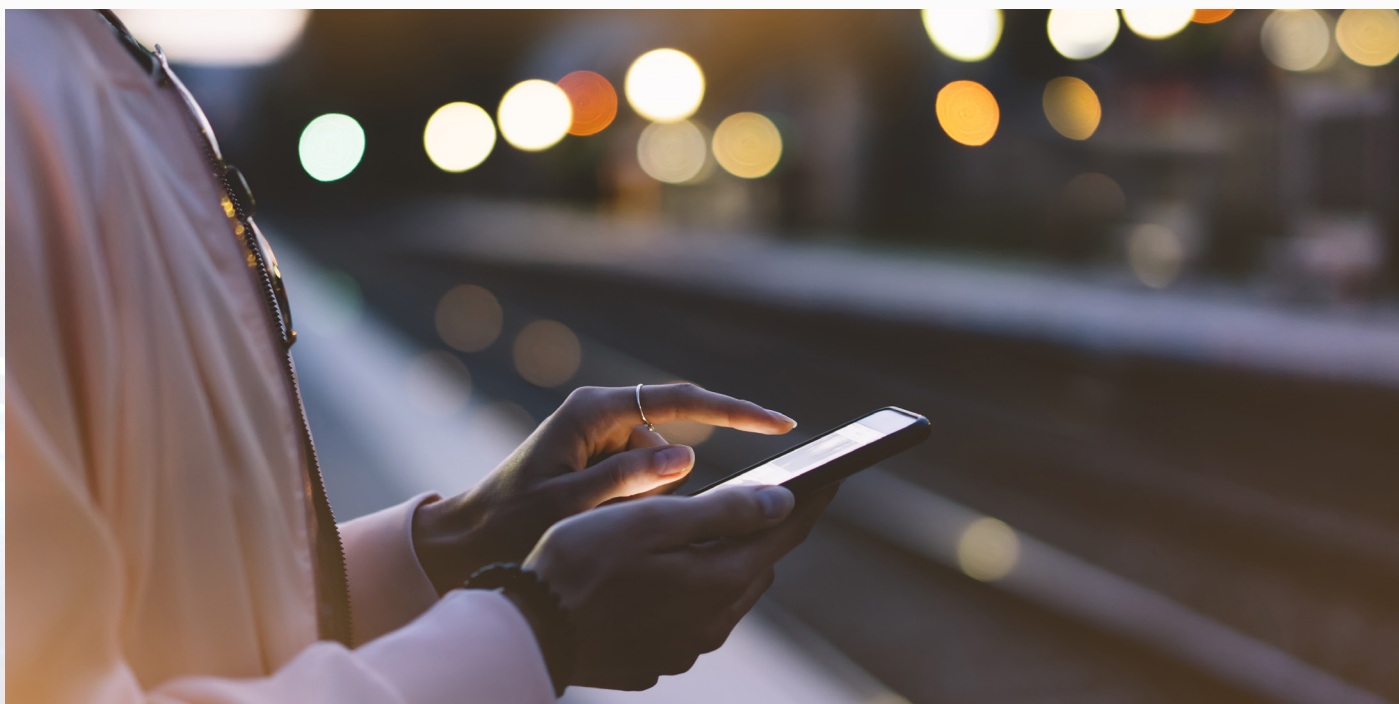


Nomad Digital

connected transport, intelligent solutions

Nomad Digital

Nomad Digital – Championing the Digital Train



Nomad Digital is a world-leading provider of passenger, fleet management and monitoring solutions to the transport industry.

Partnering with train and freight operators, rolling stock owners and train builders, Nomad Digital brings its systems architecture and integrator capabilities to provide modern processing, monitoring and connectivity solutions.

Understanding the potential value of data collected from rail journeys, Nomad Digital also supports operators in achieving operational efficiencies through real-time fleet monitoring, utilising artificial intelligence (AI) and machine learning expertise. This supports the

development of proactive rail maintenance strategies with robust rail connectivity and edge processing at the core. Providing operators with in-depth fleet intelligence for data-driven decision-making can help tackle operations and maintenance challenges early, thus preventing costly fleet downtime.

Nomad Digital also offers extensive infrastructure monitoring solutions with a powerful onboard data centre (ODC), providing edge processing capabilities to report on 'events' detected by onboard monitoring systems.

For the Whole Journey

Passengers seek more than just a journey that gets them from A to B; they want to feel comfortable and

in control when using public transport. Seamless connectivity and other value-added services, all easily accessible in a safe and connected environment, are now simply part of an expected service for passengers. With this in mind, Nomad Digital focuses on developing innovative, AI-supported solutions to meet ever-evolving industry demands for a fully connected, end-to-end passenger experience, supporting Mobility-as-a-Service (MaaS) initiatives.

Nomad Digital stands at the forefront of the modern-day landscape of rail services, with connectivity at the heart of everything. The rollout of 5G connectivity across all projects being an example of this. The integration of Nomad's products and services into the on-train environment improves the passenger journey and delivers efficient technology, both operating on one common platform. Nomad Digital aims to add intelligence to what were once passive fleet sensors, eradicating the need to rip and replace.

Integrated & Scalable Solutions

Among all of the available solutions within Nomad's portfolio its offerings include:

- Fleet & rail connectivity
- Trackside networks
- Real-time reporting
- Real-time fleet management
- Security-as-a-Service
- Wi-Fi & internet access
- Remote online condition monitoring
- Onboard data centre
- CCTV
- Engage Portal
- Passenger & on-board information systems
- Mobile engineering applications
- Infrastructure monitoring solution
- 5G network

The Future of First-Class Connectivity

Improved utilisation of available data and extracting more value from existing onboard and wayside sensors is vital to the future of rail and public transport. Harnessing more insights from existing data sources and filling gaps with AI techniques will help build passenger and operator confidence. From a passenger perspective, they will be alerted when issues have

arisen along their journey and will be aware of alternative options which may not necessarily be using a traditional mode of travel, such as e-scooters. Operators can detect potential issues with their rolling stock or the infrastructure they operate on and be able to act before service-affecting failures occur.

Increased edge processing will make the reliance on data transmission less demanding, with only event data sent. Connectivity will improve with the rollout of 6G networks but will also see satellite connectivity become a viable alternative with the development of new phased array antennas, LEO satellite constellations and falling data costs.

The latest innovative communication solutions, which include trackside radio networks, can revolutionise the rail industry by providing a flawless, uninterrupted connection for the end consumer and long-term use cost savings for rail operators.

Every indicator suggests an increasing demand and higher expectation from rail passengers for fast, consistent and reliable Wi-Fi communications during their journeys. Although introducing 5G technology for the train-to-ground link has improved this, a strong argument remains for a private trackside radio network for when the digital experience of passengers becomes a priority.

Leading the Way in Connected Transport

As rail industry requirements continue to evolve, Nomad Digital is committed to the development of innovative industry leading solutions to champion the digital train becoming a reality.

For more information visit our website www.nomad-digital.com or email experts@nomad-digital.com.



Mistral Data

Mistral Data’s Berth Maps – Creating Virtual GPS Berths for Granular Location Information

At Mistral Data, we bring together and enrich data created within multiple sources that manage railway operations, providing the context and information needed for train operators to run their services more efficiently, leading to quicker and better-informed decisions.

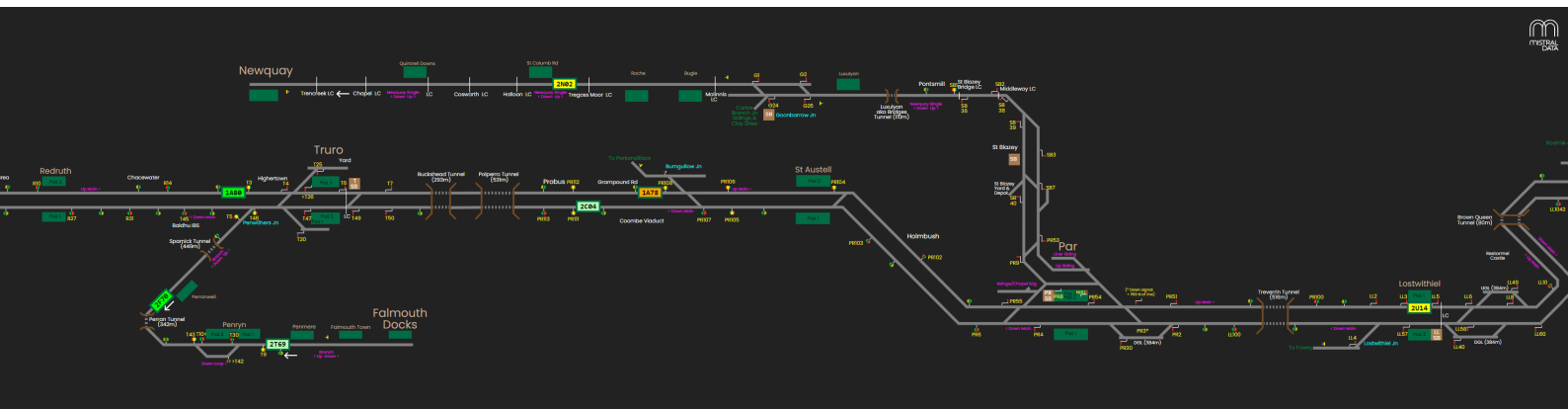
Mistral Data specialises in complex data integrations, and has experience with rail industry data, including both legacy rail systems and more modern real-time API-generated data feeds, whether that be operational, customer or commercial datasets.

UK train operators use network schematic products to track their services across the network. These products use TRUST and TD to show service location, through

a network of berths – often associated with a signal. Unfortunately, these sources either rely on manual entry of location by signallers or can place a service within a berth which can be more than ten miles long.

Given the UK has areas without TD coverage, and several areas with long section berths, Mistral Data created Berth Maps in response to these market limitations, developing the industry first Virtual GPS Berths to show exact location of a service on a schematic map.

Virtual GPS Berths provide granular location detail by dividing real berths into virtual berths, defined by geofences for more detailed tracking by GPS. This allows a long TD berth to be split for example into track, bridge, track, tunnel, track, station – allowing signallers to make informed decisions, including when managing calls from level crossing users.



Cornwall Berth Map, showing Virtual GPS Berths in a region without TD coverage

SERVICE LIST														Train Services - 46		EUSTON		1 Dec 2023		08:47:47	
Calling Type	Arrival	Departure	Head Code	Service	Start Type	Origin	Origin	Origin	Destination	Destination	Station	Type	Last Loc	Last Loc							
Search	Search	Search	Search	Search	Search	Search	Search	Search	Search	Search	Search	Search	Search	Search							
EUSTON	0823	1811	1811	WTT (P)	08:15	MANCERPC	Manchester Piccadilly	EUSTON	London Euston	Running	PASS	CARDURN	Cardburn Jn	08:47							
EUSTON	0824	1823	1823	WTT (P)	08:15	MANCERPC	Manchester Piccadilly	EUSTON	London Euston	Running	ARR	RUGBY	Rugby	08:47							
EUSTON	0825	1020	1020	WTT (P)	07:13	CREVE	Crewe	EUSTON	London Euston	Running	PASS	WEEDON	Weedon	08:44							
EUSTON	0848	1114	1114	WTT (P)	08:33	BHAMNWS	Birmingham New Street	EUSTON	London Euston	Running	PASS	WIMBY	Wimley Central	08:46							
EUSTON	0851	1817	1817	WTT (P)	07:21	BHAMNWS	Birmingham New Street	EUSTON	London Euston	Running	PASS	IRROW	Harrow & Wealdstone	08:46							
EUSTON	0857	2712	2712	WTT (P)	08:21	TRNG	Tring	EUSTON	London Euston	Running	ARR	IRROW	Harrow & Wealdstone	08:48							
EUSTON	0856	1818	1818	WTT (P)	08:43	LVRPLSH	Liverpool Lime Street HL/M/L	EUSTON	London Euston	Running	PASS	WATFJD	Watford Jn	08:45							
EUSTON	0922	2718	2718	WTT (P)	08:48	TRNG	Tring	EUSTON	London Euston	Running	DEP	TRNG	Tring	08:48							
EUSTON	0914	1828	1828	WTT (P)	08:28	GLGC	Gloucester Central High Level	EUSTON	London Euston	Running	PASS	BETCHLY	Betchley	08:45							
EUSTON	0922	1W18	1W18	WTT (P)	08:02	RUGBY	Rugby	EUSTON	London Euston	Running	ARR	MNSCEN	Milton Keynes Central	08:48							
EUSTON	0955	2C11	2C11	WTT (P)	08:00	WATFDC	Watford Jn (DC)	EUSTON	London Euston	Running	PASS	CMDNTH	Camden South Jn	08:47							
EUSTON	0959	2095	2095	WTT (P)	08:00	MNSCEN	Milton Keynes Central	EUSTON	London Euston	Running	DEP	WATFJD	Watford Jn	08:47							
EUSTON	0938	0926	0926	WTT (P)	08:24	MANCERPC	Manchester Piccadilly	EUSTON	London Euston	Running	DEP	COVENTRY	Coventry	08:41							
EUSTON	0939	2C14	2C14	WTT (P)	08:45	WATFDC	Watford Jn (DC)	EUSTON	London Euston	Running	ARR	WATFHS	Watford High Street (DC)	08:48							
EUSTON	0950	2015	2015	WTT (P)	08:09	WATFDC	Watford Jn (DC)	EUSTON	London Euston	Scheduled											
EUSTON	0951	1009	1009	WTT (P)	08:53	EUSTON	London Euston	MANCERPC	Manchester Piccadilly	Scheduled											
EUSTON	0954	2721	2721	WTT (P)	08:54	EUSTON	London Euston	TRNG	Tring	Scheduled											
EUSTON	0955	1721	1721	WTT (P)	08:56	EUSTON	London Euston	BHAMNWS	Birmingham New Street	Scheduled											
EUSTON	0955	2063	2063	WTT (P)	08:53	EUSTON	London Euston	WATFDC	Watford Jn (DC)	Scheduled											
EUSTON	0962	1081	1081	WTT (P)	09:00	EUSTON	London Euston	HLYH	Holyhead	Scheduled											
EUSTON	0962	2C19	2C19	WTT (P)	09:09	EUSTON	London Euston	MANCERPC	Manchester Piccadilly	Scheduled											
EUSTON	0966	0920	0920	WTT (P)	08:03	MANCERPC	Manchester Piccadilly	EUSTON	London Euston	Running	PASS	TRNG	Tring	08:45							
EUSTON	0969	2K11	2K11	WTT (P)	09:00	EUSTON	London Euston	MNSCEN	Milton Keynes Central	Scheduled											
EUSTON	0969	1821	1821	WTT (P)	08:21	MANCERPC	Manchester Piccadilly	EUSTON	London Euston	Running	PASS	TRNG	Tring	08:48							
EUSTON	0988	0910	0910	WTT (P)	08:10	EUSTON	London Euston	BHAMNWS	Birmingham New Street	Scheduled											
EUSTON	0912	2C12	2C12	WTT (P)	08:14	WATFDC	Watford Jn (DC)	EUSTON	London Euston	Running	DEP	STNBPX	Stonbridge Park	08:46							
EUSTON	0913	1010	1010	WTT (P)	08:11	MANCERPC	Manchester Piccadilly	EUSTON	London Euston	Running	Scheduled										
EUSTON	0915	2064	2064	WTT (P)	08:15	EUSTON	London Euston	WATFDC	Watford Jn (DC)	Scheduled											
EUSTON	0916	0955	0955	WTT (P)	08:16	EUSTON	London Euston	GLGC	Gloucester Central High Level	Scheduled											
EUSTON	0917	1116	1116	WTT (P)	07:04	BHAMNWS	Birmingham New Street	EUSTON	London Euston	Running	ARR	LTRZBD	Lightham Buzzard	08:46							
EUSTON	0923	1723	1723	WTT (P)	08:23	EUSTON	London Euston	BHAMNWS	Birmingham New Street	Scheduled											
EUSTON	0924	2723	2723	WTT (P)	08:24	EUSTON	London Euston	TRNG	Tring	Scheduled											
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EUSTON	0930	1849	1849	WTT (P)	08:30	EUSTON	London Euston	GLGC	Gloucester Central High Level	Scheduled											
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EUSTON	0933	0C14	0C14	WTT (P)	08:33	EUSTON	London Euston	EMONGSD	Camden CSD	Scheduled											
EUSTON	0933	1064	1064	WTT (P)	08:33	EUSTON	London Euston	MANCERPC	Manchester Piccadilly	Scheduled											
EUSTON	0938	2028	2028	WTT (P)	08:30	MNSCEN	Milton Keynes Central	EUSTON	London Euston	Running	ARR	CHDNTH	Cheddington	08:46							
EUSTON	0939	2K17	2K17	WTT (P)	08:39	EUSTON	London Euston	MANCERPC	Manchester Piccadilly	Scheduled											
EUSTON	0941	0921	0921	WTT (P)	08:20	EUSTON	London Euston	BHAMNWS	Birmingham New Street	Scheduled											
EUSTON	0941	1816	1816	WTT (P)	08:41	EUSTON	London Euston	LVRPLSH	Liverpool Lime Street HL/M/L	Scheduled											
EUSTON	0945	2066	2066	WTT (P)	08:45	EUSTON	London Euston	WATFDC	Watford Jn (DC)	Scheduled											
EUSTON	0946	1066	1066	WTT (P)	08:06	EUSTON	London Euston	TRNG	Tring	Scheduled											
EUSTON	0952	2710	2710	WTT (P)	08:10	TRNG	Tring	EUSTON	London Euston	Running	PASS	WLSDWJ	Willenden West London Jn	08:44							
EUSTON	0955	1825	1825	WTT (P)	08:48	HLH	Holyhead	EUSTON	London Euston	Running	PASS	HMTJU	Hillmorton Jn	08:44							

Mistral Data Berth Maps Service List – listing all services for any selected TOC, based on live running time

Mistral Data Berth Maps is an easy to maintain application providing a view of real-time railway berth movements by GPS, TD and TRUST. It provides a view of all services, allowing controllers to spot any trains which are delayed or may conflict with other approaching trains, giving controllers detailed locations of all services.

Berth Maps is a comprehensive view of train running. Any user can track and search for a service in real time, view a customisable list of services to manage punctuality, or view historical movements using the replay feature.

Map creation is simple and flexible, using Adobe Illustrator templates maintained either by the train operator or as a service by Mistral Data.

Berth Maps is one of several products designed and developed by Mistral Data. The flagship product, Mistral, is a data-enabling platform that ingests, integrates and publishes data from a number of disparate rail industry operations and on-train systems.

It is a solution that originally enabled the real-time data exchange with multiple on-train seat reservation systems (SRS) and automatic passenger counting (APC) systems and has been further developed to become our strategic operational master system.

When working with such diverse data sources, it can be a challenge to integrate the data because it often has different formats, reference data, latency and schemas,

requiring significant transformation and mapping before it can be processed, shared and interpreted.

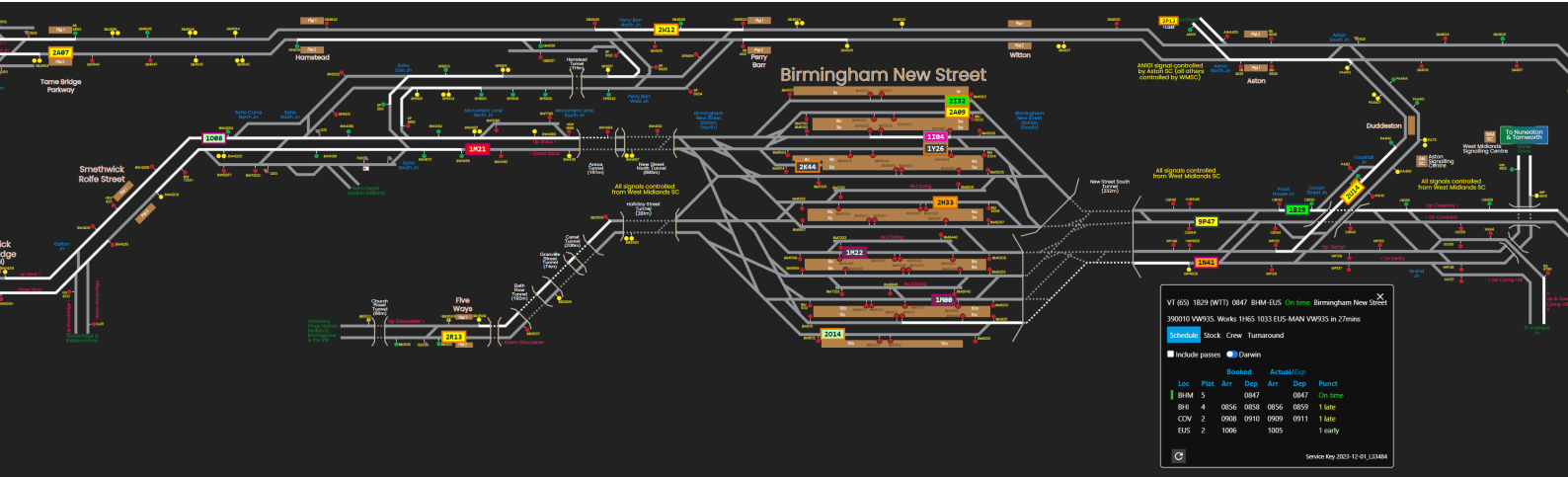
Mistral is required to source data from a range of industry and train operator-owned systems, as well as manage its own store of curated reference data. These sources vary significantly in their interface capability and the quality of data provided.

From a technical perspective, the complexity of integrating legacy sources into a modern data architecture, while ensuring both security and resilience has been a significant challenge. This variety has led to a sophisticated ingestion layer, capable of handling this complexity and resilient to failure.

Mistral creates value by integrating these datasets, and enriching them with context and version-managed reference data, together with business rules and logic to provide comprehensive insights. Mistral provides this enhanced dataset as a single version of the truth to any channel.

“Berth Maps provides greater visibility of train services for controllers than other mapping systems, particularly through ‘virtual berths’. Virtual berths have enabled SWR to create Berth Maps for the Island Line using GPS data alone.”

Chris Prior, Head of Train Service Operations Projects at South Western Railway



Berth Map at Birmingham New Street, with popup providing schedule, stock, crew and turnaround details

It enables the transfer and management of data in real-time between on-train and back-office / customer-facing systems, making data available for use in systems used in control and engineering as well as customer-facing channels like the website or customer app via the Mistral API.

Using the breadth of data sources consumed in Mistral, Berth Maps can present additional stock information like formation, facilities, orientation and real-time vehicle capacity as well as crew onboard and turnarounds for stock. It also uses network topology and track occupancy to infer between green, yellow, double yellow and other cleared aspects.

Knowing the exact signal aspects that a train receives provides visibility with respect to train delay investigations, informing exactly where a delay occurred and what may have caused it.

The enhanced data available, compared with other similar products provides operational staff with more data conveniently in the same place, allowing them to make decisions quicker, anticipate delays better and therefore reduce their impact.

South Western Railway adopted Berth Maps in 2022, using it across control, resourcing, delay attribution, station and performance monitoring teams. Chris Prior, Head of Train Service Operations Projects at South Western Railway said:

“Berth Maps provides greater visibility of train services for controllers than other mapping systems, particularly through ‘virtual berths’. Virtual berths

have enabled SWR to create Berth Maps for the Island Line using GPS data alone. Virtual berths break up long berth sections on the West of England Main Line and provide berths at stations which do not have accurate TRUST reporting. Berth Maps provides visibility to controllers of trains running in non-TD areas such as branch lines and depots. The maps also provide controllers with more granular details of stock and crews which enable them to make decisions faster than with conventional mapping systems. We have been very pleased with the approach to delivering the maps, the additional data provided on the maps and the innovation of using GPS data to create virtual berths.”

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SPEECH-TO-TEXT SOLUTION FOR RAIL

Televic GSP's Speech-to-Text solution converts real-time audio announcements that train personnel make into text.

Through the use of an API (Application Programming Interface), the transcription can be seamlessly integrated into other onboard systems for diverse applications, including passenger-oriented mobile apps.

HIGHLIGHTS

- Improves the passenger experience.
- Increases accessibility.
- There is no need for a stable internet connection.
- Emphasis on railway terminology (e.g., train station names, branding).

See Speech-to-Text in action. Contact us today at televicgsp@televic.com



Televic GSP

How to Keep Your Technology Up-to-Date Proactively

PIS technology advances rapidly, but the more it is enhanced, the faster it becomes obsolete.

Considering train projects have a lifetime of about 30 years before total overhaul, obsolescence is a pressing issue. When obsolete parts or devices need to be replaced, development can take up to one year. That's why we offer a more proactive approach with obsolescence management.

Replacing Obsolete Parts: Slow and/or Expensive

As technology becomes more complex and evolves faster, the lifespan of parts and devices shortens. Just think of real-time video: that wasn't possible ten years ago. During the warranty period, that issue remains manageable. After that, suppliers can't guarantee the availability of parts anymore.

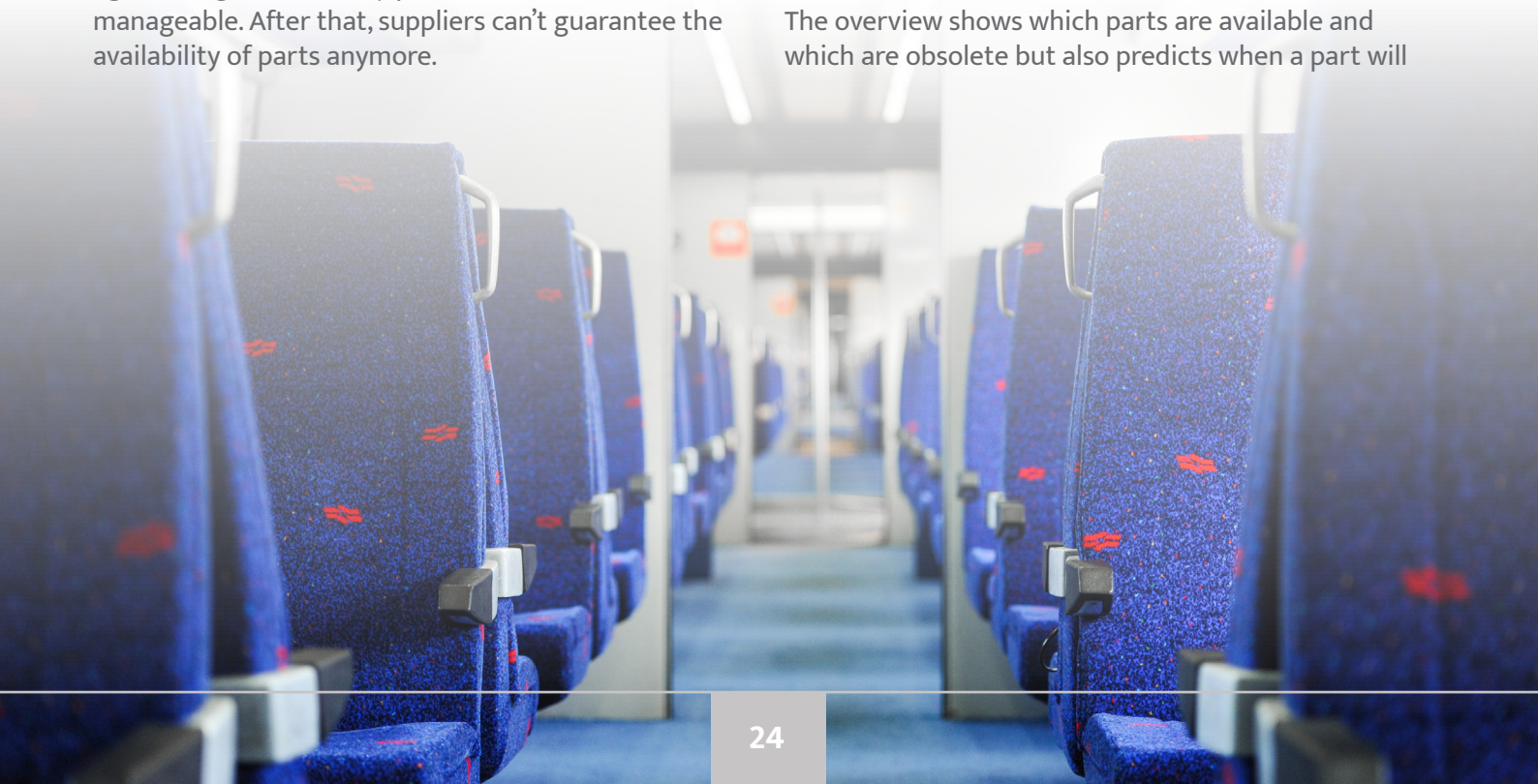
What happens when you request parts that are considered obsolete? There are two options:

- We build replacement parts ourselves or have them built for us. That requires extensive development and testing and can take up to one year.
- We buy the existing parts from brokers at up to 20 times the original price. That's very expensive and only possible if we find a broker to source the parts.

Tackling Cost and Time with Obsolescence Management

That is why we decided to offer you a more proactive approach. In our obsolescence tracking programme, you get a quarterly availability overview with an impact on component level and an action plan on how to tackle the obsolescence issue.

The overview shows which parts are available and which are obsolete but also predicts when a part will





become obsolete. That way, you can buy the parts at the regular price while they're still available. We can even keep them in stock for you.

Avoiding Obsolescence

"Of course, we try to avoid obsolescence completely where possible. Today's capacitors have a longer lifetime than the capacitors used 10 years ago, for example. And we only upgrade what needs to be upgraded. If 80% (the audio system) of your PIS can be retained, then we will advise you to only upgrade the soon-to-be obsolete 20% (the PIS controllers).

The advantages of this approach are obvious: you save money and time. No more high prices from brokers, no more development time to build a new part. You can even plan ahead, to minimise your fleet downtime. No more unpleasant surprises.

Insight is key in our obsolescence management approach. We inform you to make the informed decision. We advise proactively and let you know when you should increase your stock of components, or when you should rather invest in replacements or even a total system change. Our goal is always to provide you with the most cost-effective option and keep your fleet available during the entire lifetime," says Alexander Lodrioor, Customer Service Officer at Televic GSP.

Lifecycle Management: Going the Extra Mile

With lifecycle management, we go a step further. You hand us the keys, and we do everything to keep your fleet running. We make the decisions and fix everything that needs to be fixed. You get a full-service approach that's even faster. But the choice is yours.

Options and Pricing

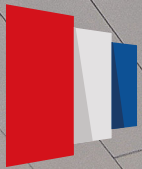
Obsolescence and lifecycle management are always tailored to your specific needs. That's why we cannot list general prices for the various options. **Contact us** and we will work out a custom solution together.

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INNOVATION

in Rail

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throughout the world.



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Dual Inventive

Saving Time and Money with Dual Inventive's Track Circuit Operating Device

Mobile Maintenance Train at Woldingham Station, Oxted



Background

Dual Inventive was invited to Woldingham Station, Oxted which is part of the Network Rail Sussex Route to observe the Mobile Maintenance Train (MMT) and to see how it operates in conjunction with Dual Inventive's ZKL 3000 RC (remote-controlled track circuit operating device) and a signal protection zone.

Network Rail on the Sussex route has been using the MMT for seven years covering regions from London Victoria to the South Coast to undertake repairs, renewals and to conduct upgrades to the rail network.

Having access to the MMT:

- enables track workers to carry out railway maintenance work in a safe and controlled environment
- allows for shorter setup and shut-down times providing cost efficiencies
- reduces emissions created during machine operation, improving long-term health, thanks to the use of electric tools and proper ventilation
- allows for the adjacent track and overhead lines to remain open, making it less disruptive for passengers and freight

Problem

Prior to using the MMT, any equipment needed for the shift would arrive by road, be driven to an access point and be transported by rail to the work site. The team would also have to take a line block using conventional methods during the dark hours putting track workers at risk.

It is a requirement that, when using a manual T-COD that it must be installed by a controller of site safety (COSS) with the assistance of a second person. To meet safety standards, two people must stay with the T-COD during the entire shift. Working this way is a slow and labour-intensive process, that is not cost-effective.

Solution

Even though the MMT provides cost efficiencies by reducing time and resources, Network Rail felt it could reduce the set-up time in terms of taking a line block.

A decision was made to use Dual Inventive's ZKL 3000 RC remote-controlled track circuit operating device to provide additional protection. The device can be pre-installed and positioned outside of the worksite to create a signal protection zone.

The ZKL 3000 RC can be switched remotely with ease using the MTinfo 3000 app. Activating the device

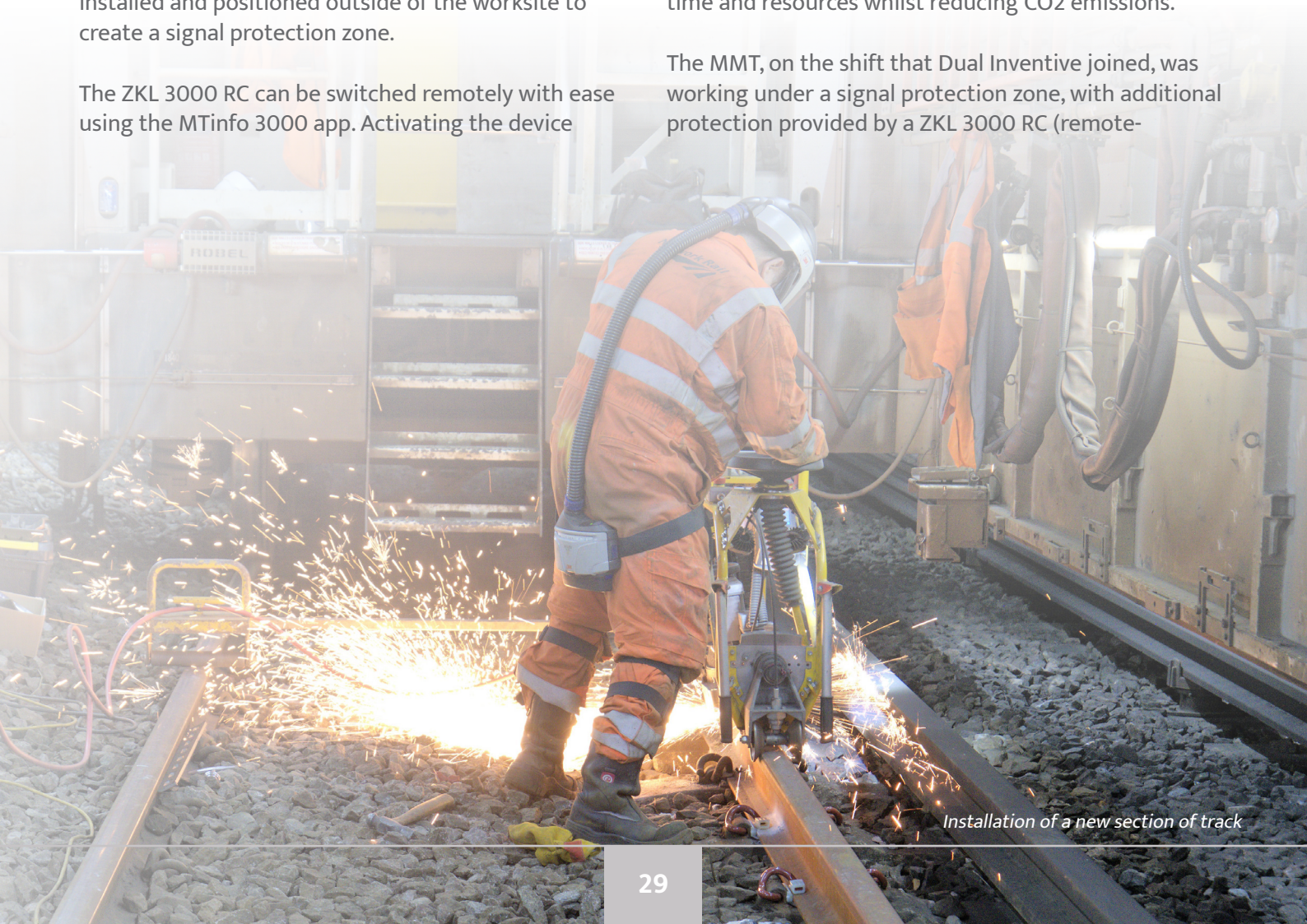
creates a short circuit that simulates a train in section, occupying the track circuit and therefore maintaining the protecting signal at danger.

The conventional methods of either detonators and possession limit boards within a possession or placing a manual T-COD requires a minimum of two people, taking around 45 minutes. With this process having to be repeated at the start and end of each shift, up to 90 minutes was being lost, impacting the time to undertake the task.

During the course of four nightshifts, this equates to 360 minutes, whereas the ZKL 3000 RC can be preinstalled and left in situ. The installation of the ZKL 3000 RC takes 15–20 minutes on average and this includes a full function test. To activate and deactivate the device remotely takes 2 minutes (60 seconds to activate and 60 seconds to deactivate), which amounts to 8 minutes as opposed to 360 minutes, therefore a total saving of 352 minutes (approximately 5 hours 52 mins).

The ZKL 3000 RC also reduces the need to drive to various blocking points, increasing efficiency, saving on time and resources whilst reducing CO2 emissions.

The MMT, on the shift that Dual Inventive joined, was working under a signal protection zone, with additional protection provided by a ZKL 3000 RC (remote-



Installation of a new section of track

controlled T-COD). This combination of protection enables the team to remove rail defects safely and efficiently.

Efficiencies

On this particular shift, a signal protection zone was applied between Sanderstead and Oxted with the additional protection of a ZKL 3000 RC (remote-controlled T-COD) (UP) and a manual T-COD (DOWN). This enabled the team to carry out the planned work – removing a rail defect, installation of closure rail and stress restore as well as two welds, which were inspected and passed. This was all completed within 3 hours and 14 minutes as opposed to taking several shifts providing cost savings in manpower and reducing the time of a line block meaning passenger/freight trains can run more frequently.

Below is an indication of the times and how long each stage took:

Activity	Time of Activity
MMT Left Horsham Yard	23:27
Arrive TPAT (OD3)	00:58
Signal Protection	01:12
Block to Electric Traffic Granted (BTET)	01:14
Protection Zone Granted	01:15
Strap Worksite	01:25
Work Started	01:26
Work Finished	04:40
Straps Lifted	04:42
Traction Current Restored	04:45
Remove TCOD	05:02
Train Exit PZ (OD11)	04:48
PZ Handed back	05:05

By using the ZKL 3000 RC in conjunction with the MMT enabled the section supervisor to reduce a team of 8–10 trackworkers/engineers to a team of 6 to 8 people – instantly making a cost-saving.

Cost-Savings Using the MMT in Conjunction with the ZKL 3000 RC

- Time saved using a ZKL 3000 RC: 45 minutes
- Manpower saved using a ZKL 3000 RC: 2 people
- Time saved using the MMT in conjunction with the ZKL 3000 RC: 15 minutes



ZKL 3000 RC in track

Conclusion

Using the MMT in conjunction with the ZKL 3000 RC enabled the team to remove a rail defect safely and efficiently in less than 3.5 hours whereas it would normally take several shifts to perform the same task. Having these control methods in place saves time and resources providing cost-savings of £425,000 within the first four periods.

Applying the remote-controlled T-COD – ZKL 3000 RC allowed the team to operate at full capacity rather than having the expense of backfilling posts, saving the company money in time, resources and CO2 emissions.

Going forward, to reduce costs further, the Sussex Route's goal is to use a ZKL 3000 RC on either side of the single protection zone saving 90 minutes per shift. This will enable it to operate as a full team without having to recruit contractors to backfill jobs that were previously deployed in manually installing the T-COD.

As a result of this, a second MMT train is being mobilised in the neighbouring route of Wessex.

Network Rail were supported in the implementation of the ZKL 3000 RC by Bridgeway Consulting Ltd.

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ti DualInventive
Transforming Rail Safety

Complete Composite Systems (CCS)



ARCOSYSTEM® troughing attached to the side of a stone bridge near Klagenfurt, Austria

Discover why the flexibility of ARCO SYSTEM® makes it the rail industry's benchmark elevated cable containment system...

Take the hassle out of installing trackside cable troughing by choosing the innovative ARCO SYSTEM® from CCS for your next rail project.

Manufactured from pultruded glass fibre-reinforced polymers (GRP/FRP) and complemented by a bespoke range of laser-cut steel bracketry, ARCO SYSTEM® can be post-mounted into the ground or fastened to a range of trackside features, such as **railings, bridges, hillside slopes, HEA beams, noise barriers** or **rock walls**.

The specialist lightweight design of the composite engineered plastic troughing allows for enhanced versatility during installation, ensuring height and direction adjustments can be easily made, particularly in tight-to-access areas along the route. This dramatically speeds up installation times, while reducing costs and strain/injuries for on-site operatives.

The adaptable yet sturdy construction of ARCO SYSTEM® provides durability in all weathers, safely containing trackside power, signal, high-voltage and digital communication cables in temperatures ranging from -40°C to +80°C.

The system can accommodate cable loads of up to 90kg/m while there is a range of trough sizes and

bracket designs available to suit a variety of projects and locations.

Case Examples

ARCOSYSTEM® is currently proving to be a reliable and cost-effective option for the multi-billion-pound Transpennine Route Upgrade (TRU) project, which is designed to transform rail travel across the north of England, modernising connectivity and boosting economic growth.

Currently being installed along a section of the East route in Castleford, ARCOSYSTEM® has been a huge success, in no small part due to its lightweight design that allows the troughing to be fixed to posts mounted as far as six metres apart, saving significant time and costs during installation.

“ARCO is a pleasure to use,” said Mark Simpson, Contractors’ Responsible Engineer (CRE) at J Murphy & Sons on the TRU East Alliance. “Its simplistic 6-metre span makes it the most cost-effective elevated route to install in a possession. ARCO assisted greatly on the Castleford project as the terrain varied from cutting to embankment constantly. The 6-metre spans aided with the reduction in post foundations compared to more traditional methods.”

The larger Size 2 troughing was used in Castleford, while the narrower Size Zero was used for another recent job in Weeze, Germany. This sleek trough size



ARCOSYSTEM® post mounted trackside in Castleford, England

is designed to fit and protect thinner cabling such as modern fibre-optic cables within a secure cell of 53mm x 56mm (2952mm²) and is also useful for jobs where access to the railway lines is challenged by difficult terrain or limited space.

Other recent successful installations include fastening ARCOSYSTEM® to the side of an ancient rock face during a 600m-long trackside route in the historic city of Grein, along the Danube river in Austria. Installers used specialist anchor rods in conjunction with our range of steel brackets to support the lightweight troughing, while operators also had to attach the troughing to trackside railings and a concrete verge backing on to the river.



ARCO troughing clamped to lineside rock face in Grein, Austria

ARCOSYSTEM® — Key Benefits

- Can be post-mounted or fixed to a variety of trackside structures such as bridges, railings, ballast boards, noise barriers or rock faces
- Spans up to 6m between supports, making installation quicker and more cost-effective than traditional ground-based systems
- Constructed from durable materials, with the troughs and lids made from pultruded fibre-reinforced polymers (GRP/FRP) for excellent structural and load-bearing performance, supported on laser-cut galvanised steel brackets
- Twin-walled design of the troughing enables the system to resist lateral forces from embankment subsidence, high snow loads and wind effects from high-speed trains
- Carries cable loads up to 90kg/m, and withstands point loads up to 0.75kN and wind loads up to 1.45kN/m²
- Durability in all weathers — with a constant working temperature range from -40°C to +80°C
- Excels in remote locations subject to intense heat or extreme freeze-thaw cycles
- Resistant to heat, water, corrosion, UV rays and a wide range of chemicals
- Meets a number of fire standards and has proven performance in simulated trackside fires
- Electrically insulating, whilst providing an interference-free containment environment for Wi-Fi and data cabling
- Troughing available in different sizes to accommodate a range of cabling/lateral load requirements

Near the southern Austrian city of Klagenfurt, ARCOSYSTEM® was expertly fitted to the side of stone bridges and a tall slanted concrete wall amongst mountainous terrain. One bridge required cross-axis parts to be fitted, clamping on to existing HEA beams.

In the German city of Bremen, both sides of the railway track were enclosed by tall aluminium noise barriers, but the flexible ARCO could still be clamped in place, with the robust yet versatile brackets adjoined to the front of the existing structure of the barriers.

With its flexible design allowing for installation in a variety of obstacle-laden or complex settings, ARCOSYSTEM® makes any cabling job run smoother.

Contact the experienced **technical experts at Complete Composite Systems**, the exclusive UK distributor of ARCOSYSTEM®, for enquiries and advice on how to safely contain the cabling for your rail application.



503 Broadway, Letchworth, Hertfordshire, SG6 3PT
Tel: +44 1462 379000 or +44 7860 147863
Email: info@completecomposites.co.uk

The exclusive UK rail stockist of ARCOSYSTEM® is Scott Parnell:



Asheton Farm Business Centre,
Stapleford Abbots, RM4 1JU
Tel: +44 208 8055797
Email: rail@scottparnell.com

ARCOSYSTEM® is manufactured by CCS's Swiss partners, **Castioni Kabelführungssysteme GmbH**



Stat-X

Fire Suppression for Rolling Stock Depots and Train Stations

When considering fire protection for rolling stock, the train itself receives the most attention. Firstly, it is on the conveyance where passengers and crew will concentrate. And secondly, when in transit, the risk of a fire occurring in rural areas away from fire suppression resources is high.

But depots, train stations, support buildings and rooms also contain a myriad of components which, from a fire protection standpoint, also require careful consideration.

The Problem

By their nature, rolling stock depots are often crowded places, so there is a significant safety exposure. Many stations are also underground or partially enclosed. This makes egress problematic and can result in exposure to the toxic by-products of combustion.

When you examine the fire risks contained within a rolling stock depot or station, you will find many electrically oriented or Class C risks such as:

- Tech rooms
- Battery back-up and uninterruptible power supply (UPS) rooms



Stat-X is proven to be effective on Class C fires and at mitigating the risk of thermal runaway propagation in lithium-ion battery fires. The proprietary, potassium-based agent acts quickly to interrupt the chemical reaction needed to sustain a fire and remains suspended for several minutes to provide reflash protection.

- Control rooms
- Switch rooms
- Power generator rooms
- Electrical substations

Fires with an electrical origin are all too common. When a Class C fire erupts, it often becomes large quickly and can be difficult to extinguish. If a fire occurs in an underground station, then the difficulty in extinguishing it increases exponentially.

While fires in train stations are fortunately not common, they do happen. A notable train station fire occurred in London in 2021. Named for the London Underground station where it occurred, the “Elephant and Castle Fire” began suddenly and spread rapidly. Witnesses reported hearing several loud bangs and were then confronted with a fast-moving fire. Six people were injured, and it took hours for over 100 firefighters to control the blaze. The cause of the fire was not disclosed, but experts suspect it was electrical in nature due to the loud bangs heard by witnesses.

The aftermath of a fire at a rolling stock depot can be substantial, as a fire of any significance can put the station out of service for months. When equipment—e.g. signalling equipment—is damaged, this puts trains on the move in jeopardy. Critical equipment such as this must be fully and properly repaired before the line can again become fully operational.

As is often the case, indirect damage from a fire can exceed direct fire loss. The loss of ridership for passenger trains and reduced freight capacity can quickly add up to a substantial economic impact. Because customers are forced to find a workaround, many may never return to using the rolling stock service due to the fire. Direct damage can be considerable too, particularly if technical or control rooms are involved.

Providing fire suppression for rolling stock depots may not be a straightforward affair. Depots can be found in rural areas away from local fire departments and where water supply may be an issue. If the station is underground, this also can complicate the situation.

Clearly, the nature of a rolling stock depot fire is a major consideration as well. The fire suppression system must be capable of effectively managing Class C fires while also being effective on Class A (ordinary combustibles) surface fuel loads. Because people may be present, it needs to be safe, and it needs to work fast.

The Fire Suppression Objective

The ideal fire suppression system for rolling stock depot fire protection is a quick-acting system that is proven to effectively handle Class A and Class C fire risks that will likely be present. The objective is to detect a fire early in its development and then deploy a fire suppression agent that will rapidly extinguish or contain the fire.

The benefits to this approach are enormous, beginning with life safety. By suppressing the fire early, the system protects scores of lives. It prevents people from being exposed to fire and its toxic smoke. While an evacuation may be required, it is more likely to be conducted calmly when appropriate fire suppression is deployed.

Aside from the safety component, suppressing a fire in the incipient phase also reduces both direct and indirect property/economic fire losses. When the fire is confined to its area of origin, less equipment is damaged because the fire does not spread. This allows the organisation to return to service easier and faster, minimising the costs associated with lengthy downtime.

Another major factor to consider with any fire suppression option is the ease of installation and servicing. A rolling stock depot that is located deep underground or in rural areas can make it difficult to install and/or support many of the legacy-type fire suppression systems such as sprinklers and clean agent gas systems. These systems require extensive piping and often their own room in which to house the myriad of components. They also have strict testing and maintenance requirements which add significantly to their lifetime costs.

Aerosols are an effective alternative to traditional special hazard fire protection



Lastly, the fire suppression agent must be safe for people and the environment. Currently, this is a growing concern. There are several fire suppression agents that are being taken off the market or having their production severely curtailed. This is because they have been found to pose health hazards to humans, contribute to global warming or have ozone-depletion potential. Consequently, many organisations are finding themselves faced with the costly problem of replacing their fire suppression system.

The Stat-X® Solution

There is a system that has all the benefits needed in a fire suppression system while avoiding the downsides found with many agents currently available: Stat-X.

Stat-X is proven to be effective on Class C fires and at mitigating the risk of thermal runaway propagation in lithium-ion battery fires. The proprietary, potassium-based agent acts quickly to interrupt the chemical reaction needed to sustain a fire and remains suspended for several minutes to provide reflash protection.

Further, Stat-X units are self-contained, and they can either be installed as a system tied to fire-detection equipment, or installed in a standalone fashion where the unit is activated at a predetermined temperature. The compact units have no piping requirements, are

virtually maintenance-free, and have a long service life. Also important, they can easily be retrofitted in existing spaces without the need for costly infrastructure work.

Aside from Stat-X's effectiveness, one of its best features is the safety of the agent. Stat-X is safe to use in normally occupied areas. It has zero global-warming potential, zero ozone-depletion potential and zero atmospheric life. It also requires minimal clean-up after use.

When considering fire protection for rolling stock assets, organisations should pay careful attention to the depot. With all the electrical componentry present, there is the real risk of a fire occurring in this crowded environment. When a fire breaks out, you can rely on Stat-X to suppress it quickly and limit the damage. Plus, you can have certainty that Stat-X will not join the long list of fire suppression agents banned because they pose a risk to people and/or the environment.

statx.com

Stat-X®
Aerosol Fire Suppression

30 YEARS OF RECYCLING BINS FOR TRAIN STATIONS





Shaping the Future of Train Stations

Three decades ago, AUWEKO GmbH began its collaboration with Deutsche Bahn AG.

Together, they introduced thousands of 3- and 4-compartment recycling bins at German train stations – an initiative to introduce the ‘Green Dot’. The Green Dot symbolises, then as now, recycling and the responsible handling of recyclable materials.

AUWEKO GmbH is now not only a proud partner of Deutsche Bahn but also of ÖBB, SBB, CFL Luxembourg and Harmain Speedrail. Our expertise and commitment transcend borders, reaching beyond just the railway industry – international airports, shopping centres and stadiums all rely on AUWEKO's high-quality products.

Primarily, AUWEKO waste bins play a pivotal role in enhancing passenger satisfaction. Through their thoughtful design and strategic placement, they ensure cleanliness and order at train stations, offering practical advantages for passengers. This user-friendliness contributes to travellers experiencing a pleasant and hygienic environment.

In an era where awareness of responsible waste management is rapidly growing, companies must champion and benefit from this movement. Resources should be reusable, and collecting, sorting and recycling ‘everyday waste’ during travel – whether it's packaging, plastic, glass or paper – is a significant step towards conserving resources. With a wide range of products, from multi-bin waste separators to smoker terminals, AUWEKO is the ideal partner in this endeavour.

From the outset, AUWEKO manufactures waste and recycling bins from high-quality stainless steel or

galvanised and powder-coated sheet steel. This choice contributes to sustainability: firstly, the exceptional durability of stainless steel ensures that the bins withstand the demanding conditions in bustling train stations while maintaining their functionality and aesthetics over time.

Secondly, the long lifespan of stainless-steel containers significantly reduces the need for resources in production, transport, and disposal. Moreover, the pivotal factor lies in the ability of steel, especially stainless steel, to be endlessly recycled without loss of quality. This closed loop allows the material to re-enter the production process at the end of its lifecycle. This continuous recycling not only contributes to efficient waste management but also champions an environmentally friendly approach that conserves resources and minimises the ecological footprint.

Selecting the appropriate containers is critical. Depending on the location of use, single or multiple containers, different insertion sizes (e.g. for pizza boxes) and clear labelling are recommended. For outdoor areas, waste bins with robust vandalism and graffiti-protection or integrated ashtrays are available. Additionally, bins with integrated information areas prove advantageous in many locations, allowing operators to provide instructions or utilise them as advertising space.

Transparent ‘Vigipirate’ containers are also gaining traction, enabling security personnel and travellers to identify suspicious items at a glance without needing to open the container.

Another crucial safety aspect in the railway industry concerns fire protection. The popular AUWEKO

'Temptation' series is renowned not only for its elegant yet unobtrusive design but also for its certified and patented fire protection.

The fire protection system is based on galvanised inner liners hermetically sealed by a patented system. In case of a fire, AUWEKO's recycling bins activate their passive safety measures automatically. Rising smoke gases gather below the intake funnel, creating a gas cushion and interrupting the oxygen supply. This self-extinguishing effect helps contain potential fire scenarios early and effectively, ensuring the safety of passengers and infrastructure. Furthermore, the bins' design has been optimised so that in case of a fire, they not only prevent the spread of fire but also minimise the temperature rise on, above and below the casing. These comprehensive fire safety measures are indispensable in the railway industry.

Through three decades of successful partnerships, AUWEKO has not only developed innovative waste separation solutions but also garnered valuable experience through continuous exchanges. As a proven partner for railway companies, AUWEKO is well-prepared to actively participate in shaping the future of train stations and confronting upcoming challenges.



Robust and with anti-graffiti coating: The KENDO litter bins

With a strong commitment to eco-friendliness, high-quality products and ongoing development, AUWEKO leads the way in supporting railway operations to create a clean, efficient and environmentally friendly future.



Bender UK

Electrical Safety Solutions

Critical infrastructure relies on the safe, resilient, supply of power and energy, and Ulverston-based Bender UK has provided customised and off the shelf solutions for over 25 years that support the needs of public and private sector business across the UK and Ireland.

Pioneering technologies coupled with its expert knowledge enable Bender UK to respond to the most challenging problems faced across healthcare, rail, defence, oil and gas, manufacturing, marine and renewable energy sectors.

Operations in demanding environments such as subsea cables and 24/7 processing plants rely on Bender to monitor, alarm, and forewarn of electrical failure in vital systems to protect services, people and production from costly disruption and downtime.



www.bender-uk.com



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Bender UK

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griwecolor GmbH

Flame-Retardant Sound Deadening to Absorb Structure-Borne Noise in Trains

Solvent-Free Artificial Resin Dispersion Achieves High Acoustic Effectiveness



© Pixabay_Murmel

Passengers enjoy a more comfortable journey when structure-borne noise is absorbed by griwecolor's sound-deadening solutions

When talking about travel comfort, it's not only speed, comfortable seating and legroom that are important; so too is a sense of spaciousness.

Passengers wishing to work or rest can choose quiet carriages on trains. But trains themselves can be noisy. To reduce structure-borne noise of the rail carriages themselves and therefore to create the quietest-possible environment inside, many rolling stock manufacturers use sound deadening.

Sound insulation and the reduction of structure-borne noise in rail vehicles is a big challenge for engineers.

Although some components can be produced from alternative materials, it's often not possible to avoid thin-walled sheet metal constructions, where significant vibration is unavoidable.

The metal sheets used in the interior construction of carriages are covered in sound-deadening materials. The paint and coating experts at griwecolor GmbH have two products in their portfolio that have been developed for this application: griwephon AN2-800 and griwephon light AN2-900.

The product range has now been expanded to include griwephon AN2-750/EU, which is classified as a non-flammable product, class A2, according to DIN EN

13501-1. The product passed the toxicity and smoke gas density test in line with the DB Systemtechnik specifications with flying colours, meeting the requirement set R1 for HL1, HL2 and HL3 for application in rail vehicles with regard to smoke development and toxicity. Griwephon AN2-800 and AN2-900 meet the requirement sets R1, R2, R3, R6, R7 and R17 in the hazard levels HL1, HL2 and HL3. All three ready-to-use one-component solutions have been tested for fire behaviour in accordance with EU standard EN 45545-2. Furthermore, all three have very high acoustic effectiveness in accordance with DIN EN ISO 6721-3. Like the two variants already on the market, the new sound deadening solution based on aqueous synthetic resin dispersion is also hydrophobic and solvent-free.

“The development of our sound-deadening griwephon AN2-750/EU is based on the extensive experience that we have collected with AN2-800 and AN2-900 as well as in the construction material sector,” reports Jörg Grieshaber, Managing Director Technology and Development at griwecolor GmbH. *“We have gathered decades of know-how in the noise reduction of rail vehicles.”*

Sound Insulation through Structure-Borne Noise Absorption

Structure-borne noise is caused by the vibration of components – sheet metal. It can spread almost unhindered, causing the sound waves to be transmitted to the air, leading to noise. To prevent this noise generation, homogeneous layers are placed between the individual elements for internal damping. griwecolor’s sound-deadening solutions achieve a very high acoustic damping effect. When the griwephon layer penetrates the material to which it has been applied, the vibrational energy of the material is largely eliminated because it converts high-frequency vibrations into low-frequency ones. As a result, rail vehicle bodies emit less noise to the air in their interior space. *“The loss factor, depending on the installation situation, application thickness and material in accordance with DIN EN ISO 6271-3, is between 0.22 and 0.24, so that large parts of the structure-borne noise energy are absorbed by the sound deadening,”* explains Grieshaber. Thanks to the application of a filler combination, as well as the development of a special binder with high toughness, an application thickness in double sheet thickness up to 5mm is possible. The



An application thickness in double sheet thickness of up to 5mm is possible © griwecolor GmbH

quality of the filler and the unusual layer thickness are responsible for the high absorption rate. Another advantage of the mineral components is their low thermal conductivity.

Easy Processing without Health Risks

“As with all of our products, we have paid attention to environmental and health compatibility and easy application,” explains Grieshaber. *“We have achieved a VOC proportion of just 0.6g/litre by avoiding all solvents.”*

The sound-deadening solution can be applied with airless devices, with a ratio of at least 60:1; and with reciprocating pump devices, with atomising air of roughly 12:1; or screw conveyors with atomising air with an inlet pressure of 3 to 4 bars. Manual application is also possible. The sound-deadening solution has a high level of stability when applied to vertical surfaces. In wet application, a layer thickness of up to 5mm is possible in one go, without the product slipping off or cracks forming on the surface.

After the drying process, the layer thickness is approximately 4 to 4.5mm. *“The processing is quick, safe, clean and does not contain any health risks,”* summarises Grieshaber. *“Even in the case of fire, griwephon AN2-750/EU doesn’t generate any toxic gases. Our griwephon sound deadening therefore connects fire protection with simple handling and efficient noise protection.”*

Watch our video [here](#).

Further information at: www.griwecolor.de



A young boy with short brown hair and blue eyes, wearing a red and blue plaid shirt, is looking out of a window. Outside, a train track is visible with a blurred train in the background.

griwephon product series



**Innovative noise
and fire protection
for rail vehicles**

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Railvolutionary

A fresh take on performance

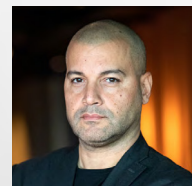
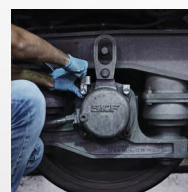
The industry is moving towards performance-based contracts, departing from traditional models for sustained support and reliability. SKF is at the forefront.

A subscription-based contract with a German rail provider showcases enhanced customer confidence, reliability, and logistics. In China, a metro system facing bearing maintenance challenges transitioned to a performance-based contract, incorporating an online monitoring system for real-time bearing health data. This proactive approach resulted in significant cost savings, extended maintenance intervals, and improved safety. Partnerships in this model involve shared

risk and reward, emphasizing clear communication and well-defined performance metrics. SKF's comprehensive value chain provides end-to-end support, from product selection to services like remanufacturing and design optimization.

Watch a webinar on the subject with SKF's Maurizio Giovannelli to see how we are redefining rail operations, leading to efficiency, safety, and financial benefits for operators navigating the dynamic landscape of modern rail.

Click the QR code to see the webinar in full now!



Webinar

SKF

From Bearing to Sharing: SKF's #railvolutionary Approach



Step into the world of critical railway operations, where precision and reliability are always paramount. SKF, a global leader in bearings and rotating equipment – and a company that knows a thing or two about reliability – stands as a guiding force, helping redefine efficiency across the tracks.

Knowledge sharing is at the core of SKF's mission. As part of its continual output of information into the industry, experts, including SKF leaders, have been sharing invaluable insights in enlightening webinar sessions. But it's not just about keeping people in the know; it's about a commitment to enriching the industry's collective knowledge.

Complementing these insights, the 'Ask an Expert' series features seasoned professionals providing personalised perceptions. Regular #railvolutionary updates through news articles cover diverse topics, from overcoming workforce shortages to strategic partnerships, reflecting SKF's dedication to a holistic approach in rail operations.

SKF is delivering for safe and sustainable rail!

In response to the rail industry's quest for a safer and sustainable future, SKF champions a proactive approach. Going beyond product delivery, the company offers complementary services elevating safety, reliability and profitability. Similarly, on-site bearing exchange services can help to minimise downtime, reduce stock and lower costs, supported by comprehensive installation and decommissioning.

That said, SKF emphasises bearing refurbishment,

reducing waste, energy consumption and emissions by up to 60 percent in some cases, proving that SKF's commitment isn't just a buzzword; it's a hands-on contribution to a greener rail industry.

In Direction of Digital

In a world where rail is not just a mode of transport but a key player in shaping the future of mobility, the integration of digital strategies also becomes paramount. SKF, with an unwavering focus on operational excellence, is at the forefront of creating digital experiences that redefine the landscape for both the company and its customers.

Around the globe, rail operators and fleet owners are on a trajectory of digital transformation. The investment and adoption of cloud services and autonomous data management signal a shift towards seamless passenger experiences—from ticket purchase to train exit. The aim is clear: minimise surprises, ensure safety and deliver on-time services. SKF sees digitalisation as the catalyst, transforming manual processes into a realm of predictability and reliability.

For rail to unleash its full potential as a catalyst for interconnected, decarbonised, and socially inclusive mobility, leveraging the abundance of industry data is imperative. SKF recognises the power of turning data into actionable insights, especially in the safety-relevant domain of bogie systems – the heartbeat of rail-going vehicles.

Smart on-board sensors, a testament to SKF's commitment to technological innovation, gather and deliver data from wheel and axle-box bearings. This data becomes the foundation for informed decision-making, providing operators with insights into potential maintenance issues before they manifest. SKF's expertise shines in turning recorded data into actionable insights, from anomaly detection to recommended actions, setting the benchmark for bogie monitoring solutions.

Solutions, Systems, Ecosystems

To unlock the full potential of rail advancements, the industry must embrace collaboration. Companies are urged to form partner ecosystems, pooling diverse skills to drive innovation collectively. Tackling challenges like workforce shortages and embracing

new technologies, such as hydrogen fuel cells, demands a united effort. SKF envisions a rail revolution, pioneering integration for a decarbonised transport and logistics sector.

Enter the Railway Business Transformation tool – a comprehensive solution beyond digital intricacies. This initiative focuses on forming knowledge-sharing networks rather than just digital threads. It advocates for a collaborative approach to enrich the industry's collective expertise, helping operators extract the best from their fleets.

The Railway Business Transformation takes a holistic stance, managing data integration, facilitating sharing and ensuring cyber security. It's not just about digital threads; it's about intertwining knowledge threads that weave through the entire rail community. This approach offers valuable insights into orders, service contracts, analytics and purchasing trends.

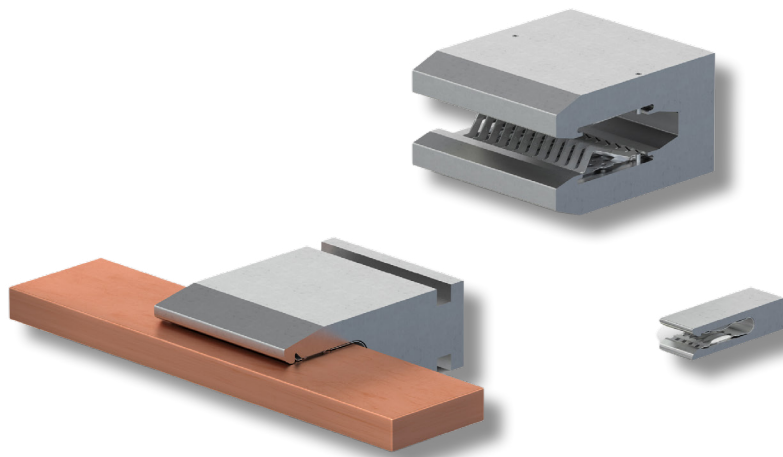
The ultimate aim is to enhance fleet efficiency and operation, contributing tangibly to a safe and sustainable future.

For more information visit our website by clicking [here](#) or email us railways@skf.com



STÄUBLI

Fork Plugs in the Railway Industry: The Invisible Heroes of Connection Technology



Fork connectors for blind mating

In an era of rising fuel costs and growing concerns about climate change, train travel is becoming increasingly popular among travellers.

This trend is particularly evident in the growing number of high-speed trains operating between major cities. As train speeds increase, the physical requirements exerted on each individual train component also increase. While the focus may not be on the train itself, the importance of the often-overlooked subsystems cannot be overstated. The selection of components for these subsystems is crucial, with factors such as shock and vibration resistance and mechanical stability playing a key role. Fork plugs serve as essential connecting elements, enabling the reliable and efficient transmission of power and signals between the various subsystems. By ensuring a secure connection, fork plugs contribute to the smooth operation of the subsystems,

ultimately enhancing the overall performance of the train – they are the invisible heroes.

Subsystems – Little Space for Important Components

High-speed railroads have been built and continuously developed in Europe and Asia since the 1980s. China has established itself as the world market-leader with almost 40,000 kilometres of rail network. However, the European network is also to be expanded in the coming years in order to provide a good alternative to air travel. High-speed trains should not only transport people quickly from A to B but also be safe and offer enough space for passengers. The space for the individual components is therefore becoming smaller and smaller in order to make the interior more spacious. The connecting components in particular, such as connectors to the converters, must therefore

be designed in such a way that they fit into this reduced space. Not only must space be taken into account, so too must ease of installation in order to avoid long downtimes in the event of maintenance. A slide-in blind mating connection is required here. Due to the considerable vibrations and shocks, the connections must have a particularly stable connection and be able to withstand the high electrical currents.

Fork Plugs – The Real Heroes

Thanks to their compact size and fork shape, fork plugs can be used in confined spaces, as described above. By using fork plugs, electrical connections can be mated and released quickly and easily, which is particularly advantageous for maintenance and repair work. Fork plugs also offer good electrical conductivity and are capable of transmitting high currents. The fork plugs from Stäubli are particularly suitable for these applications thanks to the proven MULTILAM technology, as a continuous current flow is ensured even with high vibrations. The design can be specifically adapted to each customer so that busbars, cables and other components can be installed in the system to save space. The quick assembly and replacement options of Stäubli fork plugs save time and thus increase production or maintenance efficiency and reduce total costs of ownership. They offer the same or higher reliability as bolted connections but enable faster connections.

Stäubli's Fork Connectors in China

The leading research and development institute China Academy of Railway Sciences (CARS) supported the advanced development of existing traction converters for use in the latest generation of Chinese high-speed trains back in 2010. Thanks to the intensive co-operation between the institute and Stäubli, a custom-fit solution was developed: bipolar high-performance fork connectors were introduced. Mounted on a water-cooled circuit board, the connector connects the IGBT module (insulated gate bipolar transistor)

to the busbars of the converter cabinet. Using an extremely high-performance insulating material meets the demanding industry requirements in terms of aging resistance and mechanical stability. The integrated MULTILAM enables a constant connection. These fork connectors are still in use today and are therefore characterised by their reliability and durability.

As a trusted and experienced industry partner, Stäubli has a deep understanding of the challenges and requirements of its customers in the global railway sector. Stäubli was therefore able to offer the best-fit solution in close co-operation with CARS. All Stäubli solutions are designed to meet specific customer needs and to withstand the most demanding mechanical and climatic conditions, ensuring uninterrupted operation even in extreme weather and under high mechanical stress. Stäubli is a reliable technology partner for customers seeking safe and dependable connections for their innovative railway projects.

www.staubli.com





RAILWAY MODULAR CONNECTORS

EvoTrak – the real modularity

EvoTrak family

Simplifying and unifying your traction chain connections

Experience seamless connectivity across your entire traction chain with the EvoTrak family. Our compact and flexible modular solutions ensure a consistent connection philosophy.

Whether you require 1 to 4 poles, straight or angled parts to connect to panels or receptacles, EvoTrak is precisely configurable to meet your specific needs. Furthermore, EvoTrak not only meets current standards but also undergoes rigorous testing beyond railway requirements, ensuring proven reliability.

Trust Stäubli, your expert in railway connection solutions for over 30 years.

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capitol industrial batteries

Future-Proof Battery Technology for Any Railway Application

Here at Capitol Industrial Batteries, we have operated as an independent battery manufacturer sales and service centre since 2001.

We have the background, knowledge and ability to meet any customer's requirements and we can supply and overhaul Ni-Cad, wet lead acid, gel VRLA maintenance-free and lithium battery types whilst also offering bespoke manufacturing for specific client needs.

We pride ourselves in our ability to support the market through investment in our stock holding facility as a core part of our business model which allows us to deliver products more quickly than our major competitors.

Capitol Industrial Batteries makes, supplies and services a comprehensive range of batteries and is fully aware, committed and engaged in supporting the evolving market in terms of the electrification and decarbonisation agendas, which are major themes in most organisations at present.

Our knowledge of battery technologies futureproofs our continued ability to supply and service any product type to support the long-term operation of alternative fuel-powered trains.

For more than two decades we have been acutely aware of the need for localised battery production within the UK, which is why we continue with the final assembly and commissioning of our products here in Cumbernauld, near Glasgow. We also have a full

maintenance and overhaul facility in Birmingham – something we pride ourselves on.

We have the full backing of our manufacturing partners who have supported this area of our business by providing technical development of our products to ensure they are a safe and reliable option for any and all types of rail vehicles.

Our bespoke customer-focused level of service from manufacturing through to project consultation and close collaboration means that we can tailor the correct battery option from our dedicated product range for use in all rail applications.

www.capitolbatteries.com





RAILWAY

- Full workshop test and overhaul facilities available UK wide
- Battery and charger condition-based assessments
- Battery lifecycle reporting and recommendations
- Complete site surveys and reporting for charging and ventilation requirements
- Manufacturing and design framework capabilities
- Stock holding facility for contract support
- Manufacture and supply complete batteries and components to several EU battery suppliers
- Innovative energy storage system assessments for use on railway depots



The Complete Battery Service

For more information teleph

01236 731982

Email: info@capitolbatteries.com



“Any train - not just any battery

Denis McLeod, Capitol Batteries

Where Service Is Alive and Well

Capitol Industrial Batteries - Perfect Power Solution

Whether you require batteries repaired, overhauled or replaced, Capitol are trusted and relied upon by a wide range of UK rail industry companies, who have come to know that we deliver on our promises to provide exacting standards of product, service, ongoing technical support and commitment in all aspects of our business dealings.

An independent manufacturer with enough strength and flexibility to be able to support mainline customers requirements through stock availability and technical experience, we have consistently delivered on a wide variety of projects ranging from single battery orders, to fleet change out programmes set against customer schedules and agreed service levels.

capitolindustrialbatteries  

none



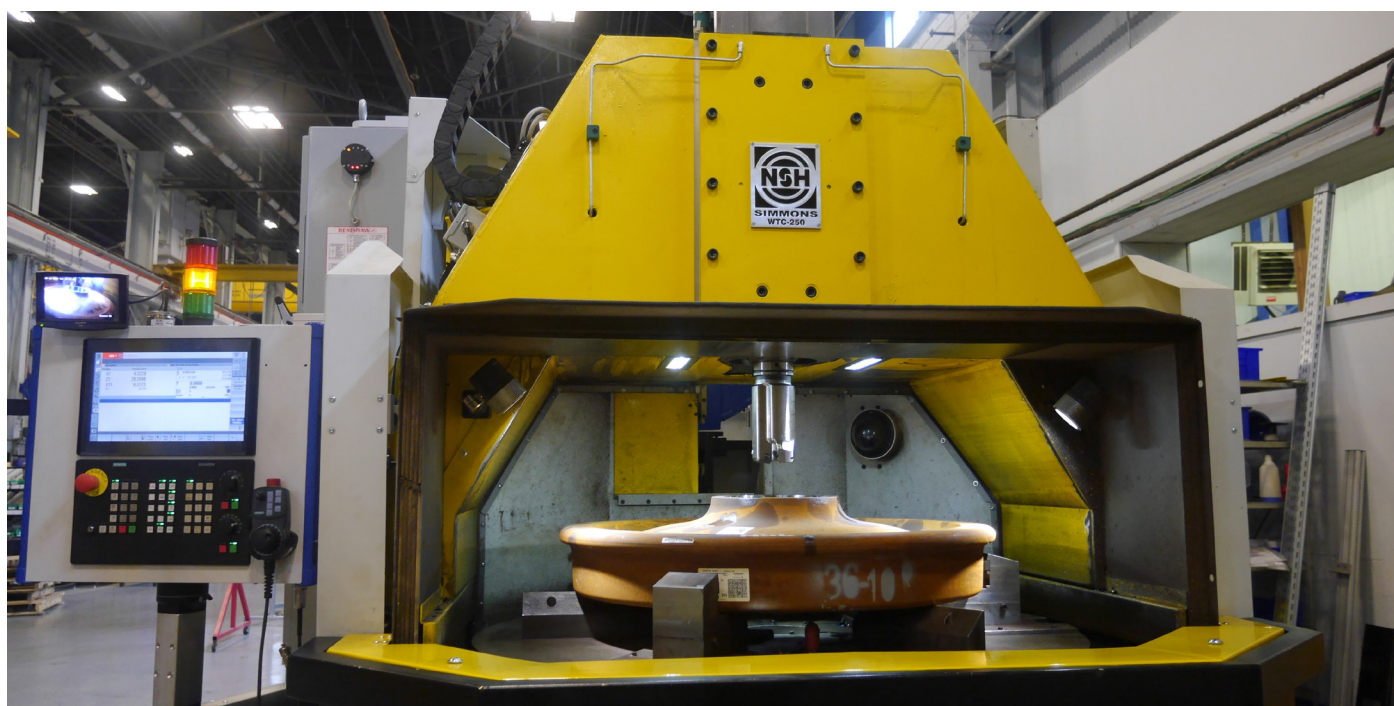
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NSH USA & NSH Group

NSH USA and the NSH Group: Dedicated to Continuous Improvement

Railway Wheel Boring and Machining



NSH USA Corporation (Albany, New York and Sterling Heights, Michigan) and our partner companies in the NSH Group (Niles-Simmons-Hegenscheidt) understand that ‘good enough’ is never good enough. Consequently, we regularly update our machinery to better meet customer needs as well as ever-evolving industry safety, production and environmental requirements.

One example of this process is evident in our wheel boring and machining product line. Over several decades aspects of the design have evolved to increase performance. For instance, the cutting tool in our previous wheel borer, the Simmons WMC-200, utilised an electronic boring bar. The current machine, the Simmons WTC-250, employs single-point tooling with an automatic tool changer for increased versatility. The

cutting tool is clamped in a vertical ram mounted on a bridge which straddles the wheel for optimal stiffness.

The table for holding or ‘chucking’ the wheel during machining is another enhancement. Our design automatically chucks a wide range of wheel diameters (roughly 300mm) without manually changing the chuck jaws. Older versions of the machine required the

operator to manually reposition heavy chuck jaws if the wheel diameter exceeded the narrow chucking range of the previous jaw setup.

With the evolving landscape of operator safety concerns, our modern designs prioritise chip management and containment. Our guarding and covers keep the operator safely removed from the machining operation while also keeping the flying metal chips inside the machine.

The addition of integrated measurement and probing is also a recent development – it allows for a more precise machining process while also allowing better access to wheel set data.

Despite these innovations, the purpose-built design for railway wheels remains a constant. All computer controls are GUIs (graphic user interfaces) that are easy to understand and do not require an extensive knowledge of machine tool programming language.

The Simmons wheel boring and machining product line will continue to be improved while maintaining a robust and dependable reputation that Simmons machines are known for.

Automated Material Handling for Maintenance Depots

Increasing safety in railway wheelset maintenance facilities means decreasing the shop personnel's direct interaction with the work pieces such as wheelsets, wheels, axles and bearings. Not only does this change have safety benefits, but modern material handling processes are often more efficient than old technologies such as fork trucks or manual overhead cranes.

NSH USA employs a wide range of automated material

handling solutions tailored to best meet a facility's production, safety and budgetary goals. This is not a 'one size fits all' offering – facility layout, personnel quantity and capabilities, and work piece variety must all be considered when designing automated systems.

Elements of our design have evolved over time to match advancements in technology and to incorporate lessons learned during practical implementation. Updates in end effector design as well as changes to the design footprint have all positively impacted the process.

Another benefit of utilising automated material handling is that they can often be seamlessly integrated with the machine tools performing the work, allowing work piece information, measurement data and other vital data to transfer digitally throughout the shop. This decreases the chance for operator error, associated with entering the data manually. It also allows easier access to the data for analysing production data and work piece trends.

NSH USA is a turnkey, 100% integrated partner on the project. All phases of the turnkey process (design, manufacture, install, commission, train and post-sales support) are handled with NSH USA as the single point of contact.

From fully automated overhead gantries to conveyors and rotating loaders, NSH USA has an automated material handling solution tailored to fit your facility.

nsh-usa.com

nshgroup.com/en

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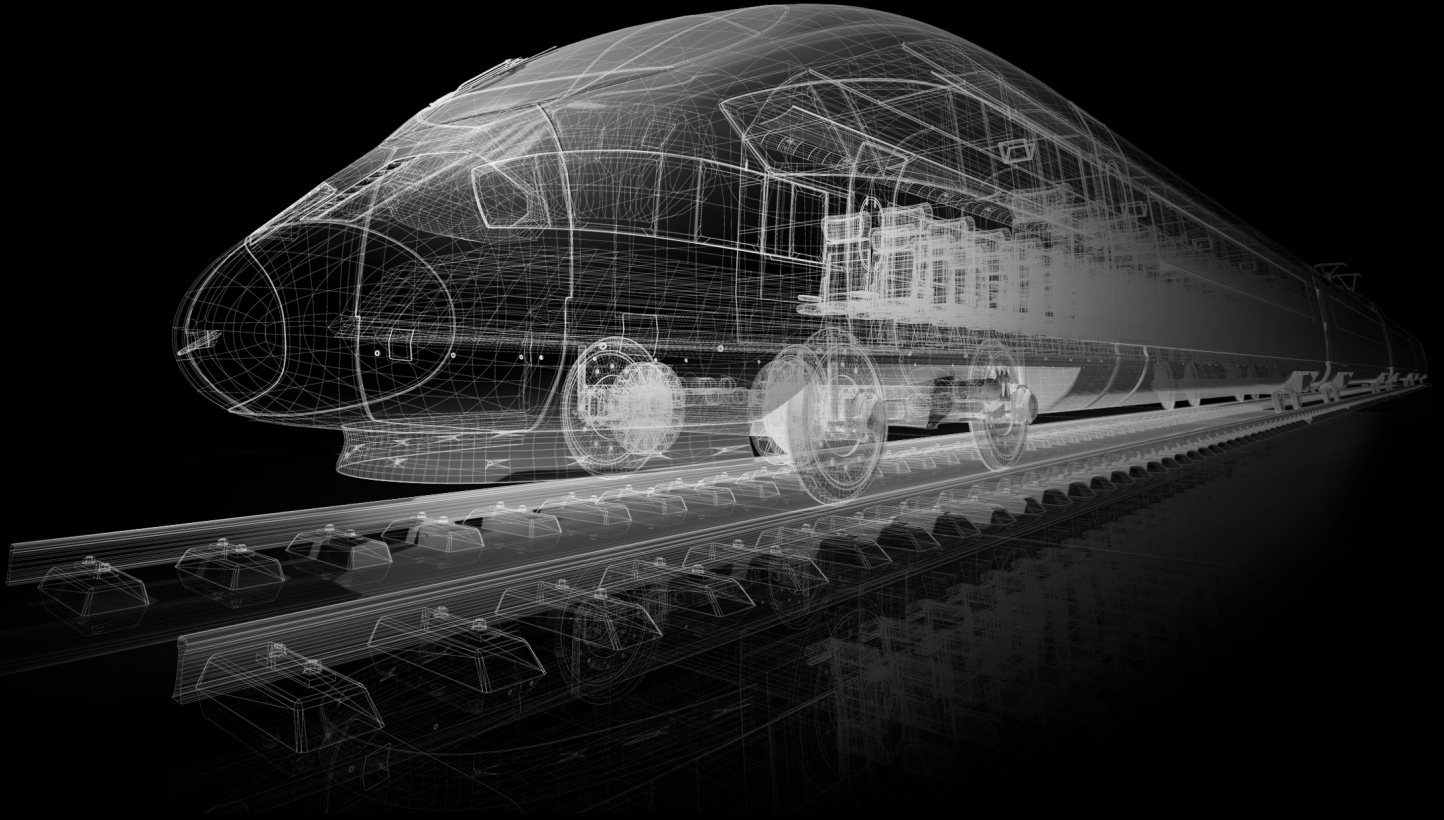
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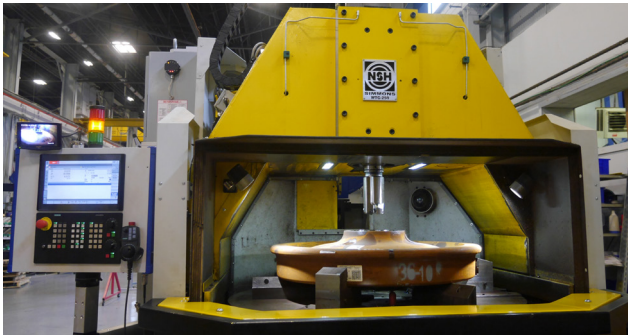


NILES-SIMMONS-HEGENSCHEIDT

MACHINE TOOL MANUFACTURING

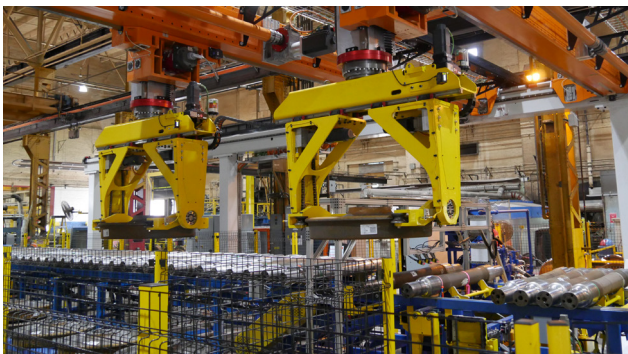


Industry Leaders in Wheel Set Production, Maintenance & Automation



Railway Wheel Boring and Machining

- Purpose-built for railway wheel boring and machining
- Integrated measurement for increased precision and decreased misfits
- Automatically chucks wide range of wheel diameters without operator intervention



Automated Material Handling for Maintenance Depots

- Custom designed to meet safety, production, and budget goals
- Can be configured for new or existing facilities
- Capable of heavy payload automation

Services

Accreditation & Certification

TÜV SÜD

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Want to be featured in Issue Two of the Railway-News magazine?

Contact us at **+44 (0)1392 580002** or
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Content Submission Deadline: **15 April 2024**

Publication: 21 May 2024

TÜV SÜD

TÜV SÜD Commences Tests on New Talgo ICE L Trains for Deutsche Bahn

Having signed a framework contract in February 2019 for the delivery of a maximum of 100 new ICE L trains for German national railway company Deutsche Bahn (DB), the Spanish high-speed passenger train manufacturer Talgo has started the testing process with TÜV SÜD.

ICE L is a long-distance locomotive-hauled push-pull train. The coachset can consist of a combination of 9 to 21 cars. The standard configuration is 256m long and consists of one locomotive and 17 articulated cars. Each car is connected to the neighbouring car with a single-axle bogie, with double-axle bogies only at each end of the set. This gives each train 20 axles, in addition to those of the associated locomotive. Each unit will be delivered with a multi-system-electric Talgo Travca locomotive.

Talgo has commissioned TÜV SÜD to execute the complete package of tests, that are performed on the public network of Germany, Austria, Switzerland and the Netherlands. This is achieved by working in close co-operation with RailAdventure, a Munich-based rail operation company specialising in rail operations. TÜV SÜD started a full set of homologation tests on two trainsets in parallel in August. The first tests focused on safety against derailment in accordance with EN 14363. This was performed on the instrumented curved track in TÜV SÜD's rolling stock test centre in Görlitz, Germany. Tests are expected to continue throughout 2023 and 2024, and once these tests are completed, the first train of this type – tested and inspected by TÜV SÜD – is expected to begin operating in 2025.

TÜV SÜD is one of the world's leading testing, inspection and certification (TIC) companies, providing services to the rail industry from conventional rail systems to high-speed trains and metro and urban rail



Markus Kammel
Sales and Projects
Engineer at TÜV SÜD

systems. Over 400 experts from TÜV SÜD - Business Unit Rail Services, support manufacturers, operators and authorities throughout all stages of a project and all phases of a product's life cycle. To this end, TÜV SÜD maintains its own test facilities for rail applications and proprietary testing tools and holds all international accreditations and approvals needed for these activities.

Markus Kammel, Sales and Projects Engineer at TÜV SÜD and Project Lead for the testing part at Talgo project said: *“Our comprehensive service portfolio and extensive testing facilities, across multiple locations, optimises our capacity to offer the full suite of testing as well as certification services, which enables us to provide swift services and processing from a single source. We are really excited to be working on this industry-leading programme to modernise and expand the German high-speed train fleet, serving both domestic and international routes.”*

About TÜV SÜD

TÜV SÜD is a trusted partner of choice for safety, security and sustainability solutions. It specialises in testing, certification, auditing and advisory services. Through more than 26,000 employees across over 1,000 locations, it adds value to its customers, inspiring trust in a physical and digital world.

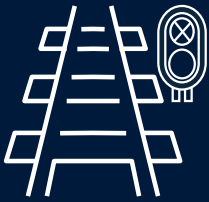


Add value.
Inspire trust.



Rail Services

Our fields of expertise



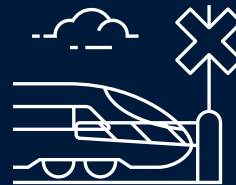
Infrastructure

- Signalling Systems
- Track and Components
- Power Supply
- Fire Protection
- Emergency and Rescue Concepts



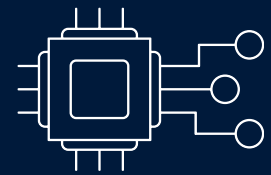
Rolling Stock

- Vehicles
- Component and Systems
- On-track and Crash Tests



Complete Railway Systems

- Turnkey Projects
- Operation and Maintenance
- Safety Management



Rail Automation

- Hardware and Software
- AI Applications
- IT Security

Our services

Inspection



Certification



Assessment



Training



Testing



Advisory



Thank you for reading Issue One 2024 of the
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the rail sector.

