Railway-News

The latest news & reviews from the industry

Railway-News

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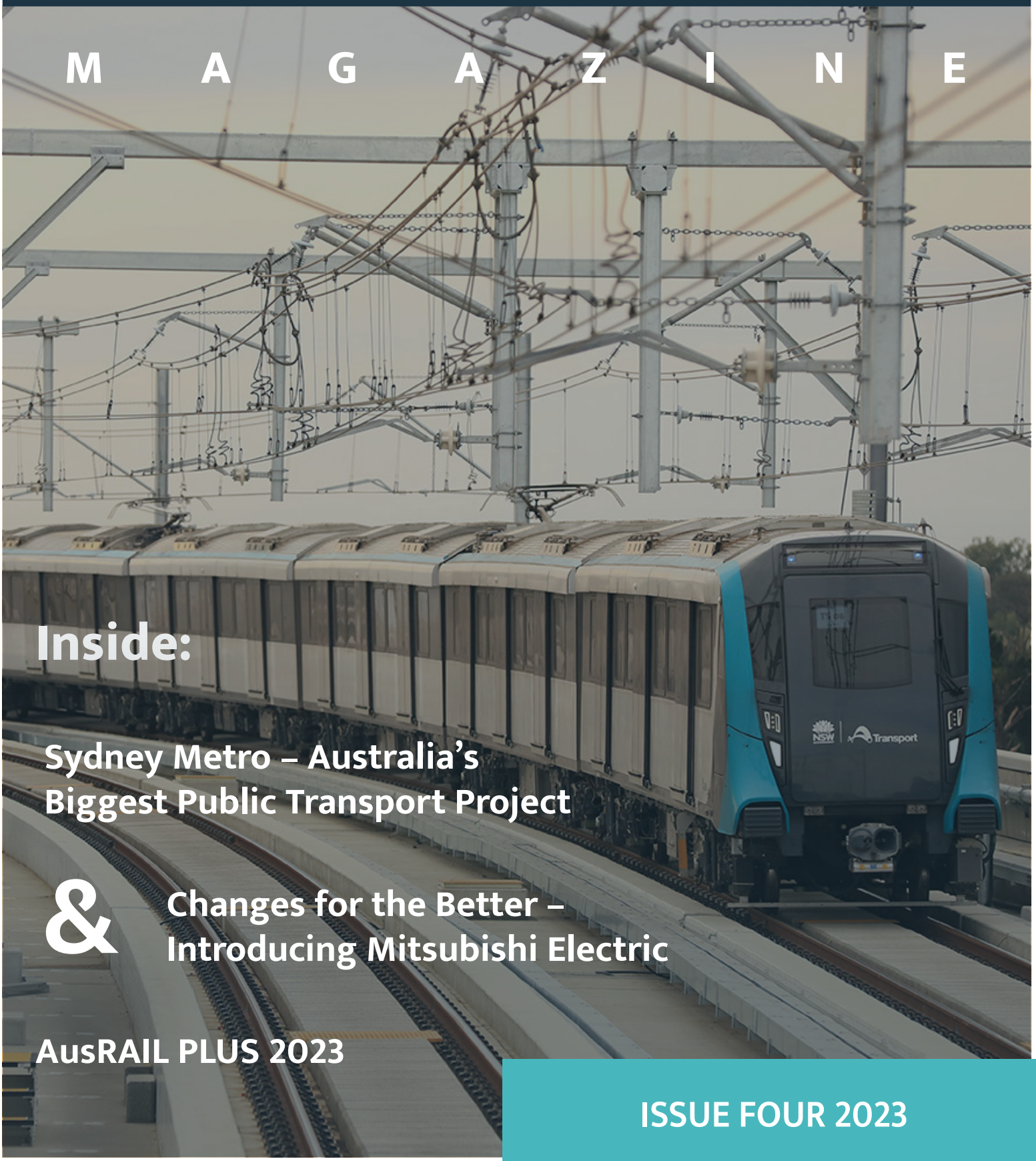

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AusRAIL PLUS 2023

ISSUE FOUR 2023

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Letter from the Editor

Dear Readers,

I have to say, the rail news for the UK is pretty bleak at the moment. Rishi Sunak has cancelled HS2, the country's transformative high-speed rail project aimed at freeing up capacity for far more local and regional services across the North of England and more widely. This would have given people the ability to leave their cars behind and use public transport for work and leisure.

At the same time, the high-speed line would have taken passengers away from the domestic flight market, giving passengers a more convenient way to travel right into the heart of a city. But no. First, the eastern leg was cancelled, then wobbles around Euston Station in London caused the idea to be floated that maybe the line should end at Old Oak Common, five miles west of the capital, and then the Prime Minister said at his party conference in – ironically – Manchester, that the high-speed line would terminate in Birmingham and not reach Manchester. Sunak also chose to announce this cancellation of this railway line – a line that was in the Conservative Party's 2019 election manifesto – with an image of himself on a private jet.

Small scraps, but HS2 will at least still go to Euston. Which is good because the last railway line England got – the Elizabeth line – which would be the one carrying passengers from Old Oak Common into London has struggled with overcrowding from the get-go.

After opening in May 2022, by December that year it had attracted 32m more passengers than expected. It would seem that when railway lines get built, people use them enthusiastically. This is not a pleasure the people of Leeds, Manchester and the like are going to get to enjoy. No freed-up capacity for them to make more journeys by rail. Now the line truly is what its objectors always said it would be: just a way for people to travel slightly quicker between London and Birmingham. Only Phase 1 remains.

With this being the case, I'm quite happy that our final issue of 2023 casts its gaze much further afield, to Australia. Sydney is due to host AusRAIL PLUS in November. Consequently, we've taken a look at what's in store at this year's event and we take a look at the Sydney Metro project which is currently under construction.

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 Andrew Lush or call +44 7432 725001.

Josephine Cordero Sapién, editor-in-chief

Meet the Team!

ANDREW LUSH
Director
al@a2bglobalmedia.com

JOSEPHINE CORDERO SAPIÉN
Editor-in-chief
jcs@a2bglobalmedia.com

NICOLA BROWN
Head of Sales
nb@a2bglobalmedia.com

ZOE GRIFFEY
Head of Design
zg@a2bglobalmedia.com

TIANA MAY
Feature Writer
tm@a2bglobalmedia.com

a2b Global Media Ltd
The Generator Hub, The Gallery
Kings Wharf
The Quay, Exeter
EX2 4AN

Office: +44 (0)1392 580002
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Issue Four 2023

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Features

Sydney Metro – Australia's Biggest Public Transport Project

By Josephine Cordero Sapién

Train testing © Sydney Metro

Most recently, **we wrote about Sydney Metro West**, one of three components of the Sydney Metro project, last November.

The other two parts to this major rail infrastructure project are the City & Southwest line and the Western Sydney Airport line, which will serve the city's new international airport.

City & Southwest

The City & Southwest line is an extension of the Northwest line, which began carrying passengers in 2019. Located entirely on Sydney's north shore, the extension comprises two parts: tunnelling 15.5km under Sydney Harbour and laying of new track to Sydenham; and converting the stations on the existing Bankstown line to be capable of taking driverless trains.

The Northwest line runs roughly in a northwest-southeast direction from Tallawong to Chatswood; the City & Southwest extension will take the line southwards under the harbour to Sydenham and then out to Bankstown in a southwest direction, making it look somewhat like a U that has toppled over to the left. The **construction work to connect these two lines** was completed in February 2023.

The City & Southwest line is by far the most advanced and is due to open to passengers from Chatswood to Sydenham in 2024. The first train ran on the new tracks this April. The line is currently undergoing testing

and commissioning, in particular 'loaded testing'. This involves 100 very large water bottles filled with 100,000 litres of water on the trains to simulate a full train load of 1,540 people to ensure both the trains and the track perform as expected.

Sydney Metro West

The Sydney Metro West line will run roughly in an east-west direction to the south of Sydney Harbour, from the CBD out west to Westmead. If the City & Southwest line is a U lying on its side, this line runs along the centre of that U. It is scheduled for opening in 2030.

Tunnelling is in full swing on this line. One noteworthy tunnel boring machine is Betty, **Australia's first autonomous TBM**. It is equipped with AI technology that automatically steers, operates and monitors the machine, though a human operator will also remain in control. TBM Betty was launched in September 2023 and is tunnelling between Sydney Olympic Park and Westmead. It was launched from Clyde and is currently heading east. At the time of writing, TBM Betty has travelled 75m.

A total of six tunnel boring machines will excavate the tunnels for this line. Currently, three are operational. The two others are TBM Beatrice, which has travelled 3.17km, and TBM Daphne, which has travelled 2.95km. The two TBMs were the first to start tunnelling on the Sydney Metro West line, having been launched in June 2023. They are creating 11km twin tunnels between The Bays and Sydney Olympic Park.

Sydney Metro Western Sydney Airport

The Western Sydney Airport line will run north-south from St Marys via the Western Sydney Aerotropolis to Western Sydney International (Nancy-Bird Walton) Airport. The line runs further west than the other two metro lines but will connect to Sydney's commuter rail network, Sydney Trains. Once completed, this line will measure 23km.

TBMs Peggy and Eileen started their journeys at the future Airport Business Park Station in April 2023, boring the first 5.5km sections of the twin tunnels towards the Aerotropolis.

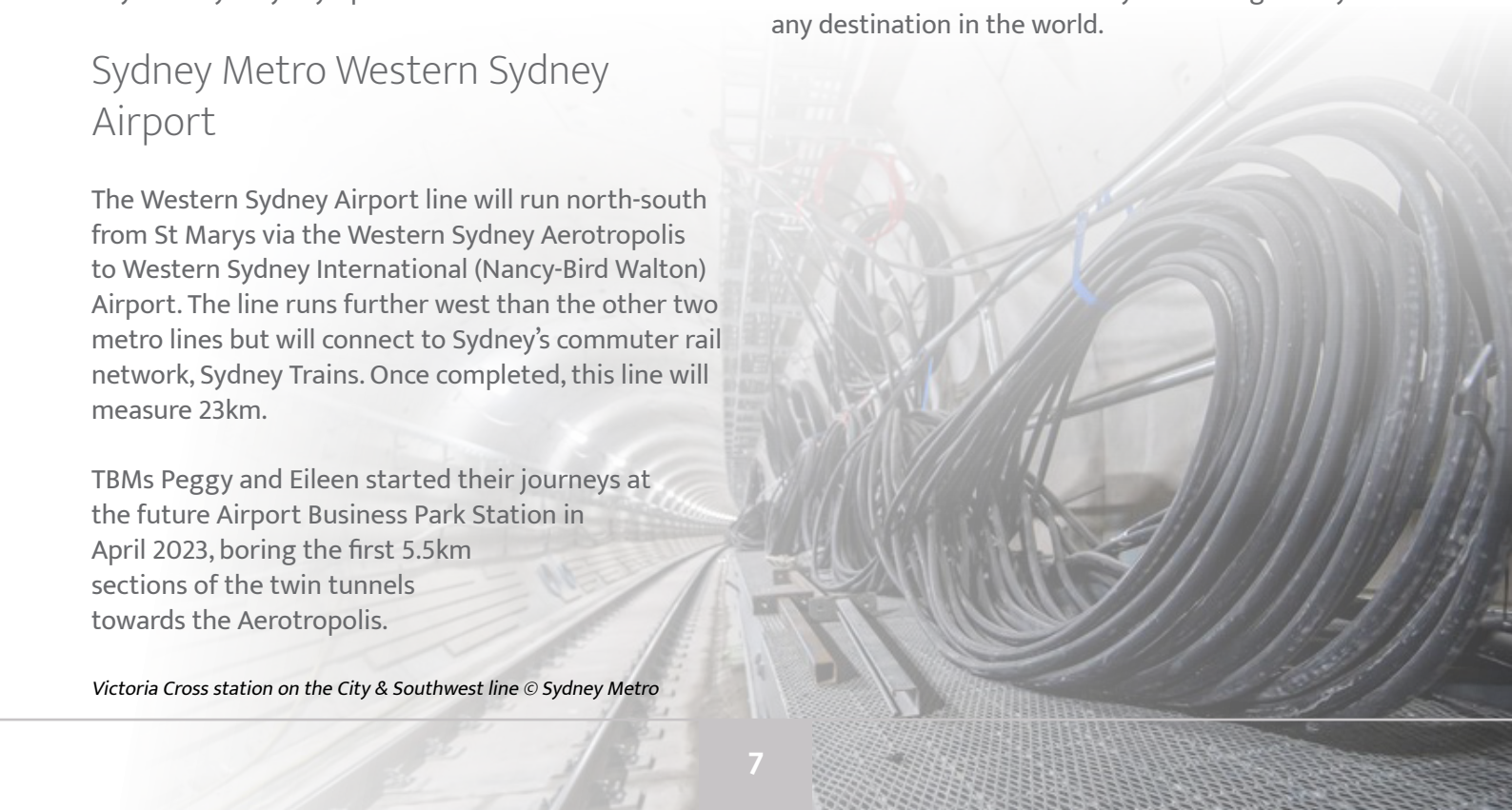
TBM Eileen broke through at the Western Sydney Airport metro station in late July, **followed by TBM Peggy** in September. TBM Eileen has travelled 1.62km so far, while Peggy has completed 1.48km.

There are two other tunnel boring machines currently digging on the Western Sydney Airport line. They are TBMs Marlene and Catherine. Only recently launched, TBM Marlene has excavated 247m, while TBM Catherine has excavated 520m. These two TBMs are boring 4.3km twin tunnels from Orchard Hill to St Marys. They are expected to reach the St Marys station site in mid-2024.

Western Sydney International Airport is due to open to passengers in 2026, having secured its 3-digit code (WSI) this year. It is expected for the metro line to be ready to start carrying passengers for that date.

Once the three lines are operational in 2030, Sydney will have got a network measuring 113km with 46 stations. With the Alstom Metropolis trains being able to run every two minutes in each direction, the network will be able to carry around 40,000 passengers per hour. To compare, Sydney's current suburban rail system can carry around 24,000 people per line per hour.

The new lines are set to revolutionise public transport – sustainable, mass transport – in Sydney, increasing the number of trains into the CBD from 120 an hour today to up to 200 services an hour beyond 2024. And with the opening of the new airport, residents and visitors will be able to use the metro system as a gateway to any destination in the world.



Victoria Cross station on the City & Southwest line © Sydney Metro

Taketsugu Matsumoto

Changes for the Better – Introducing Mitsubishi Electric

Railway-News' Keri Allan recently had the pleasure of speaking with Taketsugu Matsumoto, European Business Unit President Transportation Systems at Mitsubishi Electric, where he discussed the company's plans for Europe, its stand-out projects and its focus on sustainability and circular engineering.

Keri Allan: Please can you tell me about Mitsubishi Electric Europe Transportation Systems – your company's heritage and what you offer to rail companies in Europe?

Taketsugu Matsumoto: Mitsubishi Electric is a leader in transportation systems and solutions for trains. We design and produce customised solutions and integrated systems for rail manufacturers. Our main focuses are on propulsion with our traction motor (where we hold a leading position globally), safety, which includes our world-leading train control management systems (TCMS), comfort – our heating, ventilating and air conditioning (HVAC) systems, and sustainability and energy-saving solutions.

Today we've equipped 60,000 rail vehicles with key electric and electronic components in 36 countries, and we can provide up to 50% of a train's vital components.

Our roots are in Japan, where Mitsubishi Electric Corporation was founded over a century ago. What's different about us is that we're an independent rail equipment supplier, which means that we seldom rely on external suppliers for subsystems or components. Our engineers design, develop and build systems in house.

KA: Any new or ongoing projects you can tell us about?

TM: We're currently working on our first contract in France, where we've just completed the dynamic testing of our system for the next generation CAF-built Oxygène intercity train for SNCF.

This project consists of traction motors, converter-inverters and main transformers using natural air-cooling technologies for 28 trains. Mitsubishi Electric is actually the first company worldwide to supply such roof-mounted converters and inverters with natural air-cooling systems, which lowers operational costs.

Customers see approximately 20% energy savings, 40% less maintenance and also lose the noise.

Another recent project is with Newag in Poland, where we are supplying main transformers for its next generation locomotive, Griffin 200 (E4MSUa). We started working with Newag in 2019, when we provided the main transformer for 24 dual-voltage **Dragon 2** freight locos able to operate on 3kV DC and 25kV AC.

KA: What about your biggest projects in Europe, or those you're most proud of?

TM: One thing that stands out is the success of our HVAC system. We have a long-standing partnership with what was Bombardier, now Alstom, which began in 2010 when they chose our HVAC unit for their London Underground trains. We've since provided them with HVAC systems for their new Aventra platform used in the UK.

By the end of this year, we'll have delivered a total of 8,430 HVAC units; 7,600 of which to Alstom and also 824 to Siemens for the Desiro platform; something we're really proud of.

Another achievement is our first project for high-speed trains in Northern Europe. Between 2016 and 2021 we supplied CAF and Norwegian operator Flytoget with traction systems using high-voltage hybrid silicon carbide (SiC). We supplied 16 traction transformers, converters, inverters and auxiliary power supplies for eight high-speed trains connecting the Norwegian capital to Oslo Airport.

Then there's our largest supply contract in Europe, delivering 400 traction inverters and 1,000 traction motors to equip next-generation trains for Nederlandse Spoorwegen.

We also continue to support our long-time partners RENFE and CAF, and are proud to have motorised RENFE's S449, one of the most-used railcars in Spain.

KA: What about technical innovation – what are you working on in this area and what excites you about the future of rail?

TM: We strongly believe that technology and innovation can provide solutions to achieve social change and a more sustainable world. Our motto is 'Changes for the Better' and we look to solve social challenges through 'circular digital engineering', putting the focus on sustainability, innovation and component robustness.

For instance, energy efficiency is a very important topic and the company optimises its system using in-house power devices solely designed by the semiconductor division and system engineers. For example, our hybrid SiC modules have been available since 2013, and full SiC power modules since 2015. Then there's our SiC variable voltage and variable inverter, which lowers energy consumption and volume and mass by 40%. If you look at our SiC auxiliary power supplies, these reduce power loss by at 30% and volume and mass by 20%.

Our semiconductor business will benefit from intensive investment over the next four years, with the creation of a new SiC wafer factory in Japan and the doubling of previous investment plan by 2026.

Then, with global warming, HVAC has become a key topic for decarbonisation, while remaining mandatory for passenger comfort. Our engineering teams are currently working on implementing a natural refrigerant like propane in HVAC systems to replace the ones currently in use, which will be banned as of 2029 at the latest.

We're also focusing on miniaturisation and energy conservation of our power electrics, control equipment and HVAC units, and designing them with easy integration and minimal maintenance in mind. We can proudly say that our products require limited maintenance and almost no replacements because our quality is very high.

KA: What are your plans for the company going forward? I'd love to know more about your focus for the future and your strategy?

TM: If we look at the EU Green Deal, there's some ambitious targets set for rail, like doubling high-speed rail traffic by 2030 and rail freight by 2050. We want to be part of this journey, and so partnering in Europe is a priority and cooperation with local players is key.

Our strategy is to promote localisation in Europe. In 2014, we started to grow our footprint in Europe through capital alliances and industrial partnerships with rail equipment suppliers, starting with the establishment of an HVAC competence centre and manufacturing site in Italy.

In 2016 we signed an alliance with MEDCOM in Poland for traction and auxiliary power systems and in 2020 with EKE-Electronics in Finland, which produces the train control management system and has the competence to deal with the condition-based maintenance.

We are committed to become European, to support our customers from here. If demand increases, we are ready to open more manufacturing sites and establish more partnerships with European companies.

KA: Are you always open to collaborating with different companies to provide solutions?

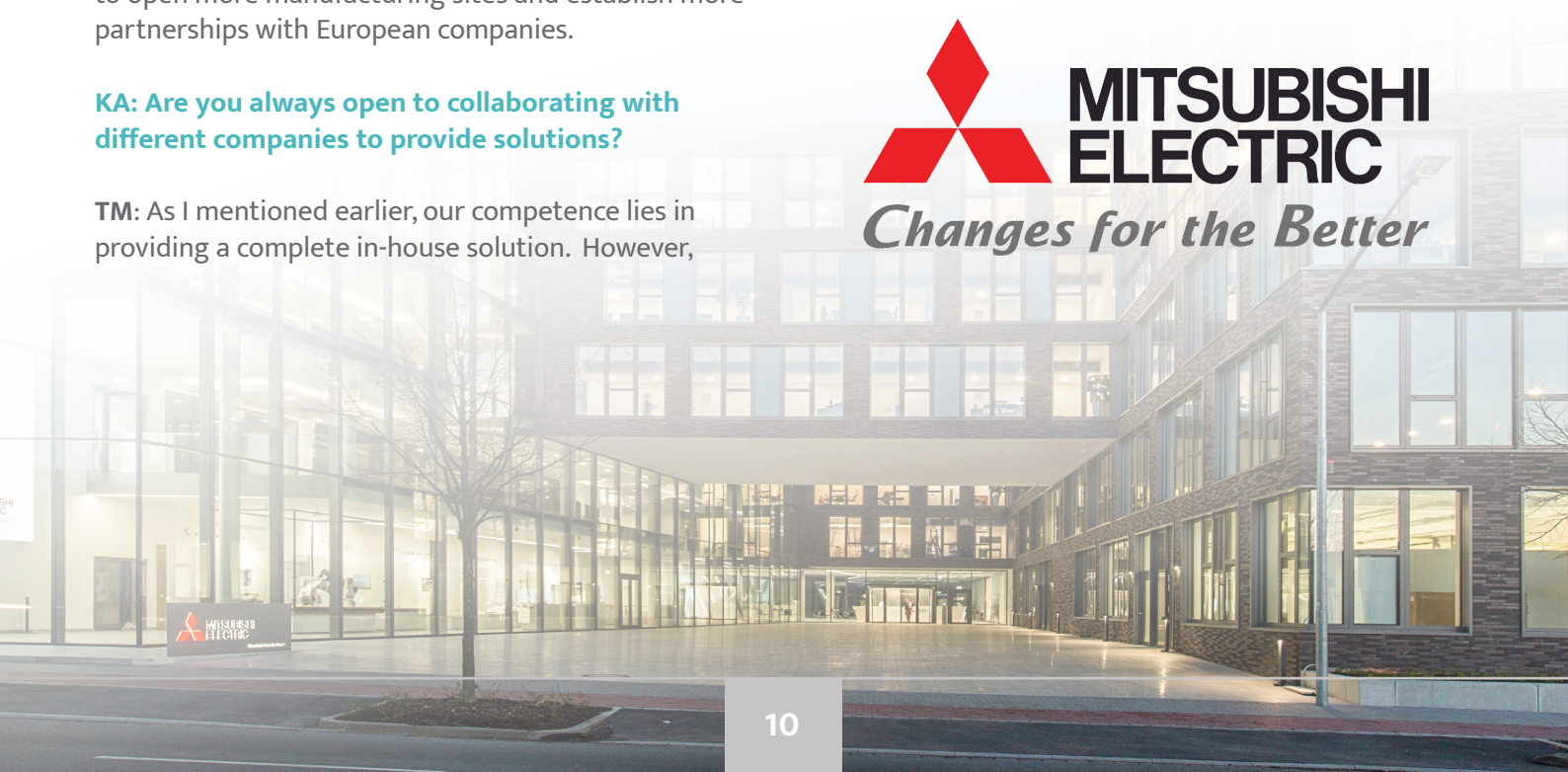
TM: As I mentioned earlier, our competence lies in providing a complete in-house solution. However, with the current demand for decarbonisation, speed is important. In this situation, collaborating with European partners with local knowledge, skills and capabilities is an option for us.

Looking forward, our mission is to contribute to the newest train platform developments in Europe through platform agreements with rail car builders. We're also eager to support rail operators and leasing companies in the decarbonisation and modernisation of their fleets, by replacing obsolete components with more energy efficient ones.

We've transformed from a component supplier to a systems integrator, providing an integrated solution that helps customers meet their sustainability targets.

If readers would like to discuss this, or any of the other points we've raised, then I invite them to contact us via our website, or even better, pick up the phone and give us a call. We'd be happy to discuss how we can support you and arrange a site visit to learn more about your needs.

For more information scan the QR code to contact Taketsugu Matsumoto, European Business Unit President Transportation Systems at Mitsubishi Electric



Upcoming Rail Events & Exhibitions

November 2023– February 2024

Click here to see all of our event and exhibitions listings

AUSRAILPLUS | AUSTRALASIAN RAILWAY ASSOCIATION

Where: International Convention Centre (ICC), Sydney

When: 13–16 November 2023

AusRAIL PLUS, which takes place alternatingly with AusRAIL, is the key rail industry event of the Australian continent. It is expected to attract more than 5,000 attendees.

In addition to the exhibition, it will feature presentations and a social programme to round off the offering.

The event is organised by the Australian Railway Association, which describes itself as the "peak body for the rail sector in Australia and New Zealand, and advocate[s] for more than 170 member organisations across the rail industry". Members come from all areas of the rail industry, namely passenger and freight operators, track owners, manager and contractors, and suppliers, manufacturers and consultants.

The organisation's mission is to drive greater use of rail across Australia and New Zealand and bring together industry and government to achieve this goal. The ARA prides itself on its advocacy work that includes creating opportunities for the rail industry to come together to network and collaborate.

Jacobs AusRAIL PLUS Exhibition Theatre Programme

The AusRAIL PLUS theatre, which can hold more than 140 attendees, will host over 25 hourly presentations over the course of the three days of the event.

Topics covered range from signalling to digital twins, sustainability, safety and more. Hear from speakers such as Raphaelle Guirineau, CEO of Siemens Mobility, AUS & NZ; Michael Hopkins, CEO and Commissioner, National Transport Commission; Pascal Dupond, Managing Director, Alstom Australia and New Zealand; Danny Broad, the Chair of the Australasian Railway Association and others. Sessions run from 9am to 4:30pm.

Supplier Spotlight

Alstom – Booth 312
Rolling stock and rail infrastructure solutions provider Alstom, which is also the event's Headline and Yellow Dinner Partner, currently employs around 2,200 people across more than 25 sites in Australia, including engineering centres, manufacturing facilities, project delivery offices and maintenance depots and workshops.

CAF – Booth 310
CAF designs and supplies transportation systems from trains to signalling systems. It manufactures and maintains high-speed trains, regional and commuter trains, locomotives, metros and trams. It has a presence in more than 55 countries with a worldwide workforce in excess of 14,000.

Frauscher Sensor Technology – Booth 419
Frauscher Sensor Technology specialises in axle counting and wheel detection, giving customers the data to make evidence-based decisions.

Frequentis – Booth 551
Frequentis offers public transport solutions that focus on safety-critical communications and applications. It holds the number one market share in GSM-R dispatcher terminal positions with more than 10,000 units delivered to customer control centres in more than 25 countries.

Mosdorfer Rail – Booth 629
Mosdorfer Rail supplies products for electric railways and trainway systems. Specifically, the company offers overhead wiring systems, with competencies in

catenary systems, tensioning, insulation technology, power supply and safety equipment.

Nokia – Booth 136
Nokia is a leader in GSM-R and a frontrunner in the development of FRMCS/5G. It provides networking, cyber security and IoT solutions to rail operators worldwide.

Pandrol – Booth 234
Pandrol defines the industry standard across rail fastening systems and aluminothermic welding. For example, Pandrol has recently developed its Common Interface System, a game-changer for non-ballasted track.

Plasser Australia – Booth 425
Plasser Australia is a member of the Plasser & Theurer group, which provides track maintenance and construction machinery for the rail industry. It also provides original spare parts, after-sales service and support including technical assistance and training as well as machine and component overhaul. Plasser Australia launched its presence in the country in 1970.

PowerRail Australia – Booth 120
PowerRail is a certified AAR M-1003 distributor, manufacturer and remanufacturer of aftermarket locomotive parts and components, supporting both EMD and GE-style locomotives.

Goldschmidt Group – Booth 737
Goldschmidt offers welding solutions, the associated tools and equipment and glued insulated joints. It also offers welder training, grinding and specialised welding services. The company's portfolio further includes geometric, ultrasonic and eddy current track measurement solutions.

Social Programme

The social programme is made up of six events, all of which require tickets.

Welcome Drinks
The Welcome Drinks are a way of getting to know AusRAIL PLUS participants before the official programme commences.

When: Monday, 13 November, 5pm–6:30pm

Women in Rail Breakfast
A breakfast to celebrate the achievements of women in rail.

When: Tuesday, 14 November, 7:15am–8:30am

Young Rail Professionals Lunch
For those under 35 years old and those advocating for and supporting the future generation of the industry.

When: Tuesday, 14 November, 12:40pm–1:40pm

Yellow Dinner
A formal dinner for rail industry leaders.

When: Tuesday, 14 November, 6:30pm–10:30pm

Exhibition Networking Drinks
An event for delegates, exhibitors and visitors in the Exhibition Hall.

When: Wednesday, 15 November, 5pm–7pm

Gala Dinner
Sponsored by Siemens Mobility, the gala dinner is a celebration of the achievements of the industry. It is also an opportunity to network with other attendees.

When: Thursday, 16 November, 6:30pm–10:30pm

Click **here** to see who will be attending the event.

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New Railway Accreditations for SGS

We are pleased to announce that, as of July 2023, we are now accredited to perform verification and assessment services for infrastructure and energy subsystems in railways.

These new accreditations, combined with our existing accreditations for rolling stock and control, command and signaling subsystems, allow us to complete the full Technical Specifications for Interoperability (TSI) certification process for railway subsystems.

SGS is accredited (Nº181/C-PR394) by ENAC, the Spanish accreditation entity, according to EN 17065, for product certification, and according to EN 17020, for inspection entities.

As an accredited certification entity for the full scope of TSI requirements, we can now perform EC verification and assessment according to TSI and notified national technical rules (NNTR) for the complete set of railway subsystems:

- Subsystem rolling stock – locomotives and passenger
- Subsystem rolling stock – freight wagons
- Subsystem rolling stock – noise
- Subsystem control-command and signaling
- Subsystem energy
- Subsystem infrastructure
- Safety in railway tunnels
- Accessibility of the European Union's rail system for persons with disabilities and persons with reduced mobility

The TSI identify the essential requirements to be met by subsystems and components. Compliance with these requirements provides evidence of the technical compatibility, quality and safety of a railway systems. The European Interoperability and Safety Directive, which establishes the European legal framework for railways, requires EC verification, based on TSI, before a rail system can be put into service. This directive ensures the safe circulation of rail vehicles on the different networks of the European Union, facilitating the mobility of people and goods and thus allowing easier access to the European market.

Our Railway Expertise

Achieving this milestone, alongside our extensive experience in railway projects, allows us to consolidate our leadership position as a provider of inspection and certification services to the global railway industry.

With an extensive international presence, we offer qualified local technicians who apply a global approach. We have the capability to develop specific regional accreditations and recognitions, based on the market's specific characteristics. SGS is accredited as an independent safety assessment body in China and Mexico.

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Transforming Rail Travel in Central and Eastern Europe

istock.com/Serjio74

Central and Eastern Europe (CEE) is joining the high-speed rail (HSR) revolution.

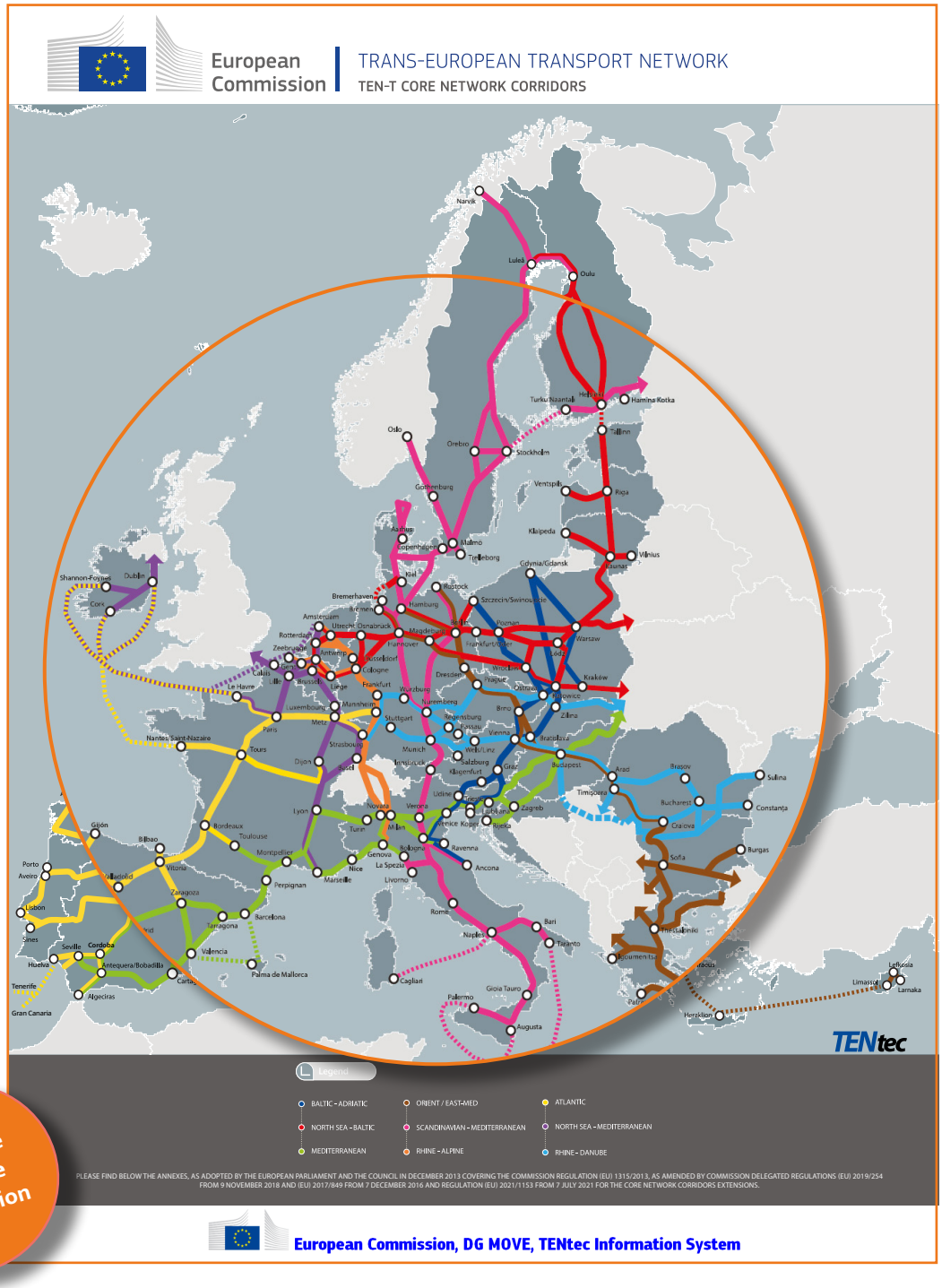
After decades of little investment in many parts of its rail infrastructure, it's great to see large projects like Centralny Port Komunikacyjny's (CPK) Transport Hub and Rail Baltica taking shape.

These projects are part of the wider Three Seas Initiative, a forum of 12 countries spanning the Adriatic, Baltic and Black Seas and covering a third of the EU region, which aims to improve transport, energy and digital connections along the EU's north-south axis.

Under this initiative HSR networks are being developed that will connect neighbouring countries, eventually creating an integrated HSR network from Poland and the Baltics down to Croatia that is forecast to be 4,500km in length by 2050.

In the words of Mikolaj Wild, CEO of CPK, *"This is a unique one-of-a-kind time in our history, when functioning together in the region, we can create an unrivalled rail transport offer that will bring about an economic domino effect, giving a boost to other industries and sectors."*

When complete, these projects will provide faster



Click here for more information

and more comprehensive networks that improve connectivity across the entire continent. But as well as offering better connections across Europe, the aim is to move passengers travelling distances of around 400–800km away from short haul flights to HSR alternatives.

Not only will this support economic growth, as Wild highlights, but also sustainability, as it becomes more attractive for travellers to choose rail over road or air.

Centralny Port Komunikacyjny (CPK)

This will make a huge difference in Poland, for example, which is known for its slow train speeds. In 2022 **82.4% of Polish rail lines had a maximum speed of 60km/h, down from 88.1% in 2014** – making it clear that much still needs to be done in order to get people out of their cars and on to trains.

CPK's mega project aims to reach this tipping point through the construction of a new airport and **the country's first HSR network** between Warsaw and Lodz. This 140km line will reduce travel times between the two cities from 90 to 45 minutes.

CPK's end goal is to build a 2,000km-plus HSR network

"This is a unique one-of-a-kind time in our history, when functioning together in the region, we can create an unrivalled rail transport offer that will bring about an economic domino effect, giving a boost to other industries and sectors."

Mikolaj Wild, CEO of CPK

that connects all major Polish cities to the new, centrally-located airport, which will also function as a rail hub, but it's also looking to improve international travel links, including the feasibility of a new HSR line between Warsaw, Lviv and Kiev.

Rail Baltica

Rail Baltica's goal, on the other hand, is to integrate the Baltic states with the rest of the European rail network after a gap of almost 80 years. Prior to World War II the Baltic States were connected to Europe with 1,435mm standard-gauge rails, but since then they've been linked to an east-west rail axis using Russian gauge 1,520mm rails.

The largest Baltic region infrastructure project in the last 20 years, when complete the fully electric, 870km-long HSR network will link Helsinki, Tallin, Parnu, Riga, Panevezys, Kaunas, Vilnius and Warsaw.

It's considered a priority transport project by the European Union (EU), as it will remove bottlenecks, build missing cross-border connections and promote modal integration and interoperability.

Trans-European Transport Network (TEN-T)

These projects will become part of the EU's TEN-T, which aims to strengthen the Union's economic, social and territorial cohesion by creating seamless transport systems across borders without physical gaps, bottlenecks or missing links.

Another goal is to reduce the environmental impact of transport and to increase network safety and resilience. There are a total of nine core TEN-T corridors, and both projects will be part of the North Sea-Baltic corridor. Many other projects from the 3SI look set to be incorporated into different corridors, depending on their location.

Financing Large-Scale Infrastructure Projects

The projects discussed are or will receive funding from the EU, but will need further funding to reach completion.

KfW IPEX-Bank is experienced in arranging financing for large scale rail infrastructure projects, including financing of the rail infrastructure as well as the acquisition of rolling stock.

One example of the bank's support of the modal shift from road to rail in the region comes in the form of recently closed **Green Loan** financing with Polish freight car lessor Eurowagon for up to 800 intermodal railcars.

Within the TEN-T network the KfW IPEX-Bank is a significant financier of locomotives and rail wagons.

An expert in passenger and freight rail financing, KfW IPEX-Bank is open to sharing its expertise in Central and Eastern European projects.

To find out more about KfW IPEX-Bank visit our **website** or follow us on **LinkedIn**.

KFW IPEX-Bank

For further information please contact Nico Hintze

Director Origination
Frankfurt (Headquarters)

nico.hintze@kfw.de

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Alexander Habermehl

Scalable Onboard Connectivity in an Ever Connected World

NOMAD CONNECT
Powering The Intelligent Journey

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

experts@nomad-digital.com |

Nomad Digital
connected transport, intelligent solutions

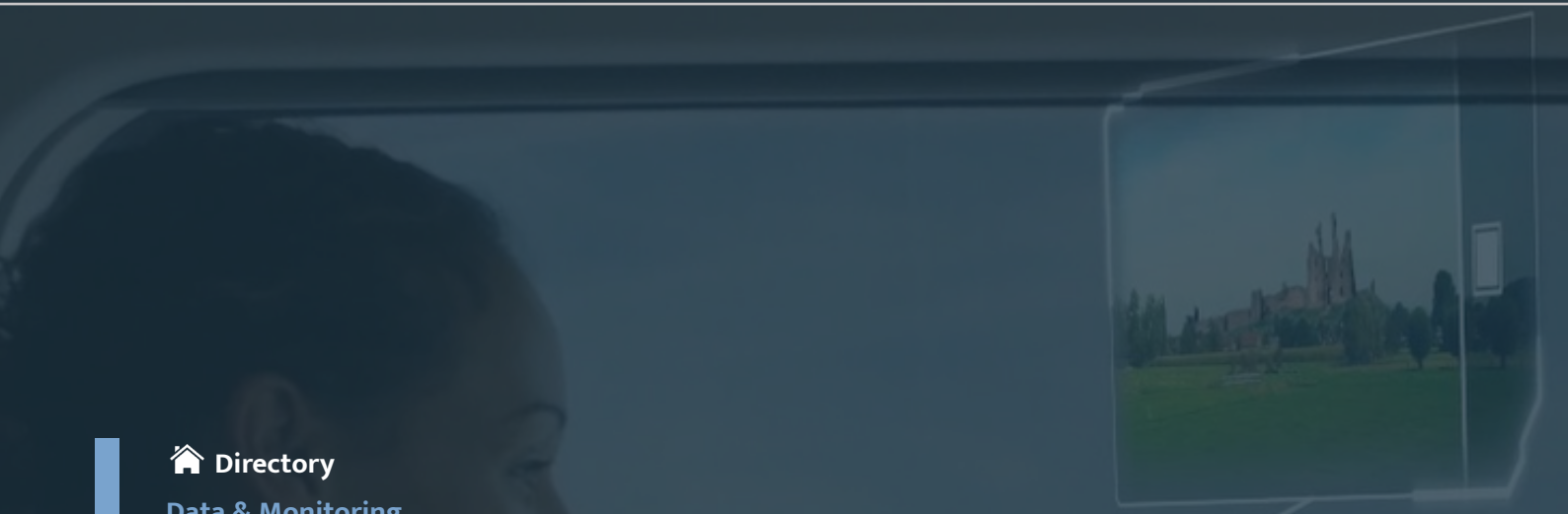
Data & Monitoring

Connectivity & Wi-Fi

Computers & Sensors

Signalling & Train Control

Cyber Security



Directory

Data & Monitoring

Nomad Digital

The Intelligent Journey Powered by Onboard Connectivity

There is an ever-growing demand for connectivity in public transport, both from passengers and operationally, including **passenger information systems** (PIS) and CCTV, creating additional needs for logging and maintenance. This has generated a corresponding demand for ever higher bandwidth, whilst ensuring secure, continuous connectivity.

Nomad Connect – Best of Class Connectivity

Nomad Connect combines multiple links and technologies, so that high-throughput and continuous connectivity can be provided on board. For an optimal level of service or when operating between population areas, the traffic is aggregated and tunnelled over our Customer Data Centre (CDC) for uninterrupted service. For an urban project with good, continuous coverage, a solution without tunnel can suffice, thereby reducing the operational cost.

For the majority of projects, we utilise cellular connectivity. Our new range of Communication Control Units (CCU) provide full 5G and multi-SIM support. Nomad Digital's entry-level router supports two 5G modems and is best suited to provide internet access in areas with good coverage. Nomad high-end routers can support up to 6 modems, multi-gigabit connectivity and can run a multi-media portal or additional services in parallel.

Cellular connectivity can be combined with other technologies such as mmWave, trackside radio or satellite. This allows a multi-gigabit link over the entire trajectory.

Optimal Use of the Available Bandwidth

Even though Nomad Connect supports very high throughput, demand often still exceeds the available bandwidth. Nomad Connect therefore also ensures that this bandwidth is shared as efficiently as possible.

Nomad Connect supports filtering and prioritisation of traffic or service classes and can implement highly customisable fair-use models. An API is available to allow customers to configure and integrate these

services within any proprietary portal. As an example, Nomad Digital recently introduced a feature named Light User Experience (LUX), which applies dynamic throttling of the heaviest users when the demand exceeds the available bandwidth, resulting in a much fairer distribution of the available bandwidth and an improved **rail connectivity** service for all passengers. On projects where the new feature was deployed, responsiveness and download speeds were significantly improved.

Nomad Connect supports various ways to customise the usage made of the available links. This can be done, for example, based simply on train location, or by using the cascading cost feature. The latter prioritises the use of links or operators with a lower cost, thereby reducing the overall cost whilst minimising the impact on the overall service.

A True End-to-End Solution

Nomad Digital provides a true end-to-end internet on board (IOB) solution, including the on-train network and passenger Wi-Fi, which is fully monitored and managed remotely.

For passenger Wi-Fi, Nomad offers a variety of solutions adapted to customer needs and the operational environment. These range from cost-efficient solutions using daisy-chained access points, to high-end Wi-Fi 6E solutions which can support extremely high throughput. The solution integrates with wireless inter-coach bridges and access points with integrated combiners to limit the need for antennae.

A wide variety of switches is also available, from gigabit solutions up to high-end 10gbps switches with 5 x 10gbps and 23 gigabit PoE ports. This allows the backbone to be used for many other services besides Internet On Board.

The Nomad 4600-3 and 5001C CCU's are extremely powerful units, using Xeon processors whilst supporting 10gbps interfaces and up to 64GB of RAM and 16TB of nVME storage. They can be used to run a wide variety of additional services and applications in parallel to providing connectivity. Examples include Nomad's Onboard Information Systems (OBIS), and the Nomad **OnBoard Entertainment** Portal (or any customer portal) to offer multimedia infotainment content to passengers offering a positive and enjoyable **passenger experience**.

The 5001C can also host Nomad's Onboard Data Centre (ODC). This virtualisation solution has been fully optimised for mobile operation. It can be used to host and deploy any containerised application provided. This avoids the need to install extra physical servers on the train. The solution can be fully managed by Nomad Digital, but ODC can also be provided to the customer to manage.

Reliable and Easy to Maintain

The entire solution has been designed for optimal reliability, security and maintainability. A central configuration management solution is in place which allows for remote updates of the full on-board system. This allows for greater reactivity and ensures uniform behaviour can be deployed across a whole fleet.

Security is a key consideration for Nomad Digital and its customers with the entire connectivity solution being designed to be as robust as possible. This is further complemented by daily vulnerability scans which allow any potential risks to be identified and addressed quickly before they become an issue.

The solution is fully integrated with Nomad Digital's monitoring tools, Network Management System (NMS) and Fleetview. These are used for fleet monitoring and troubleshooting, as well as supporting detailed historical analysis and reporting.

For more information on the Nomad Digital suite of connectivity solutions, you can the team of experts by contacting **experts@nomad-digital.com**.

Nomad Digital

Directory

Data & Monitoring

Getac

The Future of Rail Maintenance Is Digital

The rail industry has rapidly evolved in the wake of several exceptionally tough years.

In particular, a growing number of organisations tasked with maintaining critical rail infrastructure are shifting their focus towards digitalising field operations. Doing so is enabling frontline engineers to carry out work orders, complete inspections and conduct repairs as quickly and efficiently as possible. In many cases, they are using rugged mobile technology to achieve this objective successfully.

Digital Transformation Has Moved to the Frontline

Digital transformation isn't a new phenomenon in the rail industry. Many organisations have already spent significant time and resources implementing technology that is helping transform existing processes to meet resurgent post-pandemic service demand and ever-increasing customer expectations.

However, over the last few years, the focus has shifted from the backend to the frontline. When implemented correctly, advancements in mobile technology are leading to better communication between field teams and management, faster inspection and repair schedules, higher customer satisfaction ratings, and better ROI. A key part of this is the evolution of the frontline landscape itself. New connectivity technologies such as 5G and the Internet of Things (IoT) are completely changing the way technology can be used in these environments.

The Rail Industry Is in a State of Flux

Of course, with change come challenges. In order to

fully capitalise on digital transformation, the frontline workforce needs to become more tech-savvy, which is still a work in progress for many organisations. On top of this, the rail industry is facing a massive wave of experienced field engineers and technicians retiring, resulting in much younger, less experienced (but often more tech savvy) workers taking their place.

The growing importance of digital transformation, combined with the aforementioned challenges, is influencing rail organisations' technology spending in three main ways:

1) Emphasis on Reliability

Rail maintenance and inspection work isn't easy. Often taking place at night, in a wide range of weather conditions, it means digital field devices are regularly subjected to accidental knocks and drops, as well as exposed to the elements. As a result, a growing number of organisations are opting for rugged computing devices rather than traditional COTS (commercial-off-the-shelf) devices.

The need for reliability is also giving rise to two additional trends. Firstly, digital transformation in the field, especially an increased reliance on the cloud and edge computing, is creating a greater need for devices that are always on, instead of merely present. Secondly, with these devices being brought back to the office less often, servicing and issue solving has become more challenging.

In other words, field equipment must be able to tolerate more wear and tear than it did before. If a failure occurs, it could be days or even weeks before field workers can hand it over to IT. With this in mind, the best field tech is typically modular, with vital parts like the battery or storage drive easily replaceable, preferably without tools, so that operation can carry on with little to no interruption.

2) Greater Investment in Devices

With field-based IT equipment less likely to be returned to a central office at the end of each day, sharing devices amongst different groups is becoming less common. This means rail maintenance organisations need to buy more units than previously, so that devices can be issued individually or to specific teams. It also means IT managers are following the lead of their more deskbound counterparts and starting to offer field employees greater choice when it comes to the best device for their specific needs. For instance, some inspection tasks might require a larger screen with easier-to-read text and a full keyboard for rapid input, while other maintenance activities might be easier to performs with a smaller one-handed device, leaving their other hand free to operate tools.

3) Extending the Reach of Existing Workforces

Some of the same pandemic measures that led to fieldwork becoming less tethered have also led to inspection and maintenance tasks, once performed by pairs or teams, now being done by individuals. This is driving the adoption of field tech with remote cameras and communications, which means frontline personnel can receive assistance and guidance from anywhere in the world, in real-time.

Such technology is proving invaluable in areas where ongoing labour shortages and waves of retirements mean skilled experts have become few and far between. In these instances, digitalising the frontline means organisations can utilise their remaining experts much more effectively by removing the need for them to be physically present at every project where their unique skills are needed.

As digital transformation continues to sweep through the frontlines of the rail industry, field workers everywhere are being given access to the rugged digital tools and solutions they need to optimise their productivity and complete critical tasks quickly. Doing so paves the way for a true evolution in rail maintenance at a time when the industry desperately needs it, resulting in a win-win for all involved.

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GETAC RAIL SOLUTIONS

AT THE FRONTLINE OF DIGITAL TRANSFORMATION

As digital transformation continues to sweep through the frontlines of the rail industry, field workers everywhere are being given access to the rugged digital tools and solutions they need to optimise their productivity and complete critical tasks quickly. Doing so paves the way for a true evolution in rail maintenance at a time when the industry desperately needs it, resulting in a win-win for all involved.

COMPREHENSIVE SOLUTIONS

Fully integrated solutions that include peripherals, mounting kits, device charging, carry solutions, security and connectivity software, and other accessories to create your total solution.

SOLUTION AS A SERVICE

Subscription models are available to spread the investment and take advantage of a strong ROI.

GETAC SELECT® OFFERING

Getac Select® delivers total solutions for the rail industry, including a range of software solutions to support device uptime, manage your assets and streamline your deployment.

ENHANCED CONNECTIVITY

Real-time data can be collected and transmitted to our devices through a range of communications technologies such as 5G/4G, Wi-Fi 6, RFID and Bluetooth.

EXCELLENT TCO & ROI

Getac rugged computers have one of the lowest average failure rates in the industry and an industry-leading 3-year warranty that covers accidental damage with our Bumper-to-Bumper service as standard.

Getac

Rugged Mobile Computing Solutions

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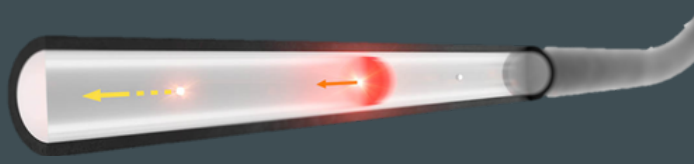
SENSONIC

ONE TECHNOLOGY MULTIPLE INSIGHTS

The versatility of fibre optic vibration sensing means many insights can be gained, with up to 80km being monitored by one Sensonic unit.



Security

We reveal security insights such as:

- Trespass
- Cable Events
- Digging

Landslide & Rockfall Alerting

24/7 detection of landslides and rockfalls:

- Keep staff safe
- Keep passengers safe
- Keep freight safe

Track Condition Monitoring

Empower maintainers to:

- Monitor changing track condition
- Identify and treat track issues early
- Assess the efficacy of maintenance interventions
- Deliver higher operational safety and availability

Flashover Location

Allow inspection and repair teams to respond more effectively to a fault allowing:

- Reduced inspection times
- Reduced likelihood damage is missed
- Improved repair times and system reliability

Get in touch...

Experience the power of the Sensonic Solution, through real-time insights and success stories. Book a demonstration today.

www.sensonic.com

sales@sensonic.com

Sensonic

Keeping an Intelligent Ear on Rail Infrastructure

By Daniel Pyke, CEng FIMMM

Humans are great at interpreting the world around us through our five senses.

We use two of these to sense the vibrating world around us through sound and touch. From a squeaking door hinge indicating it needs oil, to the rumble of thunder telling us to seek shelter, we instinctively interpret noise and vibrations to help us navigate the world.

Interpreting vibrations permeates our everyday lives, so it is no surprise it has also entered our everyday language too. E.g., "That doesn't sound right" may be heard when your car or kitchen appliances start making unusual noises which is then often followed by repair or replacement.

Why Don't We Listen to Railways?

Part of the challenge is the railway is long and the range of hearing via the human ear or microphones is limited, meaning historically we were largely deaf to this important data source.

However, Sensonic technology extends our range of vibration detection by using a fibreoptic cable and turning it into a myriad of vibration sensors along its length. Each kilometre of fibre cable is turned into over 150 sensitive vibration sensors.

Known as distributed acoustic sensing (DAS) the technology is already well established securing international borders and monitoring pipelines and powerlines and is now being brought to the railways by Sensonic to deliver improved rail infrastructure insights.

By Daniel Pyke CEng FIMMM

Listening vs Understanding

Whilst gathering huge quantities of vibration data from along the whole length of a railway is now possible, to make it useful we must also apply intelligent data analysis. Sensonic uses the latest machine learning, artificial intelligence and advanced algorithms to generate actionable insights for railways spanning multiple disciplines.

What Can Vibration Reveal about the Railway?

Security

Sensitive enough to detect the vibrations from human footsteps, the technique and algorithms can be used for detecting trespass, digging and cable tampering. As fibreoptic cables are typically laid underground or in ducts/troughs, the covert and comprehensive coverage

delivers reliable security information across whole rail routes. This can be particularly important in remote and difficult-to-access areas, where traditional security measures may be impractical or ineffective.

Security alerts generated in real-time, are displayed to operations teams, delivering the alert type together with location information so they can initiate an appropriate response. Security intrusion data is also available historically for analysis to allow improved security planning and to assess the effectiveness of preventative security measures implemented, e.g. fences, patrols, CCTV etc.

Landslide/Rockfall

A potentially life-saving application is in landslide and rockfall detection. These natural hazards are an increasing challenge as extreme weather events become more common.

When a train encounters a large rockfall or landslide, it rarely ends well. By monitoring for characteristic ground movements and vibrations along railway routes, Sensonic allows railways to identify and respond to landslides before a natural hazard turns into a railway accident.

In the event of a landslide or rockfall, the Sensonic system generates an alert displayed to the railway operations teams together with a precise location. This enables them to act, avoiding loss of life and damage to both infrastructure and rolling stock.

Ease of Implementation

Fibreoptic cables are robust, have a long life, do not generate EMC issues and are already in common use in railway signalling and telecoms. One single fibre in a cable is all that is required to gather vibration data along its length, so often no new wayside equipment is needed.

Each Sensonic sensing unit can turn 100km of fibre, (~80km of track), into over 15,000 vibration sensors along the railway.

Together with connection to the fibre, a simple power and internet connection is all that is needed to start gathering data. This simplicity of roll-out gives both rapid installation and scalability to deliver insight and protect large lengths of track.

One Technology – Multiple Applications

Whilst I have discussed security, landslide and rockfall detection applications here, I am sure many wonder what else can be detected. The answer is many, and constantly growing, as the Sensonic R&D team explores a long list of use cases.

The applications available commercially today are:

- Security (trespass, digging and cable events)
- Landslide and rockfall
- Track condition monitoring
- Catenary flashover location

Listen-out for new additions in the future and **contact** the Sensonic team for more information.

SENSONIC

Directory

Data & Monitoring

handheld

Tunnelling Crews Excavate Underwater Roadways with Rugged Technology

Contractors working on road and railway tunnel projects are using Handheld's Algiz rugged tablets to ensure a reliable, safe and efficient excavation process that minimises downtime and reduces personnel costs.

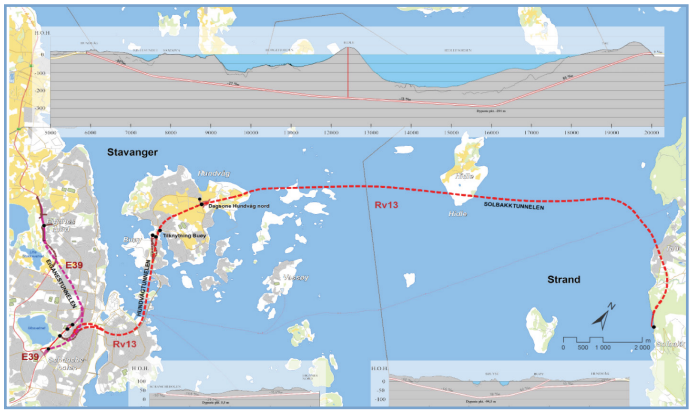
In this example – the Norwegian Ryfast-Solbakk tunnel megaproject – crews were using Algiz tablets as part of the Amberg Navigator solution from Swiss company Amberg Technologies AG, which packages Amberg Tunnel surveying software with Handheld's rugged tablets.

The surveying tablet solution allows tunnel workers to take precise measurements, generate tunnel profile graphics in real-time, and compile detailed reports, eliminating the need for separate surveying crews. Best of all, workers can perform these tasks on the surveying tablet with no prior surveying experience and very little computer training time.

A Tunnel beneath the Sea

Norway's west coast is made up of hundreds of small islands and fjords – areas where seawater reaches into narrow, deep valleys with high cliffs formed by glacial erosion. People travelling to and from the coastal city of Stavanger used to rely on bridges and ferries to access areas separated by water.

The Ryfast tunnel connects Stavanger to Norway's Ryfylke region, replacing a ferry between the two areas and cutting travel time by two-thirds. It is now the world's longest, deepest and safest subsea roadway



tunnel, spanning 14.3 kilometres and reaching 291 metres below sea level at its deepest point.

A Rugged Technology Breakthrough

To extend the tunnel through hard rock beneath the sea's surface, workers drilled holes through the material in precise locations using enormous semi-automatic drill rigs. Explosives placed in those holes blasted the rock away and conveyor belts removed this material from the site.

Traditionally, hole placement for the 'drill and blast' method of tunnel construction has been determined by surveying crews, who measure tunnel profiles and use this data to mark hole patterns or geo-reference drill rigs. But using the Amberg Navigator surveying tablet with automated surveying software eliminated the need for these extra surveyors; the tunnelling crews themselves could quickly and easily perform surveying tasks with detailed real-time analysis on the Algiz rugged tablets.

Of course, such highly precise work requires reliable

technology. For tunnel workers, reliability means two things: adequate speed and memory to process profile data, and exceptional durability in tough environments.

The engineering challenges workers were facing in the tunnel were amplified by the frigid, wet environment where they performed their work. The tunnel's surfaces ranged from muddy and slippery to rough and jagged; temperatures would drop below freezing; and humidity, dust and potential drops all posed threats to ordinary technology. Every piece of equipment at the construction site had to be able to withstand very harsh conditions.

With this in mind, Amberg Technologies chose **Handheld's Algiz ultra-rugged tablets** as the ideal complement to its Amberg Tunnel software. The Algiz tablets met the requirements for storage capacity and processor speed and were tested to stringent MIL-STD-810 U.S. military standards for withstanding humidity, vibration, drops and extreme temperatures. Plus, the IP65-rating meant that they were sealed against dust and water.

A One-Tablet Control Centre

With the Amberg Navigator surveying tablet, crews could measure tunnel profile data quickly and easily, display visualisations of that data in real time, and save detailed data logs. The software automates all measuring tasks, which workers can select and manage with one touch by tapping large, easy-to-interpret icons with illustrations – staying in control of the entire tunnel project.

To take measurements, workers use a total station – an electro-optical scanning tool that measures angles, distances and co-ordinates. They position the total station on a tripod or console aimed toward the area to be measured. Then the Amberg Navigator communicates with the total station using BT, automatically adjusts the total station's viewing area, and initiates profile data collection.

The surveying tablet can automatically profile a tunnel at pre-defined stations; it highlights areas where a blast has taken away too much or too little material; and it evaluates surface-layer thickness and displays the data graphically on the screen. With this information, workers can use the rugged tablet to set precise blast patterns and control drilling machinery.

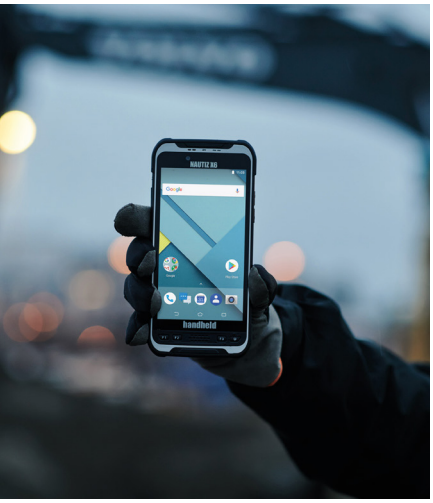
The Amberg Navigator surveying tablet also made it possible for personnel to carry out simple, routine surveying tasks reliably, efficiently and independently. This meant cutting unnecessary waiting times as the measurements required could be integrated directly in the work procedures.

For more information on Handheld's rugged computers please contact:

Dave Cawsey, Country Manager Handheld UK and Ireland

+44 1926 333 266
d.cawsey@handhelduk.com
www.handheldgroup.com

RUGGED COMPUTERS
FOR TOUGH ENVIRONMENTS



THE TOUGHEST ANDROID DEVICES FOR ANY FIELD TASK

Handheld's Android tablets are second to none, offering a remarkable blend of outstanding performance, sleek design, and unmatched durability for even the most demanding field applications.

Laughing off the roughest weather and harshest handling, our rugged Android tablets and handheld are perfect for working outdoors when building train tracks, roads and tunnels, or checking public transport tickets in a stressful environment.

Scan this to learn more

handheld

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Proven Tier 1 monitoring technology supporting rail operators since 2018

5+ YEARS

MILLIONS TO BE SAVED IN CP7 WITH NEW APPROACH TO LIFE EXTENSION OF SIGNALLING POWER ASSETS

CableGuardian is a Network Rail approved Tier 3, Tier 2 and Tier 1 cable monitoring system as specified in NR/L2/SIGELP/27725 – Insulation Monitoring and Fault Location Systems for use on Signalling Power Systems.

Our unique technology provides unparalleled insights across the lifecycle of a system, moving to a true condition-based asset management approach that allows cable faults to be quickly and accurately located.

Improve signalling resilience by turning data into information and insight. Realise safety, performance and efficiency benefits for your operational assets with proven results since 2018. Network Rail Approved: PA05/06538.

£5M SAVED in penalty payments

30K AVOIDED in delay minutes

£150K SAVED in maintenance costs

CABLE GUARDIAN®
A VIPER INNOVATION

Helping passengers arrive on time

Find out more…

www.viperinnovations.com/cableguardian

Viper Innovations

Millions to Be Saved in CP7 with New Approach to Life Extension of Signalling Power Assets

Network Rail rolls out CableGuardian technology across multiple regions

CP7 has been touted as the 'make-do-and-mend' control period. Prospective economic headwinds, the impact of inflation and the need to balance government books mean that Network Rail would have to deliver more with less.

Network Rail will have to find even more efficiencies in the delivery of work and seek novel and innovative ways to maintain safety, performance, efficiency and sustainability.

There have been discussions in the media about the potential to allow some assets to degrade over CP7 with the expectation of renewal in CP8. However, there has been resultant pushback from the Office of Rail and Road (ORR) and other railway stakeholders challenging this thinking. Nonetheless, life extension works (LEW) will be front-and-centre in ensuring the railway operates safely and in compliance. However, what's the possibility of determining the life remaining in the asset to ensure minimum intervention and maximum asset availability and efficiency – all with minimal environmental impact?

It is essential to understand that very few railway assets have such an impact on performance as a failure

of signalling power. In addition, the invasive and high-pressure environment of fault finding, maintenance, incident response and SPS can be a recipe for disaster. Safety issues, performance failure, missed KPIs and waste all result from being unable to predict and prevent failures and intervene before life expiry. Furthermore, renewals on SPS tend to be a blanket approach based on information gathered during a 5-yearly test, which can be affected by local climatic conditions at the time of the test and referenced against asset age. This leaves the asset manager with very little intelligence to determine the actual underlying condition of the asset and no real prospect of being able to deliver spot renewals.

So, what's the solution?

Previously, no technology was designed to provide the necessary insight into this asset. Monitoring technology for SPS has always focused on triggering an alert when base thresholds for safety are breached. Compliance with BS7671 was the endgame, with an eye specifically on the basic electrical safety of the asset, but since 2018, thanks to a proactive collaboration between Network Rail and Viper Innovations, there is an answer.

CableGuardian is the only technology proven to provide an in-depth understanding of asset conditions, allowing you to deliver in both the project and maintenance domains. To maximise efficiency and sustainability in renewals and to deliver LEW or spot renewals for SPS systems, CableGuardian has been designed to monitor insulation resistance (IR) and insulation capacitance (IC) to best-in-class levels. The CableGuardian technology can proactively monitor the safety and performance degradation of cables, switchgear and transformers over multiple control periods. This allows teams to intervene well before failure or plan renewal years in advance, therefore allowing the engineer to plan exact life extension works to the minimum spec, enable maintenance-delivered rolling renewals based on hard evidence and encourage planning to be done multiple control periods ahead.

Network Rail has proven over a prolonged period that CableGuardian pays back handsomely in whatever configuration it is deployed, from Schedule 8, maintenance savings and operational expenditure. So, if you are looking for ways to deliver a life extension strategy for assets, improve the safety, performance and efficiency of SPS asset management or are looking for MVP strategies for project delivery, contact Viper Innovations today.

Click **here** to visit Viper Innovations.

Learn more about CableGuardian:
www.viperinnovations.com/cableguardian

Contact us!

VIPER INNOVATIONS

AON

Innovative Solutions for the Rail Industry

You face an array of challenges every day in the rail industry:

- Employee safety and claims
- Ridership variability
- Implementing positive train control
- Transportation of hazardous materials
- Safeguards against terrorism
- Compliance with the ever-growing legislation and regulation

You need an established, knowledgeable team of advisors to help you address industry-specific issues, as well as broader requirements involving insurance and risk management.

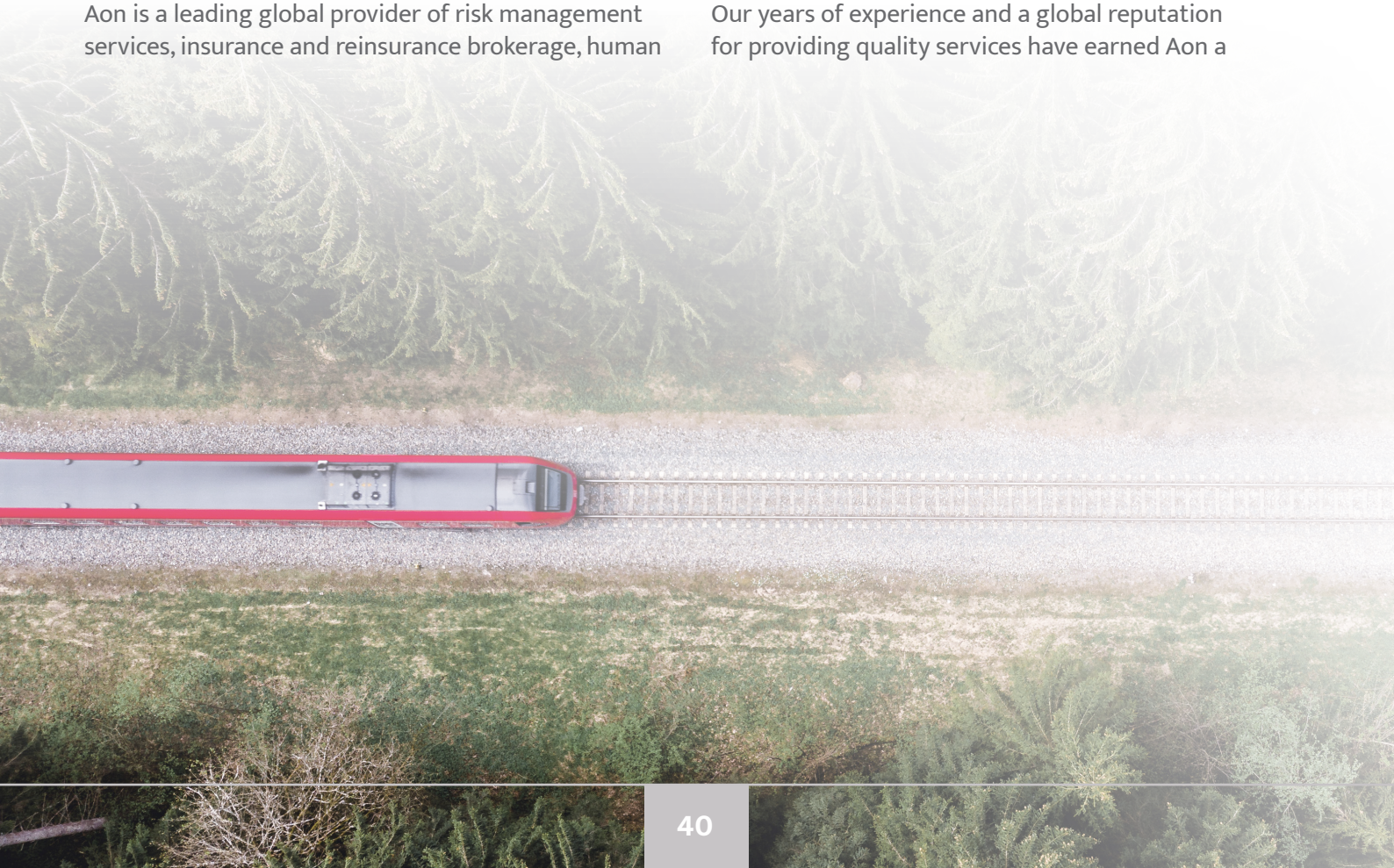
Aon is a leading global provider of risk management services, insurance and reinsurance brokerage, human capital solutions and outsourcing. We'll help you leverage the resources of our rail practice to help you develop integrated yet flexible strategies.

We Understand Your Industry

Rail practice team members are experienced in helping Class I, regional, switching operations, terminal, transit and short-line railroad clients find business solutions to their risk management and insurance placement needs.

Aon's rail practice offers more than 100 years of experience with the placement of hundreds of millions of dollars in railroad premiums in the global insurance market.

Our years of experience and a global reputation for providing quality services have earned Aon a



high standing with both the railroad industry risk-management community and the underwriters of rail-related business.

Innovative Solutions for the Transit Industry

Our practice has been helping the transit industry manage risks for more than 100 years. Our worldwide team consists of dedicated professionals with the expertise to assist you in reaching your risk management goals. With careful attention to detail, we ask the right questions to learn the intricacies of your risks. We work with you to conduct a careful assessment of your risk management needs and create a customized program designed to protect your investment. Our years of experience and a global reputation for providing quality services have earned the Aon Transit Practice a high standing with both the transit industry risk management community and the underwriters of transit-related business.

Why Aon?

Global and local expertise: Aon subsidiaries and divisions serve clients in 120 countries and sovereignties, including more than 50 offices throughout the United States.

Unparalleled range of services: Aon provides services across a wide variety of areas including:

- Property
- Liability
- Federal Employers Liability Act exposures
- Railroad protective liability
- Force account liability
- Pollution liability
- Directors' and officers' (D&O) liability
- Business auto
- Commercial crime
- Inland transit
- Marine cargo
- Captive management
- Risk control engineering
- Claims advocacy

Capabilities and Client Services

Aon is unmatched in our demonstrated experience in all rail and rail-related exposures. Our proven core strengths include program design, risk control, claims advocacy and global expertise. Always looking for

creative ways to better serve our clients, our rail professionals offer a wide selection of products and services.

Marketing and Servicing

- Programme design and marketing
- Risk identification and evaluation
- Strategic planning
- Form customisation and writing
- Claims advocacy

Risk Control Services

- Risk evaluation
- Risk and loss control advocacy
- Education
- Claims advocacy

Analytical Services

- Data management
- Loss forecasting
- Financial accruals and budgets
- Self-insurance, captive feasibility studies and other alternative risk financing options
- Risk-bearing capacity analysis
- Global risk management consulting

Financial Services

- Premium allocation
- Centralised accounting and finance administration
- Premium financing services

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AON

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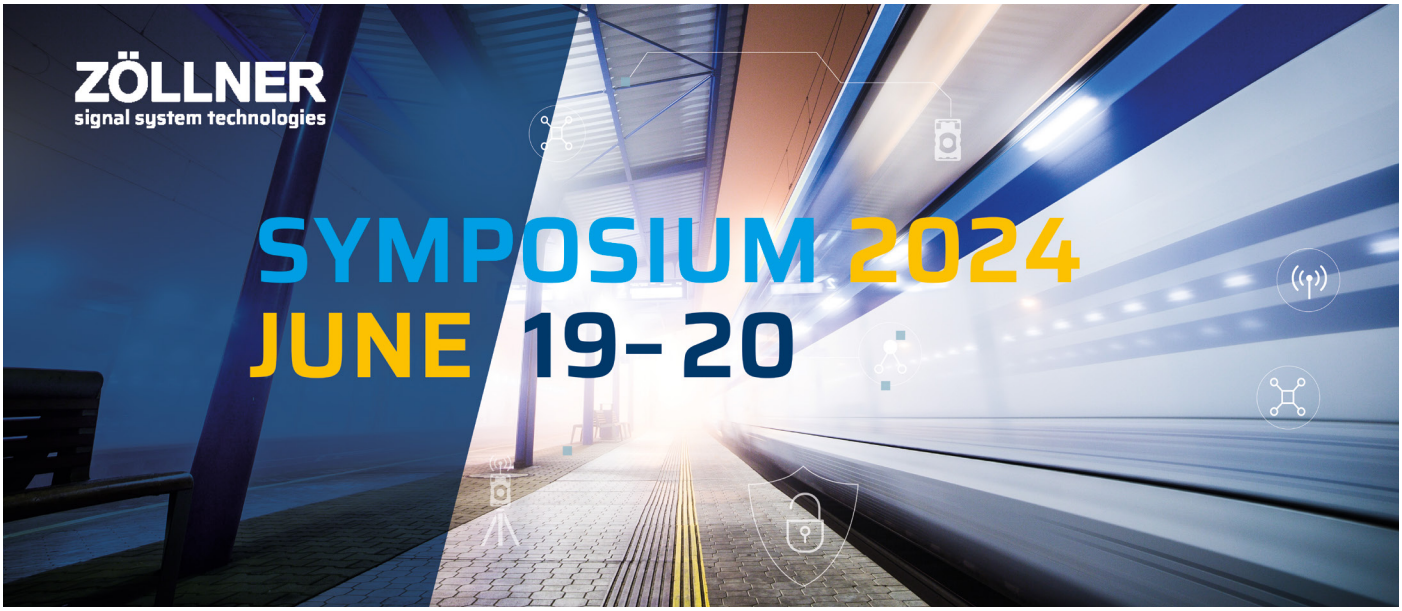
ZÖLLNER

ZÖLLNER Symposium 2023 – Europe's Think Tank for Worksite Safety on Railways



The ZÖLLNER Symposium was held on 13 and 14 September in Kiel, Germany

On 13 and 14 September ZÖLLNER hosted its annual symposium. The two-day event is held in Kiel, Germany, where we are headquartered. We are so delighted that 170 participants from 10 different countries made the journey in order to join us this year!

The symposium has a long tradition in our company's history. As manufacturer of automatic warning systems and infrastructure solutions, we have always had an interest in meeting with different people from the industry to develop and make products that don't just work on paper but make real-life worksites safer. What started as a small event held in one of our meeting rooms has turned into an international conference with far over 100 participants and speakers from around the world.

A Platform for Decision Makers from the Railway Sector

The conference days were structured around 22 podium presentations on a multitude of topics surrounding this year's guiding theme "the future of worksite safety on railways". With climate change, the growing mobility revolution and changes in the availability of qualified personnel, the industry is facing quite a few challenges in the near and far future. We are proud to have created a platform that brings together rail infrastructure companies, railway authorities, accident insurance carriers, rail construction companies and worksite safety teams in order to face these challenges hand in hand. The discussions surrounding the presentations were not only incredibly thought-provoking but led to important decisions being made right there and then.

One achievement is the founding of a round table initiated by the representatives of Deutsche Bahn who invited everyone present at the event to join together regularly in order to overcome current problems in the German rail worksite safety market. What an incredible result!

An International Think Tank

As mentioned before, the symposium has become quite international. We believe that there is great potential in learning from one another. In Germany, for example, Deutsche Bahn is just introducing the ElBa, an electronic qualification card. Having representatives from Network Rail, who have been working with their electronic qualification card, Sentinel, for more than 10 years, led to a valuable exchange of experiences. Looking to one another for support is the most effective way we can propel the industry forward! We are very grateful that so many experts were willing to share their experiences, their ideas and their struggles in order to work as a team.

In the words of Emir Mensi from Ferroway France, one of our participants, "Europe met in Kiel" as so many of the rail infrastructure companies or related authorities were represented at this year's event:

A team from SFERIS (France) shared their innovative idea for using a small train that can go on the tracks as well as on the road with the goal of reactivating old track routes and connecting more rural areas to the transportation network. In Germany, too, being able to supply residents of less urban areas with opportunities to use public transport is a big conversation topic at the moment and one that will only grow more prevalent as we move deeper into the mobility revolution.

Also from France, Sages du Rail reported on new use cases for existing technology thus creating innovation without the need to develop anything new. This was a big topic among German safety companies as creative heads use warning system technologies in ways that make it possible to secure worksites more efficiently.

Representatives from Network Rail explained their safety hierarchy and selection process for safety requirements regarding different types of worksites. Across Europe, the selection process can look quite different from country to country. No process is ever truly perfect so listening to one another and being open to changing our own ways is instrumental in continuously improving the safety for all people working on or near tracks!

Infrabel presented on their future strategy for worksite safety in Belgium and the Federal Ministry for Labour and Economy from Austria shared insights into their current safety hierarchy for worksite safety. The SCWS-S Signal Controlled Warning System with Stop function is on the top of the hierarchy. Thales Austria presented the new solution for SCWS-S which is currently in development with Zöllner Signal GmbH.

Teams from Denmark and Germany gave a presentation about the Fehmarnbelt Fixed Link, a project that will connect the two countries by railway tunnel.

News from ZÖLLNER

While the many presentations and discussions were the focus of the symposium, it also gave our guests the opportunity to see what ZÖLLNER has been working on.

We too have been working hard to make our contribution to a safer future for everyone working on

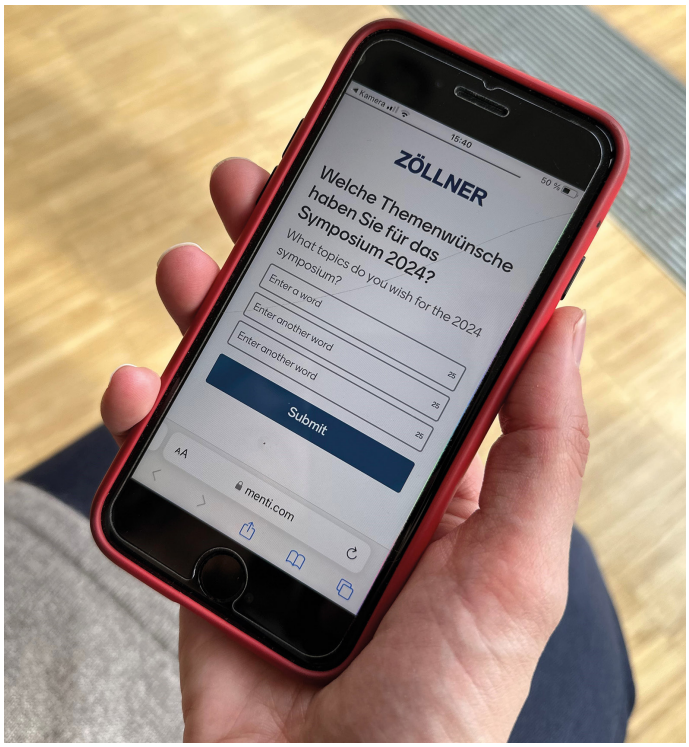
170 participants from 10 different countries attended the conference programme including 22 podium presentations and discussions with experts from the railway sector

or near the tracks. As mentioned above, we do believe in using existing technology in innovative ways. We have therefore developed the ZRT-30, a device that connects our radio-based warning system with the hardwired system. It allows both systems to be used in new ways. Innovation through the addition of just one small device!

An exhibition along with live demonstrations on the outside perimeter of the event location offered an important opportunity to connect the podium presentations and discussions with the real-life situation of a railway worksite. While we believe it is incredibly valuable to offer space for creative brainstorming and theoretical discussions, we also think that it is essential to keep in mind the current reality of people on track worksites.

Our ZCloud (ZÖLLNER Cloud), for example, was developed based on feedback from our customers to develop a tool that helps them with their everyday challenges when planning and executing the safety measures for track worksites. It revolutionises the way our customers can manage their warning systems:

The exhibition offered hands-on opportunities to get to know the ZÖLLNER product portfolio



Participants got directly involved in the presentations via Mentimeter, an online tool for polls and statistics

components can be assigned into systems digitally and the individual status of each component can be viewed at any time. Besides providing a continuous overview of all operations the ZCloud also serves as an aid for remote diagnosis, allowing us necessary insights immediately, should a customer need our help.

A Shared Promise

In summary, the ZÖLLNER symposium was a great success. It showed us that bringing different stakeholders to one table and allowing for open, honest, and productive discussion, results in immediate action that changes the future. We are proud to share a common goal with so many competent, innovative people, always working toward more safety for worksites on railways. In short: keeping people safe!!

We love hearing from people about their ideas and invite all readers to get in touch! Find out more about our products and about how to get in touch **here**.

www.zoellner.de/en

ZÖLLNER

J. LANFRANCO & Cie

Enhancing Rail Safety with J. LANFRANCO Cie's Revolutionary THU Nuts

In the sector of rail freight, the relentless pursuit of safety and reliability remains paramount, especially when tasked with transporting hefty cargo across extensive distances.

Amidst these challenges, splice joint bars emerge as a critical component, susceptible to loosening in the face of environmentally extreme conditions. J. LANFRANCO Company introduces a solution with its THU self-locking nuts, which redefine the priority of rail safety.

Conventional fastening techniques, often comprising multifarious components, tend to falter under the exacting circumstances. In stark contrast, J. LANFRANCO Company's THU self-locking nuts emerge as a superior alternative. With their full-height design, featuring twin slots positioned on the same plane, these nuts exhibit remarkable resilience to high-frequency vibrations, imposing loads and the harshest of temperature extremes.

The efficacy of THU nuts has been proven, even in the face of extreme conditions such as temperatures as low as -14°C.

J. LANFRANCO's THU self-locking nuts offer immediate advantages for rail freight enterprises. By preventing loosening and its consequences, THU nuts usher in an era of reduced maintenance expenditure and diminished downtime, stemming from the elimination of fastener-related costs. Unlike traditional methods that necessitate tightening on a daily or monthly basis, the self-locking capability of THU nuts obviates the need for such frequent interventions, saving precious time and curtailing labour expenses. Furthermore, the compatibility of THU nuts with impact wrenches improves the fastening process.

The success of THU nuts for fastening rail joint bars has proven itself within the extensive 1,000km of the New York transit network, the largest in North America, encompassing intercity trains and subterranean subway systems. With over 8 million passengers relying on this network's daily operation, the integration of THU nuts assures the safety and stability of joint bars, thereby a more efficient and secure transportation system.

The South American market now mirrors the footsteps of its North American counterpart by progressively embracing J. LANFRANCO's THU nuts for the secure fastening of joint bars. This trend signifies the influence THU nuts exert on joint bar fastening practices, advancing safety, reliability and standardisation throughout the expansive transportation networks of both continents.

J. LANFRANCO's THU self-locking nuts present a reliable and cost-effective solution for fastening joint bars. With their remarkable performance in environmental extremes, immediate cost-saving benefits and their pervasive adoption within the extensive New York rail network, THU nuts indisputably establish themselves as the best fixing solution. By elevating safety, diminishing maintenance costs and enhancing operational efficiency, THU nuts serve for ensuring the secure transportation of substantial cargo across extensive distances.

www.lanfranco.fr/en

J. LANFRANCO & Cie

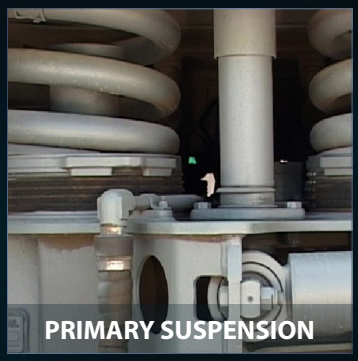
TOP QUALITY LOCKNUTS
FOR CRITICAL JOINTS

GET THE BEST RESISTANCE TO VIBRATION IN ANY ENVIRONMENT, SHOCK, IMPACT, EXTREME TEMPERATURE AND CORROSION

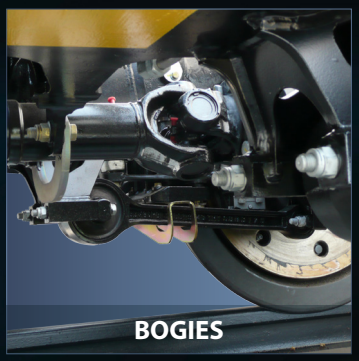
REUSABLE, EASY TO INSTALL, NO GALLING AND LONG LIFE CYCLE

LANFRANCO'S ESL
SELF-LOCKING NUT

SHOCK ABSORBER

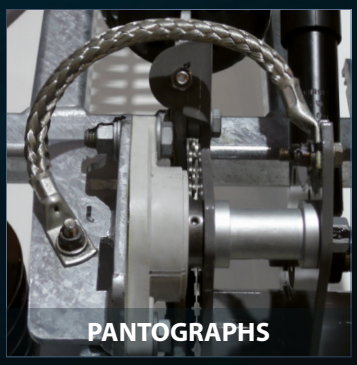


PRIMARY SUSPENSION



BOGIES

LANFRANCO'S ERM
SELF-LOCKING NUT



PANTOGRAPHS

CATENARIES

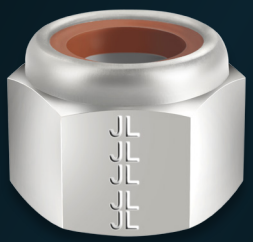
ELECTRICAL RAIL CONNECTION

LANFRANCO'S THU/THM
SELF-LOCKING NUT

RAIL JOINT BAR

SPLICE BAR

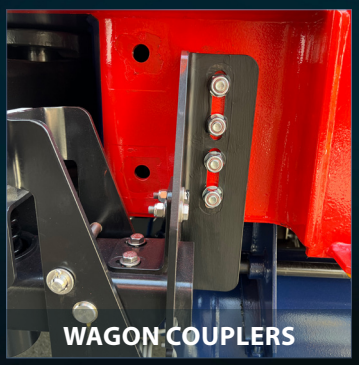
AVAILABLE FOR ANY STANDARD



LANFRANCO'S HUP
VPI SELF-LOCKING NUT
BROWN NYLON INSERT

FREIGHT CAR BOGIES

TANK WAGON

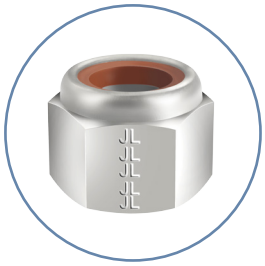


WAGON COUPLERS

LANFRANCO'S
MODULAR FIXTURES

TALGO FASTENING
OF FRAME BODY

LANFRANCO'S PROFILE
FOR DRIVER'S CABIN

TYPE OF NUT	PHOTO	DIAMETER	MATERIAL
ESL Allows better resistance to vibrations, shocks, temperatures extremes and corrosion. ESL nuts provide mounting without seizing.		M2-M68 N° 8-2" 1/2	Steel: Grade 5-8-10 Class 8-10-12 Stainless steel: A2 70 (AISI 304) A4 80 (AISI 316L)
ERM The ERM nut is a single piece which saves time with its integrated washer. To obtain rapid installations and maintain clamp force under dynamic loads.		Metric: M2-M60 Imperial N° 8-2" 1/2	Steel: Grade 5-8-10 Class 8-10-12 Stainless steel: A2 70 (AISI 304) A4 80 (AISI 316L)
HCE/HCT This single-slot, all-metal nut line is capable of withstanding high temperatures unlike a nylon insert.		HCE Metric: M6-M68 HCT Metric: M3-M68 Imperial : 1/4"-2" 1/2	Steel: Grade 5-8-10 Class 8-10-12 Stainless steel: A2 70 (304) A4 80 (316L)
HUP/HMP **(brown) nylon insert** Self-locking nut with nylon insert, usual ring (-40°C+120°C), high temperature brown ring (-40° C +230° C).		Metric: M3-M42	Steel: Class 8-10 Stainless steel: A2-70 - A4-80
THU/ THM Self-locking nuts, dual locking slots positioned on the same plane, industrial type. Low type availability.		Metric: M4-M68 Imperial N° 8- 2" 1/2	Steel: Class 8-10-12 Stainless steel: A2 70 A4 80
MODULAR FIXTURES Modular fixings with self-locking all-metal nuts and reusable ESL type. The length, the width, the shape, the holes, are all made to measure. A completely customizable Solution!		25 mm - 6 m	Stainless steel Aluminium

JEWERS

The Mark of Excellence & Innovation

INNOVATION
in Rail

BYBANEN BERGEN
TRAM DEPOT, NORWAY

Phoenix range Swift-SEW bi-folding doors – the only solution for rail depots.

Safe, energy efficient, fast, reliable and industry proven throughout the world.

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JEWERS
The Mark of Excellence & Innovation

Jewers Supplies Swift-SEW Doors for Etihad Rail's Al Faya Depot

Working with contractors 2F1JV, a joint venture of Vinci Construction Company and Archirodon, Jewers Doors was delighted to be awarded the contract to supply fourteen sets of Swift-SEW bi-folding doors for Etihad Rail's Al Faya Depot, the largest and most important facility within the UAE's National Rail Network.

Located in the Abu Dhabi desert where temperatures reach 50°C, Al Faya Depot is responsible for warehousing, installations, operations and the maintenance of locomotives and wagons. It also includes an administrative building which serves as the main operations and control centre for the entire network.

Thirteen of the sets of doors measure 4,880mm wide by 6,500mm high, and a fourteenth set is slightly wider at 5,210mm, the additional width due to a slight curvature in the track to allow the train to enter the depot at an angle.

Each door consists of four leaves, which are highly insulated to keep the desert heat out, with one pair of leaves folding inwards and to each side clear of the opening.

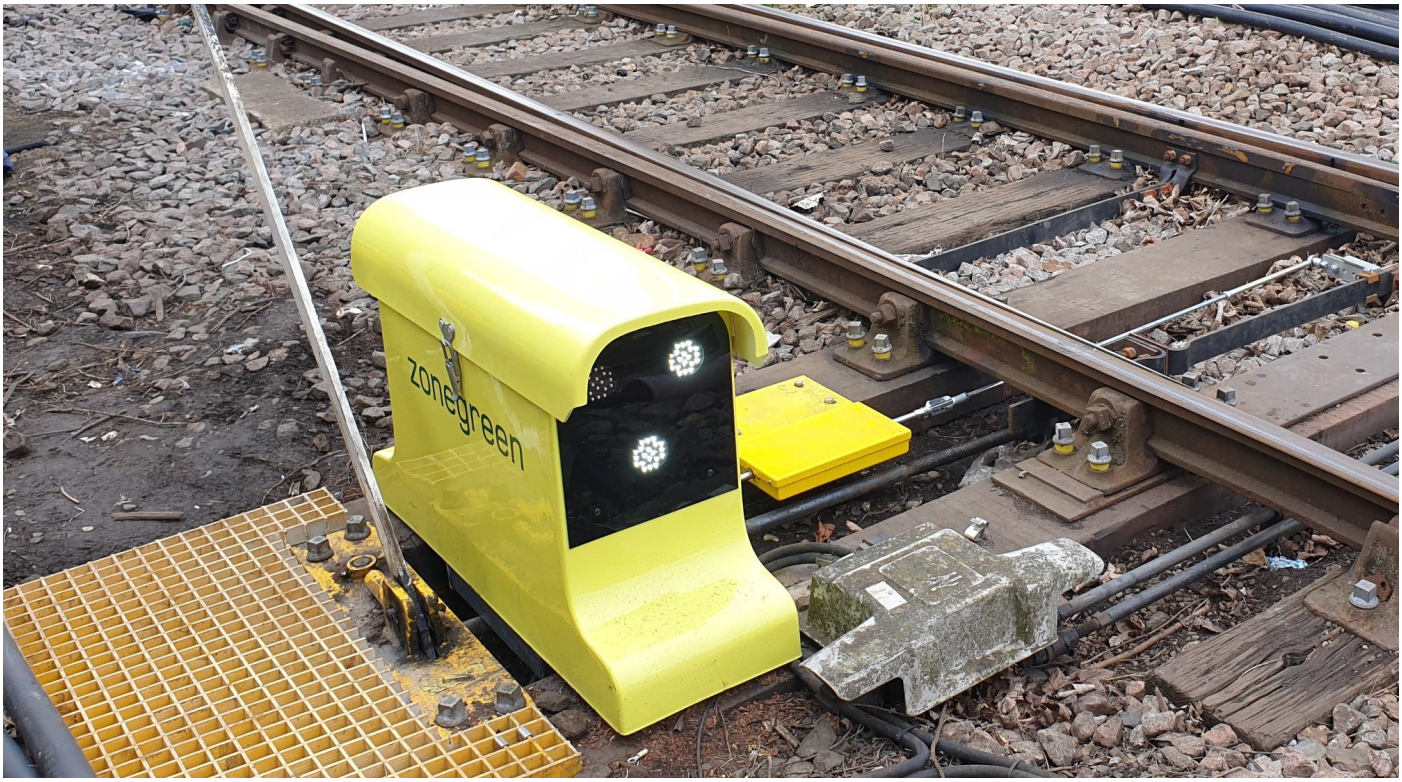
The door leaves are powder coated with a zinc primer undercoat and polyester topcoat to protect against the harsh desert conditions. The external colour is RAL 3002 Carmine Red to match the building façade and Etihad Rail's corporate colours and internally, leaves are finished in a white polyester sheet to help maintain a cool environment within the depot building. Each door is fitted with two 600mm x 600mm double-glazed toughened glass windows, drop bolts to provide additional security during heavy winds, and electrical safety features as standard. The doors are operated via a powerful centre drive above the top track; the control panel is supplied with a programmable PLC and additional inputs to allow upgrading of the control system to suit the depot's future requirements. The doors are interlocked with an air-curtain above each opening to conserve energy when a door is open.

Due to the success of Etihad Rail and the maintenance facility at Al Faya Depot, the construction of an extension to house passenger trains has begun, where Jewers has once again been selected to provide an additional two sets of identical bi-folding doors.

www.jewersdoors.co.uk
sales@jewersdoors.co.uk
+44 1767 317090

Zonegreen

Pointing Injury Prevention in the Right Direction



In the last three years, musculoskeletal and back problems have accounted for more than 40% of all self-certified sickness across the rail industry – that's almost seven million lost working days a year.

When you consider that period included a global pandemic, it's a pretty shocking statistic!

The RSSB has found sickness in our industry to be more than twice the national rate, yet there remains a lack of information about how it is being dealt with. If we could see where and how issues such as musculoskeletal injuries have been prevented, we could share best practice and make positive changes to reduce the prevalence and time lost through absenteeism.

High-Risk Manual Points

Operating manual hand points is physically dangerous and poses a significant risk of damage to the back, neck or shoulders – some points can require as much as 103kg of force.

When you consider staff are often having to do this work in poor weather conditions, dimly lit environments, over uneven terrain and in many locations, beside the third rail, it's no wonder accidents occur.

One of the firms working to reduce the musculoskeletal risks to rail workers is depot safety specialist, Zonegreen. The Sheffield-based business has developed its Points Converter to automate traditional manual hand points.

Christian Fletcher, Zonegreen's Head of Engineering, said: *"There is a vast difference between the conditions faced by workers in modern and older rail depots. The latter still rely heavily on the manual operation of points, whereas new facilities are integrating safer, more dependable solutions to remove the risk of human error and potential for accidents. Our Points Converters are a reliable way to prevent handling injuries, as the shunter no longer needs to switch the points manually."*

Points Converters not only reduce the potential for slips, trips and falls, but also protect personnel from hazards when operating manual points, such as train movements and exposure to the live third rail.

By centralising operations through an intuitive remote handset or computer system, Points Converters increase efficiency, eliminating many stop/starts. Event logging facilities also allow the depot manager to keep a full record of activity at each point for hazard reporting and traceability purposes.

SWR Prioritises Point Safety

Zonegreen has worked closely with South Western Railway (SWR) to install Points Converters at a number of its facilities.

The paint shed at the Bournemouth depot has been running the system since 2013 and received an upgrade last year, whilst Ryde on the Isle of Wight, Fratton and Southsea in Portsmouth and Wimbledon, London have all recently benefited from the installation of Zonegreen's technology.

Each installation has been tailored to the depot's needs. For example, in Fratton, a Points Converter was added to a switch on one of the entrance roads to the maintenance shed. As it was beyond the designated walking route and could only be accessed by navigating uneven ballast – often in the dark – Zonegreen added a key switch panel in the shunter's cabin from which it can be operated, removing staff exposure to the live third rail.

At Southsea, a Points Converter was installed on the HP01 point, to control vehicle movements in and out of siding roads. It is now operated remotely from a post-mounted key switch panel located on a walkway around 100m away, removing the need for staff to traverse uneven terrain, again alongside the third rail, to operate the point.

In all cases, the installations have been futureproofed allowing SWR to install further converters if the depots wish to automate other points and set routes.

Christian added: *"Slips, trips and falls are far more prevalent in the rail sector than the cross-industry average and the single most common cause of major injuries in the UK. Manual hand points are a significant contributory factor to these types of incidents in depots and can result in absences from work of one to three months, costing employers and the economy millions of pounds. By installing Points Converters, operators can add power to hand points, without incurring the expense of a full signalling system."*

For more information about Zonegreen's Points Converters, or its wide range of rail safety technology, telephone (0114) 230 0822 visit **www.zonegreen.co.uk** or follow the firm on **LinkedIn**

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SMART DEPOT PERSONNEL PROTECTION SYSTEM (DPPS™)

Renowned as the global market leading depot protection system, the SMART DPPS™ delivers physical protection from vehicle movements to rail depot staff whilst providing visual and audible warnings.

The Smart DPPS™:

- Protects staff and equipment
- Ensures safe and controlled movement of rail vehicles into and out of the depot
- Allows train maintenance operations to be conducted without endangering the safety of staff or damaging infrastructure

It is:

- Fully configurable, flexible and functional
- Proven in use and installed globally
- Capable of interfacing with third party equipment including signalling systems.
- Adaptable to the safe requirements of the depot

www.zonegreen.co.uk Tel: +44 (0)114 230 0822 info@zonegreen.co.uk

Rolling Stock

Directory

Rolling Stock

VR FLEETCARE

Industry Needs More Transport Capacity on Rails

Peter Guldbrand
Commercial Director at VR FleetCare

Emphasis on sustainability and climate goals is expected to increase the demand for rail transport in the future.

Rail transportation is an environmentally friendly mode of transport that helps reduce emissions from transportation. This prompts businesses to shift more of their freight transport to rail. According to a report by the European Commission, the need for freight wagons in Europe is projected to grow by 50% by 2030 and double by 2050. Given the rapid and massive nature of this demand, there is a need for increased manufacturing capacity for new wagons and campaigns to modify and modernise existing wagons.

Political tensions and economic consequences resulting from the conflict in Ukraine also have implications for wagon manufacturing and maintenance. The deteriorating or sanction-imposed relations between countries affect the availability of Russian-made wagons in the market and make it challenging to obtain components and spare parts for old wagons. This creates demand and new opportunities for wagon and component manufacturers as Eastern Europe also transitions to using wagons compliant with European standards in the coming years.

"The green transition in industry is also driving a transformation in freight transport and the demand for freight wagons," says Peter Guldbrand, Commercial Director at VR FleetCare. *"For example, the metallurgical and steel industry aims to shift to fossil-free steel production, which will create additional demands for*

rail transport and innovative freight wagon solutions. We want to be a part of this solution," adds Guldbrand.

Changing Customer Needs

The requirements for freight wagons are constantly evolving in response to environmental, technological, and economic changes.

The most significant trend is the increasing demand for sustainable and eco-friendly transportation. Freight wagons are also expected to have lower emissions, reduced environmental impact, versatility and flexibility for transporting various goods. Environmental considerations must be factored into wagon design, calculating the carbon footprint of the manufacturing process and materials for the benefit of the customer.

Safety considerations have always been crucial in rail transport. In the future, even better safety standards and technologies for wagons are expected to ensure the safe delivery of goods over long distances and across borders. At the same time, speed and reliable transportation are important for global trade flows.

The use of digital technologies, such as IoT sensors, telematics and smart systems, is also expected to increase in freight wagons. This allows for real-time monitoring, predictive maintenance, transport optimisation and load management.

The demand for modular and customisable wagons is growing as they can be adapted to various types of transportation. Wagons should be interoperable between different modes of transport, allowing for seamless transfers from sea to rail and road. Innovative loading and unloading systems streamline and expedite cargo handling and transfer.

VR FleetCare's Wagon Production Focuses on Smaller Specialised Series

Reports of increased demand for new freight wagons are strong and have reached us as well. Currently, there is a bottleneck in wagon manufacturing in Europe because wagons cannot be produced as much as needed. Both large-scale mass production and smaller specialised series are required.

At FleetCare, we aim to promote more efficient and sustainable freight logistics. Our wagon series always starts with our customers' transportation needs, and we can tailor a wagon solution to match them. We use our own undercarriage concept, allowing axle weights to be built up to 32 tonnes. Modular superstructures are selected based on the type of cargo, enabling customisation for different material transports.

"We have manufactured nearly 50,000 wagons for the Finnish industry, and we have an efficient production line for wagon series. Our strengths in wagon manufacturing lie in challenging technical solutions that support new service concepts. Compared to large wagon manufacturers, we can cost-effectively produce smaller wagon series tailored to customers' special needs," explains Guldbrand.

In the development of our wagon fleets, we have also considered the digitalisation of rail equipment and infrastructure. For instance, there is a need for more efficient and transparent logistics through automatic wagon coupling (DAC), which will require future wagons to accommodate both power and data transmission.

"Sustainable development principles and safety are the foundation of our manufacturing. This is supported by material choices and the use of certified and high-quality components. We also aim to make the most of existing, well-maintained materials in wagon modifications whenever possible," concludes Guldbrand.

www.vrfleetcare.com

Directory

Rolling Stock

HEXAGON

From Measurement to Demand Planning – Closing the Loop with CALIPRI

Safety is paramount in rail.

Regular wheelset measurements are therefore especially important to meet stringent regulations and to guarantee passengers a safe and smooth journey.

These regulations and requirements bring challenges for customers and operators in their daily business:

- Due to the strict safety requirements the measurements must be taken regularly
- Data needs to be traceable and long-term available
- Global trend for a greener transport
- Industry is constantly moving towards a profit-oriented market
- Railway organisations must be cost-efficient
- Railway transport needs to be attractive for end user. This means that delays must be prevented and this requires high vehicle availability. Therefore, a reliable maintenance workflow is absolutely essential
- Lifecycle costs are not as plannable as wanted

CALIPRI measuring devices from Hexagon | NEXTSENSE can make a significant contribution to supporting the maintenance flow.

Both the handheld CALIPRI C42 measuring system and the fully automated on-track wheelset measurement system, CALIPRI X ensure that the measurement results are in accordance with the standard. These standards require reliable, highly available and precise measurement data.

CALIPRI C42

The multifunctional CALIPRI C4x series enables the combination of several measurement modules in one measurement device. If, for example, the modules for wheel profile, brake disc, wheel diameter and back-to-back are combined, the result is a measuring device for evaluating a complete wheelset. CALIPRI Prime, on the other hand, focuses on wheel profile measurement and thus replaces conventional mechanical gauges.

The measurement process is based on laser light section technology. The user guides the sensor over the measurement object by hand. It is not necessary to precisely maintain the distance and angle of the sensor. This is achieved by using the patented CALIPRI principle and its unique tilt correction. During the process, the profile is captured and evaluated from different perspectives. Once measured, the data is immediately ready for analysis and transfer.

Learn more about CALIPRI C42 in the video by clicking **here**.

CALIPRI X

Our latest product is CALIPRI X, an automated, permanently installed on-track wheel profile measurement system. It eliminates time-consuming and costly manual wheelset measurement, delivering precise results in seconds, immediately identifying out-of-tolerance areas. The system measures all wheelset

parameters according to the European standard EN 15313. Accurate understanding of wheelset condition allows rail operators to move from interval-based to condition-based maintenance – and ultimately true predictive maintenance – enabling better resource planning and significant operational cost savings.

The most significant advantage of both CALIPRI C42 and CALIPRI X is: all wheelset parameters can be measured with one and the same measuring device in one measuring run, such as wheel profile, tyre thickness, run-out, diameter, back-to-back distance, equivalent conicity, camber and wheel toe. The most important parameters and variables are known in seconds, and out-of-tolerance areas immediately identified.

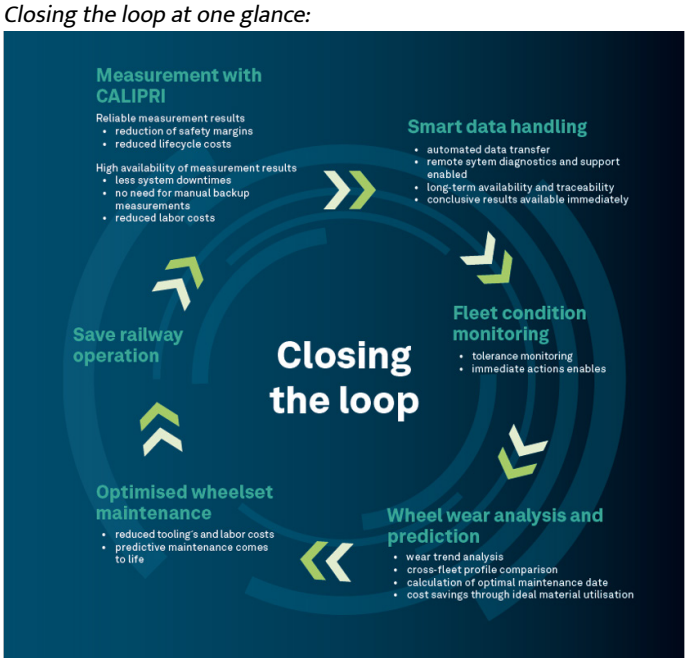
Learn more about CALIPRI X in the **video**.

Combined with CALIPRI Predictor – an easy-to-use cloud storage and analysis tool for all CALIPRI devices – all measurements are automatically, instantly and securely stored in the cloud and wear evolution is evaluated to enable planned downtime based on the as-is and forecasted condition of wheels. This enables predictable and safe operation of the fleet and unplanned downtime caused by wheel condition is eliminated.

Learn more about CALIPRI Predictor in the **video**.

The benefit for customers is that these measurement solutions close the loop between measurement, data handling and demand planning. With CALIPRI, the entire process – from performing measurements and monitoring values to planning and executing maintenance – has been digitalised as much as possible and predictive maintenance has been brought to life.

Closing the loop at one glance:



hexagon.com

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HEXAGON | NEXTSENSE

Treadmaster Flooring

World-Class Heritage

Tiflex Ltd, a leading rubber and cork manufacturer in the UK, has been supplying its Treadmaster Flooring to the transit industry since 1951.

The Treadmaster TM7 range was initially developed for the London Underground following the King's Cross Disaster in 1987 and the resulting demand to find the safest materials for its rolling stock.

Treadmaster Flooring has featured on many major metro trains around the world including the Busan Metro in South Korea, SMRT trains on the Singapore Metro, Klang Valley MRT trains in Malaysia, Waratah Trains in Australia and of course many lines of the London Underground including the brand-new Elizabeth line trains. Treadmaster Flooring has undergone much development following decades of real-world experience and feedback and remains a market leader in many key areas.

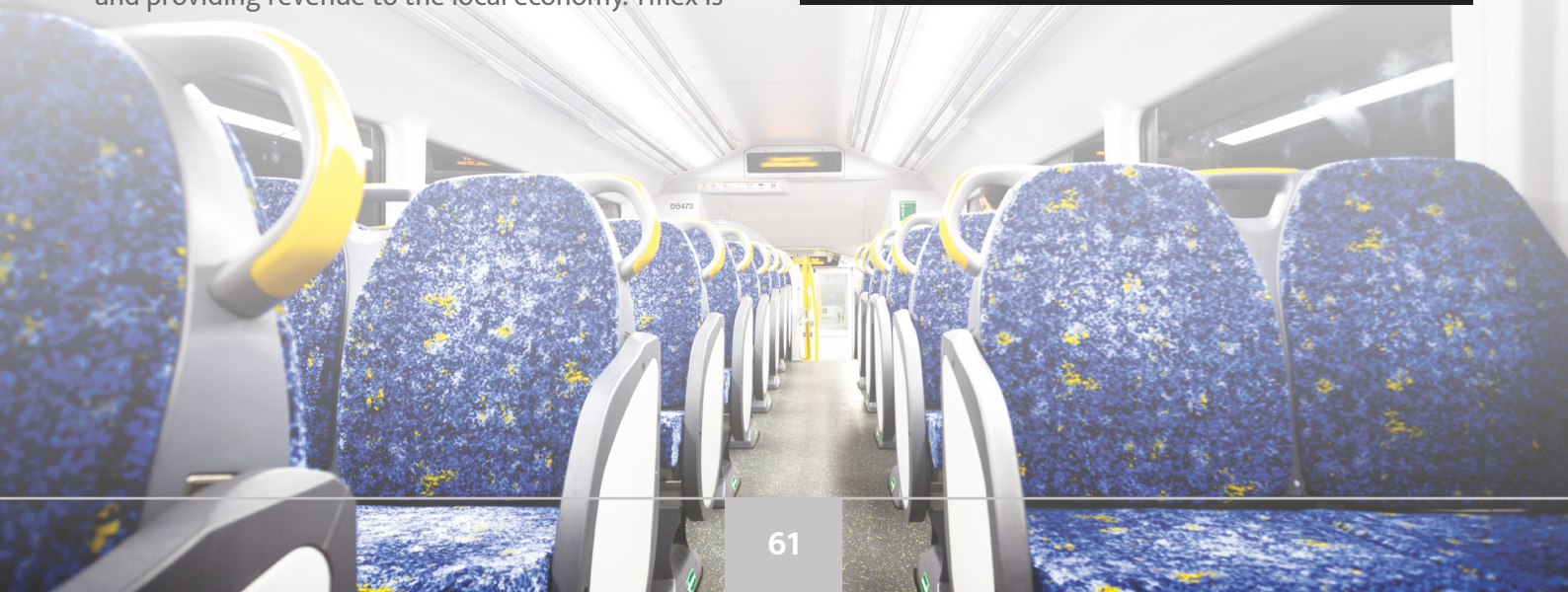
Treadmaster products can be supplied in large rolls and basic formats to provide options for local content-based fabrication. This can move parts of the manufacturing, installation process to where the trains are being built or renovated, employing local people and providing revenue to the local economy. Tiflex is able to provide instruction and training to support these initiatives.

Equally Tiflex can offer a complete service, supplying fully tailored parts, manufactured to the exact specification of the technical design saving time and money in regard to installation of the flooring. On a recent project our service at a cost of £90,000 was calculated to save nearly four times that in time and resources.

Tiflex can produce moulded coving parts to match the floors and provide protection against water ingress as well as pictograms, passive lighting and routered finishes for vestibules. With a strikingly low MOQ Tiflex can make a completely bespoke colourway for the smallest of projects or allow for several corresponding colourways on a single project.

www.treadmasterflooring.com
joliver@tiflex.co.uk
07976343246

treadmaster flooring



treadmaster flooring

A division of Tiflex

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Texat

Tde's Dirt-Trapping Mats

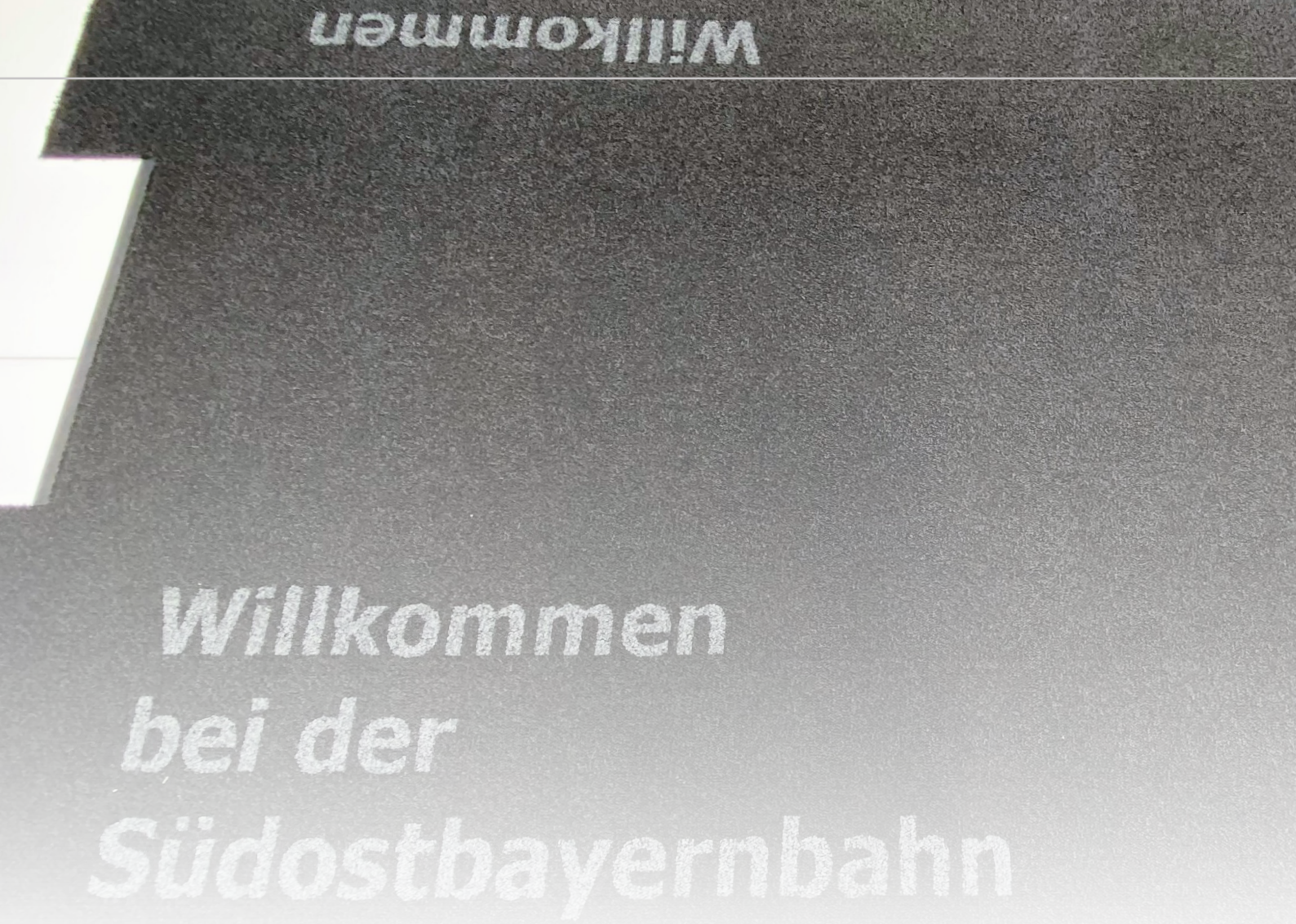
Texat decor engineering AG (Tde) is a Swiss-based provider of interior solutions for the transport sector.

It offers a wide range of bespoke dirt-trapping flooring and carpeting solutions, and many of its products can be found today in operational rolling stock across Europe, the Middle East and America.

The company's strengths lie in the high degree of customisation it offers, even in small production runs, and the quality of its products.

One of Tde's most popular products is its entrance dust mat, which is currently used by customers including Swiss Federal Railways (SBB), Swiss regional and national operators Matterhorn-Gotthard-Bahn (MGB), Montreux-Oberland Bahn (MOB), Regio-Verkehr Bern-Solothurn (RBS), VR in Finland, DB and DB-Regio in Germany and Leo Express in the Czech Republic.

"Engineered in partnership with a renowned Swiss carpet manufacturer, Tde dust mats are suitable for trains operating in all manner of climates and environments," says Christoph Zürni, Managing Director, Sales and Marketing, at Tde.



"Whether it's the damp leaves and mud that come with a British autumn, snow in Scandinavia, a tropical rainstorm in Malaysia or dust from a summer sand storm in the Sahara, our mats ensure train interiors see minimal dirt and water brought inside."

High Absorption

Tde dust mats are known for their high absorption of dirt and moisture. This is achieved due to a manufacturing process that creates tufted mats, meaning the loops are closed at the top, trapping and retaining moisture and dirt inside.

"Many of our customers have reported valuable savings thanks to the use of our mats, as they have saved them cleaning and maintenance costs," Zürni points out.

Customisation

Tde's mats are manufactured to meet each customer's specific needs. This includes geometrically adapting the design to fit a vehicle's entrance area, and/or taking into account whether the customer wants to clamp the mats under the sill profile or the side panel trim.

Coloured inlays can also be incorporated for visual area marking, plus the mats are also font laserable and logos or specific designs can be created using intarsia.

Long Service Life

The entrance dust mats are also praised for their long service life. This is due to the manufacturer's high-quality workmanship, which ensures the end product's extreme durability.

"Some customers choose to use these mats during the autumn and winter months, while others leave them installed for the entire year. In the case of the latter, customers can expect a service life of between five to eight years," Zürni says proudly.

"Engineered in partnership with a renowned Swiss carpet manufacturer, Tde dust mats are suitable for trains operating in all manner of climates and environments."

Christoph Zürni, Managing Director, Sales and Marketing, at Tde

Improved Customer Safety

The entrance dust mat also supports customer safety by reducing the risk of slipping and falling when entering or exiting a vehicle. This is thanks to the geometry of the ramp profile.

The downwardly preformed approach ramp prevents the mat from standing up and creating a possible tripping hazard while at the same time, the front rubber lip of the ramp profile prevents dirt particles from accumulating under the dirt fan mat.

The non-slip backing also increases its stability, preventing it from shifting without additional attachments to the vehicle floor.

Key Tde dust mat features:

- Reduced risk of slipping and falling
- High dirt and moisture absorption in the entrance area
- Dries quickly
- Easy to clean
- Extremely durable
- Long service life
- Different colour finishes
- Inlays can be incorporated
- Fire tested to EN 45545-2

Get in Touch

Tde continues to receive positive feedback from major rolling stock manufacturers that have chosen its entrance dust mat solutions.

The company is happy to discuss its solutions with interested parties in the rail sector. To find out more about how Tde could support your needs, please contact Christoph Zürni or visit **www.tde.ch**.

For more information scan the QR code to contact Christoph Zürni, Managing Director, Sales and Marketing Texat

tde

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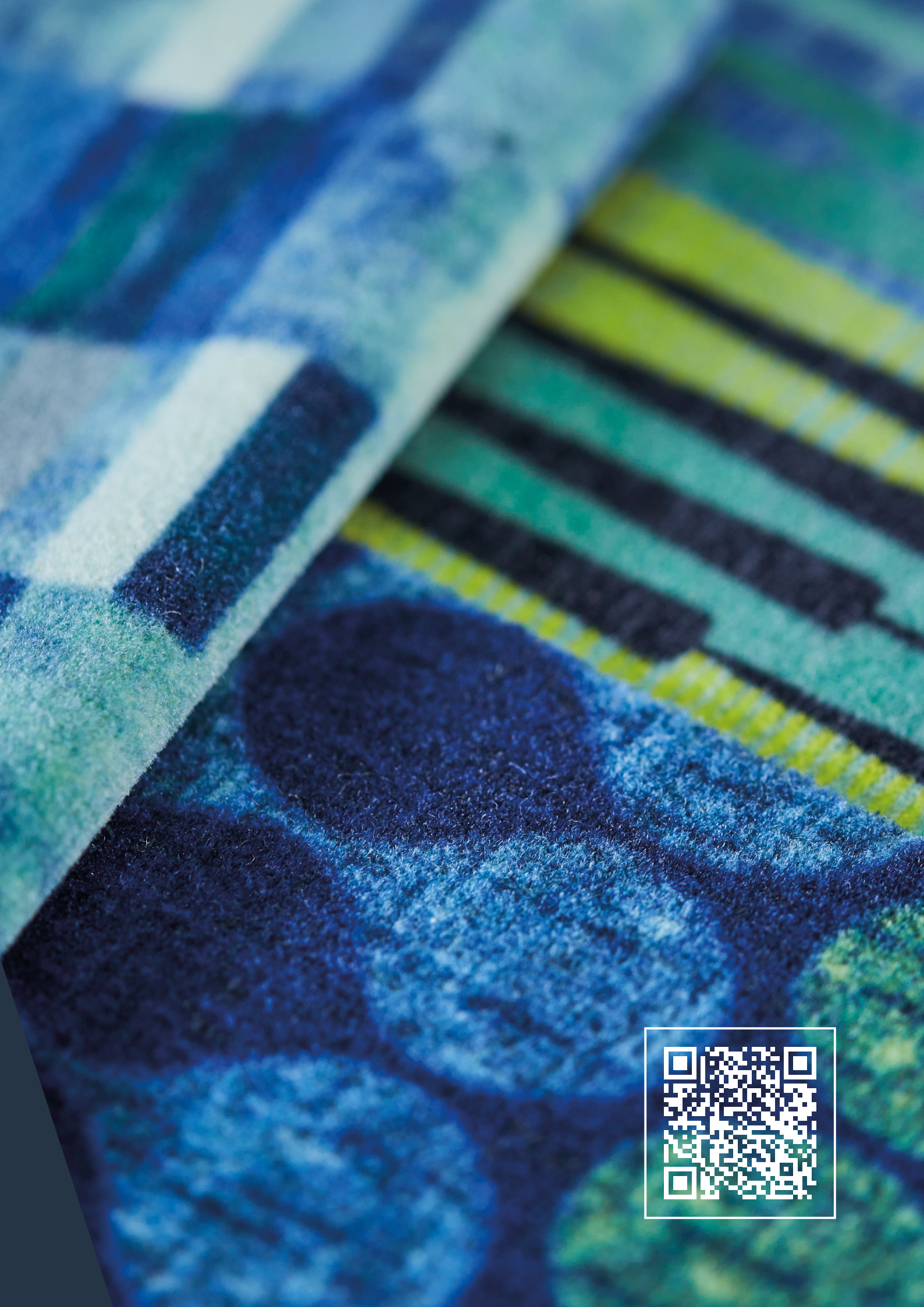


FinnProfiles

FinnProfiles' Seals Are Essential to Škoda Group's ForCity Smart Artic Trams' Travel Comfort and Safety

Škoda Group's railroad car factory in Otanmäki, Finland, is an undeniable pride of the Finnish industry.

All the stunning trams that make the lives of thousands of Finns easier and happier are manufactured there.

For example, all Tampere and newer Helsinki trams started their journey in Otanmäki.

That is why many of us must be thinking: how on earth can this big rail industry factory be located this deep in Finland's wilderness?

History

Škoda Group's Finnish business unit is officially named Škoda Transtech Oy, which originates from Otanmäki, an urban area in Kajaani, northern Finland. Otanmäki was born in the 1950s around an iron ore mine, which was in operation in the area until the mid-1980s.

The mine was originally owned by the state-owned company Otanmäki Oy, from which it was transferred in the 1960s to another state-owned company, Rautaruukki. The story of the railroad car factory practically begins where the life cycle of the mine ended.

Therefore, the first steps of the current Škoda Transtech took place in 1985, when Rautaruukki founded a railcar factory in Otanmäki called Transtech Oy to fix the employment situation in the area after the mining activity had subsided.

The business idea was nearly flawless for that time because the backlog was supposed to match the endless Soviet Union railway equipment needs. However, the stars aligned in a position where the entire trade partner country collapsed, and the Finns had to make a new plan.

The difficulties began to ease gradually in the late 1990s when VR (the state railway company) started renewing its equipment and ordering stock from Otanmäki.

Finally, after a few ownership changes, the factory found its current owner Škoda Group in 2015, and the name was also changed to Škoda Transtech Oy after the parent company.

"The most important criteria for seals are quality, safety and delivery reliability. We feel that we can rely on FinnProfiles that our seals are of top quality and delivered on time."

Pasi Häkkinen, Purchasing Engineer at Škoda Group

Rails to the Top

However, after the low point, the operation has managed to be steered on to the rails that have led the company to the top of the rail industry. Škoda Transtech Oy currently forms the Group's Region North unit, whose particular expertise includes the manufacture of arctic trams and other rail equipment.

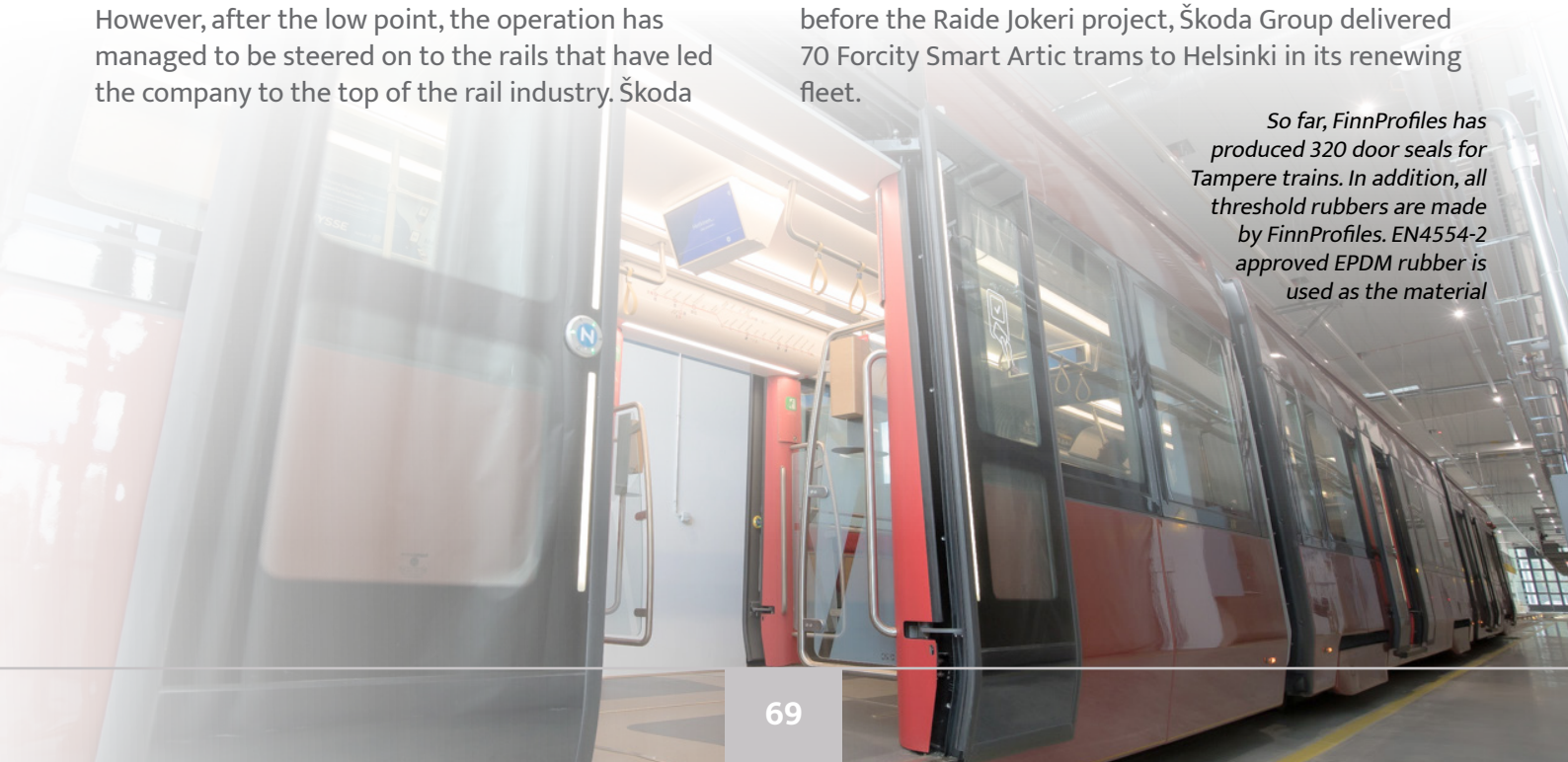
"Almost 12,000 trains and trams have been manufactured in this factory in the last 25 years," Pasi Häkkinen, Purchasing Engineer of Škoda Group, points out while introducing the more than 5.4 hectare production facility.

As we walk towards the production line for the finishing phase of the trams, we can see the whole spectrum of the rail industry's production. On each side, the chassis of the trams are either welded, their bodies are assembled, or the interiors are furnished. The factory employs a total of 650 people. Rumor has it that the best welders in Finland are among them.

During our tour, the Raide Jokeri project's trams are in production for the city of Helsinki. Initially, 29 trams were ordered, but 23 option trams have already been added to the backlog. After this, and partly already at the same time, work will continue on the trams of the second phase of Tampere. VR has also left its order at the end of the line.

"These are all very appropriate projects for us because our tram model, the Forcity Smart Artic, is designed to suit Nordic urban conditions. For example, all the trams we make for Helsinki and Tampere are from the Forcity Smart Artic product family," says Häkkinen.

In practice, the Forcity Smart Artic means that the trams are low-floor models and will not startle, even if a huge load of snow suddenly falls from the sky. Even before the Raide Jokeri project, Škoda Group delivered 70 Forcity Smart Artic trams to Helsinki in its renewing fleet.



So far, FinnProfiles has produced 320 door seals for Tampere trains. In addition, all threshold rubbers are made by FinnProfiles. EN4554-2 approved EPDM rubber is used as the material

Škoda Group's Purchasing Engineer Pasi Häkkinen introduces the seals between the outer wall panels, which FinnProfiles manufacture

"Whether it's the material choice or the technical structure implementation, we can count on them to support our design team in matters related to seals."

Pasi Häkkinen, Purchasing Engineer at Škoda Group

Seals Complete the Travel Experience and Safety

As you can imagine, passenger comfort and safety are Škoda Group's top priorities. Both of them are often finished with high-quality seals.

FinnProfiles' sealing solutions can be found in the Tampere and Helsinki trams. For example, all the window seals are the work of FinnProfiles. In addition, the cockpit's windshield and window seals, outer wall panel seals and bow rubbers are supplied by FinnProfiles.

"The most important criteria for seals are quality, safety, and delivery reliability. We feel that we can rely on FinnProfiles that our seals are of top quality and delivered on time," Häkkinen says and continues in almost the same breath:

"In addition, it must be stated that I also remember cases where we have needed seals as an urgent delivery, and FinnProfiles has always acted in a truly exemplary manner."

On the other hand, the importance of quality is emphasised because the seals are exposed to extreme weather conditions, wear and, unfortunately, sometimes also to pure vandalism.

"If the seals don't hold or if they break down easily, it quickly affects travel comfort, for example, in the form of draft and noise carried from the outside. Also, the general appearance of the tram suffers if seals are in sloppy condition," Häkkinen points out.

Safety has been taken into account in the selection of materials. All seals supplied by FinnProfiles are made from materials that comply with the fire, smoke and gas standard of the railway industry (EN 45545-2).

"We also appreciate that FinnProfiles can act as a consulting partner in our direction in issues related to seals. Whether it's the material choice or the technical structure implementation, we can count on them to support our design team in matters related to seals," Häkkinen concludes.

Read more about our solutions for railway industry.

For more please information contact

Jarno Halme
Business Area Manager, Rolling Stock

+358 50 919 3309

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FINNPROFILES

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FreiLacke

Dürr Technik

Dürr Technik Launches Next-Gen E-Bull Oil-Free Piston Compressor

Dürr Technik is pleased to announce the upcoming launch of its next generation E-Bull.

The redesigned oil-free air compressor is fully compatible with the latest rail standards across the UK and Europe, as well as many other regions around the world.

The original E-Bull model was a revolutionary compressor for the rail industry. Launched in 2020, the compact yet high-power compressor was developed for use in small spaces where height was at a premium. In addition, its fully sealed design made it well suited for placement underneath trains, as it would be protected from the elements – in particular dust and water.

Redesigned to Meet the Needs of Today's Rail Customers

In response to industry feedback, the company's engineers have redesigned and upgraded the compressor to enable its use in even smaller spaces, all while retaining – and in some cases improving – its key features.

This work was undertaken to support a variety of developments in the rail sector, where rail vehicles are designed with accessibility and sustainability in mind. These changes mean a reduction in space available due to low-height floors or the addition of batteries and / or fuel cells. With this in mind the E-Bull was redesigned to be even more compact, and can be built within stations with even lower heights.

"An original E-Bull station would need a minimum height of 500–600mm, but the new design only requires 350–400mm," says Mark White-Sharman, UK Managing Director at Dürr Technik.

Improved Heat Dissipation

This was made possible by enabling the rotation of the compressor's heads and improving the high-power compressor's heat dissipation.

"We remodelled the head to ensure we can get rid of the heat generated during the compression cycle. This included redesigning the compressor heads to optimise cooling and allow the heads to be simply rotated, which makes more efficient use of the forced cooling within the compressor station enclosure," says White-Sharman.

Lower Power Consumption

"We've also been able to reduce the compressor's power consumption from 3.4kW to 3.2kW – a reduction of 200 watts or approximately six percent. This not only reduces heat production, but also improves the E-Bull's sustainability credentials."

Increased Flow Density

Although the new and improved E-Bull has a lower power consumption and lower overall height, it now produces approximately 11% more air from the same space envelope. Typically, the free air delivery has increased from 380 to 420l/min. This increase in flow is also seen at the delivery pressure of 10 bar.

"These developments might not sound like much at first, but it's actually really impressive in the context of starting with an already very compact compressor," says Product Manager Mouldi Warag.

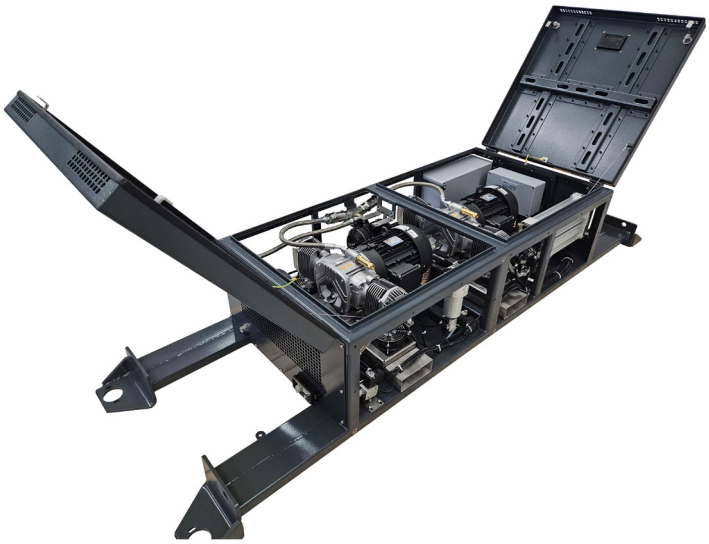
Customisable Solutions

The E-Bull compressor is already used on several trams and trains in Asia and Dürr Technik is currently working closely with some of Europe's major train manufacturers on customised E-Bull solutions that meet their specific and challenging requirements.

This includes the design of new underframe and rooftop compressor packages (open frame) that can be positioned within any road or rail vehicle, and can easily be slid in and out of place.

The company will also be delivering a new close-frame solution where two E-Bull compressors will be integrated into one station later this year in Eastern Europe. This will be followed by further units delivered to Scandinavia in 2024. This provides customers with even more flexibility, as Warag explains.

"Today customers need compact solutions and often have a lower demand for compressed air. So, we provide low-height stations that have room for two E-Bull compressors and a control unit. With the addition of two compressors, we can better balance the flow demand, meaning that instead of having to use a large, power-hungry main air compressor, you can instead just start one of the E-Bulls within the station and then add the second if more air is needed.



"This solution also means less noise and more redundancy, plus by switching between the two units you can also better manage wear and tear," he adds. "The new model and low-height stations allow our customers to be a little more creative with the control and management of their compressors."

The new stations have been designed with maintenance in mind, meaning that worn parts are easily replaceable. The E-Bull offers very low cost of ownership as the minimum of maintenance is required. As all Dürr Technik's compressors are oil-free, they also remove the issues associated with recycling and disposal of hazardous waste at the depot.

Pre-order Your Next-Gen E-Bull Now!

The company is keen to hear from other rail vehicle manufacturers interested in pre-ordering an E-Bull solution ahead of the official September launch.

If you're interested in being one of the first to take advantage of this redesigned and upgraded, compact, high-power air compressor then **contact us** for further information or to place an order.

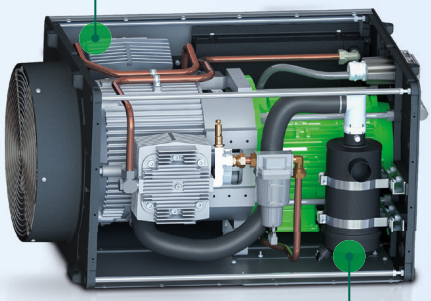
DÜRR TECHNIK

Inspiring With Green Air

Experts in oil-free compressors

Oil-free main air compressors

Manufacturer of first oil-free main air compressor
First version installed since 2001 in TGV (started under ATS Environnement label)



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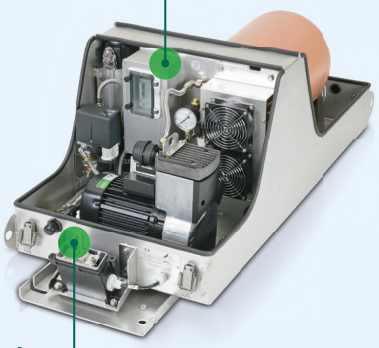
Auxiliary air applications

Oil-free auxiliary air compressors

Manufacturer of first oil-free auxiliary air compressor since 1991

Custom-made compressor solution



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- Trust in our certified products
- Low noise level and noise transmission
- Long lifetime
- Choose our oil-free technology to reduce your life-cycle costs

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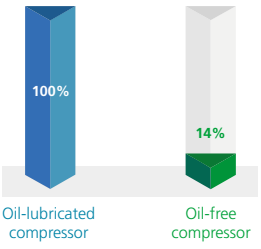

Total maintenance costs per compressor over a period of 20 years based on a real project comparison.

DÜRR TECHNIK

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Your contact person:
Mark White-Sharman

+44 (0) 1761 422944
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Premium PSU

Increasing Power in Railway Solutions

In the world of power electronics for the railway sector, Premium PSU has established itself as a manufacturer of reliable and efficient solutions in the low-power range.

Here are the reasons behind Premium PSU's decision to increase the power of its equipment and how this strategy has led to an increase in revenue and customer satisfaction.

Reasons for Increasing Power

Confidence in reliability: Premium PSU has earned an enviable reputation for the reliability of its products in the low-power range. Customers trust the quality and durability of their devices, which led Premium PSU to consider expanding into high-power solutions.

Customer demand: The demand for high-power solutions in the railway sector is undeniable. Premium PSU's customers, satisfied with the quality of its low-power products, encouraged the company to explore this market and offer more powerful solutions.

Less competitive market: As the company moves towards higher-power solutions, the railway market has less competition compared to low-power solutions. The manufacture and design of high-power devices are inherently more complex, providing opportunities to stand out in a less crowded niche.

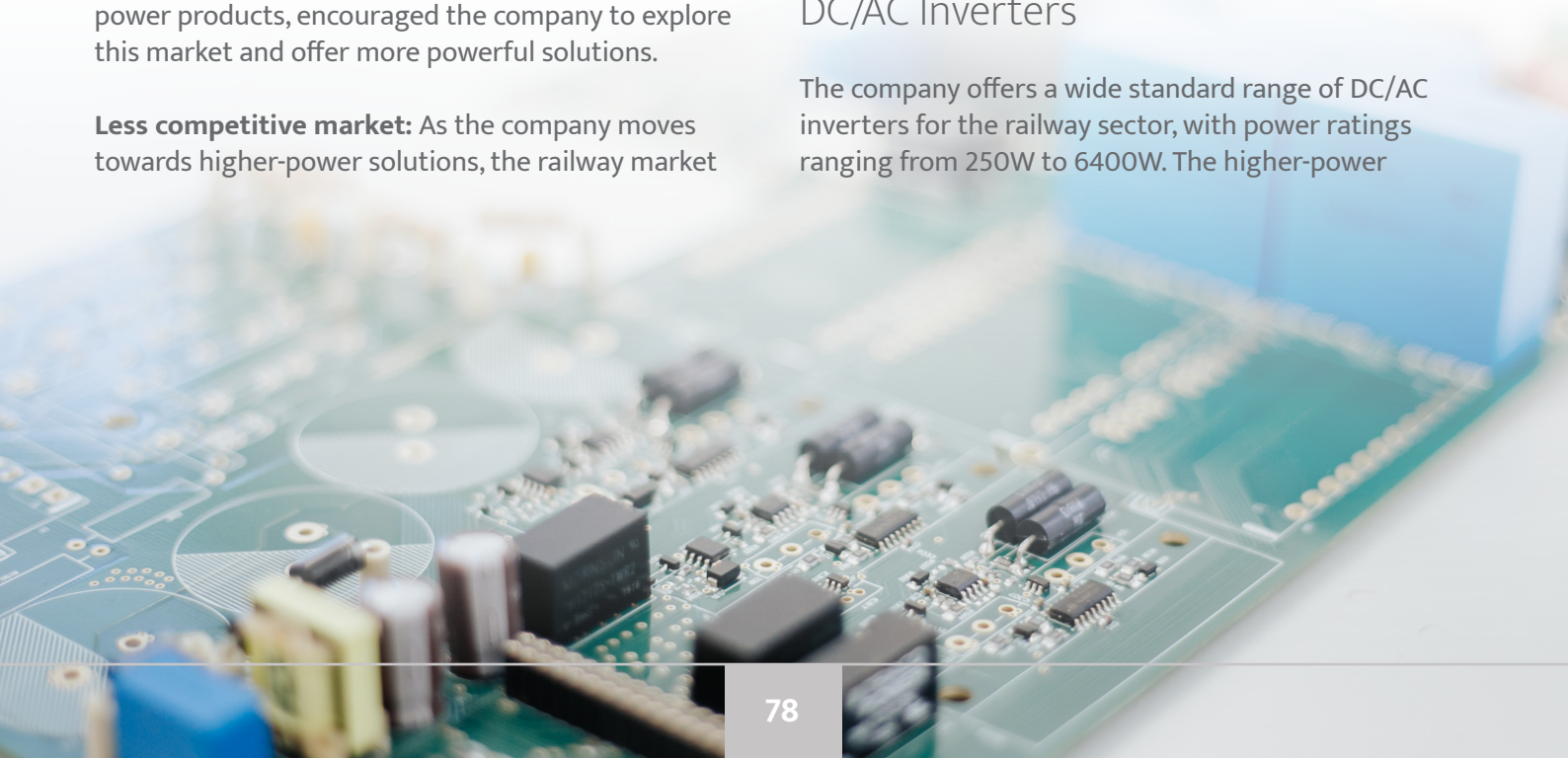
Increased revenue: It is a well-known fact that as the power of a product increases, so does its price. This increase in unit value directly translates into higher revenue for the company.

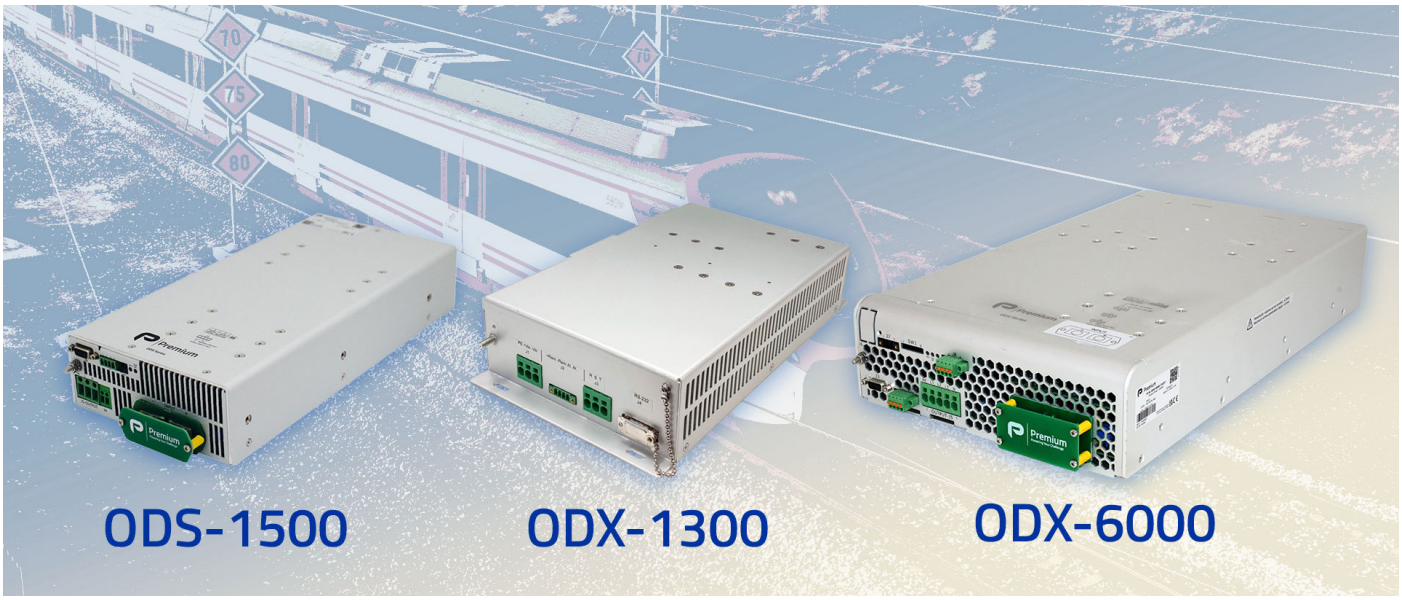
DC/DC Converters

Premium PSU began its foray into the DC/DC converter segment with 100W models and has since followed a gradual strategy of power increment. Today, the CRS-1000 DC/DC series is its 1000W standard, and it has also launched the CRS-2000 DC/DC series, both of which are parallelisable. Finally, the newest series that stands out for the railway market is the CBS-10K model, a single-output DC/DC converter offering a peak power of up to 10kW for 40 seconds.

DC/AC Inverters

The company offers a wide standard range of DC/AC inverters for the railway sector, with power ratings ranging from 250W to 6400W. The higher-power





models have the additional advantage of being able to be connected in parallel to increase total power.

They stand out for their compact design and high power density.

- Single-phase inverters: Starting from 250W, Premium PSU has gradually scaled up to 3000W with the ODS-1500 DC/AC and ODS-3000 DC/AC models.

- Three-phase inverters: The company offers models from 1100W up to 35kW. It often customizes catalogue models to modify the cooling system, adding heat sinks and/or liquid cooling. The ODX-6000 DC/AC series has the capability to be connected in parallel, achieving up to 24kW.

Premium PSU has undertaken a challenging custom design project, developing a 35kW + 5kW three-phase inverter. This innovative inverter, designed for the HVAC system of a tram, includes an active filter that allows compliance with the EN 50163 catenary standard (400VDC to 900VDC) in a very compact size.

AC/DC Battery Chargers

Another product range includes battery chargers, in which Premium PSU also has increased power. An example is a battery charger developed for a project that required an IP65 protection rating (input 360...528VAC and output 16.8...30V and 250A).

With a single product, it aims to cover all nominal three-phase supply voltages in the market, namely 400VAC, 440VAC and 480VAC. The output is for 24VDC NiCd batteries. SiC technology has been used for battery charger's design and manufacture, achieving an efficiency of up to 94%.

This battery charger is versatile, modern and efficient, with a power factor of 0.94 that allows for adjustment of both cable size and thermal protection device gauge. All of this comes with a more than reasonable MTBF of 91kh at 40˚C and an MTBFS of 102kh at 40˚C, with a lifespan of 30 years.

In the future, Premium PSU plans to create a modular standard range of 10kW for 110VDC batteries or 6kW for 24VDC batteries. This modular system can be connected in parallel to increase power and also can be mounted in enclosures with a higher IP rating when the project demands it.

Premium PSU's decision to increase the power in its power electronics solutions for the railway sector has proven to be a successful strategic move. With reliable and high-quality products in its portfolio, Premium PSU is well-positioned to meet the growing demand for high-power solutions in the railway market. Its commitment to innovative design and flexibility to meet customer needs makes the company a leading choice in this ever-evolving sector.

Premium
Powering Your Challenge

Directory

Rolling Stock

STÄUBLI

Compact Connectors for Secure Plug-in Systems in Railway Power Supply

Global climate change is elevating the importance of public transportation, increasing the demand for railway transport solutions.

With a growing number of passengers on trains, the need for compact, robust and reliable components that can meet the challenges of the railway industry is more crucial than ever. In this article, we introduce the innovative plug-in systems by Stäubli Electrical Connectors designed for railway power supply.

As rail passenger numbers continue to rise, there's less room available for components to accommodate travellers comfortably. Nevertheless, these components must remain compact and robust to meet stringent requirements. Stäubli has developed the EvoTrak family, which offers space-saving components tailored for the railway industry. These components are highly suitable for the railway sector due to their utilisation of plug-in connections instead of screw connections. These plug-in connections provide both security and time savings, ultimately reducing the total cost of ownership (TCO). In addition to the EvoTrak product line, Stäubli also offers fork plugs that enable insertion technology. The use of this insertion technology is highly space-efficient, particularly because there's limited room available for large and thick cables within subsystems. Thanks to insertion technology, secure and reliable connections can be established even in hard-to-reach areas.

Technical Strength

Stäubli's connection solutions are distinguished by their high reliability and robustness. The tried and tested MULTILAM contact technology is the cornerstone of all Stäubli connectors. The MULTILAM technology ensures a durable connection between surfaces, maintaining a consistent contact resistance for enhanced reliability and safety under extreme conditions such as electrical stress, thermal fluctuations, mechanical robustness, temperature variations, vibrations and shocks.

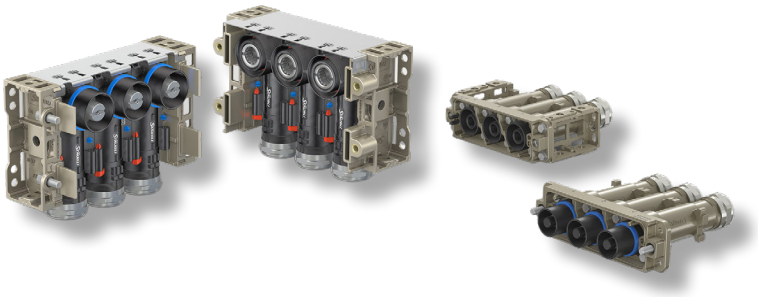
One Connector Philosophy for the Entire Traction Chain

Stäubli's modular connectors are adaptable to user requirements, offering solutions tailored to every specification. The EvoTrak family enables versatile and adaptable electrical connections between the main functions of a rail vehicle's electrical traction chain. The compact and flexible modular solutions, available in 1 to 4-pole configurations, meet all common standards and are approved for use on rolling stock.

The Modular Power Connector EvoTrak MPC provides a universal, multifunctional, space-saving and modular solution for various applications. With EvoTrak MPC and EvoTrak Lite, the Swiss connection specialist provides a flexible range of connection solutions for various applications in the railway industry. Here is an overview of the key specifications:

EvoTrak MPC for Subsystems

- 1 to 4 poles
- Up to 700 Amps and 3000V
- Straight, angled and panel connectors



EvoTrak MPC for Intercar Connections

- Customisable to meet your requirements
- DCO dynamic cable options for free intercar connections
- Compact solutions for ease of handling and fast maintenance
- Various interface types

EvoTrak Lite for Batteries

- IP2X protection
- Metallic connectors
- Compact and lightweight solution

EvoTrak Lite for Traction Motors

- Up to 330 Amps and 1500V
- Metallic connectors
- Phase segregation for permanent magnet motors (PMM)
- Management of shielded cables
- 1 to 4 poles

Easy-to-Handle Fork Plugs for Power Supply

In railway power supply, connectors play a crucial role as interfaces to ensure secure and reliable power transmission. They are also essential in subsystems for transmitting data, signals and fluids. Whether it's body-to-bogie connections, interbody connections, brake systems or inverters, connectors must withstand all the harsh environments of rail transportation. Stäubli has decades of experience and expertise in this field, providing tailored solutions to meet specific needs. Fork plugs from Stäubli enable simple and flexible contact with power rails. Thanks to their double-sided design, they facilitate a quick and resilient connection between two power rails, replacing labour-intensive screw connections. As a result, they increase productivity and reduce assembly and service costs. Furthermore, they allow for a more compact construction of rack systems.

Features and Benefits of Fork Plugs

Compact, easy to maintain, safe and cost-effective, Stäubli's fork connectors offer essential qualities for reliable power supply:

- High current-carrying capacity
- Low contact heating
- High resistance to vibrations, shocks and oscillations
- High number of mating cycles
- Compensation for angular and axial misalignment

Stäubli's fork connectors are suitable for numerous areas in rail transportation:

- High-current rail connections
- Connectors between fixed and movable busbars
- High and low voltage, indoor or outdoor installations
- Connectors for power supply, energy storage, and batteries
- Connectors for plug-in technology
- Connectors for power electronics and inverters

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Urban and intercity rail transport, whether for passengers or freight, is at the centre of many environmental and demographic challenges facing the world today. As a long-standing industry partner and key supplier in the international railway sector, Stäubli understands the challenges and expectations of its customers. Stäubli's products cover all applications and fluid types, from compressed air to hydraulics, cooling and electrical systems, as well as customised connection solutions. All solutions are designed to withstand the most demanding mechanical and climatic conditions, ensuring operational continuity, even under extreme weather conditions and mechanical stresses. Stäubli is a dependable technology partner for customers whenever secure and reliable connections are needed for innovative railway projects.

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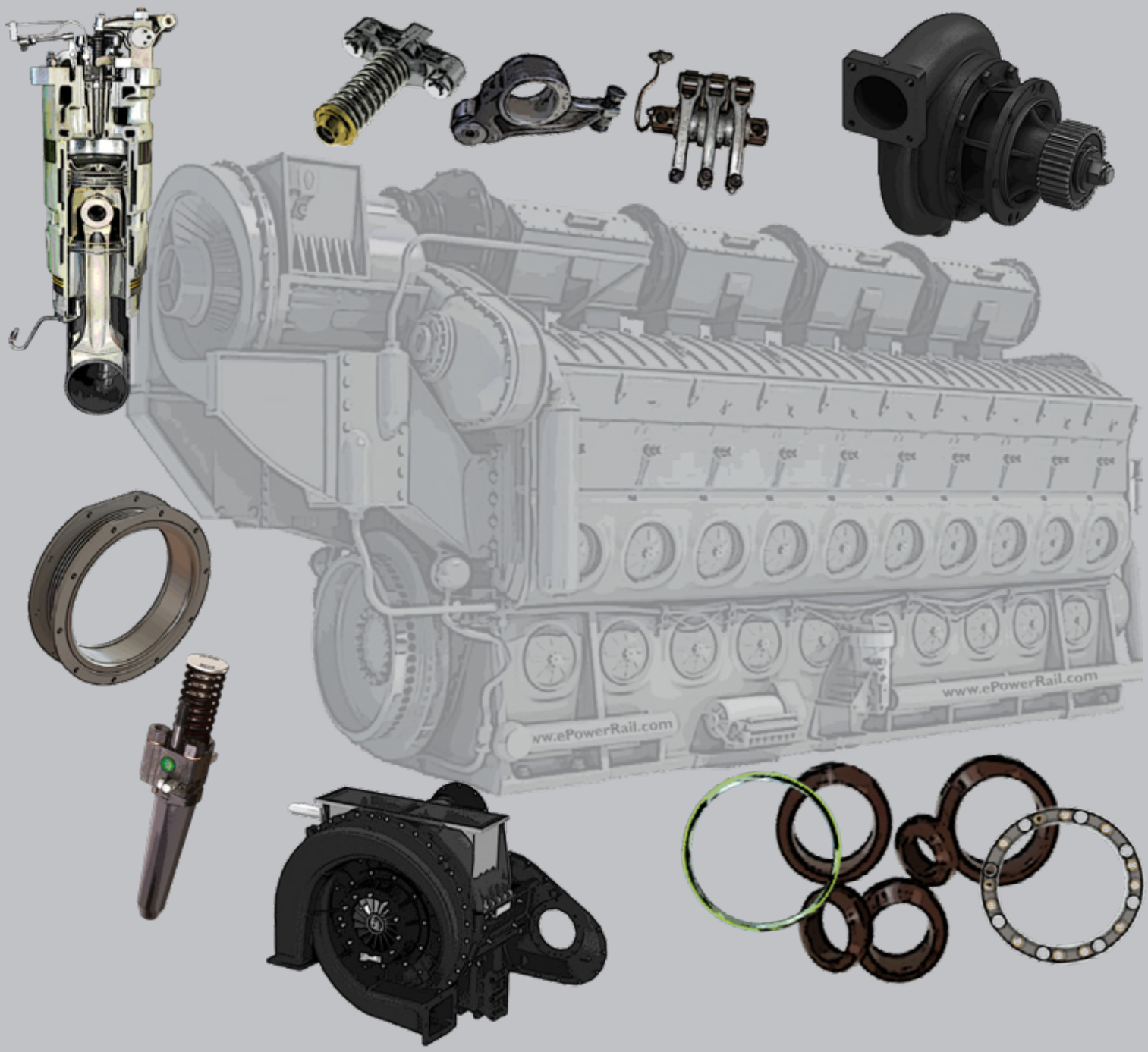

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PowerRail Engine Systems, a full-service locomotive engine company, is your one-stop shop for new and remanufactured engines and engine components.

PowerRail Engine Systems offers rebuilt engines, as well as new and remanufactured power assemblies, governors, turbochargers, water, fuel, and oil pumps, and other engine related components. The company's complete line of products provides true reliability and quality for all demanding applications, supporting both EMD and GE engines, including Tier 0+ Emission Kits.

In addition, PowerRail Engine Systems is approved by Class Is, regional lines, short lines, and passenger transits across the USA and internationally. With an experienced staff and quality workmanship, PowerRail is an AAR M-1003 quality certified company. Utilising an OEM verification process and the SolidWorks CAD system, PowerRail's engineering staff completes full product development, enhanced designs and failure analysis.

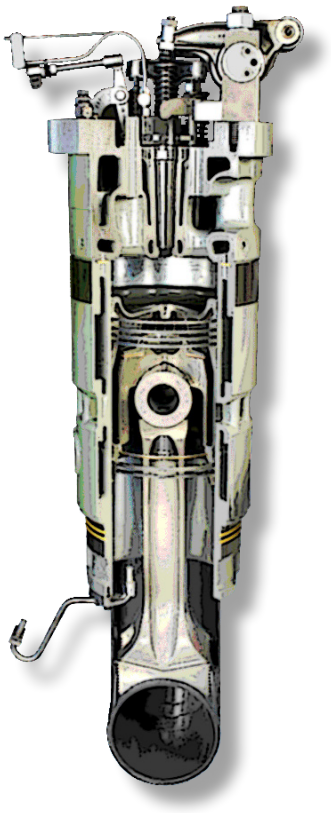
Power Assemblies

One of PowerRail Engine Systems' key product lines is the power assembly. Its complete line of premium new and remanufactured power assemblies, HLPs, cylinder heads and other related parts are machined and assembled in the United States. All raw materials undergo extensive testing to ensure they meet or exceed current OEM specifications.

Before shipment, each power assembly undergoes a 39-point inspection and documentation to ensure quality conformance. All water jackets are thoroughly inspected via bore scope to ensure no debris or casting sand remains. State of the art casting techniques are used to reduce porosity and maintain adequate coolant flow.

Governors

Another of PowerRail Engine Systems' popular product lines is their Woodward certified governors. Woodward governors provide proven reliability that improve the life of the Unit and reduce unplanned downtime.



Power Assembly

With PowerRail Engine Systems' governors, the highest-quality standards and requirements are factory-audited, ensuring strict compliance. Only genuine Woodward parts and certified, calibrated tools and test stands are used. A complete disassembly, bench inspection, comprehensive cleaning, reassembly and testing to OEM specifications occurs with each governor to ensure Woodward requirements are met.

PowerRail offers unit exchange, repair/return or new governors. All are rebuilt and tested by certified Woodward governor specialists, then calibrated to OEM specifications. PowerRail works to ensure a large inventory of unit exchange governors are on-hand, ready to ship.

Injectors

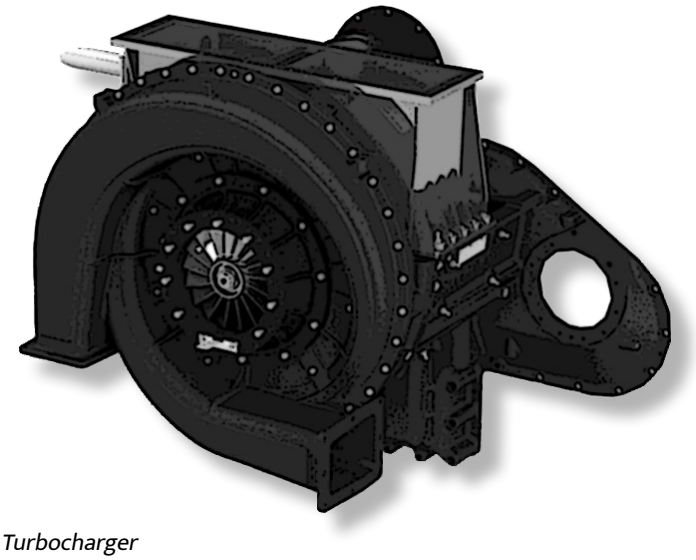
PowerRail Engine Systems proudly offers injectors and injector components for EMD and GE engines. Its complete line is comprised of new and unit-exchange injectors and pumps, including the ECOTIP® injector. Designed to reduce smoke and save fuel, this injector is available for all EMD engine applications with mechanical fuel injection. Over the years, the ECOTIP® technology has helped customers achieve the lower emissions necessary to meet strict EPA guidelines.

Turbochargers

Another one of PowerRail Engine Systems' key product lines is the turbocharger. PowerRail Engine Systems proudly offers a complete line of new and unit exchange EMD and GE turbochargers, as well as certified EPA equivalent replacements. Our turbos are Class I approved and made with AAR quality parts by experienced staff. In addition, you will receive full technical support, access to a complete line of support products, all at a competitive price.

Since its inception in 2003, PowerRail has grown to become a vital partner to many railroads across the globe, providing the parts and components needed for repairs, standard maintenance and upgrades to locomotive fleets.

PowerRail is a United States-based company, with several locations in various parts of the world. Celebrating its 20th anniversary this year, PowerRail proudly offers a wide range of new and rebuilt rail-related parts and components including bearings and journal boxes, electrical rotating parts, engine components, compressors, pumps and motors, from its various manufacturing facilities across the US. In addition, PowerRail offers locomotive rebuilds, overhauls and mobile maintenance at its locomotive shop. PowerRail also serves as a global supplier with locations in Europe and Australia.



Turbocharger

Click or scan the QR code to download the PowerRail Engine Systems Catalog

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ZF Friedrichshafen AG

Va Bene: ZF Produces New Rail Drives for Rome and Milan Metros

Thinking of mobility in Italy, the first suspects that come to mind are probably rattling Vespas, swift Fiats and racy Ferraris.

However, this list ignores how important public transport is for the country. For Italy's largest metropolitan regions – around the capital Rome and the commercial centre Milan – rail transport plays an important role. Several million inhabitants, not to mention the countless tourists, commute 'in treno'. In Rome alone, three metro lines transport over one million people every day.

Quieter, Lighter, Powerful

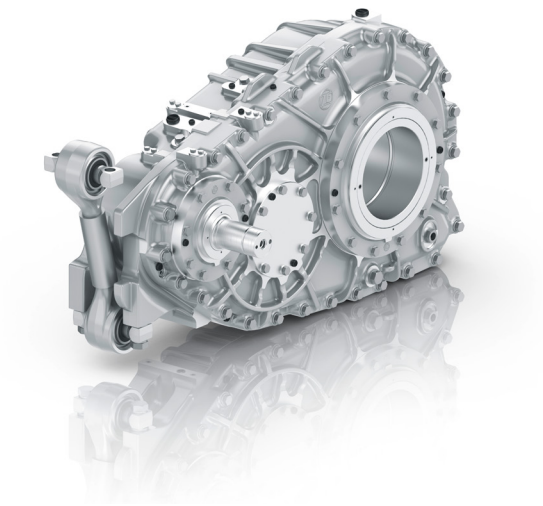
Manufacturer Hitachi Rail will produce the next generation of vehicles for the metro networks in Milan and Rome and will install a new two-stage spur gear drive from ZF. Reliability, high power density and, above all, weight savings were at the top of the list of requirements for the new rail drives. The last two rail drive generations of the metro fleets in Milan also came from the German company.

The time span between the award of the contract by the ATM Milan to Hitachi Rail and production maturity was just under 12 months. During this time, ZF developed a new, noise-improved gearing and optimised the spheroidal graphite cast iron housing. The result: at 307.5 kg (dry, without torque support and clutch), the unit weighs around ten percent less than its predecessor and also saves almost 30 percent on material costs. On the other hand, robustness and durability remain unchanged – they correspond to the proven ZF standard.

Not the Only Project in Italy

The orders from Milan and Rome are another success in the Italian market. The company has been present for over 20 years in a wide variety of Italian rail vehicles. To name some of the previous achievements in Italy, ZF has equipped the new trams in Torino with a hypoid spur gear and the Caravaggio platform with a helical gear, axle drive.

Quieter, lighter, powerful: ZF equips the metros in Milan and Rome with the latest generation of its two-stage spur gear drive



ZF Friedrichshafen AG

Industrial Technology
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Phone +49 7541 77-3610

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a2b Global Media
Editorial Calendar

Magazine Schedule

The publication dates and the associated content-submission deadlines are provided below. We frequently focus our magazines around major industry shows. Please feel free to enquire if you want to know what these shows will be.

Issue		Content Deadline	Publication Date
2024			
	Issue One	**04 December**	09 January
	Issue One	**01 January**	06 February
	Issue Two	**15 April**	21 May
	Issue One	**24 April**	30 May
	Issue Three	**08 July**	27 August
	Issue Two	**20 September**	28 October
	Issue Four	**28 October**	03 December

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W: a2bglobalmedia.com **T:** +44 1392 580002 **E:** info@a2bglobalmedia.com

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