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M A G A Z I N E

The latest news & reviews from the industry

Inside: **This Year at TRAKO** *Featured Suppliers Index*



Plus:

Start-up Corner | Menlo79

**The Belt & Road Initiative:
*7 Considerations for CEE and Europe***

**& Rolling Stock Highlights
at TRAKO 2019**

Issue Five 2019 – TRAKO Special

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- 40 EVENTS: DEBATES, SEMINARS, CONFERENCES AND PRESENTATION
- INNOVATIVE APPROACHES, MARKET NEWS AND PREMIERS

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24-27.09.2019 GDAŃSK POLAND 

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Letter from the Editor

Dear Readers, Trako will take place for the 13th time in Gdańsk on 24–27 September. It is the biggest railway show in Poland boasting 1,000m of outdoor track.

In addition to our regular feature letting you know everything that's going on at the show 'This Year at Trako', read our 'Rolling Stock Highlights at Trako 2019' to find out about some of the key exhibits, from locomotives, electric multiple units and trams. Two of the three units featured are destined for operation in Poland, while one, destined for Czech Republic, will also undergo final assembly in Poland.

As we introduced in our last magazine, Railway Interchange 2019, we now have two other regular features, The Policy Update and the Infrastructure Progress Report. In this issue we focus on the European market. I am particularly keen to follow the development of the Ceneri Base Tunnel in Switzerland, which along with the Gotthard Base Tunnel and the Lötschberg Base Tunnel will complete the New Railway Link through the Alps, a north-south connection through the Swiss Alps. Switzerland offered to build this high-speed rail link when it was in negotiations with the EEC, the predecessor to the EU in the 1980s and 90s. Swiss voters then approved of the NRLA in a mandatory referendum in 1992 with almost 64 percent in favour.

In our Start-Up Corner we feature Menlo79. Founded last August by

Fabian Stöffler, Christian Allner and Stefan Wagner, we find out what brought them together and what problems in the rail industry they're trying to solve. They tell their story from the perspective of locomotive driver 'Heiner'.

We are also re-running our popular feature 'The Belt & Road Initiative: 7 Considerations for CEE & Europe', a summary of my insights after attending the Poland & CEE: Co-Building the Belt and Road conference in June earlier this year.

We are publishing issue 6 of our magazine on 11 November. It will focus on AusRail Plus. The show itself will take place 3–5 December. If you would like to be represented on our website or in this magazine, please contact Andrew Lush at al@railway-news.com.



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If you would like your company to join Railway-News's online platform, please contact **Andrew Lush**.

To subscribe to our newsletter, visit www.railway-news.com.

COVER: TRAXX DC3 locomotive © Bombardier

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In-brief updates about funding, fines, project approvals, legal proceedings and more in the world of rail for the European region. European Commission decisions, the debate about VAT, Brexit and more.

p.36 Start-Up Corner | Menlo79

Founded in August 2018, Menlo79 wants to bring digital solutions to the rail freight sector to help locomotive drivers and dispatchers remain passionate about their jobs, while providing the best-possible service to shippers.

p.54 Infrastructure | The Progress Report

A look at some European rail infrastructure projects. In this issue: the Ceneri Base Tunnel, the Albula Tunnel, Rail Baltica in Latvia, the Grand Paris Express, and the Recoletos Tunnel in Madrid.

p.65 The Belt & Road Initiative: 7 Considerations for CEE and Europe

A look at the insights gained at the Poland & CEE: Co-Building the Belt & Road conference that took place in Warsaw in June 2019. What should the CEE region consider when it comes to this huge Chinese infrastructure project?

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September 2019 – November 2019

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This Year at TRAKO

Where: AmberExpo Exhibition and Congress Center, Gdańsk

When: 24–27 September 2019

**23 Sep
(Pre-TRAKO Day):**

10am–6pm: technical conferences & seminars requiring pre-registration

24 Sep:

10am–5pm: open hours
11am–12:30pm: opening ceremony

3pm–3:30pm: Stadler presentation of its FLIRT for Poland; location: TZ 06

25 Sep:

10am–5pm: open hours
3pm–5pm: feature event: 'State of Railway Safety' debate; location: room 1A

26 Sep:

10am–5pm: open hours
11am–noon: feature event: 'Digitalisation in the Railway Industry – an opportunity or a threat to the railway market?'; location: room 1B; required registration

27 Sep (Education and Career Day):

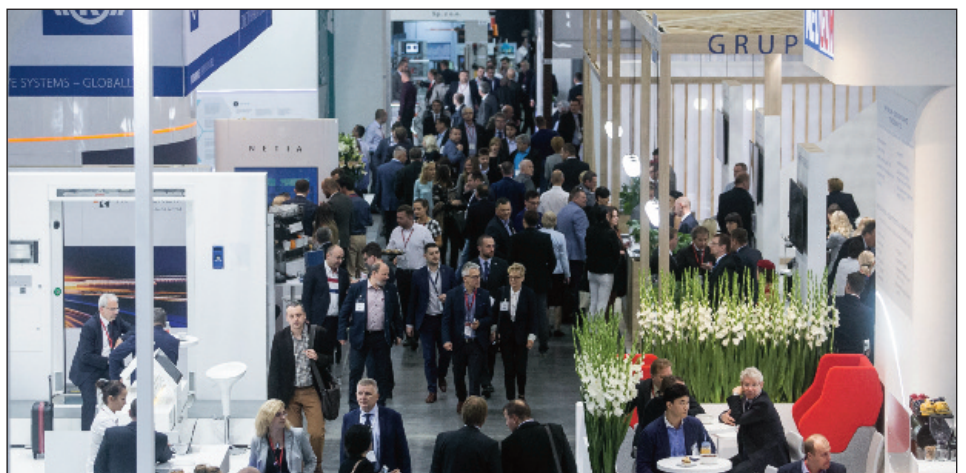
10am–4pm: open hours

This is the 13th time TRAKO is taking place. And it keeps getting bigger. In 2019 it will fill 30,000 square metres of exhibition space and boast 1,000 metres of tracks for rolling stock, track machines and equipment.

With more than 700 exhibitors from 30 countries, this is Poland's largest and most prestigious rail industry event.

TRAKO in 2017

In 2017 TRAKO had 700 exhibitors, up from 600 in 2015, from 25 countries with 16,421 trade visitors. 47 percent of visitors came from outside of Poland. The main reason visitors gave for attending TRAKO in 2017 was 'looking for innovations' (28 percent), followed by 'supporting trade relations' and 'market research' (both 22 percent).



National Pavilions

TRAKO is a truly international event with pavilions for Germany, Austria, Czech Republic and the United Kingdom.

Events

Over the course of the fair, visitors and exhibitors will be able to attend more than 40 events, such as seminars, debates, conferences

and presentations, which will address the most pressing topics in the rail industry today.

A Place for Firsts

TRAKO will be the venue where many exhibitors will launch and unveil their innovations for the first time. It therefore promises to be an event full of surprises and excitement.

Education and Career Day

The objective of this day has always been the same: to create opportunities for direct exchange between employers and employees, to provide information about expectations regarding choosing a university course, specialisation and PhD programmes. Exhibitors at TRAKO



will present job, internship and traineeship opportunities on this day (27 Sep).

TRAKO Awards

A number of awards will be handed out at TRAKO, including 'Best Company Stand Design Award' and the award for 'Socially Responsible Railway Company'. One key award is the Józef

Nowkuński Special Award. It is handed out for completed projects and designs for new rail infrastructure projects in Poland as well as for rolling stock authorised for operations in at least one EU Member State. There will be two statuettes in total. One for the Infrastructure category, and one for Rolling Stock. Prior registration by submitting the entry form is necessary in order to participate in

this competition.

TRAKO Outdoor Display

The outdoor display area is one of the major attractions of the show and it is open to the public on all TRAKO days. Read our article 'Rolling Stock Highlights at TRAKO 2019' on p.18 to find out what's in store!



Pioneers in Reliable Railway Communications

It was 1993 when Mark Rose, Founder of Tunnel Radio of America, got the call that dramatically changed the trajectory of his company's growth.



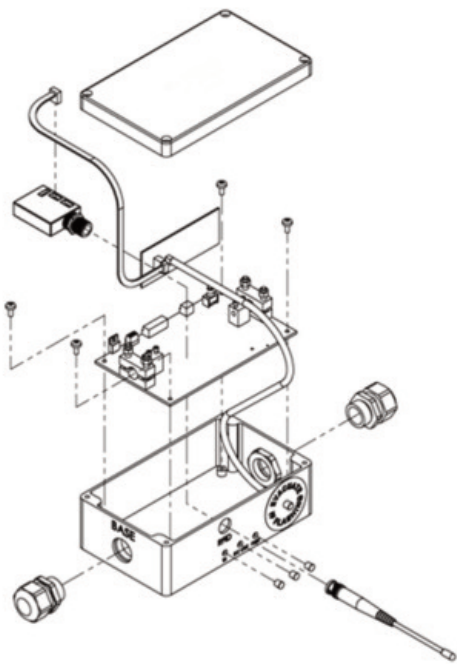
In the five years since its founding, Tunnel Radio had been working with mining operations, installing the wireless systems Rose and a partner had developed to ensure uninterrupted communications

between teams above and below ground.

But now a railroad was calling, looking for help achieving the same uninterrupted

communication, this time between both ends of a train as it passed through a long tunnel. Before starting Tunnel Radio, Rose had been a helicopter pilot in charge of a fleet of bush pilots delivering supplies to teams working on the Alaskan oil pipeline. ***“He was always highly concerned about the maintenance of his helicopters because he wanted to make sure all those pilots got home safely,”*** said Rose's son, Scott, now CEO of the company his father founded.

It was that concern for safety that piqued the elder Rose's interest when he met Bob Haining, who had been working in Alaska trying to solve the critical problem of how to keep communication flowing in an underground mine. Haining had begun work on an amplifier and head amp that showed promise to that end, and enlisted the help of Rose, who, in addition to piloting, owned a Motorola radio shop.



system allowed a signal to carry through the length of a tunnel, maintaining communication between both ends of the train for the entire length.

Almost over night, Tunnel Radio was in the railroad business, installing its first tunnel system in 1994. Soon it was equipping the 7-mile Flathead Tunnel in Montana, then, in Washington state, the Cascade Tunnel, at the time one of the longest tunnels in the United States.

“Pretty soon we were working with all four of the major Class I railroads in the U.S.,” said Scott, who had started working doing various odd jobs in his father’s company when he was only 13.

By the time Tunnel Radio’s railroad clients started calling again a few years ago, Scott was leading the company. This time former clients were looking for help satisfying the requirements of the federal Positive Tunnel Control legislation. Once again, Tunnel Radio had the technology and was able to meet its railway partners’ needs. More than a quarter century after its founding, Tunnel Radio has installed more than 500 miles of rail tunnel wireless systems, providing clear, continuous coverage and keeping railroads (as well as mining, oil and gas and other operations) safely communicating with their people.

Together they developed and installed in the Greens Creek mine near Juneau the first reliable VHF radio system in the United States. Five years later came the call from the railroad facing the same communications challenges through tunnels that mining operations had experienced underground.

“There was a tunnel up in Alaska that was just long enough that the head of a train could not communicate with the end of a train,” Scott Rose said. *“So without the ability to communicate, both engines couldn’t work in tandem. One might be speeding up while the other was braking, so they could be working against each other, causing all kinds of inefficiencies.”*

As it happened, Mark Rose had designed an amplifier and head system capable of extending radio signals generated by distributed power data equipment. The



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Connector series for Railway & Vehicle Applications

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- ⑥ Transmits data rates of up to 10 Gbit/s in accordance with IEC 61076-2-109:2014
- ⑥ Suitable for Power over Ethernet Plus (PoE+ acc to IEEE 802.3at)
- ⑥ STX M12x1 IP67 X-coded Bulkhead Sockets available both with housings for front and rear mounting and in both 180° and 90° version
- ⑥ STX M12x1 X-coded Connecting Cables available in multiple configurations and the packaging and cable printing can be individually customized

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Robust Solutions for Rail Projects



Provertha M12 Adapters

As a trusted partner to rail industry suppliers, Telegärtner UK offers products that meet the rigorous demands of the industry.

Telegärtner UK is part of the German Telegärtner Group and is engaged in the selling and marketing of high-quality electro-mechanical connectivity used in various markets, such as the railway, telecoms, marine and industrial sectors.

and ISO 14001:2015 certified and assembly staff work to IPC620C workmanship standards. The company's capabilities range from coaxial, data, multiwire and overmoulded assemblies to wiring looms and harnesses. Additionally, panel and box-build assemblies are available and Telegärtner UK also offers VMI and supplier management, kitting, subcontract and testing services.

Telegärtner M12 Connector Series

With the STX M12x1 IP67 connector series for railway and vehicle applications Telegärtner offers various solutions for applications in harsh environments. The series contains M12x1 X-coded plugs and sockets suitable for cables with solid and stranded conductors. 360° shielding ensures safe and reliable

Besides selling Telegärtner RF and Datavoice components, the company also represents high-quality manufacturers of connectors and speech communication devices, including pei tel, Provertha and Hummel. The company's policy is to provide a comprehensive first-class service and vital interface between its customers and the manufacturers it represents.

Telegärtner UK is also one of the market leaders in the cable assembly field with production facilities in the UK and Slovakia. The company is ISO 9001:2015



Telegärtner MFP8 Cat6A Series



*pef tel handsets,
microphones and speakers*

Telegärtner MFP8 Solution

MFP8 Cat.6A is the RJ45 plug for time-saving and efficient on-site assembly for all networks, from Voice to 10 Gigabit Ethernet. Available in straight and angled designs, it can be assembled quickly on all standard cable types without any special tools. MFP8 Cat.6A offers unprecedented flexibility and saves time and money on installation, repairs and maintenance. MFP8 supports PoE+ acc. to IEEE 802.3at and 360° shielding and full metal housing guarantee secure and reliable data transmission. It is suitable for solid or stranded conductors from AWG24/1 to 22/1 and AWG27/7 to 22/7 with cable diameter of 5.5–10.0mm. The highly effective strain relief of the MFP8 Cat6A IE and 4x90° makes them ideally suited for use in harsh industrial environments. Now also available in a MFP8 Cat.8.1 version.

data transmission. Additionally, factory-made cable assemblies are available in multiple configurations. The connectors can transmit data rates of up to 10 Gbit/s in accordance with IEC 61076-2-109:2014. The bulk cable conforms to EN 45545-2:2013 HL1–HL3 and DIN 5510-2 hazard level 1–4 and has been developed for high fire protection requirements in railway applications. The connectors have been tested for mechanical strength, climatic and corrosive resistance, degree of protection and functionality in accordance to railway standards EN 50155 and IEC 61373, therefore making them suitable for installation in transport applications.

Telegärtner Rail Distribution Box

In rough conditions high-quality fibre-optical connections are needed despite the mechanical and climatic stress. For this purpose, Telegärtner has developed the train-approved distribution box, RDB. Because of its tested reliability against vibrations, shocks, heat, coldness and humidity, the RDB is perfectly suited for use in harsh environments. Besides its robust housing with IP66 protection and UV resistance according to UL 508, a hinged splice cassette is mounted on to the RDB, enabling easy assembly and maintenance. Different front plates are available, being able to store pigtails with all common connectors and fibres. The splice cassette enables up to 24 splices. Cables of different outer diameters can be fed in or out via three cable glands. If the box needs to be fixed to a signal mast, an additional adapter plate is



Hummel VariaPro Rail Glands

available which can be mounted on to the distribution box. The RDB complies with climatic test EN 60068-2-1/2/14/130, vibration test EN 60068-2-64a and shock test EN 60068-2-27.

Provertha M12 and D-Sub Connector Solutions

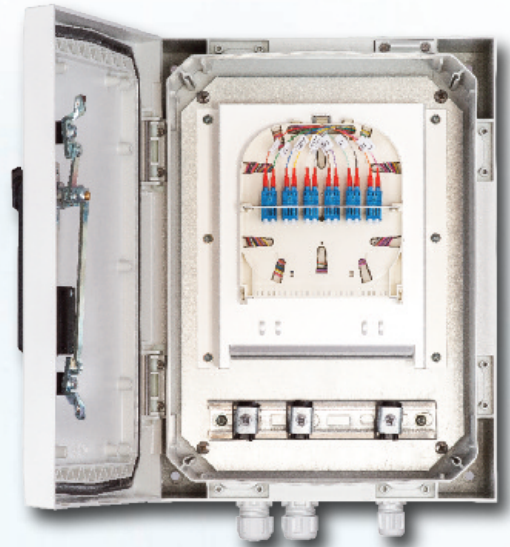
Provertha is a German company with four factories in Hungary manufacturing M12 and D-Subminiature connectors and hoods, ideally suited for rail industry applications. The Provertha M12 connector series covers the full range of options, A-, D- and X-code versions, all tested to meet rail standards for vibration, shock, hazardous gas and IP67. They are torsion-proof due to their unique special crimp flange system and offer 360° shielding and certified plastics acc. to EN 45545-2 for railway applications. The M12 range also includes 90° versions and adapters. They now have the smallest M12 on the market enabling the use of cable assemblies for small-space installations. In addition to the M12 series, Provertha offers a comprehensive selection of space-saving diecast hoods with vibration-proof screw-locking and quick-lock hoods with an innovative push-pull mechanism.

pei tel Communication Devices for Railway Applications

pei tel, a company of the Peiker family, specialises in developing and producing high-quality microphones, handsets, speakers and microphone speakers, including hand microphones and loudspeakers for train platforms, and gooseneck microphones, small loudspeakers and handsets for use in vehicles. The IP68 waterproof handheld, single or three button, rugged chromed housing microphone is ideal for use in trains as is a handset with a PTT button, display and keypad, dynamic ear capsule and durable spiral cable, suitable for analogue and digital radio systems. The housing and PCB material of pei tel handsets have been tested according to EN45545-2.

Hummel VariaPro Rail Glands

Hummel VariaPro Rail gland series meets all requirements for use in rail transport and has successfully passed the tests of fire protection standards EN 45545-2 and EN 45545-3. VariaPro Rail glands can be used in all trains on the European rail network. The slim

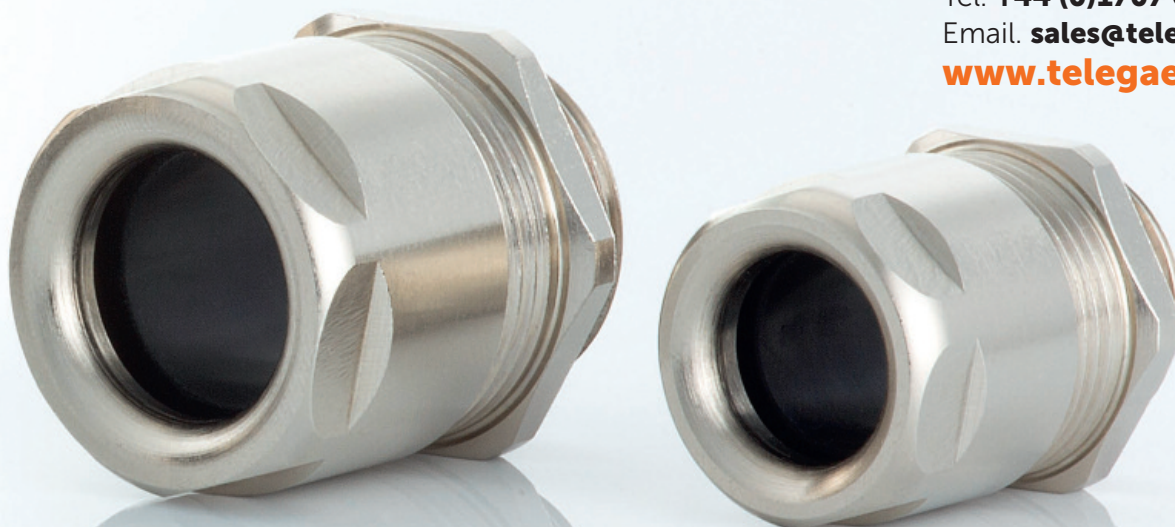


Telegärtner Rail Distribution Box

structure enables a space saving installation. They are easy to install and have EMC connection integrated as standard. Hummel VariaPro Rail glands are available in M20, M25, M32 and M40 sizes and can accommodate cables with 7 to 32mm in diameter. They can be used in -40° to +100°C and are IP68-rated.

Through the extensive range, including Telegärtner, Provertha, pei tel and Hummel products, Telegärtner UK is ideally suited to support rail industry customers by offering all products from one source to help with vendor base optimisation and logistics chain streamlining.

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Rolling Stock Highlights at TRAKO 2019

Poland's accession to the EU in 2004 triggered massive economic investment, including in the country's railway infrastructure and rolling stock.



The TRAXX DC3 locomotives are suitable for both freight and passenger operations. The DC version came after the AC locomotive and can run on 1.5kV and 3.0kV DC. For the Polish market, the TRAXX DC3 will be configured for 3kV using pantographs for current collection from overhead lines.

Did you know?

TRAXX is actually an acronym and stands for 'Transnational Railway Applications with eXtreme fleXibility'.

Bombardier TRAXX DC3 Locomotive for Akiem

Bombardier, a co-organiser of TRAKO, will present its new TRAXX DC3 locomotive for the Polish market.

In November 2018 leasing company Akiem (a division of SNCF Logistics) ordered 20 TRAXX DC3 locomotives from Bombardier.

Manufacturing Site

They are being built at Bombardier Transportation's Polish manufacturing site in Wroclaw. Incidentally, this is where BT manufactures all its locomotive car bodies for the European and North American markets.

Bombardier will deliver the four-axle DC locomotives, which also feature last-mile capability, between 2019 and 2021.

Speaking about the contract with Akiem, Peter Amman, Head of Global Ecosystem Freight Corridors, Bombardier Transportation, said: "This recent contract with our long-term partner Akiem has extended the scope of our innovative TRAXX DC3 locomotive, the most advanced in Europe, to Poland, where the previous generation of TRAXX locomotives has been operating reliably."



© Stadler

Stadler Electric Low-Floor EMU for Koleje Mazowieckie

Stadler Polska and Koleje Mazowieckie signed a framework agreement for 71 FLIRT electric multiple units in January 2018. These EMUs are to operate in Poland's Mazovian region, in which Warsaw is located.

Event

Stadler will stage an official unveiling event for this EMU on Thursday, 24 September, at 3pm, outdoor area TZ 06.

Did you know?

This order is the largest single order for rolling stock in the history of the railways in Poland.

Manufacturing Site

Stadler has three sites in Poland. Its headquarters in Warsaw, a site in Lodz, and its production site in Siedlce, which is where these EMUs will be manufactured. The site has been open since 2007. The Siedlce site manufactures rolling stock not just for Poland but for operators internationally, such as Germany, Estonia,

Hungary, Italy, the Netherlands and Belarus.

The low-floor EMUs will come equipped with ETCS Level 2 technology – Stadler's GUARDIA system. The car bodies will be made from light-weight aluminium. Operating using 3kV DC, the top speed for these multiple units is 160km/h. Each vehicle is 98.2m long and can seat 269 passengers.

The vehicles can run in a multiple traction configuration of up to three units coupled together.



Stadler Tango NF2 'nOVA' Tram

In December 2016 Stadler won the bid for 30+10 trams with Czech customer Dopravní podnik Ostrava a.s.

Based on Stadler's Tango model, these trams will be adapted with low-floor technology.

Manufacturing Site

Like the EMUs, Stadler's Siedlce site will be responsible for final assembly and commissioning,

though the project planning and engineering elements of the contract will take place at Stadler's offices in Prague. Stadler's site in Winterthur is responsible for manufacturing the bogies while the car bodies are coming from Minsk.

Each two-car tram will be 24.9m long and can seat 61 passengers. The tram's total capacity is 188. The tram's maximum speed will be 80km/h. They will operate at 600V DC.

The uni-directional vehicles

feature pivoting bogies. One of the reasons Stadler was the successful bidder is that it was the only manufacturer who added air-conditioning as a feature into its bid, something the customer had not requested. The first Tango nOVA was delivered on 23 April 2018. The final unit in this contract will be delivered in 2020.

Did you know?

This contract is Stadler's first contract in the Czech Republic. Indeed, since World War II all trams for the Czech market have come from domestic producers.

Combined Interior Sensors

EN 50155
EN 61373
EN 50121-3-2
EN 45545-2
NFPA 130

*Let us take care of Your
travelling comfort*



temperature



humidity

CO₂

atm. pressure



VOC

- Outputs: RTD, 4 to 20 mA, 0 to 10 V, RS 485 / MODBUS, CAN / CAN open
- Possibility of variable combination of measuring values

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We are introducing a comprehensive line of interior sensors for railway vehicles

SENSIT s.r.o. has been a Czech producer of level, flow and position sensors for temperature, relative humidity, CO₂, atm. pressure and VOC since 1991.

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COMBINED INTERIOR SENSORS

In response to increasing interior air quality requirements from the areas of private homes, public buildings and transportation, we are expanding the range of interior temperature sensors with additional measured physical quantities. We have developed Combined Interior Sensors that measure **air temperature, concentration of relative humidity in the air, concentration of CO₂ in the air, atmospheric pressure and the amount of harmful substances in the air – VOC** (volatile organic compounds). All these sensors meet the requirements of the following railway standards:

EN 61373, EN 50121-3-2, EN 50155, EN 45545-2 and NFPA 130.



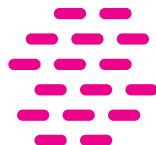
The values detected are used for monitoring and efficiently controlling the air quality and environment in passenger trains, trams, buses, trolleybuses and other means of public transport. Correctly setting the interior climate (i.e. temperature, relative humidity, CO₂, atmospheric pressure and VOC) creates an environment where passengers feel comfortable.



temperature



humidity



CO₂



atm. pressure



VOC

Combined Interior Sensors from SENSIT s.r.o. allow you to measure any combination of factors for controlling the interior environment of a passenger compartment. Combined Interior Sensors are also produced with different output variants – RTD, 4 to 20 mA, 0 to 10 V and digital outputs RS 485 / MODBUS and CAN / CAN open.

The interior sensors listed here are designed to measure the following variables:



Temperature, relative humidity, CO₂, atm. pressure and VOC
STHCPV 102 – RS 485 / MODBUS output | **STHCPV 104** – CAN / CAN open output



Temperature, relative humidity, atm. pressure and VOC
STHPV 102 – RS 485 / MODBUS output | **STHPV 104** – CAN / CAN open output



Temperature, relative humidity and CO₂
STHC 102 – RS 485 / MODBUS output | **STHC 104** – CAN / CAN open output



Temperature and relative humidity
STH 102 – RS 485 / MODBUS output | **STH 104** – CAN / CAN open output
 4 to 20 mA output | 0 to 10 V output



Temperature
S 100 – resistance output | **S 500** – 4 to 20 mA output | **S 700** – 0 to 10 V output
SD 102 – RS 485 / MODBUS output | **SD 104** – CAN / CAN open output



CO₂
SC 700 – 0 to 10 V output | **SC 102** – RS 485 / MODBUS output
SC 104 – CAN / CAN open output | 4 to 20 mA output | 0 to 10 V output



The use of Combined Interior Sensors can achieve the following and more:

- the creation and preservation of a comfortable climate for passengers in railway vehicles
- the establishment and maintenance of high air quality
- the removal of condensation from train walls and windows
- energy savings based on an evaluation of values measured by the air-conditioning unit
- cost savings within the control system
- a higher control system efficiency



For more information about SENSIT s.r.o. sensors, switches and converters, please visit www.railwayvehicles.com or contact us directly at randysek@sensit.cz

Transforming Ancillary Systems

Parker's Fluidic Solutions team has developed a new product which is transformative in its approach to ancillary systems for rail vehicles.

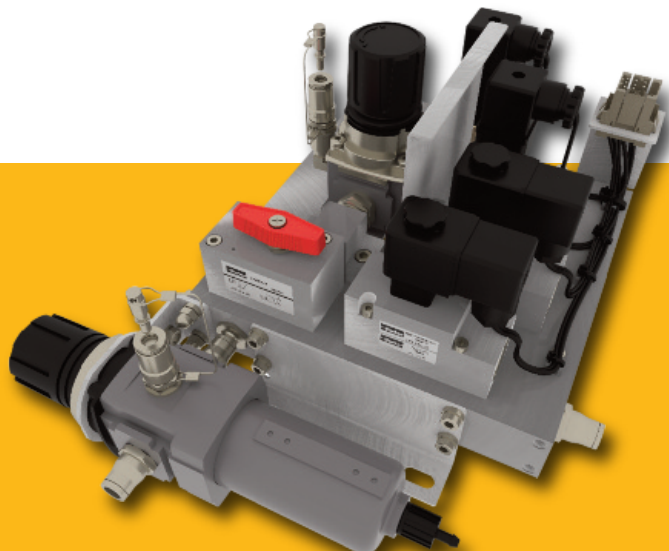
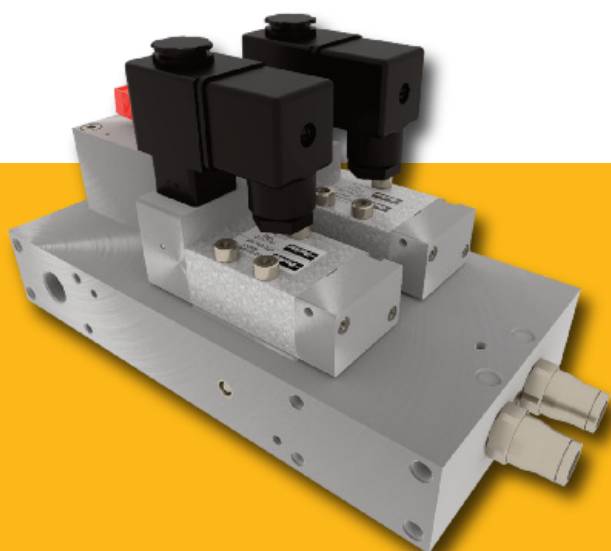
To fully appreciate the impact of this new approach we first should consider traditional ancillary system design and the issues that can arise as a result.

The typical traditional approach with ancillary system design has been to design a bespoke solution almost project by project. Some efforts have been made to utilise a common system across a vehicle platform, but even then, project variations can lead to system variation and modifications to designs.

Trying to force the use of a common system without any flexibility to alter its design can be both

technically and commercially challenging with the possibility of 'off system' additions being required, or conversely component redundancy. This traditional design approach also doesn't drive a common spares catalogue with the possibility of different components being used on a project by project basis, thereby adding to logistic costs and spares management complexity.

The documentation requirements to support the development of a new system design are significant and include the technical file for the design but also the required manuals, drawings, LCC/RAMS and contractual documentation. With bespoke designs



on a project by project basis this documentation can consume significant time and result in one off non-recurring cost charges.

Everything discussed so far has cost implications both in terms of system procurement cost and indirect costs for engineering. However, there are other less visible impacts such as the training requirements for different bespoke systems, the different maintenance requirements and activities and even installation methods and time.

The transformational new approach from Parker has system configuration flexibility absolutely at its core, drawing on a common range of rail industry standard products to ensure standardisation of products and spares across multiple contracts; it looks to address the traditional issues discussed above.

The thought was, take the common functions and make standard sub-modules to address the specific function control requirements. This has led to the design of a range of function blocks that can easily be configured into an ancillary assembly, identify the functions required and configure them in to a fully assembled and tested control system, ready to plug and play.

As well as being able to configure function blocks into a complete system assembly, blocks are designed so that they can be used as stand-alone controls. A prime example is the horn control system, the benefit of which is the ability to then locate the control much closer to the actual application it's controlling. The blocks could also be split into separate smaller ancillary systems. A

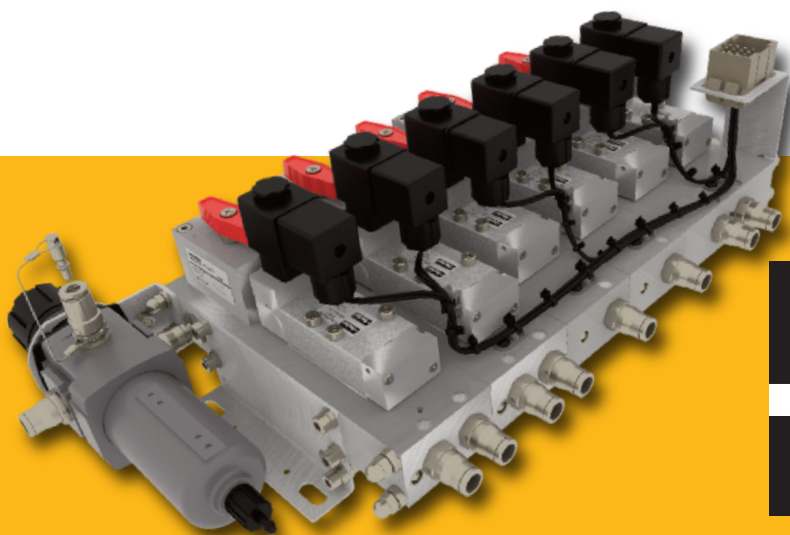
benefit of this would be that the control could be placed nearer its application; another is that the available space can be used more effectively so that smaller space envelopes can be considered.

With the new approach, the technical file also becomes standard and is configured to align with the function blocks being utilised, and the same is true for the technical manuals and drawings. For the LCC and RAMS documentation the data is pre-formatted and just needs the project variables such as project life, duty times and current costs to be entered in order to calculate periodicities and costs for maintenance activities. As a result, 'soft issues' such as installation and maintenance documentation support are also transformed.

In summary, this new approach means that the time from enquiry to solution is vastly reduced; standard blocks are configured using a standard range of components designed specifically for use in the rail industry. In essence, the benefit lies driving common parts for the spares catalogue and the subsequent benefits to overall logistics management and cost. Utilising a standard range of function blocks also provides for commonality across multiple projects as well as commonality in terms of installation and maintenance activity.

About Parker Hannifin

Parker Hannifin is a Fortune 250 global leader in motion and control technologies. For 100 years the company has engineered the success of its customers in a wide range of diversified industrial and aerospace markets. Learn more at www.parker.com or [@parkerhannifin](https://twitter.com/parkerhannifin).



The Policy Update

Slovakia

The Antimonopoly Office of Slovakia has ruled that the state rail freight company Cargo Slovak is to be sanctioned 3 million euros for abusing its dominant position in the market. Cargo Slovak has refused to lease or sell surplus electric locomotives and it has refused to make fuelling services available to other operators. This anti-competitive behaviour goes against Article 102 of the Treaty of the Functioning of the European Union (TFEU).

Greece & Ireland

The European Commission has written to Greece and Ireland to encourage them to enact EU law that requires them to open up the market for domestic passenger rail services. EU Member States agreed to transpose the EU rules in the 4th Railway Package by 31 December 2018. Following Commission communication in January 2019, which resulted in no response, this letter now gives the two MS two months to comply. Failing that the Commission could refer the cases to the Court of Justice of the EU.

Poland

The European Commission has contacted Poland for failing to enact a court decision reached in June 2018. The court found that Poland failed to adopt measures that guaranteed that investigations into serious rail accidents were independent. The Commission says independence is key to ensuring incidents can be investigated effectively and future accidents can be prevented. If Poland doesn't take steps to implement the court's ruling, the Commission can refer Poland to the CJEU and ask for financial penalties.

Germany

The demand for a reduction in the VAT rate on rail tickets is growing. Leading politicians from Germany's centre-right party, the CDU, along with its sister party, the CSU, Germany's centre-left party, the SPD, and the Green Party are all agreed that air travel must not be allowed to remain cheaper than rail travel any longer. The issue is long-distance rail travel: at 50km and more, passengers pay 19% VAT. Passengers who fly internationally, e.g. from Germany to France, pay no VAT. In a recent survey by Civey on behalf of Allianz pro Schiene, 82.8% of respondents were in favour of reducing VAT on rail tickets to make rail travel more attractive.

Germany

Transport funding should not be ring-fenced anymore. Germany to date operates with ring-fenced funding, meaning that income from the roads pays for the roads and income from rail pays for rail. This leads to roads consolidating their dominant position. Switzerland, however, pools its transport takings to pay for transport-related costs. The German government now says it will use surplus takings from lorry tolls and invest them in rail.



Switzerland

The Swiss Federal Office for Transport (BAV) first published its Strategy in 2014, with a focus on three main points: funding for maintaining and expanding the infrastructure must be secured; funding of regional passenger services must be secured and competition issues must be addressed; freight transport must become self-funded. The BAV has now updated its Strategy to take into account technological advancements, intermodal mobility and electronic processes.

Austria

The European Commission has referred Austria to the CJEU for failing to comply with European rules on the certification of train drivers. The issue: the authority tasked with licencing train drivers is not the safety authority, as required. Licencing is currently performed by the Schieneninfrastruktur-Dienstleistungsgesellschaft mbH, which has issued in excess of 6,000 licences to date. It should, however, be the Austrian Ministry for Transport, Innovation and Technology that performs this task. The Commission began its EU infringement procedure in this matter in 2015.

United Kingdom

As part of the Brexit process, the United Kingdom would pull out of the Interrail scheme, said the Rail Delivery Group. This would mean visitors to the UK would no longer be able to use their passes to travel around the country, while UK visitors to mainland Europe could still use the passes. European travellers were told they could instead purchase a 'BritRail pass', which would offer all the same benefits. However, one such one-month pass would cost the same as a one-month Interrail pass, which covers the whole of continental Europe and the UK.

However, given intense opposition to this move, the Rail Delivery Group said the UK would be 'remaining part of both the Interrail and Eurail passes'.

Denmark, Ireland, Netherlands, Poland

The European Commission says these four countries have all failed to transpose certain aspects of EU law relating to the creation of a Single European Railway Area. The purpose is to create a uniform market for matters relating to competition issues, regulatory oversight and the financial architecture of the sector.

United Kingdom

Following the Committee on Climate Change's Net Zero report, aiming at a UK emissions target of net zero greenhouse gases by 2050, the Rail Industry Decarbonisation Taskforce and RSSB have created a Final Report for the Rail Minister in which they support the Committee's vision. The focus is on electrifying both passenger and freight rail and the challenges for these two areas are different. It says 'significant decarbonisation by 2050 can only be achieved with a balanced and judicious mix of cost-effective electrification, coupled with the deployment of targeted battery and hydrogen technology where these are the best solution'.

The logo for sqills, featuring the word "sqills" in a bold, lowercase, sans-serif font. The letters are white and set against a dark blue, rounded rectangular background that has a slight gradient and a white border.

exceeding expectations

Exceeding the passenger self-service expectation

S3 Passenger (S3P) allows operators to leverage proven capabilities to enhance the overall passenger experience. S3P allows rail operators to develop value-added and cost-efficient solutions while remaining customer-centric and committed to improving the overall travel experience.

An established, future-proof passenger rail technology software platform capable of powering your business, both now and later.

Join our community of 30 public transport operators.

Learn more at www.sqills.com

Exceeding Passenger Expectations while Transforming the Rail Industry

A Big Promise to Live Up to

It's a big promise to be sure, but transformation is necessary at a time when markets are liberalised and opened up to new entrants. A time when legislators are pushing for more transparency and multimodal travel planners.

At the same time, customers demand self-service tools to manage their bookings, add services, retrieve travel

information, and more. Passengers want to be in control of their journey. They are already in control of their air travel, why should the rail industry be any different?

Another reason the rail industry needs to transform is because of environmental consciousness. An increasing number of customers prefer the more sustainable rail

transportation option over other modes of transportation, and operators need to cater to that.

Finally, technology plays a vital role in enabling this transformation to become more customer-centric. To remain competitive and offer the best-possible customer experience, operators must consider the





(long-term) feasibility that their software platform can keep up with (or preferably surpasses) the competition.

Where Do Rail/Bus Operators Stand Today?

The continued drive for customer-centricity, innovation, increased efficiency, and cost control is something almost all rail operators share. Markets may differ from one operator to another, but their needs are very similar.

Technology must empower operators to launch sales

campaigns when and how they want. It has to allow them to create segmented offers, react to competitive campaigns quickly, and meet the needs of their customers.

There was a time when operators believed that having a bespoke legacy system offered them a unique competitive advantage over competitors to gain customer preference. A combination of knowledge, budget, and limited competition allowed them to achieve positive returns on their investment with these bespoke software options.

Today's consumers expect a

modern, streamlined, seamless purchasing/check-in/travel experience. Keeping a bespoke system up-to-date with the constantly changing consumer demand is costly, while delaying investments imposes the risk of falling behind the competition, losing both customers and revenue.

Operators are aware of this cost-benefit comparison and as a result, Software-as-a-Service (SaaS) solutions powering market-driven propositions are increasingly preferred over bespoke software development.

Our SaaS Offering – S3 Passenger

S3 Passenger is gaining ground over bespoke customer-centric solutions. Instead of having to define business requirements, select competent vendors, manage and de-risk a complex software development process, secure scarce rail business and technology knowledge, customers choose SaaS for:

- **Rich customer-centric functionality. Thousands of out-of-the-box (self-service) features to manage customer schedules, inventory, prices, conditions, after-sales processes and more. With the current S3 Passenger features, we cover 95% of most tender requirements raised, out-of-the-box.**
- **Proven technology. S3 Passenger has been in production with customers since 2011 and scores high in terms of stability, scalability, and security. It is ISO 27001:2013, ISO 9001:2015 and PCI-DSS level 1 certified.**
- **On-going innovation. New features become available each**



quarter and customers can influence the roadmap to power their business innovations.

- *Cost-efficiency. One supplier developing a commonly used platform is more efficient than each customer building their own platform.*
- *Competitive positioning. Operators differentiate themselves based on their unique (branded) offerings, services, and time-to-market. Technology serves as a powerful enabler, but is no longer a differentiator in and of itself.*
- *Highly scalable cloud hosting. S3 Passenger has automatic down- and upscaling mechanisms in place to offer the best performance combined with the lowest costs.*

One Product, Many Customers

At Sqills we believe and invest in collaboration with our customers. By combining customer input, market intelligence, and agile development power, each new S3 Passenger release includes new and updated features at no incremental licence cost to the S3 Passenger customer community. Together we create, innovate, and improve the S3 Passenger solution, to continuously exceed customer expectations.

Innovations Moving Forward

We are reliable and transparent. Therefore we:

- *Meet our customers regularly to discuss system performance and roadmap developments.*

- *Allow customers to prioritise roadmap preferences using a story point mechanism.*
- *Present and discuss the content of the next release to each customer once every quarter.*
- *Discuss operational excellence (SLA reports and other details, upcoming releases).*
- *Provide all our customers with optional early access to newly developed features before the official release to evaluate, test and train staff before release.*

Together, S3 Passenger Becomes Better and Clients Become Stronger

As more and more customers join the S3 Passenger user community, which currently consists of 30 customers, each user benefits from the ideas the others listed in our product roadmap. Today, over 80% of all new features originated from our existing customers. What proves valuable to one customer may be useful for another customer as well. This brings the most powerful concepts to life in S3 Passenger.

Did You Know?

- *That Irish Rail selected S3 Passenger to power their Customer First Programme starting in 2014?*
- *That Thalys selected S3 Passenger to launch their innovative IZY service between Brussels and Paris?*
- *That Ouibus (aka BlaBlaBus) implemented S3 Passenger to prepare themselves for more intense competition in France as a result of market*

liberalisation and new entrants on the market?

- *That OUIGO implemented S3 Passenger to realise their growth objectives?*
- *That the Rail Delivery Group is implementing S3 Passenger for 21 train operating companies in the UK to replace the existing National Reservation Service and to improve inventory management as a foundation for upcoming innovations?*
- *That Eurostar is implementing S3 Passenger to replace their dated legacy system?*
- *That our partnership is rewarded with a Net Promoter Score of 78?!*

Moving Forward, S3 Passenger Market Leadership

Our ambition is nothing short of market leadership. Together with our S3 Passenger customers we are committed to delivering the best-available, customer-centric, inventory, reservation and ticketing solution in the world. Innovation is in our DNA and we will continue to invest in new and better S3 Passenger features.

Together we are stronger. Join our growing community of customers. Find out more about S3 Passenger at www.sqills.com



Industry Focus

AQSEPTENCE

GROUP



With roots going as far back as 1652, the company rebranded as Aqseptence Group GmbH in 2016 following the acquisition of several German and American companies.

Aqseptence has locations in 14 countries, including Australia, Poland, India, China, Germany and the US. Headquartered in Aarbergen, Aqseptence Group is active in a wide array of different markets, ranging from desalination, metals & mining, pulp & paper and of course transportation. We spoke to Andreas Bayerlein, Manager for Supply and Disposal Systems at Aqseptence, to find out about the company's involvement in the rail sector and its hopes for TRAKO 2019.

Railway-News:

You provide specialist equipment for filtration and separation, as well as water technology. What specifically do you do for the rail sector?

Aqseptence:

With our Roediger Sewerage Systems we provide technologies for conveying wastewater and innovative solutions for modern fresh water supply and disposal systems. In addition to this we provide water treatment and management systems for train wash stations and de-icing systems for bogeys. As a system supplier Roediger has been one of the world's leading brands in the field of vacuum technology for many decades within Aqseptence Group. Our brand name Roediger stands for quality and customised solutions.

RN: What are your latest innovations? What in particular will you want to showcase at Trako?

A: We have continuously developed our supply and disposal solutions, to make progress in two main areas: Firstly, we are committed to providing acceptable working conditions for operators, especially in terms of health and safety, but also regarding comfortable usage. Secondly, we want to help railway operators to increase their efficiency and to reduce the turnaround time for servicing trains.

We meet these requirements by continuously developing our latest versions of drip-free and odourless extraction pistols, to ensure perfect hygiene conditions ('clean to the last drop'). These automatically-closing connectors are very easy to operate, allowing the automation of the extraction process, and

avoiding safety hazards for operators.

At TRAKO we want to introduce our systems into the Polish and Eastern European markets, and we are looking forward to sharing our experience and further competence gained in these countries, where the railway sector is expected to grow significantly in the near future.

RN: *You have been a partner of Deutsche Bahn AG for a long time. How did you come to work together and what products and services do you provide them?*

A: We developed our systems and technologies especially to meet the complex requirements of Deutsche Bahn AG and have been successfully approved by DB and the railway authorities after comprehensive testing of our systems.

Since then, we have been working closely with many service depots for high-speed trains, both in Germany and in other countries. We supply – and in many cases also perform the maintenance of – both the supply and disposal systems and the wash water treatment plants.

RN: *Major industry players like DB will surely come to you with key requirements and improvements. Are you able to go to them to drive innovation as well?*

A: It's a key requirement to constantly improve and drive forward innovation. The impulse

for a new development might come from clients, operators, or from our own engineers and technicians.

Since we know that many railway companies will implement automation and data exchange technologies for service depots in the near future, we are already working with partners and clients on advanced systems, which will shortly be introduced into the market.

RN: *Can you tell us about a couple of projects you have completed in the rail sector that you are particularly proud of?*

A: The latest and most modern railway service depot that we equipped with our water supply and wastewater disposal systems was built in Cologne, Germany (Köln-Nippes). This depot was built for the new generation of ICE 4 high-speed trains.

We supplied two containerised vacuum stations, one in the service hall and one in the outdoor section that also contains

cleaning facilities for the train interiors.

For this project we installed numerous under-floor hose-reel systems, both for water supply and for sewage disposal. For the interior cleaning facilities, located outside, we installed various supply and disposal modules, as well as cleaning cabinets.

The service depot has been in operation since last year. Currently we are equipping the oldest German high-speed service depot, in Hamburg, with new supply and disposal systems, in order to make it fit for the newest fleet of rolling stock.

RN: *In 2017 then chief executive of Network Rail (UK) Mark Carne said to The Guardian newspaper that he had secured a pledge from the government that toilets on trains allowing raw sewage to be dumped on to the tracks were to be phased out by 2019 in favour of*



New railway service depot in Cologne, Germany



holding-tank toilets. In its Strategic Business Plan for Control Period 6, Network Rail has also said this practice will stop by the end of 2019. Can you comment on this situation for the UK and for other countries? How much work remains to be done in this area?

A: I cannot comment on the situation in the UK. But generally, I can say that there is still a lot of work that needs to be done in many European countries, in terms of retrofitting old rolling stock with modern toilets and holding tanks, and providing the required infrastructure in the service depots.

In the end it is not only an unpleasant way of disposing of human waste, it also poses real health and safety risks, real dangers, for railway staff and

operators working in the depots and on the tracks.

RN: *Many railway operators are going to implement a 'pit-stop concept' in order to get the trains back on the track as soon as possible. How does your technology support this concept?*

A: The so-called 'pit-stop concept', designed to reduce service time without increasing the number of operators, is not new. However, with ever increasing cost pressure, a shortage of operating staff, as well as a shortage of spare trains, this concept is now being enforced all the more, as available service time slots become ever shorter.

Our systems effectively support the fast servicing of the trains: because the extraction pistols close automatically after emptying the wastewater tanks, the

complete train can be serviced by a single operator, within a rather short time period. The operator does not have to wait until the wastewater tanks are empty before doing something else. After connecting the Roediger extraction pistol, he or she can immediately move on to the next coach. After connecting all the pistols the operator can walk back and disconnect one pistol after the other. This process means a high number of trains can be serviced effectively with minimum operational staff requirements.

RN: *As you mentioned above, you don't just deal with waste disposal in the rail sector. What is the biggest area of growth for you? What are some of the big projects for Aqseptence in the next couple of years?*

A: The Aqseptence Group is active worldwide, providing water and wastewater management facilities, including vacuum technology systems, components and solutions for screening and filtration.

Within our Vacuum Technology Systems division, with offices in Germany, the United States, Poland and Dubai, we concentrate on sewage collection systems for applications in municipalities, for industrial projects, marinas and airports.

Apart from within the railway sector, we expect a significant future growth in projects requiring vacuum sanitation systems for ships, offices and public buildings.



Roediger

A brand of
Aqseptence Group



Roediger® water & wastewater systems for rail depots and workshops

Clean, odourless & efficient

Roediger® solutions and technologies

- Potable / fresh water treatment and supply
- Sewage extraction using vacuum technology
- Preparation and supply of flushing water
- Service stations for indoor and outdoor areas
- Controlled emission toilets (CET)
- Cleaning service cabinets for interior cleaning of trains
- Treatment and recycling of washing water
- De-icing systems for bogeys

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Vacuum Technology Systems

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Who: Menlo79
Founded: August 2018
Founders: Christian Allner, Fabian Stöffler, Stefan Wagner
Location: Berlin
Employees: 5 (September 2019)
Next milestones: launch of Menlo79 Times in Sep 2019 and Menlo79 Wilson in spring 2020

Mission:

At Menlo79 we want to develop innovative digital solutions for a new employee and customer experience and for better productivity in rail freight and logistics. Thanks to our backgrounds we have a unique combination of extensive strategic and operational experience in the

sector, along with digital know-how. As a result, M79 is supporting transport companies holistically, from strategy development and user-centric product design to the complete implementation of new digital solutions. At M79 we're aiming for a modal split of 30 percent for rail freight to contribute to a better environmental balance.

Product focus:

M79 Wilson – the next generation of locomotive driving. WILSON allows train drivers to design their work schedules individually and live and work in line with their preferences. Companies are benefitting from considerably improved productivity thanks to AI-supported dispatching as well as easy and flexible access to qualified driving personnel.



TRAXX F140 MS locomotive for Switzerland © Bombardier

How will Menlo79 create a new experience for train drivers? Meet Heiner: for more than 20 years, Heiner has been a locomotive driver at heart. He loves being in control of the powerful engine pulling trains of up to 2,000 tons and more than 1,000 metres in length. It's an experience of power that few people will have in their professional career. He loves

steering the train past jammed highways replacing 20 to 30 trucks in a single trip. Following the international tracks, he is amazed every time again by the view of the colourful landscape. Heiner is a locomotive driver at heart and always has been since he was a kid. He has never forgotten the first day when he was finally old enough to get on the stand and ignite the engine on his first journey.

There are only a few industries that can really claim to have so many people passionate about their jobs as the railway sector. Locomotive drivers, dispatchers, engineers – all people who love their work. Long ago railroads were the dream of the 19th century, opening a completely new world and travel comfort. And in many ways they still create the same fascination for people today. However, this fascination is being put to a test more and more.

The Challenge:

In a competitive and complex world where the focus is shifting towards efficiency and economical gain, dreams are often not enough. With an increasing number of side constraints, the transport network becoming more and more complex, and limited rail infrastructure it is getting harder to dispatch and steer drivers efficiently. Looking at the numbers, the productive working time of locomotive drivers in Europe is probably at an all time low. Drivers are spending a huge amount of their working time waiting, transferring or preparing their work because of missing transparency regarding delays and real-time operations. At the same time the demographic shift is making it harder and harder to find



new drivers, which increases the need for other solutions. It is hard to stay fascinated and passionate when you are waiting and transferring instead of creating value for your customers.

The level of digitization is rising everywhere, creating comfort and changing industries. In our private lives, we are using mobile devices and new applications for more comfort and flexibility. The effect can be seen and touched in many industries that have either opened up to the new standards or that have been forced to do so by disruptive newcomers and changing customer expectations. Actually, it is harder today to find a taxi driver who is not using the comfortable payment of myTaxi than one who hasn't heard of the app; and every airline offers digital booking that can be accessed from anywhere.

In rail however, looking from the perspective of a locomotive driver, nothing much has changed. While most drivers have access to mobile devices, the operative processes and the communication with dispatchers have mostly remained the same for many years. Human dispatchers still don't have the desperately needed support of digital systems to handle the complexity. Fixed working shifts are still in place and actual flexibility is low. Some

documents have been provided in digital form, but in many ways, paper is still the most frequently used communication tool.

Looking at the situation, it is time to make the leap and create a new and better experience for locomotive and train drivers. It is time to bring passion and inspiration back for both employees and customers, while also using new technology to increase efficiency and productivity. It is time to lead the sector into the next generation, so it finds its place in the current industrial revolution. The railway is an industrial icon and human achievement. Now it must become digital.

Rethinking Rail:

At Menlo79 we want to develop solutions that not only serve a financial purpose but re-ignite the passion people had for rail long ago. Digital technologies are already available and need to be implemented and used to inspire employees and make them proud again of their employers. They must be used to inspire customers by creating a new experience from the booking process up to the cargo delivery and payment. We want to rethink rail freight.

Our solution M79 Wilson aims to totally change the way locomotive



Freight train in Portugal © Nelso Silva CC BY-SA 2.0

and train drivers understand their job and business while at the same time creating better productivity and reduced process costs for railway companies. Let us go back to Heiner and his daily work routine and let us imagine what his job would feel like if we were to rethink it.

- **Modern experience:** In the future Heiner will have access to a neatly designed mobile application on his mobile device. He will find all the information around his job structured and easily accessible; he feels connected to his work and his colleagues. Notifications remind him if delays occur. Starting or ending a job and shift will always be one click away and all his working time is automatically managed, respecting all constraints.

- **Individual preferences:** As if using a dating app where he is looking for a match, Heiner will be able to enter his preferences and conditions for driving to find shifts that match his personal expectations. If he wants to take more long-distance trips or likes driving internationally or with specific vehicles, he will be able to include this information in his profile. If he prefers driving in the evening or at night in March or spend the daytimes with his

family, he can also include this. The digital dispatching system will try as best it can to stay within his preferences when assigning shifts. A modern system can handle the complexity of every driver having different preferences and doing so will strongly support the human dispatcher who has to focus on some complex cases.

- **Digital dispatching assistants:** While passionate locomotive and train drivers can focus fully on their jobs, dispatchers will be supported by new assistants who process all the complex data. Since the system will have transparent access to multiple drivers, empty connection trips can be reduced to a minimum. On short notice train drivers can be notified of changes and can be dispatched to a different train close to their position. The complexity of constantly changing situations because of delays can be handled intelligently. The system will learn constantly which connections and shifts can be completed successfully, and which job combinations always fail. Over time the dispatching will become more and more stable and reliable, ultimately leading to higher production quality and stability of the train network, and to less stress for Heiner and his

colleagues along with greater satisfaction and a better transport product for customers.

- **Synergies across the industry.**

There are many examples on inefficiencies in the railway network. While the trucking industry has long adapted to drivers being independent of their cargo and customers, in the rail sector the majority still drives for just one company. By creating transparency of the overall demand in terms of trains and locomotive drivers, this efficiency increase will become possible.

Heiner will not only be driving for one company; in order to increase resource productivity he will drive trains for different companies. This aspect will create a sharing industry – safe and secure jobs in combination with high productivity. The application will provide full support with Heiner’s daily and weekly shift schedule and provide a detailed overview for his completed trips. This fully new approach to the job might also inspire new people to become a locomotive or train driver.

- **Learn and understand business.** The system will also ensure that each locomotive driver has the necessary qualifications and will suggest to him or her further qualifications based on market demand. If it is hard to find drivers who can drive from Munich to Berlin or the Siemens Vectron, then the system will recognise that and suggest to more drivers that they gain those qualifications. Qualifications will always be verified with partners and railway organisations to provide a high level of security and safety in rail.

- **Build a community.** Everything is more fun together. Heiner will be part of a community of passionate people sharing stories

and pictures of their days and trains increasing the passion and love of the job. Solutions such as M79 Wilson can be a win-win for both the drivers and the companies by rethinking the way we work. We just need the courage and install a new way of thinking to reach our targets.

Outlook and Further Challenges
Rail freight is facing many more challenges on the way to becoming the transportation mode of the 21st century. Challenges that must be solved with a new way of thinking.

Even in a time of Airbnb, Facebook and Amazon there is no rail booking platform on the market. Instead, railway undertakings seem to be trying to defend their territory against each other while the real opponent is advancing fast, creating easier access for customers and a new seamless experience. Rail freight has a huge chance to create such a platform if the sector acts fast.

Steering and dispatching processes are mostly manual at a

time where artificial intelligence is already able to steer traffic in major cities like Hong Kong or Beijing. Railways still mostly rely on manual decision-making in fully data-driven processes like dispatching.

While money transfer is fully digital and we enjoy easy and comfortable payments for online shopping, trains are still stopping at borders so that wagon orders and brakes can be checked, and customs fees can be calculated. Train drivers still need to speak local languages because most of the instructions are not available in translations while in their private life most people use Google Translate daily on many occasions.

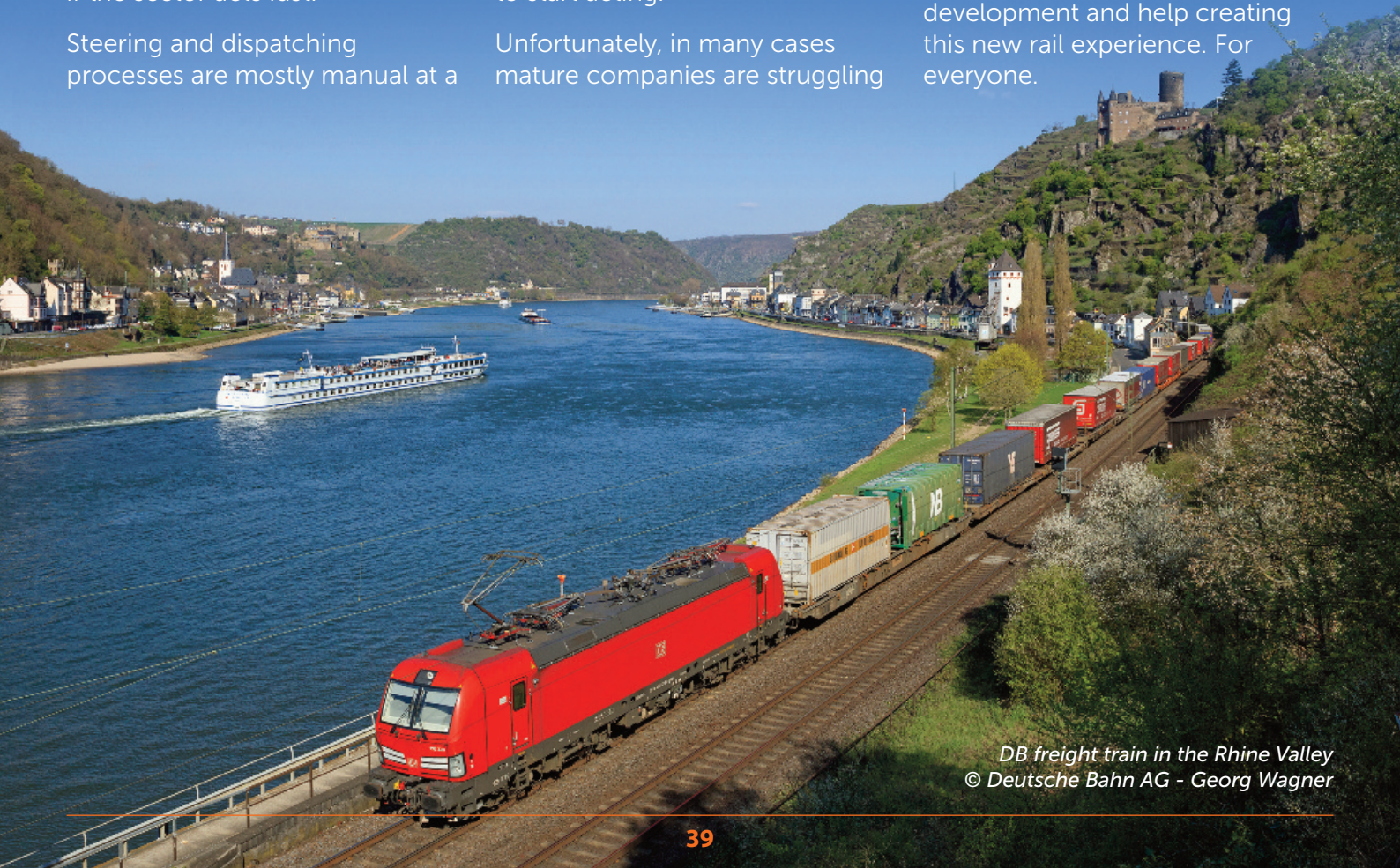
To be clear, the technologies are there to revolutionise the way railways are operating; to modernise them and to keep them attractive for a new generation of railway enthusiasts. But we need to understand this, and we need to start acting.

Unfortunately, in many cases mature companies are struggling

to come up with solutions that put the customer at the heart since they often must follow financial targets and are deep into daily operations. This is true not only for rail but for all industries and has been studied by many exceptional digital leaders.

To be able to create a new experience and rethink railways it will be key to include start-ups in the process and attract new digital talent to the sector. New approaches like design thinking and product development must be understood and introduced as the standard in the industry. Data must be shared, and an ecosystem of innovation has to be established across the sector. Start-ups need to have access to data via APIs in order to develop the solutions of the future and a new developer experience is necessary to get more experts and developers to work on the future of rail.

Menlo79 wants to support this development and help creating this new rail experience. For everyone.



DB freight train in the Rhine Valley
© Deutsche Bahn AG - Georg Wagner

GSM-R and the road towards FRMCS

Bearer-independent communications (BIC) is setting railways on the path for future mobile communications. Frequentis Head of Public Transport Solutions, Markus Myslivec, and Solution Architect, Alistair McGill, explain.



As the definition for a future IP-based telecoms system for railways (Future Railway Mobile Communications System (FRMCS)) starts to develop as the successor to the current GSM-R (Global System for Mobile Communications – Railways), a clear demand is emerging for an interim solution which allows railway network operators to take advantage of alternative bearers before 2030.

Frequentis is at the centre of this development with the evolution of its fixed terminal system for voice and data communication, FTS 3020. It is used by many of the world's major railways as a component of the operational communication system. Over the past few years Frequentis has evolved FTS 3020 to become a multi-bearer solution which allows its simplified rail communications application to operate with not only GSM-R but also TETRA and LTE (Long-Term Evolution) wireless communications networks, therefore providing bearer independence and unifying the experience for the operator at the same time.

Over recent years, the railways have realised that placing sole reliance on a single radio platform for their voice and data needs is not the best way forward. Essentially because it creates dependency on one single technology, one single platform, and can result in deeply integrated

yet inflexible services.

The Frequentis FTS Bearer Independent Communication (BIC) solution provides a roadmap architecture towards FRMCS and has already been deployed by the Finnish Transport Infrastructure Agency (FTIA).

The Finnish GSM-R network, RAILI, has been used for operational communications in rail transport in Finland since 2009. However, its operational cost and technical issues (mainly interferences), due to increased usage of 3G and 4G broadband radio technologies, saw the need for an alternative solution and subsequently the FTIA turned to Frequentis.

Frequentis created the Unified Railway Communication and Application (URCA) for FTIA, an end-to-end solution based on the FTS 3020, to fulfil its need for a cost-saving transitional solution to the future GSM-R replacement. It is the first deployment of BIC technology and enables the use of a combination of TETRA and commercial 3G Universal Mobile Telecommunications System (UMTS) to create a hybrid network covering the entire country. Since February 2019 the Finnish railways has been able to use the Finnish Public Safety digital TETRA radio network and public mobile networks for all railway-specific communication functions. This allows greater flexibility to follow the future evolution of such networks, as well as ensuring less dependency on one specific communication standard. This demonstrates a world-first evolution from GSM-R towards the world of FRMCS.

In June 2019 Frequentis' railway-specific BIC solution in Finland won an International Critical Communications Award (ICCA) in

the transport category, with judges praising the solution's interesting and innovative evolution from GSM-Rail to FRMCS. [related image provided] In addition, Frequentis is implementing mission-critical communications over a private LTE / 4G network, with a public network as fallback, for a major transport operator in the Asia Pacific region. This allows railway operators to replace legacy radio networks with a single, unified LTE solution which will provide a foundation for 5G in the future. The Frequentis network will deliver a high-availability, high-capacity, redundant communication solution, which includes the user working positions and key technology applications such as mission-critical push to talk (MCPTT). The system is being delivered in compliance with the latest release of 3GPP specifications, which are being adopted by

global rail operators as the new standard for FRMCS.

Moving to commercially available technologies such as 4G and 5G has many advantages for rail operators, including better performance and increased capacity. On top of this, the use of a commercial technology allows operators to leverage the benefits of a solution which is continuously enhanced and updated by the telecommunications industry, in line with latest-standard releases. This allows them to extend beyond the life-cycle of GSM-R. Frequentis anticipates that many rail operators will follow this roadmap beyond the traditional second-generation telecommunication systems that are in use today.

As with all industry sectors, financial motives are as much a driver as safety. But bearer independence is not only seen as a step towards future railway

communications, but also as a tool to integrate other bearer technologies into the rail communications portfolio. As a result of the work done with BIC to date, Frequentis is now seeing a clear demand for a fallback solution in the event of GSM-R outage and also as an infill solution where GSM-R does not cover the entire track footprint. In its first evolution, BIC complements GSM-R, allowing the use of additional network technologies until 2030. This has been achieved by evolving the solution to a service-oriented architecture (SOA) within FTS 3020, separating the rail communications application from the core bearer. Radio gateways have been implemented and enhanced to utilise multiple bearers including TETRA, commercial 3G and 4G services. As the definition of FRMCS is formalised, the platform will be further developed to support the new standard.



Florian Heiser (middle), Frequentis Regional Sales Manager, Singapore, receives the ICCA award from Robin Davis (right), TCAA Chairman, Transport Working Group



Head of Public Transport Solutions, Markus Myslivic, commented, "We are committed to developing our highly successful FTS 3020 solution towards the future FRMCS standard, but see a clear need for interim steps in its evolution. We believe that BIC provides an environment which caters for the needs of our customers today and gives them certainty in making an investment in the platform underpinned by a clear, well defined roadmap towards the world of 2030."

About Frequentis Public Transport

Frequentis Public Transport solutions leverage more than

seventy years of cross-industry experience focusing on safety-critical communications and applications. With its strong position in operations communication, as well as incident and crisis management, the company also holds the number one market share in GSM-R dispatcher terminal positions; more than 6,000 units are currently deployed in customer control centres in 25 countries.

Markus Myslivic is the Head of Public Transport Solutions at Frequentis head-quarters. He has a long history in railway communications, ranging from software development for GSM-R mobile terminals to technical leadership in fixed line operational

communication projects. He also represents Frequentis within ETSI TC RT and the UNITEL committee of UNIFE.

Alistair McGill is the Solution Architect for Frequentis Transport Solutions in the UK. He is an experienced telecommunications engineer having been responsible for the design and implementation of large-scale systems and applications in the UK, Asia and Australasia.

FREQUENTIS
FOR A SAFER WORLD

The WDF 2019 took place
from 5 to 7 June in Vienna.



WDF
2019
#wdfvienna

WDF 2019: **Identifying Trends –** **Shaping the Future**



100% availability, fully automated shunting, artificial intelligence in traffic management:

what sounds like dreams of the future has already entered the stage of the railway world – for example at WDF 2019, where these and other ideas were discussed in concrete terms. More than 260 visitors from 40 nations represented 101 companies and institutions from the railway industry at this year's WDF. Exciting inputs were given not only during the 21 lectures. Throughout the event operators, system integrators, technical

experts and decision-makers engaged with each other in an informal atmosphere. Together, they let their thoughts and ideas regarding "Intelligent tracking solutions" run wild.

Open Exchange Paves the Way into the Future

Christian Pucher, Programme and Content Director and initiator of

the WDF, is certain: "Initially, this event formed a platform for discussing solutions that work exclusively with axle counters and wheel detection systems. This focus is too short-sighted to meet current requirements. New technologies and approaches open up completely new possibilities. We have to discuss these together. Thereby, we can identify potentials and find out, what role proven solutions can play and what path the industry is

Under the motto "Intelligent tracking solutions", numerous experts from various fields gathered at the WDF in Vienna.



taking as a whole. The lectures we heard this year dealt with visionary concepts, current research results and innovative practical applications. This mix of topics provided for productive discussions and stimulated the visitors to an intensive exchange of opinions."

Fulminant Start

On Wednesday, 5 June, WDF 2019 started with three brilliant keynotes. TC Chew, Director and Global Rail Leader of Arup, looked into the future with his lecture "Future Rail 2050". Marco Gercke,

Director Cybercrime Research Institute, used practical examples to illustrate how artificial intelligence will change the rail industry – whereby he created exciting pictures in the minds of the audience even without any slides. Finally, Dirk Ahlborn, CEO Hyperloop Transportation Technologies, gave inspiring inputs for the implementation of ambitious future-oriented projects using the Hyperloop as an example. The first WDF day ended with a relaxed get-together in the lobby.

Inputs, Exchange, Networking

Thursday – day 2 – started with the scent of fresh coffee and tea – and the tangible anticipation of further exciting inputs in four streams.

Concrete application examples were discussed in the stream "Train localisation": From the possibilities of using GPS in tunnels, the architecture and performance of multi-sensor solutions, to the evaluation of a fully train-borne localisation algorithm.

The topic "Maximising efficiency – managing traffic" was discussed on the basis of new technological possibilities. With regard to train detection, approaches based on fibre-optic sensing were discussed intensively. In addition, the importance of specifically developed system landscapes for availability were thematised.

Using the Internet of Things in the railway industry, enabling fully automated shunting based on active communication between trains, infrastructure and



Dirk Ahlborn, CEO Hyperloop Transportation Technologies, presented concepts for sustainable projects.

Between and after the presentations, WDF 2019 offered numerous opportunities to informally discuss new ideas and experiences.



personnel as well as approaches to automated train recognition: The stream “Freight transport 4.0” made the progress of digitalisation in the railway industry tangible by means of concrete examples.

Under the title “Digitalisation, Trends and Innovations”, cybersecurity in the area of train control and signalling technology was discussed in Thursday’s last panel. The discussion on the use of geo-referenced infrastructure data concluded with an insight into practical aspects of current trends.

On top of these fascinating presentations, Thursday offered a special opportunity for further exchanges of ideas and experiences. Right after the last lecture, the visitors of the WDF made their way to the Orangery of Schönbrunn Palace. In a relaxed atmosphere, the second day of the event ended with a gala dinner and pleasant conversations.

practical aspects of sustainable technologies: two panels discussed innovative solutions for track vacancy detection and projects, in which Distributed Acoustic Sensing (DAS) is used for train tracking. Max Schubert, Head of System Architecture and IT Security, DB Netz AG, closed WDF 2019 with his presentation. He also emphasised the importance of an open exchange: “WDF is the event to meet experts and managers from the globe to discuss about fibre optic sensing

and axle counting – and of course every topic that is related to that, like safe train tracking, asset condition-monitoring or security on the track. The atmosphere here is tremendous – I mean, there are people from all over the world and they are willing to share their thoughts and their experiences. This is what creates new ideas in my head and in this whole area of the railway world – WDF creates and develops these ideas!”

From Theory to Practice

Friday was dedicated to the



More than 260 visitors attended 21 presentations and took the opportunity to enter into dialogues with the speakers.



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Her Majesty The Queen
Carpet Manufacturer
Axminster Carpets Ltd
Axminster Devon

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Drawing on esteemed experience across the transport sector, Axminster Carpets service the largest rail operators with the most precise requirements, now accounting for the majority of all woven train carpets.

Bespoke refurbishment projects include South Western Railway, ScotRail, Northern, Transpenine and the prestigious Belmond British Pullman - a glamorous vintage train which invites

each passenger to travel back to the golden age of rail travel: the roaring 20s.

An Axminster carpet combines high performance with aesthetic prowess and ecological responsibility. Their factory also boasts environmental credentials, minimising waste and making sure to save as much energy as possible. Axminster carpets are beautiful to live with, work with and travel with!

With exceptional quality and capability credentials, Axminster Carpets have

established themselves as a market leader, offering the very best in the industry since 1755.

Made in the UK, Since 1755

Established by Thomas Whitty in 1755, Axminster Carpets pride themselves in natural materials and their British heritage. Inventors of the world famous Axminster weave, they craft beautifully luxurious carpets, using only sustainably sourced, quality wool.

Axminster Carpets continue to design, craft and weave each carpet in the same Devonshire town they were founded in, over 250 years ago.

Wool Benefits for Rail

Whilst carrying huge environmental benefits, a wool carpet also houses qualities that make it perfect for rail.

Wool has acoustic absorption abilities, which help to reduce excess noise in carriages, making passengers' journeys quieter and more relaxing.

Not only are wool's pure fibres fully biodegradable, the material also holds hypoallergenic properties. This ensures air quality, creating a cleansed atmosphere, perfect for long journeys.

In addition, Axminster's quality craftsmanship provides long term appearance retention and performance. Vital in heavy traffic areas, this ensures that each carriage looks fresh and luxurious for as long as possible.

Bespoke Design

Axminster carpets carry an extensive range of both traditional and contemporary designs, but their bespoke creations allow for a beautifully personalised piece. Their in-house team will work alongside you to plan, design and craft your perfect bespoke carpet.

Case Study: South Western Rail

Axminster have supplied carpet to over 800 vehicles for South Western Rail Class 450, 444, 442, 158 and 159 fleet.

This marks Axminster's largest contract to date, a pivotal moment for the company - one for the archive!

The world-famous Devonshire factory overlooks the South Western line from Waterloo to Exeter which has always afforded Axminster employees a real affinity to the franchise.

Andy Sykes, Senior Designer at DGDESIGN says,

“

The team's agile and responsive attitude is crucial to supporting projects such as SWR where a range of samples and mock-ups are required for review, often at very short notice.

For this project in particular, attention to detail was critical, and we could rely on Axminster to faithfully interpret our design intent into production material.

”

Case Study: Northern

Axminster Carpets were delighted to supply all the carpet for Northern's Class 170 and 158 fleet update.

Crafted from a premium wool blend, the Axminster carpet offers exceptional

resilience suited to Northern's high-traffic areas. Aesthetically, the linear design works to accentuate the footway and the dual blue/yellow colouring compliments the general carriage colour scheme.

Jenny Dempsey, Fleet Refurbishment Project Manager at Northern says,

“

We selected Axminster Carpets due to their quality, durability and natural wool credentials as well as their ability to deliver the design required.

”

To see our rail case studies please visit axminster-carpets.co.uk/rail. For more information, please get in touch transportinteriors@axminster-carpets.co.uk or telephone us on 01297 32244

Images: ScotRail First Class (left), South Western Rail (below right), Northern (bottom).





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WOOL BENEFITS FOR RAIL

Wool's acoustic absorption abilities help to reduce noise in carriages
Quality craftsmanship ensures long term appearance retention and performance
Hypoallergenic properties ensure air quality
Wool is a natural fibre and therefore biodegradable

BESPOKE DESIGN

Our in-house design team craft your perfect bespoke carpet

MADE IN THE UK

All of our carpets are handcrafted in Devon

Contact | transportinteriors@axminster-carpets.co.uk

Website | www.axminster-carpets.co.uk/rail

Upcoming Railway Events & Exhibitions

September, October & November 2019

Rail NZ 2019 – Light vs Heavy Rail

11–13 Sep 2019

Rail NZ 2019 – Light vs Heavy Rail will bring together an international panel of governments, city and town planners, urban designers and architects, policy advisers and analysts and leading industry presenters to discuss and explore key issues impacting both the light and heavy rail industries within an urban setting, enabling people and communities to be connected. New Zealand will learn valuable lessons for its own rail expansion plans.

Event website: <http://bit.ly/2HvcXhY>

Location: International Department 215–225
Lambton Quay, Wellington, New Zealand

Fire Protection and Safety in Tunnels 2019

17–19 Sep 2019

The 12th annual Fire Protection and Safety in Tunnels 2019 conference: a key industry event to

showcase major innovations for designing, implementing and upgrading tunnel fire and safety projects. Marking the 11th year of running the prestigious event, we will be joined by a thought-leading speaking faculty in a major tunnel region. Over 20 presenters will join us from across Europe and beyond.

Event website: <http://bit.ly/2Ht4trq>

Location: H.C. Andersen Eventyrhuset,
Rådhuspladsen 57, 1550 København, Denmark

ASEAN Rail Summit 2019

18–19 Sep 2019

During the ASEAN Rail Summit, more than 300 experts and decision-makers from ASEAN countries and beyond, including rail industry members, government agencies, design units, operators and suppliers, will come together to discuss the development of the ASEAN rail transit industry, as well as opportunities and financial considerations, technological innovations, operation management and other topics.

Event website: <http://bit.ly/326Crdk>

Location: Kuala Lumpur, Malaysia

Railway Interchange 2019

22–25 Sep 2019

Railway Interchange is the largest combined railway exhibition and technical conference in North America. Attended by nearly 9,000 rail industry professionals from around the globe, this truly massive event showcases the latest technology, services, and research by members of the Railway Supply Institute (RSI), the Railway Engineering-Maintenance Suppliers Association (REMSA) and others!

Event website: <https://railwayinterchange.org>

Location: Minneapolis Convention Center, USA

TRAKO 2019

24–27 Sep 2019

TRAKO is the largest and most prestigious rail industry event in Poland and one of the largest in Central and Eastern Europe. It will be a presentation of state-of-the-art transport systems and railway infrastructure in Poland, Europe and around the world. The fair takes place every two years. TRAKO is the perfect opportunity to promote rail transport (trains and trams), freight forwarding and logistics and present the latest technologies.

Event website: www.trakofair.com

Location: AMBEREXPO, Gdańsk, Poland

6th Railway Forum

01–02 Oct 2019

Under the heading 'digital and automated: the future agenda of the mobility industry', the 6th Railway Forum in Berlin is a conference organised along four strategic objectives of the railway industry, in agreement with Deutsche Bahn. They are: digital transformation, international markets, new technologies, and automation.

The event also features plant tours to Bombardier Transportation, to Deutsche Bahn, to EBK Group, to Knorr-Bremse, to Spitzke SE and to the train factory in Berlin Schönweide.

On day 1 of the event there is a Women in Mobility luncheon. Agnes Bernot, Head of Digital Operations

at DB will open the event.

Event website:

<https://www.railwayforumberlin.com>

Location: Estrel Convention Center, Berlin, Germany

EXPO Ferroviaria

01–03 Oct 2019

Occurring for the 9th time, EXPO Ferroviaria offers the opportunity to professionals in the railway industry, both from Italy and internationally to present the best in technology and know-how and generate valuable business opportunities for the entire supply chain with particular reference to the Italian railway network, one of the largest and most dynamic in Europe.

Event website: <http://bit.ly/2LdYXdp>

Location: Rho, Italy

Elmia Nordic Rail

08–10 Oct 2019

Elmia Nordic Rail is aimed at companies, organisations and individuals with a professional interest in the railway sector. Over time the fair has become the self-evident arena for doing railway business in the Nordic region. At Elmia Nordic Rail you can network with people from the entire railway sector and explore the latest innovations. The fair is also a perfect meeting place to find new Swedish and international suppliers and partners for future projects.

Event website: <http://bit.ly/32evgQt>

Location: Jönköping, Sweden

Rolling Stock & Track Maintenance Middle East 2019

09–10 Oct 2019

Rolling Stock & Track Maintenance Middle East 2019 presents the opportunities and challenges for

new maintenance technologies in the Middle East rail sector. Feature topics include optimising asset management with advanced predictive maintenance solutions, data set analysis, the IoT and industry 4.0. We will address questions such as how to collect and maximise value from massive data sets from every aspect of your operations to reduce cost, minimise downtime, increase capacity and improve services.

Event website: <http://bit.ly/2ZxtNmu>

Location: The Gulf Hotel, Bahrain

Accelerate: Rail Infrastructure 2019

10 Oct 2019

Accelerate: Rail Infrastructure 2019 is the UK's leading conference that brings together senior decision-makers delivering major rail projects in the UK and beyond. The event offers unique access to leading figures connected to a whole host of rail infrastructure projects. From CP6 to BIM, ERTMS signalling to large-scale construction projects, we've got everything covered.

Event website: <http://bit.ly/2ZwjCyr>

Location: Le Meridien Piccadilly, London, UK

China International Rail Transit Expo 2019

18–20 Oct 2019

With over 200 exhibitors from 20 countries CIRTE is a hub for the rail industry, attracting a wide range of government officials and investors. The theme of this year's expo will be the "Belt and Road Initiative" and will explore China's influence on other economies as well as China's future opportunities and new cutting-edge technologies.

Event website: <http://bit.ly/2ZtbJK3>

Location: Changsha International Convention and Exhibition Centre, Hunan, China

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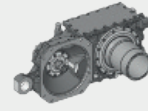
Services



Couplings



Gears



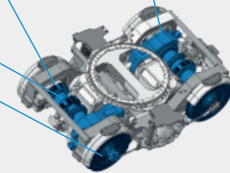
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INFRASTRUCTURE

The Progress Report

What: Ceneri Base Tunnel

Where: Switzerland

Scheduled opening: 4 September 2020

The Ceneri Base Tunnel in Switzerland forms the final component of the New Rail Link through the Alps (NRLA). It means there will be a flat railway line running through the Alps. It is named after the mountain through which it runs.

The other two base tunnels that are part of the NRLA are the 57km Gotthard Base Tunnel, which opened in 2016, and the 34.57km Lötschberg Base Tunnel, which opened in 2007.

Construction of the Ceneri Base Tunnel began in 2006. The construction company behind the project is AlpTransit Gotthard AG (ATG), which is wholly owned by Swiss Federal Railways (SBB). In 2018 the Ceneri Base Tunnel won the European Railway Award.

- **Its total length will be 15.4km**
- **It features 2 single-track tubes**
- **It is electrified at 15kV / 16.7Hz AC**
- **Starting point: Camorino**
- **End point: Vezia**
- **Maximum speed in the tunnel: 250km/h**

Current project status: on 31 May 2018 the project celebrated a

milestone as all 66km of tracks through the tunnel were laid. Then, AlpTransit Gotthard AG was busy installing the overhead lines and the electrical equipment for the power supply, the telecommunications systems, the control technology and the safety systems. By mid-2019 the installation of all railway technology was complete.

Starting in March 2020, test runs will begin through the tunnel. These will continue until August. Hundreds of test runs will take place around the clock and under realistic operating conditions to ensure everything is working correctly.



20190828 MM
Albulatunnel
Abdichtung 1 ©
Rhaetian Railway



What: Albula Tunnel
Where: Switzerland
Scheduled opening: end of 2021

There already exists one Albula Tunnel. It was found in 2006 that this tunnel was in a poor state of repair, not least because of the effect of the pressure of the mountain above it. A decision had to be made whether to perform extensive renovation works on this tunnel or whether to construct a new one. By 2010, the new option was favoured. The new tunnel will be located roughly 30m from the old one. Following the opening of the new Albula Tunnel, the old tunnel will be turned into a safety tunnel by the end of 2022.

One notable feature of the original

1903 Albula tunnel under the Albula Pass in the Swiss Alps is that it is a UNESCO World Heritage Site. Consequently, Rhaetian Railway has been working closely with the authorities to safeguard the site appropriately.

Following the beginning of the construction works in 2015, a key milestone occurred on 2 October 2018, the date of the tunnel breakthrough.

- **Its total length will be 5860m**
- **It runs around 1,000m under ground**
- **It is electrified at 11kV / 16 2/3Hz AC**
- **Starting point: Preda**
- **End point: Spinas**
- **Gauge: 1,000mm / single-track**

- **Maximum elevation: 1,820m – one of the highest railway tunnels in the Alps**

Current project status: on 31 August 2019 Rhaetian Railway held an open day in the tunnel to allow visitors to see the progress of the works. Over the next two years works will focus on the tunnel shell. During this 'cladding / interior works' phase, the tunnel shell will be completed in phases: tunnel floor, double-shell tunnel vault, verges, entrance and exit structures. If the works take place on schedule the tunnel will connect the Albula Valley and the Upper Engadine and open to trains in 2022.

What: Grand Paris Express, Line 15 South

Where: Paris, France

Scheduled opening: 2022

Current project status: Line 15 South is getting a new tunnel boring machine (TBM). In August, the starting bell, the front and intermediate shields and the cutting wheel along with the skirt and extraction screw were assembled at the bottom of the shaft located in what will become Créteil L'Échat station.

In September the tunnel boring machine will be moved into the starting bell, while the trailers will be lowered and assembled. In



October then the first tests and trials will take place. The TBM is expected to start operations in

mid-October. It will be at that time that it will be given its name during a traditional baptism.

What: Rail Baltica

Where: Latvia

Scheduled opening: 2026

RB Rail AS has announced a tender for the design and design supervision services of the Rail Baltica main line North and South sections in Latvia.

Tender lot 1 measures 94km and runs from Vangaži to the Latvian-Estonian border. This section will likely include 36 road viaducts, 13 bridges, 3 railway viaducts, 3 animal crossings, 119 culverts and regional stations.

Lot 2 measures 45km in length. It runs from Misa to the Latvian-Lithuanian border. This section should include 16 road viaducts, 4 bridges, 4 railway viaducts, 1 animal crossing, 54 culverts and regional stations.

The winning contractors will deliver the design and design supervision services for the construction of the railway track substructure, the superstructure,



and related civil structures for the new standard-gauge high-speed double-track electrified railway.

In August 2019 the Logistics Alliance Germany (a public-private partnership between the Federal Ministry of Transport and Digital Infrastructure and the German

logistics industry) visited Rail Baltica AS to learn about the status of the project and about the potential for co-operation.

The project is co-financed by the Connecting Europe Facility of the European Union.

What: Recoletos Tunnel

Where: Madrid, Spain

Scheduled completion:

November 2019

Spanish rail infrastructure manager Adif is investing more than 45 million euros in refurbishing the Recoletos Tunnel in Madrid. The original tunnel construction works began in 1933 but it wasn't until 1967 that it entered service.

These renovation works, which began in June this year, will affect the route, electrification and signalling to increase reliability on the line.

The tunnel is 7km long. It connects Atocha Station and Chamartín and accommodates around 470 trains – 200,000 passengers – every day. It is the busiest section on the Spanish railway network. In total, these upgrade works will affect five commuter lines. As a result, train operator Renfe has set up an alternative transport plan.

The main upgrade works are as follows: replacing track and sleepers, replacing the flexible catenary with a rigid catenary, modernising the signalling equipment.

So far, Adif has removed 35,000 cubic metres of ballast along with 15km of track.

40 percent of the pipes for signalling and telecommunications cables have been laid.

23,000 cubic metres of concrete will be poured. During peak operations 150 concrete mixers will enter the tunnel every day. Adif will install 24,500 new sleepers.

The project is co-financed by the Connecting Europe Facility of the European Union.



Recoletos Tunnel Spain © Adif

RAIL DEPOT & WORKSHOP EQUIPMENT


- RAILCAR LIFTING JACKS
- BOGIE/EQUIPMENT DROPS
- TRAVERSERS
- TURNTABLES
- BOGIE WORKSHOP MACHINES
- UNDER CAR EQUIPMENT HANDLING
- LASER MEASURING
- SANDBOX FILLING
- SHUNTERS
- EXHAUST EXTRACTION
- UNDER FLOOR WHEEL LATHES



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Sheffield S9 4EX

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+44 (0)114 257 0563 

Product Development Boosts Mechan Orders

Our industry's appetite for lifting jacks produced by Sheffield manufacturer Mechan shows no sign of abating.

A Booming Order Book

The rail maintenance equipment specialist has secured orders for more than 160 units so far this year, with another 100 in the pipeline. Most are being built for rail depots across the UK, although sets will also be shipped to France and New Zealand.

All Mechan's lifting and handling products are assembled at its South Yorkshire headquarters, using parts sourced from local suppliers, so the benefits of this significant boost to the firm's order book will be felt across the city region.

Mechan's Light-Capacity Range

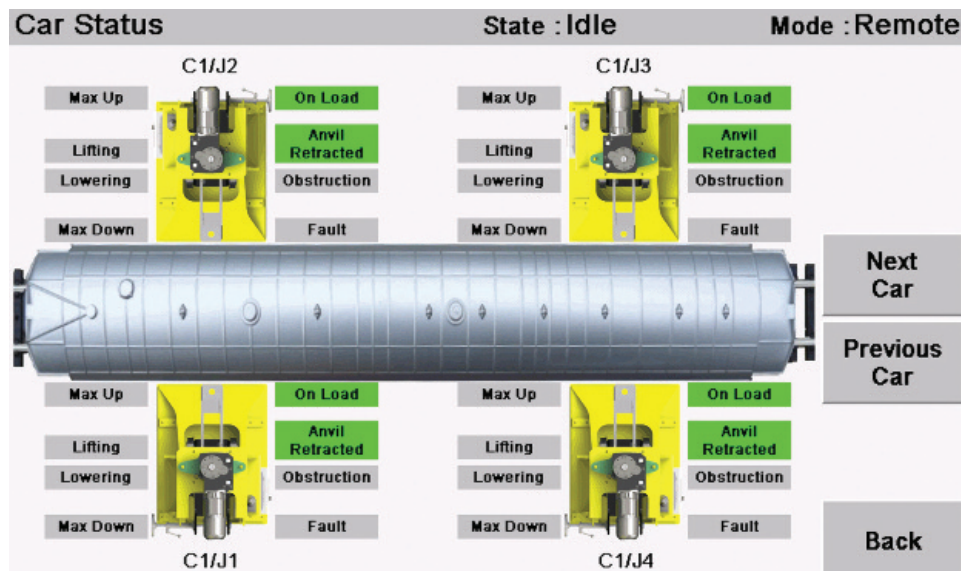
Aiding the jacks' popularity is a recently introduced light-capacity range, designed specifically for the tram and light rail markets. These customers require a different specification to their heavy rail counterparts, so the firm has developed a cost-effective smaller

product with a different base arrangement and built-in assembly, making them easier to move around a depot.

These lighter jacks retain all of the features that make Mechan so revered by depot operators. They still use the firm's much-lauded control system and can be synchronised into sets of almost any length, but have a lower lifting height to cater for the proximity of car and rail.

Mechan Megalink Controller

Mechan's Megalink controller is the most flexible and technically advanced in its field, minimising installation costs and producing power savings, when compared to similar products. The portable, HMI touch screen panel allows sets of jacks to be operated by just one user, who has the freedom to move around the depot to



Megalink Control panel screen shot



Bogie Turntable



monitor the lift more effectively. Constant feedback is provided, on operations as a whole or a particular unit, if required, making it easier to diagnose faults. Vital data is also available about maintenance and servicing.

Lindsey Mills, Mechan's Sales Manager, said: *"Our jacks are renowned for their quality, safety and reliability, making us the rail industry's preferred supplier. Thanks to continued investment in UK infrastructure, demand has surged and with various franchise developments and depot enhancements expected in the next couple of years, we can see plenty of opportunities to build on this success."*

Driving Progress: Mechan Turntables

It is not just Mechan's jacks, however, that are proving popular. The firm is also receiving orders for its new design turntables, which were launched officially in June, after 18 months' research and development into ways to overcome common problems with pit construction.

Turntables sit in a pit at track level and are used to transfer bogies between roads or turn wheelsets around. They connect with the track, so complete trains and other vehicles can roll over them at low speeds, keeping the area open for other maintenance when they are not in use.

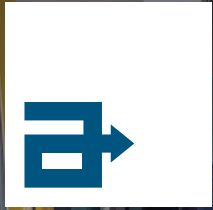
To save depot operators time and money, Mechan has now developed a turntable with integrated wheels affixed to the bottom of the structure. This allows the height of the table to be adjusted to counteract any discrepancies in the level of the pit.

David Blagg, Mechan's Service Engineer, said: *"As turntable pits need to be round, they are difficult for contractors to cast and don't always end up level. This made installing our previous equipment very time consuming, as it had wheels attached to a separate frame that was fitted after the table itself."*

"On the face of it, our new models look much the same as the old ones, but the changes we have made ensure they are not only quicker to install, but also easier to use. This means we can now offer manual versions with a higher capacity than before, again saving some users the expense of adding power."

Panama City Metro

The first depot to benefit from Mechan's new turntables is in Panama City, where four units were installed in January. The new-build facility is part of a major project to construct a second metro line, which is being undertaken by the firm's parent company, French integrated solutions supplier, the CIM Group. Another two 40-tonne turntables are currently in production, bound for a UK depot undergoing refurbishment and are expected to be commissioned in February. For further information about the developments Mechan has made to its lifting jacks and turntables, or to learn more about its wide range of depot maintenance products, telephone **+44 (0)114 257 0563**, visit **www.mechan.co.uk** or follow the firm on Twitter, **@mechanuk**.



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NEW – Altro Transflor Motus

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with high powered design options,
launcing at Trako 2019, stand A11,
GB Pavilion.

- High performance HL-2 compliance
- PUR coating for easy cleaning
- Extensive colour palette

How to Get the Best of All Worlds with Your Rail Flooring

With so many considerations to take into account when choosing a flooring product for your vehicles, it's easy to feel that you're having to compromise on something. With our new Altro Transflor Motus range, creating an interior for great passenger experience is easier than ever before.

When selecting a flooring product for your rail cars, it's often a balancing act of prioritisation to achieve the best possible passenger experience. Every product must be compliant for the application it's intended for, but beyond that, design, ease of maintenance, and safety all compete for precedence. Flooring options with a strong design for that homely feel often leave out safety considerations and can be difficult to keep clean and hygienic. Conversely, a floor that is easy to clean might fall down on safety credentials, or might need extra treatment to maintain a

good slip resistance. Here at Altro, we're introducing a new rubber flooring solution for rail to give you the freedom to have it all: Altro Transflor Motus.

First impressions count, and original and eye-catching design is the first route into good passenger experience – whether that take the form of a welcoming, homely interior, ease of wayfinding, or showing a strong sense of branding. Using different colours and patterns within a floor design is an easy way to achieve all of these objectives, but what is the best option to choose? Carpet

is the traditional choice for wider design options and that luxurious feel that reminds us of home, but keeping it clean and hygienic on busy services is a challenge. With Altro Transflor Motus, you can choose a design which is as complex or simple as you please. With a choice of twelve bright and contrasting standard colours and the option to make use of our logo and kit-cutting technology, the opportunities are endless. Cut a pattern, your company logo, or even some handy wayfinding aids, straight into the floor with no compromise on cleaning or hygiene.

As of Spring 2019, 15% of British rail passengers said that the cleanliness of the trains they travelled on had the biggest impact on their journey satisfaction. So when most dirt collects on the floor, choosing a floor that is easily maintained is a great way to make a good journey even better. And let's not forget the time, money, and downtime saved for an operator when keeping a floor looking its best. The ideal floor needs to have low dirt retention and be stain resistant to be pleasing to the eye, but our other senses come into the mix too – odour resistance is also important. Soft fibres where dirt, food, and other travel detritus can take hold can make maintenance difficult and time consuming and, if not kept on top of, can make for an unpleasant travel environment. Altro Transflor Motus is topped with a PUR coating, which helps to prevent dirt retention and protects your floors from staining.

Safety is the one consideration for a positive travel experience that passengers often won't think too hard about until it's too late. Any area where passengers will be on their feet, be that standing on busy services, or making their way to the toilet or buffet car, needs to offer a safe level of slip resistance. Some flooring options are not appropriate for use in all areas of a train car as the slip resistance simply isn't good enough. Others rely on regular surface treatments to protect against stains and maintain colour retention, which not only adds cost and extends downtime, but also means a variable surface. Altro Transflor Motus features an R10 slip resistance and, with no need for any extra surface treatments, involves no extra costs or wasted time with maintenance.



The floor of a rail carriage is the unsung hero of creating a pleasing travel experience: if it works well, it forms a seamless part of the positive whole. If it works badly, it could be the crux of why a design failed to get a positive reception. For a positive passenger experience, no matter the application, or objective for the carriage design, a floor needs to have an innovative and creative design, be easy to maintain, and provide good safety and compliance standards. With high performance compliance to EN 45545-HL2, Altro Transflor Motus is compliant for use in most rail applications. So, for an improved

finish and easy cleaning, a wide range of design options, good slip resistance and ease of maintenance, choose Altro Transflor Motus to help create a great passenger experience, without compromise.



The Belt & Road Initiative:

7 Considerations for CEE & Europe

The Poland & CEE: Co-Building the Belt & Road conference took place in Warsaw this week. Its primary focus was to look at the Chinese-led Belt & Road Initiative (formerly One Belt One Road) from a Central and Eastern European standpoint. How can the CEE region benefit? What are the obstacles? What are the concerns and opportunities? Over the course of two days, during which a variety of high-level speakers from both industry and the political sphere addressed the participants in presentations and panel discussions, the following issues stood out:

Political Considerations

With money comes influence. The Belt & Road Initiative (BRI) is a Chinese programme. The Chinese Ministry of Foreign Affairs set up the 17+1 (that is, 17 CEE countries and China) co-operation to further its aims. From the European perspective, Wolfgang Lehmacher voice the concern that there could be divided loyalties for the CEE nations. Any kind of fracturing of EU unity for example, would be highly undesirable.

Dr Lúcio Vinhas de Souza, Head of the Economics Team at the European Commission's in-house

think tank, the European Political Strategy Centre, added to this concern by saying that the EU was "losing the narrative". EU investment in the region far outweighed anything China was doing in this regard, yet the EU is not viewed with the same favourability.

The EU has long used trade and investment as its instrument of soft power – in insisting on environmental and labour standards for example. Consequently it is not unaware that China can and will wield the same.

Another major current issue of course are the US-China tensions. Should Europe step away from engaging with China so as not to anger its Western partner? Or is Europe in fact the best business partner for China as it is unencumbered by baggage?

Technical Considerations

One of the main technical aspects hampering the overland rail cargo route between China and the EU is the border crossing between Belarus and Poland (where the rail

network switches from Russian gauge to standard gauge).

The Małaszewicze-Brest crossing is a known bottleneck hampering the ability to process an increasing amount of freight.

Financial Considerations

It is currently the case that China subsidises rail freight running between it and the EU. However, these subsidies will not stay in place forever. They are likely set to be reduced gradually over time, bringing an increased cost to shippers and logistics companies. Regulatory Considerations for the CEE States

Coupled with the concern that the current border infrastructure is not up to the job, there are regulatory issues for Poland as well. Two points mentioned in this regard were VAT and customs rules. Chinese companies such as Alibaba have chosen locations such as Belgium and the Netherlands because of their simpler and more flexible implementations of the regulations.

Co-operation Versus Competition

A further key talking point focused on co-operation versus competition. Individual countries striving to profit from the China-led initiative could well end up competing with their neighbours. For example, Poland is a key gateway country for overland cargo entering the EU. However, a route via Ukraine and then Slovakia and Austria is potentially more direct. In fact, following Russia's suggestion in 2008, Breitspur Planungsgesellschaft is constructing a broad-gauge (1520mm) railway line through Slovakia and into Vienna (Austria) to eliminate the need for freight trains to switch bogies. This would also reduce the chance cargo could be damaged.

On the other hand, the Belt & Road Initiative is so huge and China is such a large country that it was pointed out there is no need to be concerned about competition – there is enough business to go around for everyone and one single border crossing could not possibly handle all the freight anyway. Another suggestion that was made was that different hubs in different CEE countries could specialise in different services, thereby developing a more collaborative approach.

Regarding rail in particular, only 2.1 percent of Europe-China trade was transported by rail in 2016. There is clearly much room to grow.

Geographical Knowledge

One of the elements Poland and the CEE region in general has to address is that from the Chinese perspective, Europe is very far away. It is viewed as a bloc and compared to the size of China is quite small. As a result, China is



more familiar with the well-established hubs such as Frankfurt and Amsterdam. Poland and the CEE region must therefore perform engagement work to explain the benefits of the CEE region, geographically and otherwise.

It makes sense of course, when we look at it in reverse. Can we name all 18 cities in China that have a population of more than 5 million? Do we know where they are? Beijing and Shanghai are about as far away from Europe as you can get. Chinese factories have been moving further inland from coastal regions, making rail more attractive. This also means European operators in the market need a keen understanding of the Chinese landscape.

Cultural Knowledge between China and Europe

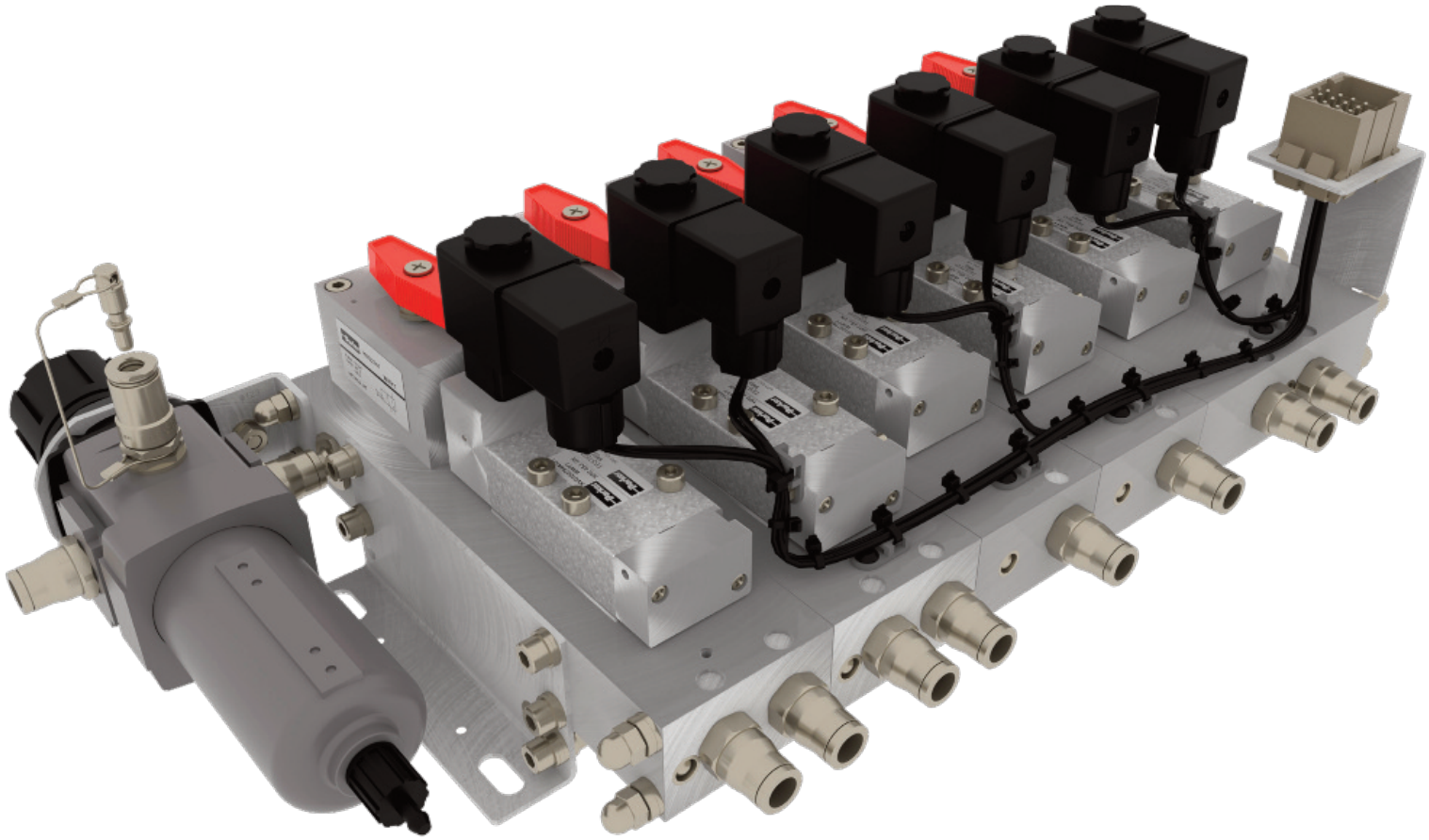
Another area where mutual knowledge is lagging behind is in the cultural sphere. What is the European understanding of China and Chinese businesses and vice versa? How are things done there compared to how they are done in Europe. One specific project that was mentioned in this context was the highway in Poland the Chinese company COVEC was to build, but failed.

It is in part this lack of cultural understanding that underpins Western suspicion around engaging with a Chinese-led project such as the BRI.

What Lies Ahead?

Following this first conference, organised by Frank Schuhholz, Founder & CEO of FMS Advisers B.V. and Richard Stephens, Founder & Editor of Poland Today, Mr Schuhholz told Railway-News that he was planning on making this an annual event in three parts: two round-table sessions in February and October and one conference in the run-up to summer.

This conference has established a baseline from which progress and developments can be tracked. With the Belt & Road Initiative taking place alongside Poland's economic miracle, a feat celebrated at the event's gala dinner with a speech given by Poland's former Deputy Prime Minister (1994–97) and Minister of Finance (2002–03) Professor Grzegorz W. Kołodko, Poland and the wider CEE region are well set to participate in and benefit from the Belt & Road Initiative. And an economically confident and strong CEE region will only strengthen the EU as a whole.



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Hybrid Technology – Design Reflects Innovation

In a world that is becoming increasingly electric, the rail industry is showing no signs of falling behind – and is instead transforming at an equally rapid pace, with the fast-growing hybrid train market perhaps the most notable development taking place.

Direction of Travel: Green and Digital

Environmentally-Friendly Power

Revolutionising the look and sound of our railways, hybrid trains are becoming an increasingly common sight at stations across the world; and with the number of units expected to leap from 5,429 in 2019 to 9,109 in 20301, we'll certainly be seeing many more in the near future. Indeed, illustrating just how readily the rail industry is evolving, this adoption of sustainable technology is also leading to other

pioneering developments – with operators and manufacturers across the world investing in the introduction of environmentally-friendly trains. From Porterbrook's project with Rolls-Royce to convert diesel trains into hybrid-electric versions using the manufacturing firm's innovative MTU Hybrid PowerPacks, to Bombardier's pioneering development into battery-operated vehicles, it seems there is no limit to the ways in which our railways could be powered in the coming years.

On-Board WiFi

In fact, this innovative approach to

technology isn't just limited to train engines, it is reflected across many areas of the rail industry – from the way we pay to what we do when onboard. Essentially, the way we travel is evolving. Whilst commuters may have previously been satisfied with a clean seat and a window to look out of, we now want to be able to use our travelling time as efficiently as possible; whether that's through catching up on our inbox or enjoying our favourite boxset, one glance across any busy train shows just how important staying connected is to many travellers. As a result, onboard WiFi, once a luxury, is increasingly perceived as essential by users, and operators

are investing to ensure their train line remains competitive, with a recent study by infrastructure consultancy BWCS predicting that the number of European train passengers accessing onboard WiFi will increase to 5.3 billion by 2028, the equivalent of approximately 43% of all rail passengers.

Contactless Payments

Indeed, indicating just how readily travellers will embrace change when it increases convenience, in just four weeks following its launch, over 170,000 journeys were made using the new contactless payment system on the Metrolink network in Manchester – and with Transport for London reporting that more than half of all journeys made across the city are now paid using contactless, it seems that this technology will rapidly replace the traditional paper-based ticket system.

Digital Trends in Interior Design

With each element of our transport experience becoming increasingly digital, it seems only natural that this is beginning to feed into the interior design of the carriage itself. James Newton, Transport Sales Director at Camira, explains “We’re moving into a new era of electric, connected transport and this has an impact on the materials we want to be surrounded by; the seats we want to sit on, the colours we want to see, and the fabrics we want to touch”.

Camira Hybrid Fabric

Ciara Crossan, Transport Design Manager at Camira, agrees: “When



travellers get on board a sleek, future-proof hybrid train they expect to see an interior that matches this modern approach, and that’s really influencing operators and manufacturers’ choices when it comes to the style of their trains and trams. It’s certainly influencing our design – our newest fabric, launching October 2019, is not only called Hybrid in a nod to the new technology powering trains, but because it is a futuristic blend; combining the contemporary aesthetics of a flat-woven fabric with the durability of a plush moquette. It really taps into the electric, modern look, without

compromising on the resilience and technical performance that is so integral to the rail industry.”

Having held its place in daily commutes, long-distance journeys and cross-country travels for over two hundred years, it seems that the rail industry’s willingness to embrace, innovate and pioneer change ensures that travellers will be able to enjoy the unique, timeless pleasure of racing through landscapes for years to come.

1“Hybrid Train Market by Propulsion, Operating Speed, Application, and Region – Global Forecast to 2030”, published by MarketsandMarkets™





Made for the future.

In an increasingly electric world, a railway interior should be as modern as the engine that powers it. Camira designs and makes fabrics to bring your train into the new era of travel.

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