

InnoTrans 2022 Report



B2B-Magazine for the Railway Industry

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FOCUS ON

InnoTrans 2022

A long-awaited event

Many things are taking place again: 42 exhibition halls and the Outdoor Display, more than 2,700 exhibitors from 55 countries, there is a lot to see from 20 September at the 13th InnoTrans.



possible for existing and new types of signals.

Spotlighted

The modular lighting system from PINTSCH creates the highest light intensity with as low an energy input as possible for existing and new types of signals.



of fully autonomous trains.

Intelligent trains

Autonomous position finding, remote control and obstacle detection – Thales is moving towards the operation



systems with a single software solution.

One for all

PaxLife Innovations simplifies the handling of passenger information

Finally, trains have the right of way again

The world's leading trade fair for transport technology opens its doors in Berlin.

After four years the time has finally come: the members of the transport sector will meet again at the 13th InnoTrans. Visitors can expect new products from more than 2,700 exhibitors from 55 countries in 42 exhibition halls and at the Outdoor Display, showing around 250 world premieres marked by a button at booths and in the hall plans. The World Innovation Guide and the [InnoTrans website](#) provide an overview of the innovations.

Opening with top-class guests

InnoTrans will kick off with the official opening ceremony on Tuesday, 20 September 2022, at 10.00 a.m. in +palais. Berlin. More than 1,000 top national and international representatives from business, science and politics have been invited. Martin Ecknig, CEO of Messe Berlin, will ceremonially open the world's leading trade fair for transport technology. Adina Vălean, European Commissioner for Transport, and Dr. Volker Wissing, German Federal Minister for Digital and Transport, will then address the international guests. More than 1,000 top national and international representatives from business, science and politics have been invited. The motto of the event is "The Future of Mobility in Times of Climate Change". Two discussion panels will address the topic. The transport companies will be represented by Dr. Richard Lutz, CEO of Deutsche Bahn AG, and Michal Krapinec, CEO of the Czech railway company České dráhy. On the industry side, moderator Conny Czymoch will chair a discussion with Michael Peter, CEO of Siemens Mobility GmbH,

Henri Poupart-Lafarge, President of Alstom Transport and Peter Spuhler, CEO of Stadler Rail Transport AG.

InnoTrans Convention: Rail Leaders' Summit and Dialogue Forum

The InnoTrans Convention will be chaired by Deutsche Bahn and begin on 20 September 2022, at 4.00 p.m. in +palais. Berlin with the international Rail Leaders' Summit for invited guests. Further to Dr. Richard Lutz, Chairman of Deutsche Bahn AG, Dr. Volker Wissing (BDMV), will speak with Adina Vălean (EU Commission), as well as probably US Secretary of Transportation Pete Buttigieg and ESA astronaut Dr. Alexander Gerst. In another panel, industry representatives from Japan, France and Australia will discuss with Dr. Daniela Gerd tom Markotten, Board Member for Digitalisation and Technology of Deutsche Bahn AG.

On the following days, Dialog Forums will be held under the auspices of the German Railway Industry Association (VDB), the German Transport Forum (DVF), the Union des Industries Ferroviaires Européennes (UNIFE) and the German

Electrical and Electronic Manufacturers' Association (ZVEI). Further information on the Dialog Forums and all other events can be found here in the report (pages 8-9) as well as on the new InnoTrans Plus portal. On this online market platform featuring all exhibitors, trade visitors can create profiles, chat and book appointments and also find an overview of all the events taking place during InnoTrans.

Events on mobility trends

At the first Mobility Science Slam at InnoTrans on Friday, 23 September 2022, everything will revolve around visions of the future of mobility. Five scientists will explain their research projects in entertaining ten-minute presentations and will then be evaluated by the audience. High-speed transport will be the topic on Friday, 23 September 2022, when players in the Hyperloop ecosystem will meet in the Conference Corner in Hall 15.2 for the first international conference on high-speed transport.

Rail transport is increasingly part of networked mobility. InnoTrans 2022 takes this trend into account with the new Mobility+

exhibition area. Exhibitors of complementary mobility services will meet transport companies, transport associations and administrations. The spectrum ranges from exhibitors from the fields of shared mobility and mobility apps to on-demand driving systems or flying objects such as drones. Driving brokerage solutions for the first and last mile will also be present. In the Mobility+ Corner in Hall 7.1c, exhibitors will introduce new forms of networked mobility in their presentations. Five other Speakers' Corner events with keynotes on products and industry news are already fully booked.

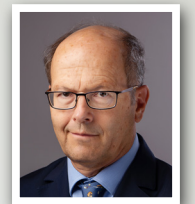
All-round care

Messe Berlin is supporting InnoTrans trade visitors with a wide range of services. A daily business breakfast, services in the Business Lounge as well as an Oktoberfest restaurant which can be booked in advance, will ensure a pleasant stay. The InnoTrans Campus offers an extended careers programme and an overview of job vacancies in Hall 4.2. A shuttle service from BER Airport and into the city, as well as complementary mobility services such as scooters, e-scooters and bicycles in the new signposted areas around the fairgrounds, will make it easier to get to and from the fair. Moreover, the tickets entitle the holder to use the public transport system free of charge.

The InnoTrans app helps you plan your visit to the trade fair and find your way around the exhibition grounds with maps of the grounds and halls. It also offers an overview of vehicles, products and events. The daily newsletter, the InnoTrans Daily, is sent to exhibitors, journalists and visitors as morning reading on their mobile phones or tablets. Registration for this is possible when purchasing [Tickets](#) and on the InnoTrans website.

COMMENT

Coming together for tomorrow's rail



Philippe Citroën
UNIFE
Director General
Photo: UNIFE

Innovation and progress do not occur in isolation, but through community and collaboration. For the European rail supply industry, InnoTrans is an exemplary opportunity to gather with experts from across our sector, governmental institutions, academia and beyond. Connections such as these are more urgent than ever as we exit the more dire phases of the COVID-19 pandemic and enter a new period that requires an economic rebound following almost three years of chronic intermittent disruptions across the international markets and European ambitions to achieve a just, green transition fit for the digital age. After two years of restrictive – yet necessary – public health measures, we are excited to convene once more in Berlin to highlight elements that will undergird our industry's continued global leadership and full commitment to the European Union's transformative ambitions for the

CONTINUED ON PAGE 2



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InnoTrans · Berlin · 20 – 23 September 2022
Meet us: Hall 25/Stand 485 · Outdoor Display O/175

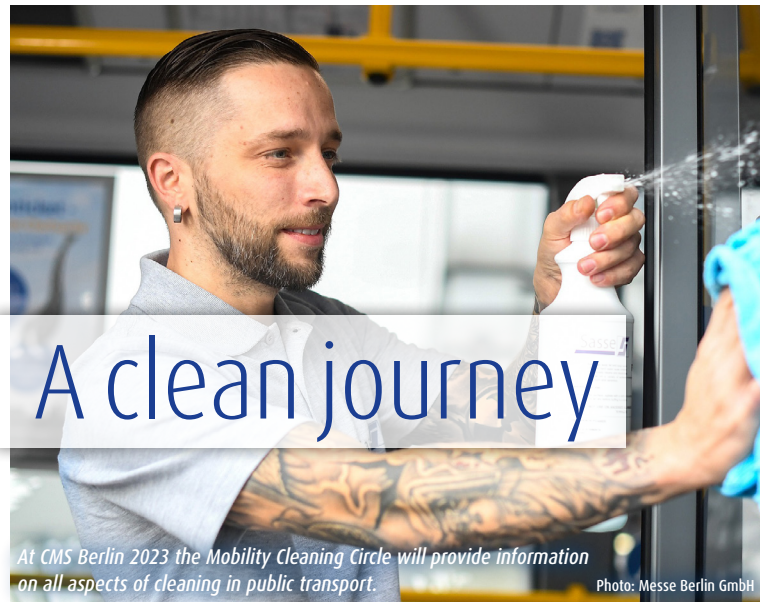
CONTINUED FROM PAGE 1

Coming together for tomorrow's rail

21st century. UNIFE will use this moment to explain the central role played by digitalisation – specifically, the **European Rail Traffic Management System (ERTMS)** and the **Future Railway Mobile Communication System (FRMCS)** – in developing next generation mobility solutions, the importance of rail investments for accelerating the deployment of those technologies and the necessity of a global level playing field as we attempt a swift post-pandemic recovery. With new funding instrument being instigated by Europe's national recovery schemes and the advent of a new **Multiannual Financial Framework**, there now exists an opportunity to make huge strides toward the actualisation of the **Single European Rail Area** if stakeholders proactively and knowledgeably pursue these possibilities. Additionally, we will demonstrate our commitment to maintaining a skilled workforce through the participation of our **STAFFER Blueprint for Skills at the Speakers' Corner**, continuing international cooperation by engaging with our counterparts from the US, Canada and beyond, as well as pursuing research

and innovation with presentations by EU consortiums that we are engaged in through the new **Europe's Rail Joint Undertaking**. Attendees will have the opportunity to learn how progress on key technologies such as hydrogen and battery-powered trains are opening new doors for European railways. This year's InnoTrans will also see the launch of the 9th edition of the World Rail Market Study, the rail sector's leading forecast of market developments that lie ahead – especially important as we witness greater uncertainty in global markets following recent developments. Europe – and the world – is at a tipping point. With the EU planning to be the first climate neutral continent in the face of mounting climate change and emerging technologies completely revolutionising modern life, rail is set to become the lynchpin in tomorrow's clean mobility network. Europe's rail is committed to helping design, manufacture and deploy the transport solutions that provide end users with increased accessibility, greater equity and improved quality of life. We look forward to meeting you in Berlin and discussing how rail can shape a better world.

UNIFE | Hall 27 | 660



At CMS Berlin 2023 the Mobility Cleaning Circle will provide information on all aspects of cleaning in public transport. Photo: Messe Berlin GmbH

With the Mobility Cleaning Circle, the international cleaning trade fair CMS Berlin and InnoTrans have created a unique dialogue platform between two sectors.

It is not only in times of pandemics that cleanliness and hygiene are essential for many passengers to feel comfortable when using public transport. Together with the international cleaning trade fair CMS Berlin, InnoTrans has created the Mobility Cleaning Circle.

The cleaning of means of transport is one of the highly specialised services offered by building cleaners. It requires a great deal of flexibility and is often accompanied by time pressure and unexpected changes in planned activities. At the same time, safety requirements are high. At CMS Berlin, the cleaning industry will come together in per-

son from 19 to 22 September 2023. This is where manufacturers and service providers will show the possibilities in terms of cleaning traffic assets today and in the future. Live shows will demonstrate professional cleaning work with a range of different machines and solutions in practical use inside and outside means of transport.

Prior to this, CMS Berlin will present itself at InnoTrans with its own exhibition stand in Hall 6.2/145 and will accompany the topic in a practical and innovation-driven way with the matching theme week on its digital platform **CMS PLUS**.

CMS Berlin | Hall 6.2 | 145

Kick-start for your career

At the Eurailpress Career Boost, applicants will be presenting their talents to potential employers.

Demographic change and a shortage of skilled workers have turned the job market into an applicant market. Companies compete for the brightest minds and most committed employees. Instead of letting companies present their job offers, Eurailpress and InnoTrans are turning the tables: for the first time they are presenting the Eurailpress Career Boost at InnoTrans. On the Talent Stage in the Recruiting-LAB, young talents from technical, operational and commercial professions, engineers and IT experts will present themselves to potential employers. They will have 90 seconds to demonstrate their CV and skills. After the pitch, the recruiters are allowed to ask the applicant three questions.

The Eurailpress Career Boost is embedded in the **InnoTrans Campus** in Hall 4.2. The new area is entirely dedicated to promoting young talents. Current job vacancies will be displayed on the Job Wall. In the Recruiting Lab, specialists and junior staff can talk to exhibitors.

InnoTrans Campus | Hall 4.2

IMPRINT

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Many novelties under the open sky

A lively impression of technical innovations is provided by the InnoTrans Outdoor Display and the Bus Display in the Summer Garden of the Exhibition Grounds.



Over 100 exhibits for passenger and freight transport await trade visitors at the Outdoor Display.

Photo: Messe Berlin GmbH

■ At the heart of every InnoTrans is the open-air exhibition area between the halls, where international manufacturers are presenting more than 100 exhibits for passenger and freight transport - from high-speed trains to hybrid locomotives, from road-rail vehicles to trams. Manufacturers will hand over trains to their customers on the tracks and visitors will have the opportunity to enjoy a live experience of the innovations on display.

This year there will also be some world firsts. For example, Siemens Mobility will present the next generation of hydrogen trains with the Mireo Plus H, as well as the Mireo Plus B, which is equipped with a modular, high-performance battery system. Stadler is coming up with seven vehicles this year. For the first time, the company will publicly present the hydrogen-powered FLIRT H2 multiple unit train for American passenger transport. The FLIRT H2 is intended for operation in passenger transport for the Redlands Passenger Rail Project in California. Stadler will also display TINA, the latest tram generation. This tram features a fully integrated drive system, which for the first time enables a completely new interior concept that eliminates cross-steps and elevated areas above the drives. In addition to its hall stand, the Slovakian freight car manufacturer Tatravagónka is presenting six vehicles at the Outdoor Display. Alstom, Vossloh, Plasser und Theurer, Robel, Daimler Truck, Thales, Hitachi and many other exhibitors will also be at the show.

For the first time, the Südostbayernbahn (SOB) will present an idea train that it has developed. This "future

lab on rails" is characterised by ten different modules, seven specifically developed seating systems, a newly designed entrance area as well as office cabins and a new on-board information system that also displays the available seats. In July, SOB was awarded the Innovation Prize of the Bundesverband SchienenNahverkehr (Federal Association of Local Rail Transport, BSN) for this project. From December, the converted double-decker car will be in service between Mühldorf and Munich.

In the Summer Garden, the Bus Display will show buses in action. On a 500-metre test track - called Demonstration Course - trade visitors will experience numerous vehicles with alternative drives in live operation. The related charging infrastructure will also be on display. Twelve buses are currently registered. For the first time at a trade fair, the Polish manufacturer Solaris will present the Solaris Urbino 18 hydrogen, an 18-metre bus with hydrogen as its main energy source. As with the Urbino 12, its shorter version, ultra-modern fuel cells serve as a miniature on-board hydrogen power plant. Ebusco from the Netherlands will show the electric city bus 3.0. Other exhibitors at the Bus Display include Karsan Automotive, Otokar Europe, SBRS, VDL Bus & Coach, Kiepe Electric and Ferrovie dello Stato Italiane.

The new technologies and their use in public transport will be accompanied by lectures and debates. On Thursday, 22 September 2022, the International Bus Forum will be held at 2:00 pm at hub27 under the motto "Mobility as a service for citizens - sustainable, smart and everywhere available".

A compact overview



Guided tours present selected world firsts.

Photo: Messe Berlin GmbH

The World Innovation Tours give trade visitors and journalists the opportunity to find out about the latest innovations.

■ Around 250 world premieres will be on display at InnoTrans 2022. Visitors who want to get an overview right on the spot can join organised tours of the trade fair. The 90-minute World

Innovation Tours offered daily will take trade visitors to selected exhibition stands where high-ranking company representatives will be waiting for participants. At ten InnoTrans stands they

can find out all about selected world premieres and may ask questions. Trade visitors and journalists speaking foreign languages will receive a headset for a simultaneous translation into English. A handout will contain the most important information about the world premieres visited. The World Innovation Tours are offered on various topics. Among other things, participants can learn about several aspects of railway technology, such as traction and bogie technology or energy and electrical engineering. But there will also be guided tours on interior design and public transport, infrastructure and tunnelling, as well as at the Outdoor Display and the Bus Display.

Registration is possible by e-mail and during the fair daily from 9.00 a.m. at the counter in the Business Lounge in the Marshall-Haus building. More info and online registration at innotrans.de.

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InnoTrans, 20. – 23. September 2022
Hall 27, Stand 550

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VOLTAP – fits!



The VOLTAP rapid charging station consists of the transformer station (foreground) and an overhead line system (OLA) with charging masts and a charging rail. Photo: swt/Marquardt

Charging tests under real conditions on the track have shown that the VOLTAP fast charging station performs well in interaction with battery trains.

■ Last October, the project partners Stadtwerke Tübingen GmbH (swt) in Germany and Furrer+Frei AG were able to test the prototype of their VOLTAP rapid charging station for battery trains (Battery Electric Mobility Unit, BEMU) for the first time at the railway station in Ammerbuch-Pfäffingen (Baden-Württemberg). The series of tests was carried out with the three-part "FLIRT battery" train which Stadler Rail made available to them.

Compatible with the requirements of EN 50160

All tests ran optimally and flawlessly. In the months following the test week, the specialists from Furrer+Frei and swt made a detailed evaluation of the data obtained during the test series. New findings emerged that underpin the fact that the VOLTAP fast charging station is fully compatible with the specifications of EN 50160 (European standard "Voltage

characteristics of electricity supplied by public electricity networks"). This is crucial to prove that these consumers will not negatively affect the voltage quality of their power network for the grid operators who are responsible for ensuring it. The developers of the fast-charging station were able to prove that the interaction between the fast-charging station and the battery train works when the on-board electronics of the latter are set up for this purpose. An inspection certificate from TÜV Süd RAIL for the VOLTAP system also proves this. VOLTAP stations can therefore be installed at all locations that have a sufficiently powerful power supply network – which is to be expected at most potential locations in the medium-voltage network (or its branches).

Promoting CO₂-neutral BEMUs

VOLTAP is based on the idea of closing not yet electrified gaps in the

nationwide German rail network, for example in rural regions or on branch lines, as well as promoting the introduction of BEMUs as a CO₂-neutral alternative to fossil-fuelled trains across the country. An alternative to fast charging is charging when trains are stabled. Here, the trains are charged on non-electrified sections during their idle times for the next day. VOLTAP's new technical approach allows the system to be fed with 50 Hertz from the local power supply – and thus allows direct charging without power electronics and the use of expensive converters for the feed-in. This enables a long service life at significantly reduced costs. On 21 April 2022, VOLTAP won the bronze "Nachhaltigkeitspreis" (Sustainability Award, a readers' prize) of the newspaper "Zeitung für Kommunalwirtschaft" (ZfK).

Furrer+Frei AG
Hall 26 | 250

NEWS

■ New alliance founded

At the end of May, 15 European rail infrastructure technology providers founded the open innovation platform Digital Railway Solutions Alliance (DRS). This aims at increasing the safety, efficiency and capacity of global rail networks. Through this platform, they aim to combine and further develop their know-how and products so that they will be able to provide railway infrastructure managers and railway enterprises with new cost-efficient overall solutions – as a first step they will be offered to European railway infrastructure managers, and from

2023 to worldwide operators. The DRS Alliance founding members want to begin by focusing on five core priorities:

- A comprehensive portfolio of the latest, seamlessly integrated sensor technology solutions for all infrastructure sectors (Integrated Sensor Technology Solutions).
- A 3D+ interface for the monitoring and proactive maintenance of rail infrastructure using a 'digital twin', based on the combined expertise and sensor solutions of the DRS Alliance partners (3D+ Infrastructure Data Solutions)

- Effective integration of newly generated digital data with historical values from paper and other archives (End-2-End Asset Data Management)
- Modular solutions for optimising track and turnout management (AI-Based Predictive Infrastructure Management)
- Automated track maintenance that communicates with train control systems to efficiently perform maintenance tasks while maximising the safety of track crews (Automated Services for Trackside Safety).

Digital Railway Solutions Alliance
Hall 26 | 150

MagRail gains momentum



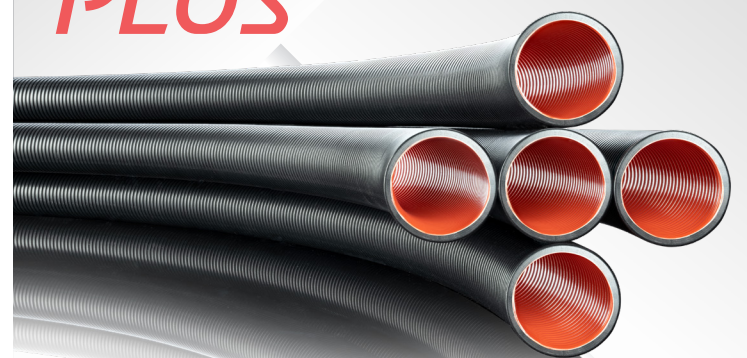
MagRail will also operate in non-electrified areas such as terminals and ports. Photo: NEVOMO

■ In March 2022, the Polish start-up NEVOMO completed the first construction phase of the experimental track in Nowa Sarzyna for testing the MagRail magnetic levitation train. The vehicle and infrastructure operation, the power grid operation and the cooperation between vehicle and infrastructure will be tested up to a speed of 160 kilometres per hour. This was followed by the installation of the equipment required for magnetic levitation – a linear motor between the rails, a levitation-stabilising track in the outer rail area and a power supply system – together with the construction of the prototype. Since the beginning of May,

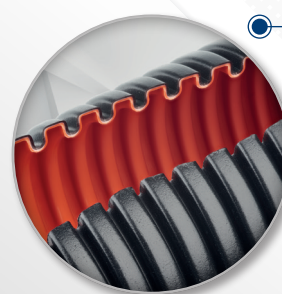
NEVOMO and the German inland port of Duisport have been cooperating and examining the implementation of MagRail in port operations. In June, NEVOMO received the assurance of 2.5 million EURO of immediate grant funding from the European Innovation Council (EIC) Accelerator Programme and a further 7.5 to 15 million EURO of EIC capital funding, callable from 2024. MagRail is a hybrid solution that allows both magnetic vehicles and conventional trains to run on the same tracks without having to convert them. It is intended for the gradual introduction of the Hyperloop.

NEVOMO | Hall 4.2 | 340

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Quality pipes from Austria

PP-MEGA pipe and PP-GLATT pipe

Photo: Bauernfeind GmbH

With the PP-MEGA system, Bauernfeind GmbH has developed an optimally coordinated range of pipes, drainage systems, fittings and manholes. The Austrian pipe manufacturer not only provides high quality products but its many years of experience with base material, manufacturing and installation enable the company to provide competent consulting services as well.

■ PP-MEGA pipes and PP-MEGA drains are versatile. In road, railway and tunnel building, but also in industrial and commercial construction, they are used in rainwater and combined sewer systems, as well as for various purposes in house building and as collector pipes.

The production of SN12 and SN16 pipes with reinforced inner walls increases their load capacity extremely. The small pipe diameters with an inner wall thickness of three or four millimetres are much thicker than prescribed

by the standard so that they are more resistant to heavy loads caused by rubble, gravel and sand. PP-MEGA pipes with a reinforced inner wall can be easily cleaned by means of centrifugal chain washing at up to 120 bar or high-pressure cleaning at up to 150 bar.

The PP-MEGA pipe achieves its high static load-bearing capacity through the innovative corrugation of the outer wall. The SN12 and SN16 PP-MEGA pipes are thus more robust against damage during installation and achieve greater stability even with

less covering. The thick wear layer not only makes the pipes resistant to external loads but also ensures the essential advantage of a long service life.

Polypropylene improves impact resistance

Bauernfeind also produces a high-quality solid-wall pipe, the PP-GLATT pipe. This is made of pure polypropylene without cheap fillers. In contrast to pipes with added minerals, this ensures higher impact resistance, good dynamic load bearing capacity and lower vulnerability to notches and cracks. The high impact resistance is also given at low temperatures and the pipes withstand the constantly changing stresses and discharges of the soil better. The PP-GLATT pipe system, which is operationally and functionally reliable in the long term, is used primarily in areas of application where particularly high stresses occur. Bauernfeind offers a wide range of custom-made products for all requirements.

Proposals for individual solutions are worked out for private customers right up to large-scale projects for tunnel construction. Together with the customers, an ideal solution is found even for complicated installations. If products are required that do not yet exist on the market in the required form, they can be developed together with the customer from the concept and design of a suitable product right through to the finished part. Various special project-specific injection-moulded manholes, outlet channels and special elongated bends have already been produced.

Bauernfeind GmbH
Hall 5.2 | 642



FALCON® fire extinguishing unit installed for engine protection

Photo: SAE S.r.l.

Simple, effective and fast protection

The FALCON® fire extinguishing system to protect tamping, stabilising, profiling and other machines for railway track laying and maintenance has been developed by the Italian manufacturer of extinguishing systems and fire extinguishers SAE S.r.l., based in Robassomero, Turin.

■ The purely mechanical FALCON® fire extinguishing system requires no external energy source and features an extremely high level of reliability. While it is automatic, a mechanical command can also activate it. The operation is simple but it is nevertheless very effective. In the event of a fire, the flame burns the pressurised FALCON® fire tube that is connected to the cylinders and causes it to break. The pressure loss in the fire detection tube triggers the opening of the valve of the propellant gas unit, which forces the CO₂ gas into the extinguish-

ing units. The extinguishing agent contained in the cylinders consists of water with foam and antifreeze and is completely biodegradable. It is directed through stainless steel pipes and flexible nozzles directly onto the flame, extinguishing the fire very quickly. For specific customer needs other solutions from SAE are also available or under development that work with high pressure (CO₂).

Configured for every machine cockpit

The FALCON® system ensures fast response times and round-the-clock operation 365 days a year. It is quickly reactivated after use. It is equipped with pressure switches and signal transmitters that indicate the active / not active and unloading / blocking status of the fuel pump. The signals can be connected directly to the machine's instruments or to a special central control panel and displayed in each machine cockpit. Thanks to the technical solutions on which it is based, trained technicians can easily manage the maintenance of FALCON® systems, which are simple and inexpensive to be serviced.

For hybrid engines, especially to protect electric motors and lithium batteries, the Italian fire extinguishing experts have developed a special configuration of the FALCON® system. Here the extinguishing agent used is a gas that leaves no residue inside the system.

The FALCON® fire extinguishing system is certified according to the European uniform CE/PED (2014/68/EU) standard for pressure equipment as well as the European EN 61373 standard.

SAE S.r.l. Hall 5.2 | 840

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Modular lighting concept opens up new horizons



Maximum light intensity with low energy consumption for different types of signals

Photo: PINTSCH GmbH

The new modular lighting system from PINTSCH GmbH is designed to 'brighten up' different types of signals for its European and worldwide customers. The system is not only suitable for new equipment, but serves equally well as a retrofit for existing lighting systems in main and distant signals or those used in marshalling yards.

Based in Dinslaken, Germany, PINTSCH GmbH offers a new light module which essentially consists of three main elements. The mechanical system is designed to be lightweight, easy to install, and suitable for use for different light emission diameters while making best use of the available installation space. The optical system is designed for maximum light intensity with the lowest possible energy requirement. At the same

time, the system meets the requirements for a special light distribution and features excellent phantom light behaviour. As a light source, highly developed light-emitting diodes of the latest technology are used. Strong luminosity and homogeneous illumination are the main features of this LED technology. The light is directed in the required direction thanks to a hybrid technology of refraction and reflection.

Digital and Eulynx ready

The third component, the control electronics, not only provides an optimal current supply to the LEDs to maximise their service life, but also ensures redundancy and safety against failure by means of an appropriate circuitry. It is also characterised by a state-of-the-art DIN-rail mounting. On the input side, the control electronics can be connected in an

analogue way to current interlockings or digitally via a fieldbus interface to what are known as object controllers. This also provides a standardised interface in accordance with the European EuLynx initiative.

Multi-colour light point

A special feature is the multi-colour concept of the new light module. A single light point can display up to four colours (red, green, yellow, white). Of course, the entire system also fulfils – among others – the specific performance requirements of Deutsche Bahn. The entire system has been developed in accordance with the European CENELEC standard and is currently undergoing certification in various safety levels up to SIL4.

180 years of Pintsch lighting systems

Lighting technology expertise has been a permanent feature of PINTSCH since the company was founded in 1843 – even before the invention of the electric light. Founded in Berlin as a company for gas piping and lighting, Pintsch as it was back then introduced gas lighting in trains in 1870. In 1919, more than 350,000 railway carriages were equipped with Pintsch lighting. 180 years after the company was founded by Julius Pintsch, a new, modern LED lighting system is now in the starting blocks with the modular light point providing the basis for a wide variety of railway signalling systems.

PINTSCH GmbH Hall 27 | 710

NEWS

Flex e.bot: a collaborative robot



Demonstration on the rails of a customer
Photo: Welding Alloys

Flex e.bot is the world's first cobot (collaborative robot) for rail and switch maintenance welding. The cobot relieves the welder of his hard work and at the same time protects him from welding fumes and excessive physical strain. This makes the Flex e.bot the perfect solution for build-up welding on rails, switch frogs or wing rails and so on. The aim is to take build-up welding to a new level with humans at the centre. The Flex e.bot is flexible, extremely light and easy to install. Programming is easy and intuitive for the operator or welder. The welding torch guidance simulates the manual skills of an experienced welder. The Flex e.bot is compact and flexibly adaptable to any application.



Welding Alloys France
Hall 25 | 400

Flex e.bot on a flat trolley
Photo: Welding Alloys

Ad

CREATING CONNECTED DIMENSIONS

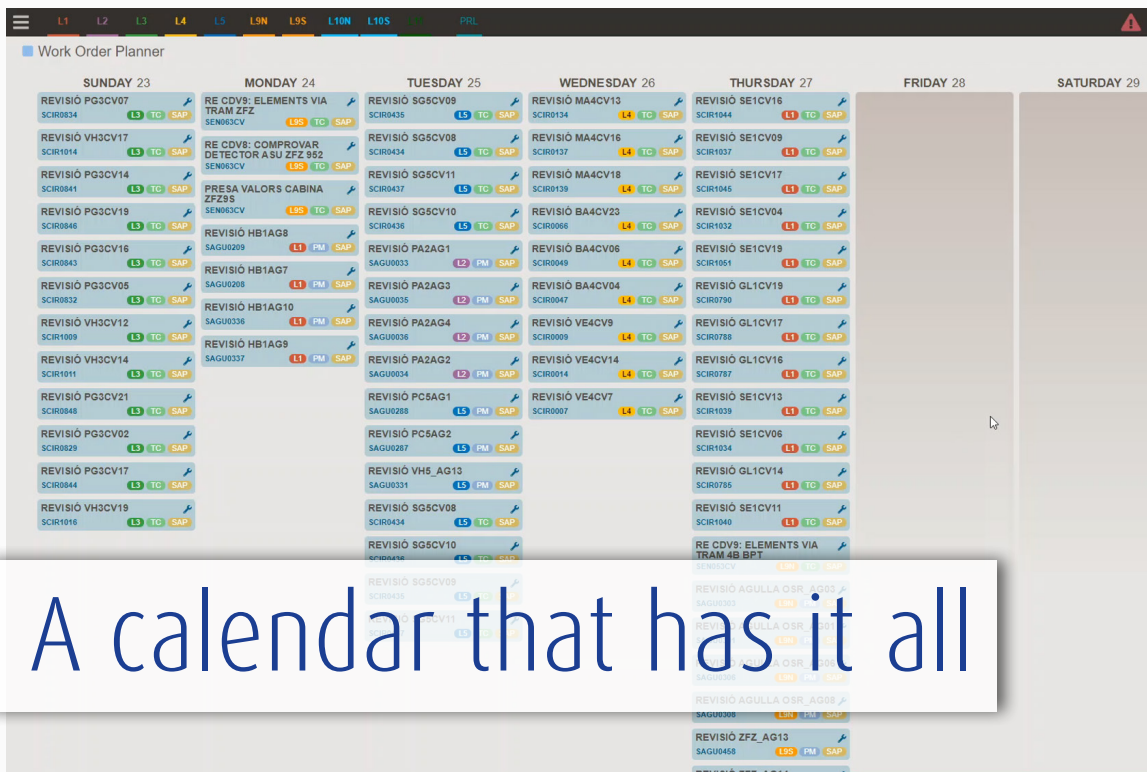
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DAVANA work order planner

Photo: smart motors

The work order planner from smart motors® automatically creates maintenance plans adapted to the daily work of maintenance teams and generates reports, graphs and tables.

The DAVANA® work order planner generates maintenance plans based on available resources and optimises them by focusing on assets with real needs. In the form of a calendar with a range of filtering and navigation options, this work order planner complies with the most stringent procedures. Thanks to the smart motors® monitoring module, the tool can handle different types of orders: condition-based as well as

corrective ones. Both are automatically created and added to minimise the impact on the service. There are additional functionalities: immediately after a maintenance operation, the work order planner indicates the condition by generating reports that include graphs and tables, which are very handy for auditing purposes. It is also possible to define threshold levels so that such measuring points are dis-

played in a warning or alarm function. Reports can be downloaded as PDFs and stored in DAVANA's database for future reference.

The trademark Smart motors® of Thinking Forward XXI SL focuses on tools and services for predictive maintenance of critical points in the process and service chain of rail networks.

smart motors | Hall 24 | 220

NEWS

Faster and safer switching of catenaries



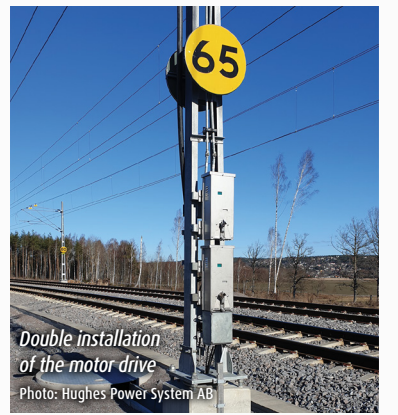
Installation of an open-air switchgear system from Hughes

Photo: Hughes Power System AB

The EOA600 motor drive from Hughes Power System (Sweden) is designed for remote operation of open-air switchgear in railway and tramway overhead contact line systems. The EOA600 incorporates a fully independent bistable remote interlocking safety device that mechanically interlocks an operating rod of the overhead switching gear and safely disconnects all electrical drive functions. With this feature, rail maintenance personnel no longer need to manually padlock the remotely controlled overhead switching devices prior to catenary work. To save time, everything is done remotely from the SCADA control centre by two completely independent remote-controlled systems. This functionality gives higher safety for rail maintenance staff, saves time in operation and minimises downtime as

well as the number of people working on the overhead line. The product is being implemented together with Hughes load circuit breakers by the Swedish railway administration Trafikverket in their 15 kV-16.7 Hz catenary networks.

Hughes Power System AB | Hall 26 | 505



Double installation of the motor drive
Photo: Hughes Power System AB

Ad

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InnoTrans Convention 2022 – discussing topical issues

Over the years the InnoTrans Convention has become firmly established as an international meeting place for top decision-makers from the business, political and transport communities. Featuring high-profile panel discussions and expert talks on current and future-focused mobility topics, the InnoTrans Convention is the ideal platform for the exchange of views on an equal footing. This is where tomorrow's transport issues can be discussed at an international level.



DIALOG FORUM · Venue: +palais.Berlin, North entrance · Conference languages: German/English

The Dialog Forum is the Convention's main thematic focus. It is organised by the German Transport Forum (DVF), the Association of the European Rail Industry (UNIFE), the German Railway Industry Association (VDB) and the German Electrical and Electronic Manufacturers' Association (ZVEI).

- 21 September 2022, 10.00 a.m. – 12.00 noon: **Rethink Mobility: Innovation paths to a new era of intelligent climate solutions**
2.00 p.m. – 4.00 p.m.: **Automated in the future - rail traffic in Germany on a higher level**
- 22 September 2022, 10.00 a.m. – 12.00 noon: **ERTMS - A building block on the journey towards a digital and autonomous rail**
2.00 p.m. – 4.00 p.m.: **5G in Mobility**
- 23 September 2022, 10.00 a.m. – 12.00 noon: **Redefine Mobility: VDB Future Lab**

RAIL LEADERS' SUMMIT · Venue: +palais.Berlin, North entrance · Conference languages: German/English

Dialogue at the highest level. The Rail Leaders' Summit (RLS) gives transport ministers and the chief executives of international transport companies the opportunity to exchange views. It is planned and run by Deutsche Bahn AG, the German Federal Ministry for Transport and Digital Infrastructure and Messe Berlin GmbH.

- 20 September 2022, 4.00 p.m. – 6.00 p.m.: **Pioneering transport - railways for a sustainable future**

Ad

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INTERNATIONAL TUNNEL FORUM · Venue: CityCube Berlin, Level 3, M8 · Conference languages: German/English

The International Tunnel Forum is the supporting event for the exhibition's Tunnel Construction segment and comprises various compact discussion forums led by international figures. It is organised by the German Research Association for Tunnels and Transportation Facilities (STUVA e.V.).

- ➔ 21 September 2022, 2.00 p.m. – 4.00 p.m.: Tunnel renewal during operation
- ➔ 22 September 2022, 2.00 p.m. – 4.00 p.m.: BIM in tunnel construction and operation

INTERNATIONAL DESIGN FORUM · Venue: CityCube Berlin, Level 3, M1 – 3 · Conference languages: German/English

The International Design Forum focuses on design-relevant topics in public transport and is organised by International Design Center Berlin (IDZ).

- ➔ 21 September 2022, 10.00 a.m. – 1.30 p.m.: From the passenger experience to connected vehicle – co-innovation for successful mobility solutions!

PUBLIC TRANSPORT FORUM · Venue: hub27, Beta 8 – 9 · Conference languages: German/English

The Public Transport Forum focuses on developments relating to public mass passenger transport systems. It is realised by ETC Solutions GmbH.

- ➔ 22 September 2022, 10.00 a.m. – 13.15 p.m.: Innovative strategies for the success of the transport turnaround – the mobility market between vision and reality

DB INNOVATION FORUM · Venue: CityCube Berlin, Level 3, M1 – 3 · Conference languages: German/English

Deutsche Bahn AG will be hosting the Innovation Forum (launched in 2016) for the third time in the scope of InnoTrans.

- ➔ 22 September 2022, 10.00 a.m. – 4.00 p.m.: Strong and digitalized railways enabling a sustainable mobility – For the climate. For people. For the economy. For Europe.

INTERNATIONAL BUS FORUM · Venue: hub27, Beta 8 – 9 · Conference languages: German/English

The International Bus Forum will be organised by the German Transport Forum (DVF).

- ➔ 22 September 2022, 2.00 p.m. – 4.00 p.m.: Mobility as a service for citizens – sustainable, smart and available everywhere

DAY	10:00 a.m.	11:00 a.m.	12:00 a.m.	1:00 p.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
20.9.	OPENING						RAIL LEADERS' SUMMIT		
21.9.	DIALOG FORUM				DIALOG FORUM				
	INTERNATIONAL DESIGN FORUM				INTERNATIONAL TUNNEL FORUM				
22.9.	DIALOG FORUM				DIALOG FORUM				
	PUBLIC TRANSPORT FORUM				INTERNATIONAL BUS FORUM				
	DB INNOVATION FORUM				INTERNATIONAL TUNNEL FORUM				
23.9.	DIALOG FORUM								

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Electronic control for rail vehicles



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LOCC-Box
goes
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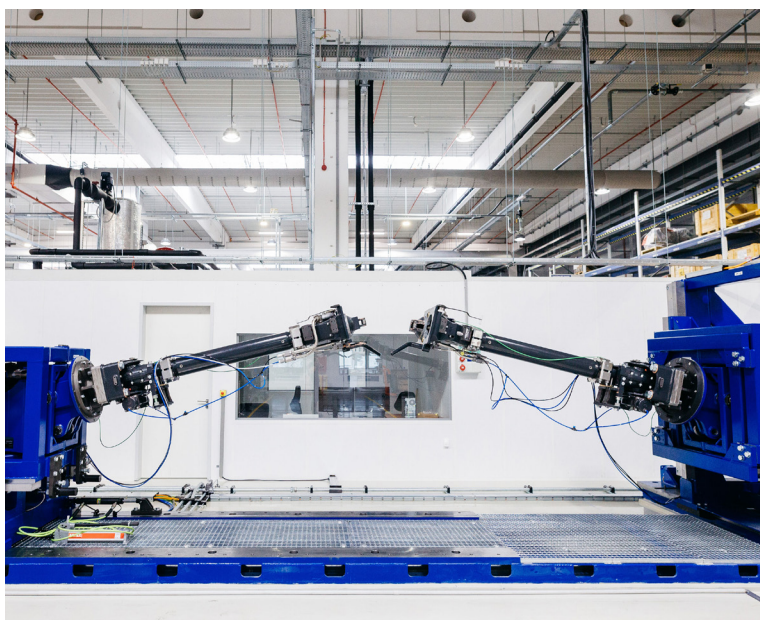
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Digital freight train for the future of rail cargo

A more efficient and competitive freight transport system is needed to cope with a higher volume of cargo to be hauled by rail. With the Digital Freight Train (DFT), Knorr-Bremse Systeme für Schienenfahrzeuge GmbH is pioneering the transition.



Automatic couplers are complex multi-talents for freight traffic as well. The picture shows two passenger couplers during a test procedure.

Photo: Knorr-Bremse Systeme für Schienenfahrzeuge GmbH

■ Today, when a freight train is formed anywhere in Europe, it is like looking into a history book: the essential preparations for its dispatch – such as the mandatory manual brake test – have not changed for 130 years. Even today, many steps in the process are still carried out manually. It is precisely freight wagons, which are actually the backbone of green cargo by rail, where analogue systems are still in use throughout. Not for much longer, however. The formula for the paradigm shift: the digital freight train. The drivers are the Digital Automatic Coupling (DAC) "FreightLink" and the automation system "Freight-Control". While they have long been standard in passenger transport, the principle behind them will soon connect freight wagons as well.

Leverage for new technologies

The automatic mechanical coupling and connection of the compressed air lines – without the presence of a shunting attendant between the cars – is only one aspect of Knorr-Bremse's DAC, while the likewise automatic connection of the train-wide lines for power supply and data signals is the other. These new connections are considered to be key prerequisites for the digitalisation of freight transport – and are thus

advancing to become one of the two essential levers for new technologies for the digital freight train. The main focus of the innovation is to significantly shorten the time-consuming processes involved in freight wagon operation. Starting with the individual wagon, automated processes and digital solutions are intended to increase transport capacities, efficiency and availability. But only an intelligent and automated wagon also enables intelligent and automated processes – all the way up to fleet level.

Digital functionalities for freight cars and locomotives

To this end, Knorr-Bremse intends to equip freight cars and locomotives with electronic hardware and software for digital functionalities, including the digital, automated brake test as a feature. This processes electronic sensor data and links them along the train composition and with the operator's cloud. Proven in passenger operations, Knorr-Bremse will thus soon be making condition-based maintenance available for freight cars as well. The DAC combined with comprehensive automation systems will result in a precisely synchronised package of solutions for rail freight traffic.

Knorr-Bremse Systeme für Schienenfahrzeuge GmbH | Hall 1.2 | 250

Intelligent and sustainable trains



LUCY, Thales' rolling laboratory, has already completed numerous test rides to validate autonomous driving.

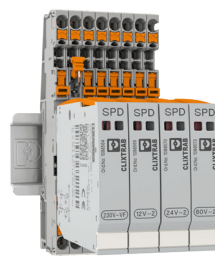
Photo: Thales Germany

A fully autonomous train can get an understanding of its environment, make decisions and steer itself according to its task without any need for human input. But technology has not yet reached that stage. Nevertheless, some building blocks for autonomous operation are already in use or close to being mature. Thales is working with its customers and partners to make the transformation for autonomous driving.

Continued on page 11



Lightning protection for safety-related systems



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Continued from page 10

Part of this is autonomous tracking. Trains accurately identify their own position and speed through onboard sensors such as radar, inertial measurement units (IMUs), GPS and UWB radio. This minimises the need for trackside systems that require a high level of maintenance and speeds up the introduction of new signalling systems. A product for autonomous positioning is already in the pipeline for metro operators. Thales is also developing a similar technology for mainline railway applications.

Step by step towards autonomy

Automatic train operation (ATO) is another step on the road to autonomy. ATO automates departure, acceleration and braking

and provides trains with computer-controlled driving instructions. As a transition technology, ATO leads from automatic to autonomous train operation. Remote control brings railways closer to full autonomy. It allows operators to take control of a train from a central location without needing to be on board. Remote control has already been successfully demonstrated by Thales during test runs.

Obstacle detection is the final piece of the puzzle. With the help of sensors and sophisticated computer algorithms, objects in front of (and around) trains can be detected and a reaction is possible. Obstacle detection is a key requirement for fully autonomous and driverless systems. It also offers advantages in conventional driver-controlled systems. The detection system is able

to identify signals and provides assistance to the driver in darkness or poor visibility.

Retrofit option for all trains

Any type of train can be retrofitted – high-speed trains, long-distance trains, metros or trams, passenger or freight trains. The sensors and software that bring autonomy to life are quickly installed.

Autonomy provides major operational benefits and improves sustainability. Autonomous driving offers both direct benefits (energy savings) and indirect ones (improved performances that make railway travel more attractive for passengers). Autonomous driving is not yet mature, but the technology is maturing fast.

Thales ■ Hall 27 | 571 | 670



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Smart blast Room

Manufacturing plants and concepts for surface pre-treatment are increasingly required to meet rising demands for efficiency and quality. Blast robots from Blastman Robotics Oy offer an efficient way to automate and digitalise pre-treatment processes.



Blastman blast robot of the fourth generation

Photo: Blastman Robotics

Last year, the Finnish manufacturer introduced the fourth generation of its blast robots. They feature an upgraded control system with a modern user interface and intuitive operation. The control system includes all necessary functions for operating and service staff and allows digital networking with the customer's production control system. To avoid operator errors, machine vision systems that identify and detect components can also be integrated as an option. They identify the component entering the blasting chamber by means of a camera-based CCD system and automatically call up the appropriate blasting programme. Since the machine vision system detects the location of the workpiece and automatically adjusts the blasting programme, no exact positioning of the component in the blasting chamber is required.

Reproducible high quality - low costs

All blast robots include a new off-line programming software that has been specially developed for blast robots and that automatically generates the programme from the CAD data of the component. With the integrated simulation tool for visual representation of the blasting process, any potential collision can be identified and the blasting programmes can be optimised. Automatic monitoring of the blasting chamber allows the process parameters to be kept continuously at the desired level and ensures a reproducibly high level of quality at low cost. This is achieved, for example, by analysing and controlling the blasting medium and pressure. The availabil-

ity and service life of the system are extended by targeted wear measurements of system-specific components and the creation of suitable routines for preventive, demand-based maintenance.

Optimised coating process

A high level of transparency is achieved through a comprehensive reporting of the operating parameters and protocols of the blasting chamber to the connected production control system, enabling customers to make production-relevant decisions on the basis of detailed information. In addition, energy can be saved and the efficiency of the plant can be further improved by controlling the ventilation and lighting according to the needs. The entire coating process benefits from the automation and digitalisation of the surface pre-treatment, thus optimising productivity, costs and quality.

Blastman Robotics Ltd ■ Hall 6.2 | 365



Automatic blast cleaning of a double-decker car

Photo: Blastman Robotics

Compact intelligence for locomotive modernisation



Modernisation work in one of the seven CAPTRAIN specialist workshops

Photo: Lütze Transportation GmbH

To keep their rail freight fleet in France in perfect conditions, the logistics professionals CAPTRAIN are continuously modernising their locomotives. A major contribution to this is made by compact logic modules from Lütze Transportation GmbH.

In an environmentally friendly manner, the rail logistics company CAPTRAIN moves an annual ten million tonnes of goods through France and across borders. Around 150 locomotives are rolling in the fleet, and there

are almost 25 industrial and port railways. General maintenance, overhauls, repairs and component replacements or refurbishments are carried out in seven specialist workshops. LÜTZE Transportation provides support through its compact LION microPLC logic module, which is designed for simple, decentralised automation jobs in rail vehicle subsystems. The module with Ethernet capability has 16 digital and two analogue inputs as well as eight digital and one analogue output. Its input/output configuration can be customised. It can be conveniently programmed by means of the freely programmable controller, the PLC project planning tool.

Flexibility

The PLC is compatible with old buses that use interfaces such as RS or CAN and allows data to be stored via the integrated Secure Digital (SD) card. It makes it easy to connect different devices with differing field buses via the controller's gateway function. LION microPLC is mainly used to retrieve data from diesel engines equipped with the CAN-open-Bus fieldbus, such as vehicle speed, direction of travel,

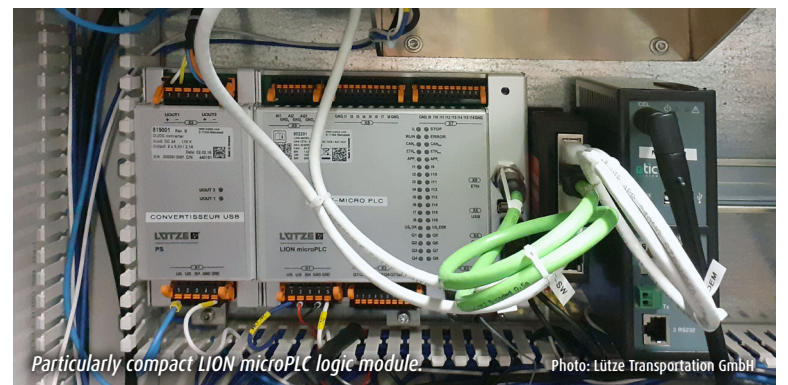
temperatures, battery voltage and more. Newer locomotives are equipped with start-stop systems. CAPTRAIN also wants to implement this function in older locomotives. The idea is to remotely monitor the voltage level of the battery and prompt the engine to start and charge in time. This eliminates the need for teams to charge the batteries, reduces costs and operational disruptions, allows the engine to run up to operating temperature, and saves fuel and emissions.

Geolocation

The RS232 interface enables geolocation of the vehicle. A connected GPS device transmits the date, time and

GPS speed by Ethernet from the locomotive via the microPLC to the server. The analysis shows where a locomotive is currently standing or travelling. If the connection to the server is lost, for example through a tunnel, an SD card stores the periodically sent data. The locomotive can be located again because the Ethernet connection establishes a Virtual Private Network (VPN) connection to the server via modem, which reprocesses, transmits and analyses the 'lost' data. Other applications include the detection of events or bugs in the diesel engine. There is also a potential for remote control of actions or functions.

Lütze Transportation GmbH
Hall 27 | 630



Particularly compact LION microPLC logic module.

Photo: Lütze Transportation GmbH

Ad



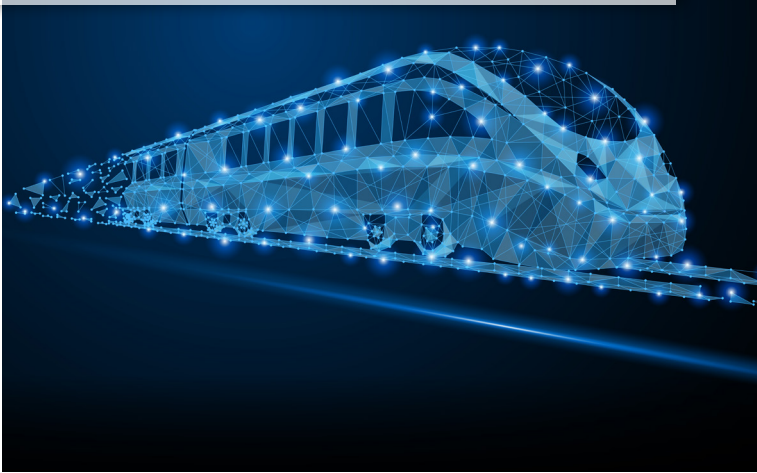
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INNOTRANS 2022 | Hall 12 Booth 250

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The future belongs to collaborative solutions



Smart technology delivers improvements to rail transport. Graphic: Cisco Systems Inc./Shutterstock

For the past decade, Cisco Systems Inc. has been working with transportation companies around the world to drive the industry forward with technologies that can be integrated into existing and new infrastructures.

■ Train and Station Innovation for Performance (TSIP) is an initiative led by Network Rail Telecom (NRT) to maximise the benefits of smart technologies for the benefit of passengers, employee safety and operational efficiency. TSIP enables intensive testing of use cases and reduces the time to deploy new digital and connected technologies. Through TSIP, NRT is working with Cisco, Intel, Telent, Purple Transformation Group and

others to turn ideas into transformative solutions.

Fast systems for greater safety

Providing high-speed connections for stations and trains is the foundation of this initiative. With 5G and WLAN connectivity at its core, the results of intelligent video surveillance (CCTV) and sensor technology will be used

more quickly and proactively. To support crowd management, for example, smart CCTV analysis monitors people density and identifies people in distress to act accordingly. Cameras monitor unauthorised entering of the track, luggage left behind and theft. Sensors built into trains provide information on the condition of components and trigger early maintenance warnings. External sensors detect changing environmental conditions, signs of crumbling rocks and shifting sands.

Efficiency through intelligent information

For station operators, this remote monitoring and sensor insight reduces delays and improves performance by providing near real-time warnings of critical events. With third-party data sources, these enriched data enable trend insights, predictive planning and many other benefits.

Once a solid foundation is established, the software processes information from various data sources (IoT sensors, Meraki cameras, backend systems). A SiYtE interface transforms big data into intelligent information for the rail network, which can result in savings in costs, time and carbon usage.

Using this technology to monitor the environment, infrastructure and assets is supporting Network Rail in its drive to become carbon neutral. With proven and established standards-based technologies, Cisco Connected Rail helps to maximise the success of implementations and to significantly reduce installation risks, costs and implementation time.

Cisco Systems Inc. | Hall 7.1b | 230

The future of GSM-R train radio functionalities



Kontron Transportation MCx Over The Top solution

Photo: wellphoto/Shutterstock.com

For secondary railways that cannot build their own infrastructure, Kontron Transportation GmbH has developed the MCx OTT (Over The Top) solution.

■ MCx OTT leverages the networks of public providers as a transport medium for its own MCx application. This application provides features of the digital mobile radio system Global System For Mobile Communication - Rail (GSM-R) such as individual, group and train emergency calls. Kontron offers the application as a hosted solution in a data centre or as a server solution in the railway's own IT departments. IP-68 industrial-grade smartphones, IP-ca-

pable dispatchers and cab-radios, with the Future Railway Mobile Communication System (FRMCS) standard, serve as end devices. As public networks do not always offer full network coverage, the MCx OTT solution has been further developed with regard to reliable transmission. It has been extended to include features such as voice recorder, heartbeat function, messenger service and dispatcher.

Kontron Transportation GmbH | Hall 4.1 | 650

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Ad

Passenger infotainment: simple and uniform



Passenger information also appears on the passenger's smartphone.

Photo: iStock/damircudic

Managing vehicle displays for a fleet of vehicles usually involves managing multiple systems from different sources. It is quite complex to maintain all passenger displays synchronised along all vehicles and to keep the communication uniform. PaxLife Innovations GmbH has developed a software solution that makes it easy to manage, update and operate display and system families across various manufacturers.

■ The core architecture of the solution is based on PaxLife's flagship product, the railSTACK cloud-edge platform. railSTACK enables the abstraction from the actual on-board environment via a program interface provided by PaxLife Innovations. As

an example, for a passenger information application (the 'soft on-board unit (OBU)'), it no longer makes a difference which display hardware is installed on board or whether the passenger information is running on board a train, bus or tram at all.

The passenger-oriented functionalities implemented on railSTACK therefore only have to be adapted once to the requirements of a transport company; they can be updated at any time at a mouse click from the railSTACK cloud

and are independent of vehicle specifics.

Simplified structure of the passenger information system

To further simplify the implementation of customer-oriented passenger information for transport companies, PaxLife Innovations has developed a new tool: the PlayList editor. With the PlayList editor, transport operators can easily update and restructure their passenger information display without any programming knowledge: splitting the screen to display different types of information, reviewing the order of content to be displayed, adding external elements such as advertisements or videos, defining sequences or content to be displayed under certain conditions, such as during the journey, when approaching a stop or when stopping.

Advantages for other services

Thanks to railSTACK's ability to integrate other cloud-based services, for example a content management system used for an on-board portal and an entertainment service, the content of the passenger information on the on-board display can be shown simultaneously on the passenger's smartphone.

PaxLife Innovations' passenger information solution is currently in the roll-out phase for the first customer.

PaxLife Innovations GmbH
Hall B, City Cube | 200

NEWS

■ The lightest leather on two rails



Muirhead quality test

Photo: Muirhead, Scottish Leather Group Ltd.

The full-substance leather, Light-Core™, is made with a unique, durable, micro-light core and is up to 33 percent lighter than standard leather - without sacrificing thickness, strength or durability. This helps to increase the range of electric vehicles and reduce emissions from conventionally powered vehicles. The material is load-tested, safe and customisable to enhance design and passenger comfort. In addition, thanks to integrated ActiveHygiene, 99 percent of all bacteria and viruses on the leather surface are killed within two hours. Muirhead offers the much needed longevity as well as an exceptional technical performance. In addition, the leather is breathable, flame-resistant, easy to clean and comes with a first-class warranty. This significantly reduces the total cost of ownership.

Muirhead, Scottish Leather Group Ltd.
Hall 5.1 | 310

Ad

MEET US!
InnoTrans
H6.2 / 858

QUALITY EQUIPMENT FROM FAIR PRODUCTION

TATONKA is a German outdoor equipment manufacturer from the Bavarian town of Dasing and produces backpacks, bags, luggage and travel accessories, tents, cookware and clothing.

Production is carried out according to European manufacturing standards while maintaining high social standards in the company's own **SA8000-certified** factories in Vietnam.

In the **OEM sector**, TATONKA develops and produces individual articles according to customer requirements. In addition, TATONKA offers a wide range of products tailored to the special needs of bus and train employees.

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TATONKA - OUTDOOR EQUIPMENT SINCE 1993

Every kilo matters



Winkler galley for the GoldLeaf service on board the Rocky Mountaineer.

Photo: Winkler Design GmbH & Co KG

In the legendary Canadian panorama train "Rocky Mountaineer", five to six cooks spoil the guests with à la carte dishes. The kitchen in the lower compartment of the double-decker train spans the full width of the coach and was built by Winkler Design GmbH & Co KG in Röttingen, Lower Franconia, Germany. Since the end of the 1960s, the company has been building tailor-made on-board restaurants for rail vehicles, and since the 1980s, these have been on the rails in Europe and all over the world.

■ The galley for the "Rocky Mountaineer" took shape over a period of about two years. After drawings and calculations were made, a mock-up was built for the end customer, the operator of the luxury train through the Canadian Rocky Mountains, in order to understand the dimensions.

Designing and building on-board kitchens is a bit like squaring the circle. In addition to the specifications and wishes of the customers, the experts at Winkler Design have to comply with the railway approval conditions and standards - and all this in a very confined space. Car bodies have to withstand the centrifugal forces of a moving train, materials have to comply with strict fire protection regulations. The stowage and refrigeration space depends on the operator's restaurant concept and the possibility of additional fresh goods being delivered along the route.

Flexibility through vertical integration

"Over decades, we have built up the know-how for our great vertically integrated production at Winkler Design," explains plant manager Rudi Schmitt. "We carry out all work involving stainless steel, wood and synthetics ourselves and deliberately refrain from using subcontractors. This gives us a very high degree of flexibility. We can imple-

ment wishes much faster, thus reducing the risk that something won't fit."

Winkler Design is a company that began building refrigerated cabinets and shop furnishings in 1921 and built its first on-board restaurants at the end of the 1960s. It all started with the furnishing of Interregio trains, followed in the mid-1980s and 1990s by the second and third generation of ICE trains operated by Deutsche Bahn. In the meantime, rail vehicles with on-board restaurants from Winkler Design are in operation all over Europe and throughout the world.

Winkler Design GmbH & Co KG
Hall 26 | 460

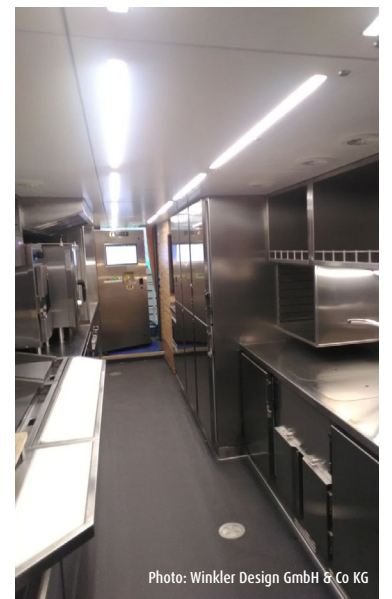


Photo: Winkler Design GmbH & Co KG

Mission: ECO – for a greener tomorrow



Mission ECO.

Photo: Kaelis World S.L.

With the ambition to use technological advances for a greener future, Kaelis World S.L. has decided to make an immediate change - a small step towards a bigger goal.

■ In its ECO mission, Kaelis focuses on the circular economy, recycled and recyclable materials, circular design and the functionality of products to make them more reusable. The mission is divided into three main pillars:

ECO life, ECO waves and ECO roots

ECO life attaches great importance to natural and sustainable materials. Replacing plastic packaging

with paper and recycled packaging is an effective way to reduce the environmental footprint. For Kaelis, sustainability is no longer just an option but a must, and it is integral from the initial design phase through

production to delivery options. The main goal of ECO waves is to save the ocean and its inhabitants from plastic pollution. Kaelis promotes the upcycling of plastic waste on beaches by working with non-governmental organisations.

By recycling plastic bottles into fabrics, the company transforms waste into useful everyday products designed for a closed-loop recycling process. The circular economy is at the heart of ECO roots, meaning that existing materials and products are reused, repaired, regenerated and recycled for as long as possible.

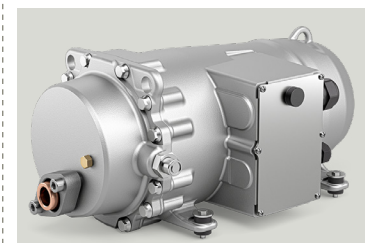
Acting in an environmentally conscious way

Environmental awareness is the driving idea behind Kaelis products: "The decisions we make today will determine the future of this planet and its inhabitants. To remain a relevant part of tomorrow, we need to be an integral element of change today!" Kaelis is the world's leading independent provider of on-board products, services and solutions.

Kaelis
Hall 1.1 | 880

NEWS

Strong performance in cooling and heating mode



Total package: the SPEEDLITE ELV52
Photo: Bitzer

For air-conditioning and heat pump systems in mobile applications such as electrically powered buses and trains, the space requirements, weight and efficiency have a direct effect on the operating costs, range (buses) and future-proofing. BITZER has tailored the SPEEDLITE ELV52 scroll compressor for electrically powered buses and rail vehicles to cope with these factors. Its focus is on high efficiency, a compact design, low weight and low noise level. Its wide rotation speed range is suitable for high performance in cooling as well as in heating mode. The scroll compressor is suitable for use with various refrigerants, including low-GWP and natural refrigerants such as R290.

Bitzer, Hall 3.1 | 680

A good start to the day

The day at InnoTrans can successfully start with the business breakfast.

Exhibitors and trade visitors who arrive early at the fairgrounds can fortify themselves with a business breakfast. Every day from 8 to 9 a.m. there will be a free business breakfast in Hall 9 and at the Messedamm entrance to the CityCube Berlin. Snacks and fresh coffee are a great way to make interesting contacts and get the day off to a relaxed start.

Digital preparation and networking

The new digital platform InnoTrans Plus assists with trade fair planning.

With a new digital offering, trade fair visitors can obtain guidance and establish networks. Users will find over 2,770 registered exhibitors, 2,400 products and 2,800 user profiles on the [InnoTransPlus](#) portal.

After a quick registration, participants can create a profile and individualise it. This allows them to net-

work, obtain information, pre-arrange appointments and take part in webinars, for instance.

During the trade fair, InnoTrans Plus allows participants to access live streams of the InnoTrans Convention and the entire supporting programme. After the event they will be available on demand.



Trade visitors can retreat to the Business Lounge.

Photo: Messe Berlin GmbH

The Business Lounge in the Marshall Building provides an opportunity for concentrated work.

The Business Lounge with its free services offers a relaxed counterpoint to the hustle and bustle at the Outdoor Display and in the halls. It is located in the Summer Garden of the Marshall Building, in front of Hall 6.2. With Wi-Fi, workstations with computer terminals and charging stations for mobile phones, tablets, cameras and computers, it offers the best conditions for con-

centrating on answering e-mails or holding undisturbed conversations. Jackets and luggage can be stored at the cloakroom and in lockers. Visitors can also use services such as catalogue mailing and registration for the World Innovation Tour. Refreshments are also available.

Those who want to relax can take a break in the quiet zone on a relaxation lounge.

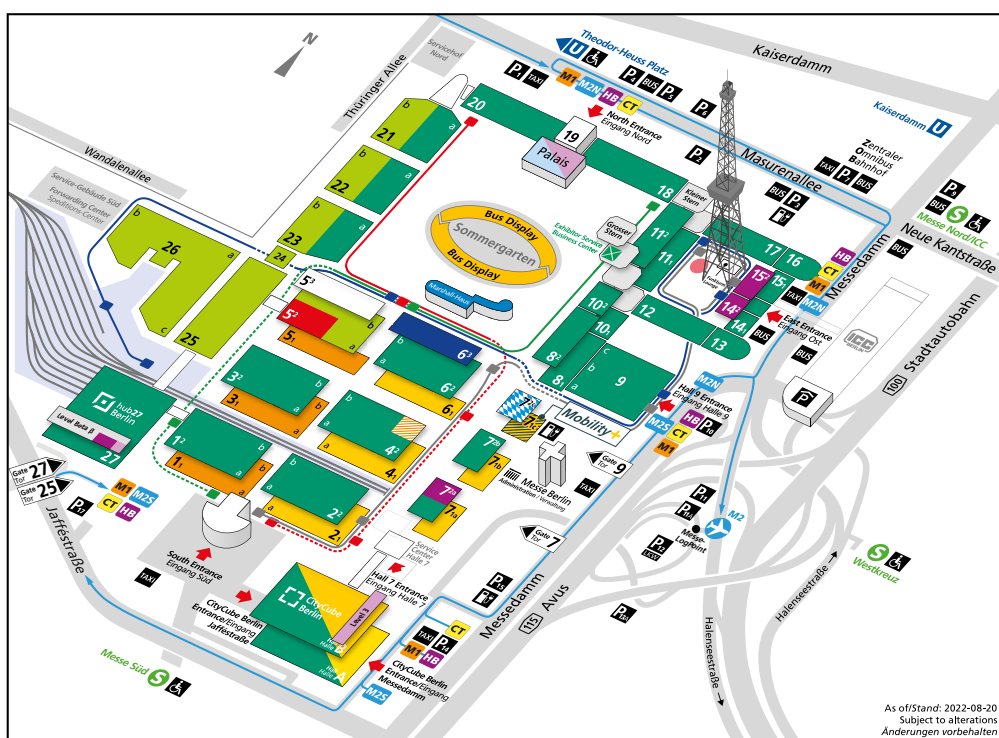
Your direct way to us: the Online Ticket Shop

Day/permanent and student tickets for InnoTrans 2022 are available from the [ticket shop](#). The tickets are available on mobile devices and allow contactless access. They will also entitle the holder to use Berlin's public transport system (ABC) free of charge for the period of validity.

Online trade visitor pass	Online
Day ticket	50 euros
Permanent ticket	75 euros
Day ticket for students	13 euros



Ticket sales and voucher redemption will take place exclusively online. At the event, there will be no box office.



SHUTTLE LINES

M1	Olympischer Platz P+R	CT	City Transfer
M2N	BER T1 + T2 - Expo North	HB	Hotel Transfer
M2S	BER T1 + T2 - Expo South		

Exhibition grounds InnoTrans 2022

- Railway Technology
- Interiors incl. Travel Catering & Comfort Services
- Railway Infrastructure
- Tunnel Construction
- Public Transport incl.
- Mobility+ / Mobility+ Corner
- Outdoor Display
- Bus Display
- Opening Ceremony
- InnoTrans Convention
- Speakers' Corner
- Messe Berlin Studio
- InnoTrans Campus
- Business Lounge (Marshall-Haus)
- Press Center
- Restaurant Oktoberfest
- FoodCourt

FAIRGROUND SHUTTLE

- Fast Shuttle - South Entrance - Hall 18
- South Entrance - Hall 20
- South Entrance - East Entrance
- East Entrance - Outdoor Display

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