

# InnoTrans 2021 Report



B2B Magazine for the Railway Industry

No. 2 ■ 24<sup>th</sup> annual set ■ May 2020

**THEME IN FOCUS**

**TUNNEL CONSTRUCTION**

**Connecting links**

In mountainous regions as well as below metropolitan areas, tunnels are important elements of the transport infrastructure – and they pose challenges for construction and operation.



**4** New metros for Berlin  
Stadler will expand its plant in Berlin-Pankow to build and commission up to 1,500 new underground railway cars ordered by the Berlin transport authority.



**6** Culinary journeys  
Specially equipped galleys built to the highest hygiene standards are needed so that passengers can enjoy a cup of coffee or savour a hot snack during their train journey.



**11** The passenger in focus  
Pleasantly air-conditioned, silent and smoothly braked trains. A whole range of innovative technologies are available to provide passengers with a high level of comfort.



## Signal for take-off – overwhelming support for the new InnoTrans date

As an international platform for mobility, InnoTrans will welcome visitors from all over the world to Berlin in April 2021.

Photo: Messe Berlin

■ The decision to postpone InnoTrans in order to help curb the spread of the COVID-19 pandemic was a difficult one. It is therefore all the more gratifying that this complex and complicated measure was able to offer an adequate alternative to the vast majority of exhibitors.

Messe Berlin received a great deal of praise from the industry for this rapid achievement and the new date. On the one hand, the new date in spring 2021 is concretely half a year

after the originally planned InnoTrans in September 2020, and thus within a manageable time frame. On the other hand, it offers sufficient predictability for all those involved. In addition, there is enough time to get back to the normal rhythm for the next scheduled date in September 2022. The exhibitors were also given more time than usual to sound out how to deal with the new situation.

The vast majority of exhibitors welcome the new date in April 2021 and

will use the classic trade fair marketing platform as a new start after the corona pandemic. Due to the economic repercussions of the crisis, however, it was to be expected that some companies in the sector would still not be able to achieve this at this point in time. This is a great pity for the companies affected, and InnoTrans is trying to provide the best possible support in such cases. It is therefore all the more pleasing that the current level of bookings is more or less the same as the

hall space at the previous event. This clearly shows that the industry is in agreement and is working at full speed on InnoTrans 2021.

Although this means that the excess demand recorded at the beginning of the year has been reduced, InnoTrans 2021 will still occupy the entire exhibition grounds and the premiere of the new congress and events hall hub27 is being awaited with great excitement.

**CONTINUED ON PAGE 2**

**COMMENT**

**Kerstin Schulz**  
Director  
InnoTrans

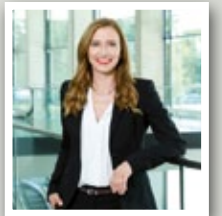


Photo: InnoTrans

Dear exhibitors and trade visitors,

For several months we have been experiencing a new and most challenging situation for all of us. Life and work as we have known it up to now has significantly changed. As a result of the decree of the Senate of Berlin, Messe Berlin is therefore unable to hold InnoTrans as planned from 22 – 25 September 2020.

We regret this very much, as we were all in the middle of our preparations for InnoTrans and, after two years, were all looking forward to meeting you again. As the largest international “family gathering” for mobility, we know how important InnoTrans is for you and your company. At the same time we all need some sort of planning security. Therefore, we have worked in close consultation with the founding associations and international market leaders to find an adequate solution for everyone involved.

We are now pleased to cordially invite you to InnoTrans 2021 in Berlin from 27 to 30 April. Together with you, we would like to show what the industry has to offer in the coming April. Public transport is more important than ever, and new ideas and innovations are more in demand than ever before. We need a strong signal and thus a strong InnoTrans, which as an international focal point will be presenting the mobility of tomorrow.

We would like to thank you for the many inspiring discussions over the past few weeks and we are looking forward to exchanging ideas with you. See you next spring for InnoTrans 2021!

*Until then, stay healthy.*



### Making tracks available

In developing new perspectives for modern and cost-effective rail transport, Vossloh occupies a unique position as a systems provider within the field of rail infrastructure.

[vossloh.com](http://vossloh.com)



## Joint debate on the future of mobility – associations will digitally present planned Dialog Forums in September



Some of InnoTrans' partner associations will be holding their dialogue forums online in September 2020.

Photo: istock / ipopba

CONTINUED FROM PAGE 1

### Wide and topical range of subjects in September 2020

Despite the current situation, the development processes in the mobility industry are not standing still. In order to network worldwide and offer a col-

lective exchange, some of InnoTrans' partner associations have decided to maintain their Dialog Forums in September, but to hold them in digital form instead of live discussions at InnoTrans. InnoTrans is supporting the virtual supporting programme. The time slots will be maintained and will take place on the scheduled

dates of InnoTrans 2020 at the end of September.

The German Transport Forum, DVF, will be presenting a foretaste of InnoTrans on **Wednesday, 23 September 2020**. Under the theme "Using the investment ramp-up as planned and as quickly as possible – for a digital and extended rail network", there will be

panel talks and exciting insights from experts in video formats. In addition to the DVF, the German Association of the Railway Industry, VDB, will also present current figures from the industry and invite interested parties to get into conversation with each other.

On **Thursday, 24 September 2020** the International Bus Forum, organ-

ised by the DVF, will deal with current developments in urban mobility.

All InnoTrans forums will then take place as usual at InnoTrans 2021 from **27 to 30 April 2021**. Further information on the planned InnoTrans events can be found [here](#) and on the websites of the respective partner associations.



**InnoTrans 2021**  
27–30 APRIL · BERLIN  
International Trade Fair for Transport Technology

+++ New Date +++

THE FUTURE  
OF MOBILITY

Messe Berlin

## InnoTrans Career Award to bring top international talents to Berlin



*InnoTrans Career Award winner Alena Conrads at the award ceremony with university professor Dr.-Ing. Martin Ziegler, Chairman of the Board of STUVA e.V.*

Photo: STUVA e.V.

With the InnoTrans Career Award, InnoTrans is fully devoted to the support of young talents in their professional development. With this in mind, 11 international associations are offering prizes for groundbreaking achievements or ideas. The 17 winners of the InnoTrans Career Award will be offered a trip to attend InnoTrans in Berlin. The InnoTrans Campus gives them an outstanding chance of establishing initial contacts and shaping their future career.

With the InnoTrans Campus in hall 21e, the world's leading trade fair for transport technology will establish a career concept that offers young people in the industry better oppor-

tunities for a direct start into their professional lives. The creation of this platform brings companies and young professionals together and generates optimum networking conditions.

### Winners from all over the world are looking forward to InnoTrans 2021

Alena Conrads studied civil engineering at the Ruhr University Bochum and is currently working in Australia as a site engineer. "In particular the Tunnel Forum organised by STUVA e.V. and the promotion of young engineers aroused my interest in InnoTrans. I am already looking

forward to seeing what I can expect during my visit to InnoTrans", the young engineer said.

Tyler Kleinsasser is studying for a Master's degree in civil engineering at the South Dakota School of Mines and Technology. "In addition to networking with students and professionals, with whom I may be working together in the future, I am also very much looking forward to learning more about the railway sector and transportation around the world at first hand," says Tyler Kleinsasser.

Beema Dahal is a student at Boise State University. The up-and-coming civil engineer is looking forward to the opportunity to expand her

knowledge through the innovations of the industry sector. "My participation in the interesting lectures and discussions and talking with various exhibitors about my main interests will help me to gain more insight into railway infrastructure and technology. Participation in the InnoTrans Campus would also provide me with a platform to network directly with the experts and personnel managers about career opportunities in the railway sector and to guide me through

my career objectives. Therefore, participation in InnoTrans 2021 will be very beneficial to broaden my horizon and also for my future prospects".

In addition to the Career Award winners, all interested students, pupils and young professionals from the mobility sector are invited to come to InnoTrans to find out about the latest job and trainee offers from the more than 3,000 exhibitors and to make contacts that will shape their future.

## Discover the future of your company at InnoTrans

Shaping the future of mobility will result exciting challenges for many enterprises. Companies will have to successfully master the change in mobility patterns and will therefore have to rely on innovative impulses from young talents in the industry.

### A new concept focuses on applicants

Your company will easily find the right young talent at the Eurailpress Career Boost that will be held on **Wednesday, 28 April 2021, from 2 - 4 p.m.** on the InnoTrans Talent Stage in hall 21e.

The new recruiting format offers five applicants from each of five categories (technical professions, engineers, IT experts, operational and commercial professions) the opportunity to introduce themselves in 90-second presentations to potential employers. You will then have the opportunity to ask the respective applicant three questions.

As a talent scout from a company you will not have to separately register for the Eurailpress Career Boost. After the pitches on 28 April you can directly contact the applicants in the RecruitingLAB on the InnoTrans Campus in hall 21e. We look forward to meeting you. [www.eurailpress.com/careerboost](http://www.eurailpress.com/careerboost)

**Eurailpress Career Boost**

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**HALL 13  
BOOTH 300**

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## Stadler to supply up to 1,500 metro cars for the Berlin transport authority



The Ik (small profile) and I (large profile) series for BVG

Graphic: Stadler

Stadler was able to assert itself in an international tender and has emerged as the winner of the largest tender to date from Berliner Verkehrsbetriebe (BVG) for the delivery of up to 1,500 new underground railway cars to operate in the Berlin U-Bahn network.

■ The framework contract with a total value of up to around three billion euros also covers the supply of spare parts over a period of 32 years. The framework agreement includes a fixed minimum order of 606 cars. Thus, from 2022, Stadler will supply 376 cars for two- to four-car units for both the small and large profile networks in an initial all order. A further 230 cars are on firm order but will only be requested at a later date. In addition, it is possible to request up to 894 further cars from the framework agreement. The volume of this firm order is around 1.2 billion euros and also includes the supply of spare parts. Stadler had already announced that up to 70 million euros would be invested in the Berlin-Pankow pro-

duction plant. The new manufacturing concept not only includes the construction of a new manufacturing hall, but also creates new and optimised space for logistics and commissioning.

### Nothing stands in the way of a formal order

This is one of the largest supply contracts ever awarded in Europe. A defeated bidder had initiated a review procedure, that was recently rejected by the Berlin Chamber of Commerce at the final appeal stage. This means that the way is now clear for the formal award of the contract and the order by the Berlin transport authority. **Stadler Rail | Hall 2.2 | 160 + Outdoor Display**

## New brand identity for Goldschmidt

125 years after the Thermit® welding process was patented in 1895, the Goldschmidt family business is bringing together all companies worldwide under the Goldschmidt brand.

■ “We have grown enormously over the past ten years and have taken over numerous companies that have retained their brands during a transitional phase. It is time now to move even closer together under a globally uniform brand umbrella,” explains Dr. Hans-Jürgen Munding, CEO of Goldschmidt.

Goldschmidt is one of the world's leading companies for rail fasteners, modern track construction and the inspection and maintenance of track infrastructure. Products and services for the intelligent modernisation of railway infrastructure are in demand worldwide as investments in passenger and freight transport increase. Germany alone will invest 86 billion euros in the expansion and renewal of the rail network over the next ten years. The need to catch up is enormous – per capita investment in the rail network is significantly higher in many countries, and Switzerland invests five times as much in track-bound mobility as Germany. Asia is the world leader in large-scale rail transport projects but Brazil, Russia and Southeast Asia are also invest-

ing in the renewal of existing and the construction of new rail networks. Current studies expect the global investment volume to increase annually to 35.3 billion US dollars by 2025.

**Goldschmidt**

■ Hall 25 | 485 + Outdoor Display



Dr. Hans-Jürgen Munding, CEO of Goldschmidt

Photo: Goldschmidt



## European Startup Prize goes into the next round

The European Startup Prize for mobility will be awarded for the third time this year. In May, the jury will select 50 start-ups from among the applicants to participate. The criteria are innovation, marketability and the ecological and social impact of the business ideas.

■ The evaluation will be carried out by a jury and four gold and six silver prizes will be awarded. The ten winners will be announced in July. It is planned to hold pitch sessions with European investors from September to November 2020. The official award ceremony will be delayed to November due to the Corona crisis, details will be published as soon as possible.

The European Startup Prize is a public-private initiative co-founded by Karima Delli, Chair of the Transport and Tourism Committee of the European Parliament, the

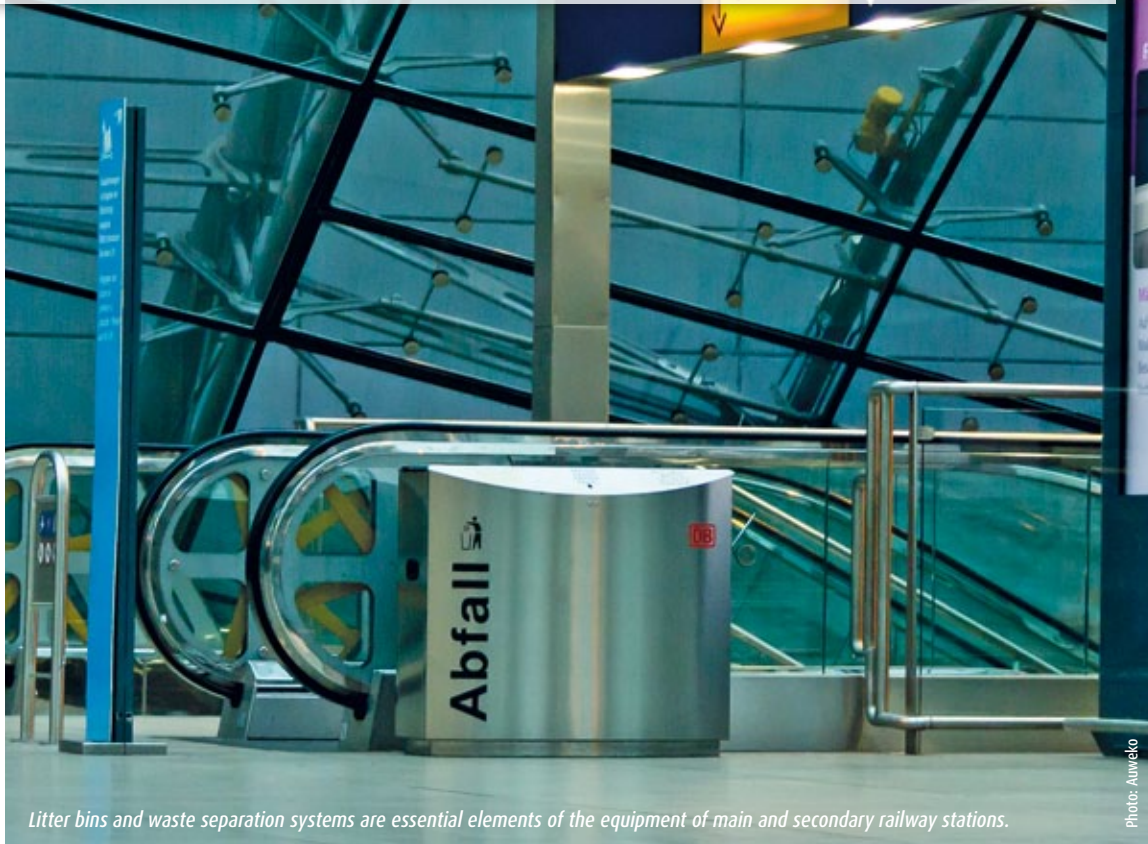
Boston Consulting Group and Via ID. The competition is supported by the European Parliament and the European Commission, but also by influential partners such as ADP, GRDF, Europcar Mobility Group and RATP, and invites mobility start-ups from all over Europe to take part. These partners bring together their networks, financial knowledge and core competencies to identify future mobility champions during the competition. This year as an exception the funding opportunities will be open to all applicants to support the start-ups in the face of the Covid 19 pandemic.

### NEWS

#### ■ Singapore plans huge investment to expand its railway network

More than 60 billion Singapore dollars (around 39 billion euros) are to be invested in the expansion and renewal of Singapore's rail network over the next decade, said Singapore's Transport Minister Khaw Boon Wan. In recent years, SMRT (Singapore Mass Rapid Transit), the public transport operator, repeatedly had to contend with interruptions in its service. Khaw Boon Wan said that the conclusion to be drawn from this is that one has to invest in good operation and maintenance. The investment volume is to flow into a whole range of projects, including the completion of the 43-kilometre Thomson East Coast Line by 2024, the construction of the Jurong Region Line by 2028 and the first phase of the Cross Island Line with twelve stations by 2029. Three existing lines, the Downtown Line, the North East Line and the Circle Line, are also to be extended by 2025. Major renewal work on Singapore's oldest lines, the 32-year-old North South and East West Lines and the 20-year-old Bukit Panjang Tram Line, is also to be completed in the coming years. The rail network would be extended from the current 230 kilometres to 360 kilometres by 2030. By then, this expansion work would ensure that around 80 percent of the inhabitants of the Asian city state would live within walking distance of a railway station.

## Functional, sleek and smooth – litter bins for stations



Litter bins and waste separation systems are essential elements of the equipment of main and secondary railway stations.

Photo: Auweko

Most travellers have seen them, many have already used them, and yet hardly anyone knows where they come from. We are talking about litter bins and waste separation systems in and around public transport facilities.

They are called Temptation, Original, Kendo, Capital or Elegance – the litter bins and recycling collection systems of Auweko GmbH. They were born from the idea to offer high-quality, visually appealing systems with integrated advertising possibilities that came up 25 years ago.

The company has now sold over 100,000 bins to railways and transport companies. Around half of these are accounted for by Deutsche Bahn AG, which has procured various types of waste bins under framework agreements for 25 years. In addition to the state railways in Austria, Switzerland and Luxembourg, Auweko systems can also be found in the metros in Berlin, Munich, Lisbon and Porto as well as in Cologne city railway stations.

### High demands on functionality and design

Although litter bins may be inconspicuous objects at first glance,

their design contributes significantly to the appearance of public transport stations. In addition to functional aspects, such as the separation of different types of waste, their design must also take into account whether they are to be used indoors or outdoors. Operators will not only consider the durability and ease of operation for cleaning staff but also other aspects such as theft, fire and vandalism protection.

Auweko GmbH manufactures its products in stainless steel, galvanised or powder-coated sheet steel and colour-coated sheet steel in various thicknesses. The product lines usually offer different volumes and container combinations in order to provide a consistent appearance for different purposes. The developers attach great importance to the design, so that the systems fit in just as harmoniously in modern buildings as in historic railway station halls.

Auweko | Hall 7.1a | 110

## New systems for new standards

Digitisation in public transport is driven by information and communication systems. The standardisation of interfaces and new solutions are promising an easy integration of 'plug and play' functionalities.



Data for passenger information and video surveillance can be exchanged in a standardised way using Luminator's data management.

Photo: Luminator

incorporate the latest state-of-the-art technology, such as full-IP passenger information systems based on the ITxPT standard, high-resolution LED destination displays, stationary real-time displays with e-paper technology or full-IP video security systems with cameras, recorders and driving monitors with a direct connection to the back office via router and antenna.

### Exchange via data hub

The product portfolio is completed by the corresponding control units and software applications. Luminator has developed its own data management system for the efficient and smooth exchange of traffic data. It integrates various protocols and services in the rail and public transport sector and is used for data exchange between different providers. In addition, this so-called data hub can be used to control access authorisations and pre-concentrate traffic data for transmission to nationwide data hubs.

The Luminator Technology Group (Luminator), a manufacturer of digital information systems, video security systems and lighting solutions, offers a comprehensive portfolio of intelligent system solutions for public transport worldwide. These systems can help bus and train operators to cope with the steady increase of in-

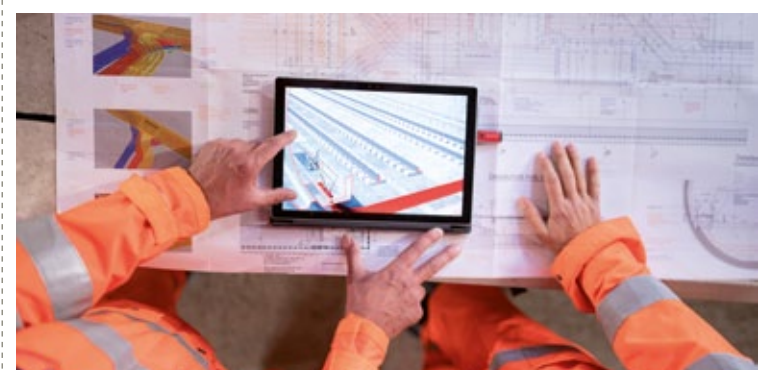
formation technology networking and to meet their growing need for information, security and updated data.

In addition to on-board passenger information for trains and buses, Luminator offers on-board video security systems and also stationary passenger information. These

## NEWS

### SBB AG "Shoring Factory railway production" names partners

The internationally active IT consulting and system integration company Fincons Group with over 1,600 employees in Switzerland, Italy, Germany, Great Britain and the USA, together with another technology supplier, has been awarded the contract for the Swiss Federal Railways (SBB AG) "Shoring Factory railway production" project. Software solutions for the industry sector programme smartrail 4.0 will also be implemented in the railway production sector. This programme is being used to modernise the Swiss railway system. Old systems are being replaced and both automation and optimisation potentials are being exploited. The aim is to make the future offering robust, to increase the capacity on the existing network, to improve the safety of employees in the track field, and to stabilise system costs. All these measures serve the long-term competitiveness of the railway. As part of its digitisation process, SBB will realise part of its projects for the development and implementation of railway technology applications at the Fincons Group's delivery centre in Bari, Italy, which will become one of SBB's strategic production sites for railway software. The contract provides for a continuous and growing cooperation with the delivery centre which will support the SBB with around 100 additional resources in the coming years. This service will be provided exclusively in a smart offshore mode by teams from Bari, working with on-site focus points in SBB's offices in Bern.



SBB also relies on digitisation for construction projects.

Photo: SBB

## Perfect travel gastronomy



Thanks to a variety of modules, food preparation is possible without restrictions.

Photo: Kugel Edelstahlverarbeitung GmbH

Drinking a coffee or eating a warm snack while travelling is part of the journey for many passengers – at least on long-distance services. To make this culinary supply possible, specially equipped galleys are required for passenger trains.

These galleys have to be adapted to the requirements of daily use in passenger trains. In addition to practicability, accident prevention and

railway-compatible technical equipment in the areas of water, electricity and lighting, any design must ensure a high levels of hygiene. The

H2 standard for hygienically very demanding locations must be met. Kugel Edelstahlverarbeitung GmbH is an experienced and long-stand-

ing system partner in the interiors sector and supplies its products to international train manufacturers worldwide. In addition to modular and self-supporting kitchens in lightweight construction, customer-specific design proposals can also be implemented.

### Optimised for the requirements of railway operations

The jointless, specially deep-drawn working surfaces and work covers with moisture-protected plastic or wood-based materials that comply with the applicable fire protection standards are sound-absorbent. As a result, the galleys and galley kitchens installed in long-distance and high-speed trains are not affected by any vibration, even at high speeds. Depending on customer requirements, they include stainless steel furniture that is easy to clean; dishwasher, refrigerator, freezer, cash desk, bar or storage modules; serving counters and display cases (refrigerated or non-refrigerated) as well as electrical appliances, including steamers, speciality coffee machines, kettles and hotplates plus touch controls for convenient diagnosis and operation.

Rounded edges and corners with all-round surge edge, special wedge grooves as draining surfaces and seamlessly welded-in basins in various dimensions (hand washing or

dishwashing sinks) as well as solid, fully welded double-walled front edges and handle bars on all hinged doors, flaps, drawers and waste module front panels facilitate cleaning of the kitchen modules.

The telescopic full-extension slides for all drawers and the waste module pull-outs are also made of stainless steel and have a maximum load capacity of 120 kilograms. Closed floor trays underneath the sink and/or counter modules and openings integrated into the furniture for the water system, cable conduit, air conditioning and other supply and disposal facilities complete the well thought-out modules.

### Complete service from one single source

The services offered by special equipment producer Kugel Edelstahlverarbeitung GmbH include the planning, development and manufacture of highly complex galleys and on-board bistros, from the initial idea through design, construction, production and assembly to after-sales service. All the components used in this process come from a single source. The modules meet the highest quality requirements as well as international and country-specific rail vehicle industry standards.

Kugel Edelstahlverarbeitung  
Hall 1.1 | 480

## Boosting safety

Safety is the first aspect that comes to the mind when thinking about platform screen doors (PSD). There is no doubt that the complete blocking of access to the platform increases passenger safety. But the system, that is essential for automatic train operation, offers a number of other equally attractive advantages.

One of these advantages is the better air conditioning of stations. PSD systems at full height in particular provide very good air quality, as the platform area is isolated from the track side. Another advantage, although not visible, but nevertheless remarkable, is the increase of line capacity. For that, the reduction of the time passengers need to get on and off the train is of crucial importance. For this purpose, the Spanish company Masats S.A. offers an integrated lighting system that easily identifies the train doors and at the same time provides information on whether the respective door is operational or not. This leads to more efficient boarding and alighting times, thus increasing line capacity. In addition, Masats door systems can be adapted to the requirements of each station thanks to their modular design. In this way, the stations can be supplemented with a whole range of useful



High platform screen doors in Barcelona

Photo: Masats S.A.

equipment such as advertisements, video surveillance or first aid kits.

Another proprietary development in the portfolio is the so-called platform gap filler. This product easily bridges the gap between the edge of the platform and the train door

sill. The Platform Gap Filler can be integrated into the PSD or used independently on the platform. This increases safety not only for passengers with reduced mobility, but for all passengers.

### At the service of passengers

With the ThyraLink system, the functionalities of the previous developments have been improved even further. With the help of direct communication between the train and the platform screen doors, an "open-on-demand" function is achieved. This makes the use of air conditioning systems in stations and trains much more sustainable. In addition, ThyraLink makes it possible to determine the operating status of the doors before a train reaches a station in order to inform passengers on the train and on the platform in advance about the status of the access doors.

At InnoTrans 2021, the Spanish company Masats S.A., that has been active for many decades in the field of platform screen doors and boarding aids for both rail vehicles, urban and intercity buses, will be presenting a new sliding door system for electric multiple units.

Masats Hall 3.1 | 360

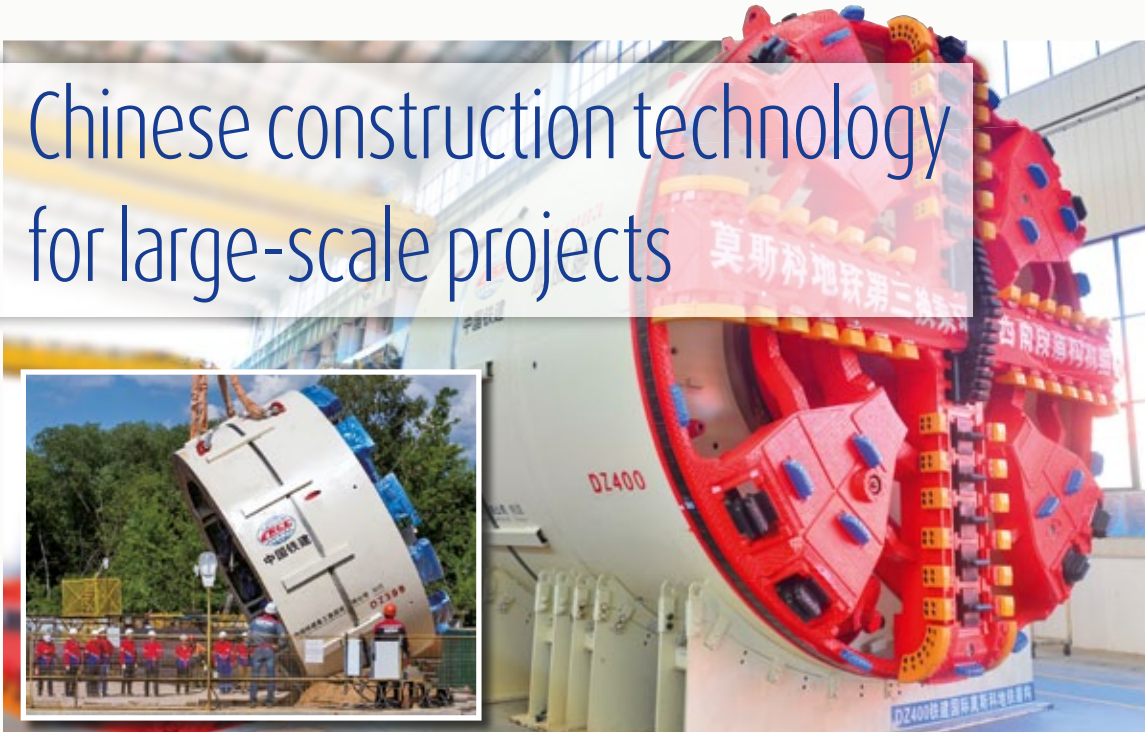
## THEME IN FOCUS

## TUNNEL CONSTRUCTION

## Tunnels to connect people

They are important components of the railway infrastructure, both in long-distance and freight transport as well as in metro systems – tunnels. Their construction is always a challenge – in urban areas due to the transmission of vibrations generated during construction as well as in uninhabited areas with geological peculiarities. There are also some operational issues to be considered.

## Chinese construction technology for large-scale projects



The first batch of tunnel boring machines for export to Russia.

Photo: CRCHI

Founded in 2007, China Railway Construction Heavy Industry Corporation Limited (CRCHI) is part of the Fortune Global 500 company China Railway Construction Corporation (CRCC). CRCHI is active in three major industries: tunnel boring machines (TBM), specialised tunnelling equipment and railway track equipment.

CRCHI is a major player in the research, design, manufacture and service of intelligent equipment for both

tunnelling and high quality track systems. The large number of major construction projects, especially in

the infrastructure sector, requires the increasing use of heavy machinery, including tunnel boring machines for

the numerous projects in the country. In more than 30 Chinese provinces and cities, tunnel boring machines have been used in the construction of metro and railway tunnels, as well as in mining, water protection and other key projects. They have also been successfully exported to Russia, South Korea, Sri Lanka, India, Peru and other countries to facilitate the construction of the “Belt and Road” projects. Since 2013, “Belt and Road” has been bundling projects that serve the interests and goals of the People’s Republic of China in the development and expansion of intercontinental trade and infrastructure networks between the People’s Republic of China and over 60 other countries in Africa, Asia and Europe.

## The right tunnel (boring) machine for every project

A large number of different machine types are available, from hard rock tunnel boring machines in single, double shield or open construction, each with a different diameter, to shield tunnelling machines in EBP (Earth Pressure Balance) or SBP (Slurry Pressure Balance) versions, as well as, depending on the geology, dual mode versions in different diameter variants. In addition, further

machines for special applications are available – all types are proprietary developments.

## First batch of TBMs to Russia

The excavation diameter of the machines exported to Russia is 6.28 metres. The entire machine is 87 metres long, weighs 460 tons and has an installed power of 1,750 kilowatts. The automatic high-precision system to correct the deviation of the TBM was developed for soft soils with steep gradients and small curve radii and has been optimised for Russia’s special construction environment. When developing the main propulsion system, that can withstand low temperatures down to –30 degrees Celsius, CRCHI has taken anti-freeze measures to prevent damage to the equipment down to –45 degrees Celsius.

The various tunnel construction machines and equipment thus close the previous gap of Chinese products, now comprising the entire process of mechanical construction equipment. The technology has already been applied in many railway construction projects, such as Zhengzhou – Wanzhou, Yuxi-Mohan as well as in the high-speed projects Anqing – Jiujiang and Ganzhou – Shenzhen.

CRCHI | Hall 5.2 | 700

## Tunnel ventilation system for the Doha Metro

The Doha Metro project is a special feature for all the contractors involved. One of the major challenges is the extremely tight schedule due to the upcoming 2022 FIFA Football World Cup, the main driver of many projects recently launched in the State of Qatar.

Phase I of the Doha Metro is currently the most challenging project for tunnel ventilation systems (TVS) in the world. The Spanish company Zitrón, as a TVS designer and supplier, therefore had to implement an execution package consisting of integral design, manufacture, transport, installation and commissioning at short notice. It included equipping all 42 underground stations as well as some other specific locations along the four new metro lines with a modern tun-

nel ventilation system. This required, among other things, several hundred pieces of mechanical equipment with fire resistance (250 degrees Celsius for 2 hours); in addition, 1,400 kilometres of cable were laid for fire protection (250 degrees Celsius for 2 hours).

## BIM for project completion

For the Doha Metro project, the Zitrón Interface Team recruited a multidisciplinary workforce of civil,

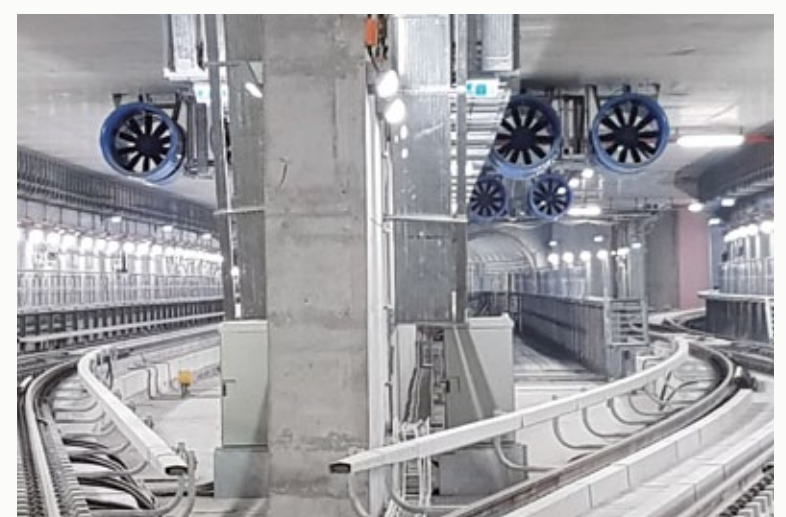
mechanical and electrical engineers, supported by a building information modelling (BIM) team of specialist engineers and modellers.

The team’s high performance, flexibility and problem-solving mentality paved the way to successfully integrate the design of the tunnel ventilation system and to deliver it on time and on budget. The BIM used software required all parties to work in the same 3D environment, exchange information in real time and coordinate

their activities in a virtual space. Any changes made by architectural or other sub-system designers could be detected in real time, and this helped to improve the implementation of each

party’s design or prepare the necessary information to be discussed in the interface meetings and workshops set up to resolve the conflicts that arose.

Zitrón | Hall 5.2 | 720



Tunnel ventilation system for the Doha Metro

Photo: Zitrón



SAE S.r.l. is an Italian manufacturer of extinguishing systems and fire extinguishers, founded in 1976. The newly developed FALCON® fire extinguishing system is suitable for use on track construction machines (such as tamping, compacting and profiling machines).

■ A fire would have a devastating effect in any type of tunnel, especially during the construction and maintenance phases. The FALCON® fire-fighting system was developed to protect the deployed track-laying machines that often operate many

kilometres beyond the tunnel portals. The purely mechanical action of the system makes it highly reliable. It requires no external energy source. It is automatically triggered, but it can also be manually activated by a mechanical command. In the event

of a fire, the flame burns the pressurised FALCON® fire detection tube, that is connected to the extinguishing cylinders, causing it to break. The pressure loss inside the fire detection tube opens the valve of the propellant unit, that forces CO<sub>2</sub> gas into the

extinguishing units. The extinguishing agent contained in the bottles – water with fully biodegradable foam and antifreeze – is conducted directly onto the flame through flexible stainless steel pipes and nozzles and extinguishes the fire very quickly.

#### Quickly ready to operate again

The FALCON® system guarantees fast reaction times and round-the-clock operation 365 days a year. After use it is quickly operational again. Equipped with a pressure switch and signal transmitters, the operating states “active”, “not active”, “emptying” and “blockade” of the fuel pump can be displayed. The signalling can be connected either directly to the track maintenance machine’s instruments or to a special central panel and can be displayed in any machine cockpit. The technical solutions that are used for the FALCON® system make it easy and inexpensive to maintain as well as to administer; such activities are only carried out by trained and authorised technicians. A special configuration of the FALCON® system is available for machines with hybrid engines. It is specifically designed to protect the electric motor and lithium batteries. In these cases, the extinguishing agent used is a gas that leaves no residue inside the system. The FALCON® fire extinguishing system is certified according to CE/PED (2014/68/EU) and tested according to the European standard EN 61373:2010. **SAE ■ Hall 5.2 | 840**

#### NEWS

##### ■ Attractive luminaire(s)

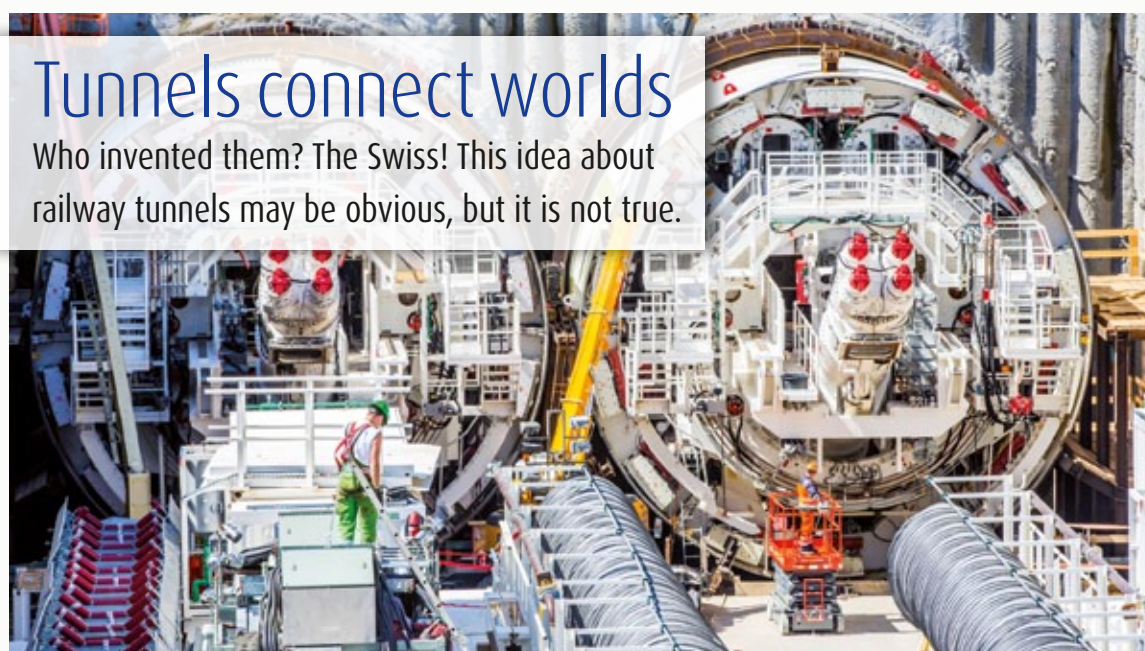
Technically sophisticated lighting solutions are the domain of NORKA Norddeutsche Kunststoff- und Elektro-Gesellschaft Stäcker mbH & Co. KG from Hamburg. Their product range includes luminaires for the lighting of tunnel entrances and along tunnels as well as solutions for traffic flow guidance and the marking of escape routes. For the lighting design of the Elbbrücken metro stations in Hamburg, that are above ground but nevertheless exposed to the weather due to their location on the river Elbe, the ‘Munich’ LED model in the version with asymmetrical light distribution was chosen for the contract. The light source consists of two LED strings. An internal aluminium reflector and an opaque luminaire cover made of plastic are combined for the optical system. As a result, it is not possible to look into the light source and the individual LED light points are resolved into a homogeneously luminous surface. The company has already been able to use this convincing solution with its wall surface-mounted ‘Spandau’ LED luminaire for tunnels when it was equipping the Leipzig City Tunnel. **NORKA ■ Hall 5.2 | 640**



Convincing lighting in Hamburg

■ With several large tunnel projects in the country, some of which have already been completed – the Gotthard Base Tunnel, the world’s longest railway tunnel – and others still under construction, Switzerland has certainly set standards. But, as a matter of fact, the first railway tunnel was put into operation as early as in 1836 in the then Prussian province of Saxony on the Tollwitz-Dürrenberg railway, with a track gauge of 585 millimetres. As in the past, tunnel constructions are still considered special challenges in terms of building technology. The work is difficult, not only because of geological peculiarities with unexpected surprises during construction but also due to the often difficult boundary conditions for access to the construction sites and the supply of the required materials.

Not to forget – gigantic tunnel boring machines with diameters of several metres are required for the mechanical boring of the tunnel tubes. A company founded in 1977 in the small town of Schwanau in southwest Germany has shown a pioneering spirit and set standards in this field: Herrenknecht AG.



Two shield machines for the Alborland foothills tunnel

Photo: Herrenknecht AG

#### Four ladies set the rhythm

‘Stuttgart 21’ and its associated projects are expected to change a lot in rail transport in Germany and the neighbouring countries. A difficult terrain and various tunnels are part of the Stuttgart – Ulm rail project

which is divided into the major project ‘Stuttgart 21’ and the new Wendlingen – Ulm line. All the machine-bored tunnels could be rapidly drilled within just five years. Suse, Sibylle, Wanda and Käthchen, the names of the EBP shield tunnel boring machines from Herrenknecht AG in Schwanau, tradi-

tionally bearing women’s names, were largely responsible for this achievement. As a result, the approximately 50 kilometres of the key tunnel structures Filder, Alborland and Bossler are now ready for the next construction steps. Suse, a convertible multi-mode tunnel boring machine with a diameter

of 10,820 millimetres, was used in the Filder tunnel near Stuttgart, while Sibylle and Wanda, two identical EBP shield machines, both with a diameter of 10,820 millimetres as well, were used in the Alborland tunnel, coming from the south and north respectively. In the Bossler tunnel, the EBP shield machine Käthchen with a diameter of 11,340 millimetres worked its way about 8.8 kilometres to reach the target.

Herrenknecht tunnel boring machines were and are in use all over the world. Among other things in the construction of the Eurasia Tunnel which connects Europe with Asia through the Bosphorus, in the Gotthard base tunnel as the world’s longest railway tunnel or in Doha (Qatar), where 21 shield boring machines were used simultaneously to build the metro.

But before railway tunnels can connect cities and countries, as in the planned Fehmarn Belt Tunnel, or even continents, a large number of details in planning, construction and technical equipment have to be taken into account in addition to knowledge and experience.

**Herrenknecht ■ Hall 5.2 | 820**



## STUVA's task is to create high-performance tunnels for the world of tomorrow



Example of modern tunnel construction: vaulted blocks concreted on gap, ARGE Tunnel Feuerbach

Photo: imago/cora/Jürgen Stresius

Tunnels will remain the lifelines of modern society in the future. Efficient new construction and well thought-through tunnel refurbishment will secure our transport infrastructure of tomorrow.

■ 78 million people per year! This is the speed at which the world population is currently growing. At the moment there are about 7.7 billion people living on our planet – in 2050 there will be 2 billion more. In order to provide adequate living conditions

for all these people, cities will have to reinvent themselves. Above all, the infrastructure must be designed so efficiently that there is enough room to live. This is particularly true for the transport sector, because a city of the future can only be worth living in if

motorised private transport is reduced and public transport services are massively expanded. But the space cities can offer for transport is extremely limited and as a consequence the underground space must inevitably be more intensively used. Only in this way

can the sealed surfaces taken up by motorised private transport be made available for more meaningful uses or even restored to their natural “unused” state. This is crucial since additional seepage areas are urgently needed to cope with the predicted increase in heavy rainfall events and thus prevent recurrent flooding in cities.

These goals can only be achieved with additional, intelligently planned tunnels. This is why STUVA, as a non-profit association, has been carrying out research since its foundation almost 60 years ago to improve inner-city traffic and underground construction. With its approximately 250 corporate members from industry, associations, cities, transport companies, engineering offices and universities, STUVA brings together all important entities that are needed for real innovations in tunnelling and tunnel operation – regardless of whether it is a matter of detail questions of construction or of the safe and cost-effective operation of tunnels.

### Challenges of the future and the past

Thanks to unique large-scale test facilities such as tunnel lining segment test rigs, STUVA can also carry out practical research work on unusual special questions of tunnel construction. In October 2018, for example, STUVA and its research partners IMM Maidl & Maidl, Porr Bau and MC Bauchemie Müller were awarded the Innovation Prize of the Austrian Tunnel Association for the “Development of a water-permeable annular

gap material for single-shell draining segment linings”. In addition to the construction of new tunnels, the focus is increasingly shifting to the refurbishment of existing facilities. Particularly in the rail network (but also in road infrastructure) there are numerous tunnels, some of which were built more than 100 years ago and whose performance and safety are declining due to age.

In this field, STUVA performs important committee work. The fourth STUVA working group on tunnel maintenance that is currently taking place with the participation of experts from Germany, Austria and Switzerland (DACH countries) can be cited as an example. The working group has set itself the goal of developing concrete principles for cost- and time-saving tunnel renovation while train operations are going on. After their free publication as a progress report, these principles will be used jointly by all DACH countries for the conception of efficient tunnel renovation. The previous progress reports on tunnel refurbishment can be obtained free of charge from [www.stuva.de](http://www.stuva.de).

Together with the major companies in the tunnel industry, STUVA is facing up to the diverse tasks that population growth and dense construction methods pose to the infrastructure of our cities. It is the common task of all of us to foster innovative resource-saving technology, consistent teamwork and unconditional project orientation in order to assure the traffic of the future in an environment worth living in for all people.

STUVA | Hall 5.2 | 940

## A good start for the new generation: The STUVA-YEP

Every beginning is hard! Of course, this also applies to young engineers of all disciplines when they start their careers. After all, what use is all the newly acquired specialist knowledge if you still lack the contacts and networks which experienced colleagues have at their disposal?

■ The STUVA Forum for Young Engineering Professionals (STUVA-YEP) was established to facilitate precisely this entry: to support networking and to promote the exchange of knowledge between research and practice.

YEP was originally initiated by seven doctoral students at the Ruhr University of Bochum when they discovered that the various associations in tunnel construction did not have any dedicated development measures in place for junior engineering staff. The founders turned to STUVA with their idea and could quickly convince with the concept they had themselves developed. Since then, STUVA-YEP has been part of the large STUVA family, which naturally not only led to a high level of awareness in the industry but also received the necessary support

from STUVA. The official launch of STUVA-YEP took place at the STUVA 2017 conference and immediately inspired around 80 young engineers to join the team. Since then, several tech-

nical excursions have already taken place, for example to the DB construction site of the Stuttgart-Ulm project, and there were some workshops on current topics such as digitalisation

in tunnelling. At the most recent STUVA conference in December 2019, STUVA-YEP was even represented with its own exhibition stand (see photo). Here, more than 70 other young professionals were inspired by the idea of STUVA-YEP and the number of members was increased to more than 300.

The existence of STUVA-YEP has also been a great help for Julia Nass, M. Sc. (first from left in the photo), to find her way into the professional world. She has been working as a project engineer at STUVA for four years and comments: “While at the beginning it is extremely important to gain your own experience in the professional world, this is not the only success factor. The best part of our meetings is therefore swapping

experience with other young professionals. Here, everyone gives advice to their colleagues encourages them”, says the 30-year-old, who, as STUVA representative, is now herself a member of the Steering Committee, looking back on the first years of STUVA-YEP. “For me, the YEP Forum is exactly what I needed when transitioning from my studies to my job”.

Even if there is a dedicated steering committee, no one is “boss” at STUVA-YEP. The meetings are always held as a partnership of equals. However, anyone who wants to take part should not be older than 35 years. Further information about STUVA-YEP and its current projects can be found on the homepage of the young people's organisation. [yep.stuva.de](http://yep.stuva.de)



The current STUVA-YEP steering committee at its own exhibition stand at the STUVA 2019 conference. The blue sunglasses are the self-chosen “badge” of the young professionals.

## All-rounder for rail and road



The 'A 922 Rail Litronic' road-rail excavator is used both in track construction and in classic earthmoving work.

Photo: Liebherr

Road-rail machines can be used both on railway tracks and in road construction. Liebherr's new 'A 922 Rail Litronic' two-way excavator that complies with emission level V can be moved quickly thanks to its mobile undercarriage.

■ The basic machine, the rail running gear, the quick-change system, the attachment and all safety systems of the

road-rail excavator are proprietary developments from Liebherr that are custom-designed for the machine.

The 'A 922 Rail' is available in various undercarriage variants with different track gauges and railway wheels, ena-

bling it to be used on tracks all over the world. An independent variable displacement pump for the railway running gear ensures traction and safe propulsion. The brakes are integrated as standard features in the railway wheels to shorten the braking distance in both the lowered and raised state, thus increasing safety.

### New generation with more power

The new generation of the 'A 922 Rail Litronic' now has even more power. With a new 120 kW / 163 hp engine, a faster working speed is achieved, while the usual smooth working movements are maintained. Thanks to a variable displacement twin pump with independent control circuits from Liebherr, powerful hydraulic attachments can be operated independently of the working and travel movements of the road-rail excavator. The delivery rate of the variable displacement double pump is 2x220 litres per minute. In addition, a heavier ballast weight has been engineered in order to achieve the best payload values with improved weight distribution and a compact rear swing radius of 2,000 millimetres. Access to key components has been simplified – air, oil and fuel filters, the main battery switch, the central lubrication point for the undercarriage,

and the pilot valves for the hydraulic system can be reached much more easily. All maintenance points are easily accessible from the floor level. This shortens maintenance times and reduces maintenance costs.

### Improved safety and higher productivity

The crew cab with standard rollover protection system (ROPS) has a colour touch-screen display for indication and operation. It is generously glazed and, in combination with the standard rear and side cameras, provides an optimum view of the working and swivelling area. The cab has improved access and entry lighting. The safety systems come from the company itself and include technologies such as load moment, height and pivoting angle limitations as well as a virtual wall. The wide range of Liebherr attachment tools makes the 'A 922 Rail' suitable for a variety of applications. To further increase productivity, the road-rail excavator can optionally be equipped with the fully hydraulic quick-change system developed by Liebherr. The combination of a hydraulic quick-change system with an automatic hydraulic coupling system allows mechanical and hydraulic attachments to be changed quickly and safely from the cab.

Liebherr-Hydraulikbagger ■ Outdoor Display

## Protecting infrastructure

In order to ensure the availability of infrastructure, rail operations depend on electrical and electronic components in many places. In the event of a fault, they also represent a potential fire hazard. Early detection and a reliable fire protection are therefore essential.

■ About every third fire in Germany is caused by electrical equipment, systems and installations. Be it short circuits, faulty components or defective cable connections as a result of equipment aging, the possible causes of fire are manifold. The AMFE sys-

tem, the Automatic Miniature Fire Extinguishing Unit (AMFE) developed in Germany, is a reliable, economical and above all retrofittable solution for extended fire protection in the railway industry. The AMFE series works on the principle of a sprinkler but with

the highly effective, globally approved 3M™ NOVEC™ engineered fluid extinguishing agent. ime® Elektrotechnik GmbH, a long-standing partner of various public transport operators in Germany, offers the system from a single source.

Extinguishing agent cartridges are available for the AMFE series in six different sizes from 24 to 603 millilitres of extinguishing agent. This means that for each application the most economical size can be used. The extinguishing agent cartridges are used directly at the potential hazard location, for example in a control cabinet, and function autonomously – without trigger current. The heat-sensitive glass bulb integrated in the AMFE bursts at a defined temperature (similar to sprinkler systems) and triggers a spring mechanism. This opens the connected fire extinguishing cylinder, that distributes the 3M™ Novec™ Engineered Fluid. In a matter of seconds, the emerging fire is suppressed at an early stage.

### Highly effective and residue-free

As the extinguishing agent is practically residue-free, the damage to the affected devices is usually minimal and allows easy troubleshooting. The design is sufficiently robust for use in the railway environment, it is economical thanks to the high extinguishing effect and, in addition, it is easy to retrofit to increase fire protection and achieve fire protection class VO. With a low maintenance requirement, the operating costs remain low. The AMFE system is TÜV-certified.

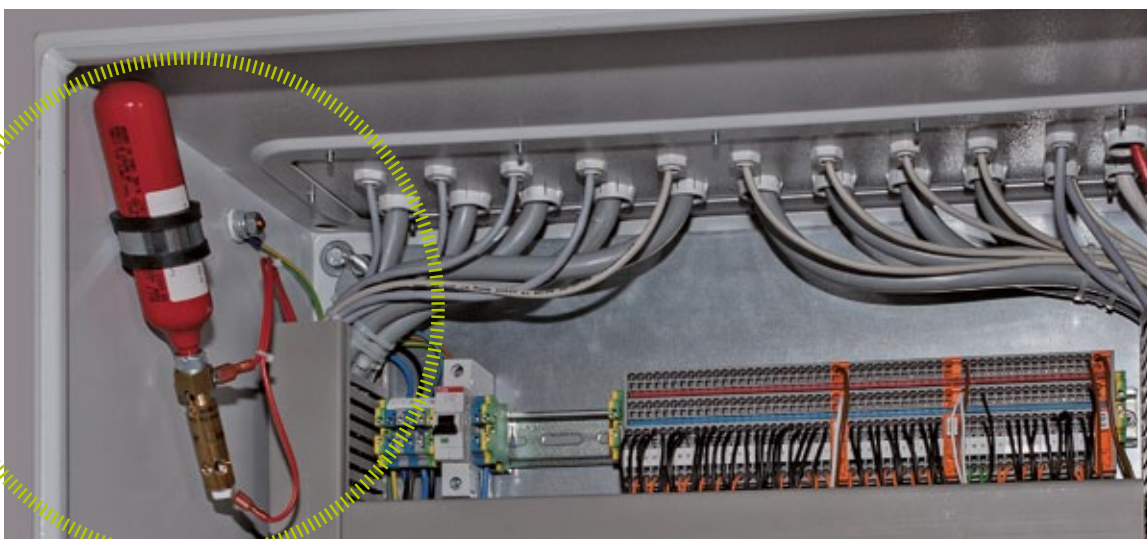
ime® Elektrotechnik ■ Hall 5.2 | 750

### NEWS

#### ■ With tradition into the future

A company with history. The origins of Dnipropetrovsk (DnSZ), a turnout factory in the Ukraine, can be traced back to 1916. DnSZ is the oldest known manufacturer of broad gauge turnouts for the 1,520 millimetre track gauge. The product portfolio includes turnouts and their components for mainline, light rail, metro and tram systems, for mining and tunnel construction as well as for port facilities. All parts, including fixed and movable frogs, forged switch rails, base plates and smaller castings, are produced on site. The associated foundry operates two electric arc furnaces with a nominal capacity of 6 tons each, equipped with an automatic system for electrode positioning. Castings up to 9 metres long can be produced in the automatic IMF ("no-bake") moulding plant. All products are delivered to customers in finished condition, with a few exceptions. In-house design and sample production enables the manufacture of individual castings with short lead times. The modern company certifies its products according to GOST, EN and other standards and delivers to about two dozen countries. DnSZ is certified according to ISO 9001 (quality management system standard), ISO 14001 (environmental management system standard) and OHSAS 18001 (occupational health and safety management system standard).

DnSZ ■ Hall 26 | 220



Extinguishing agent cartridge in a control cabinet.

Photo: Job Group



## The passenger in focus

Air conditioning systems can, for example, be integrated into the roof of the vehicle.

Photo: PESA

Travellers want to reach their destination in comfort and without stress and noise. Railways can keep up with this. A range of systems and solutions from Knorr-Bremse are already helping to make train travel more comfortable, quieter and easier.

Knorr-Bremse's subsidiary IFE is developing variable entrance systems for regional and high-speed trains as well as for S-Bahn trains. Folding, sliding or swivelling steps help to ensure rapid, effortless and safe boarding. There is currently increasing pressure from the German public transport sector to install such systems throughout the country. The goal is to achieve full

accessibility of public transport by 2022.

### Less noise and draught thanks to new sealing systems

IFE has improved the sound insulation of its new generation of both exterior and pocket type sliding doors and has achieved a significant reduction

of noise levels in passenger compartments. While conventional seals only close at the lateral edges of the doors, a device lifts the door leaf before closing, thereby sealing its upper and lower edges. In addition to improved noise insulation, this also reduces the volume of cold air that is forced into the vehicle – especially at high speeds. Train crews can thus control the temperature in the passenger compartments in a more energy-efficient way. Passengers can enjoy travel at a constant temperature and without a cold draught.

### A pleasant temperature: The right climate in every situation

The world's leading HVAC systems from Knorr-Bremse subsidiaries Merak and Kiepe Electric make it possible to adapt the atmosphere in the vehicles to seasonal, weather and outside temperature conditions. In Europe,

the systems are rather inconspicuous. Here, travellers find it unpleasant if there is too big a change between the outside ambient and interior temperature. In particularly sultry and hot areas with high humidity, however, passengers often want a clearly noticeable cooling effect with a high level of air circulation. And since the systems can be operated with the almost climate-neutral refrigerant CO<sub>2</sub> (R744), they offer an additional contribution to environmental protection.

### Gentle braking for a smooth travelling experience

The so-called stopping jerk was previously considered unavoidable, as the friction coefficient of brake pads increases rapidly at low speeds. Thanks to an even more intelligent braking system design, smooth braking is now achieved through perfect control that practically eliminates any jerk transmitted along the train. Even when the classic disc brake is blended in to substitute the electrodynamic brake at low speeds, this goes unnoticed by passengers. In the course of the next generation of brake control systems, Knorr-Bremse is working to ensure that braking is as even as possible over the entire speed curve, regardless of fluctuations in the systems involved.

Knorr-Bremse | Hall 1.2 | 250



## WAGO 750 XTR I/O system now with M12 connections

The proven WAGO 750 XTR I/O system is specially optimised for rail applications.

Photo: WAGO

Temperature fluctuations, shocks and vibrations – the safe and reliable operation of automation technology for railway applications must be guaranteed even under extreme conditions.

The WAGO 750 XTR I/O system has now been specially optimised for railway applications. On the one hand, the PFC200 XTR (2nd generation) and the field bus couplers Modbus TCP XTR/EtherNet/IP XTR (4th generation) are now each implemented in the latest, more powerful generation. On the other hand, particularly robust M12 connectors on the devices replace the previously common RJ-45 connections.

M12 connectors have a high mechanical strength and are resistant to dirt and moisture when

plugged in. At the same time they ensure safe and reliable contacts and thus error-free data transmission. In contrast to RJ-45 plugs, they are not only plugged in but screwed into the socket to provide vibration resistance. Manfred Kühme, the system product manager, explains that this is the more reliable connection method for the heavy and rigid Ethernet cabling material used in rail transport.

The WAGO 750 XTR I/O system has already proven itself in many demanding outdoor applications in railways, on ships, in the petrochemical industry or in the water and sewage

industry. Certifications for various applications and markets, high-performance components, the small size and a large selection of I/O modules are among the most important advantages of the system and promise maximum flexibility even under the most difficult conditions.

The WAGO Group is one of the international trend-setting suppliers of connection and automation technology as well as interface electronics. The family-run company is the world market leader in the field of spring clamp technology.

WAGO | Hall 13 | 300

Ad

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## Logistics and maintenance – integrated software solution to optimise processes

A core task of railway undertakings is the safe and timely delivery of goods to their destination. The quality of service is determined by smooth planning and execution of the logistics chain. The availability of locomotives and wagons is a prerequisite for achieving this goal.

■ The software specialist ZEDAS GmbH has combined the approach of a comprehensive view of logistics management and asset management in its product suite. The dispatching software for rail-freight transport

zedas<sup>®</sup>cargo facilitates and automates not only operational but also commercial processes. zedas<sup>®</sup>asset is a software for the asset management of rail vehicles and rail infrastructure, that enables predictive maintenance.

This minimises unplanned downtime and thus increases the safety and availability of assets. The use of zedas<sup>®</sup>cargo and zedas<sup>®</sup>asset combines and coordinates logistics and maintenance processes. If a scheduler

plans vehicles for a rotation, he can see at first glance which vehicles are available and which are due for immediate maintenance. If a vehicle is scheduled for a rotation that is longer than the remaining mileage before the next scheduled maintenance, conflicts are immediately displayed and another vehicle can be used ad hoc. During operation, the vehicle's mileage is automatically and continuously updated, transferred to all components and used for performance-dependent

maintenance planning and deadline calculation.

### Simple app – great effect

Locomotive drivers can directly record damaged wagons on the spot via the app. The damage data including the damage code, photo documentation, the location and consignment data are transferred to the maintenance system without media disruption. The data pool is available for further planning and processing in the workshop. The feedback on workshop orders and the processing of checklists takes place electronically and without media disruption via the app. The maintenance delivery notification by the workshop (ECM 4) as well as the approval to return to operation by the fleet manager (ECM 3) is carried out digitally in a complete and audit-proof manner, and the vehicles are immediately available for scheduling.

The efficient interaction of logistics and maintenance processes allows railway undertakings to take advantage of a number of synergies. Vehicles can be scheduled for maintenance while their rotations can be optimised at the same time, verbal coordination between the specialist departments is reduced to a minimum and the obligation to provide proof and documentation is significantly simplified. An efficient end-to-end working method allows cost-saving potentials to be tapped. **ZEDAS | CityCube Berlin | 100**

## Safe and low-emission on the move – protection for passengers

Current and future emission limits require individual configuration of exhaust gas after-treatment systems in order to integrate them in the best possible way into new or existing applications. Fire protection also plays a major role here.

■ The Fischer Group with Fischer Abgastechnik GmbH & Co. KG and Fischer Industriemotorenzubehör GmbH & Co. KG offers technologies for various applications. Fischer Abgastechnik is an influential developer of unique exhaust gas after-treatment systems for rail vehicles and industry. The soot particle filter systems, that are specially tailored and manufactured for each specific application, reduce the soot emissions of the main and auxiliary drives very effectively.

Fischer Industriemotorenzubehör has been a supplier and service partner for fire protection solutions for all types of vehicles, aggregates, engines and engine rooms for many years. The new EU regulation UNECE R107 on public transport includes the use

of fire extinguishing systems in urban buses and in future also in long-distance buses and coaches. This is associated with new requirements and guidelines for local authorities when awarding service contracts to bus companies.

### Partner companies of the manufacturer Fogmaker

Technical defects are not necessarily the only ignition sources; human errors such as an oil-soaked cloth forgotten on the exhaust manifold may also cause them. The high exhaust gas temperatures that are necessary to ensure an appropriate function of particulate filters and SCR systems and thus to cope with the ever more stringent engine emission limits, also

lead to an increased fire risk. The fully automatically triggered Fogmaker extinguishing system effectively fights the fire source with the excellent properties of a high-pressure water mist.

Finely sprayed water mist displaces the oxygen required to sustain the fire and cools the ambient temperature very quickly. The extinguishing medium, water, is harmless to humans and does not pollute the environment. Extinguishing agent containers do not have to be replaced after been activated but instead can be used again after inspection and refilling, thus ensuring low maintenance and servicing costs throughout their entire service life. Fischer keeps all necessary fluids and spare parts for this purpose in stock. In addition,

the specialists from Emsdetten install the fire protection solutions professionally and offer a comprehensive service. The headquarters of the Fischer Group are located in Emsdetten,

where a new building with more space for new developments, test bench areas and filter service is currently being built. All in all, the Fischer Group will thus triple its company size.





## Between coffee and couscous – the imaginative future of travel catering

LSG Head of Train Services Xavier Muller talks about the future prospects of travel catering.

Photos: LSG Group

■ How will we travel in the future? Among others, InnoTrans 2021 will set a strong focus on Travel Catering & Comfort Services in hall 1.1. The aim of the exhibitors is to ensure that passengers feel valued and respected throughout their journey so that they can relax and be at ease. It is not only an important criteria to create comfort on board; a high-quality and well-balanced range of snacks and drinks as well as a first-class service for rail customers also play a decisive role. LSG Group recognises the importance of Travel Catering & Comfort Services for the industry and has been providing advanced rail services with a wide range of products and services for over a decade. Head of

Train Services Xavier Muller gave us an insight into the future of an expanding industry.

**The motto of InnoTrans 2021 is “The Future of Mobility”. What are your company’s goals in the near future?**

**Muller:** “We want to ensure greater sustainability in on-board sales products and help our customers to use less equipment and produce less waste. This starts with the selection of suppliers, when we look for those who can provide us with the best possible support. It extends to raising the environmental awareness of our employees. Other

trends are the digitisation of the on-board retail business with order-to-seat and co-operations with well-known, attractive brands.”

**Which dish is most popular in the railway sector?**

**Muller:** “In the food sector it depends on the type of train, the route and the target group. We supply many different products – from sandwiches to fine dining experiences with filet mignon, served on high-quality porcelain and a tablecloth. There is demand for every-thing. The situation is different with drinks – whatever time of day, coffee is the most popular. A sweet snack

such as a chocolate muffin goes perfectly with it. Such products are very popular.”

**How has rail catering changed in recent years?**

**Muller:** “On-board sales programmes are becoming increasingly important. The demand for concepts individually developed for each train operator to achieve a gastronomic image is increasing. We have established the brands “La Table” in France and “Reisecafe” in Germany. They are not only visible on napkins or sugar sachets, but also, for example, on train attendants’ aprons. None of our concepts is like any other. They are always tailor-made, which creates recognition value and unique selling points for the customer. In addition, the demand for to-go products has increased – combined with the challenge of reducing waste.”

**Are rail customers paying more attention to balanced eating?**

**Muller:** “Customers are happy about healthy alternatives such as fruit salad or couscous. Such flagship products add value to the product range. But in the end, many customers still go for classics like curry sausage. They simply want an authentic product range. We concentrate on making fast food on-the-go healthier and more balanced.”

SG Group | Hall 1.1 | 550

## TCCS Route Hall / Halle 1.1

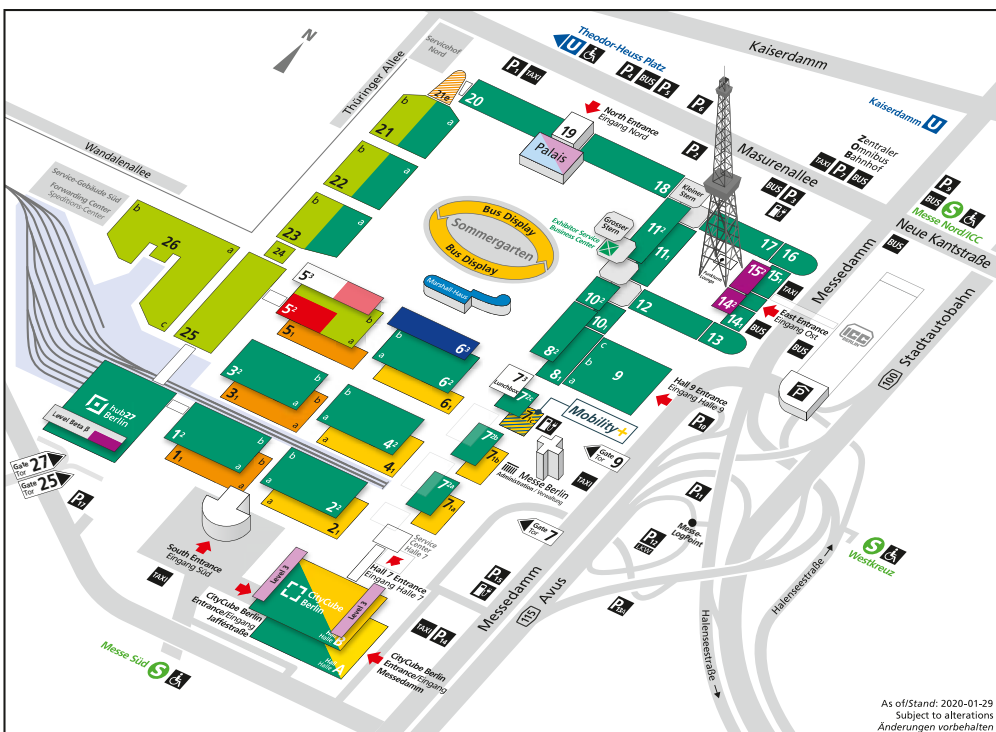
Experience a journey through the diverse and gastronomic world of comfort with the TCCS Route.

■ Hall 1.1, in the Interiors segment focuses on Travel Catering & Comfort Services (TCCS). This independent

thematic area combines products and services for all aspects of catering facilities and services in the field of

railway travel. This is the place where trade visitors can get a comprehensive overview of the industry sector, covering essential product groups such as hygiene articles, coffee machines, food & beverage, comfort and care articles, restaurant cars and amenities from international providers such as Rex-Royal AG. The Travel Catering & Comfort Services Route provides an

optimal overview of the numerous offers from exhibitors. The specially designed route enables enterprises such as engineerethics S.r.l. or MULTI RAIL Srl. to directly provide professional visitors with information about their highlights. Trade visitors can find further information about TCCS exhibitors and the TCCS Route at: [www.innotrans.com/tccs](http://www.innotrans.com/tccs)



## Exhibition grounds InnoTrans 2021



- 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
- InnoTrans Campus
- Business Lounge (Marshall-Haus)
- Press Centre
- Restaurant "Meet'n'Eat"

Your contact persons for InnoTrans

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