

# InnoTrans 2024 Report



B2B-Magazine for the Railway Industry

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**IN FOCUS**

**INNOTRANS 2024**

The trade fair has never been as large and varied as this year

Around 170,000 visitors from 133 countries visited the fully booked exhibition centre to find out about the latest innovations in the transport industry which were presented by 2,946 exhibitors from 59 countries.



**2** The world's first Railway Influencer Festival

Social media rail fans from all over the world came to InnoTrans to network. The jury conferred the Railway Influencer Award on the best of them.



**5** Concentrated AI expertise in the new AI Mobility Lab

'Don't experiment' – for cybersecurity expert Mirko Ross, cybersecurity is also part of the architectural planning when artificial intelligence is applied.



**6** Know where the mobility industry is heading

The who's who of the mobility industry came together on the 200,000 square metres of exhibition space with 42 exhibition halls and outdoor display and track areas - a look back in pictures.



## A firework of innovations

With around 170,000 visitors, the exhibition centre was really packed.

Photo: Messe Berlin GmbH

essary ecosystem for its trains and related industries. Stadler's RS ZERO celebrated its world premiere at InnoTrans. The regional train relies on a combination of hydrogen and battery propulsion for CO2-free operation. The Modula BFC from Vossloh Rolling Stock with duisport rail also runs on hydrogen. The hybrid locomotive is equipped with two fuel cells and a hydrogen tank and it is intended to be used at the Duisburg Gateway Terminal. At maximum power, it has a range of 273 kilometres.

Hydrogen is also a valuable drive system for the road. Arthur Bus with its Arthur Zero hydrogen bus was one of the eleven buses presented, which invited visitors to test drive them on a 500 metre circuit in the Sommergarten at Messe Berlin. With its Ebusco 3.0, Ebusco brought along a real lightweight, weighing just 9,950 kilograms with a length of twelve metres and has a range of up to 700 kilometres.

### Great interest in AI

With the AI Mobility Lab, InnoTrans dedicated a separate exhibition area to manufacturers and service providers specialising in topics such as cybersecurity, robotics and AI applications for the first time. The trade fair thus did justice to the growing digitalisation of the transport sector. Dr Volker Wissing, the German Federal Minister for Digital and Transport, praised the new exhibition area: 'There is great potential here, especially in times of a shortage of skilled workers and growing traffic,' emphasised the minister.

Another premiere at InnoTrans 2024 was the Railway Influencer Festival (page 2). Content creators exchanged ideas with industry professionals over DJ sounds, currywurst (a popular German sausage speciality) and candy floss. Prizes were also awarded in various categories, including for the best trade fair video.

### Discussion and exchange

The InnoTrans Convention took place as a well-established format for dialogue. The programme was organised by the German Railway Industry Association (VDB), the German Transport Forum (DVF), the Association of the European Rail Supply Industry (UNIFE), the German Electro and Digital Industry Association (ZVEI) and the Association of German Transport Companies (VDV). Opportunities to discuss specific industry topics were provided by the dialogue forums. At the International Design Forum, International Bus Forum, International Tunnel Forum, DB Innovation Forum and Public Transport Forum, trade visitors were able to meet high-calibre speakers.

The Women in Rail Award 2024 was presented at the EU Rail stand to honour women for outstanding achievements in the rail sector and the activities of organisations and companies which are committed to fairness, diversity and equality. There was also an opportunity for networking at the Women in Mobility luncheon. Employers and jobseekers also networked at the InnoTrans Campus. In the RecruitingLAB, exhibitors presented their companies in short talks, while jobseekers pitched for the favour of recruiters at the Eurailpress Career Boost (page2).

### COMMENT

## Platform to launch bright future

Enno Wiebe, Director General Union des Industries Ferroviaires Européennes (UNIFE)



Photo: UNIFE

The largest ever InnoTrans delivered exactly what it needed to – an opportunity for the rail sector to meet in one place and join forces to embrace new opportunities and offer solutions to pressing issues.

Over the course of the week, I spoke with journalists from around the world and met with trade and industry delegations from India, the United States, the Gulf States and Australia. InnoTrans' ability to bring people together has never been stronger and through my own personal experience remains valid.

Our week began with the International Press Circle, where we presented the overlying results of the World Rail Market Study 2024 as well as the European Rail Supply Industry's vision of the future.

The next four days were very busy – a mix of hosting sessions at UNIFE's stand, while also meeting with our members, key policymakers and industry stakeholders from across

CONTINUED ON PAGE 2

## The 14<sup>th</sup> InnoTrans in Berlin closed with a record amount of exhibition space and visitors.

Being larger and with a wider international participation, InnoTrans was certainly not short of superlatives. With around 170,000 visitors from 133 countries and the exhibition grounds booked to the last square metre, it was the largest InnoTrans of all time and even the largest trade fair for transport technology in the world. With 2,946 exhibitors from 59 countries, it was larger than before the pandemic. More than 1,200 guests attended the opening with Dr Volker Wissing, including many international colleagues of the German Federal Minister for Digital and Transport. 226 world firsts were on show at InnoTrans this year. The crowd-puller was the track area with a total of 133 vehicles on 3,500 running

metres of track. One of the attractions there was the ETR1000 high-speed train from Hitachi Rail in Italy. It is suitable for cross-border traffic as it is compatible with various power supply systems. Alstom presented Berlin's longest tram. It is particularly sustainable, quiet and safe.

### High hopes for H2

Hydrogen as the driving force behind emission-free mobility made its grand entrance at InnoTrans. Hyundai Rotem, for example, presented a hydrogen tram. The vehicle, which has won an award for its design, is set to run in South Korea from 2028. The company is also developing the nec-

## #safetygoesdigital

HIMA's innovative approach guides the railway industry into a smart, safe, and secure digital future.

- Flexibility by Design
- Functional Safety Excellence
- Optimizing Lifecycle Cost
- Safe & Secure Ecosystem
- Technology Leadership

## CONTINUED COMMENT

the world. At UNIFE's stand, a showcase of the European rail supply industry, we offered a range of different items on our programme. Many attendees had the opportunity to engage in virtual reality at the stand, with key rail applications provided by some of UNIFE's members. The virtual exhibition space was customised for InnoTrans 2024, giving participants an immersive environment.

We also hosted several key events on the future of rail cybersecurity and the future rail communications system, FRMCS, while continuing to champion the ERTMS roll-out and we hosted dedicated sessions at the fairground and at our stand. InnoTrans gave the European rail sector the perfect forum to sign a joint declaration by the ERTMS Stakeholder Platform Board in order to ensure coordination, alignment and promotion of the deployment and implementation of ERTMS in order to create a Single European Railway Area. UNIFE also put IRIS Certification in the spotlight, giving visitors to UNIFE's stand an inside view into the IRIS program, showcasing the value it brings to the companies which engage in quality certification. To mention a few key displays and visits – the Women in Rail Award (with UNIFE as one of the co-organizers) at the European stand was an important way of boosting inclusivity and the role of women to ensure the industry diversifies and reflects the wider public.

These awards took place concurrently with the first ever UNIFE SMEs Award, which saw wins from Gillet Tools in the category of Innovation, while Prolan won in the category of Corporate Social Responsibility. Elsewhere, the Railway Influencer Festival was a great opportunity not just to applaud excellence in the field, but to show the ways we can bring new interest and talent to our sector. The hall and all the exhibits dedicated to AI were also a testament to the bright path we are charting. After the truly enlightening conversations and interactions at InnoTrans the job is now ours to take that wonder and implement what we saw.

# 'Everyone is here, so we have to be here too'



His Excellency Mattar Al Tayer at the Hyundai Rotem stand

Photo: Messe Berlin GmbH

## InnoTrans provides important inputs for international policy makers and business delegations.

37 foreign delegations travelled to Berlin for the 14th InnoTrans to find out about the latest developments in

transport technology. For the first time there was a group from Colombia which included representatives from the Min-

istry of Transport, the Medellín metro and the Bogotá transport company. 'Rail transport is more important than ever in Colombia,' said Veronica Cristancho, project coordinator at the German-Colombian Chamber of Industry and Commerce, who had organised the journey. Rodrigo Vilaça and Alexandre Barros had travelled from neighbouring Brazil. The Brazilians visited their country's joint stand. 'Brazil on Rails' includes component manufacturers, software and consulting companies as well as government companies and transport associations. 'InnoTrans is the trade fair with the most comprehensive solutions worldwide. Everyone is here, so we feel the need to be here too,' emphasised Rodrigo Vilaça. Spanish Transport Minister Óscar Puente Santiago's tour of the trade fair took him and his delegation to companies from Europe and Asia. 'I need to be informed

about all innovations in trains,' said the politician, explaining his visit.

Kelly-Anne Gallagher, CEO of the Commuter Rail Coalition, brought buyers from the USA to InnoTrans. 'There are no comparable trade fairs in the USA with so many suppliers and service providers. The visit to InnoTrans provides a complete view of all the opportunities in the rail industry,' emphasised the mobility expert.

His Excellency Mattar Al Tayer, Commissioner General of Infrastructure, Urban Planning and Welfare and Director General and Chairman of the Board of the Roads and Transport Authority (RTA), came from Dubai. At InnoTrans, he and his delegation gained an impression of transport projects and international innovations.

You can read the full text on the [InnoTrans Blog](#).



The youngest participant at the Career Boost was 17-year-old Rajveer Honroo from Great Britain.

Photo: Messe Berlin GmbH

## At the Eurailpress Career Boost, young applicants attracted the attention of companies from the rail industry on stage. The experience, commitment and knowledge they showed in their 90-second pitches is captivating.

90 seconds of excitement - for Maria Potapova it was definitely worth it. As soon as the young Belarusian stepped off the Talent Stage at the InnoTrans Campus after her pitch, three companies approached her to get to know her better.

Potapova was one of 21 candidates who presented themselves on stage at the Eurailpress Career Boost at InnoTrans 2024. The live format was launched in 2022 and was such a great success that it has now entered its second round. Half the world was represented on the Talent Stage. Some applicants come from India, China or the Ukraine, but are currently studying in Europe or are already work-

ing here. 'When I turn 18 next year, I'd love to go somewhere in the world to work in the railway sector,' said Rajveer Honroo, who is currently studying in Great Britain. Tawonga Tsokodayi may possibly only have to travel as far as the Austrian city of Linz. The young Zimbabwean has been living in Frankfurt since 2018, where he completed his degree in Mechatronic Systems Engineering.

Anna Kuraja, HR Manager at Plasser & Theurer, was so impressed that she immediately invited him for an interview. 'When someone comes to our site in Linz, it's like a match made in heaven.'

You can read the full text on the [InnoTrans Blog](#).



The winners of the first Railway Influencer Festival at InnoTrans were YouTuber Tobias Foltin (left), winner in the 'Best InnoTrans Video' category, and Heather Lewis (right), who accepted the prize in the 'Best Brand Video' category on behalf of Alstom from InnoTrans Director Kerstin Schulz (centre).

Photo: Messe Berlin GmbH

## Social media train fans from all over the world came together at the first international Railway Influencer Festival at InnoTrans. The best videos and content creators were awarded prizes.

It smelled of fresh popcorn, pink candy floss and Berlin currywurst (a popular sausage speciality) at the world's first Railway Influencer Festival at InnoTrans. A DJ provided the background music and it was the ideal backdrop for around 30 influencers from all over the world who had come to Berlin to make contacts and celebrate their enthusiasm for the railway sector.

The Railway Influencer Award was also presented there for the first time, including three categories right from the start. 'Simply Railway' by Frenchman Thibault Constant was honoured as the best mobility channel. The prize for the best brand video went to Alstom. The video 'Sustainable mobility for everyone, everywhere' focuses on employees in all areas of the com-

pany as well as diversity and inclusion. The winner for the best InnoTrans video was a complete surprise. Tobias Foltin from the German region of Franconia was honoured for his contribution about the top ten highlights of new trains at InnoTrans 2022. The vocational school teacher posts his videos about railway topics on YouTube under the title 'Zug 2013'. In addition to the influencers, selected exhibitors were also present. Monika Schäffner, Team Leader Digital at Harting, has already had very good experiences working with a YouTuber. The festival now offered her an opportunity to establish similar contacts, she said.

You can read the full text on the [InnoTrans Blog](#).

## IMPRINT

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## A multifaceted look at shaping the future

The SPITZKE panel: Thomas Zeidler, Mark Fisher, moderator Carina Jantsch, Markus Hochmuth, Dr Bernhard Lichtberger and Uwe Neumann (from left)

Photo: SPITZKE SE / Laurin Schmid

Numerous guests, an innovative trade fair stand, a top-class programme and plenty of networking opportunities made SPITZKE an interesting point of contact at InnoTrans 2024.

■ In addition to the traditional focus on promoting young talent, SPITZKE's trade fair programme focused on the future - in particular with a panel discussion and the question: 'Where will the rail industry be in 2035 and how will we then be constructing?' Uwe Neumann, Head of Infrastructure Procurement at Deutsche Bahn AG, Dr Bernhard Lichtberger, Managing Partner and CTO of System7 Railsupport GmbH, Markus Hochmuth, CEO of OBERMEYER Digital Solution GmbH, Thomas Zeidler, Managing Director of GI-CONSULT GmbH and host Mark Fisher, CTO of SPITZKE, took part in the discussion. The panel painted a clear picture of the current and future challenges for an efficient railway system and set clear priorities for solving

them. For example, by using AI and autonomous technology to overcome capacity bottlenecks throughout the industry. A more comprehensive database should also be created and made accessible to all stakeholders, they concluded. The panellists were unanimous in their opinion that the burden of tasks could only be borne as a collective effort on all shoulders. They found that companies would have to invest in a future-oriented manner, planning and authorisation procedures should be accelerated or simplified and the Federal Government should make long-term financing commitments in order to secure investments and create predictability.

This year's SPITZKE student competition, the winners of which were

honoured on the last day of the trade fair, was a special kind of work for the future. The task focussed on the effectiveness and efficiency of the execution of corridor projects.

At the SPITZKE Talk, Dirk Flege, Managing Director of Allianz pro Schiene e. V. and member of the Sector Advisory Board, Bärbel Fuchs, Managing Director of BEG Bayerische Eisenbahngesellschaft mbH and Chair of the Sector Advisory Board, and host Torsten Völker, CRO of SPITZKE, discussed the topic of 'Infraplan and Sector Advisory Board'. SPITZKE also honoured its long-standing partners Beuerlein GmbH, Erdwerke GmbH and Schwihag AG for their trusting cooperation and was delighted to once again receive the 'DB Supplier Commendation'.

## Key element for a sustainable mobility era



voestalpine Signaling - intelligent systems for rail transport

Photo: voestalpine Signaling Austria GmbH

voestalpine Railway Systems combines industrial expertise with digital intelligence to create a holistic smart ecosystem under the new zentrak product brand.

■ Efficiency, safety and maximum capacity utilisation are key when it comes to the development of innovative railway systems. While the underlying technology has remained unchanged for 150 years, technical standards have evolved. Faster trains, denser traffic and heavier loads are placing considerable requirements on the infrastructure. This calls for constant innovation and optimisation.

In the areas of artificial intelligence and digitalisation, voestalpine Railway

Systems focuses its research and development on three aspects in particular.

New materials and technologies extend the service life of railway infrastructure and offer ecological and economic benefits.

Data is continuously collected for proactive monitoring and diagnosis. This enables the early detection and rectification of potential problems.

In order to ensure optimised asset and maintenance management, advanced maintenance strategies are used to increase the availability and reliability of the infrastructure and reduce operating costs.

### zentrak - Connecting everything

With the zentrak product portfolio, voestalpine Railway Systems offers

solutions for the challenges of modern railway systems. The combination of traditional expertise and state-of-the-art digital intelligence significantly improves the efficiency, safety and sustainability of railway infrastructure.

The zentrak portfolio is divided into three main areas:

zentrak Infrastructure Monitoring comprises customised condition monitoring and intelligent evaluation to improve availability and reduce life cycle costs through prescriptive maintenance.

zentrak Rolling Stock Monitoring: Diagnostic and monitoring functions enable intelligent maintenance practices.

zentrak Asset & Maintenance Management: Digital touchpoints and plant data identify potential savings and optimise maintenance management.

## We are on Track! Electronic control for rail vehicles

### Safe SIL2 control unit with TRDP and Dual Homing



The new LION Safe CCU expands the LION product family with a powerful control unit that is SIL2-capable. With the L-Bus<sup>2</sup>, the controller can be easily adapted to any application. Various safe and non-safe IO modules are available for this purpose.

The connection to other systems is made via MVB, CAN or CANopen. The controller also offers TRDP including Dual Homing as a communication interface.

The SDTv2 protocol for MVB and TRDP is available for safe communication.

Scalable  
Safety

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**LÜTZE**   
TRANSPORTATION



'It's straight to the point here'

Bus exhibitors in the bus display area at InnoTrans 2024

Photo: Messe Berlin GmbH

Exhibitors were able to present their vehicles in the bus display area in the Sommergarten and experience them in live operation on a 500 metre long circuit. InnoTrans Report went there to talk to industry representatives about their impressions of the trade fair.

■ 'We believe that InnoTrans is one of the best bus exhibition areas in Europe. We take part in many trade fairs all over the world. Europe is our main market, but we are also active in North America and Japan. A unique feature of InnoTrans is the dedicated bus display area in the Sommergarten. Usually, lorries, heavy transport vehicles and other public transport vehicles are mixed with the bus displays, but here it's to the point. All the visitors come and ask real questions about the buses. That's why it's very important for us to be here,' said Nurdan Derman, responsible for Marketing & Communications at KARASAN AUTOMOTIVE. This was the second InnoTrans for the Turkish bus manufacturer, which this year presented the e-ATAK, the first autonomous bus.

'It's really nice to be able to see vehicles outside and go for a ride. That's a plus for InnoTrans,' emphasises Patrick Oosterveld, Sales Director at Dutch bus manufacturer Ebusco. 'You can get a feel for electric here. Normally, when I start a vehicle and switch it to 'D', it starts running, but that's not the case with an electric vehicle. It's difficult for a lot of people and here you can really test how smooth it is, how quickly the vehicle accelerates.' Ebusco was represented in the bus display with the all-electric Ebusco 3.0 with a body made of composite materials. Oosterveld emphasised that

experts from municipal utilities, who mostly operate rail and bus systems, showed great interest in the Ebusco innovation.

Zoltán Sipos, CEO of the traditional Hungarian manufacturer Ikarus, which has been exhibiting at InnoTrans for the first time, was positively impressed by the number of visitors and the favourable conditions: 'InnoTrans is very good for the expansion of the Ikarus brand, so we have set our goal and we will achieve it. Another contributing factor was the visit by the German Federal Minister for Digital Affairs and Transport, Dr Volker Wissing, of which Sipos is very proud: 'We are a European manufacturer and we are part of this industry.' For the bus display area, Ikarus had brought along two electric buses, the latest V4 version of the 12-metre city bus, the Ikarus 120e, and the Ikarus Midi bus, an 8-metre electric bus.

A total of eight bus manufacturers with different vehicle types were represented in the bus display, among them K-Bus and NesoBus. For the first time, the Chinese company BYD was also present with three electric buses, the BYD B12, BYD B13 and BYD B18. The special features of the BYD B12 are its fast and flexible charging solution and its long range of up to 600 kilometres.

Other manufacturers also had booths in the exhibition halls, including Bozankaya, CAF and Daimler Buses.

## Clear real-time passenger audio information



The Cura®G3 public address system in a compact design of just one height unit

Photo: Funkwerk

With a live presentation at InnoTrans, Funkwerk Systems GmbH has launched Cura®G3, a new compact IP-based public address system for acoustic passenger information.

■ When an announcement is made, the listener must be able to hear it with impressive sound quality - at a small railway station as well as in a large factory building. This is achieved with the new Cura®G3 from Funkwerk. It combines all the functions of an announcement device with those of a public address system. At just one height unit, it is very compact and runs without a fan.

A third-generation Cura® system consists of a basic device with a redundant IP connection that can be expanded to up to 80 amplifiers and

160 monitored line outputs thanks to expansion devices. For a medium-sized railway station with four platforms and a reception hall, for example, one basic unit including two expansion units is required to ensure optimum public address via 100 or more loudspeakers. The announcements themselves are controlled via the customer's IP network, NF & Contacts or via customer-specific interfaces. Multilingual text-to-speech synthesis or voice over IP can also be integrated. A special highlight is the capability to play background music.

Cura® already fulfils this use case at Austrian railway stations in order to increase the feeling of security for travellers on the platform and in the waiting area - with proven success.

### Monitoring without additional gateways

A special feature of the Cura® is its environmental supervision function. This means that the system monitors itself and its immediate surroundings. It is able to transmit sensor data without additional gateways from third-party manufacturers. If, for example, a short circuit occurs in the electronics cabinet and heat is generated, the Cura® emits an alarm. It also sounds if there is an unauthorised door contact or door opening. The local personnel are quickly informed and can initiate appropriate security measures.

All the data stored on the Cura®G3 is 100 per cent encrypted in order to protect the system against cyber attacks. There is furthermore a centralised user and update management system and the IEEE 802.1X standard for authentication in computer networks to support the security requirements.

Funkwerk is currently working on EN54-16 certification so that the Cura®G3 can also be used as a voice alarm system with a fire brigade call station from 2025.

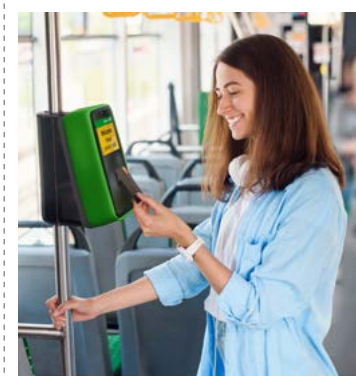


Exhibitor in the bus display area: BYD from China

Photo: mf

## NEWS

### INIT: account-based ticketing



Passengers hold their debit or credit card or smart device in front of a terminal and set off.

Photo: Adobe Stock

Passengers around the world have long been able to purchase tickets simply by holding their bank card, credit card or smartphone in front of a

ticket terminal when boarding and alighting. They check in using the EMV procedure, the specification for payment cards, whereby the travel authorisation is assigned in the background system. This is also where the best possible fare is calculated. This is particularly beneficial for occasional passengers, tourists and business travellers, who do not have to be involved with the fare system or register in advance. INIT now also offers this in Germany. With this account-based ticketing (ABT), transport companies are gaining new target customer groups. The system makes it possible to reduce cash-, labour- and maintenance-intensive sales channels. This solution, which is also available as Software-as-a-Service, can also be offered as part of a multi-channel strategy in addition to an existing ticketing system.

## INTERVIEW WITH ...

## MIRKO ROSS

Cybersecurity expert and founder of asvin GmbH



Mirko Ross

Photo: asvin GmbH

**InnoTrans Report:** How does cyber security work technically in the mobility industry?

**Mirko Ross:** In the end, mobility is always about transporting people. A large part of regulatory requirements is focussed on how vehicles are made safe. And this is correct, because it is what the safety regulations are supposed to ensure. However, if we look at where the real attacks actually occur - not the simulated or scientific ones - it is more likely to be at the end points of connections to the

## 'We will have to learn a lot in the future'

In his presentation in the new AI Mobility Corner at InnoTrans, cybersecurity expert Mirko Ross shed light on the weaknesses of artificial intelligence (AI) systems in terms of security. InnoTrans Report asked him about cyber security and AI in the mobility industry.

cloud of several providers. There are great examples such as hackers go to a provider's service portal, where the vehicles are registered, and gain access to individual vehicle functions. This is much better than attacking an individual vehicle. It is also technically easier. As an attacker, I don't need to be familiar with vehicle technology, but 'only' with server or cloud technology, which hackers usually know inside out.

**?** Is there cyber security in mobility or is the industry still a long way off?

**Mirko Ross:** No. There is a good regulatory framework. By and large, the industry has positioned itself well in terms of personnel and expertise. But it is an extremely complex topic. As an OEM vehicle manufacturer or operator, I not only have to protect myself, but also ensure that my entire supply chain complies with security regulations.

**?** How is the mobility industry positioned when it comes to AI?

**Mirko Ross:** A completely new technology layer is currently being added. In many cases, the expertise has to be developed in-house first, and the right people have to be hired to deal with AI cybersecurity. There are even few-

er staff than for regular cybersecurity. The importance has already been recognised - but it is difficult to adapt to it in terms of personnel. In the future, we will have to learn quite a lot about where and how such systems can be attacked.

And what AI applications are we talking about? Are we talking about a driver assistance system which works with a camera and LIDAR and AI? Or about an attack which takes place via the chatbot of the user interface on the vehicle? There are so many different layers involved. We simply don't have the experience yet.

**?** What advice do you have for the mobility industry to put AI on the right track?

**Mirko Ross:** The principle of security by design - cyber security and security by design - must be incorporated at a very early stage in the planning, in other words in the architectural planning of the system. This must also be done for AI systems and institutionalised in the process. This would also be my advice: it should not be a case of trying to identify and solve the problem after it has already happened, but rather discussing the potential problems and vectors of attack in advance and considering how the risk can be minimised in an early development phase.

## More modularity and independence from suppliers

The new PICMG standard ModBlox7 from EKF Elektronik GmbH combines the advantages of modular standards such as CompactPCI and CompactPCI Serial with the typical requirements of industrial box PCs: cost efficiency, small form factor, low weight and independence from individual suppliers.

ModBlox7 has been specifically developed for edge computing, data acquisition, communication and control applications in such demanding markets as transport, automation, agriculture and others.

A typical ModBlox7 system consists of various power units, processing units and PCIe- or USB 2.0/3.2-based input and output units (IOUs). These units can be expanded in 7-HP increments and therefore always remain compatible with ModBlox units or systems from other providers. Thanks to their modular and scalable architecture, a backplane can be dispensed with, enabling cost-efficient and flexibly configurable production even in small quantities.

### Modular customisation

The modular structure of the Box PC facilitates its customisation to specific requirements and a more efficient implementation of systems in different applications. Thanks to the use of standardised modules, the integration of new technologies is simplified. This increases the adaptability and future-proofing of the systems and guarantees for the first time that system updates are really independent of suppliers.

ModBlox7 greatly simplifies system maintenance and upgrades, thereby minimising system failures and ex-

tending the service life of the hardware. The result is a reduction in total cost of ownership and an improved long-term return on investment.

ModBlox7 supports a wide range of applications. With a focus on the transport industry and with already existing software solutions from 'Edge to Cloud', these can range from fleet management, predictive maintenance and precise positioning to smart IIoT solutions based on artificial intelligence.

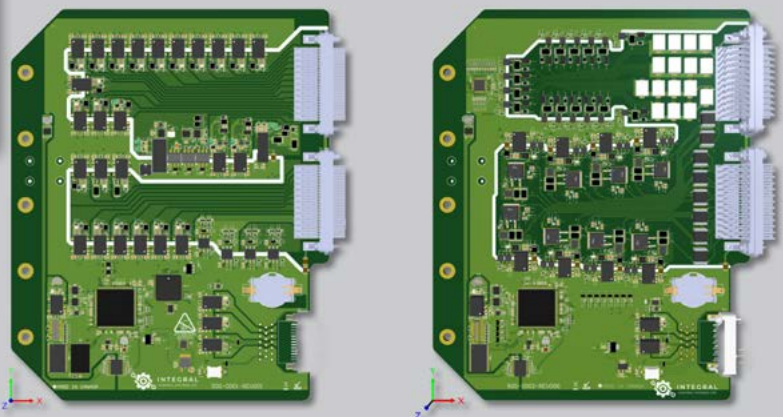
By combining proven technologies with innovative design principles, ModBlox7 fulfils the expectations of this industry for a future-proof and adaptable infrastructure. Thanks to the adaptable form factor, it is possible to make optimum use of the space available in 19" solutions can be modernised as a retrofit.



The first ModBlox7-based product from EKF: the 7L600 single-pair Ethernet switch

Photo: EKF Elektronik GmbH

## Repowering locomotives



The LCC CPU card and IO card

Photo: PowerRail

Cutting-edge technology is required to be at the forefront in the dynamic field of rail transport. Integral Control Systems from PowerRail supplies high-quality products which are tailored to locomotive repowering projects, such as conversion to hydrogen fuel cells or battery electrics.

Integral Control Systems supports these energy conversions by helping to reduce operating costs and increase operational efficiency. Integral's Locomotive Control Computer (LCC) is a card-based control system which features flexible and scalable hardware and firmware to meet industry requirements and to optimise communication and performance. The operational parameter configuration allows users to securely set key common control points without the need for costly firmware updates. Analogue and digital input and output channels are isolated independently from each other so that an excellent fault isolation is ensured and the Doppler radar is used for absolute speed measurements.

The LCC can be mounted on the wall or shelf to save space. It is compatible with new energy conversion technologies and well suited for upgrading and replacing older systems. The Direct Sense interface uses fewer control fields

and offers real-time remote monitoring to ensure an optimal performance and timely interventions, thereby maximising both uptime and efficiency. The LCC has 32 digital inputs, 16 outputs and up to 27 communication connections for user needs or integration with additional subsystems, such as high-speed engine computers.

Customisable local colour touchscreen displays in the driver's cab allow a high degree of versatility in different layouts and can be fully integrated with other systems - such as a distributed power supply, remote locomotive or train front and end - to improve operational awareness and control. The latest sensor technology not only increases reliability but also simplifies troubleshooting through independently isolated signal channels, thus minimising errors and downtime. Finally, seamless integration with electronic air brakes ensures safety and precision during braking operations.

## FLASHBACK

■ **This was  
InnoTrans 2024**

# The future of mobility was a guest in Berlin

Exploring innovations and networking: InnoTrans 2024 brought together the who's who of the national and international mobility industry. The world's leading trade fair for transport technology has never been as large and diverse as this year. Full exhibition halls made it a great place to talk and do business. Our review in pictures shows an InnoTrans which made history.



A spectacular eye-catcher: the outdoor display area at InnoTrans



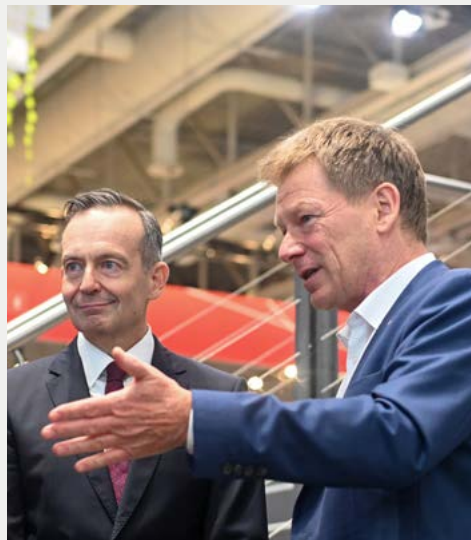
Óscar Puente Santiago, Spain's Minister for Transport and Sustainable Mobility, and Kerstin Schulz, Director of InnoTrans, greet each other at the Mafex booth.



Maria Luisa Domínguez González from Spanish rail infrastructure manager Adif (left) and Veronica Elena Bocci from Italy's DITECFER (centre) are the winners of the Women in Rail Award; right: Noemi Jiménez-Redondo, Director of Research & Innovation at CEMOSA.



Representatives from associations answered questions from the media at the International Press Circle (from left to right): Sarah Stark (Managing Director VDB), Enno Wiebe (UNIFE Director General), Kerstin Schulz (InnoTrans Director), Azar Mottale (Head of Mobility Division ZVEI), Dirk Hoffmann (COO Messe Berlin), Mesela Kope-Nhlapo (CEO ARIA), Martin Schmitz (Managing Director Technology VDV), Marko Krönke (President IMA), Dr. Heike van Hoorn (Managing Director DVF), Christian Hölbl (President IRCG), Pedro Fortea (Managing Director MAFEX)



Federal Transport Minister Dr Volker Wissing with CEO Dr Richard Lutz at the Deutsche Bahn stand.



Amazing innovations: German Federal Minister of Transport Dr Volker Wissing (2nd from left), Dirk Hoffmann (behind), Chief Operating Officer of Messe Berlin, Dr Sigrid Nikutta (2nd from right), Member of the Management Board responsible for Freight Transport of Deutsche Bahn, and State Secretary Susanne Henckel at the Federal Ministry for Digital and Transport on the opening tour

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Diversity on rails: Exhibitors presented 133 vehicles ranging from high-speed and regional trains to trams, hybrid locomotives and track vehicles.



InnoTrans was also an event for the media: 632 media representatives from 32 countries attended.



H.E. Mattar Al Tayer, Director General and Chairman of the Board of Executive Directors of Dubai's Roads and Transport Authority (RTA), at the Hyundai Rotem stand.



Berlin's Governing Mayor Kai Wegner took a look at the new Berlin tram in the open-air display and track area at InnoTrans.



Relaxed atmosphere in the summer garden at Messe Berlin: visitors were able to experience eleven innovative buses live during test drives on the course.



CEO Mario Tobias and COO Dirk Hoffmann from Messe Berlin welcoming Berlin's transport senator Ute Bonde to InnoTrans.



Of course, the photo wall is a must when influencers meet. At the Railway Influencer Festival there was popcorn, awards and a special guided tour of InnoTrans.



VIP guests at the opening ceremony (from left to right): Mario Tobias (CEO Messe Berlin), State Secretary Susanne Henckel, Henri Poupart-Lafarge (CEO Alstom), Michael Peter (CEO Siemens Mobility), Javier Martínez Ojinaga (CEO CAF), Richard Lutz (CEO Deutsche Bahn), German Transport Minister Dr Volker Wissing, Dirk Hoffmann (COO Messe Berlin).



Dr Volker Wissing, German Federal Minister for Digital and Transport, at the opening ceremony of InnoTrans 2024.



Demonstration in the AI Mobility Lab – the new exhibition area for artificial intelligence at InnoTrans

Ad

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## Surprises in the outdoor display area



The Cinova H2, the hydrogen train from CRRC

Photo: cm

The outdoor display area once again offered plenty of space for new products from international exhibitors at this year's InnoTrans. They ranged from high-speed trains and regional trains to locomotives and track construction vehicles.

■ In the high-speed sector, the Velaro Egypt from Siemens Mobility and the ETR 1000 from Hitachi Rail were represented. Siemens Mobility has adapted the train for use under Egyptian climate conditions. The air conditioning systems and spoilers are designed to reduce the amount of sand being blown up. Cooling of the under-floor equipment has also been modified. Hitachi Rail has increased the recycling rate of the ETR 1000 by 2.7 per cent to 97.1 per cent while also reducing energy consumption through new components such as traction motors, further developed equipment and a new control system.

With the Cinova H2, CRRC from China surprisingly presented a regional hydrogen-powered train. It is energised by four fuel cells that are complemented with a battery. The stated range is 1,000 kilometres. CRRC has developed a robotic system for refuelling. In January 2022, Stadler Rail was awarded the contract

for a tram-train vehicle family which had been jointly invited to tender by six VDV short-distance transport operators. The first vehicle to be supplied to Saarbahn has now been exhibited in Berlin. The vehicles can travel on both urban light rail networks and railway networks.

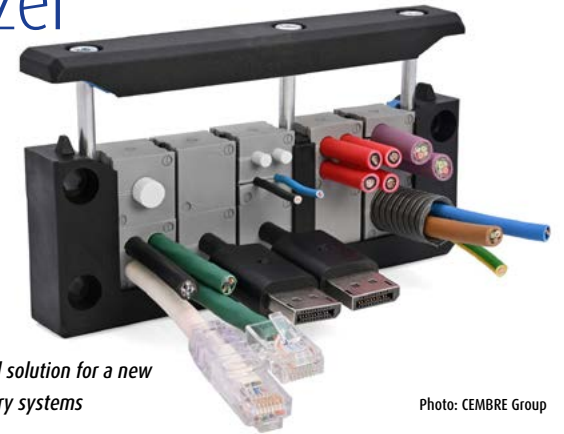
With its sheer length of 50 metres, the low-floor tram from Alstom for Berliner Verkehrsbetriebe (BVG) was impressive.

The innovative concept of the ARS, (Aachener Rail Shuttle), was on show for the first time. The concept, developed under the direction of RWTH Aachen University, consists of a chassis with the entire battery drive technology. The chassis can either be fitted with a body for passenger transport, as shown at the trade fair, or it can carry a 30-foot container. The ARS is designed to drive fully autonomously. It is equipped with extensive braking equipment from Knorr-Bremse. A surprise was the three-axle battery-powered

shunting locomotive e6 – a product of leasing company Nexrail Lease (provider of finance), manufacturer IPE Railway Vehicles from Italy (engineering and construction) and German railway undertaking Havelländische Eisenbahn (hvl), which provided the idea and will be the first customer to use the e6. As a special feature, the battery charging technology is not installed on the locomotive itself, but at the charging station with a resulting significant weight saving for the locomotive.

Together with the Port of Duisburg (duisport), Vossloh Rolling Stock will test the use of hydrogen in locomotives. For this purpose, the demonstrator of the Modula BFC locomotive was presented. The locomotive has two fuel cells which are complemented by a battery. According to the manufacturer, the Modula BFC should be able to perform heavy shunting operations for one day.

## EWO, the new Easy Wire Organizer



Plug & Fix: an advanced solution for a new generation of cable entry systems

Photo: CEMBRE Group

CEMBRE's new family of multi-part cable glands, the halogen-free EWO series, is characterised by an ergonomic, multi-part frame and its encapsulated seal provides a high degree of protection against the ingress of external substances and water

■ Thanks to its compact design and the absence of an external seal, the EWO series is slim and space-saving, making it ideal for many different applications, particularly in the field of industrial automation. The cable glands are available in square, rectangular and round shapes, allowing them to fulfil all installation requirements. This enables cables to be laid easily and precisely in control cabinets, control panels and machines. These features mean that they meet a wide range of standards – for example EN45545-2, EN45545-3 and VO UL94 – and have also been granted UL approval with file no. E535849 in accordance with UL standard 50E.

The glass fibre reinforced PA6.6 frame is manufactured in a slim and compact design. The protective grommets can be conveniently inserted through the opening side of the frame. They can be modulated and configured depending on the

various installation requirements. The drop protection system allows the EWO cable glands to be fastened quickly and easily, even when the assembled frame is facing downwards. The Stop-Plinth technology is a special frame structure which protects the moulded seal from any risk of compression, while providing effective IP66 protection and cable stress relief in accordance with EN 62444 at all times.

Thanks to the double profile, the grommets lie evenly against the frame without protruding from it. The wide variety of grommets has been specially developed to realise as many combinations as possible and to adapt to any configuration requirements.

EWO cable grommets from CEMBRE are characterised by their ability to combine easy installation, a high degree of protection and flexibility for any wiring.

## New digital solutions for railway systems



Elmar Zeiler, CEO Customer Services, at the presentation of new Siemens solutions at InnoTrans 2024.

Photo: gk

Siemens Mobility GmbH used the day before the official opening of InnoTrans 2024 to announce its world premiere Signaling X and the expansion of its Railigent X suite in the CityCube on the fairgrounds.

■ With the help of the Signaling X solution, various different signalling systems can be integrated into a standardised and unified cloud platform. Signaling X also opens up the interfaces of these systems for additional functionalities. And it does not matter whether the signalling systems are used in high-speed, suburban or metro traffic. However, the signalling systems must all come from Siemens Mobility.

Signaling X enables 'seamless control from a central signalling data centre', explained André Rodenbeck, CEO Rail Infrastructure at Siemens Mobility. The solution utilises the Distributed Smart Safe System (DS3), which Siemens Mobility introduced in 2020. The platform enables geo-redundant

operation of safety-relevant applications in a cyber-secure environment in the cloud. According to Rodenbeck, DS3 increases availability and boosts operational efficiency by around 30 per cent. The solution is already being used successfully in Austria and Spain. An order was also recently received from Finland.

### Better data access thanks to Railigent X extension

Siemens Mobility also presented the extensions for its Railigent X suite. They allow operators and maintenance personnel, for example, to access their own applications better than before and retrieve Railigent X

data or algorithms via standardised programming interfaces (APIs). This allows service tasks to be carried out even more efficiently than before, said Elmar Zeiler, CEO Customer Services. The enhancements help to further automate wear, anomaly and fault measurements. In future, this should enable fully automated visual inspections. To this end, Siemens Mobility is working on a solution which will enable trains to be scanned by cameras before entering the depot and the images to be analysed using artificial intelligence (AI). Zeiler explained that this will enable an automated evaluation of up to 100 percent of the vehicle surface. This would make it possible to recognise not only technical damage, but also graffiti in future.



## EUCO Rail: just played up



EUCO Rail was a guest at InnoTrans 2024 with an innovative stand design

Photo: EUCO Rail

InnoTrans featured a creative interpretation of the motto "The Future of Mobility". EUCO Rail impressed with a modern maintenance circle and football-inspired stand design which emphasised the company's passion and team spirit.

■ Loyal to its trade fair claim 'The Future of Maintenance', as an independent European service provider, the company from the Swiss city of

Zug presented modern maintenance approaches to trade fair visitors, in particular the use of digital twins and innovative tools for real-time analysis.

These digital twins, virtual models of physical rail vehicles, enable continuous real-time monitoring of individual vehicle components using tablets

and thus enabling early detection of potential problems. This allows precise planning of the availability of trains, spare parts and staff, which minimises downtimes and maximises operating times.

### Flexible deployment in the heart of Europe

Another highlight of the trade fair presentation was the presentation of their mobile service teams, which operate within a radius of 150 kilometres from two depots in southern Germany. With these depots, one of which is one of the most modern in Europe, located in Langweid, EUCO Rail has created a central hub for the European region. These teams rectify acute problems with rail vehicles directly in depots and often carry out maintenance and repair work on site at night to minimise downtimes. With this in mind, partners and customers had a perfect opportunity to exchange ideas with the team of experts about the processes and organisation of mobile maintenance.

### What EUCO Rail and football have in common

EUCO Rail brought a breath of fresh air to InnoTrans with football

network and a football table. This creative design reflected the passion and team spirit which are also at the heart of the company. Under the motto 'Passion meets Mobility', visitors were able to compete against the team of experts in a table football match, which led to a lively exchange of ideas. The artwork motifs and table football aptly symbolised the corporate philosophy: versatility, adaptability, transparency, openness and ingenuity. These values are crucial in football as well as in railway maintenance to ensure smooth mobility which benefits passengers and the environment.

### Positive trade fair conclusion

The trade fair offered numerous highlights, including keynotes from industry leaders and impressive technologies. EUCO Rail is proud to have contributed to the Speakers Corner on the topic of digitalisation in maintenance. Participants and experts praised the innovative approaches and benefited from the opportunity for networking and partnerships. InnoTrans 2024 demonstrated how important such platforms are for the further development of transport technology and how much the future of mobility hinges on lively discussions and the exchange of innovative ideas.



## Hydrogen supply by rail – fully mobile and flexible

Rapid refuelling with a mobile filling station and hydrogen storage trailer

Photo: DB Energie GmbH / Max Lautenschläger

The 'DB Refueler' from DB Energie is a fully mobile hydrogen refuelling system which facilitates rapid refuelling of hydrogen trains. It is part of an innovative overall infrastructure system in the German city of Tübingen for the green railway energy supply of tomorrow.

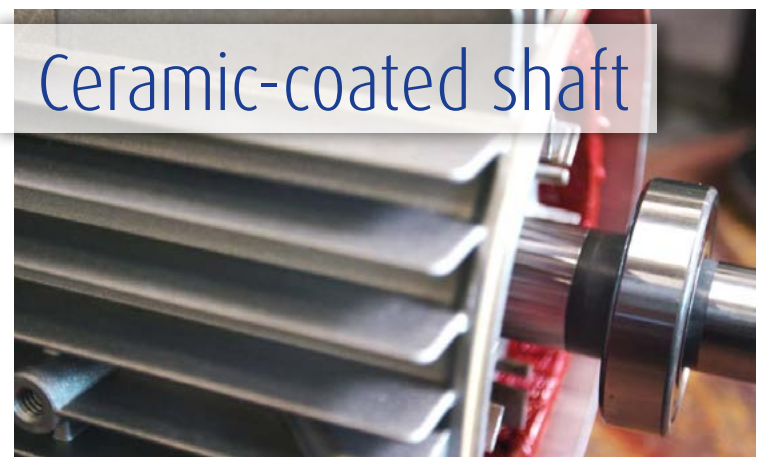
■ The mobile refuelling station system 'DB Refueler' is an energy-efficient, user-friendly hydrogen refuelling station for filling hydrogen trains with compressed hydrogen, a 350 bar H<sub>2</sub> tank system and a gross capacity of around 1,200 kilograms of hydrogen which can be transported. The system consists of

a tank container and a mobile refuelling station container. It is installed as a complete solution which includes safety technology. The intelligent combination of the different storage sections of the containers allows the filling pressure to be optimised. The system can be put into operation after just one day of assembly

and installation. The 'DB Refueler' is a plug & play hydrogen refuelling station which has been developed to serve rail vehicles as well as lorries and buses. The system is equipped with an intelligent control system which enables efficient and automated vehicle refuelling with and without communication to the vehicle.

### Test bench in Tübingen

The 'DB Refueler' has been part of the Tübingen Innovation Hub since the beginning of 2024, where DB Energie is testing new technologies for a green railway energy supply. The site consists of a total of eleven containers, as the site houses an electrolyser, a battery storage system and a sector coupler in addition to the hydrogen supply system. The DB sector coupler forms the interface to the overhead line and supplies the systems of the innovation hub with green electricity. Future plans foresee feeding locally generated green electricity, for instance from wind or solar power plants, directly into the overhead line, thus ensuring greater grid stability and better utilisation of the capacity of the grid. Thanks to its compact design, the system requires little space and can be scaled up. It is therefore advisable to use the DB sector coupler in a decentralised way. The second-life battery storage system can supply the on-site fuelling station autonomously for up to a week. In addition, the recuperation from the storage system into the overhead line is being tested.



SOGA's ceramic-coated shaft for insulating bearings in electric motors.

Photo: SOGA SpA

Eddy currents are one of the biggest risk factors for asynchronous motors; they damage the motor bearings and impair their service life. In addition to hybrid ceramic bearings, SOGA SpA also offers an alternative solution.

■ The use of inverters amplifies and distorts rotor currents, which are then transmitted to all metal parts of the motor. With disproportionate wear of the steel balls and the roller bearing races, the bearings suffer serious damage. To prevent this, there are hybrid versions which use materials such as ceramic balls or insulating coatings on the contact surfaces to isolate the passage of eddy currents.

These solutions are ideal for the asynchronous motors commonly used in all industrial sectors, which are driven by inverters. SOGA offers the railway industry an alternative option: ceramic coating of the shaft area

where a 'normal' bearing is located to achieve the same insulation as hybrid bearings. Even if the technical result is identical, there is a relevant advantage from a logistical point of view.

The procurement of hybrid bearings often requires large order quantities and longer lead times than usual. It is therefore important for railway companies to simplify regular replacement of bearings, avoid unnecessary stock and reduce waiting times for availability. In a SOGA motor with a ceramic-coated shaft, the simple replacement of a 'standard' bearing ensures lower costs and fast and reliable availability.

## More capacity through digitalisation



Complex train routing outside of Zurich main station

Photo: SBB CFF FFS

Optimal conflict resolution in real time with a traffic management system (TMS) from Accenture GmbH improves punctuality and enables maximum capacity utilisation.

Resolving conflicts in real time by making optimal scheduling decisions is a mandatory requirement for infrastructure operators in order to ensure quality and punctuality and optimise the use of network capacity.

A modern traffic management system (TMS) takes into account all interactions between trains across the network, such as train sequence, connections, circulation and much more. The continuous real-time generation of journey profiles for automated train operation (ATO) is also an important feature of a TMS in order to optimally utilise the capacity of the rail network. In addition to minimising delays, the calculation of traction energy-optimised driving profiles is a very important function in a modern TMS. In technical terms, this requires in

particular the ability to dispatch the entire network as well as vertical and horizontal scalability.

### Improved punctuality with reduced costs

A TMS is therefore the answer to many of today's requirements, especially in very dense rail transport. Ultimately, investments in the railway infrastructure can be reduced by optimising capacity utilisation while maintaining a high level of punctuality.

In future, it will be equally important for a TMS to follow the European standardisation process and have the standard interfaces which are currently being defined in the EU Rail Joint Undertaking project. A TMS supports railway operations, i.e. one of the most

important core processes of a railway infrastructure operator. On the one hand, the introduction of a new TMS requires proven, scalable system components which can be easily integrated into a system environment with existing control technology. On the other hand, in order to avoid risks, a well-coordinated team of technical and software specialists who have already 'built' such systems is required. Thanks to their many years of experience, they can not only create functional and technical solution concepts, but also implement them in a target-orientated and customer-orientated manner.

TMS implementations in Belgium and Switzerland, among others, show that such a TMS is not just a vision, but a reality.

## Integrated technologies for train management

The ALIVE and OPTIO platforms from the Spanish transport systems developer CAF complement each other and thus offer comprehensive solutions – from remote operation in depots to advanced automation on railway lines.

ALIVE, a platform developed as part of the European railway project FP2 R2DATO, allows multiple trains to be controlled simultaneously in depots and controlled areas, reducing downtime and improving efficiency. The solution optimises the use of resources and increases safety by enabling operations from an office. This ensures a faster response to incidents and minimises disruption. Trains are ready for operation without direct physical intervention. By optimising the processes involved in the start-up and shut-down of trains, ALIVE reduces energy consumption and emissions and supports more sustainable rail operations. In this context, CAF is developing a demonstrator for remote-controlled driving in one of the Urbos trams operated by Sporveien, the public transport operator of the city of Oslo.

The OPTIO platform is a communication-based train control system (CBTC) which integrates critical functions such as automatic train protection (ATP), automatic train operation (ATO) and automatic train supervision (ATS). OPTIO fulfils safety standards such as CENELEC and SIL4 and ensures high availability and fault tolerance, which are essential for demanding railway operations. The architecture supports all levels of automation, from manual operation (GoA1) to full

automation (GoA4), so that it can be used on new lines and in existing infrastructures.

Although they differ in their approach, both platforms are technical solutions which address specific problems of railway operations and provide innovative tools to improve the efficiency, safety and sustainability of operations. They are CAF's response to the growing demand for greener and more reliable public transport and are designed to lay the foundations for the future of urban mobility.



CAF tram for the city of Oslo

Photo: CAF



## Radar-based obstacle detection

ATO test in the Netherlands with NIART SYSTEMS radar

Photo: NIART SYSTEMS/Jord Visser

NIART SYSTEMS combines long-range millimetre-wave radar and advanced perception technology for more safety in rail traffic under all visibility conditions.

An important prerequisite for automation and the introduction of automatic train operation (ATO) is an effective long-range obstacle detection system which guarantees the warning distances required for safe railway operation. Existing solutions in the automotive industry are not sufficient and most systems developed for railway operations rely on electro-optical or laser sensors, which can fail in unfavourable weather conditions such as fog, rain and haze.

NIART SYSTEMS is taking a new approach and combining high-resolution radar developed for the requirements of railway operations with multispectral electro-optical sensors for its SEEFAR perception solution, ensuring reliable performance in all weather and visibility conditions.

The radar, which operates in automotive segment frequencies, is tailored for longer range, higher resolution and the ability to withstand the environmental conditions of railway operations. Even in the thickest fog, it delivers precise distance measurements of obstacles in real time – an innovation which enables train operators to maintain smooth and safe operations regardless of visibility issues.

SEEFAR radar is also an end-to-end perception solution which is installed in locomotives and operates as a driver assistance system in GOA-2 (Grade of Automation) mode. It provides long-range warnings (more than 1,000 metres) and can precisely measure and classify hazards. By integrating machine learning based processing of video streams from

multispectral electro-optical sensors with radar-based detection, SEEFAR ensures a comprehensive situational awareness.

The system is designed for higher levels of automation. It was successfully tested together with Alstom's AutoPilot during the NL Shunting Proof of Concept (POC) for the Dutch operator ProRail and has proven its effectiveness in rain, fog and darkness in several phases of the Dutch GOA4 operational demo.

SEEFAR is currently being introduced in India as part of Indian Railways' TRI-NETRA project. This initiative aims to equip several locomotives with an obstacle detection system, which is crucial for avoiding collisions and minimising downtimes, especially in dense fog during the winter months.

## Growing demand for comfort



CSI Trolley exhibiting at InnoTrans in Hall 1.1

Photo: gk

The reliability of trains is an important issue for the future of rail travel. However, there is also a growing need among customers to be able to travel in comfort and to find an appropriate range of catering services. This year's InnoTrans exhibition area Travel Catering & Comfort Services (TCCS) was once again dedicated to topics such as these.

■ One stop on the tour of Hall 1.1 was the CSI Trolley stand. The traditional Italian company with more than 100 years of history specialises in the manufacture of trolleys which can be customised - both in terms of size and equipment. For example, the manufacturer exhibited a trolley with a fully retractable coffee machine so that the vehicle can be easily stowed away when train staff are not using it. Germany is an interesting market, said CSI Trolley CEO Massimo Tartaro. 'We are also looking for partners in this country to expand our own range.' Ophardt Hygiene, on the other hand, specialises in the production of dispensers for tissues, soap and other liquids. The com-

pany is headquartered in the German town of Issum on the Lower Rhine, employs around 700 people worldwide and has plants in Ireland, Belgium, Canada and the Philippines, among others. Hospitals are an important area of business for Ophardt - but there are now also interesting opportunities in the railway sector, explained sales manager Manfred Weenen. Their non-flammability is a special feature of Ophardt products so that, among other benefits, they offer a high level of protection against vandalism.

Other exhibitors showcased networked vending machines for snacks, as well as fabrics which are easy to clean and protective cleaning agents. The

TCCS area was accompanied by a framework programme which made it clear that good rail catering works better when such offers interact with the technical innovations of railway vehicle manufacturers. However, there are ever increasing challenges for catering providers, said Christian Hölbl, President of the International Rail Catering Group (IRCG). On the one hand, 'more and more guests are travelling by train and relying on a fresh, innovative catering product', while on the other hand, the space available in on-board kitchens is getting smaller while storage space and even refrigerated areas are also becoming scarce.



Jan Wielert, Managing Director & partner at büro+staubach, explained the design of the new Hamburg DT6 metro trains

Photo: dhe

How can design help to make local and regional transport a highly accepted travel option for commuters despite the often high passenger density? Some visionary industry solutions were discussed at the International Design Forum as part of InnoTrans 2024.

■ The OTTOBAHN project organisers, for example, are taking a very future-oriented view on urban public transport. With this approach, which is currently in the planning stage, a system of suspended cabins running above the road, the vision of a "private-public interior" is to be realised, as Dominik Meier from the design office NVGTR, which advises OTTOBAHN, put it. According to the principle of 'cherry picking', a 'psychological part' (the private sphere) of individual car use is to be combined 'with the well-functioning systemic structures of urban public transport'.

In the segment of metro transport, Jan Wielert, Managing Director & Partner at büro+staubach, presented the development process of the design of the new DT6 U-Bahn trains for Hamburg. He emphasised the 'good preparatory work' carried out by the operator Hamburger Hochbahn. Nicole Michel from Alstom - chosen as the manufacturer of the DT6 tender - also praised the fact that Hamburger Hochbahn had already involved external designers even before the tendering phase. She said that this was a normal

practice in other countries, but still unusual in Germany. It was of course necessary to find compromises with the Alstom standard designs for this degree of detailing. Wielert emphasised that the content of the design contract was 'not about colour or material', but essentially about core issues such as passenger flow and transparency.

Christiane Bausback, Managing Director and Head of Design at N+P Experience Design, also presented clearly forward-looking design ideas in her role as a panel member. Her company had developed proposals for the Japanese client Hitachi Rail. The aim, she said, was to 'completely rethink' commuter transport and convert it from a 'morning nuisance' into an attractive experience. Bausback considers 'seating' to be one of the decisive factors. It would be preferable to do without some seats and thus create space for useful elements such as storage areas. The design ideas also include self-contained cabins in the vehicle, which could be bookable as part of the ticket. 'A very Japanese approach, but applicable worldwide,' said Bausback.



Professor Roland Leucker, head of STUVA, moderated the expert forum on tunnelling. Photo: dhe

Tunnelling not only played an important role in the exhibition area at this year's InnoTrans. At the 'International Tunnel Forum - Sustainability in Tunnelling' as part of the InnoTrans Convention, the aspects of building underground transport routes were also discussed in depth.

■ 'On the one hand, at the trade fair we are seeing a lot of new developments from the operational area, such as in the field of firefighting, with one of the topics being water mist,' said Professor Roland Leucker, Chairman of the event and Managing Director of STUVA e.V. (Study organisation for tunnels and transport facilities), STUVAtec GmbH and DAUB (German Committee for Underground Construction), to InnoTrans Report on the fringes of the expert discussion. Another key topic which is also addressed at many trade fair stands is sustainability. 'The focus here is not least on the fact that tunnelling - inevitably - involves concrete and that a relatively large amount of CO2 is released during cement production,' says Leucker. 'In the industry, we are trying to cause less CO2.'

As part of the individual presentations at the forum, opening speaker Heinz Ehrbar dealt with the requirements for underground construction resulting from the 'UN sustainability goals' for the industry. As a representative of DB Infrago, Ehrbar is a member of the DAUB, which is working on a recommendation in this regard. Benoit de Rivaz, Global Technical Manager at the Belgian company NV Bekaert SA, a manufacturer of steel fibres, spoke about 'steel fibre-reinforced concrete' for tunnel segments, the inner shell of tunnels and shotcrete. De Rivaz used calculations to show how much CO2 could be reduced by using tubbing segments produced in this way.

Professor Christoph Budach posed the question of how tunnel excavation

material can be sustainably recycled to the expert panel.

Budach is head of the teaching and research field of geotechnics and tunnelling at Cologne University of Applied Sciences and Arts and has also recently become a member of the DAUB. He specifically explained the DAUB's 'Recommendation on excavated tunnelling material', which deals with tunnelling materials in their role as a source of raw materials.

Finally, Frank Plöger, Head of the sustainability staff unit at Hochbahn U5 Projekt GmbH, presented the U5 project in Hamburg, which is currently being planned or already under construction, as a 'showcase project for climate-friendly transport infrastructure construction'.



## Outstanding achievements in the rail sector

The 2024 Career Award winners visited InnoTrans (from left): Erik Schaefer, Product Manager InnoTrans, Brennan Gedney, Nyoman Selamet, Angelica Perego, Emily Lalonde, Damiano Santi, Blanca Rossberg, Lena Ritter, Deputy Project Manager InnoTrans, Hugo Sütterlin, Working Student InnoTrans, second row (from left): Nils Schluckebier, Markus Tesar, Sandro Tanner, Pietro Mariano, Zeliya Schär, Tom Horn and Haris Ismail. left): Nils Schluckebier, Markus Tesar, Sandro Tanner, Pietro Mariano, Zeliya Schär, Tom Horn and Haris Ismail. Photo: Messe Berlin GmbH

■ InnoTrans 2024 was a very special host for 16 students and young professionals from all over the world. The young people were the winners of the InnoTrans Career Award. For them, this meant an exclusive invitation to the world's largest trade fair for transport technology.

The Career Award has been presented since 2016. For this purpose, national and international industry associations select students and young professionals who have excelled through outstanding performances or innovative ideas in the railway or public transport sector. The 2024 winners came from Australia, Germany, Italy, Canada, Switzerland and the USA. We have asked them what InnoTrans means to them and what fascinates them about the railway industry. You are invited to read a selection of their answers here:

**Pietro Mariano (Italy), Ph.D. student, Politecnico di Milano University:**

'InnoTrans plays a crucial role in my professional growth as it provides a platform

to exchange ideas, stay informed about the latest developments in the industry and make interesting connections which help drive innovation in the transport industry. It is my goal to develop sustainable and efficient transport solutions which improve the quality of life in the urban environment.'

Pietro Mariano was honoured for his final thesis in the field of engineering on methods for executing railway transport services.

**Kershan Pillai (Australia), Principal Rail Engineer at Mott MacDonald, Sydney**

'When I was a little boy and we were travelling, my father always pointed to roads and said, 'I built that. I also wanted to be able to say that one day - and what industry would be a more appropriate one than one which moves millions of people every year. When I came to InnoTrans, I was looking forward to networking with many railway experts from all over the world and exploring new and innovative railway technologies.'

Kershan Pillai was honoured for having played a decisive role in getting major projects in Australia and Asia off the ground as a young manager. He is currently working on Australia's largest transport project - the Sydney Metro.

**Nils Schluckebier (Germany), Head of Digitalisation and BIM at Schüssler-Plan, Düsseldorf**

'For me, InnoTrans is a unique platform for gaining new inspiration and global insights into the future, especially in the field of railway infrastructure. I am looking forward to meeting experts from all over the world and working with them to develop new solutions for the biggest challenges of our time'

Nils Schluckebier has been distinguished for his outstanding work on the digitalisation of the construction industry. His commitment to digital methods such as Building Information Modelling (BIM) makes a significant contribution to the sustainable development of transport infrastructure.

**Sandro Tanner (Switzerland), Transport Planner at INFRAS, Zurich**

'I am so delighted to meet other award winners on the one hand and to gain a first-hand insight into such an important trade fair on the other. I have always been enthusiastic about transport and in particular about railways and aviation. For the future, it is my wish to make a contribution to a transport system which creates many opportunities for people and at the same time contributes to sustainable development.'

Sandro Tanner has been distinguished for his Master's thesis, in which he investigated the question of whether tradable mobility credits for long-distance leisure travel in Europe can strengthen climate protection. He wrote his thesis at the Technical University of Delft and the Swiss Federal Institute of Technology in Zurich.

**Blanca Rossberg (Germany), student of rolling stock technology at TU Dresden University of Technology.**

'It wasn't difficult at all for me to choose this field of study, as it combines highly sophisticated technical elements with an environmentally friendly and climate-preserving approach. It is my goal to combine passenger-orientated and interdisciplinary solutions in order to make rail transport equally efficient, sustainable and comfortable.'

Blanca Rossberg was honoured for her student research project entitled 'Investigations into the ETCS upgrade of rail vehicles for branch lines and structural space requirements.'

The participating associations at the InnoTrans Career Awards were: Rail Track Association Australia, Verband der Bahnindustrie in Deutschland (Germany), Studiengesellschaft für unterirdische Verkehrsanlagen (Germany), Collegio Ingegneri Ferroviari Italiani, Canadian Association of Railway Suppliers, LITRA - Verband für den öffentlichen Verkehr in der Schweiz (Switzerland), American Public Transport Association and Railway Engineering Maintenance Suppliers Association (both USA).

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