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InnoTrans 2024 Report

InnoTrans

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Mobility+ celebrates successful premiere with a future

Complementary mobility service offerings had their own exhibition area for the first time.

Photo: Messe Berlin GmbH

The new platform for complementary mobility services establishes itself at InnoTrans and shows that rail transport is becoming increasingly networked.

■ Complementary mobility services have become an integral part of everyday life. At InnoTrans 2022 the Mobility+ section of the trade fair celebrated its premiere and immediately attracted great interest among trade visitors. This is in line with the trend for increasing networking of public transport. "The extremely positive response and the thematic diversity in this new area show the importance of integrating Mobility+ at InnoTrans in order to connect the relevant players with each other and to further advance the topic of complementary mobility services or First/Last Mile," says InnoTrans Director Kerstin Schulz.

Individual and seamless networking

26 exhibitors presented their mobility solutions, including arvato GmbH, Door2door GmbH/Swvl, CleverShuttle, MotionTag GmbH, Optibus Ltd, Sono Motors GmbH and Via Technologies Europe BV. The spectrum ranged from shared mobility via mobility apps and payment solutions to on-demand driving systems or flying objects such as drones. "The most exciting thing about InnoTrans is that we can meet with international customers from the rail sector and combine our on-demand solutions with classic public transport services," says Ivan Cihlarz, Global Head of Customer Success at Swvl/Door2door. The goal, as with all complementary mobility services, is to make the passenger experience as personalised and seamless as possible through multimodal routing combined with futuristic mobility transport, he adds.

Focus on autonomous driving

Solutions for ride sharing for the first and last mile and ride-pooling offers were also represented, as well as AI applications such as delivery robots, air taxis and autonomous driving, which are an important part of the mobility turnaround and were also discussed in the Mobility+ Corner. Here, for example, the company ZF Mobility Solutions presented its autonomous transport system and showed the differences to the much-discussed Robottaxi.

Other presentations and discussions revolved around demand-oriented and area-wide mobility in rural areas, the increased integration and promotion of on-demand services in public transport, and the need for digital information to learn more about customer needs and ensure a flexible and optimised mobility experience.

Mobility+ will continue to increasingly address these trends and will also map them at InnoTrans 2024, where all the key players from politics, business and research will come together to drive forward the industry's issues. "We are always pleased to have the opportunity here to exchange ideas and work together on the transport turnaround," says Ralf Droste, Senior Manager Communications at DB Regio Bus.

Ralf Droste and Sabrina Remd from DB Regio Bus presented the range of services for the transport turnaround.

Photo: Messe Berlin GmbH

COMMENT

Urgently required: a faster pace in Germany

Oliver Wolff, Managing Director and Executive Member of the Executive Committee of the German Transport Association (VDV)

Photo: VDV

Something has started to move. For decades, the focus of bus and train networks was to achieve maximum efficiency with the aim of keeping costs to the public purse as low as possible. Once consequence of this was that investments were held back and innovations could not be introduced. Times have, however, changed. The transformation has begun; on the initiative of operators. The new, faster pace of administrative processes in Germany, invoked by the federal government, has not yet filtered down to bus and rail networks. Take e-buses, for example. The EU has set strict targets which foresee fewer diesel buses, and instead more and cleaner e-buses, which, however, cost significantly more. The EU Commission is currently considering measures which involve only issuing approvals for emission-free urban buses by 2030. The industry is also examining the option of discontinuing diesel buses earlier than originally planned. Transport companies have completed their expansion plans for electric depots and are fully committed to moving over to electric vehicles. The German federal government is also proposing the procurement of a total of 8,000 e-buses throughout the country by 2030. On the downside, however, it currently has funding applications for 2,500 e-buses, and the corresponding budget is oversubscribed. The nationwide "D-Ticket" for public transport is another example of this. On Labour Day 2023, the industry will launch the Deutschland-Ticket, which costs 49 euros, is digital and can be cancelled on a monthly basis. The VDV predicts that 5.6 million people will purchase such a public transport season ticket for the first time. This new product will, however, only be funded until 2025. Another example is the "on-demand" model: Changes in legislation have allowed transport companies to offer numerous new, often small and flexible on-call buses which can be ordered using an app. They bring mobility to places which previously had no transport services. However, the public transport performance cost report by Roland Berger has

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CONTINUED COMMENT

shown that the financial requirements for this are high. Even before the price increases caused by the Ukraine War, it was estimated that around 3.8 billion euros would be needed by 2030 for on-demand transport to be introduced nationwide. The mobility budget is a further example. Despite the rise in the number of people working from home, commuting to work accounts for a large part of mobility in Germany. Many companies would like to have a budget which allows their employees to take advantage of various mobility offers, also because it makes them more attractive to employees. The complicated wage tax law-related procedures associated with mobility budgets and the high administrative burden however often cause problems. Simplification is urgently required and also possible. It is the precondition for utilising the great potential which exists. We cannot afford to let the new faster pace of administrative processes in Germany apply only to the construction of LNG terminals.

Cleaning vehicles – Arriving in clean condition

The cleaning industry will meet at CMS Berlin from 19 to 22 September 2023. Photo: Messe Berlin GmbH

CMS Berlin 2023 to host exclusive networking event

Even before the corona pandemic, cleanliness and hygiene were important factors in the service provided by transport operators and in passenger satisfaction. Particularly in highly frequented areas and places with large numbers of visitors, there are considerable demands on cleanliness, for example in aircraft and trains, at airports and railway stations or in buses and at bus stops. These are areas in which flexible, fast and professional cleaning concepts are essential. And for this reason, cleaning of vehicles is one of the highly specialised offers among the wide range of services provided by building cleaners.

Mobility Cleaning Circle – networking, exchange of ideas and live demonstrations

The cleaning industry will come together at CMS Berlin from 19 to 22 September 2023 to show what is currently possible in the field of transport cleaning and what will be possible in the future. At the exclusive networking event on 20 September 2023, high-ranking invited representatives from the transport and cleaning sectors will exchange ideas and discuss the needs and solutions of their industries. Increasing demands in terms of sustainability, supply chains, inflation and shortage of skilled workers present new challenges for both industries in the area of vehicle cleaning, which need to be discussed.

With the **Mobility Cleaning Circle,** CMS Berlin and InnoTrans, the leading international trade fair for transport technology, have created a unique dialogue platform for the two industries. Both are united by the desire to promote interaction between representatives of the two industries and to jointly discuss their synergies in order to provide passengers with a clean and pleasant journey.

www.cms-berlin.de

InnoTrans 2024 – Around 80 per cent of the exhibition space already booked

InnoTrans – World's leading trade fair for transport technology 24 to 27 September 2024 in Berlin Photo: Messe Berlin GmbH

Next year the world's leading trade fair for transport technology will take place in Berlin from 24 to 27 September 2024 and will once again occupy the entire exhibition grounds.

Numerous exhibitors from Germany and abroad have already secured their participation at the exhibition. With around 80 per cent of the exhibition space booked, the current registration level is at a record high. "Each time I am impressed by how early the industry prepares for InnoTrans, thus underlining the importance of InnoTrans as the worldwide unique mobility platform with a market coverage which is second to none," says InnoTrans Director Kerstin Schulz.

Proven highlights and new major attractions

As in previous editions, the 14th InnoTrans 2024 will occupy the entire grounds of Messe Berlin – including the outdoor and track areas, which are among the highlights of every InnoTrans. Whether hydrogen trains or hybrid locomotives – on more than 3,500 running metres of track adjacent to the exhibition halls, the professional public will be able to enjoy a live experience of the latest innovations in rail transport. At the Bus Display, exhibitors will present technical bus innovations on a 500-metre demonstration circuit. In the 42 halls of the Berlin Exhibition Grounds everything will revolve around the five segments of InnoTrans – Railway Technology, Railway Infrastructure, Public Transport, Interiors and Tunnel Construction.

The new Mobility+ area and the InnoTrans Campus met with great interest from exhibitors and visitors right from their start in 2022 and next year they will once again be part of the implementation concept. The Mobility+ exhibition zone within the existing Public Transport trade fair segment is dedicated to supplementary mobility services – from shared mobility and last-mile offers to mobility apps and on-demand mobility systems.

The InnoTrans Campus is all about promoting young talent and offers an extended career programme. Students and young professionals can get an overview of job vacancies and will be able to network with global players in the rail industry. In recent months, new career opportunities have opened up for some participants after their performance at the Talent Stage at the Eurailpress Career Boost 2022.

Registration deadline for exhibitors in September 2023

In 2022, 2,771 exhibitors from 56 countries presented their products and services to a total of 132,319 trade visitors from 137 countries. 142 vehicles, 14 of which were buses, were shown on the outdoor and track areas and at the Bus Display. Many of the exhibitors have already secured their participation in the world's leading trade fair for transport technology next year – in some cases even with an expanded trade fair presence. All in all, the many requests for larger stands are striking, says InnoTrans Director Kerstin Schulz: "We are very pleased about the ongoing high demand for exhibition space and hope to be able to offer space to all interested parties in 2024." Potential exhibitors can still register for InnoTrans 2024 until 22 September 2023.

IMPRINT

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INTERVIEW WITH ...

SARAH STARK

Managing Director of the German Railway Industry Association (VDB)

If you want the lowest purchase price, you turn down innovations

Since 1 March, the German Railway Industry Association (VDB) has been relying on Sarah Stark as its new Chief Executive, a woman who is very familiar with the topic of mobility. From 2021 she was a member of the executive board at the German Transport Forum e.V. (DVF). Before that she was head of European transport policy, security and rail transport at the association. In an interview with InnoTrans Report, she describes what needs to change - especially in German minds - in order to achieve the climate objectives set in Paris.

Sarah Stark

Photo: Erika Borbely Hansen

? **InnoTrans Report:**
Ms Stark, what accents do you want to set in your work as Managing Director of VDB?

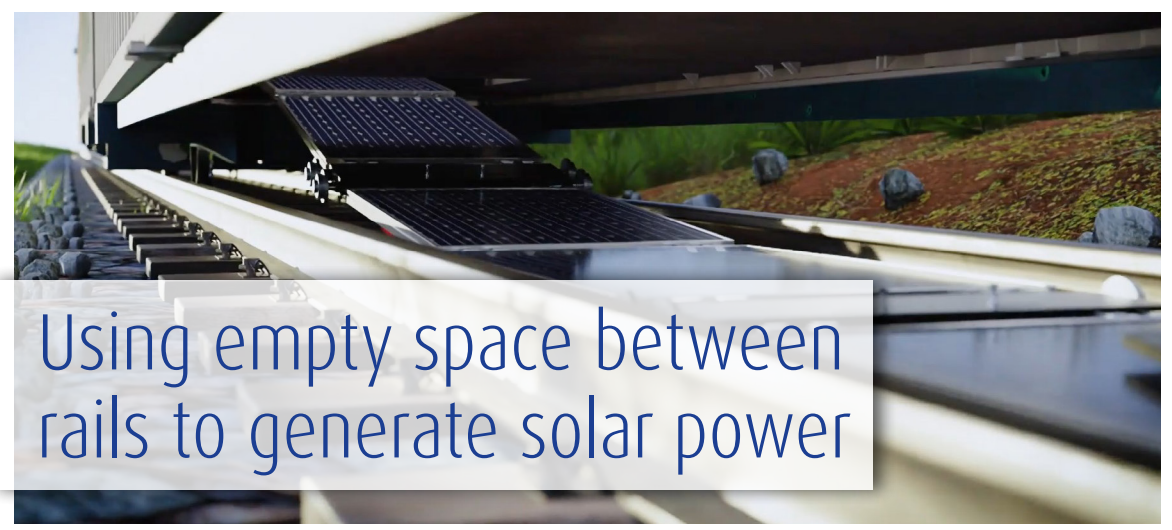
Sarah Stark: The German railway industry provides solutions. We are a reliable partner for politicians and operators when it comes to implementing transport policy goals. To double passenger numbers by 2030 and achieve a market share of 25 per cent in freight transport, we must accelerate the speed of implementation. I am convinced that politicians, operators and industry will succeed in achieving both together – if we focus more on solutions instead of problems. This creates a tailwind. Innovations and modern administrative structures speed up our processes and rail operations. The fast-track programme has shown that we can complete construction projects up to four years faster if they are managed by a general contractor. With digital train dispatch systems, we improve punctuality and capacity in the existing network. We must apply both as a matter of course. I am focusing on increasing the speed of implementation to achieve a modern rail system.
What needs to be done was summarised by the Rail Acceleration Commission in its final report in December 2022. At the end of March 2023, the coalition committee set the financial parameters with its "Modernisation Package for Climate Protection and Planning Acceleration". A Modern Rail Act must implement these decisions.

? At the time, for their first 100 days, the VDB submitted ten priority measures for the next mobility revolution to the new Federal Government. That was a while ago now. What has happened in the meantime?

Sarah Stark: When the new federal government took office in 2021, the rail industry called for measures which were primarily aimed at accelerating the digitisation and electrification of rail transport. These included an increase in investments in line with the matching funding models. But they also included an acceleration in planning and the modernisation of tendering practices in Germany.
If the current pace of investment in digitisation in rail transport was maintained, the railways would not be digitised throughout Germany until 2077 and that would be about 42 years too late. The additional 45 billion euros in investment funds for rail by 2027 which have been decided by the coalition committee will allow us to turn things around. The Federal Government's fundamental shift regarding vehicle equipment is a key factor in enabling a nationally coordinated migration path without costly years of duplicate infrastructure equipment.
Practical solutions must be found for the extreme price increases resulting from the war in Ukraine. Like so many industries, disrupted supply chains, high inflation, and increased wage and energy costs are weighing on the rail industry. For our industry, which works with long-term supply and framework agreements at fixed prices, there is a need to find practical solutions. There is an urgent need for provisions which allow prices to be adjusted and additional costs to be shared fairly in both new and existing contracts. The Federal Government has provided the necessary leeway for building materials. The same should apply and be applied to control and safety technology.

? In your opinion, what is needed to achieve the Paris climate goals?

Sarah Stark: In order to achieve the digital transformation in rail transport, companies need to build up operational capacities over several years – especially in terms of human resources. However, this requires a reliable perspective. The Federal Government's modernisation package allows dynamic funding. Now it is a matter of introducing leaner financial mechanisms to ensure that investments reach the market more quickly. It is only in this way that funding can fulfil its purpose and strengthen the climate-friendly transport mode of rail. Up to now, investments have been stuck in the jungle of regulations far too often and for far too long.
And the way procurement is structured in Germany also needs to change. Mobility offers should be more strongly oriented towards the needs of passengers. The railway industry delivers innovations, from appealing interior design via digital information systems to climate-friendly alternative drives. But whether these innovations are put into operation is decided by public tenders. And in Germany, these tenders predominantly reward the lowest purchase price. This is neither good for the climate nor for customers and passengers.
Which rail technology is procured must in future be decided much more in line with social and sustainability criteria which exist in both Europe and Germany and are already enshrined in European and German public procurement law in the form of "Most Economically Advantageous Tenders". The MEAT principle breaks down the concept of economic efficiency and enables procuring entities to give greater weight to criteria such as the best price-performance ratio, low life-cycle costs, modern design, high sustainability or energy efficiency when awarding contracts. Germany must move towards the best offer. Those who want the lowest purchase price are rejecting innovations. More use should be made of MEAT criteria in federal and state tenders, and help desks should be set up to ensure their legally compliant application.
We must not discourage ambitious goals because of the current framework conditions. On the contrary, we must adapt the framework in such a way that it makes it possible to achieve the climate goals. The rail industry is ready and willing to do this.



Using empty space between rails to generate solar power

In the pilot project, 50 photovoltaic panels will be installed over 100 metres.

Photo: Shutterstock

The start-up Sun-Ways from Vaud, Switzerland, is testing its easy-to-maintain, removable solar panels between the rails on a section of the Neuchâtel transport company's rail network transN.

With a patented solution, the Swiss company Sun-Ways wants to contribute to an extensive production of clean and locally generated electricity. The technology aims at benefiting from the "empty" space between the two rails of a railway track. The removable solar panels are placed mechanically without interrupting rail traffic. They can be removed again one by one when maintenance work is needed.

"The idea is not new and there are already initiatives trying to use this type of surface," Sun-Ways says. However, they say their company's panel development is the only one with a removable system which can meet the technical constraints imposed by rail infrastructure maintenance requirements.

Prototype development

After the mechanical design, undertaken in collaboration with the research institute of the EPFL in Lausanne and with the support of Innosuisse, the Alliance association and Venturelab, the project is now entering the prototype development phase of the technical elements which will allow photovoltaic panels to be installed between the rails. These elements are the core of the development, as the entire system is pre-assembled in the workshop and then loaded onto a special train which rolls out the photovoltaic panels like a carpet between the rails. The special feature of this technology is that the equipment can be completely or partially removed at any time to carry out maintenance work on the tracks, such as tamping, cleaning or grinding; the solar panels are then put back in place.

The technology has been tested since May in a pilot project on a 100-metre section of the rail network of the Neuchâtel transport company transN near the Buttes railway station. The Swiss Centre for Electronics and Microtechnology (CSEM) in Neuchâtel is carrying out the analyses to assess the resistance of the solar panels in this new environment. The project, which Sun-Ways says has a budget of 400,000 Swiss francs (CHF), involves transN, Scheuchzer, Romande Energie, Viteos, DG Rail, RM voie ferrée, Meccad and GESTE Engineering, while Geneva industrial services are supporting it with a financial contribution of CHF 100,000 from the Vitale Innovation Fund.

IN FOCUS

RAILWAY TECHNOLOGY

Creating optimal parameters

In order to be well positioned for the increasing demand for transport, it is necessary to create an optimised framework of conditions. Examples of this are the asset management of rail vehicles and rail infrastructure and the positioning of trains using the individual magnetic fingerprint of tracks.

Asset management system for a major project in Canada

City of the Future – Toronto

Photo: pixabay

From 2024 onwards, the Canadian large-scale project carried out by the multinational consortium ONxpress Transportation Partners for its customers Metrolinx and Infrastructure Ontario will rely on the asset management system of the German software company ZEDAS.

Around seven million people currently live in the Greater Toronto and Hamilton Area. In 2041, there will be more than twelve million. This will also increase the demand for transport by more than 50 per cent. Today, a major part of the currently operated transport network (GO Transit) is already overloaded. The expansion of the route network by 205 kilometres and a higher frequency of trains are intended to provide a remedy – in a cost-conscious manner and combined with better passenger comfort.

International project partners

The mass transit operator Metrolinx and Infrastructure Ontario commissioned ONxpress to implement the project in the Greater Toronto and Hamilton Area (GTHA). ONxpress is a multinational consortium consisting of Aecon, Alstom, DB International Operations (part of the E.C.O Group) and FCC Construcción. ONxpress brought the German software company ZEDAS on board to provide the asset management. After a two-year development phase, ZEDAS is to implement its asset management system zedas®asset from 2024. It will digitalise and automate maintenance processes in the fields of rolling stock and rail infrastructure. This should reduce maintenance costs while also ensuring the reliability and safety of the assets.

Metrolinx and Infrastructure are providing billions of dollars in funding for the transformation through electrification, more frequent services (15-minute intervals), shorter journey times and a modernised system of the GO regional rail network in the Greater Toronto Area and Hamilton.

ONxpress Transportation Partners is ZEDAS' second Canadian customer for its rolling stock and infrastructure asset management system. “North America is looking to this flagship project. Our standard zedas®asset software will support the efficient asset management of rail vehicles and rail infrastructure in the Greater Toronto and Hamilton Area with its total 2,000 users. In the course of the project, we intend to significantly expand our presence on the North American rail market,” says Wolfgang Jahn, Managing Director of ZEDAS GmbH.

ONxpress opted for the software solution of the Senftenberg-based software provider after a multi-stage selection process. Its many years of experience in the market and its railway know-how were key factors in the decision, as were its special offers for mobile working, the mapping of railway-specific assets and good interface connections to external systems.

Intelligent sensor solution increases rail traffic efficiency

The position of a vehicle is determined by changes in the electromagnetic field

Photo: ITK Engineering

The sensor solution MAROS (Magnetic Railway Onboard Sensor) developed by ITK Engineering and experts from the Karlsruhe Institute of Technology determines the exact position of a train by means of the individual magnetic fingerprint of the track.

The operators of the world's railway networks are facing great challenges. In Germany alone, the total length of tracks has decreased to about 38,000 kilometres over the last few years, while at the same time the rate of utilisation has increased dramatically. According to Allianz pro Schiene, freight traffic in Germany has grown by more than 80 per cent while passenger traffic has increased by more than 40 per cent since 1995. The capacity usage is expected to continue rising, as trains are one of the most climate-friendly means of transport. In order for rail traffic to continue its growth, the expensive and complex construction of new tracks seems unavoidable. Teaming up with experts from the Karlsruhe Institute of Technology, ITK Engineering, a Bosch subsidiary, has developed an alternative. MAROS (Magnetic Railway Onboard Sensor) is a sensor solution which uses the individual magnetic fingerprint of the track to determine the exact position of a train. This means that the necessary safety distance between trains can be measured more precisely and thus be reduced, allowing more trains to run on a track simultaneously than was possible before, thus avoiding the need to build new tracks.

A sensor mounted on the underside of a traction unit makes use of the ferromagnetic properties of railway tracks. They actually have a kind of fingerprint with an individual profile at each location. To measure this location signature, the sensor generates an electromagnetic field and measures how much it changes during the journey. This measurement curve is similar to an altitude profile of mountains and is then automatically assigned to an exact geographical position via a digital signature card. To do this, each railway line must be travelled along and measured at least once before this data can be superimposed on the maps of the train route.

This solution is significantly more economical than balises, it is not weather-sensitive compared to camera systems, and it also works on track sections where GPS solutions have to struggle with weak signals. Moreover, the sensor solution requires little maintenance as it is free of mechanical parts. Test runs have shown that trains can be continuously located with a high degree of track accuracy. The capacity of today's rail networks could thus be increased by up to 35 percent. The developers already have other applications in mind, such as exact, slip-free speed measurement, smart maintenance or automated train driving.

Fast, flexible and functional

The fire protection systems from ZAPP-ZIMMERMANN offer certified safety according to EN 45545 and NFPA 130. Photo: ZAPP-ZIMMERMANN GmbH

With its fire protection products, Zapp-Zimmermann GmbH offers certified safety in planning, installation and use.

The ZAPP-ZIMMERMANN product range extends from moulded parts which are individually adapted to structures. Easy and quick to fit, they also include products tailored to the geometry of openings for maximum flexibility in installation.

For vehicle interiors, for example, the Cologne-based manufacturer produces three-dimensional moulded parts in a wide variety of geometries. The individual fire seals for wall and ceiling components are particularly suitable for serial production of prefabricated system seals and ensure safety of application and a rapid installation due to the dimensionally accurate moulded parts. Elastic fire protection joint seals, for example, guarantee smoke tight connection joints between externally manufactured technical components or partition walls of passenger areas and the outer skin of the rail vehicle. Furthermore, fire-resistant fire protection enclosures serve to maintain the function of safety-relevant electronic components or corresponding sensor technology.

In the area of fire protection products which adapt to opening geometries, fire protection foams and compounds enable component openings to be closed quickly and easily, even if they are difficult to access and irregular. The latest product from ZAPP-ZIMMERMANN in this field is the isocyanate, borate and melamine-free two-component fire protection compound ZZ® 395, which is suitable for the production of fire protection barriers in vertical components such as vehicle floors or roofs. During its development, the focus was on a significantly increased working safety in processing isocyanate-based pouring systems while maintaining the same ease of processing. The coordinated flowability and a curing time of about three minutes make it possible to seal the opening with simple moulds and ensure rapid work progress. In combination with adhesion agents, the penetration seals achieve a high resistance to air and water pressure loads.

In addition to the flexible standard range of intumescent mouldings, foams and grouting systems, ZAPP-ZIMMERMANN also develops individual solutions for special applications.

Centre of excellence and virtual catalogue

Lippert Technical Excellence Center Rignano sull'Arno, Toskana Foto: Lippert

Interior components play a crucial role in passenger comfort and safety. Lippert focuses on developing state-of-the-art rail vehicle solutions that meet both passenger needs and market changes.

One of the most important services Lippert Rail offers its customers is the Technical Excellence Centre (TEC) in Tuscany, established in 2022. In the 3,000 square metres of the Lippert TEC, prototypes can be designed and tested together with the customer before and during the production phase to meet the requirements of train manufacturers and passengers.

When developing new products for a new line of train interiors, Lippert places the needs and experiences of the people who use the components at the centre of its design and development process. To do this, Lippert collects feedback from passengers, conducts user tests and considers the physical and emotional aspects of product use.

Lippert compiles standard components such as rail tables, compartment ceilings, windscreens and accessories in a product catalogue. Based on a standard architecture, the products can be easily combined and configured to meet the specific requirements of each train. This library of modular components allows a wide range of rail interiors to be created.

The Lippert Rail catalogue is presented in an innovative way: Using digital tools (virtual reality), the company offers the possibility to configure and test products in the train environment. This service is available at Lippert TEC, but it can also be presented at the customers' premises.

"Our products are easily interchangeable and compatible with other components, and therefore the manufacturing process becomes more efficient," says Francesco Filippelli, Vice President of Lippert Rail EMEA. "As market and consumer demands change, we are committed to improving our service to rail operators. Lippert's out-of-the-box modular products can save 50 per cent on development costs."

Founded in the US in 1965, Lippert has grown into a leading supplier of components to the automotive industry, expanding its business into the marine, rail and retail sectors.

Vegetation management – sustainable and digital

Cutting back vegetation along the tracks Photo: Deutsche Bahn AG

In order to prepare for the effects of climate change, Deutsche Bahn AG (DB) has intensified the care of vegetation along its approximately 33,400 kilometre long rail network.

For this purpose, DB also relies on technical support from space. Using satellite technology, tree populations are comprehensively registered and measured. In combination with on-site expert assessment and operational framework conditions, the trees are cut back according to a priority plan. This ensures that trees with the highest risk potential are treated first.

Artificial intelligence (AI) is also a solution to get an overview of the state of vegetation growth in the track area. Together with AI company Birds on Mars, DB is developing a digital vegetation management system. In the process, track videos are analysed by an AI, and critical vegetation in the track area is identified and marked. The results help DB's vegetation management staff to quickly remove vegetation in critical areas in a targeted manner.

This digital vegetation control supported by AI and satellites contributes to DB's sustainable vegetation management, as does the use of mechanical-manual methods. The coordinated combination of different measures can help to achieve efficient vegetation control in and around the tracks. As announced as early as 2019, DB will consistently implement the phasing out of glyphosate from 2023. After testing a variety of alternative methods, pelargonic acid will be used in future as a more environmentally friendly alternative to glyphosate. The approval for the use of pelargonic acid was granted in February 2023 by the Federal Office of Consumer Protection and Food Safety (BVL) in close coordination with the Federal Ministry of Food and Agriculture (BMEL) and the Federal Ministry of Digital Affairs and Transport (BMDV). The use of pelargonic acid is still subject to approval by the Federal Railway Authority (EBA).

NEWS

Comfortable, convenient, sustainable

The Mesh Seat on show at InnoTrans 2022. Photo: Lantal

With the Mesh Seat, the Portuguese textile manufacturer Lantal has designed a particularly air-permeable lightweight product. The air in the entire train or bus can circulate better thanks to the breathable mesh material. Even on warm days, passengers stay cool and comfortable because the back and neck are optimally supported by the ergonomic design. The risk of discomfort and fatigue during long journeys is reduced. The Mesh Seat is also environmentally friendly. Its lightweight construction from recycled fibres and the resulting improved fuel efficiency make it an environmentally friendly alternative to conventional seats. For buses, the Mesh Seat's impact on fuel efficiency is particularly great as it reduces the overall weight of the vehicle and results in lower carbon emissions. The Mesh Seat cover was also developed with comfort in mind. Unlike traditional train and bus seats with fixed covers which are difficult to clean, the Mesh Seat's cover can be easily removed, allowing for quick and easy maintenance. In addition, the cover can be replaced when it wears out, so the seat still looks and feels like new even after years of use. The Mesh Seat has been in use on Germany's Südostbayernbahn network since the beginning of March.

EURODUAL simulator in teaching mode

The EURODUAL simulator of the NEF in Braunschweig.

Photo: NEF | Norddeutsche Eisenbahnfachschule GmbH

Last year, the world's first simulator for Stadler EURODUAL locomotives (BR 159 class) went into operation at the Norddeutsche Eisenbahnfachschule GmbH (NEF) in the German city of Braunschweig. The simulator is the result of a cooperation between NEF, European Loc Pool (ELP) and Braunschweig-based company Zusi, a manufacturer of railway simulators in Germany. Initial findings related to the role of the EURODUAL simulator for the industry are now available.

The EURODUAL simulator was presented and commissioned in April last year and a positive usage balance can already be drawn after just under one year of service. With a continuous increase in orders for the EURODUAL, the demand for simulated journeys using the 159 Class locomotive is also growing. Since last year, some 130 train drivers have started or completed their retraining as BR 159 locomotive drivers at the locations of the Norddeutsche Eisenbahnfachschule. In addition, external enquiries from railway undertakings have brought in a further 60 users for surveillance, testing and educational runs. Numerous private persons have already gained an impression of the EURODUAL as well, bringing the number of users to over 200 in just under a year of operation.

A plus for Braunschweig as a railway location

"The increasing use of the EURODUAL is naturally also resulting in excellent utilisation of our simulator for this series. When we decided to operate this highly modern and elaborate EURODUAL simulator at the Braunschweig site, this was also an important consideration. We are very pleased that the training offer is being used extensively, even beyond our internal needs," explains Robert Nahrstedt, Managing Director of NEF.

While the six-axle dual-mode locomotive is produced in Valencia, Spain, Braunschweig is the only location in Germany where it is delivered to German railway companies. The EURODUAL simulator provides a further building block for pioneering economic and environment-friendly solutions in railway transport at railway centre Braunschweig, which is already home to a diverse number of train-related companies. The EURODUAL simulator in Braunschweig is available to all interested parties and can be booked by companies for simulator training courses. Further information at:
www.meineZUGunft.de/bahnsimulator/

Data to boost efficiency

The cloud-based software platform for supply, rotation and roster planning as well as deployment of buses in public transport

Photo: Optibus

Public transport planning and scheduling are becoming increasingly relevant in times of inflation and cost pressure. Artificial intelligence (AI)-based digital platforms and optimisation algorithms play a key role in efficient planning in all areas. Such platforms are offered by Optibus.

Buses are the most important means of transport in German public transport. Statista reports that urban and long-distance buses in Germany carry 7.8 billion passengers per year. In comparison, rail transport carries just 1.8 billion passengers a year. What stands out here is not only the flexibility of buses, which allows them to connect cities, towns and suburbs, but also their sustainability. This trend is increasingly driven and promoted by the EU directive on the procurement of clean and emission-free road vehicles.

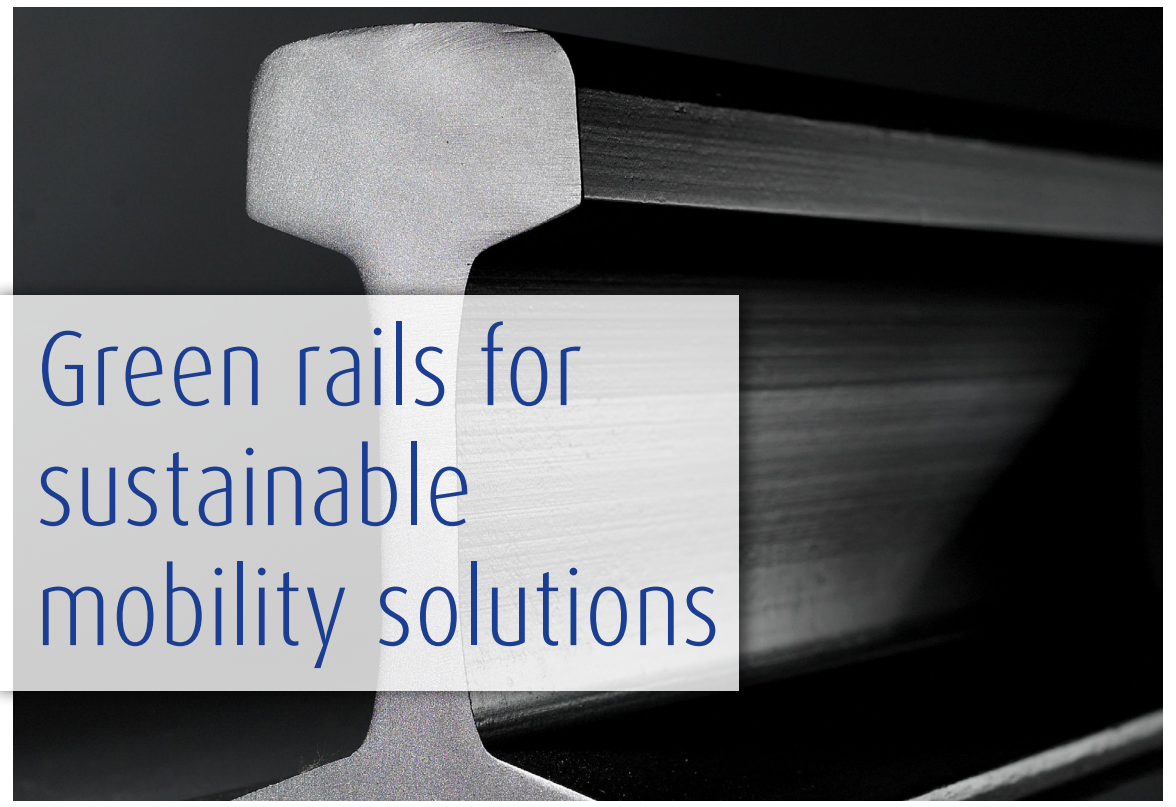
Public authorities and transport operators are faced with numerous challenges in ensuring efficient, sustainable and reliable public transport. Savings under increased cost pressure can be achieved by quick identification of relevant specific data for e-vehicles – such as their battery status and charging possibilities within the available infrastructure – and especially of fuel and energy prices.

The use of data, algorithms and machine learning is one way to address the issues and it is also increasingly gaining ground in public transport. They help automate manual tasks, rapidly and accurately handle large amounts of data and make corresponding real-time recommendations, thus contributing to faster and more data-driven decision-making.

Data-based timetable optimisation

Transport operators can generate different scenarios based on algorithms and adjust them quickly. However, digital software solutions also help to promptly create and validate route variations and timetables. Optimised timetables can also be produced on the basis of key figures such as punctuality, costs, efficiency and service quality.

In addition, they provide passengers with accurate route and timetable information, as they can easily create and maintain data in the digital exchange formats GTFS and VDV. This in turn makes it possible to also display the service in existing applications, such as Google Maps. Optibus.com



Green rails for sustainable mobility solutions

227,000 tonnes of the total 262,000 tonnes of rails delivered from Hayange in 2022 were "green". Photo: Saarstahl Rail

For its infrastructure products, Saarstahl Rail focuses on the two factors of quality and sustainability. The Saarstahl Group subsidiary, based in Hayange, France, has developed unique European green rails made of low-CO_2 steel for environmentally conscious customers.

The concept behind these "green rails" is based on the circular economy model. Saarstahl Ascoval, another subsidiary of the Saarstahl Group, recycles industrial scrap for the environmentally friendly production of the rails. It is sourced in particular from the Saarstahl Rail plant and from various railway networks, such as that of the French railway company SNCF or that of the Belgian infrastructure company Infrabel. Last year, for example, SNCF delivered 40,000 tonnes of scrap rails to Saarstahl Ascoval for the recycling process. The scrap is melted down there in an electric arc furnace (EAF) and delivered in blooms to the plant in Hayange, where the new "green rails" are rolled.

The entire production process is extremely environmentally friendly, as it already reduces CO_2 emissions by more than 70 per cent compared to the conventional production process, which is based on iron ore and coal as raw materials.

In 2022, a total of 262,000 tonnes of rails were delivered in Hayange. Of these, 227,000 tonnes were produced using "green" methods, which means a bottom-line saving of 415,000 tonnes of CO_2.

Contract awarded for sections in major Paris project

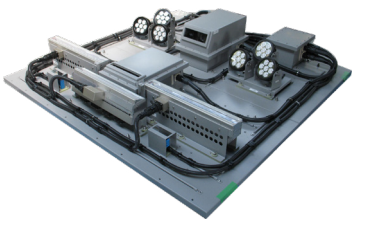
The green rails are mainly used on high-speed lines and in local traffic, but also in heavy goods traffic. Saarstahl Rail has been awarded the contract for two sections of the "Grand-Paris Express" infrastructure project, which will connect Greater Paris with the existing metro network by 2030. So far, a total of more than 6,000 tonnes of rails have left the plant in Hayange, and a firm order has been placed for a further 12,000 tonnes. When the major project is completed in 2030, the Paris metro network will be able to carry an additional two million people a day.

Saarstahl Rail's product portfolio comprises a total of more than 100 rail sections, which can be supplied in 25 steel grades and in lengths of up to 108 metres.

Saarstahl Rail is a subsidiary of the Saarstahl Group, which is headquartered in the German town of Völklingen, and specialises in the production of rolled wire, steel bars, semi-finished products as well as forged products in sophisticated qualities in response to global challenges such as mobility, energy efficiency and safety. **http://www.saarstahl-rail.fr/saarstahl-rail/en/products/green-rails/index.shtml**

NEWS

Contactless inspection of contact wires and contact wire equipment



Inspection device Photo: Meidensha Corporation

CATENARY EYE from MEIDENSHA CORPORATION is a non-contact, high-precision inspection device which uses camera imaging technologies to inspect contact wire and contact wire equipment. CATENARY EYE uses a camera to carry out image processing-based inspections, so it can be installed not only in inspection vehicles but also in various other types of rolling stock, including high-speed trains. It can also be used to inspect the overhead contact line systems in commercial operation.
CATENARY EYE reduces the inspection and maintenance work on overhead lines and installations. If an anomaly is detected, the camera images can be evaluated offline in the office to identify the required repair measures before carrying out repair and/or maintenance work. In addition to contact wire conditions such as contact wire height, deviation, wear and contact force, it is also possible to inspect anomalies in contact wire equipment such as droppers and connectors.

Technology for vehicle and track appraisal

Artificial Intelligence Argos Photo: Shutterstock

The railway industry is undergoing a transformation from conventional maintenance strategies to data-based approaches using sensors, the Industrial Internet of Things (IIoT), Big Data and artificial intelligence. In collaboration with its partners, HBK has developed a technology to detect deviations at an early stage.

DTSI-Spot® is based on a deep understanding of physical processes based on high-precision measurements of forces and movements. These make it possible to detect deviations in vehicles (pantograph, wheels and bogies) and infrastructure (rails and catenary) at an early stage. Thanks to the high data quality, reliable forecasts can be made when planning maintenance interventions. The interfaces between vehicle and infrastructure offer great potential for optimising rail traffic. However, separate consideration and partial optimisation of vehicle, track and overhead line leads to friction losses. In contrast, mutual data acquisition and cross-system measurement data exchanges can result in quantifiable monetary benefits for both sides. The reduction of load levels and the increase in passenger comfort in particular improve the efficiency and acceptance of rail transport.

Automated maintenance planning through AI

The data-based consideration of rolling stock and infrastructure results in optimisation of the overall railway system and a reduction of overall costs. It also ensures comfort, availability and capacity as well as reducing the burden on residents and the environment. The use of artificial intelligence and machine learning enables precise forecasts and the automation of maintenance planning. The mutual data collection and the exchange across systems of measurement data can lead to quantifiable monetary benefits for both sides and support the transformation process in the railway system.

www.hbkworld.com/rail

EBA-approved steel doors and gates

The Ulm-Alb-Abstiegstunnel Photo: Nikolay Kazakov

After numerous projects in national and international tunnel construction, Hodapp GmbH & Co. KG from the German town of Achern-Großweier is also providing special doors to the Stuttgart 21 project. Hodapp designed the unrivalled "DYNOS" pressure/suction test stand for the development and manufacture of pressure and suction wave-resistant fire doors.

The varying over- and underpressure conditions in high-speed tunnels have to fulfil particularly strict regulatory requirements imposed by the railway supervisory authorities for the use of construction elements in railway and metro tunnels. Due to these requirements, doors can only be manufactured as customised components. The basic prerequisite for this is approval by the German Federal Railway Authority (EBA). Hodapp was already granted this EBA approval for the construction of swing doors as fire-retardant, smoke-tight and self-closing escape doors (EI2 30 CSm or T30-RS) with aerodynamic loading in 2018. This required many years of testing within the scope of individual case approvals, the fulfilment of further tests and qualification in accordance with DIN EN ISO 3834-2 and EN 1090-1.

In order to be able to meet the requirements, engineers at Hodapp developed the "DYNOS" pressure/suction test stand, which is unique in the world. It is used primarily to test and develop fire doors which are resistant to pressure shock waves and have to withstand the requirements of high-speed tunnels, among other things. DYNOS is designed for a fast change between suction and pressure of ± 10 kilopascal. The cycle time is one second and one million cycles with 40,000 to 45,000 loads per day.

Strict requirements for Stuttgart 21

Since the approval was granted, Hodapp has equipped numerous projects in Germany, but also mainly in other European countries, with doors and gates. Examples include the Copenhagen metro tunnel, the Eurasia tunnel in Istanbul and the Simplon and Lötschberg tunnels in Switzerland.

The most recent construction project is right on our doorstep – Stuttgart 21, where work is already in full swing. Here, too, particularly strict regulations apply to escape and rescue routes and to fire protection. The demands on dynamic loading are challenging here as well. The many years of experience in the high-speed sector and the specialisation in custom-built doors mean that Hodapp is up to the challenges. The company has been manufacturing tailor-made doors and gates for special requirements for more than 75 years.

All doors manufactured by Hodapp for installation between railway tunnels and the connecting structures, emergency exits or escape galleries of railway tunnels in Germany are approved and meet the most stringent quality requirements.

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