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## Content

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## Submissions & Contributions

Railtalk Magazine Xtra, a magazine written by the Enthusiast for the Enthusiast. So why not join the team. We are always looking for talented photographers and writers to join us at Railtalk. Be it though pictorial submissions or via provided above. a written article featuring an event or railtour, we greatly appreciate any contributions to the magazine however big or small.

#### **Photographic Contributions**

All Photographic contributions should to be sent to us via email, post or via the members section page on our website. Contact addresses are

All images should be provided at a resolution of at least 2400px x 1700px at 240dpi.



## Welcome to Issue 216Xtra

Well it's that time when all the major rail companies head to Berlin for InnoTrans and this year is no exception with many exhibits focussing on emissions, the environment and automation.....

The InnoTrans 2024 trade fair, taking place from September 24th to 27th at Berlin Exhibition Grounds, has become a global platform for innovations in rail transport and mobility. Occupying an expansive 200,000 square metres across 42 halls and outdoor display areas, the event features over 2,900 exhibitors from 59 countries, all showcasing their latest products and innovations in the sector. A key highlight of InnoTrans 2024 is the rail track and outdoor display, where more than 110 passenger and freight vehicles are on exhibit. These include high-speed trains, regional trains, trams, hybrid locomotives and rail maintenance vehicles, giving trade visitors the opportunity to explore the latest technological advancements first-hand.

Siemens Mobility is among the prominent exhibitors, presenting five vehicles, including the high-speed Velaro train designed for the Egyptian market. This train, built for extreme weather conditions, combines advanced design features with premium passenger comfort. The company is also showcasing the Mireo Smart regional train, tailored to meet the growing demand for sustainable rail mobility. AlstomisdisplayingitsCoradiaMax™regionaltrain,designed for the Landesnahverkehrsgesellschaft Niedersachsen mbH (LNVG) with a unique single and double-decker configuration. The company is also featuring its Flexity™ tram for Berlin's public transport, which stands out as the city's longest tram with enhanced passenger capacity and innovative safety systems. Stadler is introducing its RS ZERO, a zero-emission vehicle powered by fuel cells or battery-electric systems, marking a significant step toward sustainable rail transport. The company is also exhibiting the CITYLINK for Saarbahn, a dual-function vehicle that operates as both a train and tram, offering versatile urban and regional transport solutions. Other notable exhibits include Hitachi Rail's high-speed ETR1000, compatible with various European electric supply systems, and CRRC's CINOVA, an energy-efficient regional train. Hyundai Rotem is presenting a new fuel cell-powered tram, emphasising

low noise and high energy efficiency. Vossloh Rolling Stock is showcasing its Modula BFC, a hybrid fuel cellpowered freight locomotive designed for flexible and sustainable freight transport. Additionally, Tatravagónka a.s. is displaying its six-axle intermodal wagon designed for transporting heavy non-craneable saddle trailers. DB Bahnbaugruppe and DB Engineering & Consulting are highlighting their 360° multi-sensor platform (MSP), a significant innovation for digitalizing rail infrastructure. The MSP integrates various sensors and measurement systems on a single rail maintenance vehicle, providing detailed 3D imaging and comprehensive inspection capabilities.

#### And from New Zealand comes the news that....

KiwiRail has reported that a recently released video of a collision between a train and a motor vehicle at a level crossing underscores the critical need for heightened awareness around railway tracks. The footage captures a car accelerating towards the train tracks and entering the path of an approaching train, despite the presence of warning signals. The train drivers' distress is evident in the recording, but they were unable to prevent the crash.

KiwiRail Chief Asset Development Officer David Gordon explained that the release of the video is intended to draw attention to the importance of individual responsibility at level crossings. He said: "Luckily, in this case, the accident was not fatal. But even close calls at level crossings can take a huge toll on train drivers and those who narrowly avoid death."

in the year leading up to June 30th, there had been 19 collisions and 173 near misses at level crossings. Over the past decade, over 170 people have lost their lives in trainrelated incidents in New Zealand. "Disappointingly, the latest figures show that 95 per cent of collisions and 73 per cent per cent of near misses were at crossings that already have flashing lights and bells or barrier arms installed," says Mr Gordon.

Until next month...

**David** 

## **This Page**

Due to construction work, the high-speed line near St. Valentin is closed and all trains take the old line via Haag. In the area of the former Haag station, two Westbahn services pass each other. Thomas Niederl

#### **Front Cover**

ZSSK 'Gorilla' Class 350.017 departs Bratislava hl.st. on August 3rd with train No. IC523 11:34 service to Košice. Andy Pratt



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## With Thanks

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These issues wouldn't be possible without contributions from: Ken Abram, Michael J Alderdice, John Alsop, Steve Andrews, Ray Anslow, Mark Armstrong, John Balaam, Brian Battersby, Mark Bearton, Steven Beesley, Barry Beeston, Tom Blanpain, Mark Bennett, Michael Bennett, Ben Bucki, Ian Callander, Keith Chapman, Steve Chapman, Julian Churchill, Russell Clarke, Nick Clemson, Keith Davies, Brian Dobbs,

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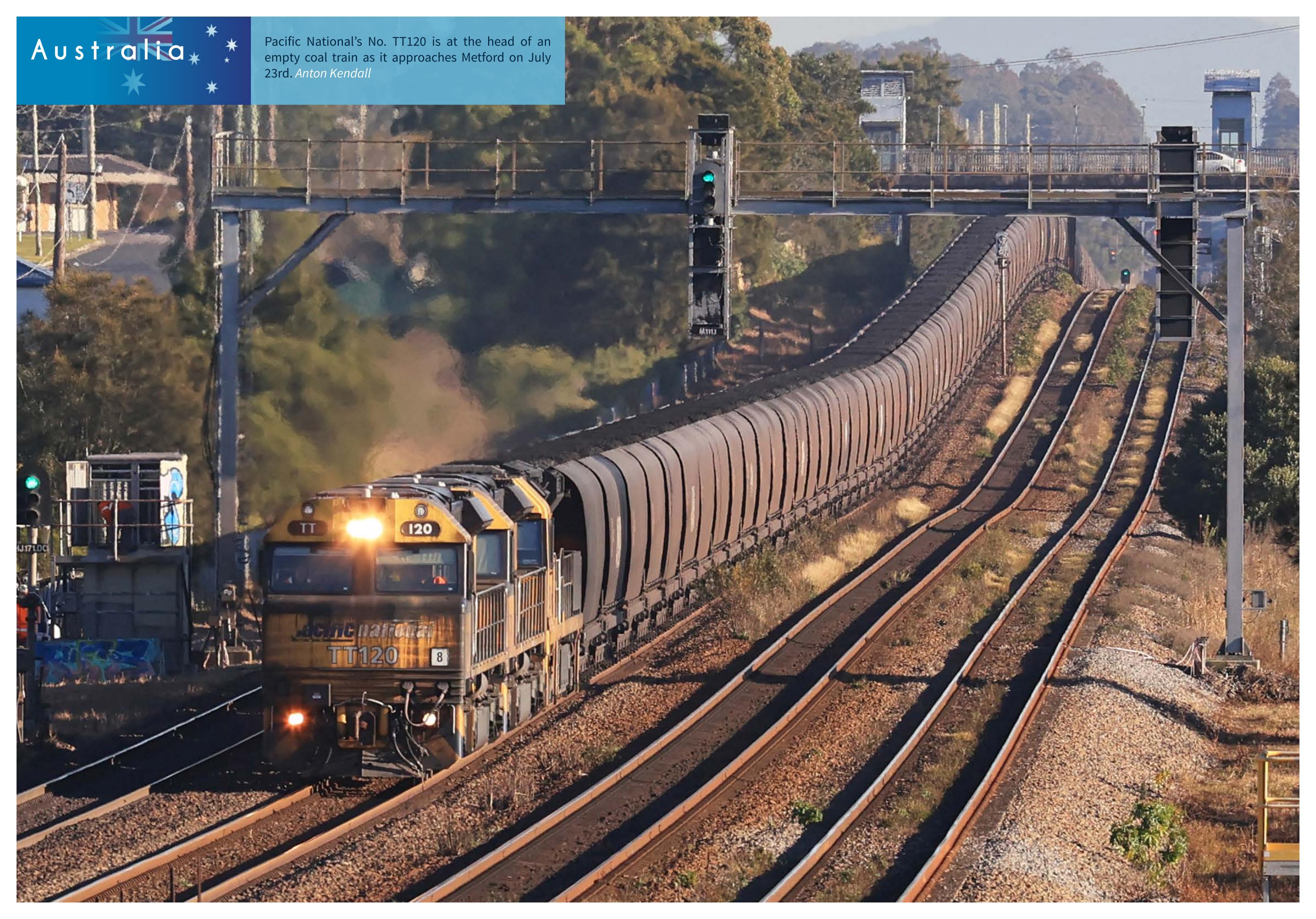






No. QL018 working for Qube brings a southbound empty steel train through Tarro on July 23rd. Anton Kendall









## Austria

The ÖBB Rail Cargo Group (RCG) is expanding its TransNET to include a multimodal connection to and from Serbia. The new TransFER links the economic centres of Western and Central Europe directly with the Western Balkans.

RCG is now offering one round trip per week from Kruševac, Serbia, via the Hungarian terminal BILK in Budapest to Duisburg, Germany. Kruševacisanimportantindustrial centre in the Western Balkans and plays a key role in regional rail freight transport. Its central location offers ideal conditions for freight transport within Serbia and to neighbouring countries.

While Budapest, as an important hub, connects the Western Balkans with the

# New: TransFER Krusevac-Budapest-Duisburg

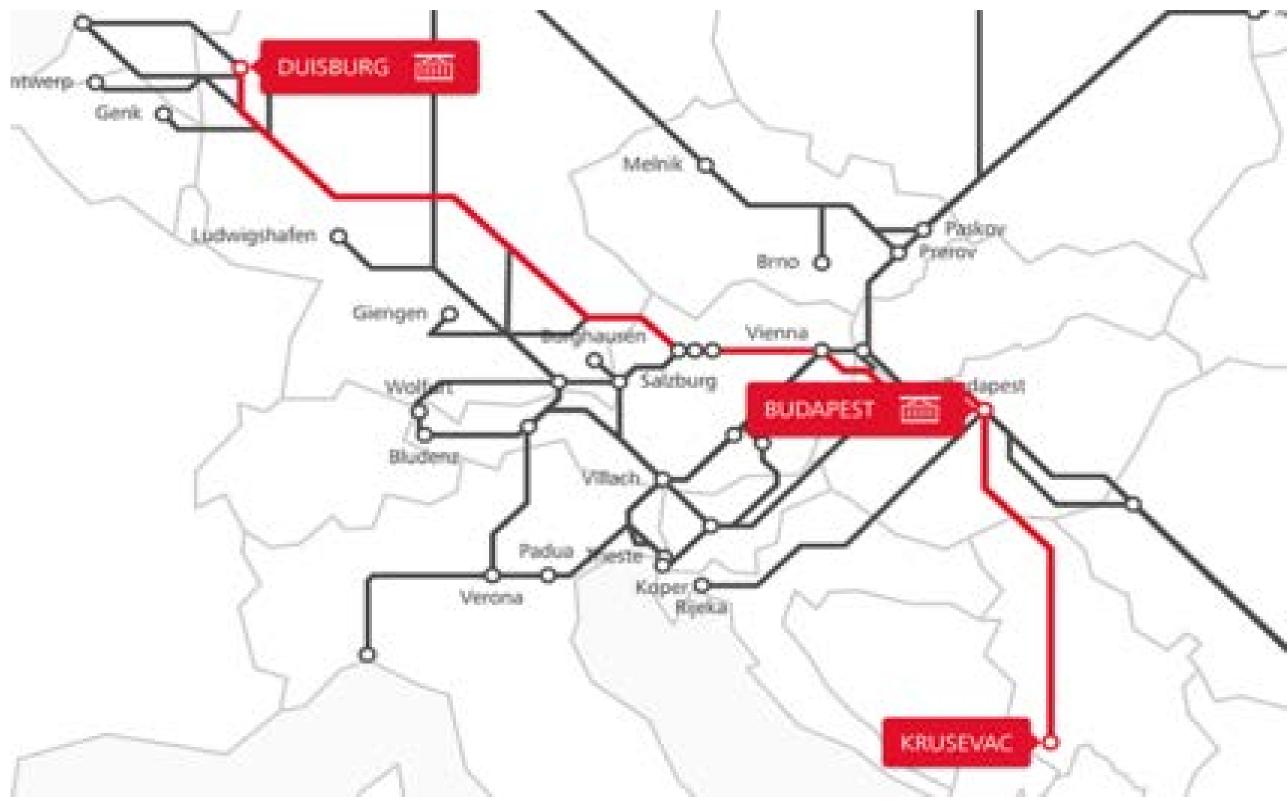
Central European markets and ensures seamless onward connections to Western Europe through efficient transhipment facilities, Duisburg, as one of Europe's largest inland ports and logistics centres for international freight transport, acts as a gateway to the Western European markets and offers onward connections for flows of goods to the Benelux countries.

## Fixed timetable and extensive additional services

With the new TransFER, RCG provides a reliable transport solution on sustainable rail for the transport of 45-ft containers and swap bodies. All sectors are covered, such as the beverage, chemical, building materials, steel and automotive industries. The fixed timetable ensures plannable and

punctual transport at attractive transit times. In addition, all necessary additional forwarding services are offered.

These include the organisation of first and last mile, state-of-the-art warehouse logistics and professional customs clearance to ensure smooth and safe transport. Otherservices such as reloading, reporting and monitoring, equipment positioning and utilisation, back-up solutions on the road and a single point of contact for every customer complete RCG's offer.



# New: TransFER Salzburg-Augsburg

With the new Trans FER Salzburg – Augsburg, ÖBB Rail Cargo Group (RCG) connects Austria with Southern Germany and creates a central link to the entire Central and South-Eastern European region.

With two round trips per week, the new TransFER offers a non-stop connection between two important economic centres in Austria and Germany: Salzburg, a central hub in the Austrian rail network, and Augsburg, an important industrial and logistics centre in Southern Germany.

This not only promotes the flow of goods between both regions, but also strengthens the entire logistics chain in Central and South-Eastern Europe.

# Comprehensive end-to-end logistics solutions

Customers from all industries benefit from conventional wagonload and container



transport on sustainable rail – the TransFER is also suitable for the transport of dangerous goods (RID). In addition, RCG offers comprehensive end-to-end logistics solutions such as first and last mile to ensure that goods reach their destination

smoothly, even for customers without their own siding. A wide range of additional freight forwarding services are also offered. These include transhipment, modern warehouse logistics and professional customs clearance.

# Over 100,000 tonnes of waste paper for Bunzl & Biach

For decades, Bunzl & Biach GmbH has relied on ÖBB Rail Cargo Group (RCG) for the sustainable transport of waste paper.

Bunzl & Biach GmbH is Austria's leading provider for the collection, sorting and processing of waste paper. The company has been relying on RCG's logistics solutions for several decades, since 1987 to be precise.

#### Waste paper across Austria

Thanks to this cooperation, waste paper in bales is transported from the Austrian sites – Vienna-Floridsdorf, Vienna-Matzleinsdorf and Linz Stadthafen – to paper mills in Laakirchen, Ortmann, Frohnleiten and Pitten in two- and four-axle "H" class wagons.

In 2023 alone, this amounted to an impressive 103,600 tonnes – 100 per cent organised and handled by RCG.

#### Over 700 tonnes of CO2 saved per year

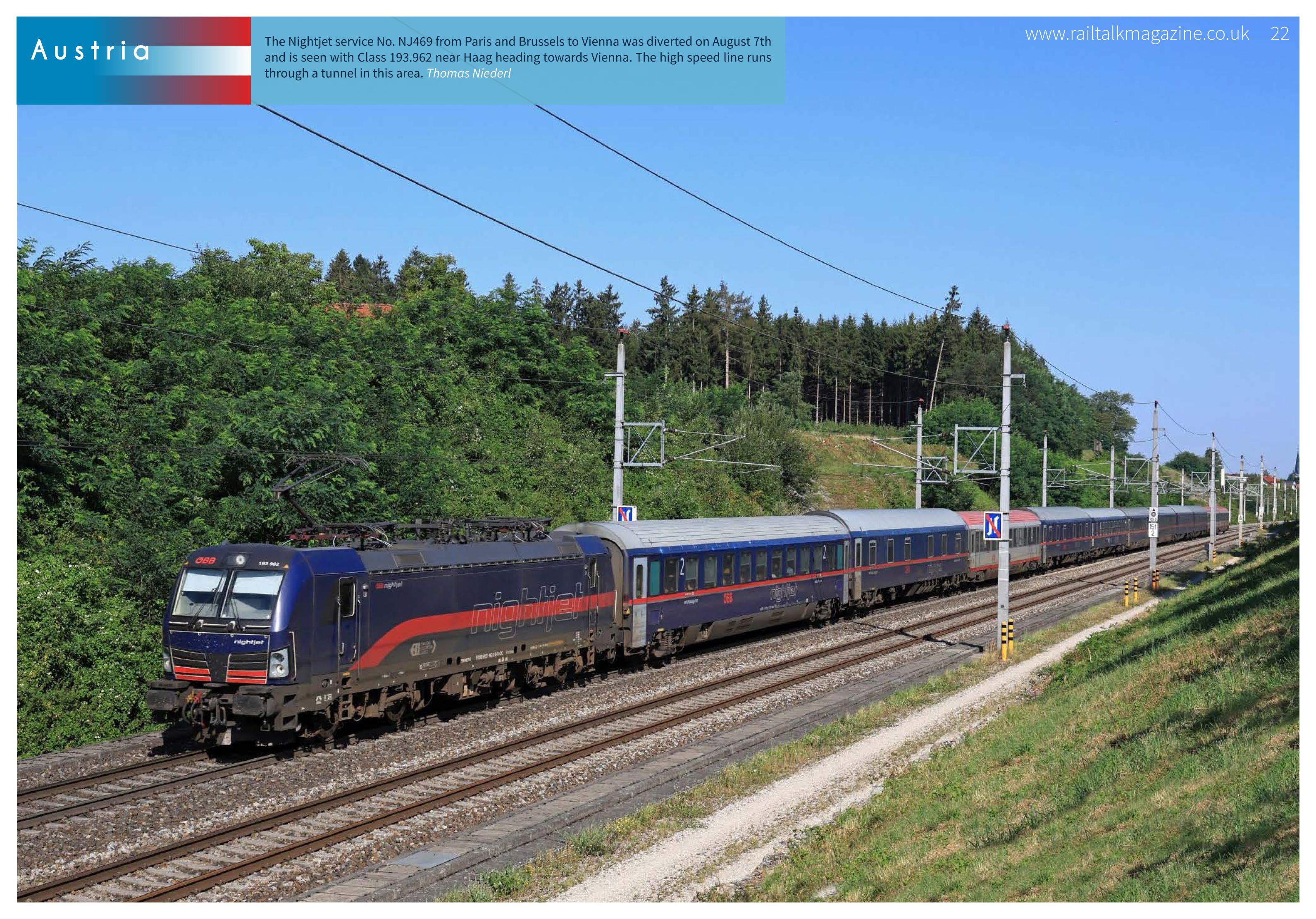
Bunzl & Biach is committed to efficient and environmentally friendly logistics that delivers both economic and ecological benefits. Rail transport makes a significant contribution to reducing CO2 emissions and energy costs compared to road transport.

In 2023 alone, over 700 tonnes of CO2 were saved this way. RCG recently recognised this commitment to sustainability and climate protection with a TÜV-certified environmental award.











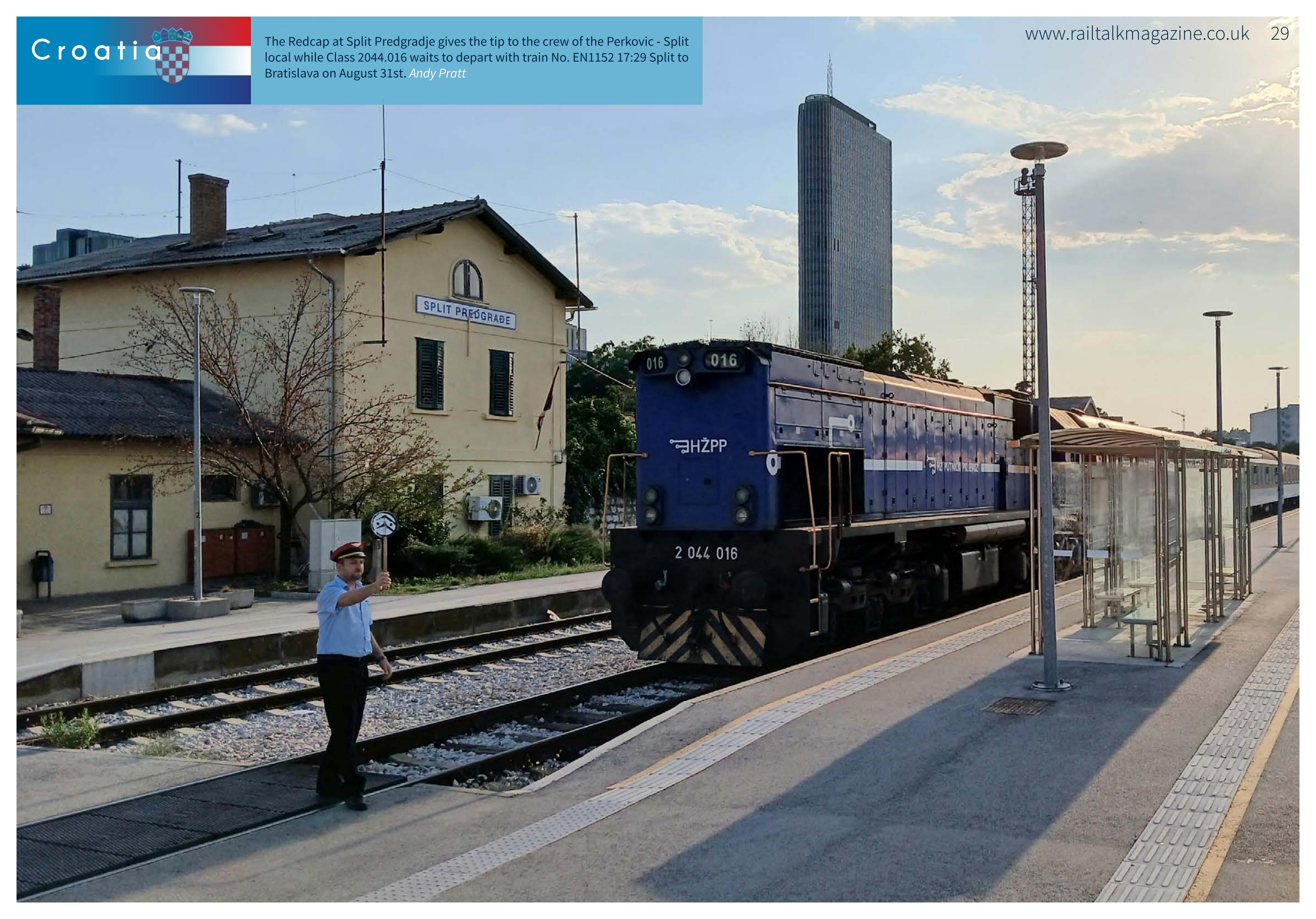


















HZPP No. 1141.377 departs Meja whilst hauling train No. 4603 07:35 Rijeka - Ogulin on July 12th. Laurence Sly





HZ Cargo No. 1141.001 and an unidentified Vectron pass Meja whilst hauling a coal train from Rijeka on July 12th. *Laurence Sly* 









On July 6th, Class 2044.029 approaches Labin Dalmatinski with the thrice weekly Split to Bratislava overnight train.

Mark Torkington



# Czech Republic

#### Exercising the option to purchase new locomotives



In 2018, ČD Cargo concluded a contract with Bombardier Transportation GmbH for the purchase of ten TRAXX 3MS locomotives. The contractual option allowed to increase the number of these locomotives up to a total of 50 engines. These are operated in the Czech Republic as the 388 series.

In 2020, Bombardier's rail division was purchased by a French company Alstom,

which assumed all obligations under the above contract.

On August 20th, Tomáš Tóth, Chairman of the Board of Directors of ČD Cargo, Martin Svojanovský, Member of the Board of Directors of ČD Cargo, and Daniel Kurucz, Managing Director of Alstom Czech Republic, signed an Amendment to exercise the option for the delivery of the last 11 locomotives up to the total of 50. The locomotives, which enable operation not only in the Czech Republic but also in Germany, Austria, Poland, Slovakia, Hungary, Croatia, Slovenia and Serbia, will be delivered in 2026 and will be equipped with Atlas and EbiCab signaling and safety equipment.

The value of the option exceeds CZK1 billion. In addition to the original contract,

ČD Cargo has purchased 10 more TRAXX 3MS locomotives, which are expected to be delivered in 2025 and operated by the Austrian branch of ČD Cargo.

The renewal of the locomotive fleet is a necessary condition for the expansion of the largest domestic rail freight carrier to foreign markets, especially in Germany and Austria. The share of ČD Cargo's foreign transports

is steadily growing. In 2023, the carrier transported more than 12 million tonnes of goods through its branches or subsidiaries.

ČD Cargo locomotives can now already be seen in seven European countries, and plans are underway to enter other markets, such as Italy and the Benelux countries.

#### DB Cargo in action: logistics for the Riedbahn redevelopment

In the middle of one of Germany's largest infrastructure projects, DB Cargo is showing what logistics really means. The general refurbishment of the Riedbahn - one of the most important north-south connections - is a mammoth project that will shape the future of rail infrastructure. Not only will 117 kilometres of track be renewed, but 152 points will also be replaced, 140 kilometres of contact wire replaced and more than 15 kilometres of noise barriers erected.

In addition, 230,000 sleepers and 100,000 tons of ballast will be installed and 20 stations modernized. A task that requires precision and coordination at the highest level - and this is exactly where DB Cargo comes in.

#### Ballast and sleepers: Logistics in step

The challenge begins with the material supply. Around a third of the ballast transported by rail is supplied by DB Cargo from the material distribution center (MVZ) in Karlsruhe. DB Cargo brings the important raw material to the construction site in over

80 trains. But the job doesn't end with the delivery: we also dispose of the old ballast using specially provided tipping cars. DB InfraGO also relies on special wagons from DB Cargo to transport the sleepers - around 60 of them are in use on the Riedbahn.

#### Switch parts on the move

Around 150 new turnouts are needed to keep traffic on the Riedbahn safe and efficient in the future. This is where the true strength of logistics comes into play: DB Cargo FLS is responsible for transporting the switch parts, which are manufactured in the switch factory in Witten. These high-precision components, such as sets of switches and so-called frogs, are transported by special trucks to the assembly sites in Biblis, Riedstadt Goddelau and Gernsheim. But that's not all: the detour routes used during the construction work must also function perfectly. This is why DB Cargo FLS also delivers switch parts to strategically important locations such as Darmstadt, Ludwigshafen, Mannheim and Heidelberg.

A logistical masterpiece at all levels
Each of these turnout components
is a logistical masterpiece: weighing
between 1.5 and 2.3 tons and
measuringupto 17.5 meters in length,
they are delivered to the installation
sites with pinpoint accuracy.

From there, the work continues seamlessly - the switches are then installed on the rails in the corresponding construction phases.

The renovation of the Riedbahn is not only a gigantic construction project, but also a blueprint for the future renovation of the entire rail network in Germany. DB Cargo is playing a central role in this project, demonstrating once again that efficient logistics are the key to successful infrastructure projects.



#### Digitalisation rolling by: DB Cargo now uses Al to help with freight car checks

DB Cargo is using artificial intelligence to make rail freight transport even more efficient: AI technology can literally read out the status and, more recently, important operating data as it rolls past marshalling yards. DB Cargo uses existing camera bridges for this purpose. With the AI initiative at the freight railway, Deutsche Bahn is following its long-term growth strategy Strong Rail: The digital eye ensures that more goods are transported on the climate-friendly rails because operations can be carried out much faster and more effectively.

DB Cargo has been using camera bridges for digital diagnostics of freight wagons across the board for some time now. A total of 13 camera bridges are located at the eight largest freight stations in Germany. Freight trains pass through portals that are equipped with high-speed cameras and lighting. An Al analyzes the captured images for damage.

Now another feature is being rolled out: the most important wagon information can be read and analyzed in seconds using AI. The labeling of the wagons contains essential operating data such as deadweight, brakes, loading dimensions and much more. The check of this data is required by law and must be carried out again for each train formation.

Previously, employees with long computer lists carried out this work exclusively manually, which was very time-consuming. With the new AI-supported image processing, DB Cargo can precisely recognize and further process the 15 most important addresses on a freight wagon.

The new AI technology is now being tested nationwide. It is intended to speed up the provision of freight wagons and at the same time make the work of employees considerably easier.



DB Cargo customers will benefit most from this. As Europe's largest freight railway with over 83,000 freight wagons, DB Cargo offers its services across the entire continent and also transports thousands of freight wagons from other companies on its trains.

The project is funded by the Federal Ministry for Digital and Transport as part of the Future of Rail Freight Transport program.

### The northern route is a strong network between southern Europe and Denmark, Sweden and Norway.

The longest rail freight route in Europe runs from Scandinavia to southern Europe. With a strong network in Denmark, Sweden and Norway, DB Cargo keeps factories running and ports busy.

#### A strong team for all goods!

DB Cargo covers the entire transport chain in Scandinavia. Based in Denmark and Sweden, we operate a broad single wagonload network, efficient intermodal and block trains, multimodal terminals and our own maintenance depot. With technical expertise, good contacts and in all Scandinavian languages, we ensure that rail freight transport runs smoothly.

#### **Traction for satisfied customers**

Our 30 multi-system electric locomotives connect Sweden, Denmark and Germany without locomotive changeovers at the borders. DB Cargo is the only freight railroad that can haul 2,300 tons in one train through Denmark. HVO-certified diesel and switching locomotives complement our versatile fleet and enable shunting on private customers' sidings.

#### Local presence in Denmark and Sweden

With close political contacts and strong partnerships in the rail and logistics industry, DB Cargo creates optimal customer solutions and ensures a shift to other modes of transport. With our Swedish branch, we ensure smooth processes at competitive costs. Together with our partners, we are proven all-rounders for intermodal, block train and spot concepts.

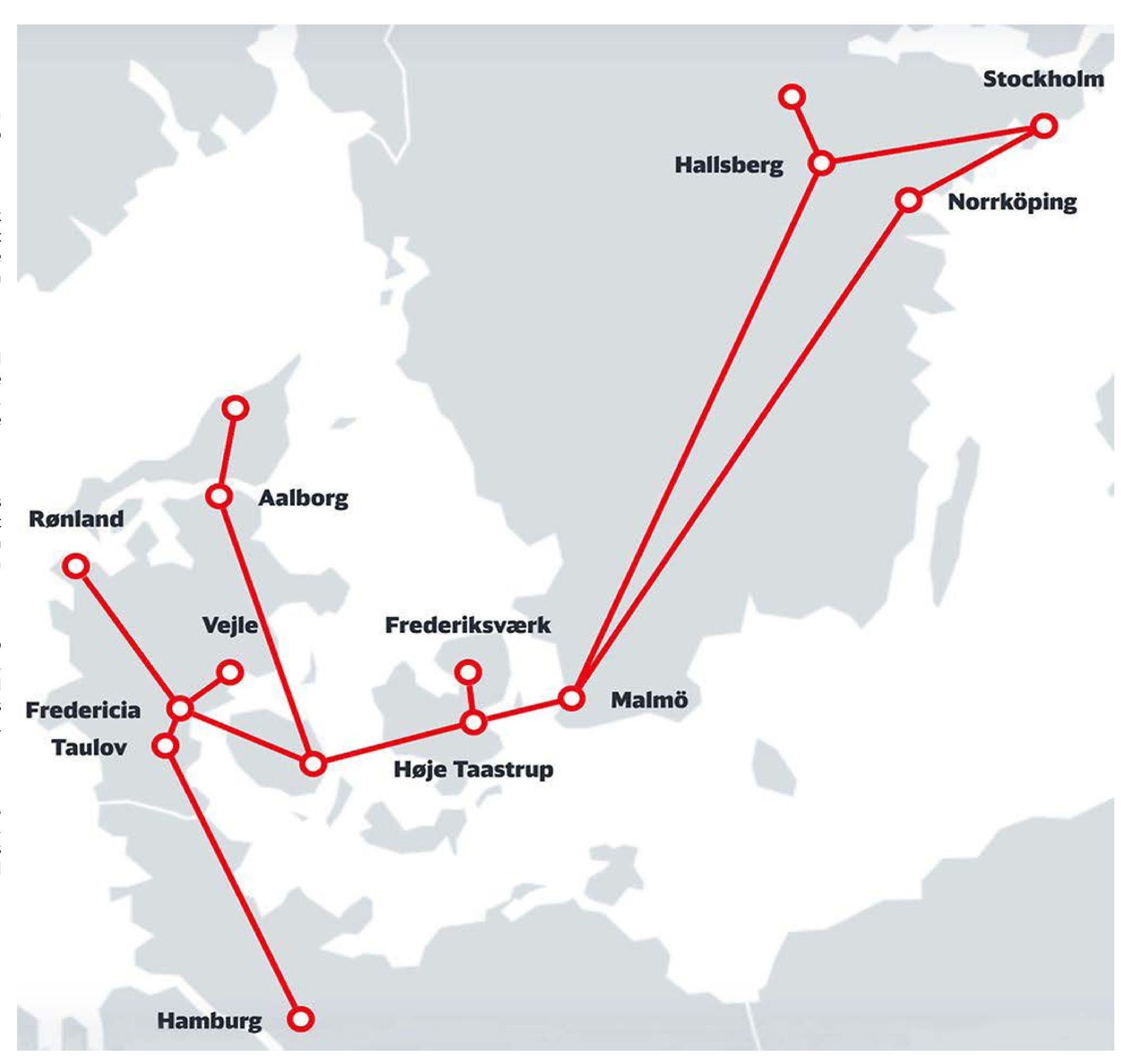
#### In-house terminal expertise

The two intermodal terminals in Taulov (Fredericia) and Høje Taastrup (Copenhagen) on the Scandinavian corridor are genuine all-round hubs. With a total depot capacity of 2,400 TEU, they offer options for handling and storing containers, swap bodies and trailers. Recycling material, chemicals and other hazardous materials can also be handled effortlessly. Additional services and flexibility make the terminals genuine all-round hubs.

#### Availability on the rail for satisfied customers

Our own maintenance depot in Fredericia, directly on the ScanMed corridor, offers comprehensive maintenance services for locomotives and wagons. A mobile team that is always ready for action and authorized repair shops throughout Scandinavia ensure that our freight trains are always on the road for our customers.

#### DB Cargo's network: We connect Scandinavia



More and more young talents are choosing to start their careers at Deutsche Bahn (DB): Around 6,000 young professionals will start in 50 apprenticeships and 25 dual study programs in the fall. Despite a historically tight labour market, DB has thus achieved a new hiring record. For the official start of apprenticeships on September 2nd, the company will welcome the new colleagues nationwide at large events at eight locations.

DB Human Resources Director Martin Seiler: "Our young talent is our future! We are delighted about the many new talents who have chosen Deutsche Bahn as a training company and employer and are starting their careers with us. Committed and qualified employees are essential for our long-term growth strategy Strong Rail. That is why we offer high-quality, modern training and attractive, long-term career opportunities."

And he continued: "On the one hand, we have to save money, but at the same time we will continue to invest heavily in our young talent. Anyone who is needed for the company will be hired, without any ifs or

# DB welcomes around 6,000 young employees

buts. Our young talent has a secure future at DB. After successfully completing their final exams, they are guaranteed a job."

Most young people are trained for the professions of railway worker in train traffic control (formerly dispatcher, almost 900), train driver (around 900) and electronics technician for operational technology (850). You can expect high-quality training, including in 30 modern training centres nationwide. The focus is on intensive support with a wide variety of exchange formats and personal learning support. The trainees and students receive high-quality digital devices. The overall package also includes attractive conditions such as travel discounts and, if required, a rental subsidy.

With around 15,000 young employees, DB is one of the largest training companies in the country. Overall, the company wants to bring more than 25,000 new employees on board this year. There are already job advertisements for 2025 at db.jobs.de.

The tight job market is certainly a challenge.



For this reason, personnel recruitment is constantly taking new, innovative approaches. This includes the use of modern technologies such as augmented reality (AR) or virtual reality (VR).

Since June of this year, potential applicants have been able to immerse themselves in a newly developed, virtual 3D world at DB on experience.db.jobs. There are various jobs to discover in interactively designed rooms. More than 5,500 visitors have already clicked

through the job profiles at DB.

Another record number of trainees starting:

For the first time, augmented reality is being used to welcome new employees: The application makes it possible to bring HR Director Martin Seiler into your environment as a 3D hologram so that you can be warmly welcomed by him.

For all those who still need career guidance and preparation for vocational training after graduating from school, DB is continuing its "Chance plus" training preparation program this year. Here, participants get an impression of a career in the commercial, service-oriented or industrial-technical sector and receive social-educational support. Classes will start on November 1st at the following locations: Hamburg, Bremen, Berlin, Erfurt, Frankfurt, Stuttgart, Munich and Cologne.

More information at: db.jobs

# Vossloh's unique rail replacement technology enables refurbishment of the important Cologne - Rhine/Main high-speed line in record time

Vossloh is playing a central role in the modernization of Deutsche Bahn's main transport routes. One of Vossloh's unique rail replacement trains was used for the refurbishment of the Cologne - Rhine/Main high-speed line, once again proving to be an indispensable tool for the efficient and rapid replacement of rails.

Vossloh's rail replacement train, in combination with its own rail loading trains, enables the rails to be completely replaced in the shortest possible time thanks to a highly efficient assembly line system. The rail replacement process includes welding using a mobile flash-butt welding machine, unloading new rails and loading the old rails. Thanks to the high working speed of up to 4,000 meters of track per shift, shutdown and construction times are reduced to a minimum. This was impressively demonstrated during the refurbishment of the heavily frequented and, due to topographical conditions, highly demanding high-speed line between Cologne and

Frankfurt. Thanks to the one-stop shop approach, the high level of logistics expertise and Vossloh's innovative rail replacement technology, more than 100,000 meters of rails were replaced and seamlessly welded in less than a month, once again impressively underlining the efficiency and performance of the rail replacement process. This enabled the refurbishment of the line, one of the most important routes in the ICE network with 120 ICE trains a day, to be completed in record time.

Vossloh's rail replacement train has also proven itself many times internationally. In the Netherlands and most recently in the north of Sweden, where a section of the important Malmbanan railroad line was damaged after two derailments, the train was successfully deployed. Despite enormous time pressure and adverse weather conditions, the damaged rails were quickly replaced, ensuring the smooth transportation of ore from the mines in the far north of Sweden. The end customer, Trafikverket, was extremely

satisfied with the fast and efficient solution.

"With our comprehensive expertise and holistic approach, we have provided our customers with significant support in recent weeks, both in the rapid renewal of one of Deutsche Bahn's key high-speed lines and in the urgent refurbishment of a section of the economically important Malmbanan line in Sweden. Our unique rail replacement technology enabled us to complete these tasks efficiently, with clockwork precision and in record time. Special thanks go to our trackside teams, whose outstanding expertise and tireless efforts have made these important projects a success," says Jan Furnivall, Chief Operating Officer of Vossloh AG.

## General renovation: Work on the Riedbahn between Frankfurt/Main and Mannheim is fully on schedule

The first general renovation of a central railway line is in full swing and is fully on schedule. The so-called Riedbahn between Frankfurt/Main and Mannheim has been undergoing complete renovation since July 15th. So far, around 800 employees of DB and the construction companies involved have renewed around 37 kilometres of tracks, 55 switches, 338 signals and around 9 kilometres of noise barriers, and replaced around 19 kilometres of overhead wire (quantities including preliminary work in January).

In some cases, more than 90 construction machines are in use on the tracks of the 70-kilometer-long Riedbahn every day. The general renovation is to be completed by the timetable change in December. In the next few years, as part of the DB Group's Strong Rail strategy, other heavily used routes will be expanded into high-performance corridors using the same model.

Dr. Volker Wissing, Federal Minister for Digital Affairs and Transport: "Our expectations for the general renovation of the Riedbahn were and continue to be high. True to the motto 'Trust is good, control is better', I got a personal impression and found an extremely motivated team that is doing everything it can to stick to the schedule. I am convinced that if we can keep up this pace, we will succeed in giving the railway a new shine - first on the Riedbahn, then throughout Germany."

Berthold Huber, DB Infrastructure Director: "The general renovation of the Riedbahn is a major undertaking. We are therefore pleased that we are making good progress with the work and are on schedule. There is still a lot of work ahead of us. The entire Riedbahn project team, together with the construction companies involved, is continuing to do everything they can to ensure that the construction work can be completed on time in December. At the same time, we would



companies and residents, who we are asking a lot of with the general renovation."

Evelyn Palla, DB Board Member for Regional Transport: "It is important that we provide our commuters with a reliable mobility service even during construction work. With day - that's the equivalent of going around

we are opening a new chapter in rail replacement services.

Our purple bus fleet is setting completely new standards and covers an enormous distance every day: almost 40,000 kilometres every like to thank travellers, freight transport—the replacement service on the Riedbahn,—theworld.Whatmakesmeparticularlyhappy

is that the feedback from our passengers on the 30,000 replacement service trips on the Riedbahn to date has been consistently positive."

### Top-level meeting with employee representatives:

## Deutsche Bahn continues to recruit without restrictions in the operational area

At a top-level meeting with employee representatives, Deutsche Bahn promised to continue hiring without restrictions in the operational area. "We have to save money, but we will not cut back on customers or safety," said DB CEO Richard Lutz afterwards. Human Resources Director Martin Seiler and Lutz agreed on this joint course together with EVG Chairman Martin Burkert and Group Works Council Chairman Jens Schwarz.

"Anyone who is needed for operations will be hired, without any ifs or buts. We have a sustained high demand in the direct rail business, especially for train drivers, maintenance workers, train traffic controllers and service staff," says Seiler. This year alone, Deutsche Bahn will hire around 25,000 new employees. Of these, 6,000 are trainees and dual students, who will be welcomed at the beginning of September. "But in other areas we are clearly putting the brakes on, namely in overhead and administration. Here we need to become much more efficient and streamlined."

This is an important step in achieving a "turnaround" in the next three years, said Richard Lutz. "We are now concentrating on renovating the outdated infrastructure, operational quality and financial situation. This is the only way to get our Strong Rail growth strategy back on track. This is the only way this country will get the railway it deserves."

In view of the worsening labor shortage, DB is simultaneously driving forward digitalization, automation and AI in order to be able to manage with fewer operational staff in the medium and long term. "But of course this will only be possible if the new developments take hold and release the corresponding potential," says Seiler. DB wants to significantly reduce its personnel requirements by 2030.

There will be no layoffs; instead, natural fluctuation and the large internal labor market will be used. Instruments such as partial retirement and voluntary severance payments are also available in individual cases.

"DBisagood and responsible employer. We have strong collective agreements and a strong social partnership. These are the prerequisites for achieving the transformation," said Human Resources Director Seiler.

In general, the job market is becoming increasingly tighter and competition for talent is becoming more intense. In the coming years, twice as many people will leave the job market in this country as will enter it. If fluctuation remains the same, Deutsche Bahn alone would need more than 130,000 new employees by the end of the decade. The market will simply not provide this number of workers, neither in the planned quantity nor in the usual quality and at reasonably competitive costs.

This is why processes must become leaner, radically simplified and personnel requirements reduced through automation and digitization as well as artificial intelligence.

## The Berlin S-Bahn turns 100 years old

A big birthday for the Berlin S-Bahn: August 8th marks the 100th anniversary of the first scheduled journey of an electric S-Bahn in Berlin. To mark this special anniversary, the Berlin S-Bahn is sending a very special vehicle onto the tracks: a train from the 481 series, completely covered in ten different vehicle designs from the past 100 years, will initially be running on the S2 line.

For 100 years, the S-Bahn has connected communities and cities in the surrounding area with Berlin's city center. The 340-kilometre-long network with the north-south and east-west lines as well as the ring line that encircles the city center is unique in the world. With 1.5 million passengers per working day, the Berlin S-Bahn shows what a strong rail system can achieve: every working day, it offers around 3,300 trips on 16 lines. One in three passengers in the entire DB Regio local rail service travels on a Berlin S-Bahn.

Peter Buchner, Managing Director of S-Bahn Berlin GmbH: "If the S-Bahn didn't already exist, we would have to invent it. No other means of transport can move so many people between the city and the surrounding area in an environmentally friendly way and takes up so little space. But the Berlin S-Bahn is more than just a means of transport. For 100 years it has accompanied and shaped the history of the capital and has itself become a Berlin icon. Happy 100th birthday, S-Bahn Berlin."

Ute Bonde, Senator for Mobility, Transport, Climate Protection and the Environment: "WhenthefirstS-Bahnlinewentintoregular operation 100 years ago on the route from the Stettin suburban station, today's Nordbahnhof, to Bernau, this was without question a formative contribution to the successful development of Berlin into a metropolis. Today, we are again facing major challenges, as we have the major goal of making our city climate-neutral by 2045 at the latest. My warmest congratulations to the S-Bahn and all its great, committed employees on their 100th birthday and a big thank you, certainly also on behalf of the many passengers, for their daily commitment to our mobility in Berlin."

RainerGenilke, Infrastructure Minister of the State of Brandenburg: "100 years of the S-Bahn - that is a reason to celebrate. On August 8th, 1924, the first S-Bahn of the 'Bernau' type traveled from what is now Berlin's North Station to Bernau. That is why celebrations are also taking place at these locations 100 years later, to which all visitors are cordially invited. The S-Bahn is more than just a witness to the eventful history of the states of Brandenburg and Berlin. It was, is and will continue to be the backbone of local transport in the capital region. This is also demonstrated by our investments in the S-Bahn and our expansion plans. With the i2030 infrastructure project, we not only want to prepare the extension of the S25 to Stahnsdorf and Falkensee, but also the 10-minute frequency to Bernau, Oranienburg, Strausberg and Hennigsdorf. The S-Bahn has been part of people's lives for 100 years. This also makes it an emotionally connecting means of transport that cannot only be measured in numbers and facts."



Martin Fuchs, Managing Director of the Berlin-Brandenburg Transport Association: "100 years ago, visionary decision-makers opted for the S-Bahn system - fast, environmentally friendly and an integral part of Berlin and Brandenburg ever since - and thus set a milestone in transport policy. The S-Bahn serves as an example for us to continue to move forward courageously over the next 100 years and to shape the S-Bahn of the future with the i2030 infrastructure project."

The class 481 train bridges the gap between 1926 and the present day. In the 1926 "Oranienburg" model, the carriages were still painted red and yellow to distinguish between the 2nd and 3rd class carriages that were common at the time. With the "Stadtbahn" model, the two-tone paintwork with the red stripe at the bottom that is typical today was introduced in 1928. The upper

part of these trains was painted ochre yellow in the 3rd class carriages and dark turquoise in the 2nd class.

The so-called "East Berlin capital paint" with which the 276 series was running from 1984 in light beige and burgundy red can also be seen, as well as the silver-grey-blue paintwork of the prototype of the 480 series from 1986.

Last but not least, the anniversary train wears the red dress with dark grey window band, to which the 485 series owes its nickname "Coke can".









# Slovakia

ČD Class 380.008 arrives at Bratislava hl.st. with train No. EC277 'Metropolitan' 07:44 Praha hl.n. - Budapest Nyugati on August 3rd. *Andy Pratt* 

ZSSK Class 362.025 departs Bratislava hl.st. on August 3rd with train No. R835 'Urpin', the 09:52 to Banska Bystrica. The train will terminate at Kozárovce with a bus forward to Zvolen due to long term engineering works closing the railway line. *Andy Pratt* 

ZSSK double deck unit Class 671.013 runs ECS out of Bratislava hl.st. on August 3rd. *Andy Pratt* 









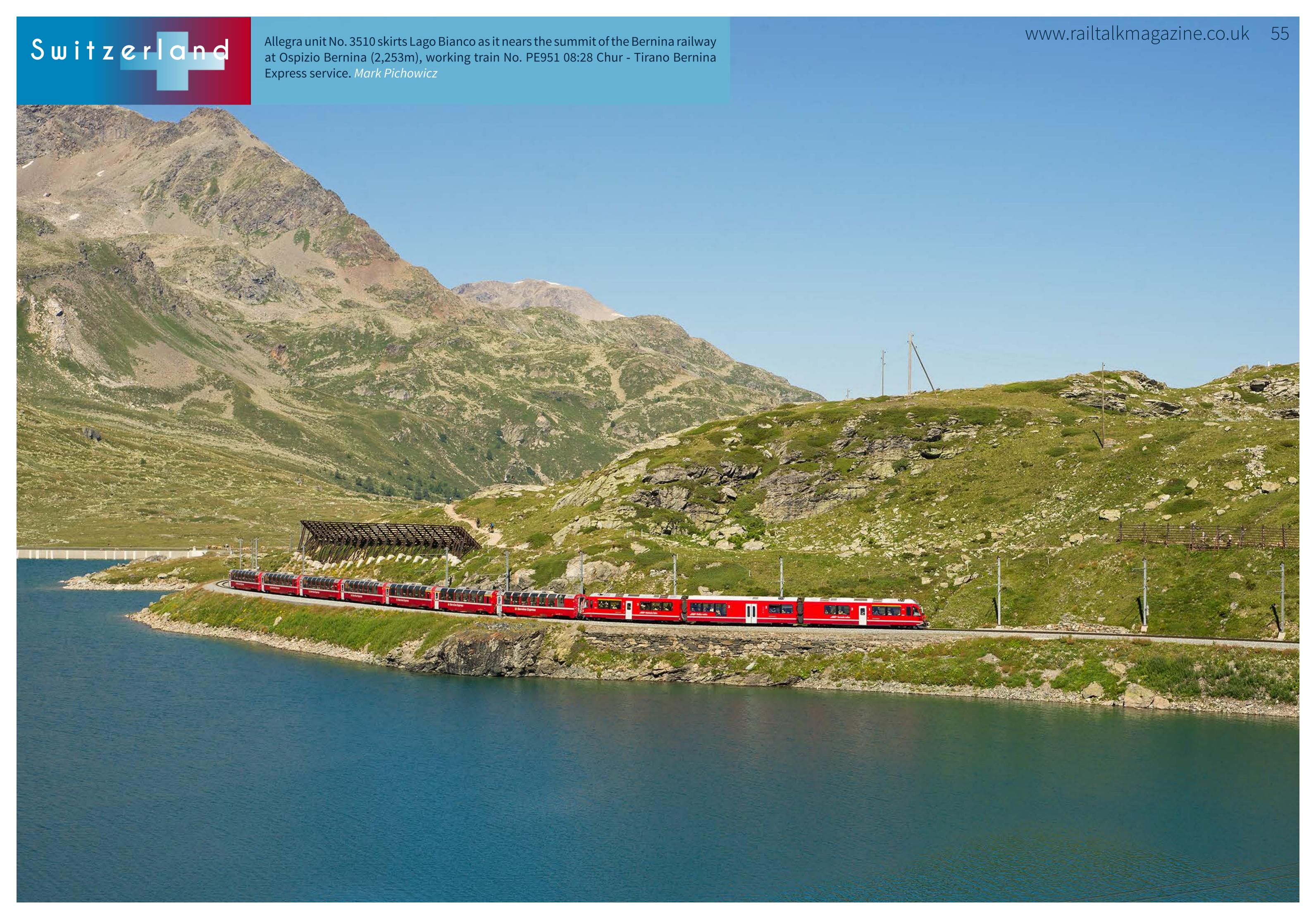


















# The Italian railway operator SSIF ordered additional narrow gauge trains as part of the Framework Agreement signed in December 2022

Thanks to a European funding of 35.7m EUR guaranteed by the funds of the modified NRRP (National Recovery and Resilience Plan), the railway operator SSIF (Società Subalpina di Imprese Ferroviarie) has been able to sign a further contract, bringing to four the total number of four-car EMUs ordered to Stadler, thus expanding its fleet for the cross-border rail operation on the Domodossola (Italy) - Locarno (Switzerland) section of the Vigezzina-Centovalli railway line.

The four-car electric trains, with a total length of 64 metres and 144 seats, can be configured as well into shorter compositions - with two or three cars - to meet different operating requirements. The signing of the new order confirms Stadler's leading role in the supply of narrow-gauge rolling stock for which the Swiss company is market leader in Italy as well as in Europe.

The Managing Director, Mr. Daniele Corti, who signed the contract together with Mr. Maurizio Oberti - Stadler's Sales Director for the Italian market, points out that the renewal of the SSIF fleet is taking place at the same time as the one launched in Switzerland by the Ferrovie Autolinee Regionali Ticinesi company, which together with SSIF operates on the Vigezzina - Centovalli railway line. "With this company, an excellent and profitable cooperation relationship has existed for over 100 years, aimed at maintaining both uniformity of vehicle construction and the same operational quality standards.

Moreover, thanks to Stadler's flexibility and the significant attention the train manufacturer pays to customerneeds, it was possible to develop a train project that meets both the increasingly stringent regulatory requirements and the necessity to find 'a suitable slot' in the production process to schedule the construction

of additional rolling stock within the timeframe prescribed by EU with the NRRP funds. All this will made it possible to complete the order under the existing Framework Agreement.

The General Manager, Dr. Matteo Corti, while thanking Stadler for the professionalism shown in the management of the project, also expresses his satisfaction with the achievement of this important milestone, which is crucial in the context of the expansion and technological innovation plan that SSIF is implementing, following the renewal of the ten-year concession obtained in 2021.



In fact, the expansion of the fleet with the four new Stadler trains will allow the Vigezzina- Centovalli railway, which for hundred years represented a decisive service for both local and cross- border public transport and an excellence for tourism in the area, to guarantee operation's continuity and regularity, significantly increasing the overall quality level.

Dr. Ansgar Brockmeyer, Executive Vice President Marketing & Sales at Stadler, said: "We are very proud that SSIF has placed to Stadler an order for additional trains and that one of our products has met the challenging requirements and needs of both railway operators of the Vigezzina- Centovalli railway line. We'd like to thank SSIF for the trust given to Stadler and look forward to continuing our fruitful, mutual cooperation."

#### Sustainable solutions on rails

The solutions offered by Stadler will make it possible to travel on the Vigezzina-Centovalli railway line with even more efficient and environmentally friendly trains, promoting increased passenger comfort combined with the high performance standards of the new vehicles.

In addition to SSIF's new electric trains, Stadler is also leading the development of innovative and sustainable battery- and hydrogen-powered narrow-gauge rail vehicles for other Italian Regions, pursuing together with those operators the goal of decarbonizing rail transport in Italy.

# Belgium

# Lineas and Hupac Intermodal announce enhanced services on Antwerp-Catalonia line

Lineas, one of Europe's most trusted private rail freight operator, and Hupac Intermodal, one of Europe's most reliable intermodal network operator, are pleased to announce an important improvement aimed at enhancing intermodal logistics on the Antwerp-Catalonia line, effective as of September 16th, 2024.

In order to better meet the expectations and needs of its customers, Lineas has implemented a large transformation plan in recent years. The company has completely realigned its offering to propose highly reliable operations and services. And this has paid off: its customer satisfaction has risen from 2,9 out of 5 in 2022 to 3,5 in 2023, with several peaks at 4. This success is the result of many internal improvements, including

a renewed focus on its core business of being a Railway Undertaking. In this context, Lineas has been looking to focus on being a traction provider for its Open Intermodal product Antwerp-Catalonia and to massify the Spanish corridor delivering improved quality and synergies.

Since the beginning of the year, Lineas has been operating traction services for its customer Hupac on the Antwerp – Catalonia (Perpignan & Barcelona El Morrot). Both companies have observed an improvement in service quality on this traffic.

Therefore, as of September 16, 2024, on the Antwerp – Catalonia product:

Hupac Intermodal will increase the frequency of its

intermodal services up to 10 roundtrips per week and will use its extensive industry knowledge and operational capabilities to deliver outstanding intermodal solutions.

- Hupac Intermodal will operate and commercialize the intermodal service on the Antwerp-Catalonia line.
- Lineas will remain the traction provider on this line and take care of a seamless transition and continuity of the service for customers.

Both companies are committed to maintaining the highest standards of service delivery during and after the transition period. Customers can expect continued support and high-quality intermodal solutions that leverage Hupac's extensive expertise and Lineas' proven reliability as a Railway Undertaking.

"We are excited about this step with Hupac Intermodal," says Bernard Gustin, Executive Chairman of Lineas. "By creating synergies on the Antwerp-Catalonia line with Hupac, we are confident that our customers will benefit from a high quality of service and operational efficiency."

"This operation presents a significant opportunity for the market to benefit from the joint expertise and strengths of two extraordinary companies working together," said Alessandro Valenti, Deputy Managing Director of Hupac Intermodal. "We are committed to maintaining the highest standards of service and look forward to delivering added value to customers."



## Alstom to refurbish CrossCountry's Voyager fleet in £60 million upgrade

Alstom, global leader in smart and sustainable mobility, support has signed a contract to refurbish CrossCountry's chain. Voyager trains, transforming the on-board experience for customers. The contract, valued at around £60 million "For m (€70 million) will see the trains receive an interior refresh proudled in crossCountry's new livery.

The work will be carried out at Alstom's historic Derby Litchurch Lane facility and encompasses 312 cars, comprising 136 Voyager (Class 220) and 176 Super Voyager (Class 221) vehicles respectively. 252 cars belong to the existing CrossCountry fleet, while an additional 12 trains – totalling 60 additional carriages – will be added following their release from Avanti West Coast.

Additional enhancements will see the trains fitted with new carpets, improved lighting and a new passenger counting system. Sustainability will be at the heart of the refurbishment; the Voyager's new seats will be at least 95% recyclable and 98% recoverable, while lighter materials used throughout the trains will help reduce fuel and carbon emissions.

Design work will commence immediately, with physical work in Derby set to commence from next year until 2027. Around 100 Alstom staff will work on the contract,

supported by many more in the company's UK supply chain.

"For more than 20 years, CrossCountry's Voyagers have proudly served towns and cities across Great Britain – travelling millions of miles in the process. We now look forward to giving these iconic Alstom-built trains some well-deserved TLC with a comprehensive overhaul that will include new seats, on-board technology enhancements and an exterior repaint," said Peter Broadley, Managing Director, Services UK and Ireland at Alstom.

He added: "Not only will the refurbishment delight farepaying customers with increased levels of comfort and accessibility, the overhaul programme will support UK suppliers and skilled jobs across the country."

Owned by Beacon Rail, who are funding the upgrade, the Voyagers operate across the CrossCountry network, from Aberdeen, Scotland, to Penzance, England.

"We're delighted to be moving forward on the refurbishment of our Voyager fleet which will transform the passenger experience for customers on our long-distanceroutes," said Adrian Hugill, Fleet and Engineering Director at Cross Country.

He added: "We look forward to working with colleagues at Alstom and Beacon Trains to give the ever-impressive Voyager fleet a new lease of life on the CrossCountry network."

Last year, Alstom signed an eight-year extension to its Train Services Agreement (TSA) with CrossCountry. The contract extension, valued at around £825 million (€950 million), sees Alstom continue to maintain, overhaul, service and clean CrossCountry's Voyager and Super Voyager fleet until 2031 at their primary depot – Central Rivers in Burton upon Trent, Staffordshire.

Meanwhile, in June 2024, Alstom signed a contract worth around £370 million (€430 million) for 10 new nine-car Aventra trains for the Elizabeth line to help meet growing passenger demand.

Like the rest of the fleet, the additional Aventra electric multiple unit (EMU) Class 345 passenger trains will be built at Alstom's Derby Litchurch Lane Works, the only UK facility that designs, engineers, builds and tests trains for domestic and export markets.



Also built by Alstom, Voyager and Super Voyager inter-city trains have already served passengers across England, Scotland and Wales for over two decades. Operating at speeds of up to 200 km/hour, they have clocked up over 427 million miles of service.



Alstom, a global leader in smart and sustainable mobility, celebrates a decade of operation of Line 15-Prata of the São Paulo Metro, a pioneer in monorail technology in Brazil and Latin America. Since its opening on August 30th, 2014, the line has played a key role in transforming urban mobility in the metropolis, connecting densely populated areas to the city center and significantly reducing travel times.

"The development and implementation of Line 15, the first monorail in Brazil – and in Latin America – marks a significant advance in the railway sector in the country and in the region. This pioneering project has transformed urban mobility in São Paulo by setting a precedent for future innovations in transport infrastructure. It is great proof of how technology can be used to improve people's lives, reducing travel times and connecting communities," said Suely Sola, Alstom's Manager Director of Signalling & Infrastructure for Latin America.

Alstom designed, manufactured, installed and delivered the existing fleet on Line 15, as well as the onboard and trackside signalling. The 27 Innovia™ 300 trains supplied for the line are equipped with the Cityflo™ 650 signalling system, which allows flexible integration with auxiliary systems such as passenger information panels, closed-circuit television and telecommunications. It also

# Alstom celebrates a decade of operation of the São Paulo Monorail Line 15-Prata

features a regenerative braking system, an intelligent energy management system and LED lighting.

The Line 15's monorailals of eatures driver less technology using track markers for guidance, positioning and collision prevention of trains. Another technical resource is transmitters responsible for locating and identifying the time required for opening platform doors, which results in more efficient operations and a better experience for passengers when boarding/landing. The trains are also equipped with advanced fire extinguishing systems to ensure safety.

Each train has the capacity to carry 40 thousand passengers per hour and per direction, with a 90-second headway between trains.

On the August 20th, the São Paulo Metro reported that the Monorail Line 15 registered a historic record in passenger transport, serving 140,000 people, the largest volume of passengers transported in a single day since the beginning of operations.

Alstom is also helping build the future for this line, manufacturing 19 new seven-car trains for the line's expansion. Fast and efficient to build, the new Innovia™ trains are being produced in China by PATS, a joint venture between Alstom and CRRC. The first train is



scheduled to be delivered to São Paulo in October, 2024. Currently, Line 15 operates along 15 kilometres, with 11 stations between Jardim Colonial and Vila Prudente, and allows people to travel from the far east to the city center in approximately half the time as it would take

to drive. With the planned expansion to Ipiranga, Boa-Esperança and Jacu Pêssego stations, plus a new depot at Ragueb Chohfi, the line will cover 19.1 kilometres and 14 stations, serving an estimated demand of 380 thousand passengers per day.

## Belgium

In an ongoing effort to promote the industrial development of the Belgian Regions and tackle major societal challenges such as road congestion, climate change and the energy transition, Lineas has released a 2 page memorandum highlighting the crucial role of rail freight. This memorandum presents the key strategies and actions that are needed to improve the competitiveness of the rail freight sector, ensuring it remains a sustainable transportation option.

#### Importance of rail freight

Lineas halved its losses in 2023 and is optimistic about approaching break-even in 2024, with profitability expected in 2025 – provided the Belgian and Regional

## 2024 Memorandum on increasing the competitiveness of rail freight

Governments address some key priorities.

Indeed, rail freight plays a critical role in connecting the Belgian industry and ports with Europe, safeguarding our competitive advantage over neighbouring countries such as France and Germany. Moreover, Lineas is essential to the success of rail freight in our region: with its customer centricity and quality focus, Lineas stands out as the first and largest private rail freight company in Europe.

#### Proposed actions for supporting rail freight

This short memorandum highlights five key actions that are necessary to support the shift from road to rail and

to ensure a level playing field:

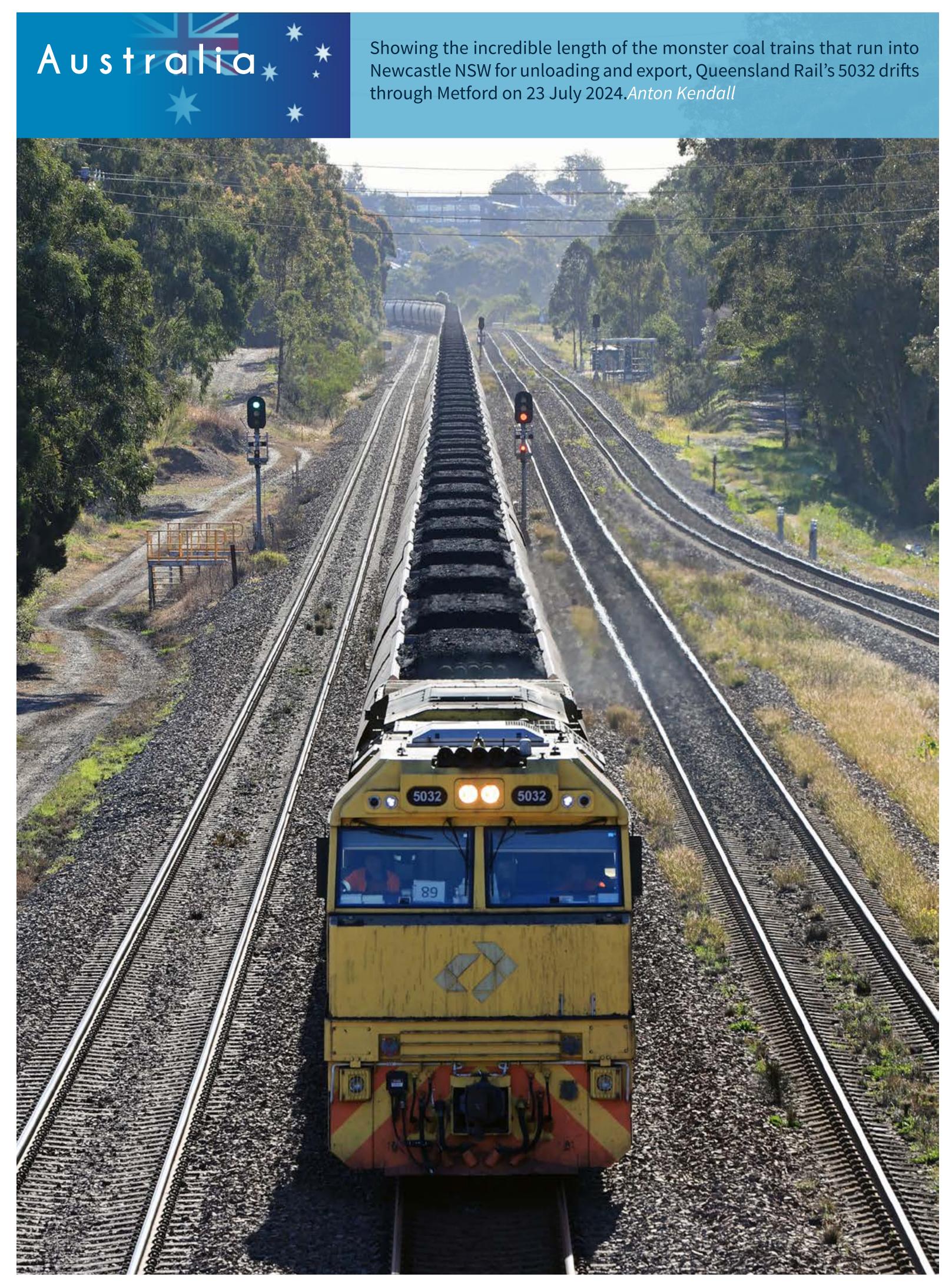
- 1. Competitive fairness: the distortion of competition by State-owned competitors should be addressed, by stopping (illegal) State aid.
- 2. Reciprocity in facility access: There must be reciprocity in access to essential facilities in Europe such as shunting yards to create a level playing field for competition.
- 3. Balancedsupportforroad and rail: Lineas recommends reducing support for road transport and reallocating it to rail infrastructure and safety projects, such as ERTMS.

  4. Infrastructure investment: The implementation of Infrabel's multi-year investment plan and the optimization of capacity allocation between passenger and freight trains are essential to improve the use of rail

infrastructure.

5. Multimodal transport promotion: Creating incentives for road transport companies to adopt multimodal solutions, this will improve the integration and efficiency of all modes of transport.

This memorandum emphasizes the need for a collaborative effort by Federal and Regional Governments to strengthen the role of rail freight within a sustainable industrial development and a competitive transport market.



#### Poland

# Alstom awarded a new contract for Traxx locomotives delivery for Captrain Polska

Alstom, global leader in smart and sustainable mobility, has signed a contract with Captrain Polska – an independent railway operator offering transport services throughout Europe.

Alstom will deliver three third-generation Traxx Universal locomotives, which will serve the intermodal operations. The units will be homologated in at least six countries, including Poland, Germany, Austria, France, Belgium and Luxembourg.

The Alstom site in Kassel, Germany, will be responsible to produce the units. The locomotives' car-body shells will be manufactured at the Alstom facility in Wrocław, Poland. "Captrain Polska has been using Traxx locomotives, both in MS and DC configurations, for more than 10 years and we are very satisfied with them. To date, we have leased all the locomotives of this platform, but in accordance with the company's policy, after exceeding a certain number of locomotives of a certain type, we decide to supplement the fleet with our own locomotives. The current level of 10 MS locomotives and the recent decision to build our own warehouse of spare parts and develop the competence of our workshop in Wolow towards this particular locomotive platform, is the right moment to decide that Traxx locomotives will be the first modern locomotives purchased by Captrain Poland. Not without significance is the fact that this locomotive is approved in all the countries in which Captrain Companies from the Rail Logistics Europe group operate," emphasizes Paweł Szczapiński, Managing Director of Captrain Polska.

The Traxx Universal locomotives have been approved in 20 countries, where they cover a total annual distance of more than 300 million kilometres. The third-generation multi-system units can reach a top speed of 160 km per hour and can handle heavier trains compared to other locomotives in the same class.

They offer a flexible design based on a strong, modular platform approach compatible with many applications (single or multi-country freight and passenger transport) and available in various configurations (AC, DC and multi-system). The units will be equipped with

the leading signalling system Onvia (formerly known as Atlas), Alstom's onboard solution for the European Train Control System (ETCS). This system offers the most extensive coverage across various countries and lines. During the warranty period, Alstom will be ECM (Entity in Charge of Maintenance) and undertake preventive maintenance for the locomotives. As part of the contract, Captrain Poland employees will also be trained to perform maintenance on the locomotives themselves.

"We are proud of another contract for a carrier providing international services. The Traxx locomotives will provide increased operational efficiency and reliability, as well as better availability thanks to extended maintenance intervals. We are pleased that Alstom solutions have supported logistics operators in achieving their strategic goals for many years, while also contributing to the development of a sustainable and low-emission Trans-European Transport Network," said Beata Rusinowicz, Managing Director of Alstom in Poland, Ukraine and Baltic States.

Since 2000, Alstom has produced over 5,700 locomotives, that have started operation and have been used in many European countries, as well as in Asia, North America and Africa. Alstom is the leading locomotive services provider, maintaining more than 2,450 locomotives around the world, including over 600 Traxx locomotives.

#### Sweden

In September 2021, Västtrafik ordered the 40 longer trams from Alstom. The following year, another 20 were ordered. On the night of August 23rd, the first tram in the delivery to Gothenburg arrived on a trailer from Alstom's plant in Bautzen, Germany.

"This is a milestone in our investment in developing public transport in Gothenburg. With 60 new and longer trams, we are making it even easier for Gothenburg's citizens to get to their jobs, schools and activities in a sustainable way," says Lars Backström, CEO of Västtrafik.

The unloading took place on Friday morning, August 23rd at 07:00 at Göteborgs Spårvägar's depot at Rantorget in Gothenburg.

The remaining 59 trams will be delivered gradually to Gothenburg until 2026.

#### Facts - Model M34

- 45 meters long (12 meters longer than model)
- Room for 319 travellers
- Large flex areas with space for wheelchairs, prams, etc
- The cost of the new carriages is estimated at approximately SEK 1.4 billion.

"We are very pleased to now deliver the first M34 to Västtrafik and to Gothenburg. It is a tram with a large capacity thanks to its generous length. As always when building advanced vehicles, the production process is a journey in itself, and we have had a very good and close collaboration with Västtrafik through all stages. Now we look forward to continuing to deliver the rest of the fleet," says Björn Asplund, Customer Director at Alstom.





# of Economy and Finance and Directorate General of the Alstom, a global leader in smart and sustainable

mobility, announces the entry of the elevated section of Hanoi Metro Line 3 into revenue service. The new line, operated by Hanoi Metro Company (HMC), will be officially inaugurated in September 2024 and is currently open for free public trial. The first stage of the project covers 8.5 kilometres and includes eight stations on the elevated section. Once complete, the full line will extend to 12.5 kilometres with a total of 12 stations and enhance access for 1.6 million residents across six districts of Hanoi city. At full capacity, the integrated metro system is expected to carry more than 23,900 passengers per hour per direction.

In 2017, Alstom, as leader of a consortium including Colas Rail and Hitachi Rail, was awarded a contract to supply an integrated metro system for Hanoi Metro Line 3. Alstom's share covered the supply and integration of the metro system, including ten four-car Metropolis trains and the Urbalis 400 CBTC system, as well as the delivery of power supply and depot equipment together with partner, Colas Rail. This project was made possible thanks to the French government, including the Ministry

Treasury, the French Development Agency, the European Investment Bank and the Asian Development Bank.

Mr. Nguyen Cao Minh, Hanoi Metropolitan Railway ManagementBoard(MRB)said, "Wewanttobringreliable, safe and efficient transport solutions for commuters in Hanoi and with our strategic partnership with Alstom, Hanoi Line 3 is introducing a world class metro system to our commuters, helping improve Hanoi's transportation systems."

Toby Tiberghien, Managing Director, East Asia, Alstom, said, "At Alstom, we're committed to transforming mobility in Vietnam with smarter, greener, and more efficientsolutions for every day commuters. Our expertise in turnkey projects has been crucial in successfully delivering this complex metro project, featuring eight elevated and four underground stations. The start of Hanoi Line 3 operations showcases our dedication to meticulous planning and engineering, ensuring that passengers in the nation's capital enjoy safe, efficient, and comfortable journeys every day. I'm proud to see

our emblematic Metropolis™ thriving in the vibrant and iconic city of Hanoi, a hub of economic and cultural richness. We thank H.E. Olivier Brochet, French Ambassador to Vietnam, the French and Vietnamese authorities, and all those who have made this project possible,"

Hanoi Metro Line 3 to start passenger service with Alstom's first

integrated system in Vietnam

The new trams now being delivered to Gothenburg, Sweden

The Hanoi metro system was designed with the passenger at heart. The four-car Metropolis trains for Hanoi Metro Line 3 feature wide doors to facilitate passenger flow, dedicated space for passengers with reduced mobility, as well as ergonomic and easy-to-grab bars. The trains are made with lightweight aluminium car bodies, reducing energy consumption and making it more sustainable. Furthermore, the train's exterior and interior colour schemes take local Vietnamese inspiration and include motifs such as dragon fruit and the rice paddy field designs, which enhance cultural relevance and aesthetic appeal.

The Hanoi metro is one of Alstom's projects, which was designed and manufactured in France for international markets. The metro is a showcase of French industrial

expertise. It involves six Alstom sites in France: Valenciennes for the design and manufacture of the metros, Ornans for the engines, Le Creusot for the bogies, Tarbes for the electrical cabinets and traction systems, Saint-Ouen for the Urbalis 400 signalling solution and Villeurbanne for the onboard computerised systems, passenger information and signalling equipment.

#### Alstom's turnkey expertise in metro systems

Alstom has an extensive portfolio of capabilities and technologies to build turnkey metro systems to every city's requirement. Currently, 19 projects around the world benefit from Alstom's integrated metro solutions, ensuring fast and cost-efficient delivery. Alstom has already delivered several high-profile metro systems globally, from Panama and Mexico City to Lausanne and Singapore.









