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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 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 provided above.

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

Welcome to Issue 186Xtra

Well what a month for Europe and the world. I am not going to head into political debate or comment on the current tragedy that's happening in Ukraine but I will say from a railway point of view it is pleasing to see that many of their neighbouring countries have rallied to assist with special trains being laid on. In our archives section this month we have some photos from Ukraine in happier times.

The situation so far: Ukrainian Railways (UZ) is operating trains for refugees. A transport hub has been set up at Chop station on the border with Hungary, and UZ said it would operate additional trains to Poland. On February 26th, UZ said there was enough rolling stock to be able to transport about 5000 passengers a day from Kyiv. A humanitarian centre has been created at Kyiv's Central station, with two heating points and a field kitchen. 60 volunteers who speak foreign languages are working at the station and seven tonnes of humanitarian products had been delivered to the station by February 28th.

PKP Intercity confirmed on February 26th that Ukrainian citizens crossing the border into Poland could travel free in standard class. Ukrainian citizens will be able to travel across Poland by rail for free for the next four weeks. Currently there are direct PKP Intercity trains between Poland and Ukraine and these are being strengthened on the Polish section. Additional staff are also being deployed at Przemyśl station to help manage passenger flows. On February 26th, PKP Intercity sent a train to Ukraine adapted for injured passengers by fitting camp beds. The rest of the train was loaded with products including medical equipment, food and blankets. A similar train operated from the Bohemia region of the Czech Republic on the same day.

Hungarian national operator MÁV-Start announced on February 27th that passengers from Ukraine travelling to destinations within Hungary could do so for free regardless of their citizenship. Additional capacity was also being added to trains operating to the border the operator confirmed. All suitable rooms at Záhony station have been opened to refugees, with MÁV-Start reporting 450 people using them on February 27th and a further 600 waiting. Waiting rooms were kept open at night at Debrecen, Mátészalka, Nyíregyháza and Vásárosnamény.

Germany has setup a "helpukraine" ticket which gives refugees free travel to any German train station, with DB making it easier for refugees from Ukraine to continue their journey in Germany. Ukrainian guests can receive this in all DB travel centres and DB agencies in Germany. The free ticket is valid for long-distance and local travel to any destination station. This allows the refugees to reach their families, relatives and acquaintances throughout Germany. With information sheets in several languages, DB draws attention to the special ticket "helpukraine". In addition, all local trains throughout Germany can be used free of charge. Proof of identity (passport/ID) is sufficient for local trains. Deutsche Bahn is now providing information to refugees and relatives in several languages via the website bahn.de/helpukraine and the customer hotline 030-2970, and DB said it was working with the federal government, the BMDV and federal and state authorities as well as operators in Poland, the Czech Republic and Austria. DB says it is collaborating with Polish operators to prepare any additional capacity which may be required at short notice.

Danish State Railways (DSB) confirmed on February 28th that it all Ukrainian refugees can travel free of charge upon presentation of documents proving that they are residents of Ukraine.

As always a massive thanks for all the excellent photos, please do keep sending them in, until next month....

David

This Page

A loco change in Venlo where TRI Class 110.428 takes over the 'Alps Express' from The Hague to Zell am See in Austria on February 11th. *Erik de Zeeuw*

Front Cover

RhB No. 621 provides a matching red set as it pushes its train to Chur across the Landwasser Viadukt on January 13th. *Mark Torkington*

Under the expert guidance of railpro loco No. 607, Fccpps cars are loaded with ballast by an excavator in Amsterdam Westport on January 26th. *Erik de Zeeuw*

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With Thanks

Once again many thanks to the many people who have contributed, it really makes our task of putting this magazine together a joy when we see so many great photos.

These issues wouldn't be possible without: Ray Anslow, Brian Battersby, Mark Bearton, Mark Bennett, Tim Blazey, Rob Boyce, Keith Chapman, Julian Churchill, Nick Clemson, Derek Elston, Mark Enderby, Tim Farmer, Dave Felton, FrontCompVids, Colin Gildersleve, Paul Godding, Richard Hargreaves, James Haywood, Keith Hookham, Colin Irwin, John Johnson, Anton Kendall, Mathijs Kok, Jyrki Lastunen, Ken Livermore, Michael Lynam, Peter Marsden, Phil Martin, Thomas Niederl, Peter Norrell, Chris Perkins, Mark Pichowicz, David Pollock, Andy Pratt, Andre Pronk, Paul Quinlan, Railwaymedia, Alan Rigby, Bryan Roberts, Neil Scarlett, John Sloane, Stephen Simpson, Laurence Sly, Stewart Smith, Steamsounds, Steve Stepney, Mark Torkington, Gerard van Vliet and Erik de Zeeuw.

Australia

On February 7th, BHP SD70 No. 4492 sits at 160km south of Port Hedland with a loaded iron ore train as the Australian Outback does what it often does….burn! *Mark Bennett*

Czech Republic

CD Class 150.210 pauses at Olomouc with a working towards the Ostrava direction on January 16th. *Mark Torkington*

Czech Republic

ZSSK Class 350.016 sits at Praha hl.n. on January 15th after arrival with a service from Bratislava. *Mark Torkington*

Czech Republic

On January 16th, Class 705.913 runs round its train at Osoblaha on the remote narrow gauge line. *Mark Torkington*

Czech Republic

Czech Railways will modernize all 14 locomotives of the 742 series. The contract was won by CZ LOKO

All 14 locomotives of the 742 series, which have Czech Railways in their fleet, will undergo a complete modernization by the company CZ LOKO who became the winner of the tender announced last year. The contract for more than CZK 684 million was signed by representatives of both companies. The first vehicle will be taken over by the national carrier by the end of February 2023, the last by the end of 2024.

“The comprehensive upgrade of the 742 series locomotives to the EffiShunter 1000M fits into our 2030 Strategy, during which we want to renew a significant part of our fleet. Together with the 750.7 series, they will be designed for independent traction services on corridors equipped with the European ETCS safety system, under the exclusive supervision of which the selected railway network will be operated from January 1st 2025,” explains Michal Kraus, Member of the Board and Deputy General Manager for Service.

CZ LOKO uses the trade name EffiShunter 1000M for the project of modernization of 742 series locomotives to 742.71X series, as it makes new, first-class machines from the former four-axle ČKD locomotives from 1977 to 1986.

“The comprehensive upgrade is based on the ‘EffiShunter’ range, and with regard to development costs and component delivery times, this type is highly unified, although there will be many other changes to the vehicle for use in passenger transport. The goal of unification is not only the ability to offer a reasonable price / performance ratio in the current extreme growth in component prices, but also the need to meet demanding delivery deadlines and expected quality levels. We highly appreciate the willingness and effort of the ČD, as group to optimize the fleet of independent traction vehicles,” says Ing. Josef Gulyás, Deputy Chairman of the Board of Directors and CEO of CZ LOKO.

During the complex modernization, a practically new vehicle will be created, in addition to standard components and equipment, the vehicle is equipped with the ETCS security system, online monitoring and diagnostics and a new generation of traction and auxiliary equipment. Only the chassis and the main frame remain original, but these parts also undergo major repairs and many modifications. The power of the combustion engine of 1000 kW allows a maximum speed of 100 km/h.

Czech Railways will use EffiShuntery 1000M to haul “The ambition of our modernization program is to improve the working conditions of drivers and increase the safety of operators and railways, increase the reliability of locomotives, extend the life of vehicles, more versatile use and deployment on ETCS-equipped lines. The management of maintenance costs is essential for the company’s management, and within our social responsibility it is essential to reduce energy intensity and exhaust emissions,” said Michal Kraus from České dráhy.

trains during voltage lockouts, for technological and operational journeys on ETCS lines, at the head of accident trains and for other business needs. CZ LOKO has already succeeded in the competition of the freight carrier ČD Cargo with the same project, with which in 2018 it concluded a contract for the modernization of 50 locomotives of this series, other pieces are owned by the carriers CER and Rail Cargo Carrier, and the Ostrava ODOS also signed the contract.

“Comprehensive modernization and production of new universal vehicles independent traction is our main production program with our own know-how. We are now expanding this program to include hybrid and dual vehicles, with the aim of the most efficient and environmentally friendly operation. We would also like to thank ČD, as for its tough but pragmatic conduct in the framework of the tender procedure, we are glad that we succeeded and we believe that the modernized vehicles in operation will meet the expectations of the national carrier,” concluded Josef Gulyás.

Správa železnic in 2022

Modernisation of railway lines, junctions and stations, including station buildings, preparation of high-speed railway lines and improving safety at level crossings – these are the priorities of Správa železnic for 2022. The infrastructure manager will resume last year’s successful utilising of financial resources from EU funds and used 99.9% of all available European subsidy resources for the modernisation of railway infrastructure. In 2022, Správa železnic will operate with a budget of CZK 53 billion.

“In terms of the volume of investments, we maintain pace and seek savings in maintenance mainly. The priority is further progress in the preparation of high-speed railway lines, which will connect us with Europe and bring great economic benefits,” says Minister of Transport Martin Kupka. The key projects being currently executed include mainly modernisation on the first railway corridor, such as the remodelling of the Pardubice junction, reconstruction of the line between Ústí nad Orlicí and Brandýs nad Orlicí or the renewal of the line between Velim and Poříčany.

“This year is exceptional on the Czech railway network. On the one hand, traffic between Brno and Blansko will be interrupted almost all year round due to the execution of three modernisation projects in this section. On the other hand, the completely new sections of the fourth railway corridor between Sudoměřice and Votice as well as Soběslav and Doubí will open for operation, which represents 28.7 km of new lines and seven stops on the Czech railway network,” said Jiří Svoboda, Director General of Správa železnic. In addition to the sites under construction, Správa železnic has dozens of projects in various stages of preparation aimed at modernising corridors, lines, junctions, increasing safety (ETCS, level crossings) or electrification.

The most important ongoing investments projects 2022: Adamov – Blansko; Modernisation of the railway junction at Pardubice; Brno-Maloměřice signal tower 6 – Adamov; ETCS + DOZ (interlocking system remote control) Votice – České Budějovice; Velim – Poříčany; Double-tracking the line Pardubice-Rosice nad Labem – Stéblová; Ústí nad Orlicí – Brandýs nad Orlicí, replacing original track ; Mstětice – Praha-Vysočany; Renovation of the station in Vsetín; Line modernisation Sudoměřice – Votice ; Line modernisation Soběslav – Doubí ; Junction Plzeň, 5th stage Lobzy – Kotero.

Preparation of High-Speed Rail (HSR) Lines

The designing of high-speed rail lines in overall length of 300 km is planned or about to begin. In the first quarter, Správa železnic will announce the results of the architectural competition for the HSR terminal in Roudnice nad Labem and publish its design. Preparations in the area of technological provision for HSR will enter next phase. This involves a market analysis and subsequent provision of technical model solutions as well as licences for the necessary infrastructure elements. Intensive communication with the concerned municipalities, regions, public associations, interest groups and civic initiatives will continue.

Station buildings

Currently, 53 station buildings in various stages of progress are being remodelled. This year, renovations of large listed buildings will continue in České Budějovice, Plzeň, Pardubice and at the main station in Prague. Repairs of station premises in Beroun, Písek and Veselí nad Lužnicí are expected to be completed. In 2021, Správa železnic has completely reconstructed 73 railway stations. The financial costs spent on construction and maintenance projects exceeded two billion Czech crowns.

Level crossings

Správa železnic will continue improving the safety of level crossings. Works in progress on at least 150 level crossings facilities will be completed and modernisation of further locations on the Czech railway network will commenced. At present, the amount of approximately CZK 2.4 billion is allocated for the modernisation of level crossings in 2022.

France

SNCF Alstom DMU No. 84625 slows for Lamure-sur-Azergues with the 10:20 Paray-le-Monial - Lyon Part Dieu service on February 10th. The train is passing the old disused water column at the northern end of the station. *James Haywood*

France

SNCF Voyageurs and Alstom present the first French hybrid train for the Occitanie, Grand-Est, Nouvelle-Aquitaine and Centre-Val-de-Loire regions

A French première

This electric-diesel-battery regional train is the first hybridisation project of a Régiolis train in France. The project was launched in 2018 by SNCF Group and Alstom, with the mobilisation and financial participation of the Occitanie, Grand-Est, Nouvelle-Aquitaine and Centre-Val-de-Loire Regions, and the provision by the Occitanie Region of a train from its liO fleet. The ambition of the project is to contribute to the decarbonisation of the regional trains fleet. The objectives are to reduce energy consumption and greenhouse gas emissions, with a solution that makes it possible to adapt the existing diesel fleet without having to modify the current infrastructure.

Eight months of testing

The validation of the energy storage systems at Alstom's Tarbes site (centre of excellence for "green" traction systems), at the end of 2020, enabled the first Régiolis train to be hybridised at the beginning of 2021 at the Alstom Reichshoffen site. The hybridisation of the train consisted of replacing half of the diesel engines with energy storage systems made up of lithium-ion batteries. The train was also temporarily equipped with a laboratory coach and sensors to measure the train's energy flows.

Equipped with its two energy storage systems and its laboratory coach, the train started its tests in 2021. A static and dynamic tuning phase at up to 60 km/h took place in Reichshoffen to check the train's operations and test its hybrid traction mode. The tests then continued on the Velim test center (in the Czech Republic), with validation and certification tests at up to 160 km/h. All of the train's new traction modes were tested at high speed and the route simulation models were validated.

Successful initial feedback

The tests showed that the train performed as expected.

The rate of energy recycling during braking, which is used to recharge the batteries, is very high, over 90%, allowing energy savings of up to 20%, depending on the itinerary. With a range of around 20 kilometres, the zero-emission mode allows the train to run without using combustion engines: this feature will be tested in commercial service to reduce pollution in certain urban areas. The hybrid Regional Train will have the same autonomy on non-electrified lines as the dual-mode diesel-electric version, up to 1,000 kilometres.

Next steps

The first hybrid regional train will soon leave the Reichshoffen site to begin its final test phase on the French national railway network. These final tests will enable SNCF Voyageurs to finalise the admission file that will be presented to the Public Railway Safety Establishment (EPSF) with a view to obtaining the necessary authorisations for its commercial operation. This period will also be used by SNCF Voyageurs to prepare the operation of the train in the various territories (traffic plan, staff training, etc.). The experimental commercial service will start in the second quarter of 2023 with traffic in each of the partner regions, before considering the deployment of the hybrid solution on the existing Régiolis fleet.

"The trials of the first Régiolis hybrid train demonstrate that hybridisation of diesel trains is a realistic solution, both technically and economically, to reduce energy consumption and greenhouse gas emissions. Alstom is particularly proud to contribute with SNCF and the Occitanie, Grand-Est, Nouvelle-Aquitaine and Centre-Val-de-Loire regions to a cleaner and more sustainable mobility" says Jean-Baptiste Eyméoud, President, Alstom France.

"In the battle we are waging on behalf of the Regions to decarbonise TERs, we have chosen to invest in hybrid trains, which are a useful solution for reducing CO2 emissions effectively and quickly. Alongside hydrogen and biofuel, hybrid trains have their rightful place in the mix of technologies we are banking on in our PLANETER program to move away from diesel" says Christophe Fanichet, CEO of SNCF Voyageurs.

"We are very proud to participate today in the presentation of the first hybrid train to run on the French rail network. The skills of the SNCF and Alstom technical teams have made it possible to meet the challenge of integrating an innovative traction chain into existing equipment, thus paving the way for the decarbonisation of regional trains. To offer the Regions other alternatives to diesel by 2024-2025, we are also working on other solutions, such as hydrogen and battery-powered trains, as well as the partial electrification of lines," says Carole Desnost, SNCF Group Director of Technology, Innovation and Projects.

"The climate emergency we are facing means that we have to rethink our modes of transport, the main source of greenhouse gas emissions in France. It's not a question of travelling less, but of travelling better! This is the whole point of our Green Pact for Occitanie, because I believe that mobility is a right. Rail is also a response to the strong demographic growth of our region, a tool for regional development. I therefore wished to launch an ambitious plan for the development of public transport. This involves providing an adapted, quality and accessible service, with attractive prices. And the results are there, since ridership has increased on liO trains. Proof that our citizens are ready to take the leap when there is an offer. Making Occitanie a pioneer and an exemplary region in terms of innovation and low-carbon transport naturally involves the train. As early as 2018, I committed the Region, alongside our partners, to the experimentation of the hybrid train, which offers a sustainable progress in terms of energy savings and reduction of greenhouse gas emissions. Today, we are taking a major step forward before the commercial launch of this train in early 2023. Tomorrow, we will go even further as the first hydrogen train will run between Montréjeau and Luchon in 2025. I am convinced that the train remains our best asset in the battle to reduce the carbon footprint of our travels". Carole Delga, President of the Occitanie / Pyrénées-Méditerranée Region, President of Régions de France.

"This "green" technology is one of the solutions that can rapidly generate a significant reduction in greenhouse gas emissions from conventional diesel equipment in use, and is fully in line with the regional and national strategy in favour of low-carbon mobility. The Grand Est Region is proud to participate in this promising project, which will contribute to the greening of railway rolling stock and the development of a genuine sector in favour of the sustainable development of mobility, participating in the reindustrialisation and the revival of employment in the regions concerned". Jean Rottner, President of the Grand Est Region.

"The greening of the TER fleet is one of the major ambitions decided in Néo Terra, the roadmap of the New Aquitaine Region intended to accelerate the environmental transition, and one of our objectives is the decarbonisation of transport and therefore the withdrawal of diesel TERs by 2030. To achieve this, various technologies are envisaged in the Region: rechargeable batteries, hydrogen, biodiesel (B100), bioGNV and of course hybridisation, for which I am delighted with this presentation. Very soon a hybrid TER will be on the rails, which is excellent news for our travellers, for the industry and for the planet". Alain Rousset, President of the Nouvelle-Aquitaine Region.

"The challenge of mobility throughout the Centre-Val de Loire region is our priority. It involves saving and renovating local lines, to which we have made a strong commitment with the State, but also the vital issue of renewing rolling stock. It is therefore with ambition that we have decided to commit to the hybridisation of our existing equipment. The fact that this program is moving into the production phase demonstrates its relevance and allows us to foresee, in the near future, cleaner trains that are closer to the territories and their inhabitants". François Bonneau, President of the Centre Val de Loire Region.

Photo: Regiolis Hybride © Alstom/Christian Creutz

Germany

On February 11th, Class 186.291 passes Boisheim with a rake of Zans tankers from Antwerpen (B) to Köln Eifeltor (D). *Erik de Zeeuw*

On February 11th, DB Cargo No. 6469 picked up a set of CargoBeamer cars (Sdkmms) for combined transport in Kaldenkirchen and will take these cars to the Railterminal Greenport Venlo (NL) where loading with semi-trailers for Perpignan in France will take place. *Erik de Zeeuw*

Germany

After letting a ‘Eurobahn’ passenger train past, boxXpress Class 193.538 departs from Boisheim with a container shuttle from Rotterdam (NL) to Kornwestheim (D). *Erik de Zeeuw*

Germany

Stadler manifests market leadership in alternative drive technologies: DB Regio orders more battery-operated trains

Electric instead of diesel: DB Regio orders trains of the type FLIRT Akku from Stadler again. 14 trains will also be used in the north-east of Germany. Stadler is expanding its market leadership considerably in the field of alternative drives in Germany with this third supply contract for battery-operated vehicles. Stadler will be delivering at least 113 vehicles with alternative drive technologies over the next five years. The two-part vehicles for Mecklenburg-Vorpommern will go into passenger service from December 2026.

Starting at the end of 2026, Deutsche Bahn will use the innovative battery-operated vehicles from Stadler on a route that was previously serviced by diesel-operated vehicles in the so-called H-network in Mecklenburg-Vorpommern. The «H-network» stands for «The use of electrical battery-hybrid vehicles». This means that these routes can be serviced locally and completely emission-free - without having to install catenaries throughout the entire network. The two-part vehicles of the type FLIRT Akku will be used for typical transport period of 13 years, and are tailored to the needs of the network that runs along part of the Baltic Sea coast. The H-network Warnow has a service scope of 1.5 million train kilometres a year and covers the routes of the RB11 between Wismar – Rostock – Tessin and the RB12 between Bad Doberan – Rostock – Graal-Müritz.
The FLIRT Akkus provide space on 99 seats. Two spacious and accessible multi-purpose areas are provided for wheelchairs, pushchairs and bicycles. The air-conditioned and step-free vehicles also have a wheelchair-accessible toilet. All trains are equipped with WLAN, power sockets as well as video surveillance of the passenger areas and a modern passenger information system and ensure contemporary ride comfort.

«With this new order for battery-operated vehicles from the Deutsche Bahn, we have further consolidated our market leadership in the field of alternative drives. Since 2019, Stadler has sold 113 vehicles with alternative drive technologies in Germany. It makes us very proud that our FLIRT Akku not only makes an ecological and innovative contribution to climate-friendly traffic policies, but also significantly boosts efficiency. If we consider the average life of a rail vehicle of around 30 years, battery-operated vehicles are more cost-effective than diesel-operated trains», said Jure Mikolčić, CEO of Stadler in Germany.

Carsten Moll, Chairman of DB Regio Northeast: «With the battery-electric multiple units, which will replace diesel vehicles, we are taking an important step towards climate neutrality with the state. As DB Regio, we are proud to put the first environmentally friendly network of this type into operation in Mecklenburg-Western Pomerania.»

FLIRT Akku: The world record train
The FLIRT Akku is the battery-operated version of the FLIRT type series by Stadler. The vehicle is highly versatile thanks to that fact that it is designed for non-electrified and partially electrified tracks. The operational reach of the vehicle is about 100 km, which means that 80 percent of the non-electrified routes in Germany can be used by regional trains in battery mode. With 224 driven kilometres in pure battery mode, the FLIRT Akku holds the world record for the longest journey by a regional train in pure battery mode without additional charging. The FLIRT AKKU is a single-storey, easily customised regional train. Its vehicle concept is largely based on the already approved and tested electrical trains FLIRT for exclusive operation under a catenary. Most of the traction equipment and the most important mechanical components have been retained. All FLIRT models have a lightweight aluminium frame. Maintenance-friendly designs and components that have proven themselves thousands of times over help to keep operating, energy and servicing costs to a minimum. Two to four-part train compositions can be realised in the battery-operated variant. Like the FLIRT, the FLIRT Akku can also be customized highly flexibly with respect to the number of seats, passenger flow or interior design.

The FLIRT by Stadler is a single-storey train for local and long-haul transport. To date, Stadler has sold more than 2000 of this best-selling model in 20 countries. In addition to purely electrical, diesel or mixed drives, Stadler also supplies the FLIRT with alternative drives such as batteries and hydrogen. For instance, Stadler developed the first FLIRT with a hydrogen drive for the American San Bernardino County Transportation Authority (SBCTA).

Battery trains produce fewer carbon emissions than diesel vehicles and are a very attractive alternative to them. They offer a fantastic solution for non-electrified lines, eliminating the need for costly infrastructure upgrades for transport organisations and governments.

Investment worth billions: Deutsche Bahn orders 43 new ICE trains

Deutsche Bahn (DB) is buying 43 more trains of the new ICE 3neo from Siemens for around 1.5 billion euros. The CEOs Richard Lutz (DB) and Roland Busch (Siemens AG) announced the order in Berlin in the presence of Federal Transport Minister Volker Wissing. DB is thus expanding its fleet to a total of 73 ICE 3neo, as 30 ICE of this type were already ordered in July 2020. This will increase DB's ICE fleet to a total of around 450 trains by the end of the decade. With the 73 new trains, the daily space available for passengers in long-distance transport by DB will increase by a further 32,000 seats. With this increase in the fleet, DB will in future have the capacity to run the timetable provided for the Deutschlandtakt by 2030.

At a top speed of 320 km/h, the new ICE 3neo offers numerous innovations for improved comfort in addition to 439 seats:
- Mobile phone transparent panes for stable reception
- Eight bicycle parking spaces on each train
- Redesigned luggage racks with more storage space
- Lighting with color tones that change depending on the time of day
- Tablet holders and sockets at all seats, also in 2nd class
- Additional doors for faster boarding and alighting at train stations
- A new lift for easier access for wheelchair users

Dr Volker Wissing, Federal Minister for Digital Affairs and Transport: "The new ICE represents progress on the rails - fast, digital, barrier-free. The total of 73 new trains with their 32,000 additional seats make a major contribution to the implementation of the Deutschlandtakt. This brings us another step closer to our goal of doubling the number of passengers on the rails in the next eight years."

Dr Roland Busch, CEO of Siemens AG: "Today we are taking an important step in the mobility transition. With the new high-speed trains, we are supporting Deutsche Bahn in realizing its vision: to transport more people with maximum comfort, punctuality and better service, efficiently and extremely sustainably. We will be putting the first trains on the rails by the end of this year. This is record speed, because based on a long-standing, trusting partnership with DB, we are relying on a tried-and-tested train platform that we have enriched with numerous innovations for the passengers."
DB and Siemens presented the first ICE 3neo when the order was announced at the ICE plant in Berlin-Rummelsburg. This was built in the record time of just twelve months – faster than an ICE has ever been. At the end of this year, the first ICE 3neo will be in service for passengers. The new trains will initially run between North Rhine-Westphalia and southern Germany on the high-speed route between Cologne and the Rhine/Main.

Germany

Record investment of 13.6 billion euros: DB is making the network and stations fit for the future

DB infrastructure board member Pofalla: “Every euro spent on rail is a euro spent on climate protection”

Deutsche Bahn (DB) is consistently continuing its “New Network for Germany” investment program. In 2022, the record sum of 13.6 billion euros is to flow into the rail infrastructure from DB, the federal government and the states - around 900 million euros more than in the previous year. DB is modernizing and renewing around 1,800 kilometers of track, 2,000 points, 140 bridges and 800 stations. With this program, DB primarily wants to create more capacity in the rail network and make the existing infrastructure more efficient.

“We are building more than ever before – a real tour de force! We can only achieve this with a strong team, with motivated and committed employees. To this end, we are hiring 4,800 additional engineers and specialists for expansion and maintenance this year alone,” Ronald Pofalla, Board Member for Infrastructure at DB

This year’s investment offensive has two major focal points: Firstly, DB is creating more space on the rails. The expansion and new construction of important infrastructure projects are continuing at a high level. As a major milestone, the approximately 60-kilometer-long Wendlingen-Ulm high-speed line will go into operation as planned at the end of 2022. It is an important step on the way to putting Stuttgart 21 into operation and will shorten travel times between Stuttgart and Ulm by around 15 minutes.

On the other hand, DB is continuing to press ahead with its digitization projects. The focus is on the work on the digital node in Stuttgart and the Scandinavian-Mediterranean corridor from Hamburg via Erfurt and Munich to the Austrian border near Kufstein. At the same time, the expansion with ETCS, the most modern control and safety system with European standards, continues. In the summer, the first digital interlocking to control trains on a high-speed line will go into operation in Donauwörth.

Both - more capacity and digitization - are prerequisites for more and faster connections and the Germany clock. “A strong infrastructure is the basis for an attractive offer for all rail passengers. That’s exactly what we want to do: We want to convince more people that rail is an environmentally friendly means of transport. Every euro spent on rail is therefore also a euro spent on climate protection,” Pofalla continued.

Resilience for the existing infrastructure, more modern train stations

In addition to the major future projects, DB continues to ensure that the existing network is kept fit. The DB also relies on small and medium-sized measures to make the rails strong and less prone to failure. The installation of additional points and the use of temporary bridges should ensure that the train traffic runs reliably even during construction work. Projects to adjust route speeds add another buffer to the timetable and improve punctuality. So that passengers can board and change trains comfortably during their journey, DB is tackling around 800 stations this year – around 15 percent of all stations in Germany. The focus is on the feeder and hub stations. More than 40 percent of the station budget – around 700 million euros – is earmarked for this. Furthermore, DB is expanding weather protection and passenger information for its travellers.

Customer-friendly construction in focus

In order to ensure a high-quality offer for customers in passenger and freight transport despite the high construction volume, DB is bundling construction measures even more intensively and efficiently than before.

Ronald Pofalla: “Higher investments also mean more construction volume in our network. Customer-friendly and capacity-saving construction is right at the top of the agenda. To this end, we will further intensify our cooperation with the construction industry and carry out construction work even faster and more reliably.”

Germany

20 FLIRT for cross-border traffic: Stadler and the Regionalverkehre Start Deutschland conclude a delivery contract

Stadler and the Regionalverkehre Start Deutschland GmbH have signed a delivery contract for 20 vehicles of the type FLIRT for use in the Maas-Wupper network.

This was based on a commission sent to the Regionalverkehre Start Deutschland GmbH – aka start - by the Traffic Association Rhein-Ruhr AöR (VRR) and the Local Traffic Association Westfalen-Lippe (NWL). This railway traffic company, which was founded in 2016, ordered new vehicles for the first time in this delivery contract.

Modern trains for cross-border traffic between Germany and The Netherlands: The new FLIRT vehicles make travelling from the Rhine-Ruhr region to The Netherlands faster and more convenient.

The passengers trains will go into operation in 2026 on a direct route between Hamm and Eindhoven.
The vehicles can be used without restriction in both countries because they are equipped for both the German and also the Dutch traction supply systems, and are also equipped with the European train control system ETCS, the German PZB system and the Dutch ATB system. The extra-long cars of the FLIRT vehicles for the Maas-Wupper-Express have seven doors on each side to ensure easy and safe entry and exit, as well as fast passenger change times.

There is space for 375 passengers in the four-part trains, 235 of which on seats. There are 34 seats spaced further apart in the 1st class. The fully air-conditioned FLIRT has passenger WLAN, light and airy passenger compartments and large multi-purpose areas that can accommodate up to 12 bicycles, wheelchairs or prams. The vehicles offer step-free access and also have a handicapped-accessible WC and another WC in the middle cars. The modern passenger information system provides passengers a real-time update about further connections.

«Railway traffic must be reliable, cross-border and comfortable for successful implementation of the German and European-wide traffic revolution. We are pleased that Stadler can, once again, bring its many years of experience in the design of multi-system-capable vehicles to the table to enable direct cross-border connections.», says Jure Mikolčić, CEO Stadler Deutschland.

Stadler and its vehicles won a European public tender issued by the Regionalverkehre Start Deutschland GmbH for the Maas-Wupper-Express. «What tipped the balance for Stadler was the outstanding price- performance ratio in combination with the excellent energy values of the vehicles. We are really looking forward to running the RE13 from 2026 with new trains in the start design», says Alexander Falkenmeier, managing director of start.

The VRR vehicle financing model was applied for the procurement of the vehicles. With this, start will purchase vehicles that meet the customer's quality requirements, and will sell these to the VRR and NWL. These will become the owners of the vehicles, assume the financing and lease them to start for the entire duration of the traffic contract.

Netherlands

On February 11thm IRP Vossloh G2000BB No. 2105 is seen in Venlo with a tanker train on its way from Rotterdam to Köln Eifeltor (Germany). *Erik de Zeeuw*

Netherlands

On January 20th, Rurtalbahn Cargo 193.598 rushes to Rotterdam with a rake of tankers coming from Magdeburg-Rothensee (Germany), seen passing here at Kockengen. *Erik de Zeeuw*

On January 26th, BT TRAINS No. 363.723 shunts a tanker train under license of IRP at the Westport in Amsterdam.
Erik de Zeeuw

Netherlands

On February 11th, Railtraxx Class 66 No. 266 009 is seen in Venlo on its way from Antwerp North (Belgium) to the Solvay Company in Millingen (Germany) with Zacens cars (Sodium Hydroxide Solution) and Zacns cars (Ethlene Dichloride). *Erik de Zeeuw*

Netherlands

On February 11th, TRI (Train Rental International) Class 110.428 is seen at Venlo. *Erik de Zeeuw*

Netherlands

On February 11th, Retrack Class 186.438 has approached the German border with the Poznan shuttle from the Cabooter Railterminal Greenport Venlo to the CLIP Intermodal Container Terminal Swarzędz (Poland). *Erik de Zeeuw*

Netherlands

LTE Class 186.941 passes Venlo with a container shuttle from Rotterdam (NL) to Mannheim and Wörth am Rhein (Germany) on February 11th. *Erik de Zeeuw*

On February 11th, DB Cargo Class 193.341 is seen in Venlo hauling the Westports Express from Neuss (Germany) to Antwerpen (Belgium).
Erik de Zeeuw

On February 12th, RXP No. 9902 (under license of HSL) is seen on its way with a deepsea container train from Coevorden to the Kijfhoek yard in Zwijndrecht, Baambrugge. *Erik de Zeeuw*

Netherlands

Battery trials on a Stadler train for Arriva Netherlands prove that they can run emission-free on non-electrified lines

Tests completed on a modified Stadler-built diesel-electric multiple unit demonstrate that trains are able to operate solely with batteries, on lines that are not electrified. This success underscores Stadler's sustainability credentials and represents huge benefits for clients and society overall.

The successful completion of battery trials undertaken on a modified diesel-electric multiple unit built for Arriva Netherlands shows that these trains can run emission-free, without the use of a diesel generator, supporting the client's carbon emission targets and enabling it to avoid costly infrastructure changes.

Tests were completed on the non-electrified lines from Almelo to Hardenberg and Arnhem to Doetinchem, in the east of the Netherlands. This particular train runs with electric energy 1.5kV DC from the overhead line and uses the battery to bridge non-electrified sections.

The use of battery power enables trains to run independently on non-electrified lines and provides a more sustainable alternative to diesel. Batteries are used to power a train and can capture energy while it is braking. They can be charged from electrified lines or at designated charging-points on a network.

Stadler has sold around 300 trains and locomotives with traction batteries in ten countries, including more than 110 FLIRT Akku for operation in three regions in Germany.

In tests conducted last year, the battery-powered FLIRT Akku travelled more than 220km in battery-only mode, the longest distance on record and documented in the book of Guinness World Records. Stadler is currently building the first hydrogen-powered train ever to run in the US, ordered by the San Bernardino County Transportation Authority.

Dr Ansgar Brockmeyer, Executive Vice President Marketing & Sales and Deputy CEO of Stadler, commented: "These trials highlight the role that green technology can play in de-carbonising our world and bring us one step further to creating a truly green railway. Working closely with our clients, Stadler is committed to developing innovative ways of making the industry more sustainable, providing attractive and efficient rolling stock, to encourage modal shift for both passengers and freight."

HSL Class 186.383 with a rake of (two months old) GATX-tankers, loaded with UN 1179 is seen in the Eempolder near Soest, en route to Houtrakpolder on February 27th.
Mathijs Kok

SBB Class 420.212 stands in Pfaffikon with an S Bahn train towards Dietikon on January 11th. *Mark Torkington*

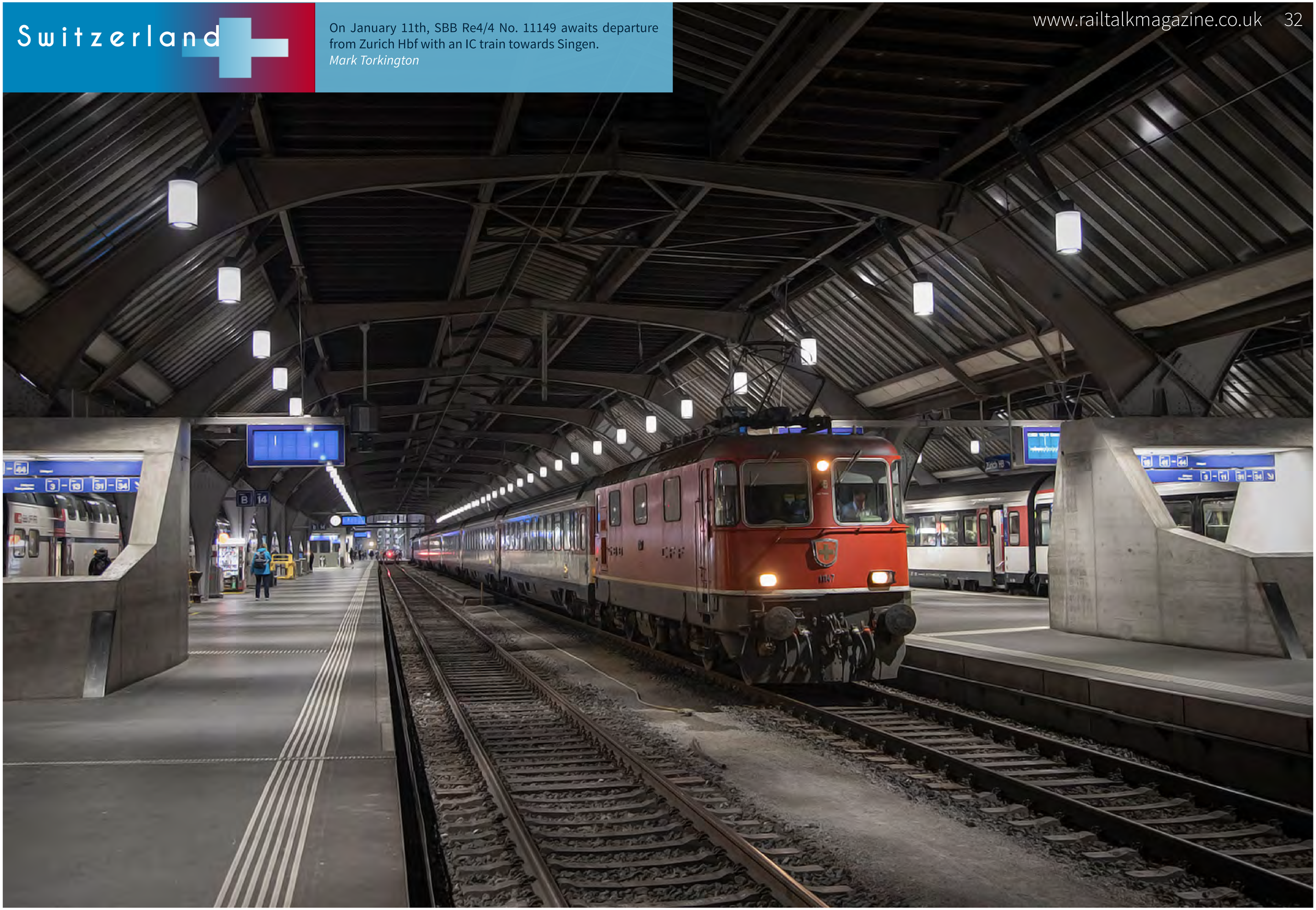
On January 13th, RhB No. 631 approaches the tiny station of Ftan Baraiga near Scuol tarasp. *Mark Torkington*

Switzerland

RhB No. 642 crosses the Schmittentobel Viadukt on the approach to the more famous Landwasser Viadukt on January 13th. *Mark Torkington*

On January 14th, RhB No. 649 pauses at Filisur with a freight train. *Mark Torkington*

On January 11th, SBB Re4/4 No. 11149 awaits departure from Zurich Hbf with an IC train towards Singen.
Mark Torkington



Spain

EIB and Talgo sign €35 million green loan to finance innovation strategy

The EU bank funds will finance Talgo's research, development and innovation for 2021-2024, its digital transformation and other investments.

The European Investment Bank (EIB) and Patentes Talgo have signed a €35 million green loan to finance the company's research, development and innovation (RDI) strategy. Las Rozas, Madrid-based Patentes Talgo is a Spanish leader in the design, manufacture and maintenance of light high-speed trains. All of the investments will be made in Spain and will be implemented between 2021 and 2024.

The EIB financing will boost Patentes Talgo's competitiveness via the development of new rolling stock solutions and the expansion of its product portfolio. This operation, the third to be signed with Patentes Talgo, will finance various investments by the company in research, development and innovation activities connected to the development of key components and systems for low-carbon rail transport vehicles. All the EIB-financed investments will be in line with the EU Sustainable and Smart Mobility Strategy and the Climate Bank Roadmap. As well as delivering safer products and manufacturing processes, the investments will have positive environmental effects related to the development of more energy-efficient rolling stock using recyclable composite materials. They will also help to promote sustainable mobility by gradually increasing passenger and goods rail traffic, fostering an affordable high-speed rail network. The EIB-financed investment plan includes RDI projects aligned with the EU Horizon 2020 programme on Smart, Green and Integrated Transport. The goal of this programme is to boost the competitiveness of European transport industries and to achieve a resource-efficient, environmentally friendly and safe European transport system for the benefit of all.

EIB Vice-President Ricardo Mourinho Félix said: "We are proud to finance Talgo's RDI strategy once again, demonstrating our commitment to sustainable transport. This operation again reflects the EIB's support for helping Spain to achieve an economic recovery focused on the environment, innovation and job creation."

Talgo Chairman Carlos Palacio added: "Talgo has been committed to rail sector innovation since its founding almost 80 years ago. We firmly believe that trains are the immediate response to the climate emergency, and EIB support will enable us to make further progress in decarbonising the transport system."

Turkey

Alstom wins another signalling project in Turkey

This is the second largest signalling project in Istanbul within the last three months.

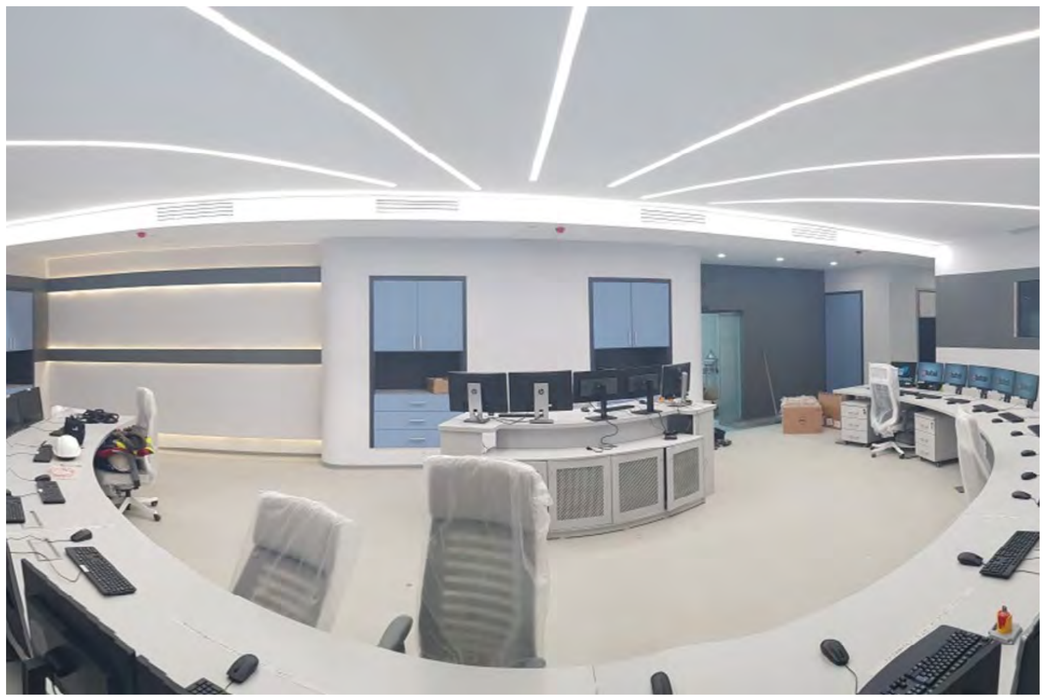
Alstom has signed a new contract to install a complete driverless communications-based train control (CBTC) signalling system and electromechanical infrastructure for the Umraniye-Atasehir-Goztepe (UAG) Metro Line, which is of great importance for the Anatolian side of Istanbul. This contract will not only enhance the existing infrastructure quality but also advance reliability, travel comfort and reduce maintenance cost for the operator.

Alstom, through Gulermak and Nurol Joint-Venture, will ensure that the 13-kilometre long UAG metro line will operate as a fully automatic and driverless system. The line, which will connect Marmaray, Uskudar-Umraniye-Cekmekoy-Sancaktepe and Kadikoy-Kartal-Kaynarca metro lines, will have 11 stations with the highest level of safety measures. The line will be compatible and interoperable with the the Dudullu-Bostanci Metro Line signalling system.

"We are thrilled to carry out our second largest signalling project in Istanbul within the last three months. As a leader of sustainable and innovative mobility, we are committed to continue advancing Istanbul's rail system network with our latest technology solutions," said Volkan Karakilinc, the Managing Director of Alstom Turkey.

This will be the 3rd important project that was undertaken by Alstom within the last three months. Alstom is currently carrying out the signalling works for the Istanbul Cekmekoy-Sancaktepe-Sultanbeyli (CSS) line and the Bandirma-Bursa-Yenisehir-Osmaneli (BBYO) line.

As a strong leader in the mass transit market with over 30 years' expertise in CBTC and over 160 metro lines equipped in over 25 countries, Alstom has been a leading provider of signalling and train control technology to provide turnkey transit systems for rail vehicles, metros and trams in Turkey for more than 60 years. The Istanbul office serves as the regional hub for Alstom's Signalling expertise, and provides project management, engineering, procurement, training and maintenance services for the entire region.



Europe

Rail automation made easy

Automatic Train Operation makes rail automation simple.

Automation is all the rage, but what about rail? How does Automatic Train Operation work, what is it and how does it make trains better? This article will have you speaking in Automatic Train Operation lingo in no time.

What is Automatic Train Operation?
Automatic Train Operation is basically a set of computerised systems that takes control over certain parts of a train. Its similar to an airplane being flown on autopilot. There is always a pilot present who can intervene and take control if required, but the basics are handled by the airplane's onboard computers. Trains are different from planes of course, but it's a good comparison. Automatic Train Operation works with an existing system called Automatic Train Protection (ATP). ATP is like a safety system that limits how fast the train can go and even automatically apply the brakes if something isn't right. Automatic Train Operation builds upon this automated safety system but takes it to a whole new level.

Ok great. But what's the point of automating trains when we already have drivers?

The short answer is that Automatic Train Operation automates smaller tasks like opening and closing doors so train drivers can focus on other responsibilities. But what's more important is that, when it comes to certain things, computers and machines are simply more accurate and reliable than humans. We know that humans can do math, but if you want to accurately calculate huge numbers over and over, a calculator will always be faster and more reliable and accurate than a human. Rail automation can take control of a vehicles' routine actions like operating doors, enabling drivers to focus on core tasks.

Increasing transport capacity with Automatic Train Operation
Automation really comes into play when we want to increase transport capacity to help move more and more people. Population is growing everywhere, and cities are getting more and more crowded. But its not so easy to increase capacity by just adding trains or building new lines. On one hand its expensive to keep buying trains and building lines and on the other hand, there is a point where you just can't increase a line's capacity anymore without changing something.

Think of filling a bottle with a funnel. The water is people, the funnel is the trains and the hole in the bottom of the funnel is the tracks, and you want to get more water into the bottle. But if you try increasing the amount of water going into the funnel, at some point it just flows over the sides. You can get a bigger funnel, one that will hold more water but the water won't flow into your bottle any faster because you are limited by the opening at the bottom where all the water has to pass.

So, you could say that Automatic Train Operation widens the opening at the bottom of the funnel, letting more water pass through the funnel faster. Because it's all automated like a calculator, our latest digital automation technologies enable a single station to handle one train every 90 seconds. A human can do a lot of things, but they just can't reliably make those precise calculations over and over with the same efficiency and accuracy.

That's why Automatic Train Operation matters, it enables us to bring the rail lines we already have to their full capacity. It's the best, and often only, way to get more people to their destination using our existing infrastructure. Of course, you could build more tracks, but that's expensive and not sustainable. We call that 'signalling instead of concrete'. The goal of rail automation is not to replace human drivers, instead powerful computers support them and help perfect their driving so the entire network is faster, cleaner and more efficient.

Ok, seems simple, so why don't we just use Automatic Train Operation everywhere?

Well, we have. Some Metro systems have been automated since the 1960s. At Alstom, we have delivered 12 of these automated rail systems for the busiest airports. These are called closed systems. They operate on their own track and don't have to share with other vehicles like cars or trains. They have safety doors at the stops, to keep people from falling into the gap between the track and train and the trains just go back and forth like an elevator. Easy. The challenge we are working on today, is how to apply the automation we use in metros to make large mainline trains like the ones you take from city to city autonomous.

What's the difference between an automated train and autonomous train?
The difference lies in the level of mechanization. Automated means that computer systems only control certain aspects of the train. For example, a driver still runs the train, but the doors open and close automatically. It does not sound like much, but automating doors lets the driver focus on the train and it makes the stops shorter because everyone boards and exits as fast as possible. This is a train that has some automation but still relies on human driver, we would call that grade of Automation Level 1 or 2.

Autonomous trains however are much more advanced. They require sophisticated sensors and powerful software to run them. This is because they automate more than just doors. In Grade of Automation Level 3, there isn't even a driver, but there are attendants on the train. In Grade of Automation Level 4, the train is fully autonomous, it handles everything itself and doesn't require a human to be onboard at all. That's an autonomous train.

Automated means that computer systems only control certain aspects of the train. Rail automation enables rail operators to do less with more, increasing capacity without adding costly new tracks or vehicles.

Why is automating mainlines challenging?
It's a challenge because mainline is what we call an open environment. Unlike metros, mainline trains have to work with other vehicles. They have to know how to deal with areas where the tracks cross a street with cars and since they go further and faster, they need to know when to accelerate and brake and how much. They also have to know how to work with other vehicles, which means they need to have eyes and ears and the ability to communicate with each other.

Are there any other advantages to autonomous trains?
Yes, definitely. First, they are more efficient because computers take the variables out of the equation. Take car racing for example, why is car racing a sport? All the cars have to go the same distance, they all have the same amount of gas and they all pretty much go the same speed. But what makes it interesting is how the drivers drive. Some accelerate more, others brake earlier, some drive in a way that uses more gas. Everyone drives a bit different, its what makes racing fun. But that difference is no fun when you are trying to get somewhere. If you've ever been in a traffic jam, you already understand. Train automation has benefits for operators, passengers and the environment. Rapid and accurate computers can help rail systems improve service all around by eliminating waste and fine-tuning operation.

Computers driving trains
When a computer drives the train, it's predictable. We know how fast it's going to go and how long it's going to take to stop because we told it exactly what we wanted. Since we know how it's going to operate, we can predict and optimise its operation. There is no more guessing, there is no more 'personality'. What this means is, fewer delays, more trains, and shorter trips. Basically, Automatic Train Operation puts time back into your life.

Train automation is also better for the environment
The computer systems that manage everything are more 'frugal', they eliminate waste. No wasted energy from driving too fast. No wasted energy because the driver waited just a bit too long to brake. In addition, this frugality is much easier on the trains and the track. Trains last longer and tracks don't need to be repaired as much. Maintaining tracks and trains is expensive, so it saves money too.

Spain

CAF AND IBERDROLA TO TURN THE GREEN HYDROGEN TRAIN INTO A REALITY

CAF and Iberdrola have concluded a framework agreement with the main focus being global promotion of green hydrogen, emission-free rail transport.

The CAF Group (Construcciones y Auxiliar de Ferrocarriles) has partnered with IBERDROLA to promote the use of green hydrogen in the railway sector and for passenger transport. The agreement was signed between Iosu Ibarbia, CAF's Technology Manager, and Millán García-Tola, the Green Hydrogen Manager of the utility company. This partnership arose out of both companies' mutual dedication towards providing comprehensive sustainable transport solutions, ranging from supplying rolling stock and fuelling infrastructures, to green hydrogen production plants and renewable energy infrastructures.

For Millán-García Tola, Iberdrola's Global Director for Green Hydrogen, "This partnership further bolsters Iberdrola's commitment to decarbonising transport that is hardly electrifiable. By partnering with CAF, a leading player in sustainable transport, we intend to continue providing solutions that will serve as a catalyst for the transition to zero-emission transport. Both companies complement each other perfectly, and together we will be able to deliver comprehensive solutions for transport electrification, a sector that contributes to a third of EU greenhouse gas emissions."

"CAF has long been strong advocate for developing its own technologies for power electronics, energy storage and batteries, and more recently hydrogen. We believe that this partnership agreement with Iberdrola is another step towards furthering this commitment and will contribute significantly to achieving the decarbonisation goals in the transport sector", observes Iosu Ibarbia, the CAF Group Technology Manager, commenting on the agreement entered into between the two companies.

TRAINS WILL BE GREENER THAN EVER

It is currently difficult to electrify certain sections of railway lines on which fossil fuel-powered trains are used. The goal of this partnership is to promote comprehensive solutions by which to replace these trains without having to install catenary or make significant modifications.

Another goal is to improve the renewable hydrogen value chain with the highest safety, technology and competition standards in fields like the railway sector and passenger transport, helping to encourage local companies to develop their technology and production capacity so as to drive sector transformation in Spain and compete on the international market.

Tests are due to start in April this year for the new train CAF has developed at its Zaragoza plant as part of the FCH2RAIL project. These trains will be powered by green hydrogen supplied by IBERDROLA from its Barcelona plant.

Headed up by CAF, the project is already well underway in terms of the design and production of a hydrogen train prototype which, based on a RENFE Civia series commuter train, will be fitted with a new electric generator system based on the hybridization of hydrogen fuel cells and batteries, will combine with the vehicle existing traction system to become one of the first railway showcases for hydrogen Cell dual energy mode systems.

China

Alstom's Chinese joint venture wins contract to provide maintenance for Shanghai Metro line

Alstom's Chinese joint venture, Shentong Bombardier (Shanghai) Rail Transit Vehicle Maintenance Co., Ltd. (SHBRT) [1], has been awarded a contract from Shanghai Shentong Metro Group Co., Ltd. (Shanghai Metro) to provide whole lifecycle maintenance service for 204 Movia metro cars (34 trains) on Shanghai's Line 12 phase 2 and phase 3 project. The total contract is valued at approximately €43.6 million (330 million CNY excl. VAT).

Under the contract, SHBRT will adopt the condition-based maintenance regime by deploying the advanced maintenance tools, including Alstom's Orbita advanced train monitoring system, Automatic Vehicle Inspection System, etc., to improve the safety, reliability, availability and efficiency of Shanghai's Line 12 fleet. The scope of the contract includes preventive maintenance, corrective maintenance, balanced overhauls, safety inspections, train cleaning and train escort services for 204 metro cars. The project is expected to be completed in November 2027.

Henry Wang, Managing Director of Alstom China said, "Alstom is delighted to be selected by Shanghai Metro to provide whole lifecycle maintenance service for Line 12. We will focus on maintaining our high-performance and are confident that our experienced joint venture team with advanced maintenance tools will provide reliable service and contribute to seamless operations for our customer as well as passengers in Shanghai."

In 2016, SHBRT was awarded the first full fleet metro maintenance contract in China when Shanghai Metro enlisted them to provide 12 years of (on a 6+6 basis) maintenance service for 246 metro cars for Line 12. This latest agreement with Shanghai Metro is a supplementary contract to that initial contract awarded in 2016. Since its establishment, SHBRT has provided overhaul service for a total of 1,362 metro cars for Shanghai Metro. By leveraging the respective partners' competencies in terms of technologies, equipment and businesses, the joint venture is dedicated to providing efficient services for urban mass transit vehicles in China, offering customers daily maintenance, intermediate repairs, overhaul, refurbishment, and technical consultation. All 204 Movia metro cars for the Shanghai line 12 phase 2 and phase 3 were delivered by another Alstom Chinese Joint Venture, Changchun Alstom Railway Vehicles Company Limited. (CARC) [2] . To date, CARC has supplied 1,548 metro cars to Shanghai Metro across three Shanghai Metro lines.

Present in China for over 60 years, Alstom participates in the full spectrum of China's railway projects. With the completion of the acquisition of Bombardier Transportation effective Jan. 29, 2021, Alstom in China now has a complete range of rolling stock (high-speed trains, railway passenger cars, locomotives, metro, automated people movers, monorail and trams), state-of-the-art components (traction systems, bogies, traction motors, dampers), customised services, as well as infrastructure and signalling solutions. Alstom in China has thirteen joint ventures, seven wholly foreign-owned enterprises,

and over 11,000 employees. Together, the joint ventures have delivered more than 6,000 railway passenger cars, 1,530 electric locomotives, 7,194 metro cars, 536 monorail cars, 168 automated people mover cars and 191 tram cars to China's growing rail transit market as well as to overseas markets. In China, Alstom also provides customers with a wide range of services solutions, from heavy maintenance to modernisations, and currently has 2,252 metro cars under maintenance contracts. It is a major signalling supplier to the Chinese high-speed network, and through its joint ventures, its signalling systems are utilised in 102 urban mass transit lines and its propulsion equipment are applied in 100 metro lines in Chinese cities.

[1] Shentong Bombardier (Shanghai) Rail Transit Vehicle Maintenance Co. Limited is owned at 50% by Alstom Group and is consolidated by equity-method.
[2] Changchun Alstom Railway Vehicles Company Limited is owned at 50% by Alstom Group and is consolidated by equity-method.

U.K.

Arriva Group's Chiltern Railways brings innovative emission-cutting train into service

Arriva Group's Chiltern Railways train operating company is launching a new innovative train w/c February 7th which will significantly cut CO2 emissions, save fuel and reduce noise and air pollution, particularly around stations.

The train is known as 'HybridFLEX' and is the result of a four-year partnership between Chiltern Railways, Porterbrook (the train owner) and the industrial technology giant, Rolls- Royce. The companies worked together to convert a diesel train into one that now runs on both diesel and battery power. The concept train is the first 100mph capable battery-diesel hybrid train to operate on the UK's national rail network.

The train has been retrofitted with a Roll-Royce powerpack which means quieter and quicker journeys and a 25 percent reduction in CO2 emissions on every journey it makes. Nitrogen oxide and pollutants are also cut by 70 and 90 per cent respectively. The HybridFlex train substantially cuts fuel usage and reduces noise by up to 75 per cent in and around stations and urban areas. It also presents the opportunity for faster customer journeys in the future because the train will be able to accelerate away from a station more quickly.

Arriva Group's Managing Director for UK Trains, David Brown, commented: "Innovating for a sustainable future is at the heart of Arriva's business and we're incredibly proud of what has been achieved alongside Porterbrook and Rolls-Royce through a shared commitment to green technologies. This ground-breaking concept-train will allow us to deliver cleaner, more sustainable rail services right now, further contributing to decarbonisation."

Richard Allan, Chiltern Railway's Managing Director, added: "Chiltern Railways is determined to operate a railway that is as sustainable and environmentally friendly as possible. "We have worked hard with our partners to fit a powerful battery power pack underneath a 20-year old diesel train to make the train cleaner, quieter and quicker. We are really proud that this train is now carrying customers and look forward to assessing its performance in daily service."

The HybridFlex train will initially operate between Aylesbury and London Marylebone with plans to bring the new type of train to the London to Oxford via Bicester Village route in the coming months.

Rolls-Royce's 'mtu' Hybrid PowerPack pairs a diesel engine with an electric unit that can function both as a motor and as a generator. The battery system stores power that is recovered during train braking.

The concept train will be assessed in customer service to understand if there is an opportunity to convert more diesel trains to use this innovative hybrid technology in the future.

U.S.A.

1960s-Era R-32 Subway Cars Begin Final Journey

New York City Transit Recently Retired the R-32's After 58 Years of Service

The Metropolitan Transportation Authority (MTA) announced on February 28th that four of the recently retired R-32 subway cars, nicknamed the Brightliners, had begun their final journey. The cars were transferred from the South Brooklyn Marine Terminal to the 65th Street Yard by New York New Jersey (NYNJ) Rail locomotive, via 1st Av.

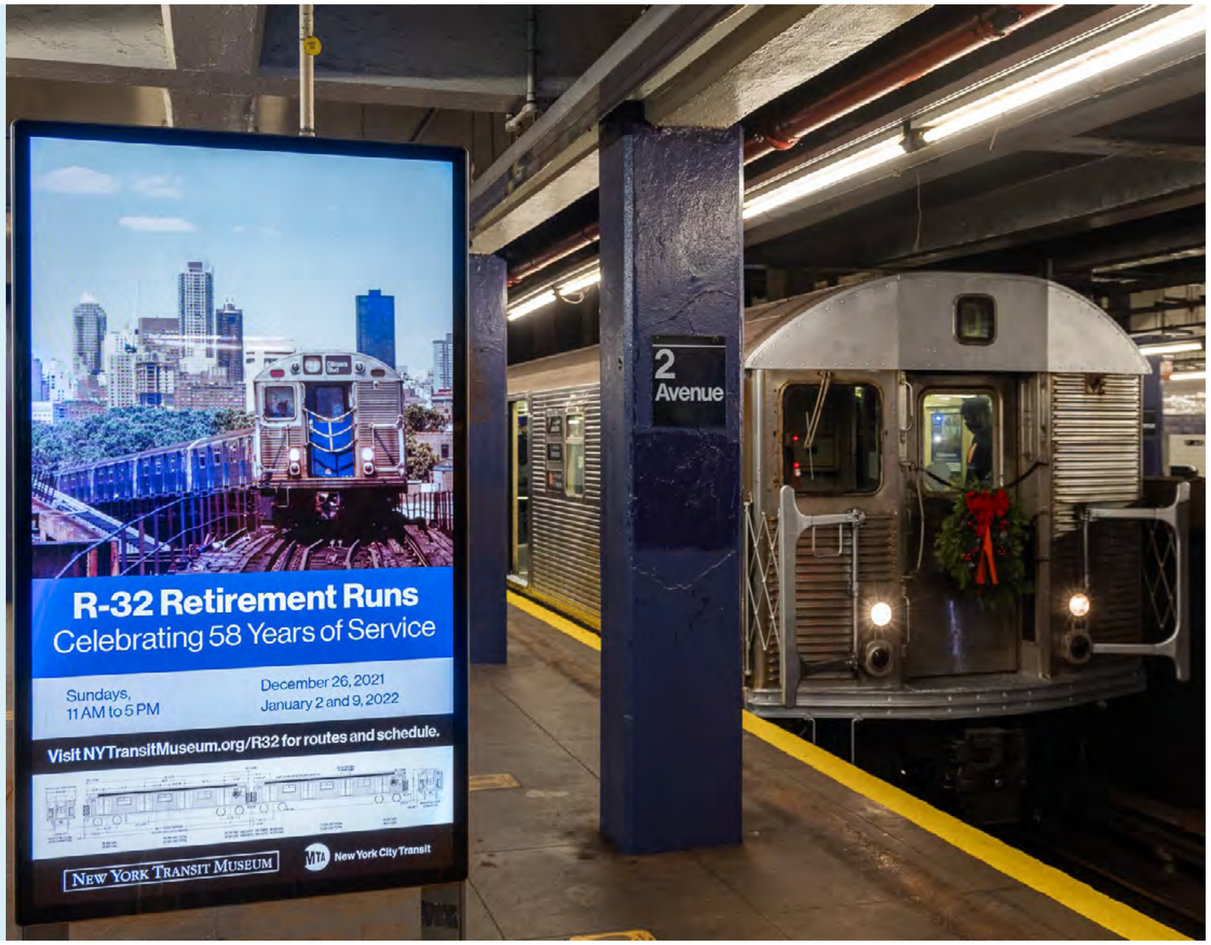
Once at the NYNJ railyard, the R-32 cars were disassembled over approximately four days by separating the car bodies from the trucks. They were then placed and secured onto Frontier Industrial Corporation's flat cars before being floated across the Hudson River on a Port Authority barge to Jersey City where they were placed onto CSX freight trains for shipment to Ohio.

About the R-32s

The R-32s were the first large fleet of mass-produced stainless-steel cars purchased by NYCT, comprising a total of 600 cars. Built in Philadelphia by the Budd Company, they were nicknamed the Brightliners because of their washboard-like stainless steel exteriors. The first revenue train ran on Sep. 14, 1964, With a state-of-the-art design for its time, the Brightliners quickly became a crowd favourite and continues to be a nostalgic favourite to many. The cars introduced design elements unlike any of its predecessors, but one that the MTA has received inspiration from for its newest train cars. Notably, the R-32 cars are the last subway car class in service to have a front window that passengers can look out of.

The cars were featured in multiple blockbuster films including Bridge of Spies (2015), Spiderman: Homecoming (2017) and Joker (2019). Many R-32s were retired in the late 2000s, when the R-160 cars began filtering into the subway system. A large number of these cars were sunk in the Atlantic Ocean as part of an artificial reef program.

The R-32's made their final run on along their original debut route from 1964, on the line (the then-BMT Brighton Line) on January 9th.



Spain

CAF GROUP AWARDED THE SUPPLY OF ELECTRIC UNITS AND HYDROGEN BUSES IN THE BALEARIC ISLANDS

Yet again, the CAF Group consolidates its position as a global supplier of Zero Emissions Mobility solutions by securing two new contracts in the Balearic Islands. These consist, on the one hand, of the supply of five electric units to Serveis Ferroviaris de Mallorca, and on the other, five hydrogen buses to the capital city of Palma. These new projects substantiate the sound start of the CAF Group this year. In the last few weeks it has secured various significant contracts worth in excess of €800 million, such as the supply of 23 trains for Auckland, close to 200 electric buses for the city of Oslo, as well as the Purple Line project in Tel Aviv which includes the design, construction, financing and maintenance for 25 years of this line that forms part of the city's light rail system.

THE SUPPLY OF FIVE ELECTRIC UNITS FOR SERVEIS FERROVIARIS DE MALLORCA

Serveis Ferroviaris de Mallorca (SFM) has awarded CAF the contract to supply 5 electric 4-car units, along with their depot parts and comprehensive maintenance of the vehicles for 2 years. The contract is worth in excess of €50 million, and the units are scheduled for commissioning in 2024. The operator SFM is the public company that manages operation of the narrow-gauge railway and metro lines on the island of Mallorca, except for the Palma-Sóller line. Purchasing these new units will allow SFM to further consolidate and develop sustainable mobility on the island, which is accessible for the whole population as well as being efficient and environmentally friendly. This project will be financed with additional Recovery Assistance for Cohesion and the Territories of Europe (REACT-EU) funds under the ERDF 2014-2020 Operational Programme; financed in the framework of the European Union's response to the COVID-19 pandemic.

The new trains for SFM will be modelled based on the modern units that CAF recently built for the operator Euskotren, and will be able to provide revenue service at 100 km/h. They will consist of two cabbed motor cars and two intermediate trailer cars, with a capacity for more than 500 passengers. CAF's relationship with the Balearic Islands dates back a long way, given that it supplied six 7100 series units for the Palma de Mallorca Metro in 2006. Two years later, in 2008, concluded a new contract to supply 13 electric 8100 Series units, for metric tracks in 3- and 4-car consists, to operate on the island's railway network. In this case, the five new units will be used for the same commercial services previously served by the 8100 Series units previously built by CAF. In other words, they will run on Line T1, which connects Palma de Mallorca with the city of Inca, Line T2 from the capital city to the town of La Pobla and Line T3, which connects Palma with Manacor, located on the eastern part of the island.

Italy

Alstom and Divisione Ferroviaria TUA sign two contracts worth €33 million for the supply of new trains and for a new signalling system on Abruzzo's infrastructure

First contract for the supply of three regional Coradia Stream Pop 2.0 trains
Second contract for installation of a new ETCS[1]signalling system on the Lanciano-San Vito and Fossacesia/Torino di Sangro-Archi line

On February 11th, Alstom, global leader in smart and sustainable mobility signed two contracts valued at €33 million with Divisione Ferroviaria TUA, a public company of the Abruzzo region operating in the field of regional passenger mobility services, for the supply of three new Coradia Stream Pop 2.0 trains and the construction of a new signalling system on the Lanciano-San Vito and Fossacesia/Torino di Sangro-Archi routes.

The signature of the contract was celebrated during a press conference in Lanciano attended by the President of the Abruzzo Region, Marco Marsilio, the President of TUA, Gianfranco Giuliante, and the General Manager of Alstom Italia and President and CEO of Alstom Ferroviaria, Michele Viale. Following the press conference, Gianfranco Giuliante and Michele Viale signed the contracts to finalise the purchase of the trains and for the work to modernise the technology of the railway infrastructure.

The new trains
These are new Coradia Stream POP 2.0 trains with 305 seats and a total capacity of 534 with standing passengers. This new regional train is more than 84 metres long, equipped with four traction motors, a bicycle rack, monitors for passenger information, internet on board, waste bins, a people counting system, large interior spaces to facilitate the mobility of disabled travellers, video surveillance cameras and air conditioning which is automatically regulated according to the number of passengers on board.
The Coradia Stream POP 2.0 trains can reach a maximum speed of 160 kilometres per hour. The trains will also be equipped with Alstom's ERTMS technology, which will guarantee increased availability, lower environmental impact and lower operating and maintenance costs. The first new Coradia Stream POP 2.0 train is scheduled for delivery in February 2023.

The new signalling system
Alstom will carry out the executive design and construction of an ETCS Level 2 signalling system with GSM-R[1] on the Lanciano-San Vito and Fossacesia/Torino di Sangro-Archi routes.. The system meets the technical specifications for interoperability required by the European Union and the CENELEC[2] standards for railway safety, guaranteeing the highest and most restrictive safety requirement. The signalling installations on the TUA lines enable them to be brought into line with the standards in use on the national infrastructure.

Important investments for the Abruzzo Region
« Thanks to the far-sightedness and attention of the Region, TUA's Railway Division further strengthens its role as an enterprise and makes new vehicles and technology available to the entire community. Significant investments that are even more important because they were made during a particularly difficult period. In other words, TUA is making investments that will be crucial for the mobility of this region in the near future» explained Gianfranco Giuliante, president of TUA.

"We are proud to have been chosen by TUA for these important projects to improve Abruzzo's regional transport system. The Pop train is the latest generation of the Coradia Stream regional train, an easily adaptable, sustainable, high-tech train designed to meet all passenger needs. Pop Coradia Stream trains are manufactured by Alstom in Italy. The design development, and most of the production and certification is carried out at Alstom's site in Savigliano (CN). The design and production of traction systems and other components is carried out in Sesto San Giovanni (MI), while on-board and trackside signalling systems are designed and manufactured at the Bologna plant." explained Michele Viale, General Manager of Alstom Italy and President and CEO of Alstom Ferroviaria.

Coradia Stream™ is a state-of-the-art, low-floor, high-performance electric multiple unit (EMU) with a maximum speed of up to 200 km/h that offers a modular design to allow operators to choose their best configuration and interior. Developed for the European market, Coradia Stream is capable of operating on all the main European power supply systems. In total, over 660 trains based on the Coradia Stream™ train family have been ordered by Italy, Luxembourg, the Netherlands, Germany, Denmark, and Spain, ensuring a well-proven product. The train family also offers emission-free traction solutions such as battery or hydrogen for non-electrified lines. A special high-capacity solution completes the portfolio.

[1] European Train Control System
[2] A radio system for providing voice and data communication between the track and the train
[3] European Committee for Electrotechnical Standardization

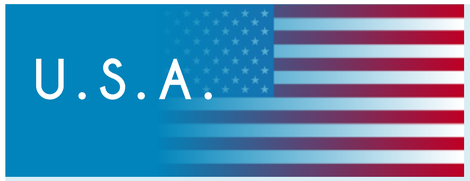
Vossloh wins one of the biggest infrastructure contracts in the company's history

Vossloh has received another major order from the state rail company ARTC (Australian Rail Track Corporation) for the Inland Rail project. The approximately 1,700 km railway line under construction between the Australian cities of Melbourne and Brisbane is the largest infrastructure project for rail freight transport in Australia. The Australian subsidiary Austrak will deliver around 1.3 million sleepers for this project.

The deliveries will take place between 2022 and 2027. The entire order is worth the equivalent of around €90 million and was officially announced in the presence of Deputy Prime Minister Barnaby Joyce at Vossloh's Rockhampton site.

"We are very pleased to have won one of the largest rail infrastructure contracts in Vossloh's history and the largest order in the Australian market to date. Only in January 2021 we were awarded the supply of switch systems for the same Inland Rail construction project with a value of more than €50 million over the next five years," says Oliver Schuster, CEO of Vossloh AG, adding: "With this contract, we can once again demonstrate our expertise of the track system for the benefit of our important customer."

Austrak Pty Ltd. is the leading manufacturer of concrete sleepers in Australia with around 120 employees and has been part of the Vossloh Group since the end of 2018. In several production facilities in various Australian states, the company produces railway sleepers as well as turnout sleepers and concrete elements for level crossings.



Siemens Mobility secures 12-year service contract for rail vehicles in San Diego, California

Siemens Mobility was awarded a 12-year Technical Support Spares Supply Agreement (TSSSA) contract by North County Transit District (NCTD) in San Diego, California for their fleet of Siemens Sprinter Diesel Multiple Unit (DMU) vehicles. With a value of $80 million, the contract includes base services for the 12-year term with a 3-year option to be performed on a task order basis if executed. These Sprinter DMU vehicles have been in revenue service since 2008.

"NCTD is excited about this agreement with Siemens which complements a similar agreement with Siemens for our Tier IV locomotive fleet. The two technical services and material agreements with Siemens supports NCTD's Zero Delay emphasis and will allow NCTD to advance the implementation of a world class rail operations as we insource commuter and hybrid rail operations and maintenance," said Matthew Tucker, NCTD's Chief Executive Officer.

"The US is one of our core markets and we are proud to partner with NCTD on their modernization efforts. Our comprehensive and state-of-the-art supply, support, and maintenance services will help them improve operations by increasing the reliability and availability of their rail systems, which will ultimately enhance the passenger experience and support passenger growth in the years ahead," said Johannes Emmelheinz, CEO of Customer Services at Siemens Mobility.

The North County Transit District is a public transportation agency providing over 10.3 million passenger trips annually throughout North San Diego County and into downtown San Diego, California. NCTD covers a geographic area of approximately 1,020 square miles with an approximate population of 849,000 people. Under the terms of the contract, Siemens Mobility will provide full-time on-site employees for technical expertise, materials management, project management and engineering support. Siemens Mobility will also provide CorMap services, a digital Maintenance Equipment Asset Management System, to all vehicles in the NCTD rolling stock fleet including bi-level coaches, charger locomotives and the sprinter DMU vehicles. CorMap supports the rolling stock fleet to optimize and reduce maintenance costs by improving data quality while increasing fleet reliability and availability.

More than 130 years of Siemens Mobility maintenance and service support experience worldwide has resulted in optimized processes that ensure improved and sustainable levels of performance. Siemens Mobility believes in a continued focus on innovation in technology, tools, and maintenance concepts to ensure high levels of reliability over the lifetime of its vehicles. As part of this agreement, NCTD's Siemens DMU fleet will have a wide network of available support including direct, immediate connections to support from local and national Siemens Mobility depots, as well as its corporate services headquarters and plant in Sacramento. NCTD will also have access to Siemens' exclusive global support network for purchasing, engineering and maintenance innovation.

NCTD is one of more than 35 transit agencies across North America benefiting from Siemens Mobility's portfolio of rail vehicles, locomotives, components, and automation systems. American cities also rely on Siemens Mobility to provide traction-power substations and electricity transmission, as well as signalling and control technology for freight and passenger rail and transit systems.

Luxembourg

Alpha Trains' diverse locomotive fleet continues to grow. Framework agreement signed for the purchase of additional Siemens Vectron locomotives

Alpha Trains' locomotive fleet continues to grow to more than 440 assets
Framework agreement signed with Siemens Mobility for Vectron locomotives
Incorporation of first Vectron AC and Dual Mode locomotives

In 2022, the Alpha Trains locomotive fleet will continue to show considerable growth. With more than 440 locomotives from a wide range of manufacturers, series and homologations covering a total of 22 European countries, the Luxembourg-based lessor offers its customers one of the largest and most diverse fleets in the leasing market.

The Siemens Vectron locomotives have been part of the Alpha Trains portfolio for over 5 years. The number of vehicles has increased to more than 50 and continues to grow: Recently, the Luxembourg-based lessor signed a framework agreement with Siemens for the purchase of further Vectron locomotives. The different country configurations of the locomotives will permit reaching customers in 18 different European countries from Central - Eastern Europe to the Northern part of Europe.

Under this framework agreement, Alpha Trains has already ordered Vectron AC as well as Vectron Dual Mode locomotives and thus has completed its portfolio of Vectron locomotives: In addition to the Vectron MS locomotives, which have a maximum power of 6.4 megawatts and a top speed of 200 km/h, Alpha Train is now equally able to offer its customers Vectron AC locomotives that can reach Scandinavia and the Vectron Dual Mode locomotive designed for freight operations in Germany using 15 kV AC lines. Under electric traction, the locomotive has a maximum power of 2 MW and under diesel traction, the locomotive has a power output of 2,400 kW.

"We are delighted to have entered into a framework agreement with Siemens Mobility and to continue incorporating additional Vectron locomotives in the near future. This will enable us to expand our footprint in Eastern and Northern Europe while targeting a new market segment in Germany with the environmentally friendly Vectron Dual Mode locomotives," said Fernando Pérez, Managing Director of the Locomotives Division of Alpha Trains.

Image:© Alpha Trains / Siemens | Christian Bauer

Belgium

Alstom to supply Belgium's SNCB with up to 50 electric Traxx passenger locomotives

First firm order of 24 locomotives worth around €120 million
Locomotives for domestic and cross-border journeys between Belgium, the Netherlands, Luxembourg and Germany
The most sustainable mobility solution in their category

Alstom has signed a framework agreement to deliver up to 50 third-generation electric Traxx locomotives to Belgium's Société Nationale des Chemins de Fer Belges (SNCB) for use on its passenger services. The first firm order, worth around €120 million, covers the design, manufacturing and homologation of 24 locomotives. Deliveries are expected to begin in 2026.

These new locomotives will be used for domestic and cross-border journeys on the electrified networks in Belgium, the Netherlands, Luxembourg and Germany, including on a number of high-speed lines. They are designed for use with the various electrification[1] systems across the countries and are equipped with an ETCS signalling system, as well as all the required conventional signalling systems[2].

"We would like to thank SNCB for placing its trust in our transport solutions. The Traxx locomotive is the most sustainable mobility solution in its category and can boast proven reliability and an optimised maintenance cycle," said Bernard Belvaux, Managing Director of Alstom Benelux.

The development of this new generation of locomotives builds on the proven success of the Traxx platform. More than 2,400 units have been sold throughout the world over the last 20 years. They have been approved in 20 countries and cover a total annual distance of more than 300 million kilometres. In the Benelux countries, nearly 280 Traxx locomotives are already in commercial service. The third generation Traxx locomotive delivers increased operational performance: it runs at 200 km/h, provides increased flexibility and meets the most recent requirements of the TSI security standards. It also comes with a higher energy efficiency and its maintenance intervals have been extended by 33% to improve availability and reduce maintenance burden. The new Traxx locomotive was designed at Alstom's site in Mannheim and is manufactured at the site of Kassel (Germany). The bogies are provided by the Siegen site (Germany) and the body structures are manufactured in Wroclaw (Poland). Alstom's site at Charleroi will provide the national signalling systems for the four countries and the level 2 ETCS system.

[1] 1.5 kV DC in the Netherlands 3 kV DC in Belgium, 15 kV AC in Germany and 25 kV AC in Belgium, the Netherlands and Luxembourg
[2] TBL1+ (Belgium), ATB (Netherlands) and LZB/PZB (Germany)

Sweden

Alstom will deliver 40 new trams to Gothenburg in Sweden

Västtrafik orders 40 new state-of-the-art Flexity trams
New extended version to increase transport capacity by 50 percent

Alstom has received an order, worth €100m, to deliver 40 new trams to Västtrafik for use in Gothenburg city. The new Flexity, locally known as the M34, is an extended version of the M33 tram that Alstom is currently delivering to Gothenburg and the 40 units are an option from the initial 2016 contract enabling Västtrafik to order additional trams. The first M34 tram is expected to be in service in Gothenburg by the end of 2023 and the last tram will be delivered in 2026.

"Alstom is very proud to deliver the new carriages to Gothenburg. The modern Flexity trams' iconic design will enhance the city's aesthetics while more comfortable interiors will improve the travel experience for the city's passengers. The trams will also help Gothenburg become more sustainable by providing an attractive transport alternative to the automobile. We would like to thank Västtrafik for their continued trust", says Rob Whyte, CEO of Alstom Nordics.

Alstom is manufacturing the M34 together with its partner Kiepe-Electric. Kiepe-Electric will provide all the trams' electrical parts while Alstom will supply the mechanical portion. One outcome of the close collaboration between the engineers at Kiepe-Electric and Alstom is the outstanding performance of the various braking systems – leading both operator and passengers to comment on the tram's exceptionally comfortable ride.

The new Flexity tram will accommodate 50 percent more passengers
The new Flexity M34 model can accommodate 319 passengers, which is 50 percent more than the previous M33 model. The additional trams will meets Gothenburg's great need for new trams as the M33 and M34 models will replace the aeging M28 and M29 models currently in use.

The state-of-the-art Flexity trams are designed to meet the city's track and weather conditions and their cutting-edge technology will ensure that passengers will have a safe and stable journey. The Flexity's low-floor entrance makes boarding easy and the 45-metre-long trams will feature plenty of space for both prams and passengers using wheelchairs. The design meets the highest safety standards as well as Gothenburg's requirements for environmentally friendly public transport

Innovative trams
The Flexity tram's award-winning design is matched by innovative technology and environmental excellence. Flexity trams were the first in the industry to combine 100 percent low-floor technology with conventional wheel-set bogies and can be equipped with the world's first homologated obstacle detection assistance system (ODAS) for increased active safety. The modular concept paired with proven and reliable building blocks makes Flexity trams a perfect fit for a variety of customer needs, from tropical to winter climates as well as for smaller or higher capacities. With a track record of over 30 years, more than 5,000 Flexity trams have been ordered or are already in successful revenue service in 70 cities around the globe.

Azerbaijan

Alstom successfully ships the last freight electric locomotive to Azerbaijan

On February 9th, Alstom celebrated the delivery of the 40th Prima T8 AZ8A heavy freight locomotive under the contract to Azerbaijan Railways (ADY).

“The final delivery is a milestone that we always celebrate. The shipment of locomotives for Azerbaijan is of particular importance for us, as this is our first export contract for Kazakhstan. Despite all the difficulties posed by the pandemic, we have been able to reach this milestone as a result of the commitment of our team. These locomotives play a key role in boosting the freight transportation capacity within Azerbaijan, and, moreover, they contribute to the ambitious goals of increasing the transit potential of the Trans-Caspian railway corridor. We are continuing to develop our close partnership with Azerbaijan Railways, including the organization of the locomotive fleet maintenance and the implementation of railway signaling projects.” said Kanat Alpysbayev, Managing Director of Alstom in Western and Central Asia.

In 2014, ADY signed a contract with Alstom for €288 million for 50 electric locomotives, which includes 40 Prima T8 AZ8A heavy freight locomotives produced at Alstom’s JV EKZ in Nur-Sultan, Kazakhstan and 10 Prima M4 AZ4A passenger locomotives produced in Belfort, France and delivered to Azerbaijan. Alstom’s Prima T8 is one of the most powerful electric locomotives in the world. This model is a 25 ton per axle two-section freight locomotive capable of towing up to 9,000 tons and running at 120 km/h, with installed continuous power of 8.8 Megawatts. The Prima T8 AZ8A is designed to operate in temperatures ranging from -25°C to 50°C. It requires minimum maintenance and provides high reliability levels and low lifecycle costs thanks to its modular design.

Alstom’s Prima range covers all market segments of locomotives from heavy-haul, freight and passenger operation and shunting or track work operation. Over the past 20 years, more than 3,200 Prima locomotives (more than 4,600 sections) have been sold worldwide.
Alstom is present in Western & Central Asia with more than 1,000 people, three country offices in Kazakhstan, Azerbaijan and Uzbekistan, five depots, repair center and two plants, EKZ in Nur-Sultan for electric locomotives

manufacturing and maintenance and production of on-board transformers, and KEP in Almaty to produce point machines. Alstom is a major contributor to the revitalization of the region’s mobility industry and the development of its economy.

EKZ, a joint venture of Alstom, employs around 850 people and is working on supplying and maintaining the Prima electric locomotives ordered by KTZ, Kazakhstan’s national railway company and export markets, like Azerbaijan.

Italy

Alstom to supply new signalling system and additional trains for line 1 of Turin Metro

Alstom, global leader in smart and sustainable mobility, has won a €156 million turnkey contract in Italy with Infra.To, owned by the city of Turin and one of Europe’s largest public companies, to supply its latest generation of fully driverless train-to-train CBTC[1] system for line 1 of Turin Metro along with four new Metropolis trains. The contract includes an option for twelve more Metropolis trains.

Alstom will oversee the development, delivery, installation, testing and commissioning of its CBTC solution to replace the current signalling system both on the existing line and aboard the trains of line 1 along the newly built extension, Fermi-Cascine Vica. The option also includes the introduction of the signalling system in the new depot under construction.

“We are very proud of this agreement signed with Infra.To, which further confirms Alstom’s expertise in urban mobility. We are pleased to help give new impetus to local mobility in Turin with our new environmentally friendly Metropolis trains. The metros will also be equipped with Alstom’s innovative CBTC solution, which allows for fully automated operation, thus allowing higher capacity on all lines,” explained Michele Viale.

Line 1 of the Turin Metro is currently 15.1 kilometres long. Upon completion of the section under construction, it will reach 18.5 kilometres. The Turin Metro represents a core element of the improvement program put in place by the City of Turin to upgrade public transport infrastructure. The system connects Fermi (in Collegno) to Piazza Bengasi with the route passing through the heart of the city via the stations of Porta Nuova and Porta Susa.

The new Metropolis trains will have a total capacity of 320 passengers, who will benefit from greater comfort, as well as improved accessibility and passenger flow thanks to the presence of walkthrough gangways between carriages. Passenger information will be enhanced by multimedia displays and screens. The metros will be equipped with dedicated areas for people with reduced mobility and an integrated video protection system will contribute to the safety of passengers on board.

CBTC is an automation system capable of carrying out remote operational functions, safely monitoring the train running by controlling the train traction and braking systems, to manage the circulation of the undergrounds automatically, with different levels of automation. The solution for Turin’s Line 1 is based on the latest generation, fully driverless train-to train CBTC (GOA4[2]). With over 30 years’ expertise in CBTC and over 160 metro lines equipped in over 25 countries, Alstom is known as a global leader in the mass transit market.

[1] Communications-Based Train Control
[2] Automation Grade 4

From the Archives

Argentina

Ferrosur Roca No. 8121, a rebuilt GE loco imported from the USA, stands in the yard next to Olivera station on November 11th 2004. *John Sloane*

From the Archives

Czech

CD Class 371.002 passes through Stadt Wehler with a Budapest to Berlin service on April 23rd 2007. *Mark Enderby*

From the Archives

France

After battling through the snow from Belgium, SNCF CC No. 40104 is escorted from Paris Nord to La Chapelle shed by No. 16011 on February 20th 1996.
John Sloane

From the Archives

France

SNCF No. 6539, formerly a Maurienne line third rail loco, stands in the snow covered yard at Vilenueve St. Georges depot in southern Paris on February 21st 1996. *John Sloane*

From the Archives

Germany

DB multi voltage Class 181.206 is seen at Koblenz Lutzel on July 4th 2013.
John Sloane

From the Archives

Germany

Former DB Class 140.438 heads a southbound freight near Lorch in the Rhine valley on July 5th 2013.
John Sloane

From the Archives

Germany

ERS Railways Class 66 No. 6609 passes Koln Sud on May 5th 2005.
Mark Enderby

From the Archives

Germany

NOB MaK No. DE2700-09 is seen at Morsum on April 29th 2006.
Mark Enderby

From the Archives

Hungary

MAV V43-1276 and V63-021 wait departure time at Budapest Nugati station on July 13th 2007.
John Sloane

From the Archives

Hungary

MAV No. V43-1176 passes Budafok, Budapest on October 12th 1988. *Mark Enderby*

From the Archives

India

Indian Railways YDM4 No. 6193 stands at Delhi Serai Rohilla shed awaiting its next duty on April 8th 1983. *John Sloane*

From the Archives

India

Udaipur City station on August 19th 1991. *Mark Enderby*

From the Archives

India

Indian Railways WAG-6A No. 23310 is seen at Shapur on August 6th 1991. *Mark Enderby*

From the Archives

India

Indian Southern Railway YP Pacifics Nos. 2376, 2569 and another rest at the splendid full circle roundhouse at Madurai on August 18th 1980. *John Sloane*

From the Archives

Indonesia

On Java, PJKA BB No. 201-04 waits to depart Maos with a westbound freight on February 5th 1980. *John Sloane*

From the Archives

Italy

FS loco No. E626-270 is seen at Sesto Calende station on June 22nd 1977. *Gerard van Vliet*

From the Archives

Italy

FS Class E645.019 calls at Livorno Centrale with a northbound express from Rome on August 25th 1989. *John Sloane*

From the Archives

Italy

FS Ale No. 880.036 is a 1930's single unit electric railcar with one end streamlined and the other blunt. It is seen standing at Bologna Centrale shed on August 27th 1989. *John Sloane*

From the Archives

Italy

FS Ale railcar is seen stabled at Mestre on June 23rd 1977.
Gerard van Vliet

From the Archives

Russia

L Class 2-10-0 No. L0029 is seen at Likea about to depart for Morosovskaya on March 18th 2002.
John Sloane

From the Archives

Serbia

Romanian built electric Class 461.038 and others stand at Belgrade Makis yard on May 26th 2007. *John Sloane*

From the Archives

Switzerland

SBB Class 10012 stands at Bellinzona depot on a very damp August 8th 1994. *John Sloane*

From the Archives

Turkey

A TCDD EMU passes Topkapi Palace in Istanbul on June 1st 1997.
Mark Enderby

From the Archives

Ukraine

Debalchevo is an important strategic railway and road junction which was hard fought for in 2015. In better times, on May 2nd 1993, an L Class 2-8-0 No. L5008 meets Er Class 0-10-0 No. Er769.62 outside the station.
John Sloane

From the Archives

Ukraine

Lughansk was the site of a large locomotive factory previously known as the October Revolution locomotive works, Voroshilovgrad which had built large numbers of Russian locos. On May 2nd 1993 a newly constructed Te 110U, a two section diesel loco, stands outside the main erecting shop. *John Sloane*

From the Archives

Ukraine

Skoda built ChS2 017 stands at Donetz main station after arrival with an overnight charter train from Kiev on March 16th 2002. It is thought that this station is no longer operational. *John Sloane*

From the Archives

U.S.A.

BNSF Nos. 7696, 4489, 5213 cross the Lake Washington Ship Canal in Seattle on October 14th 2007.
Mark Enderby

From the Archives

U.S.A.

MARC F9s Nos. 68 and 82 are seen at Camden Yards, Baltimore with a Ball Game special on April 9th 1994. *Mark Enderby*