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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 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 173Xtra

To be honest I didn't think that we would be able to have any news and pictures this month. With strict lockdown measures all over Europe and many countries closing borders, it certainly has been a challenging time for railway photographers at the moment. However although we haven't got the variety of countries, I think you will agree that we have got an excellent selection, many thanks to those who have contributed.

We start this month with the news that Russian Railways plans phase out purchases of diesel-only locos. According to Russian Railways' Deputy General Director and Chief Engineer, after 2025 the operator plans to purchase electric, natural gas and alternative energy locomotives only. Sergey Kobzev, Deputy General Director and Chief Engineer of Russian Railways, has announced that after 2025, Russian Railways plan to purchase electric locomotives as well as locomotives operating on natural gas and other alternative energy sources only. In a press release issued by the railway company, he said: "In the future, we are going to operate locomotives using rechargeable batteries, multiunit rolling stock with hydrogen fuel cells, and locomotives with gas-piston and gas-diesel engines. This will help reduce the burden on the environment." He went on to note that, by the end of 2025, 55 rail buses, 1,156 electric train cars, and over 2,800 passenger cars will be replaced, and it is estimated that the company will need to purchase 2,522 locomotives for this period. Sergey continued: "Russian Railways, with the participation of various machine-building holdings, has developed technical requirements for different types of locomotives. The starting point for setting the main parameters of the locomotive was an operational model which describes in detail existing and prospective freight flows, bottlenecks, and options for future freight traffic."

In other news, shocking but not surprising the CER reveals railways lost €26 billion in 2020 due to COVID-19. Keeping European mobility operational during the COVID-19 pandemic has of course been vital. Despite heavy losses and huge impacts in revenue, railways have continued to do their utmost to keep essential freight and passenger

services running, while protecting their customers and staff. The Community of European Railway and Infrastructure Companies (CER) has been monitoring the situation in close collaboration with all its members and the data collected for 2020 reveals the shocking financial impact that COVID-19 has had on railways. The results of the CER survey were presented at the CER General Assembly which took place virtually on January 26th. While the figures are daunting enough, the CER explain they only show part of the picture. Whereas freight seems to have managed to somewhat mitigate losses in the second half of 2020, the situation of passenger services started to deteriorate again in the autumn (after a short upswing during the summer) to reach record-high revenue losses of -50 per cent in December 2020. Alberto Mazzola, CER Executive Director, said: "The COVID-19 crisis is impacting heavily on railways. However the rail sector is showing resilience and capacity to help fight the pandemic and assist society on the road to recovery. Getting Europe's economy back on track while continuing to bring down global emissions is a pressing dual challenge. The European Year of Rail is a timely recognition of the role railways can and should play on these fronts."

Some good news though as Lineas – the largest private rail freight company in Europe – has secured €60 million in additional financing to pursue its international growth strategy. As the market leader in Belgium, the company has steadily grown its market shares in neighbouring countries over the past years. The financing will strengthen the company's financial buffers and enable the further rollout of Lineas' European growth strategy over the coming years. Lineas' revenues in 2020 were almost 10 per cent lower than in 2019, caused by the drop in transport volumes during the COVID-19 pandemic, with a peak of 40 per cent less volumes at the height of the crisis. Its partners are confirming their belief in the business strategy of Lineas and its purpose Modal Shift to positively influence climate and mobility.

Until next month

David

This Page

NS VIRM No. 9576 on its way to Schiphol Airport is seen near Soest on January 23rd. *Mathijs Kok*

Front Cover

On December 30th, Freightliner's No. 513-02 has arrived with 34 wagons loaded with corn and RFO No. 692 has taken them for unloading at OOC in Oss. After unloading this loco will take the hoppers back to Poland.

Erik de Zeeuw





On January 8th, RFO Class 189.213-2 hauling containers shuttle No. 43364 covers the last kilometres of its journey from Germersheim (Germany) to the container port of Rotterdam. *Erik de Zeeuw*

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Railtalk Magazine is published by HAD-PRINT a trading name of HAD-IT LIMITED.

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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, Paul Godding, Richard Hargreaves, Jim Haywood, Keith Hookham, Colin Irwin, John Johnson, Anton Kendall, Mathijs Kok, Jyrki Lastunen, Ken Livermore, Michael Lynam, Peter Marsden, Phil Martin, Denzil Morgan,

Thomas Niederl, Peter Norrell, Chris Perkins, Mark Pichowicz, David Pollock, Andy Pratt, 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.

On January 18th, Southern Shorthaul Railroad's Nos. 44204 and 44206 hauling train No. NK81, the track inspection vehicles known as the AK Cars, from Sydney to Brisbane on their quarterly track recording trip, are seen at Pembroke on the NSW North Coast line. *Mark Bennett*













ÖBB Rail Cargo Group running on 100 % green traction current in Germany

As of January 1st, the ÖBB Rail Cargo Group is now running exclusively on traction current from renewable energy sources on all TransFER services where traction is provided in Germany by Rail Cargo Carrier - Germany.

What was rolled out in Austria in 2018, now also applies to Germany: all of the ÖBB Rail Cargo Group's TransFER products in Germany are running exclusively on green electricity. This applies to all network TransFER services like the TransFER Linz–Duisburg–Wels and the TransFER Vienna–Scandinavia, as well as all other products in Germany where traction is provided by Rail Cargo Carrier - Germany.

The ÖBB Rail Cargo Group is continuing to invest in clean energy sources for its traction current. In Austria, all of its freight trains have been running on electricity from renewable energy sources since summer 2018. After Germany, more countries are to follow suit in the coming years.

Green electricity in Austria and Germany

The green electricity being used for rail operations in Germany is CO2 neutral. It is obtained from partner power stations and is drawn from the public power grid. Its hydrogen source has been certified by TÜV Nord.

In Austria, the ÖBB Infrastruktur already runs eight of its own hydropower stations and one solar power station. Together, they generate more than one third of the required traction current. This electricity will be distributed via railway power cables and converted into the relevant overhead line voltage in substations. The overhead lines in Austria then bring the green traction current to the trains that run on the ÖBB's rail network.



Stadler to supply rescue trains to ÖBB

Austrian Federal Railways (ÖBB) will order up to 20 new fire-fighting and rescue trains from Stadler following the signature of a framework agreement between the two companies. ÖBB has already placed a call-off order for the first five trains.

At the end of December 2020, Stadler and ÖBB Infrastruktur AG signed a framework agreement for the development, manufacture, delivery, approval under railway law and commissioning of up to 20 new fire-fighting and rescue trains. The contract is valued at approx. 240 million euros in total. ÖBB Infrastruktur AG has already placed an initial call-off order for 5 trains worth around 60 million euros.

The new trains are designed as three-car vehicles and are approximately 66.5 metres long. They each consist of a railcar, a motorised low-floor control car and a water car that can carry up to 45,000 litres of water. The water car will be accessible and provide up to 56 seats. A total of 300 seats and standing places will be available per train, for example for persons in need of rescue. The trains will travel at speeds of up to 160 kilometres per hour and will be suitable for trimodal operation, i.e. electrically, diesel-electrically and by battery. The first vehicles are scheduled to enter into service by mid-2024 at the latest.

The vehicles are intended for interventions in the three new base tunnels of Koralm, Semmering and Brenner, and will replace ÖBB's first generation of fire-fighting and rescue trains. They will be able to run on ÖBB's entire route network.

Dr. Ansgar Brockmeyer, Sales Manager at Stadler, says: "We are very pleased about this order and the cooperation with ÖBB. Our many years of experience with tailor-made vehicles involving a wide variety of drive concepts will help us to produce these technically demanding trains. This experience is a unique advantage for Stadler."

RCH invests 1.5 billion HUF in quiet rail technology

Rail Cargo Hungaria is investing 1.5 billion Hungarian forints to retrofit its freight wagons with whisper brakes. This noise-reducing measure will significantly reduce noise emissions in Hungary.

By December 2020, a total of 1,300 vehicles in the existing RCH fleet were equipped with quiet brake pads and a further 700 freight wagons with the new technology ordered. This will enable the Hungarian rail freight company to continue to handle all transport shipments in and through Germany – which introduced a nationwide ban on loud brakes in December 2020.

The project to retrofit around 11,000 RCA and RCH wagons is being supported with funds from the Connecting Europe Facility, the European fund for the promotion of sustainable development in the transport sector, amounting to almost EUR 3.3 million.

In order to convert the entire Rail Cargo Hungaria fleet, the company will invest a further EUR 4.3 million from its own funds in the coming years, which will enable all

6,300 wagons to be completely retrofitted by the end of 2023.

Quiet brakes in rail freight transport

This newly introduced quiet braking technology prevents wheel treads from getting roughened up, thus reducing sound pressure levels by up to 10dBA. This equates to halving the noise to the human ear. Thanks to this development, noise emissions in the fleet's sphere of operation, Hungary in particular, will be reduced significantly and noise pollution levels will be improved for tens of thousands of people living near the Hungarian railway network. Rail Cargo Hungaria, which is responsible for more than half of Hungary's rail freight transport, is setting further standards in the field of sustainable European freight logistics.

Feasibility Study for a New Line from Prague to Dresden is Approved

The Central Commission of the Ministry of Transport has approved the Feasibility Study of a new railway connection between Prague and Dresden. Based on this concept document, the preparation of this branch of the future rapid service network will take place now.

The study proved the feasibility of the line, the first section of which leading from Prague to Litoměřice will be used purely for passenger transport with a maximum speed of up to 320 km/h. The section across the České středohoří (Central Bohemian Uplands) and further to Germany will also be used by freight trains, thanks to which traffic in the narrow Labe (Elbe) Valley will be relieved. In the tunnel under the Central Bohemian Uplands, therefore, passenger trains will run at speeds of up to 250 km/h and in the Krušnohorský

(Ore Mountains) tunnel 200 km/h. In addition to trains with passengers, it also counts the operation of up to 150 freight trains per day.

The new railway line Prague – Dresden is part of the TEN-T network and will connect the Czech Republic to Western European high-speed rail. Its construction will significantly reduce travel times not only in international transport. International express trains will be from Prague in the centre of Ústí nad Labem in 25 minutes and from Ústí nad Labem in Dresden in another 26 minutes. Thanks to the high-speed line, the national express trains will stop on their way from Prague at the new terminal on the outskirts of Roudnice nad Labem in just 19 minutes and will arrive in Lovosice or Litoměřice in 32 minutes.

Precisely the terminals on the outskirts of Roudnice nad Labem and in the centre of Ústí nad Labem will be significant constructions on the new line; architectural and urban design competitions will be announced for their design and appearance of their surroundings. Other important elements will be the Středohorský (Central Bohemian Uplands) tunnel with a length of about 18 kilometres and the Krušnohorský (Ore Mountains) Tunnel with a length of at least 26 kilometres (of which 11.7 kilometres in the Czech territory). Its preparation is being proceeded in cooperation with the German railway infrastructure manager – DB Netz AG. As part of this cooperation, a project management contractor has already been chosen, and suppliers' offers for processing documentation for zoning decision are currently being evaluated.

ŠKODA VAGONKA IS OPENING THE LARGEST MACHINING CENTER IN EUROPE

The largest machining center in Europe worth about 100 million crowns has begun to operate in Ostrava-based company Škoda Vagonka, which has just celebrated 120 years since its foundation. This subsidiary of the Škoda Transportation group has put a unique machine into operation, thanks to which it can machine giant oversized aluminum parts. This machine weighing a total of 360 tons with a length of fifty meters and a width of ten meters will be used in Ostrava for the production of railway vehicles for customers in the country and abroad. The company will thus significantly increase its production capacity and streamline the production of new trains.

“The development and innovation of our production are key for us at this time. The new machining center is unrivaled in size and will allow us to work much more efficiently, both in terms of time and cost. In recent years, we have been really successful under our new owner, PPF Group, which is why we are investing in companies not only in our Škoda in Ostrava, but also in Plzeň and Šumperk. In Ostrava, we will not only double the production area, but also the number of employees, which will increase from 450 to 900,” says Petr Brzezina, Chairman of the Board of Directors and President of the Škoda Transportation group.

The machining center, which was supplied to Škoda by Strojírna Tyc, is the most modern and largest facility of its kind in Europe. Its dimensions are astounding - the length of the machine itself reaches almost fifty meters, and the maximum dimension of a workpiece that the machine can hold will be 39 × 4.5 meters, while the machining accuracy will be in the hundredths of millimeters. The machining center consists of two independent portals with a continuously controlled 5-axis head at up to 12,000 rpm.

“The new machining center will double the company’s capacity to machine oversized parts. Thanks to this, we will be able to newly machine aluminum weldments and subassemblies of wide-gauge cabinets for vehicle projects

intended for Latvian Railways, for example,” adds CEO and Chairman of the Board of Škoda Vagonka, Martin Bednarz.

The new machining center in the production hall of Ostrava-based Vagonka occupies an area as large as half of an Olympic swimming pool. During the construction, it was necessary to dig out a thousand cubic meters of soil, which represents about 150 trucks of material. The builders used 700 cubic meters of concrete and 40 tons of fittings and reinforcement to build the foundation. The biggest challenge, however, was planting 138 hammered concrete piles at a depth of nine to eleven meters. The resistance of the foundations for settling the machine was verified by stress deformation tests.

The installation of this unique machine is part of an extensive investment project titled “Nová Vagonka”. “The total investment is almost on billion crowns. We are thus preparing for a significant increase in the volume of production that we will implement thanks to new contracts for the supply of electrical units,” says Martin Bednarz. Thanks to the expansion of the complex and extensive investments in Škoda Vagonka, the number of assembled cars per month will increase significantly and the production of rough aluminum constructions will increase fivefold.

In the near future, the company will work mainly on single-deck electrical units for customers in the Czech Republic, Slovakia or Latvia and push-pull trains for the Moravian-Silesian Region. In addition, technological know-how in the area of control, multimedia and diagnostic systems of the Škoda Digital subsidiary will be concentrated in Ostrava.

The Škoda Transportation group also invests hundreds of millions of crowns in its companies in Plzeň and Šumperk. Here, too, it is searching for hundreds of new employees.

Technical data: Machining center with mobile portal

- This machine has a “lower gantry” portal structure. It is equipped with two crossbars with a continuously controlled head with an electric spindle.
- Both stands contain mirror-mounted mobile, air-conditioned cabins with a control panel, which ensures an ideal view of the cutting point for the operator. When the stands moves into “parking” position, it is possible to safely handle even large workpieces, because the crane operator has a direct view of the machine’s working space.
- The machine is equipped with a fixed table for clamping the workpiece. The table consists of cast iron base plates, which are standard recommended accessories of the machine.
- The size of the table was chosen so that in the case of failure of one of the crossbars, it is possible to park it in service position and to machine (even with the head tilted by 90 °) the entire maximum specified workpiece size at the same time without restriction with the functional crossbar.
- As standard, the machine is controlled by the Heidenhain TNC 640 control system in three basic axes - X (longitudinal movement of the crossbar), Y (transverse movement of the ram with the headstock) and Z (vertical movement of the headstock).
- The machining center is equipped with two independent crossbars with a ram (headstock). These contain a 2-axis continuously controlled head with an electric spindle.

Locomotives for foreign activities of ČD Cargo

In the afternoon of January 4th, five Class 193 series locomotives arrived at SOKV Ústí nad Labem, which have been leased by the joint-stock company ČD Cargo on the basis of a tender announced at the end of last year. The locomotives are leased from Alpha Trains for one year and are in the A10 version, which is approved for operation in the Czech Republic, in all surrounding countries, as well as in Hungary and the Netherlands.

The locomotives will be deployed mainly abroad to cover the ever-expanding activities of branches in Germany and Austria. However, deployment to performances in other countries is not excluded either. Leased locomotives should be put into operation after the takeover in the first weeks of January. These will be complemented by two more Vectrons from another owner.

Chairman of the Board of Directors of ČD Cargo Ing. Tomáš Tóth adds: „In the tender, we requested Siemens Vectron locomotives with regard to the unity with the existing locomotive fleet and the related number of trained drivers. By renting these locomotives, we thus partially compensate for the delay in deliveries of the 388 series locomotives from Bombardier due to the extension of their approval process, not on the part of ČD Cargo.”

Photo: ©CD Cargo



Another leased locomotive for ČD Cargo takes to the track

Another Vectron, which ČD Cargo hired on the basis of a tender from the end of last year, has set off on the track. Class 193.724 machine is from the ELL German pool and is provided with a sticker reminiscent of the ČD Group Endowment Fund - RAILWAY SRDCEM established last year .

“Our partners, railway fans or friends of railway workers can also support the activities of the endowment fund. That is why it is important that it is known and seen, because it helps those who shape rail transport in our country every day.

That is why ČD Cargo has provided the Siemens Vectron locomotive with a special sticker, which will commemorate the mission that unites us within the ČD Group Endowment Fund - RAILWAY SRDCEM on the journeys through the Czech Republic , “said Ing. Tomáš Tóth, Chairman of the Board of ČD Cargo.

Photo: ©CD Cargo



At the height of Salzbergen, DB Class 146.575-6 is pushing Bombardier/Twindexx composition No. 2876 and is underway as train No. IC2206 from Koblenz Hbf via Münster (Westf) Hbf to Norddeich Mole on January 15th. *Erik de Zeeuw*



Siemens Mobility awarded service contract for ICE 4 trains

Largest service order for Siemens Mobility from Deutsche Bahn

IS 600 revision for 40 ICE 4 trains

Deutsche Bahn (DB) has awarded Siemens Mobility a contract for the revision of 40 trains of the series 412 ICE 4. This is the largest service order ever awarded to Siemens Mobility by Deutsche Bahn. The contract also includes an option for the revision of 50 additional series 412 trains. IS 600 revisions are required for new high-speed trains operated by Deutsche Bahn when they have reached a mileage of 1.65 million kilometers. The work will be carried out beginning in mid-2021 in the “Expert House” service area of the Siemens Mobility Test and Validation Center in Wegberg-Wildenrath, in the state of North Rhine-Westphalia, Germany.

“The ICE 4 is the backbone of DB’s mainline rail operations. As DB’s service partner, we will make a decisive contribution towards guaranteeing the availability and operation of the ICE 4 fleet and ensuring its sustainable performance over the entire lifecycle,” said Johannes Emmelheinz, CEO Customer Service at Siemens Mobility.

As part of the IS 600 revision, Siemens Mobility will inspect the central systems and components of the ICE 4 trains and carry out maintenance activities as planned. The maintenance work will cover, among other things, the doors, windscreen washer systems, couplings, running

and traction bogies, as well as pantographs, train control systems, and brakes. Maintenance work in the train interior will include fire alarm systems, passenger information systems, bistro equipment, and the sanitary facilities. In addition, the wheelsets will be exchanged on all trains.

Deutsche Bahn has ordered a total of 137 ICE 4 trains from Siemens Mobility since May 2011. A new ICE 4 train is currently joining DB’s mainline fleet every three weeks. By last December, Siemens Mobility had delivered 65 of the ordered ICE 4 trains to Deutsche Bahn. The first trains in this series have been in passenger service since 2016.



Quietly and sustainably on track

Metrans, the rail subsidiary of Hamburger Hafen und Logistik AG (HHLA), has fitted its entire 3,000-container wagon fleet with what are known as “whispering” (composite) brakes. This means that Metrans has already implemented the ban on noisy freight trains in Germany, which was passed by the German Federal Parliament, on the entire European rail network.

Driving and braking noise created by the wagons will be cut in half, because the composite material of the brake pads is harder than the actual wheel. The braking process is not the only part that will be quieter – the wheels will also be smoothed down by the pads, which will lead to less friction and therefore less noise.

Mettrans wagons are mostly lightweight flat wagons and especially energy efficient as a result. They make the already eco-friendly rail transport even

more sustainable because they are around 4,000 kilograms lighter than conventional container wagons. Their rolling resistance is lower and they require less energy for transport. Additionally, their special construction allows containers to be placed closer together on the 700 metre-long block trains, meaning more containers can be transported on the same train length. These wagons were developed by Metrans and the Slovakian manufacturer Tatravagonka.

For Peter Kiss, CEO of the Metrans Group, innovations are the right way to more sustainability: “Our rail transports are more eco-friendly than road traffic. However, we cannot just rest on our laurels. We need to keep expanding this advantage. This is why at Metrans we think about every little detail.”

Mettrans was, for example, the first company in the world to test the

environmentally friendly hybrid technology on shunting. Units using this technology emit up to 50 percent less CO₂ than conventional shunting locomotives. It even cuts emissions of other harmful substances such as nitrogen dioxide by up to 70 percent. Three of these hybrid shunters have become part of the regular fleet. Depending on the assignment, a shunting locomotive can run on battery power for between 50 and 70 percent of the time it is in operation, reducing fuel consumption by up to 50 percent.

State-of-the-art electric locomotives are also used on the numerous rail connections between the seaports and Metrans terminals, featuring modern energy-efficient technology, high performance and pulling power, and flexible cross-border use. They have noise-reducing disc brakes and use their electric motors to support the braking process. Thus, up to 18 percent of the energy is recovered during braking and fed back into the power grid.



Alstom equips 13 freight locomotives of DB Cargo with the latest ETCS signalling standard

Trains to run smoothly, safely and reliably between Germany, Denmark and Sweden

Alstom will equip a total of 13 freight locomotives for DB Cargo with the latest ETCS signalling technology standard (ETCS Baseline 3 Release 2) for trans-European freight traffic between Germany, Denmark and Sweden.

“We are pleased to be making a significant contribution to the digitalisation of trans-European freight transport by retrofitting the locomotives,” says Frederic Rybicki, Managing Director Alstom Digital Mobility Germany & Austria. “Rail freight transport plays a crucial role in the mobility turnaround - this is where our digital solutions come into perfect play.”

“By equipping our powerful EG3100 series locomotives with ETCS equipment, we will also be able to offer climate-friendly, cross-border transport services for our customers in the future,” says Ralf Günter Kloß, Member of the Management Board for Production at DB Cargo.

The electric freight locomotives of the EG3100 series will be equipped with Alstom’s Atlas ETCS Baseline 3 Release 2 solution. This complies with the latest European standards for rail interoperability and enables trains to run smoothly, safely and reliably even on routes across national borders. As part of the order, the existing German and Danish systems will be upgraded to communicate with the ETCS signalling system. In addition, the Swedish system will be integrated as software into the new ETCS hardware.

First certification runs with a retrofitted prototype are scheduled for the end of 2022. This will be followed by the gradual retrofitting and approval of the remaining freight locomotives.

ETCS is the most efficient train control system in the world, delivering significant benefits in terms of maintenance cost savings, safety, reliability, punctuality and traffic capacity. Alstom is the first company in the world to be fully certified for the latest on-board and trackside ETCS standards. The latest software development ensures interoperability with Baseline 3 Release 2 for the entire rail system.



More than ever before: Deutsche Bahn is hiring 5,000 young people

**Record hiring for trainees and dual students planned for 2021
Necessary investments in personnel for sustainable mobility and a
successful turnaround in traffic**

Deutsche Bahn remains on record course when it comes to training and qualification and is hiring more junior staff than ever this year despite the Corona crisis. DB plans to get around 5,000 trainees and dual students on board in 2021. For comparison: Last year, a good 4,700 young talents started their careers at DB.

“We need the active support of our junior employees for our major tasks,” says DB Human Resources Director Martin Seiler, “which is why DB is now offering a higher number of apprenticeships for the sixth year in a row; since 2016, more than 19,000 junior employees have started at DB.”

In addition, last year Deutsche Bahn concluded the “Alliance for our Railways” with the EVG trade union, the federal government and the group works council - so that it can now invest in personnel, training and qualification. There is currently no such agreement with the GDL union. But here, too, the conclusion of an appropriate corona tariff package is necessary, confirms Martin Seiler.

As a guarantor of sustainable mobility and logistics, Deutsche Bahn has set itself the goal of bringing far more traffic to the rails. DB wants to make a significant contribution to the turnaround in traffic and climate protection. That is why, as part of the “Strong Rails” strategy, it is investing on a large scale in infrastructure, in new vehicles - and also in personnel. Deutsche Bahn is in the process of implementing the largest growth program in its history. In total, DB wants to give at least 18,000 employment commitments this year.



DB offers its youngsters innovative qualification methods, digital learning and the latest on-site training centers and simulators. Apprenticeships and their content are constantly being developed. All trainees receive tablets at the beginning of their training. This is one of the reasons why it was possible last year to successfully transfer training to the virtual world within a very short time.

On January 15th, DB Class 101.079-2 has left train No. IC240 from Berlin to Amsterdam at Bad Bentheim border station and heads into the yard. The overhead line here changes voltage from 15kV to 1.5kV. NS No.1761 will take the train forward to Amsterdam. *Erik de Zeeuw*



Deutsche Bahn breathes new life into old wind farms

Deutsche Bahn (DB) is breaking new ground for even more green electricity in the traction current mix: In the short term, Deutsche Bahn ensures the continued operation of two wind farms in Lower Saxony that are over 20 years old. Both green electricity plants should be shut down in the medium term after the originally planned expiry of state subsidies through the Renewable Energy Sources Act. Instead, DB will now gain experience with green electricity supplies from older types of systems. Continuing operation will save around 50,000 tonnes of CO₂ per year compared to supplying electricity from coal power.

DB Energie Managing Director Torsten Schein: “DB is the driver of the energy transition on the rails. We are also breaking new ground with our ambitious goal of being completely on the move with 100 percent green electricity by 2038. We cover our energy needs in an ecologically sustainable, economically sensible and balanced manner in terms of the risk structure. “

The one-year green electricity contract with a wind farm near Bremerhaven has been running since the beginning of the month. As a marketer, Statkraft will supply around 40 gigawatt hours of green electricity this year. That corresponds to a little more than the daily requirement of all electric trains in Germany. The Nordleda wind farm near Cuxhaven will deliver around 50 gigawatt hours of green electricity and a good one and a half days of electrical rail operation in 2022 and 2023. The partner is Getec Energie.

So far there is hardly any empirical data on the reliability of wind turbines after 20 years of operation. The contract terms are therefore short.

With the two wind farms, DB Energie is now also including onshore wind turbines in DB's growing green electricity portfolio. This consists largely of hydropower. Solar power parks and wind power plants on the high seas are playing an increasingly important role. DB Energie is fundamentally restructuring its portfolio of power plants and contracts. Renewables are gradually and consistently replacing contracts for fossil fuels that are running out.

Most recently, in November 2020, DB signed three large, long-term green electricity supply contracts for solar, wind and hydropower. Compared to coal-fired electricity, these green electricity contracts alone save up to 600,000 tons of CO₂ per year.



DB Regio Bayern and Siemens Mobility sign contract for 31 regional trains

DB Regio Bayern has ordered 31 regional trains from Siemens Mobility. The trains will serve on routes between Munich, Passau and Regensburg. Siemens Mobility will be delivering 25 double-decker Desiro HC trainsets and six single-decker Mireo trainsets. Passenger service with the new trains is planned to begin with the timetable change in December 2024.

“We’re especially pleased that we were able to win the Europe-wide call for tenders from the Bayerischen Eisenbahngesellschaft. The modern trains provided by our partner Siemens Mobility are an important contribution for ensuring high-quality operations that attract additional passengers to rail transport,” said Hansrüdiger Fritz, Chairman of the Regional Management, DB Regio Bayern.

“Our Desiro HC and Mireo regional trains stand for enhanced passenger experience and convenience, maximum availability, and sustainability. Both train platforms are very popular with passengers and have already significantly improved passenger satisfaction on many routes. We are pleased that we’ve received the order to build 25 Desiro HC trains and six Mireo trains for the Danube-Isar network,” said Albrecht Neumann, CEO Rolling Stock, Siemens Mobility.

The Desiro HC trains are intended for use on the line RE 3 Munich Hbf - Landshut Hbf - Plattling - Passau Hbf and until the opening of the 2nd S-Bahn main line in Munich on the RB 33 (Munich Hbf) - Freising - Moosburg - Landshut Hbf. The Mireo trains will be used on the airport express RE 22 Munich Airport Terminal - Landshut Hbf - Regensburg Hbf. After commissioning of the 2nd line, the vehicles of the RB 33 will be used for increased frequency in rush-hour traffic between Munich and Regensburg or Plattling.

Bavarian Railway Company (BEG) calls for new vehicles and sets quality standards

For the Danube-Isar network, the BEG, which plans, finances and controls regional and suburban rail transport on behalf of the Free State of Bavaria, has specified barrier-free and air-conditioned new vehicles with a high capacity and made further minimum specifications, e.g. for WLAN and passenger information. At the same time, the BEG supports the financing of the new vehicle fleet by granting a debt service guarantee.

DB Regio has opted for four-car Desiro HCs from Siemens. They offer 350 seats in 2nd class and 20 seats in 1st class. For greater flexibility and extra space, up to three Desiro HCs can be coupled and operated as a single unit. The four-car Mireo provides 250 seats in 2nd class and 14 seats in 1st class. On platforms with a standard height of 76 cm, wheelchair users can get on and off without assistance. A multi-purpose area is located at each car entrance and the trains are barrier-free for passengers with reduced mobility. In addition, a power lift is on board to assist wheelchair users in entering and exiting at stations with low platforms. A real-time passenger information system provides current arrival and departure times as well

as connection options at each stop. The trains are fitted with special high-frequency windowpanes developed by Siemens Mobility that significantly improve cellphone reception. Passengers can also look forward to free WLAN service on the trains, courtesy of the Free State of Bavaria.

Further order from DB Regio Bayern for Siemens Mobility

Siemens Mobility previously received an order from DB Regio Bayern in mid-2020 to deliver 18 four-car and eight six-car electric double-decker Desiro HC trainsets. These trains are planned for service in the Franconian-South Thuringia network. Here, too, the BEG, together with the state of Thuringia, specified barrier-free and air-conditioned new vehicles with high capacities. Albrecht Neuman, CEO Rolling Stock, Siemens Mobility: “We are building the Desiro HC – an ultra-modern double-decker train that won the German Mobility Award in 2020 – for the Franconian-South Thuringia network. The trains offer improved passenger experience with up to 634 seats, air conditioning, power sockets at the seats and free WLAN. The six-car trains have 634 seats, the four-car trains also run coupled on high-demand sections of the route and thus offer up to 780 seats. The trains also feature an intelligent and predictive train diagnostics system and an advanced

passenger information system. Generous lines of sight and large windows ensure a pleasant atmosphere.”

The start of passenger service is planned from December 2023. The trains are intended for use on the lines RE 19 Nuremberg - Bamberg - Coburg - Erfurt/Sonneberg, RE 20 Nuremberg - Bamberg - Würzburg, RE 42 Nuremberg - Bamberg - Lichtenfels - Saalfeld, RE 49 and Nuremberg - Bamberg - Lichtenfels - Coburg and RB 25 Bamberg - Kronach.

The RE 19 Nuremberg - Erfurt/Sonneberg line will run on the VDE 8 high-speed line, for which these six-car trains are equipped with the latest ETCS train control technology. In addition, the trains are pressure-tight for fast journeys in tunnels. With a top speed of 190 km/h, they are among the fastest regional trains operating in Germany.





DB train punctuality at its best for 15 years

**Annual punctuality of all DB long-distance trains in 2020 at 81.8 percent
Increase of around 6 percentage points compared to the previous year**

The long-distance trains of the Deutsche Bahn (DB) are more punctual than they have been in 15 years. In 2020, 81.8 percent of all ICE and IC / EC trains were on time. That is an increase of 5.9 percentage points compared to the previous year (2019: 75.9 percent). The clear upward trend that was already apparent at the end of 2019 stabilized in the course of 2020. In regional transport too, DB has further increased the punctuality of its trains compared to 2019. With 95.6 percent, DB Regio achieved the best punctuality in the history of DB AG in 2020.

About half of the punctuality increases are due to Corona. Fewer passengers reduced the stopping times at the stations. At times, slightly fewer trains were in use, including for freight traffic. As a result, the route network was less stressed, especially the rail nodes.

With the “Strong Rail” strategy program, DB has been working intensively on improving punctuality since 2019. Significant progress has been made on the Internet, for example. In 2020 there were at times a record number of over 1,000 construction sites per day. Thanks to even better construction planning, the number of construction site-related delays has fallen by five percent. Thanks to the intensified vegetation management, weather-related damage has also continued to decline.

The increasingly higher train availability also has a significantly positive influence on punctuality. The reason: the long-distance fleet is growing and its average age is falling. The number of vehicle damage is also falling. In the Corona year, DB Fernverkehr paid even more attention to the maintenance of the trains and carried out additional maintenance on the technical systems during the first lockdown. By 2026, DB will invest around 8.5 billion euros in modernizing the long-distance fleet alone.

Every three weeks the DB receives a new ICE 4. Over 50 ICE 4 are already in use. In addition, DB Fernverkehr put nine new double-decker IC trains from Stadler into operation last year.



At the same time, DB is further expanding its long-distance transport company. Plants are modernized, error diagnosis and cleaning processes are digitized and staff increased. In regional traffic, mobile maintenance teams and improved processes for train provision also have a positive effect on punctuality.

On January 15th, the transport of two carriages from the railway museum in Utrecht to Apeldoorn took place and is seen here at the Stockholm Road in Barneveld. Upon arrival in Apeldoorn, No. WR 055.117 from the Veluwsche Steam Train Company was deposited and Pullman carriage No. 4129 continued to the Stichting Zuid-Limburgse Stoomtrein Maatschappij in Limburg. The two carriages had been at the museum for a exposition. *Andre Pronk*



▶ The Dutch 'Buffalo's' DM90s have been sold to SKPL in Poland. In this picture, Rail Force One No. 6702 (a former SNCB HLD 62) is seen hauling four DM90s (Nos. 3425, 3415, 3407 and 3437)

Mathijs Kok

▶ A V100 meeting at Waalhaven on December 30th, on the left Captrain Class 203-101 and on the right RRF No. 20. Both were built around 1970 in East Germany.

Mathijs Kok

▶ Rail Force One G2000 No. 1605 passes Waalhaven with a tank train filled with Biodiesel on December 30th.

Mathijs Kok



▶ Whilst the DM90s are sold, the old DDM-Doubledeck carriages unfortunately are to go for scrap. Here Volkerrail No. V100.203-4 with 7 coaches (Nos. 6905, 6901, 6902, 6904, 6911, 6903 and 6913) pass Baarn on December 29th. *Mathijs Kok*

▶ RFO No. 1829 with a container train from China passes Soestduinen on December 16th. *Mathijs Kok*

▶ PKP Vectron Class 193.515 with a China container shuttle passes Assel on December 22nd. *Mathijs Kok*



Netherlands

▶ RFO No. 1829 with 'Buffalo's Nos. 3429, 3431, 3425 and 3445 pass Diemen on November 28th.
Mathijs Kok

▶ NS SGM's Nos. 2136 and 2966 as sprinter train No. 5453 stands at Zandvoort on December 13th.
Mathijs Kok

▶ RFO locomotives Nos. 1837 and 6702 with four 'Buffalo's (Nos. 3432, 3447, 3439 and 3449) pass Eempolder on December 10th.
Mathijs Kok



▶ RFO 'Hippel' No. 683 with a train loaded with new Volkswagen cars is seen at Leusden on December 17th. *Mathijs Kok*

▶ RRF Class 66 No. PB01 with the Herne container shuttle passes Waalhaven on December 30th. *Mathijs Kok*

▶ SBB cargo Class 193.525 with the GTS-container shuttle passes Waalhaven on December 30th. The locomotive is specially liveried for the connection with Rotterdam. Waalhaven, *Mathijs Kok*



DB Class 193.325-8 passes Bruchem (near Zaltbommel) with a container shuttle from Ruhland (Germany) to Antwerpen-Combinant (Belgium) on December 16th. *Erik de Zeeuw*



▶ HSL Class 186.382-8 is seen passing Soest, Spinkerweg hauling Biodiesel to Germany.
Andre Pronk

▶ TCS Nos. 101002 and 2105 (both hired to Belgian Lines) are seen with a dolomite train in Amersfoort on January 24th.
Mathijs Kok

▶ RFO No. 1831 passes Soest, Spinkerweg with a German Biodiesel train.
Andre Pronk



▶ Railexperts No. 9902 is seen with two new SNG-sprinter trains in Amersfoort on January 24th. The new trains are built by CAF in Spain. *Mathijs Kok*

▶ RTB Cargo Class 186.297 hauls the PCC-container shuttle near Soest on January 2nd. *Mathijs Kok*

▶ Connexion 'Valleilijn' Flirt No. 5038 on a test run in snowy Amersfoort on January 17th. *Mathijs Kok*



▶ NS VIP-car No. 20, nicknamed 'Camel', heads through Amersfoort on January 24th. *Mathijs Kok*

▶ Railexperts No. 9902 hauls NS ICNG No. 3103, after tests in the Netherlands, heading back to the Alstom factory. *Mathijs Kok*

▶ Railexperts V60 No. 6002 in the old ACTS livery, hauls a broken SLT 'Sprinter Light Train' in Soest on January 1st. *Mathijs Kok*



Netherlands

On December 18th, Strukton No. 1824 'Nicole' is seen in Bruchem with Strukton No. 303008 'Danique' on tow and on their way to Roosendaal.

Erik de Zeeuw



RTB Cargo Class 193.791-1 runs through Meteren with container shuttle No. 45798 from Duisburg (Germany) to Rotterdam on December 18th.
Erik de Zeeuw



RXP No. 9902 hauls ICNG No. 3113 (with extra brake wagons) past Soest having arrived from Bad Bentheim in Germany where RXP took over the transport from Railadventure. *Andre Pronk*



RFO Nos. 1829 and 6702 (No. 6702 will be used at parts of the journey that are not electrified) haul a German Biodiesel train past Soest.

Andre Pronk





On December 18th, DB Class 193.365-4 runs on the 'Betuweroute' near Meteren with a 'Kombiverkehr' train from Lovosice (Czech Republic) to Rotterdam Europort. *Erik de Zeeuw*



Netherlands

NS EMU No. 8731 is seen near Culemborg as train No. 3555 from Schiphol Airport to Venlo on December 18th. *Erik de Zeeuw*



Netherlands

On December 30th, RFO No. 692 is seen simmering at OOC in Oss. The machine was built by English Electric in 1956 and delivered to NS as No. 649. On November 11th 1992 No.649 was renumbered No. 692 after the installation of radio control. The locomotive has faithfully served its services for the NS until the 1990s, before being transported from Tilburg to England on July 13th 2005. In England, the machine got its typical English livery: black with a yellow cab, shock stripes and red buffer beams. The locomotive went into service for Middle Peak Railways, which leased the locomotive to RMS Locotec / Teesport and she was deployed around Stoke-on-Trent. Shortly before her return to the Netherlands, she had another period at Peak Rail. After more than 13 years the locomotive returned to the Netherlands on October 4th 2018 and has kept its English look, returning to service for Rail Force One on October 12th, 2019. *Erik de Zeeuw*



IRP No. 101002 passes the Vlierdseweg in Bruchem with empty dolomite train No. 47627 from Nedmag Industries in Veendam to the lime factory Lhoist in Hermalle-sous-Huy (Belgium) on December 30th.

Erik de Zeeuw









On January 8th, LTE Class 193.262-3 and 193.729-1 passes Dordrecht with train No. 41975 from Rotterdam Maasvlakte to Wolfurt (Austria).
Erik de Zeeuw





On January 9th, NSM No.386 from the Dutch Railway Museum made a fitness ride from the Maliebaanstation in Utrecht to Deventer, Zwolle, Emmen and return. Seen here in Amersfoort during the last break of the trip. *Erik de Zeeuw*



On January 24th, RailExpert No. 9902 is seen passing Stockholmweg in Barneveld transporting two Sprinter Next Generation units Nos. SNG 2758 (SNG-2 IIV) and 3009 (SNG-2 III). The two translator car's are mandatory for this kind of transport and are from Railadventure who deliver this type of working throughout Germany. The SNG units are built by CAF in Spain. *Andre Pronk*





China

Powering metro projects across top 10 Chinese cities with Alstom's sustainable mobility solutions

The last two months have seen seven metro projects entrusted to Alstom across three of Mainland China's top 10 populous cities – namely Chengdu, Shanghai and Xi'an – come to fruition. This follows the Chinese tradition of opening new transit lines during the New Year period.

From Shanghai's Grade of Automation 4 (GoA4) driverless metro lines 10 (phase two), 15 and 18, Xi'an Line 5 (phases one and two) to Chengdu's metro lines 17 (phase one) and 18 (phase one), as well its first GoA4 driverless Line 9 (phase one), Alstom and its joint ventures in China, Shanghai Alstom Transport Electrical Equipment Co. Ltd (SATEE)[1] and CASCO Signal Ltd[2] celebrate their continued contributions to the country's urban transit development. With the successful opening of these four GoA4 driverless lines, Alstom brings its wealth of experience and advanced traction technologies to the Chinese market.

Between December 2020 and January 2021, SATEE supplied its OptONIX and ONIX metro traction systems[3] for 1,088 metro cars of four metro lines – Chengdu Line 9 (200 cars), Shanghai Line 10 (156 cars), Shanghai Line 15 (324 cars) and Xi'an Line 5 (408 cars), with support from Xi'an Alstom Yongji Electric Equipment Co. Ltd (XAYEECO)[4]. It was also responsible for the train control monitoring system (TCMS) of Shanghai Line 10 and Shanghai Line 15, and the latter line's train electrical design. During the same period, CASCO has successfully put into service its Urbalis 888 signalling solution on six of these metro lines in Chengdu and Shanghai.

"We are humbled and excited for the various opportunities across major Chinese cities to provide a reliable, efficient and comfortable connectivity experience for their commuters. We remain committed to supporting the country's bold ambition of urban rail transit expansion while delivering our service proven and sustainable mobility solutions to even more travellers,"

said Olivier Loison, Managing Director for Alstom in China & East Asia.

Alstom has been operating in China for over 60 years. Today, 30% of the radio communication based train control (CBTC) solutions are supplied by CASCO, cementing its lead in China's railway signalling sector. Alstom has provided traction systems for more than 40% of the GoA4 driverless metro lines in China, and is currently delivering for the Nanjing Line 7 project. Designed and developed specifically for the Chinese market in 2009, OptONIX is in operation today on 4,422 metro cars across six cities. This experience enables Alstom to innovate and implement an upgraded

OptONIX system for the four metro projects in Chengdu, Shanghai and Xi'an, achieving higher levels of energy efficiency and electrical braking while remaining 98% recyclable.



[1] Established in 1999, Alstom holds 60% of the shares.

[2] Established in 1986, Alstom holds 49% of the shares.

[3] The OptONIX system is installed on the metro cars for Chengdu Line 9, Shanghai Line 15 and Xi'an Line 5, while the ONIX system is used on Shanghai Line 10.

[4] Established in 2006, Alstom holds 60% of the shares.

Serbia



Alstom signs Memorandum of Understanding for the design and building of Belgrade's first metro system

On January 22nd, Alstom signed a Memorandum of Understanding (MoU) with the Government of Serbia for the construction of phase 1 of the first line of the future Belgrade metro. In this project, Alstom will be responsible for a wide scope of works including the metro trains themselves, digital train control systems, platform screen doors, the infrastructure (the track laying and the power supply solutions) and the transport system integration. The construction of the new metro network is expected to start at the end of this year, pending signature of the contract with the relevant Serbian authorities.

"We are immensely proud that Alstom's solutions will be part of the construction of the Belgrade metro, which is a very important infrastructure project in the Balkan region. This project will greatly improve the transport

offering available to Belgrade's residents and will showcase Alstom's leadership in metro solutions and providing a superior passenger experience," says Antonio Moreno, Central and Eastern Europe Managing Director at Alstom. The new transport system will provide the foundations for truly sustainable mobility in the densely populated capital city of Serbia, rapidly contributing to the reduction of road congestion.

The first two lines will cover a total of around 42 kilometres – the first 22 kilometres, the second nearly 20. The first line will run along the Sava river, crossing the Belgrade city centre, linking the Makisko Polje area in south part of the city, to the Mirijevo urban neighbourhood in the north-east. The second line will connect Zemun railway station crossing the New Belgrade

urban municipality, with an interchange with the first line in Mirijevo.

Alstom is the global number one in urban integrated solutions, boasting full portfolio of capabilities and technologies to build the efficiency of urban transport system, as well as the know-how and resources needed to implement turnkey solutions: from rolling stock and infrastructure to signalling and information systems and maintenance. Alstom's references include metro systems for Dubai, Riyadh, Hanoi, Montreal, Taipei, Panama and Singapore. Alstom has sold over 17,000 Metropolis cars, operating in 55 cities around the world and carrying 30 million passengers every day.

First Citylink tram-train successfully arrived in Hungary

Stadler has transported the first Citylink tram-train from Valencia to Szentes, Hungary, where it occupied its temporary home in the maintenance depot of Hungarian Railway Company MÁV. The three-car, 70 tons prototype was carried by special oversized shipment from Valencia to Szentes in 9 days. The first unit will be followed by another 7 trains, and the batch of 8 units are expected to start commercial service between Szeged and Hódmezővásárhely (south Hungary) in the last quarter of 2021.

Hungarian passenger operator MÁV-START Zrt. signed the contract with Stadler for the supply of 8 bi-mode tram-train vehicles with an option for additional 4 units in May 2017. The new vehicles, which will connect without transshipments the tram networks of Szeged and Hódmezővásárhely, are going to be the first tram-trains in Hungary. The objective of the project is to provide a high quality public transportation system for passengers commuting every day between the two cities. The first batch consists of altogether 8 units, which will be followed by a second lot of additional 4 trains, which the customer MÁV-START ordered last year as an option to the base contract.

The bidirectional and bi-mode Citylink vehicles are able to operate in electric mode under 600 V DC overhead on the tram networks in Szeged and Hódmezővásárhely, and in diesel mode on the mainline connecting both cities at a top speed of 100 km/h. The new tram-trains have a capacity to carry 216 passengers, out of which 92 can be seated. The universal and accessible vehicles have been designed according to the latest safety standards. The vehicles are low-floor throughout and barrier-free. Spacious interior with a high number of seats and four multi-purpose places for persons of limited mobility such as wheelchair users and parents with prams, full HVAC, CCTV and PIS systems are all features that will optimize the passenger travel experience.

Stadler is a benchmark in the tram-train segment. The bi-mode tram trains for Szeged belongs to the multi- country platform, which has been sold continuously since 2006. It's a modular and versatile light rail vehicle family customizable to fit almost any network requirements and mobility demands. In addition to the order in Hungary, Citylink LRV are running in Karlsruhe and Chemnitz (Germany), Alicante (Spain), Puebla (Mexico) and Sheffield in the UK where, by 2022, these vehicles are also expected to arrive in the Wales Region.

Considering the technical characteristics of the vehicle, special care has been taken to maximize acoustic insulation, providing a smooth and silent operation. The total number of sold units is 165, out of which 111 are already in commercial operation.



U.K.



Stadler and Rail Operations (UK) Limited sign a contract for the new Class 93 tri-mode locomotives

Stadler and Rail Operations (UK) Limited have signed a framework agreement for the supply of thirty Class 93 tri-mode locomotives, which will support rail decarbonisation requirements in the UK. An initial batch of 10 locomotives are due for delivery in early 2023.

Stadler and the British company, Rail Operations (UK) Limited have signed a framework agreement for the supply of thirty Class 93 tri-mode locomotives. The advanced locomotives will significantly reduce CO2 emissions for both rail freight as well as potential passenger transport services, underscoring Stadler's green credentials and demonstrating its commitment to decarbonisation. Deliveries are expected to start in early 2023.

Class 93 is a Bo'Bo' mixed-traffic locomotive based on Stadler's Class 68 and Class 88 locomotives that have been operating successfully in the UK for some years. It is capable of reaching higher speed than the previous ones; i.e. 110 mph instead of 100 mph.

Stadler's first tri-mode locomotive has three different power sources. In electric mode, it is able to run on 25kV AC overhead lines with a power of 4,000 kW. In addition, the locomotive features a CATERPILLAR C32 engine and Lithium Titanate Oxide (LTO) traction battery packs, allowing it to operate over non-electrified lines. The diesel engine has a nominal power of 900 kW and meets EU 97/68 Stage V emission requirements. The two LTO battery packs provide 400kW extra power to supplement the engine when the locomotive is running in diesel/battery hybrid mode as well as last mile carbon free shunting operation.

Iñigo Parra, CEO Stadler Valencia added, "The innovative and cost-effective solution will provide environmentally-friendly rail transport services, supporting national decarbonisation strategies and promoting modal shift to rail".

Commenting on the contract, Karl Watts, Chief Executive Officer, Rail Operations (UK) Limited, said ... "The rail industry has acted very positively in understanding its role in reducing carbon emissions and improving inner city air quality. The class 93 fleet with its array of green credentials, will allow us to lead the way in supporting the rail industry deliver its decarbonisation targets.

Furthermore, with its impressive state-of-the-art specification, the class 93s also allow us to develop new markets and modernise many aspects of UK train operations".



Egypt



Siemens Mobility Signs Landmark MoU to Install Egypt's First Ever High-Speed Rail System

The National Authority for Tunnels, a governmental authority under the jurisdiction of the Ministry of Transport of Egypt, and Siemens Mobility have signed a Memorandum of Understanding (MoU) - together with the local companies Orascom Construction S.A.E. and The Arab Contractors (Osman Ahmed Osman & Co.) - to design, install and commission Egypt's first ever high-speed rail transportation system. Additionally, Siemens Mobility will be providing maintenance services. The agreement comprises a rail system with a network of 1000km, with the first being a 460km high-speed line. The order value of this initial high-speed line is around 3bn\$.

The MoU was signed by Essam Waly, Chairman of Egypt's National Authority for Tunnels, and Michael Peter, CEO Siemens Mobility, in a meeting on January 14, 2021 in Cairo. This was witnessed by His excellency, Prime Minister Mostafa Madbouly, His excellency, Minister of Transport Egypt Kamel Al Wazir, as well as Siemens CEO Joe Kaeser and Siemens Deputy CEO Roland Busch.

"We are honored and proud to expand our trustful partnership with Egypt. By building a high efficiency rail system for the country, we will support the Egyptian people with affordable, clean and reliable transportation," said Joe Kaeser, the President and Chief Executive Officer of Siemens AG. "After the highly successful energy Mega project, we are now keen to repeat this visionary spirit in the mobility sector together with our partners."

"We are delighted that the Ministry of Transport is seeking to put their trust in us to deliver this important project. Our digital leadership and comprehensive

turnkey services will bring an integrated and state of the art high-speed rail system, that will provide a technology boost for the country and create local jobs. The system will significantly enhance passenger experience and reduce travel time for millions of Egyptian people," said Michael Peter, CEO Siemens Mobility.

The first 460 km long high-speed line will connect the vastly developing cities of El-Alamein on the Mediterranean Sea to Ain Sokhna on the Red Sea, while also passing through the New Administrative Capital. The line will also be operable for freight transport purposes which will further foster economic growth in the region.

Siemens Mobility is the global leader in high-speed rail operations and is one of the leading companies in the Egyptian mobility market since the 1960s. The company has also extensive experience in delivering high-speed rail projects in the Middle East and Africa region.

As a leading global rail turnkey project provider with a proven track record of delivering projects on time, Siemens Mobility integrates its portfolio elements and delivers complete rail systems reliably and from one single source.



So far, the company has successfully completed around 50 turnkey projects all over the world - delivering many ahead of schedule. Latest projects include the Extension of the Blue Line metro in Bangkok finished last year and the Copenhagen Light Rail project.

Italy

Stadler to build new tailor-made trains for the Centovalli railway

Ferrovie Autolinee regionali Ticinesi SA (FART) and Stadler have signed a contract for the delivery of eight new electric multiple units. The tailor-made trains will replace the old rolling stock of the reputed Centovalli railway in Ticino from 2023. The order volume amounts to around 94 million Swiss francs. Stadler is thereby gaining another customer in Ticino.

Ferrovie Autolinee regionali Ticinesi SA (FART) and Stadler signed a contract for the manufacture and delivery of eight new multiple units at the end of December 2020. The new tailor-made trains are expected to replace the old rolling stock of the reputed Centovalli railway in Ticino from 2023 – in time for its 100th anniversary. For Stadler, this will be the third order from Ticino within the past two years: the best-selling FLIRT train is already in use for TILO cross-border regional transport, while the first TRAMLINK trains will be operated by Ferrovie Luganesi SA (FLP) in Lugano from summer 2021.

The new, modern and more efficient fleet will allow FART to meet the needs of public transport as well as those of the region's tourism industry, which is growing in the long term. The multiple units also fully comply with the Law on Equal Rights for Persons with Disabilities. The order volume totals around 94 million Swiss francs. The follow-up costs of the investment will be financed by the Confederation and the canton of Ticino.

This is the first time that Stadler will build new, customised narrow-gauge multiple-units for regional and cross-border rail transport in Ticino. The new rolling stock consists of four four-car narrow-gauge multiple units for the route from Locarno to Domodossola (Italy). Four more three-car trains are intended for regional transport services in the Centovalli.

“We are proud to be building these new trains for the Centovalli railway. The development and production of tailor-made vehicles is and remains a core business area for Stadler,” says André Kurmann, Sales Manager Tailor Made at Stadler. “The new trains will ensure a high level of travel comfort for passengers. We have paid special attention to the design, to the choice of materials, and to the safety of passengers and crew members. These aspects are crucial to us as a leading train builder, and this is where our many years of experience come into play.”

“Over the past few months, we have worked closely with Stadler to define all the contractual details necessary for the completion of a contract of this kind,” underlines Paolo Caroni, Chairman of the Board of Directors of FART. “The challenge for us was to take advantage today of all the options for the development and modernisation of trains that will enter into service at the end of 2023 and continue to operate for decades to come. It is a great opportunity that requires vision and foresight.”

More about the vehicles

The regional multiple units are around 49 metres long, whereas the international multiple units measure approximately 63 metres. The car bodies are made of aluminium. Each train can transport 264 (three-car models) or 343 (four-car models) passengers respectively, with seating space for 106 (three-car models) and 141 (four-car models) people.



Stadler has focused particularly on vehicle accessibility in order to give all passengers, including those with limited mobility, unhindered access to platforms. In addition, the trains have areas reserved for wheelchairs as well as for bicycles and prams. The multiple units also have a Wi-Fi network that enables passengers to access FART and multimedia content. An innovative passenger information system completes the travel experience in the new trains for the Centovalli railway.

Australia

Vossloh receives major order to deliver switch systems in Australia with a total sales volume of around €50 million

Vossloh AG has received a major order of switch systems for the Australian Inland Rail project via its Australian subsidiary Vossloh Cogifer Australia Pty. Ltd. Inland Rail will connect the eastern Australian cities of Melbourne and Brisbane. Around 1,100 km of the planned 1,700-km freight line will be modernized, and 600 km will be newly built. The deliveries are spread over five years and have a total volume of around €50 million. The deliveries are reported as orders received at the time they are called off. The first switches will be delivered in March 2021.

The customer is the state-owned ARTC, which manages most of the Australian rail network.

“This order is the biggest in the history of Vossloh in Australia. It highlights our strong market position and the increasing importance of the Australian market,” explains Oliver Schuster, Chief Executive Officer of Vossloh AG. “We are honored that our long-standing customer ARTC has once again placed its trust in us and that we can contribute to the biggest rail infrastructure project for freight transport in Australia.”

Vossloh Cogifer Australia Pty. Ltd. is part of the Customized Modules division in the Vossloh Group. The company is headquartered in Castlemaine in the state of Victoria, employs around 70 workers in Australia, and specializes in the manufacture and maintenance of switch systems.

The Alstom – Cosider Travaux Publics consortium carries out the first dynamic test of the Constantine tram in Algeria

Alstom, with its partner Cosider Travaux Publics, has successfully carried out the first dynamic test on phase two of the extension of the Constantine tramway line.

This 3.4 km-long extension will link the entrance of the new city of Ali Mendjeli to the terminal station of Université 2 de Constantine Abdelhamid Mehri. During the test phase, Alstom’s tram ran for approximately 1km from Université Abdelhamid Mehri station to Ennasr station, at a speed of 5km/h.

This dynamic test, which represents the last stage before entry into commercial service of the entire line, was conducted in the presence of the Wali delegate of the city of Ali Mendjeli, the Director of Transport of the wilaya, the Senior Management of EMA and representatives of Alstom Algeria, as well as representatives of Cosider Travaux Publics.

EMA (Entreprise du Métro d’Alger) awarded the turnkey project for the Constantine tramway line extension, 10.3 km long in total, to the consortium consisting of Alstom (consortium leader) and Cosider Travaux Publics in July 2015.

The first phase of this extension, 6.9 km long, has already been in operation since 2019. It connects Zouaghi station to the entrance of the new city of Ali Mendjeli. The second 3.4 km phase will serve Kadri Brahim station to the terminus of Abdelhamid Mehri Constantine 2 University. It consists of 6 passenger stations equipped with 8 ticket counters, as well as 3 electrical substations, 2 tram access routes and 1 viaduct.

“The Constantine tram is a major project for Alstom Algeria. We are proud to lead the consortium, which is putting all its expertise to work to satisfy the ambition and objectives of our customer EMA. We remain fully mobilised and attentive to the needs of Constantine’s passengers, while offering them sustainable mobility solutions” said Amar Chouaki, Managing Director of Alstom Algeria.

As part of this project, Alstom, as leader of the consortium, is providing the telecoms, signalling, traction energy, ticketing and track systems, including the catenary.

Present in Algeria for more than 30 years, with its 250 employees, Alstom has always supported the development of the local railway infrastructure and industry, and more particularly the tram market (several trams are already in service in Algiers, Oran, Constantine, Ouargla, Sétif and Sidi Bel Abbès). In addition, Alstom has always viewed the development of its industrial and engineering activities in the country as a strategic priority, in particular technology transfer and local skills development. Through its joint venture Cital, Alstom is meeting the country’s growing mobility

needs, in particular its need for tramway systems, to continue to support the development of Algerian cities.



Alstom expands digital mobility signalling and communications expertise with acquisition of B&C Transit

Alstom progresses further on the execution of its Alstom in Motion strategy and supports its growth ambition for digital mobility with the acquisition of B&C Transit, Inc., a transit engineering design and construction firm specializing in the passenger rail sector. This transaction reinforces Alstom’s position in the North American signalling market by combining the companies’ advanced technology products and engineering capabilities to the benefit of transit agencies and operators across the United States and Canada.

The acquisition will support Alstom’s efficient delivery of its innovative signalling solutions by extending its systems engineering and wayside application capabilities. The acquisition will also bolster Alstom’s portfolio of solutions, for existing and new customers across North America and reinforce Alstom’s presence on the West coast. The combined resources of both companies will support customers’ operations and technological visions, accelerating the delivery of more efficient, reliable, safe and sustainable

mobility.

“B&C Transit’s expertise in signalling and communications engineering and design is the perfect complement to Alstom’s advanced technology solutions,” says Jérôme Wallut, Senior Vice President for Alstom North America. “Customers will benefit from additional resource capacity and an extensive footprint across North America that will further enable localized development, delivery and support.”

B&C Transit will be able to leverage Alstom’s worldwide presence and business development opportunities in rolling stock, services and maintenance to further grow and scale-up its operations. Employees from both companies will have opportunities to further develop their skills sets and scopes.

B&C Transit, headquartered in Oakland, California, employs approximately 85 people across the United States at offices in cities such as Livermore, California, and Pittsburgh, Pennsylvania, and had a turnover over US\$45 million in 2020. B&C Transit serves an established customer base across North America, and its portfolio of projects includes, for example, the San Francisco Municipal Transportation Agency (Muni) Central Subway project, and Miami-Dade’s Metrorail control centre and systems.

Following completion of the transaction, which is expected in the first quarter of 2021, B&C Transit, Inc. will become a wholly owned subsidiary of Alstom.

Greece

First high-speed trains to run in Greece

The first ETR470 Pendolino train upgraded by Alstom has arrived in Thessaloniki, marking the arrival of high-speed trains in Greece. This is part of a project implemented by TRAINOSE - the main rail transport provider in Greece - in which Alstom is to provide depot modernisation and corrective maintenance for the five trains that will constitute the country's first fleet of high-speed trains. The two contracts, signed in March 2020 for depot modernisation and in June 2020 for maintenance, are worth a total of approximately €40 million.

The scope of the contracts includes modernisation of a depot in Thessaloniki and corrective maintenance services for five Alstom ETR470 Pendolino high-speed trains. The Thessaloniki depot has undergone significant modernisation works in the past few months. The trains have also been fully refurbished and modernised by Alstom at its Savigliano site in Italy. Following an extensive upgrade process, the trains, now belonging to TRAINOSE as a part of the Ferrovie dello Stato Italiane Group (FSI), will have improved features such as Wi-Fi connection and new passenger information systems. The trains have also been upgraded with ETCS signalling and modified to operate under 25 kV catenary so as to be fully suitable for operation on the Greek network. The first Pendolino train will start circulating between Athens and Thessaloniki from March 2021. The other four trains are expected to be delivered to Thessaloniki by Autumn 2021.

"Introducing high-speed trains to Greece is a major achievement for Alstom and for our client in the country's railway transport modernisation efforts. This project complements Alstom's long-standing presence in Greece," said Stavros Vlachos, Alstom Managing Director for Greece.

The introduction of high-speed trains is a key component of Greek operator TRAINOSE's plan to reduce current journey times on the main Athens-Thessaloniki axis from 4 hours to around 3 hours following the completed infrastructure upgrades.

"Starting high-speed service in Greece with these upgraded Alstom trains is part of our strategy to offer an improved passenger experience, better quality services and reduced travel time on a very popular route. Moreover, the upgrade of our Thessaloniki depot as part of this project will turn our depots into some of the most modern and high-tech depots in South-East Europe," said CEO of TRAINOSE, Professor Filippos Tsalidis.

Alstom's high-speed Avelia range is based on three current flagship products: Avelia Pendolino, Avelia Euroduplex and Avelia AGV, totalling 35 years of experience in commercial service. Avelia Pendolino high-speed train is certified in 14 countries and more than 520 trains have been sold in countries such as Italy, Spain, UK, Poland, Portugal, Russia and China. The Avelia Pendolino is a flexible and interoperable passenger rail solution for high-speed and conventional lines, running at up to 250 km/h. One of the most proven high-speed trains in the world and truly cross-border, the Avelia Pendolino benefits from Alstom's four decades of high-speed experience. Its success rests primarily on its modularity and flexibility. Avelia Pendolino is mainly produced at Alstom's Savigliano factory in Italy and its first entry into commercial service dates from 1988. The modernization applied to this ETR 470 Pendolino fleet demonstrates Alstom's commitment to supporting customers in the adaptation of their assets during the whole life cycle and leveraging the flexibility of the Avelia Pendolino product.



Norway

Next stop: Norway



Norway and Germany – they're a combo with huge potential for growth. However, Norway has no direct connection to DB Cargo's single wagon network. Since trains can't float (yet), DB has dreamed up a new logistics solution for our customers. They are demonstrating once again that they're capable of so much more than just providing transport by rail.

Norway is becoming an increasingly attractive place for German companies to do business. According to an economic survey from the German-Norwegian Chamber of Commerce, almost one in five German companies have seen conditions for doing business with Norway improve. The feeling is mutual – after all, Germany is Norway's second-most-important trading partner. Even so, getting the goods to Norway is no small feat. There is no direct connection by land and Norway lacks a link to DB Cargo's single wagon network.

Ships cover the last mile

The tricky geography hasn't stopped sales experts developing new logistics solutions for Norway, however. The Danish village of Thyborøn, located in the municipality of Lemvig in the Midtjylland region, has recently come to play a key role here. Perched on the North Sea coast, Thyborøn is on the northern tip of the Harboøre Tange headland, which is separated by the Thyborøn Canal from another Danish promontory called Agger

Tange. Thanks to DB Cargo, trains can now access Thyborøn from Germany. For this purpose, the route of the train going to Rønland had to be extended by five kilometers further to Thyborøn. From there, freight is handed off to ships bound for Norway.

"We're hoping to turn Thyborøn into the main hub for Norway-bound freight," says Thomas Vestergaard, Head of International Sales at DB Cargo Scandinavia. With the first few transports now under our belt, we've taken another step toward achieving this goal. We've transported 94 tonnes of steel girders from Germany to Thyborøn, where the freight was loaded onto the M/S With Frohavet and shipped on time to the Norwegian city of Trondheim.

First rail transports to Thyborøn in 20 years

"For the last 20 years, there haven't been any official rail transports to Thyborøn. That's changing now," says Vestergaard. "The first transports were a huge success thanks to a high level of flexibility in production and planning, and to Midtjyske Jernbaner and Thyborøn Stevedore, our local partner companies. We're grateful for all the assistance." A few days after the first shipments, two more wagons carrying a total of 72 tonnes arrived in Thyborøn, and more transports are planned for this route in future.



France

Métropole Aix-Marseille-Provence and Alstom unveil the design of the future metros for Marseille

The teams of Alstom, of Métropole Aix-Marseille-Provence and Marseille designer Ora İto have finalised the exterior design and interior layout of the new trains for the Marseille metro, which should be on the rails by 2023.

Métropole Aix-Marseille-Provence, which wanted to involve all of the city's inhabitants in the choice of design for the state-of-the-art metros, launched a public consultation at the end of 2019 on the website www.marseillechange.fr. More than 17,000 people were thus given the opportunity to say what they thought. Out of three proposals devised by the Alstom group, the one nicknamed "Listen to the City" was selected by the inhabitants of Marseille with a majority of 44% of the votes.

This is the basis on which Alstom's teams, the designers Ora İto and Fabien Bourdier and the services of the Métropole started working in collaboration to apply the design concepts to all the elements of the metro. The design is centred on the light of Marseille, a welcoming city bathed in sunshine and the Mediterranean. The future metros will be lined with a play of blue trim on the outside and radiant interior harmony in warm, natural tones, colouring the muted spaces with a convivial

touch. The passenger experience will be enhanced by a sound design inspired by the city's various emblematic landscapes. Vast reception areas will offer accessibility to all passengers, including people with reduced mobility with dedicated areas, improving the fluidity and capacity of the trains. With large bay windows, a sophisticated air-conditioning system and a modern passenger information system, the new Marseille metro will offer a pleasant travelling experience.

"Mobility is a central issue for the Métropole and a challenge for the development of our region. Today, the Marseille metro enters a new era: these new, modern metro trains will improve passengers' journeys with services that are up to the standard of France's second largest city. I am pleased to see that the key projects of the Métropole are taking shape. Others will follow in Marseille, such as the extension of the tram to the north and east of the city. Daily transport, and its accessibility to all, is a priority of my work at the head of the Métropole, so that the inhabitants of the whole area can travel with ease between where they live and the pools of employment and activities," said Martine Vassal, President of Métropole Aix-Marseille-Provence and of the Bouches-du-Rhône departmental council.

"We are proud to unveil the design of this state-of-the-art metro that the people of Marseille will appreciate for its comfort and reliability. This is an important step forward, as the technical design of the metros and the development of automatic train control continue at our six French sites. In total, more than 400 people in France will work on this project, including more than 60 in the area covered by Métropole Aix-Marseille-Provence. Jobs are also being created at our suppliers in France and soon also within the Métropole for the installation and deployment of the signalling system," said Jean-Baptiste Eyméoud, President of Alstom in France.

"The challenge was not to recreate speed in the design, but the smoothness of movement, safety, and economy of material. The identity of the metro is determined by the hexagonal shape of the front end. The tonalities, elegant and timeless, are reminiscent of the city of Marseille, particularly thanks to the colours blue and white, symbols of the city. Its sleek lines and shapes are in keeping with the principle I call simplicity, the aim being to develop a simple answer to a complex problem. These state-of-the-art trains are a prism of modernity, representing total unity between their function, their form, and the architectural character they will subscribe to for several decades to come," explained Ora İto,

designer.

Environmentally friendly, the new Marseille metros are eco-designed, enabling them to be 96% recycled at the end of their lifespan. They will consume 25% less energy than the metros currently in service, thanks in particular to electric braking, LED lighting and other optimisations. From 2023 onwards, Marseille's existing metro will thus be replaced by a driverless, automatic metro, air-conditioned, accessible from the platform for people with reduced mobility, and benefiting from cutting-edge technology that improves operational flexibility, quality of service and passenger comfort. For Métropole Aix-Marseille-Provence, the modernisation of the metro is accompanied by a number of projects to gradually make Marseille's stations more accessible. By 2023, seven stations (Vieux-Port, La Rose, Timone, Jules Guesde, Rond-point du Prado, Castelanne, Saint-Charles) will be accessible to people with reduced mobility, while the other 16 stations in the network will begin their transformation from 2024. The first projects are already moving in this direction, such as Saint-Marguerite station, now equipped with a lift for people with reduced mobility, and the new Capitaine Gèze station, the terminus of line 2, open since December 2019.



Taiwan

Alstom introduces Citadis X05 trams to Kaohsiung

Alstom's Citadis X05 trams have entered passenger service on the South Circular Light Rail line of Kaohsiung City in Taiwan. This launch follows their smooth operations on the existing first phase of Kaohsiung's circular light rail line^[1] since early November 2020. Alstom has been responsible for the design, delivery and commissioning of 15 Citadis X05 new-generation trams, power supply and energy storage equipment, which are fully interoperable with the city's current network and planned extension. These are not only Alstom's first trams operating in Taiwan, but also mark the inaugural Asian launch of its latest evolution of the Citadis range.

"Being the first Asian city to adopt the Citadis X05, we are excited to be contributing towards the green modernisation of Kaohsiung's public transport network, while protecting the aesthetic appeal of the city. With their efficiency, availability and easier maintenance, the Citadis trams provide a step change in the city's transport capability, reliability and comfort," said

Olivier Loison, Managing Director for Alstom in China & East Asia.

Passengers have been placed at the heart of the development of this new vehicle, with the emphasis on on-board mobility and comfort. The trams are fitted with a full low floor and double doors for improved passenger circulation and accessibility for all, large bay windows, ambient LED lighting, ergonomic and spacious seats, as well as large passenger information screens.

To integrate seamlessly and safely into the Kaohsiung cityscape, the Citadis trams run autonomously thanks to the Autonomy charging solution, combined with the Citadis Ecopack system of energy storage and catenary-free recharging system at each station. The trams also boast several new technologies, including permanent magnet motors for higher efficiency, as well as optimised HVAC (heating, ventilation and air-conditioning), which together reduce their energy consumption by 25%. Simplified sub-system

integration and maintenance decrease lifecycle costs, while the trams are 97% recyclable. The trams were manufactured at eight Alstom sites in France: La Rochelle for the design and assembly, Aix en Provence for the safety control system, Le Creusot for the bogies, Ornans for the motors, Tarbes for the traction system equipment, Valenciennes for the interior design, Villeurbanne for the on-board electronics, and Vitrolles for the on-board power supply switching boxes (Citadis Ecoswitch). Sesto in Italy was also involved for the traction system equipment, while the team in Taiwan is responsible for the onsite testing, training and warranty services.

[1] When fully opened, Kaohsiung's circular light rail line will form a 22.1km loop around the city via 37 stations. The first phase with 14 stations has been in service since October 2015, while the second phase comprising 23 stations has commenced partial operations with 9 stations, spanning 12.8km (known as the Kaohsiung South Circular Light Rail line) on 12 January 2021.

Saudi Arabia

Alstom innovates towards a sustainable future for rail transport & mobility

Alstom, a global leader in rail transport and sustainable mobility, is proving to be a key supporter and facilitator of Saudi Arabia's goal to comprehensively enhance the interconnectivity of the Kingdom and the development of major rail and metro projects, in line with its Vision for 2030. Having been an integral part of Saudi Arabia's history for almost 70 years, Alstom is now proudly playing a pivotal role in shaping the future of transport systems and infrastructure in the Kingdom, by delivering best-in-class mobility solutions and projects.

In alignment with the Kingdom's overall growth and in response to the ever-increasing public demand for the expansion of land transportation services, Saudi Arabia has continuously reiterated its commitment to developing an additional 10,000km of rail and metro by 2030. A key factor in this commitment is the country's ambition to lead the way in reducing transport emissions, relieving traffic congestion, improving residents' health and quality of life, and progressively decarbonising rail transit in the Middle East.

By 2024, Saudi Arabia is expected to have spent over \$48bn on rail projects throughout the Kingdom. At the forefront of this major investment in rail transport is the Riyadh Metro: the largest single-phase metro system project ever launched in the world. An ongoing project, the Riyadh Metro's lines 4, 5 and 6 have been built from scratch by Alstom and its civil partners, as part of the FAST consortium, and the fully integrated metro system is set to provide comprehensive, citywide, mass-transit coverage.

Alstom has supplied 69 Metropolis™-based Riyadh Metro trains and an Urbalis signalling system. As a leader

in the improvement of environmental performance of rail across the region, Alstom has also implemented highly advanced and innovative HESOP™ (Harmonic Energy Saver) technology in the project. HESOP™ recovers the electrical energy generated by trains during braking, which, in addition to reducing operational costs, will cut about 3 million kilograms of carbon emissions and decrease power consumption by 6.6 million kilowatts per annum.

“Saudi Arabia has a long and rich history of innovation across various industries, and Alstom is extremely proud to have been entrusted by the Kingdom to have such a strong presence in driving that innovation in its transport and energy industries for almost 70 years. Today, with our sole focus being transport and mobility, we continue our support of the Kingdom's economic growth and development, alongside its Vision for 2030, through the enhancement of infrastructure and the supply of sustainable solutions such as the Riyadh Metro,” says Yasser Omar, Alstom's Managing Director for Saudi Arabia.

Alstom is a dedicated and long-standing partner of Saudi Arabia's transportation and mobility development. Having originally played an integral role in the Kingdom's energy sector, installing its first gas turbine in 1951, Alstom has gone on to become a key contributor to the advancement of the region's transport infrastructure.

A committed supporter of its investment in rail transport systems, Alstom remains a leading supplier of sustainable mobility solutions in the Kingdom.



India



India adopts ground-breaking ETCS for mainline railways for the first time

Alstom has won a contract [1] worth €106 million from the National Capital Region Transport Corporation Ltd. (NCRTC) to design, supply and install the signalling, train control and telecommunication system (Package 24) of the 82.15 km Delhi – Ghaziabad – Meerut Regional Rapid Transit System (RRTS) Corridor. NCRTC is a joint venture between the Government of India and States of Delhi, Haryana, Rajasthan and Uttar Pradesh. It is implementing RRTS, a first-of-its-kind semi-high-speed rail line which will reduce the journey time between Delhi and Meerut to just 60 minutes, compared to the current 90-100 minutes, and with a maximum speed of 160 km/h.

Alstom's scope of work includes design, supply, installation, testing and commissioning of Signalling & Train Control, Supervision, Platform Screen Doors and Telecommunication Systems for the corridor. This line will be the first in India to adopt the European Train Control System (ETCS) hybrid Level 3 [2] signalling system, which is the core signalling and train control component of the European Rail Traffic Management System (ERTMS).

“As leaders in digital mobility, we are thrilled to receive this contract and provide India's first-ever line with the future proof signalling system. Alstom sees huge potential for the technology in the Indian market. We are looking forward to deploying our advanced technologies in a bid to revamp the mainline railway landscape,” said Ling Fang, Senior Vice President of Alstom Asia Pacific.

A key feature of the RRTS is interoperability of all its priority corridors which facilitates seamless commuter movement across the corridors, without the hassle of changing the trains for passengers. ETCS signalling system will not only facilitate interoperability but will also ensure train movement at quick frequencies, thus reducing the waiting time for passengers. The contract marks a world premiere for the combination of the latest ETCS standard supported by the latest digital Interlocking and Automatic Train Operation (ATO) over Long

Term Evolution (LTE) radio. The integrated platform screen door solution will also provide utmost safety to passengers.

In October 2020, Alstom reaffirmed its leading position in digital rail technologies by becoming the first company to achieve full certification for the latest onboard and trackside ETCS standards. ETCS hybrid Level 3 optimises line capacity in complete safety by anticipating and adapting the speed of the trains through continuous train control and supervision via a radio-based signalling system. It is arguably the most efficient train control system in the world, bringing significant advantages combined with automatic train operation (ATO) in terms of maintenance cost and energy savings, safety, reliability, punctuality and traffic capacity. ETCS is a replacement for the legacy train protection systems and is designed to replace the many incompatible safety systems currently in operation, making it the train control system of choice for India, as well as, Australia, Taiwan, South Korea and Saudi Arabia.

Alstom's Atlas ERTMS Level 2 and hybrid Level 3 are digital signalling solutions that allows trains to run at higher speeds without physical lineside signals. The company is a major supplier of onboard and trackside ETCS equipment via this solution, representing 70% of the world's onboard rail systems in service and 18,000 kilometres of tracks worldwide. In total, Alstom has been contracted to equip 9,000 trains with Atlas onboard solutions, of which 1,100 vehicles will be equipped with the Baseline 3 Release 2 solution. Today, across 30 countries, Alstom has provided significant performance improvement for all ETCS standards, including the very first application of ETCS Level 3 in Germany.

[1] Booked in Q3 of the 2020/21 fiscal year

[2] Hybrid Level 3 is a combination of ETCS Level 2 with shorter virtual section normally used in ETCS Level 3 for even higher performance.

From the
Archives

Argentina

Ex Renfe Class 319.220 rests on the buffers at Retiro on November 8th 2011. *Mark Torkington*



From the Archives

Argentina

On November 14th 2011, Nos. MF624 and MF701 both sit on trains at Aldo Bonzi on the Belgrano metre gauge system. *Mark Torkington*



From the Archives

Argentina

TBA ALCO No. D663 (ex Renfe) runs round its train at Lobos before heading back to Merlo on November 3rd 2011.
Mark Torkington



From the Archives

Ferrovias G22 No. E.704 sits under the roof at Aristibulo Del Valle station on November 5th 2011. *Mark Torkington*

Argentina



From the Archives

SNCB No. 2019 runs past Antwerp Berchem station with a freight destined for the docks on March 24th 2011.
John Sloane

Belgium



From the Archives

Bulgaria

Two car Desiro DMU No. 10017 stands at Pernik on September 8th 2012 with a Sofia to Blagoevgrad working.
Christopher Baldwin



From the Archives

Bulgaria

On September 8th 2012, four car Desiro EMU No. 31005 is seen at Pernik awaiting departure for Sofia on a suburban service.
Christopher Baldwin



From the Archives

Brazil



RFFSA Donna Teresa Cristina No. 156 is seen between shunting turns at Capivari power station on November 27th 1981.
John Sloane



From the Archives

Chile

ALCO DL543 No. 1806 sits in the depot at Temuco on March 31st 2013.

Mark Torkington



From the Archives

FC de C electric shunter No. 20808 is pictured at Camilo Cienfuegos Yard on the former Hershey railway on February 16th 1992. *John Sloane*

Cuba



From the Archives

Cuba

The MLW built MX624s were at one point the main locomotives for long distance services in Cuba but since the arrival of Chinese locos in the early 2000s they've been relegated to secondary duties. Here No. 52407 sits on the blocks at Havana Central station in-between shunts on May 12th 2011. *Mark Torkington*



From the Archives

Cuba

No. 52405 departs Pinar Del Rio with a local train on the evening of May 16th 2011. *Mark Torkington*



From the Archives

On January 27th, 2011 a smart looking Class 749.240 waits departure time at Praha hl.n. with a service to Ceske Budejovice. *Class47*

Czech Republic



From the
Archives

Czech
Republic

CD Cargo's Class 122.035 hauls a rake of tanks through Usti nad Orlici on January 26th 2011. *Class47*



From the
Archives

On January 23rd 2011, Class 704.013
is seen shunting Class 810 trailers at
Tabor. *Class47*

Czech
Republic



From the Archives

Czech Republic

OBB Class 1216.233 approaches Ceska Trebova with a service to Wien on January 24th 2011. *Class47*



From the Archives

France

SNCF CC No. 6514 sweeps into Juvisy station with a southbound fast freight on October 25th 1988. *John Sloane*



From the Archives

The last steam loco working on the SNCF, No, 230G 353, is about to depart Paris Gare St. Lazare with a special excursion on October 23rd 1988.
John Sloane

France



From the
Archives

DB Netz Class 111.059 propels a track
inspection train past Dedensen-
Gümmer station on July 4th 2016.
John Sloane

Germany



From the Archives

In the summer of 2006 this Maybach engine unit, No. VT 08 503, ran special trips in and out of Berlin Hauptbahnhof to advertise the soccer World Cup held in Germany that year.
John Sloane

Germany



From the Archives

India



Western Railway 2ft 6in gauge ZB No. 74 departs Dabhoi with the 08:20 service to Chanod on March 16th 1976. *John Sloane*



From the Archives

FS Class E444.024 is about to back onto its train to Rome at Turin Porta Nuova station on August 8th 1984.
John Sloane

Italy



From the Archives

A surprise find at the side of the road on holiday in Italy on August 2nd 2007. This 2-8-2 tank is on display at Piazza al Serchio in the summer but in the winter is put back in the short 'tunnel' behind it. *Jeff Nicholls*

Italy



From the Archives

Morocco

Japanese built Co-Co electric No. E-1258 arrives at Rabat with an evening train to Fez on April 4th 1993. *John Sloane*



From the Archives

Netherlands

SNCB Class 1500 No. 1505 is seen upon arrival at Amsterdam Centraal on March 15th 1986 with a service from Bruxelles.
Mark Enderby



From the Archives

Netherlands

NS Class 2200 No. 2285 is seen
at Arnhem on March 28th 1989.
Mark Enderby



From the Archives

No. 653 waits at the remote and very high station of La Raya with the Peru Rail tourist train from Puno to Cusco on October 29th 2005. *Mark Torkington*

Peru



From the Archives

Instructions are given to the driver of PKP Class EP07-1053 before departure time at Leszno with a regional express service on May 27th 2011. *Jeff Nicholls*

Poland



From the Archives

Poland

On September 9th 2016, No. EU07-169 in Przewozy Regionalne livery calls at Mosina with a Poznan to Wrocław express.
Christopher Baldwin



From the Archives

Single-car DMU, Koleje Dolnośląskie No. SA135-007, waits at Legnica to depart for Międzylesie in the Sudeten mountains on September 9th 2017. *Christopher Baldwin*

Poland



From the Archives

Serbia



No. 441-514 is seen at Belgrade passenger roundhouse on May 26th 2007. *John Sloane*



From the Archives

Slovenia

Italian built Bo-Bo-Bo No. 362.023 stands at Sezana with an eastbound evening freight on June 1st 2007.

John Sloane



From the Archives

Metre gauge FEVE 0-6-0 diesel No. 1208 hauling the 'Limon Express' tourist train near Calpe is on its way from Benidorm to Gata de Gorgos on April 14th 1976.
John Sloane

Spain



From the
Archives

SBB Re4/4ii No. 11108 in Swiss
Express livery with matching
stock is seen departing Bern in
August 1977. *Chris Morrison*

Switzerland



From the Archives

TCDD No. DE24371 is seen at Izmir Halkapinar on June 8th 1997. *Mark Enderby*

Turkey 



From the Archives

Amtrak's Swedish built AEM7 loco No. 941 hurries out of Newark NJ past Harrison on its way to New York City on February 4th 1997.
John Sloane

U.S.A.



From the Archives

On November 12th 2011, Alstom built No. 805 waits to depart Montevideo with a local service towards 25 de Augusto whilst classmate No. 819 sits alongside.

Mark Torkington

Uruguay

