



PRESS RELEASE
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First hybrid TER train in France Successful tests: start of production in anticipation of trials from early 2021

The prototype for the energy storage system of the first hybrid TER train has completed its trials on the test bench at Alstom's Tarbes site (departmental code 65), a centre of excellence for "green" traction systems. The tests have made it possible to finalise the design and start manufacturing the pre-series systems in September. They will be installed on the first experimental hybrid TER train in early 2021.

A French first

This hybrid TER represents France's first project to produce a hybrid Régiolis¹ train. The project to hybridise a train was launched by Alstom in 2018 in partnership with SNCF and the French regions of Centre-Val de Loire, Grand Est, Nouvelle-Aquitaine and Occitanie. The hybridisation involves replacing half of the thermal engines with storage systems made up of lithium-ion batteries.

Working towards a greener TER rail fleet

The targeted objectives are a 20% reduction in energy consumption and greenhouse gas emissions, as well as a reduction in operating and maintenance costs. The lithium-ion batteries will make it possible to recover and store braking energy for reuse. The traction will be more economical, combining thermal energy and stored energy. Representing another benefit, the thermal engines can be stopped during extended halts in stations, with the train then being powered by its batteries. Finally, this technology will help to maintain performance in the event of low catenary voltage.

Successful bench tests

After an engineering phase, the storage system prototype was installed on the test bench at Alstom's Tarbes site at the end of 2019. The aim was to validate the system by simulating the train's operating conditions. Journeys were simulated in 'zero-emission' mode, using batteries only, as were journeys in 'hybridisation' mode, using thermal engines and batteries. Several months of tests have made it possible to finalise the design of the traction box – the energy storage system comprising the lithium-ion batteries and a power converter.

¹ The Régiolis train belongs to Alstom's Coradia Polyvalent range of regional trains. More than 300 state-of-the-art Coradia Polyvalent trains for Régiolis are currently in operation in France. The train concerned by the hybridisation project is a so-called "dual-mode" train (electric and thermal).



First modified train to undergo tests from 2021

The manufacture of the pre-series traction boxes started in September 2020 at Alstom's Tarbes site. At the same time, SNCF and Alstom are continuing their work on regulatory safety demonstrations and development. The first train, a Regiolis Occitanie train already in service, will be hybridised as of early 2021 at Alstom's Reichshoffen factory; tests will take place over the course of the year. The trials will then continue in commercial service from 2022 to validate the functions and performance of the solution in real conditions, with a view to mass deployment.

"The tests and validation of the energy storage system conducted at our centre of excellence for traction in Tarbes already demonstrate that the hybridisation of thermal trains is a technically and economically feasible solution for reducing emissions and costs. Alstom is particularly proud to be contributing to cleaner and more sustainable mobility alongside SNCF and the regions of Occitanie, Grand Est, Nouvelle-Aquitaine and Centre-Val de Loire," declares **Jean-Baptiste Eyméoud, President of Alstom in France.**

"We are today taking a new step towards a form of rail mobility that is increasingly respectful of the planet. The hybrid TER is part of the range of solutions to which we are committed, alongside the regions, in order to produce more TERs and less CO₂, with our programme PLANETER. Because each situation is different, we have multiple solutions. My thanks go to Alstom and the regions of Occitanie, Grand Est, Nouvelle-Aquitaine and Centre-Val de Loire for the quality of our partnership." **Frank Lacroix, TER Managing Director**

"The goal of 'zero emission' transport is a powerful driver for innovation. Rail is already a mode that does not emit much CO₂, and it will soon be even better thanks to the hybrid TER. It's what the passengers, as well as the regions, are very much expecting. Hybridisation is now entering the production phase: it deserves everyone's utmost determination because it is a promising solution for making rapid, significant progress." **Carole Desnost, Director of Research and Innovation at SNCF**

"The challenge of mobility throughout the Centre-Val de Loire region is our priority. It involves safeguarding and renovating local lines, to which we are strongly committed with the State, but also the fundamental issue of renewing trains. We have therefore decided to make an ambitious commitment to the hybridisation of existing material. The programme's entry into the production phase demonstrates how relevant it is and provides a glimpse of cleaner trains in the near future, close to the local regions and the inhabitants!" **François Bonneau, President of the Centre-Val de Loire Region.**

"With this shared initiative, we are developing a new alternative to the trains and locomotives that run entirely on fossil fuel on non-electrified lines. Thanks to hybrid, rail mobility is taking a decisive step towards reducing its greenhouse gas emissions. This is a promising new technological challenge and a real step towards carbon-free mobility." **Jean Rottner, President of the Grand Est Region.**

"Making the TER train fleet greener is one of the major objectives laid out in the roadmap of the Nouvelle-Aquitaine Region, Néo Terra, intended to speed up the ecological transition. Our goal: to make TER trains diesel-free by 2030. To achieve this, various technologies are being considered in the region: trains with rechargeable batteries, hydrogen trains, trains that run on bioNGV and of course hybrid trains, for which I am delighted to see the start of production. Very soon, a hybrid TER will be on the rails, which is excellent news for our users, for the industry, and for the planet."



Alain Rousset, President of the Nouvelle-Aquitaine Region.

"Hybridisation, hydrogen trains or trains with rechargeable batteries, all these developments must be supported to commit our rail network to an even more virtuous approach. Of course, the train is the cleanest form of transport, but maintaining the very highest standards is essential if we are to maintain our position as a leader. In addition to acquiring less polluting material, we must also, collectively, fight for the development of the network. Let the train be accessible in every local region, let the TGV allow the inhabitants of Toulouse and Perpignan to reach Paris, let the night train win back its former glory." **Carole Delga, President of the Occitanie / Pyrénées-Méditerranée Region.**

About Alstom

Leading the way to greener and smarter mobility worldwide, Alstom develops and markets integrated systems that provide the sustainable foundations for the future of transportation. Alstom offers a complete range of equipment and services, from high-speed trains, metros, trams and e-buses to integrated systems, customised services, infrastructure, signalling and digital mobility solutions. The company recorded sales of €8.2 billion and booked €9.9 billion of orders in the 2019/20 fiscal year. Headquartered in France, Alstom is present in over 60 countries and currently employs 38,900 people. Its employees in France total approximately 9,500, providing a pool of expertise to serve French and international clients. Over 25,000 jobs are created in France amongst its 4,500 French suppliers.

www.alstom.com

About the group SNCF

SNCF is one of the world's leading passenger transport and freight logistics groups, managing the French rail network, with an annual turnover of approximately €35 billion. Present in 120 countries, SNCF employs 275,000 people, 220,000 of whom work in France and more than half of whom serve its core rail business. The new SNCF, a public company created on 1 January 2020, is run by the SNCF parent company, which owns five companies: SNCF Réseau (management, operation and maintenance of the French rail network, railway engineering) and its subsidiary SNCF Gares & Connexions (station management and development), SNCF Voyageurs (Transilien, TER and Intercités, TGV InOUI, OUIGO, Eurostar, Thalys, Aléo, Lyria and distribution with OUI. sncf), Keolis (urban, suburban and regional public transport operator in France and worldwide), SNCF Fret (rail freight transport) and Geodis (logistics solutions and freight transport). Working alongside its customers (passengers, local authorities, loading and railway companies concerning SNCF Réseau) at the heart of the regions, the Group draws on its expertise in all aspects of rail transport, and more generally in all transport services, to provide a simple, fluid and sustainable response to all their mobility needs.

To find out more, www.sncf.com

About the Centre-Val de Loire Region

As the TER transport authority for 20 years, the region of Centre-Val de Loire has become the main local mobility operator following the NOTRe law and the takeover of the departmental roads, then with the integration of the TET train lines providing connections to Paris. Faced with the growing challenges of mobility and the opening-up of rural areas, the region has a global, intermodal vision, drawing on a strategy of transport services and a service charter as part of the SRADDET plan for the regions. By providing free school transport, launching a unified "REMI" regional road network and redesigning its fare structure, the region of Centre-Val de Loire has created the conditions for greater, more systematic use of its public transport services. Finally, by safeguarding the local rail network, it has reaffirmed its commitment to maintaining a multimodal,



complementary and efficient service for all local communities. In 2018, the region ordered nearly €460 million of new material (Regio2N) to renew the Corail TET rolling stock. The region has also received three Régiolis trains, which may eventually be involved in this trial.

About the Grand Est Region

Transport, mobility and intermodality represent a jurisdictional priority for the Grand Est Region, representing a budget of nearly 900 million in 2020 (nearly a third of the regional budget). The Region's aim is to facilitate daily life and co-construct the mobility of the future. To this end, it is involved every day in supporting people's journeys and strengthening the links between large cities and medium-sized towns, in order to open up its region in every direction and prepare for the mobility of the future. Today, the energy transition, particularly in the field of transport, represents a major challenge for the region, which has taken a proactive approach to ensure that the regional rail passenger transport network has a strong, energy-efficient service offer with a low carbon footprint. In this respect, hybridising the trains is likely to significantly improve their environmental impact, since in 2025 (when the cross-border Régiolis fleet enters service) the Grand Est region will be in possession of France's first Régiolis fleet, with 98 trains operating in the region.

About the Nouvelle-Aquitaine Region

As the transport authority for regional rail transport (TER), but also for intercity road transport and school transport, transportation and mobility represent one of the Nouvelle-Aquitaine Region's main budgets. Every day, 63,000 passengers are transported on the TER network, representing 700 runs per day, and 225,000 pupils on the school routes. Since 2002, the region of Nouvelle-Aquitaine has invested €789 million in renewing its rolling stock fleet, comprising 194 trains. This includes 66 Régiolis and Regio2N trains gradually brought into service between 2014 and October 2018.

About the Occitanie / Pyrénées-Méditerranée Region

As part of its action plan to become the first energy-positive region in Europe by 2050, and as a transport authority, the region of Occitanie / Pyrénées-Méditerranée is working hard to support the development of innovative, more energy-efficient travel modes. The region of Occitanie / Pyrénées-Méditerranée has set up a proactive policy to develop and organise a coordinated service offer to meet the new challenges of mobility and regional development. With the public consultation *Etats Généraux du Rail et de l'Intermodalité*, the new TER agreement and a €13 billion investment by 2030, the region of Occitanie / Pyrénées-Méditerranée has launched a true collective and strategic dynamic to serve communities and users.



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