



INFRASTRUCTURE AND VEHICLES, THE CHALLENGES OF ELECTRIFICATION

The electrification of highways and vehicles is a necessary step to reduce carbon footprint and meet European targets to reduce CO2 emissions by 30% in 2025. It is a prime opportunity for the sector to showcase its many initiatives.

The race to innovate is fuelled by the challenges of vehicle autonomy, charging facilities, charging speed and others.



ELECTRIC TRUCKS : MANUFACTURERS AT THE FOREFRONT

► **DAF Trucks** offers the 19-tonne 195 kW/266 hp LF Electric model with a range of 220 km and the 4x2 CF Electric tractor unit fitted with a 210 kW/286 hp VDL E-Power smart electric motor with a range of 100 km.

► **Renault Trucks** has put several experimental fully electric vehicles to the test in the 12 to 16-tonne segment. Delanchy Transports is running a fully electric 13-tonne refrigerated truck for deliveries to Halles Paul Bocuse in the centre of Lyon. Mass production of electric trucks is starting in March at the Blainville plant in Normandy, with the first deliveries planned for September.

► **Volvo Trucks** delivered its first electric vehicles in February 2019 : a waste collection truck for Swedish company Renova and a haulage truck for DB Schenker. Mass production of the FL Electric (16 tonnes) and the FE Electric (26 tonnes) will begin in the second half of 2019.

► **Mercedes** will produce the eActros in 2021. With two electric engines of 170 hp et 485 Nm, each one powered by a 240 kWh battery, the truck will have a range of up to 200 km and will be able to be charged in three hours.

► In Austria, **MAN** is testing the eTG prototype in a 32-tonne tractor unit version with a range of 130 km and a 26-tonne carrier with a range of 200 km. Mass production will begin in 2021. MAN has already sold one eTGM to Porsche for delivery logistics on the site of the Stuttgart-Zuffenhausen plant, enabling a CO2 reduction of over 30 tonnes per year.

► **Nikola**, in the United States, is adapting its “Two” and “Tre” hydrogen models in a fully electric version for the European market. Presented in 2019, they will be offered with three battery capacities: 500 kWh, 750 kWh and 1,000 kWh for a range of up to 700 km.

► Also in the United States, **Tesla** created a buzz when it demonstrated the Tesla Semi. Market launch has been announced, without any certainty, for the end of 2019.

► At the end of 2018, **Ford** unveiled its own electric truck, called F-Vision Future Truck. Its technical specifications are as yet unknown.

INVOLVEMENT OF PUBLIC AUTHORITIES

In February, Emmanuel Macron unveiled several measures in aid of electric mobility.

The French government is to invest €3 million in the BOM ZE project for electric household waste trucks.

The objectives of the Sector Strategic Contract have been confirmed, as 100,000 charging terminals are expected in 2022.

In addition, over €700 million will be invested over a five-year period for the development of a European battery sector alongside Germany, which will be investing €1.12 billion.

ELECTRIC BUSES MAKING HEADWAY

According to the Transport & Environment (T&E) NGO, sales of electric buses doubled in 2018, reaching around 9% of European bus sales. There are now 1,600 electric buses in circulation in Europe.

In France, the RATP in the Ile de France region has nearly 300 electric buses and has placed an order for a further 2,000 by 2020. In Lyon, 250 new low-emission buses will be added to the city's fleet as of 2020. The Orleans bus network will be fully electric by 2024. The city of Amiens has invested €30 million in 43 electric buses which are being put into service in March. In Grenoble, Alstom runs seven electric Aptis buses with low floors, co-developed with NTL.



THE ELECTRIC LCV GAINING GROUND

LCVs are rapidly becoming electric. Whether they are concepts such as the Renault EZ Pro, the Mercedes Vision Van, the Volkswagen I.D. Buzz Cargo, or new versions of existing vehicles, such as the Volkswagen eCrafter, the Mercedes eVito, the MAN eTGE or the Transit Custom hybrid, electric LCVs are available from all manufacturers.

Mercedes, for example, is launching the eVito this summer in France, with the first deliveries planned for the autumn, and has announced the eSprinter for the end of the year. The engine power is 84 kW, i.e. 114 hp, the battery capacity is 41.4 kWh, i.e. a range of 150 km for a charging time of around six hours.

The expansion of the electric bus is global. The Mercedes eCitaro, voted bus of the year 2019 in Spain, is in operation in Germany, serving the historic city centre of Heidelberg and also running two lines in Mannheim with a range of 150 to 250 km. This is nothing compared to China, where on average every 40 days nearly 10,000 new electric buses take to city roads.

CONNECTED PROJECTS

There are still a number of challenges to rise to in order to democratise electric vehicles in the professional sector. The first is the range, which is still insufficient to properly meet the needs of long-haul transport. Charging time is another, which varies between 90 minutes and six hours, depending on battery capacity and terminal throughput. The regional networking of these terminals needs to be extended. According to the ACEA, at least 6,000 high-power charging terminals are required.

But alternative innovative projects are being explored, such as the WattWay electric road by Colas, with photovoltaic cells able to produce electricity to be re-distributed. Combined with induction charging technology, like that of Qualcomm tested by Renault on an electric Kangoo, the technology could partly power the vehicles as they drive.

Initiated in Sweden by Scania, electrified road tests are stepping up in Europe. On a 2-km motorway section in Gävle in Sweden, overhead electric lines supply trucks with current via a pantograph (articulated arm). In the long-term, Scania hopes to develop the network of electric roads, to reach 1,000 km in 2025 and between 3,000 and 4,000 by 2035. Similar trials are being conducted in Frankfurt in Germany and in Italy, on a motorway section between Milan and Bergamo. To complete the charging systems, the installation of photovoltaic panels on the roof of vehicles is also envisaged, or the use of a fuel cell in buses and trucks. Launched in 2017, the European project JIVE (Joint Initiative for hydrogen Vehicles across Europe) plans for the deployment of 300 hydrogen-operated buses in Europe by 2023. In France, 28 buses are planned from 2019 in Pau, Toulouse, Artois-Gohelle, Auxerre and Versailles. Around one hundred refuelling stations should be operational in France by 2023.

A FEW LINKS



REPORT BY BNP PARIBAS
ON ELECTRIC VEHICLES
(IN FRENCH)

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