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Electric Truck on the Road to Breakthrough

After commercial vehicle manufacturers hesitated to make a clear technology decision in the past, things could now move very quickly with the electric truck. At the moment, electric vehicles are mainly used for short distances. The low requirements for the range of the vehicles as well as clearly plannable routes are an advantage in this case. However, the first relevant vehicles for medium and long distances are expected on the market soon as well, and the manufacturers' pipelines have filled up considerably in the last six months.

Recently, the three major European truck OEMs Traton, Volvo and Daimler announced aggressive targets until 2030. These plans seem ambitious, given that electrification is currently in its initial stages: only about one thousand electric trucks were registered in the EU at the end of 2020. According to an analysis by Arthur D. Little (ADL), this number is expected to increase ninety-fold by 2025, reaching as many as 560,000 trucks by 2030. By that time, one in ten trucks in Europe will be electric. Whether this ambitious ramp-up succeeds depends less on the product portfolio than on the available charging infrastructure. Due to the rapidly increasing number of e-trucks, the expansion of the necessary infrastructure will become a major obstacle to the ramp-up, which is why the expansion must succeed more quickly than in the passenger car sector.

The question is how and where to charge the heavy vehicles? Currently, four main charging use cases can be distin-

guished: home depot charging, destination charging, public fast charging, and public overnight charging. The main difference is the time a truck has available for charging, which in turn determines what power the chargers must offer. The shorter the time available for charging, the higher the power must be. In addition, logistics networks extend across the entire continent. Thus, public fast charging points on trans-european transport network (Ten-t) corridors should be equipped with very high capacity chargers (1000 kW or more). In contrast, home depot charging can use both simple AC chargers of 22 kW and more advanced DC fast chargers of up to 150 kW, depending on the vehicle design.

One challenge is common to the four use cases: given the lead times normally associated with the development of such infrastructure, governments and businesses would be well advised to act together rapidly. That's because the expected 2030 electricity demand of Europe's fleet of electric trucks is equivalent to about 1.5 % of Europe's total electricity consumption in 2019 (before the Covid-19 pandemic), according to an ADL analysis. Therefore, the expansion of the charging infrastructure must be intensified; this is the only way to achieve the breakthrough of climate-friendly e-mobility for commercial vehicles. The main routes of European logistics must be made future-ready across national borders. With clever planning and decisive action, that can be achieved in this decade.