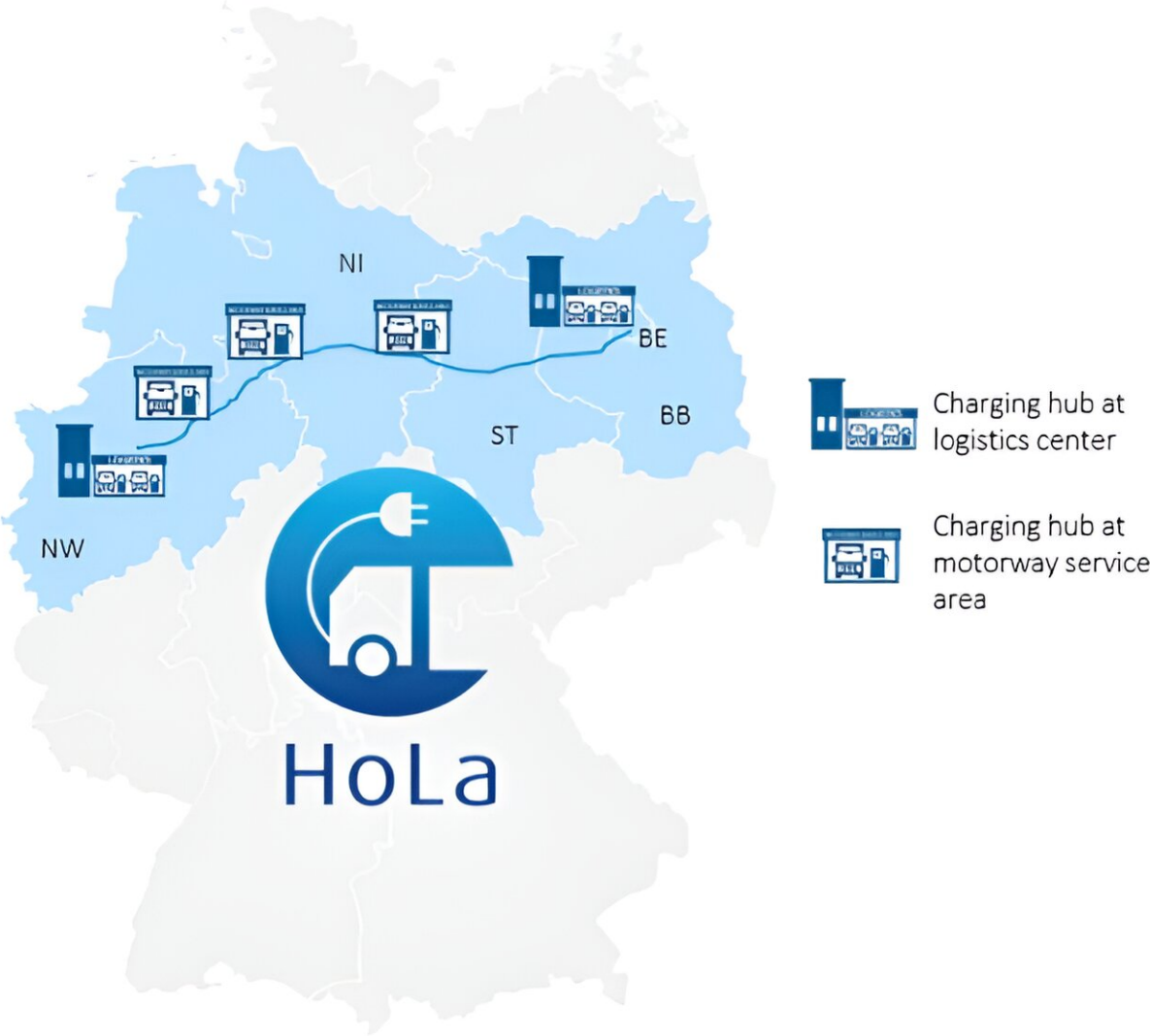


Electric trucks: Considerations for Germany's nationwide expansion of fast-charging locations

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Credit: HoLa Consortium

In the HoLa project, a total of eight high-performance charging points for trucks using the Megawatt Charging System (MCS) are being installed at five locations along the A2 between Berlin and the Ruhr region and used in real logistics operations. Recommendations for action have been derived from the research results available to date that contain important findings for a nationwide expansion of charging infrastructure.

All the results were presented today at the European "HoLa conference" in Berlin and are documented in a [report](#) titled "Megawatt charging in long-haul trucking: First findings on challenges and solutions."

In order to reduce greenhouse gas emissions from transport and from heavy-duty [trucks](#) in particular, it is mandatory for all EU Member States to deploy infrastructure for alternative fuels in the coming years. This includes the deployment of public fast-charging infrastructure for trucks along motorways. At the same time, all major truck manufacturers are offering battery-electric series models, which further underscores the urgent need for charging infrastructure.

The HoLa project, High-performance charging for long-haul trucking, coordinated by Fraunhofer ISI, is dedicated to this topic and is installing a total of eight high-performance charging points with the Megawatt Charging System (MCS) at five locations.

The project comprises three parts: Planning and selection of the locations, construction and planning of fast-charging points, and accompanying scientific analyses. In total, 12 consortium and 10 associated partners from industry and research are involved in the project—including the truck manufacturers Daimler Truck, MAN, Scania, TRATON and Volvo.

The cooperation of these 22 partners generates important insights into the development of charging infrastructure and fast-charging points along motorways. These were used to derive recommendations for action in the project that were presented to the public and discussed for the first time at the conference in Berlin.

More than 250 participants from 18 European countries discussed the challenges and possible solutions for the megawatt charging of battery-electric trucks, among other things. The conference was opened by Daniela Kluckert, Parliamentary State Secretary to the Federal Minister for Digital and Transport (BMDV), which is funding the HoLa project as an innovation cluster for climate-friendly truck drive technologies as part of implementing its Overall Approach to Climate-Friendly Commercial Vehicles.

Enormous expansion of truck charging locations by 2050

An EU regulation has already set concrete minimum targets with regard to public truck charging infrastructure for all EU Member States: For instance, Germany must have a total of 32 truck charging locations by 2025, rising to 104 by 2027 and finally to 314 by 2030. The related charging capacity for trucks will increase from approximately 66 megawatts in 2025 to 918 megawatts in 2030. The EU regulation also states that there must be fast-charging infrastructure available for battery-electric trucks every 60 to 100 km along the most important German motorways.

This raises questions about suitable locations, their design and the number of locations and charging points beyond the specified minimum amount. The researchers conclude that an initial network for Germany should cover approximately 142 charging locations. The underlying

scenario assumes that, in 2030, trucks will charge during the statutory 45 minute break after four-and-a-half hours of driving, about 15% of all heavy-duty trucks will be battery-electric ones, and a maximum of half of all charging processes will take place using public charging infrastructure.

When considering the volume and development of local traffic, the researchers believe that Germany will need at least 1,000 charging points in 2030, assuming a maximum waiting time of five minutes during rush hour and that 2,000 charging points are likely to be required assuming faster market diffusion of long-haul electric trucks and longer standing times. This ensures a minimum quantity of charging infrastructure and encompasses both large stations with more than ten charging points as well as smaller ones with at least two charging points.

Network operators should plan charging capacities in advance

In order to be able to make even more concrete statements about needs and the required charging infrastructure, the researchers recommend conducting comprehensive surveys to gather information about the temporal and spatial driving behavior of trucks as well as standardizing data on the [electricity grid](#) and the available power connection capacity in order to accelerate the expansion of electrical infrastructure.

In addition, the aim should be for network operators to publish local capacity data at the medium-voltage level along motorways and they should plan the provision of additional charging capacity in advance—especially close to motorways or other key transport hubs where charging demand is expected to be high, which could accelerate the expansion of charging infrastructure overall.

The project also conducted simulations of a future battery truck fleet based on the existing driving profiles of 2,400 diesel trucks. This revealed that significantly more than 90 percent of this fictitious truck fleet could be electrified, assuming a maximum battery size of 700 kWh in 2030 and 900 kWh in 2050, and that slow charging [infrastructure](#) would be sufficient for the majority of charging events, usually on private property with a maximum 44 kW. Charging with more than 350 kW, i.e., with the new Megawatt Charging Standard MCS, will be used especially for interim charging of long-haul trucks and will take place mainly at public charging stations.

There should be a combination of fast and slow charging

Dr. Patrick Plötz, Coordinator of the Business Unit Energy Economy at Fraunhofer ISI and the HoLa project leader adds, "At the HoLa Conference, it became clear to the truck manufacturers, logistics companies and politicians present that the demand for fast-charging stations equipped with MCS charging technology will grow enormously in the next few years. To meet this demand, MCS charging stations should be installed along major long-distance traffic corridors and should be combined with slow-charging stations at public and private parking areas.

"As the space along motorways is limited, the charging stations have to be built with as small a footprint as possible and areas close to motorways should also be taken into account. A joint use of truck charging locations for MCS charging, overnight charging or charging passenger cars with trailers could improve the capacity utilization of the charging locations and reduce the physical footprint needed."

More information: Megawatt charging in long-haul trucking: First

findings on challenges and solutions. hochleistungsladen-lkw.de/hola...
[LessonsLearnt-en.pdf](#)

Provided by Fraunhofer-Gesellschaft

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