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Siemens to deliver charging stations for electric buses to Denmark

- **High-power charging stations for electric buses**
- **Elimination of noise pollution and harmful emissions**

Siemens signed a frame contract with Movia, the largest public transport authority in Denmark, to deliver charging stations with a top-down pantograph for electric buses on request of their municipalities. The contract is a good example of how cooperation between public authorities and private companies can help to improve climate change.

Forty-five municipalities, including the city of Copenhagen within the Capital Region of Denmark and Region Zealand, could benefit from the contract. Siemens will provide high-power charging (HPC) stations, with power levels of 150kW, 300kW or 450kW. The three-year contract includes the installation, commissioning, civil engineering works and the Siemens remote monitoring system eBus cloud. This is one of the biggest frame contracts for the Siemens eBus business and it is accompanied by a six-year service contract. The service contract is important, since providing the necessary service level has often proven to be the weak part in testing electricity as a propellant on a larger scale.

In 2017, the forty-five municipalities and two regions of Zealand agreed to aim for CO₂-neutral bus transport by 2030 as part of Movia's Mobility Plan 2016 – to the benefit of the over 215 million annual passengers. In addition, the municipality of Copenhagen aims to become the world's first CO₂-neutral city in 2025. The switch to electric buses in Copenhagen, where nearly 100 million passengers travel by bus each year, will eliminate particle and noise pollution and CO₂ emissions from the public buses.

“Movia aims to deliver climate-friendly mobility for the benefit of cities, businesses and citizens. The agreement with Siemens paves the way for electric buses throughout Zealand and thus increases the green change of bus transport for which we have been working hard for several years. It’s really very pleasing,” says Movia Chairwoman Kirsten Jensen, Mayor of Hilleroed and former member of the European Parliament.

“Electromobility plays a key role in enabling environmentally friendly transportation in our cities. Siemens offers solutions for intelligent road, thanks to our proven, fully automated eBus charging technology. It is a fast and efficient solution, adapted to cities’ requirements, punctuality needs, environmentally friendly public transport and low energy consumption,” says Roland Edel, Chief Technology Officer of the Siemens Mobility Division.

Selected bus terminals are equipped with charging stations providing the necessary power to the electric buses via a top-down pantograph inversely mounted to a mast. The battery-management system of the electric bus controls the charging process according to the standard protocol ISO 15118 via Wi-Fi communication. Additionally, the control pilot circuit defined by the international standard DIN EN 61851 provides a manual control over the charging process to ensure the highest safety standards.

The charging process is initiated when the electric bus arrives on the charging mast and a Wi-Fi communication is established. In order to charge the batteries, the bus stops underneath the charging mast. As soon as the driver has activated the hand brake, the charging process is started automatically and the four-pole pantograph connects with the bus. The buses are equipped with contact rails on the roof above the front axis of each electric bus. Once the driver releases the hand brake, the charging process will be stopped and the pantograph will be automatically raised to the upper position, and the bus is allowed to leave.

The HPC stations can charge the bus batteries within four to six minutes at regular dwell time intervals, enabling them to complete a full day of scheduled service. By charging just enough for traveling all day from terminus to terminus or to the next available charging point, the Off-board High Power Charger adds a lot of flexibility to

the eBus service. Since the buses occupy the charging station only for a few minutes, the Off-board High Power Charger is ideal for high-frequency operating conditions, since the charging infrastructure can be used by several buses per hour, even if they are from different manufacturers.

In addition, Siemens also developed the onboard interfaces for the bus. By providing all components from a single source, Siemens guarantees a fully interoperable charging system to deliver electric charge from the same charging station to buses from different bus manufacturers.

Selected bus routes in Hamburg (Germany), Stockholm and Gothenburg (Sweden), Drammen and Oslo (Norway) and Montreal (Canada) are already electrified with this latest Siemens technology.

This press release and further material is available at www.siemens.com/press/ebus

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