Schunk Group

150 Cities – 35 Countries: Schunk Smart Charging Charges Electric Buses All over the World

Cities and municipalities around the world are working hard to reduce noise and air pollution caused primarily by daily traffic.

Schunk has decades of experience in the field of electric mobility and emission-free alternative drives. More than 150 cities in 35 countries are already benefiting from this. They rely on the durable, flexible and economical Schunk Smart Charging systems for their electric buses. These enable automated, reliable and safe charging of the batteries. Among other things, 100 electric buses connect Amsterdam Airport Schiphol with the surrounding area. The buses cover ~30,000km every day – completely emission-free. The Schunk charging pantographs are mounted on the roof of the buses or alternatively on the charging station as inverted pantographs.

There is now a new model of Depot Charger. It enables vehicles of different heights to be docked at the depot in mere seconds. E-buses with Schunk Smart Charging pantographs are in operation in over 35 countries. In the beginning only individual buses were equipped in projects. Today the company supplies the key technology for fleets of up to 200 buses. Customers trust the experience Schunk has gathered in over 150 international projects – from Seattle to Krakow to Tokyo.

Product Manager Timo Staubach explains where electromobility stands today and what he expects for the near future.

Question: Mr Staubach, Schunk has been offering sophisticated electric bus charging technologies since 2014. The industry is currently working with two different charging concepts: opportunity charging on the route and depot charging. How do they differ?

Timo Staubach: 'Opportunity charging' takes place at strategically selected bus stops. Here, the roof-mounted pantograph makes contact with a docking station installed at the bus stop. The advantage is that a comparatively smaller vehicle battery can be used because only a relatively small amount of energy needs to be stored – just enough for the next hours of operation. This method is particularly well suited for cities with bus lines that have extensive operating ranges. Overnight charging, or depot charging, takes place after operating hours, in the vehicle depot. The significantly larger batteries with their correspondingly higher charging capacities require more space and can easily add a few tons of additional weight to the vehicle, depending on the operating range requirements. This also means less space on the bus for passengers. For smaller municipalities with less extensive operating ranges, this can, however, be a practicable solution.

Q: Schunk offers pantographs for both concepts. What advantage do they offer over the conventional plug-in solution?

TS: Our pantographs are well suited for recharging both at the bus stop and for overnight recharging in

Electric buses equipped with roof-mounted pantographs stop under the charging station where the pantograph extends, connects to the charging station and charges the batteries

the depot; here the contact interface is simply located in the vehicle depot hall. Transit companies with large fleets naturally do not want to individually plug in each bus every evening. That's why we're convinced that the manual plug-in solution has no long-term future, specifically with a view to automated depot operation. Whether opportunity charging or depot charging is the best solution depends on the respective charging strategy, the number of vehicles, the characteristics of the bus routes and their particular requirements. The main thing here is to take into account and analyse the individual needs of the customer.

Q: In ongoing operation, keeping to the bus schedule is the top priority. What technical challenges did you have to overcome as a supplier to ensure this?

TS: When parking the bus at the charging station, the tolerance range has to be chosen to be as large as possible. We cannot expect bus drivers to park with millimetre precision. Schunk pantographs provide a very large tolerance range. A visual orientation aid is sufficient for bringing the vehicle into the proper position. In addition, the pantograph automatically connects with the charging infrastructure in just five seconds and with 1000 amps allows an extremely high current transfer. Because of this, our systems are some of the leading and best engineered automated charging systems currently in use in public local transport with battery-powered electrical buses. The so-called kneeling effect, the sideways tilting of the bus at the bus stop, is compensated by the rocking suspension design of the pantograph so that no interruption of current flow occurs. Reliable contact quality is the key to the charging process.

Currently, Schunk is the supplier with the most projects and systems within the fully automatic conductive charging market segment. With intelligent technologies, the required battery dimensions can be significantly reduced, thus achieving a highly effective relationship between battery size, passenger load and range.

Click **here** to watch our video.

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Background Image: One charging solution for day and night: equipped with roof-mounted pantographs, 80 electric buses in Krakow are charged quickly on the route during the day and slowly in the depot at night

SMART CHARGING SOLUTIONS FOR ELECTRIC BUSES

Automated recharging with pantograph technology

Innovative. Process-efficient. Functionally reliable.

Whether on the line or in the depot: We offer charging technologies and components that set standards. Schunk Smart Charging – our unique portfolio of charging solutions based on pantograph technology can be individually tailored and optimally integrated into your existing infrastructure.

Depot charger

Roof-mounted pantograph

Inverted pantograph

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