



E-Mobility



## SUCCESS STORY

# Space-saving connectors for electric buses

Czech bus manufacturer SOR places highest requirements on electrical connectors. Working closely with Stäubli enabled them to find the right solution to their problems.

In Europe, public transportation networks are highly valued and are the backbone of transportation in many regions. To meet climate targets and improve air quality, many cities and transportation companies are upgrading their existing combustion engine equipped bus fleets with their new electric counterparts. While the technology of electric drives has evolved drastically over the last decade, integration still poses great challenges regarding space and performance – therefore Stäubli worked with SOR from the Czech Republic to find the ideal connector for their advanced requirements.

### A long history in the bus business

Established in 1991, SOR has a long tradition in the development and manufacture of environmentally friendly buses. With a responsible approach to development and production, they can offer a very efficient and environmentally friendly solutions. What started off as a small business, with the goal to produce small buses, has developed into a modern bus manufacturer with a wide product portfolio and multiple drive options. Today, SOR is one of the largest employers in the Libchavy area and produces buses for clients around the world, ranging from the Netherlands to Bulgaria, all the way to the Faroe Islands.

**Application:** PerforMore high voltage connector: DC interfaces with high technical requirements

- Inverters / converters
- Batteries
- Charging-inlets
- High-voltage distribution units

**STÄUBLI**



### Vehicle modularity limits space

Being specialized in manufacturing buses, all SORs vehicles are designed for passenger transit in urban environments with an emphasis on low-cost operation. One of the main features of their new SOR NS all-low-floor electric bus is its ability to arrange the seats in various layouts inside the vehicle and different combinations of the entrance doors, to enable a wide range of use in all possible environments. This unique design solution of the technical elements makes for a very economical operation of this model but limits the space for technology under the passenger surfaces.

One aspect of low-cost operation is user-friendly maintenance. To make working on the buses as easy and straight forward as possible, the SOR engineering team decided to use a pluggable connector to connect the batteries to the charging socket cabinet.

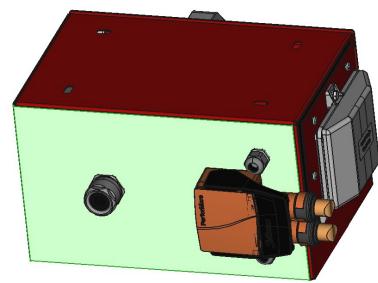
Pluggable connections in the drive design facilitate assembly and maintenance. These solutions must also be shock-resistant and have the ability to withstand vibrations. In addition, weight and space are another important topic, especially in the new SOR buses.

### Stäubli's solution

In cooperation with Stäubli experts, it was evaluated that a standard connector product meets the high requirements of the new SOR bus. The Stäubli PerformMore is designed for the use in various interfaces inside electric and hybrid vehicles such as batteries, inverters, charging inlets, or high voltage distribution units. It stands out for its compact design, heavy-duty resistance as well as easy and fast assembly operation.

A two-stage locking mechanism enables quick and user-friendly operation as well as high occupational safety. The easy handling saves a lot of time during assembly and maintenance, where safe and reliable operation is essential in high-voltage applications.

By using the 90° angled version, the Stäubli connector eases the installation in limited packing environments in various positions within the vehicle.



### Customer benefits

- Compact two-pole connector design
- Loads up to 400A/1000V DC
- Highest water ingress protection IP68, IP6K9K
- Special, two-stage opening mechanism with built-in High Voltage Interlock Loop (HVIL) functionality
- High quality including EMC shielding
- High vibration resistance

### About Stäubli

Stäubli is a global mechatronics solution provider with three core activities: Connectors, Robotics and Textile. The international Group has a presence in 29 countries.

Stäubli Electrical Connectors is a specialist for advanced contact technology and technically mature solutions with a product portfolio ranging from miniature connectors up to high-power connectors for various industries.