

Carrosserie HESS AG

Success Story – SwissTrolley plus

The «SwissTrolley plus», an all-electric vehicle with space for around 160 passengers, has been running on the lines of Zurich's public transport services since the beginning of 2017. Also on board of the innovative trolleybus is an NB2800 router of NetModule.

The Project

Carrosserie HESS AG is a vehicle manufacturer based in Switzerland. The «SwissTrolley plus» - a trolleybus that is operated purely electrically - is developed in the company's assembly halls. Its high-performance traction battery allows journeys over 20 kilometers without overhead contact lines.



The project was launched in cooperation with Zurich's public transport services (VBZ). ETH Zurich and the Bern University of Applied Sciences (BFH) are also involved in research in the areas of control and optimisation as well as battery technology. «SwissTrolley plus» is a lighthouse project, which is supported by the Swiss Federal Office of Energy for Switzerland's energy future.

An NB2800 router of the NetModule is installed in the e-trolleys for recording and forwarding the vehicle data as well as for remote access.

Requirements

For the successful implementation of the project, NetModule's devices must meet, among others, the following requirements:

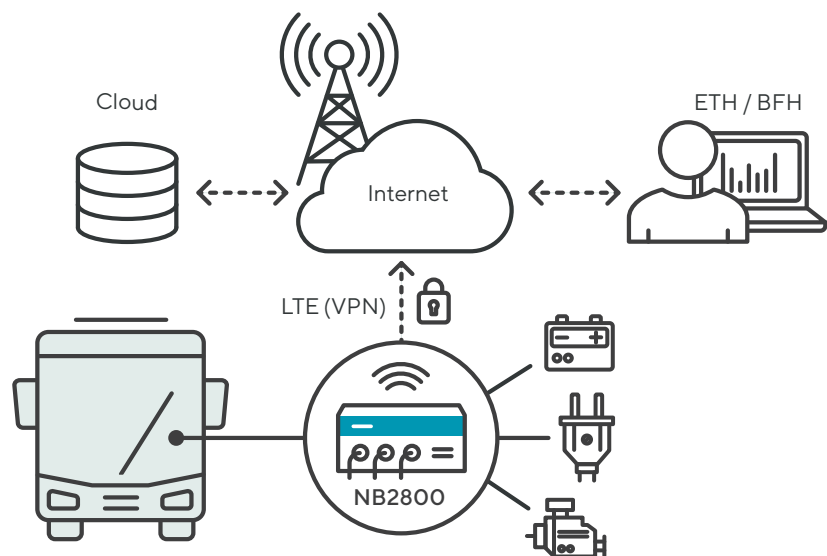
- E1 certification
- Connection to the vehicle bus
- Internal data storage
- Possibility to implement own applications

Solution

The SwissTrolley plus of HESS is equipped with an NB2800 router in customer-specific design (OEM). The router is specially certified for installation in vehicles (E-mark) and designed for the temperature range from -25 °C to +70 °C. The device is equipped with an LTE module, several Ethernet ports and also GPS.

The special feature of the customer-specific designed router variant is the possibility of direct connection to the vehicle bus. This is done via several interfaces, so that the data of different vehicle parts can be read out individually and safely separated from each other and so that the load can also be distributed. For example, battery and general vehicle data are read out and preprocessed directly on the router. The router has an integrated SSD for this purpose.

Customer-specific applications can be implemented independently and cleanly separated from the router software in a so-called Linux container. Several gigabytes of data accumulate per day, which are directly preprocessed in the bus. This saves HESS an additional industrial computer.



The pre-processed data is then securely transported to the cloud via LTE with OpenVPN. The universities involved also have access to the system for their research work via OpenVPN. ETH Zurich is working on ingenious control algorithms to plan and control battery charge levels with foresight and energy efficiency. BFH is also involved in research into prediction models and methods to maximise battery life.

With the routers of the NetModule a good and professional solution was found, which meets the requirements of the project. With the SwissTrolley plus, the company Carrosserie HESS and its partners are heading into the future.