

REFUSE COLLECTING VEHICLE

E-truck with in-vehicle networks based on J1939

The Futuricum e-truck is used in prototype applications as refuse collecting vehicle. The Volvo Truck's electronic control units are linked via J1939 networks.

Designwerk (Switzerland) has developed in cooperation with various industry partners and universities a vehicle for the collection of recyclable materials named Futuricum. The drive and battery system is being further developed and tested for the completely electric-powered 26-t truck. There have been no electric commercial vehicles with hydraulic structures and a gross weight of over 18 t in operation in Switzerland. The Swiss Federal Office for Energy supports the development and testing of the vehicle within the parameters of a flagship project.

The in-truck networks use the J1939 protocol. The communication with the construction on the vehicles works with digital signals only and without a bus system, said Fabian Wyssmann from Designwerk. "The weighting system works independent from our system."



(Photo: Designwerk)



Designwerk, Volvo Trucks, and other partners have developed jointly the Futuricum truck (Photo: Designwerk)

Considerable savings in energy are expected through the electrification of such vehicles, as conventional combustion engines used for such purposes frequently operated in the partial load area and the energy produced by braking cannot be recovered by means of the stop-and-go drive function. Electric motors have additional relevant benefits, especially when used as waste collection vehicles in the city environment, such as the lower or non-existent level of noise and pollutant emissions. Besides the motor being free of emissions and silent, there is the hope of lower operating costs in comparison to conventional diesel vehicles.

The four motors of the Futuricum 26E ensure a total performance of about 500 kW. Engines of electric vehicles and bodywork structures do not require an idle mode. They consist of fewer movable parts and with uniform motion compared to combustion engines. This makes electric vehicles quieter than vehicles with Otto petrol engines. First refuse collecting e-trucks have been shipped to Swiss customers: Since one year they are in daily operation in Lausanne, Murten, Neuenburg, and Thun. Beginning of this year, the cities of Colmar (France), Frankfurt (Germany), and Mainz (Germany) are testing the e-vehicles. The achievable distance is up to 150 km, which is suitable for intercity waste collection.

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