

SmartHybrid Vossloh DE 18

MAINLINE, GERMANY



Cost-effective and low-emission locomotives for freight transport are the order of the day. Battery-powered operation enables emission-free and low-noise

operation for up to 1 hour and offers operators various benefits, such as higher availability, decarbonization, and energy efficiency.

Project features

KIEPE has already equipped more than 285 DE 18 locomotives from Vossloh Rolling Stock, primarily used for heavy shunting and mainline service with traction converters (TU 900). 25 locomotives of this type have already been fitted with a SmartHybrid battery power converter, including a control system.

The power converter with an integrated battery is mounted under the locomotive in place of the auxiliary fuel tank and is connected to the locomotive’s fire detection and suppression system.

KIEPE assembles the SmartHybrid battery power converters in a dedicated assembly facility set up in Düsseldorf.

Two battery packs are placed inside the housing and integrated into the locomotive’s propulsion system both mechanically and via software.

The batteries can be charged via the diesel engine or an external power source (400 V AC).

- System Integration Replaces Diesel Auxiliary Tanks with Battery Power
 - Up to one hour of emission-free and quiet driving, especially in residential areas, at the depot, in the evenings, etc.
- Up to 25% lower fuel consumption
 - Efficient Starting and Stopping of Locomotives
 - Reduced maintenance costs
 - Compliance with New Environmental Regulations

Traction Batteries: Technical specifications

Type	BorgWarner battery packs with Li-ion NMC cell chemistry, water-cooled
Battery voltage	583...907V
Battery capacity	2x 36,8 kWh
Max. Discharge Power	2x 294 kW (10 sec)
Max. Charging Power	2x 184 kW (10 sec)
Continuous Power	2x 92 kW
Dimensions (L x W x H) in mm	1875 x 750 x 216 each
Weight	430 kg each
Additional features	Integrated battery management, connection box including disconnect switches, pre-charge circuit, and fuse

Subject to change without notice

SmartHybrid-Container

- 2 Li-Ion NMC battery packs
 - 17 kW battery charger for plug-in charging
 - Water cooling for batteries and charger
 - Connection to the traction DC link
 - Power contactors for safe disconnection
 - Thyristor-Crowbar to protect the battery from overvoltage
 - Fuses in the positive and negative
- circuits
 - KIEPE battery control unit (BSG) for connection to the locomotive’s central computer
 - Installation in the auxiliary tank compartment
 - Integration into the locomotive’s fire detection and suppression system
 - Dimensions: 3010 x 942 x 960 mm³
 - Weight: 1550 kg

Technical drawing

