



DE 18 Smart Hybrid

Technical Data

**Diesel-electric
hybrid locomotive for
heavy-duty shunting
and mainline service**

Diesel-electric hybrid locomotive for heavy shunting and mainline service

The DE 18 SmartHybrid is a clever choice. It combines a diesel engine output of 1,800 kW with a powerful battery pack of the latest lithium-ion technology and a peak output of 600 kW. This not only pays out for the so-called 'last mile' or in construction logistics.

In sensitive areas, it ensures noiseless 'zero emissions'. One major advantage is that the DE 18 SmartHybrid can operate at zero emissions and maximum traction power at walking speed for an unlimited period of time.

At a glance

Benefits

- Existing locomotive enhanced by additional battery system
- No limitation of the 1,800 kW diesel engine power
- Up to one hour of shunting without emissions
- Drive through zero-emission areas in tunnels or indoor operations
- Extended start-stop support for the diesel engine, hence associated savings on fuel costs, maintenance costs and pollutants
- Simple integration of the batteries without complex interconnection of diesel engine and batteries – and therefore safe for innovations

Implementation

- Plug and play solution, replacement of the 1,000-litre additional tank with rechargeable battery module
- Integration of a lithium-ion battery with the latest lithium-ion technology
- Plug-in hybrid, ecologically sound with affordable charging overnight from external electricity supply
- Fast charging via the diesel engine

Performance

- Nominal capacity of the traction battery of 73.6 kWh
- Depending on use of the battery up to 7,000 charging cycles, Lifetime 8-10 years
- Total weight of the locomotive <84 t
- Homologation in Germany, France, Belgium, the Netherlands and Luxemburg
- 100 % takeover of the electrical auxiliary operations
- Reduction of the high idle energy consumption in shunting operations, which makes up on average 60 % of a shunting locomotive's operational performance
- 184 kW continuous power (charge/discharge)
- Up to 592 kW short time discharge power

Technical Data

wheelset arrangement	Bo'Bo'
maximum speed	120 km/h
diesel engine power	max. 1.800 kW
diesel engine	MTU 12V 4000 R84, MTU 12V 4000 R43
power transmission	wheelset selective control
starting tractive effort	max. 300 kN
power at the wheel in battery mode	155 kW
power at the wheel in diesel mode	1.600 kW
mass	80 t
fuel tank capacity	2.700 l
nominal capacity of the traction battery	73,6 kWh
track gauge	1.435 mm
length over buffers	17.000 mm
inverter type	IGBT
electrodynamic brake power	max. 1.450 kW
Top speed	120 km/h

SmartHybrid battery system

integrated into the installation space
of the additional tank



Doktor-Hell-Straße 6
24107 Kiel, Germany
+49 (0) 431 3999 0
contact.kiel@vl-rs.com

vl-rs.com