



**Vossloh  
Rolling Stock**



# Modula EDD

Technical Data

## Hybrid locomotive for hauling freight

Electric Traction + 2 Diesel Engines

# Hybrid locomotive Modula EDD

The Modula is a hybrid locomotive concept with different traction modules on a standardised centre-cab locomotive platform. These systems have the same interfaces so that, for example, the two diesel engine unit can be replaced by a two battery unit.

## Variants:

- **BDD** (small battery + two diesel engines),
- **EDD** (electric traction + two diesel engines) and
- **EBB** (electric traction + two larger batteries).
- In addition a **BFC** (Fuel Cell traction system) is in development as a further traction variant.

This modularity allows the operator to adapt the locomotive quickly and easily to changing requirements. It offers a range of standardised functions and systems that can be assembled into customised versions to suit the customer's specific requirements. With its high proportion of identical parts, the platform concept provides synergy effects and simplifies the management of replacement parts.

## The benefits of a EDD at a glance

- Sturdy, mid-cab construction, excellent shunting locomotive qualities and a wide range of operational applications
- Optimised vehicle design that takes into account the full range of customer requirements
- Power at the wheel increases for line use by up to 2,500 kW – in 15/25 kV E-Mode approx. 50 % more output than a DE 18
- Simple and flexible integration of current and future energy storage and electricity generation technologies (also hydrogen-based systems)
- The EDD variants (draw power from the overhead catenary system) have considerable potential for savings in maintenance and energy costs
- High level of reliability through the use of high-quality components
- High availability thanks to a redundant drive configuration and two drive systems
- Remote Cloud access to data and the locomotive's condition enables its deployments to be precision-planned (an advantage when refueling or when replacing parts subject to regular wear and tear)
- Design and safety aspects structured according to the CSM and EN 50126 V-Model process
- TSI approval allows the locomotive to be used in many European countries



approx. **50%**

more power at the wheel  
compared to the DE 18

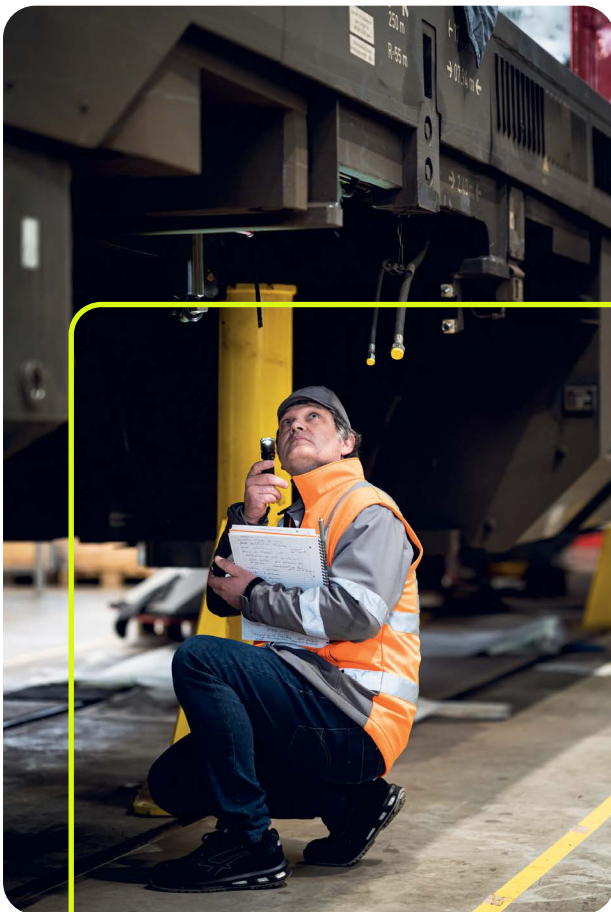
The Modula combines the characteristics of a main-line locomotive with those of a classical shunting locomotive, and the focus here is on flexible power sources. The customer's application profile can be used to combine two power sources to make a single variant.

The control system in the Modula is designed with the future in mind; it can be upgraded with new functionality even years after delivery. It can also be equipped with a digital automatic coupling, a camera to identify obstacles or Augmented Reality applications for servicing. And if the locomotive's intended use changes in the future, modifications can also be carried out accordingly.

The Modula EDD variant combines the advantages of electric traction with two diesel engines, offering flexibility for operations both on electrified and non-electrified lines.

The locomotive can run on electric power from the catenary where available, minimizing fuel consumption and emissions, while the dual diesel engines provide backup power in areas without overhead lines.

This dual-mode capability allows for seamless transitions between power sources without the need for additional locomotives, enhancing operational efficiency. The EDD can recuperate energy during braking when operating in electric mode. With a high starting tractive effort and a redundant drive configuration, the EDD ensures reliability and operational flexibility, especially on long-distance routes where access to catenary may be intermittent. It is ideal for operators requiring both power and adaptability for diverse railway networks.



## Maintenance

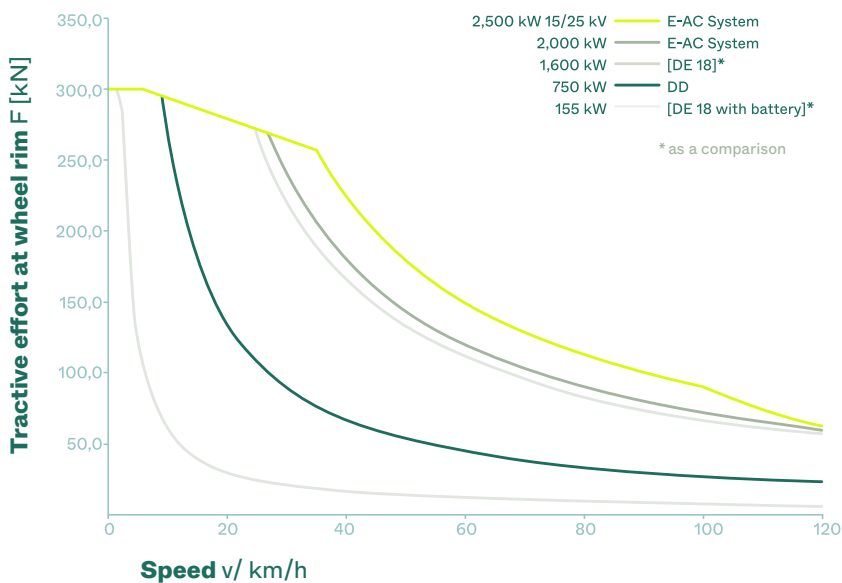
There's a focus on maintenance. Every Modula variant is designed for easy maintenance. The continuous analysis of sensor data allows maintenance work to be predicted and planned better, which means that downtime can be reduced considerably. What's more, the modular system also allows the user to completely remove a diesel engine or battery unit, replace it with one that has already been serviced and go straight back into operation. This opens up completely new possibilities in the area of maintenance and service.

## Modula EDD Technical Data

<b>Wheel arrangement</b>	Bo'Bo'
<b>Length over buffers</b>	18.700 mm
<b>Min. curve radius</b>	75 m
<b>Vehicle mass</b>	84 – 90 t
<b>Fuel tank capacity</b>	1,500 l
<b>Diesel engine output</b>	2 x 480 kW
<b>Diesel engine in EDD</b>	MAN D3876 6-cylinder, in-line engine
<b>Exhaust emission restriction</b>	EU 2016/1628 Stage V as per EU Regulation 2016/1628
<b>Power transmission</b>	AC/AC wheelset-selective control
<b>Converter</b>	IGBT-inverter
<b>Power at the wheel E AC system</b>	2.500 kW 15/25 kV
<b>Power at the wheel DD</b>	750 kW
<b>Tractive effort</b>	300 kN starting tractive effort
<b>Top speed</b>	120 km/h
<b>Ambient conditions</b>	T1 -25°C to +40°C
<b>Tunnel classification</b>	Category B (20 km) as per TSI SRT
<b>Homologation</b>	As per TSI initially planned in Germany, Austria and the Netherlands

## Modula EDD

### Power at the Wheel



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