

# Voith Electrical Drive System Complete system approach



# Improve your fleet's performance, efficiency and reliability

The steady progress of climate change is increasing public pressure to reduce CO<sub>2</sub> emissions in cities and municipalities as quickly as possible. For this reason, local public transport should dispense with internal combustion engines altogether in the future and switch to zero-emission drives instead.

With over 30 years of electric drive developments, Voith's latest innovative drive system offers an extremely quiet, low energy consumption system with water-cooled componentry.

In addition to extending your range, the Voith Electrical Drive System (VEDS) has the full electric drivetrain suitable for solo, articulated, double decker busses as well as coaches operating in challenging topographies.

The VEDS core products (electric motor, inverter and control software) have been designed to work seamlessly together as a single drive system. The components have been optimized to deliver best-in-class efficiency as well as highest peak and continuous power considering automotive standards.

The direct drive concept requires no additional gearbox, reducing weight and complexity while increasing driveline efficiency through optimized recuperation and exceeding top speed, gradeability and acceleration requirements.

VEDS supports battery systems from a wide range of manufacturers and is also enabled for use in fuel cell electric vehicles. VEDS requires no additional installation space in the chassis designed for combustion engines. This simplifies converting existing vehicle fleets with conventional diesel, hybrid or gas drives to electric vehicles.

With the modular VEDS approach, Voith's experts support you to configure a tailor-made solution for your vehicle application.

Let's save emissions with VEDS for a sustainable world!

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## Client benefits and advantages

- + High reliability
  - + Most efficient electric drivetrain on the market
  - + Highest continuous power available
  - + One-stop-shop solution from components to complete systems
  - + High recuperation rates, low noise and compact design
  - + Advanced energy management
  - + ISO 26262 compliance
  - + Modular approach for battery electric and fuel cell application
  - + Customer support over the whole product life cycle
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## Energy-efficient electric motor



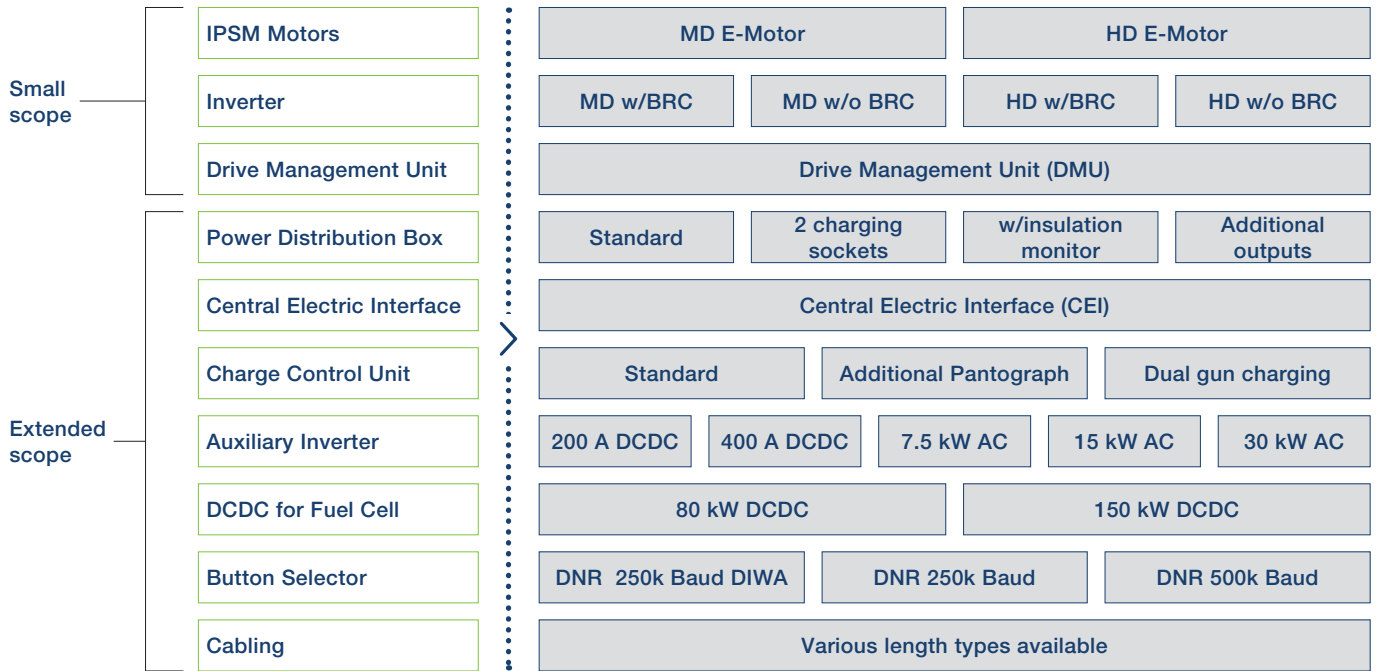
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## Technical data

Type	VEDS MD	VEDS HD
Continuous power	230 kW	310 kW
Peak power	250 kW	410 kW
Max torque	2,850 Nm	3,100 Nm
Max speed	2,500 rpm	3,800 rpm
Isolation class	IP6K9K	IP6K9K
Weight	260 kg	315 kg
Application cycle	Optimized for urban applications, low average speed cycles	Optimized for inter-urban applications, higher average speed cycles
Vehicle class	Solo buses 9–12 m	Solo and articulated buses 18 m, double deckers and coaches

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Individual tailor-made configurations for different vehicle applications



Voith Electrical Drive System at a glance



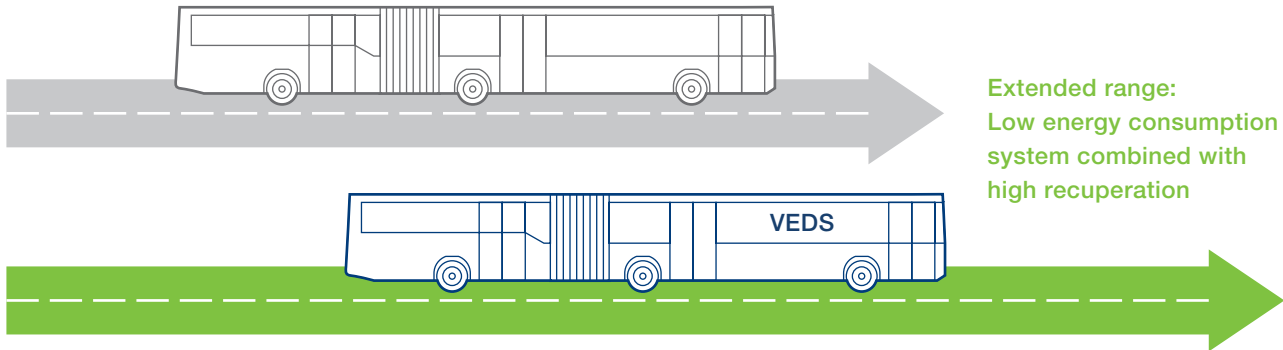
Modular motor concept, suitable for all bus classes. Optimized range thanks to high efficiency and low system weight



Safe and easy entry into e-mobility for environmentally and citizen-friendly local public transport



Complete system approach for minimum integration effort and maximum reliability



Supports all common battery systems on the market and can be integrated into any vehicle type



Minimal noise level inside and outside the bus thanks to direct drive and water cooling



No local emissions of NO<sub>x</sub> and particulate matter thanks to recuperation braking and energy management



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