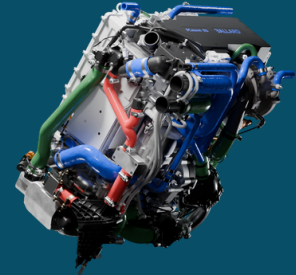




Fuel Cell Power for Heavy-Duty Applications

The FCmove®-XD is the latest development in Ballard's proven FCmove® platform of high performance fuel cell engines for zero-emission heavy-duty vehicles. With a compact, powerful, modular design, the FCmove®-XD is scalable from 135-405kW. It features a single interface offering an easy integration solution for vehicle OEMs and integrators, backed by Ballard's proven experience, product performance, and service quality promise.



Features

Low Total Cost of Ownership

High efficiency engine enabling long driving range.

Scalable by Design

Easily incorporates up to three parallel connections for power output of 135kW to 405kW utilizing all the original connections.

Proven Reliability & Durability

Demonstrated exceptional fuel cell stack lifetime, with >25,000 hours of operation and 98% in service module power availability.

High Performance Stack

FCgen®-HPS is a high power density, high performance stack designed to meet stringent automotive standards.

Freeze-Start Capability

Rapid freeze-start from -30°C eliminates vehicle plug in or vehicle assisted start procedures.

Compact Design

Integrated with a DC/DC converter and Balance of Plant components, this module easily connects to the architecture of the integrator with a 17% reduction in volume from previous models.

Humidification

Integrated maintenance free system that provides maximum system performance and durability through a wide range of environmental conditions.

High Temperature Operation

Operation up to 90°C system outlet temperature.

Climate Protection

IP6K9K-rated enclosure guards against and protects key module components in extreme climates.

High Pressure System

Offers better performance, fuel efficiency, and durability by preventing degradation.

Remote Diagnostics

Monitors performance data remotely to anticipate preventative maintenance.

Safety Features

Fuel shut off, fuel pressure relief, touchsafe high voltage rated connectors, optional high voltage interlock configuration, hydrogen leak and fire detection, and an integrated redundant hardware safety system.

Product Specifications¹

Performance with integrated DC/DC convertor

Rated power	135 kW
Peak efficiency ²	58%
Lifetime ³	>25,000 hours
Operating voltage with DC/DC	520-750 V
Idle power	10 kW

Physical

Dimensions (LxWxH)	895 x 735 x 550 mm
Weight ⁴	238 kg

Environmental

Ingress Protection	IP6K9K
Environmental operating temperature	-30°C - +80°C
Minimum ambient start-up temperature	-30°C

Fluids

Fuel type	Gaseous hydrogen
Fuel composition	ISO 14687:2019 Grade D SAE J2719_201511
Fuel supply pressure	5-8 bar
Oxidant type	Air
Coolant type	Ethylene glycol concentrate fuel cell grade balanced by DI water
Maximum coolant outlet temperature	90°C

Standards

Codes, standards, directives ⁵	ISO23273:2013, ISO6469-2:2018, ISO6469-3:2018, ISO646901:2019, SAE J2578, UN ECE Reg 10, UN ECE R134, REACH, R100:2015 Annex 4B
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Communication

Control interface	CANbus
Data interface	Wifi/Cellular

¹ Specifications are subject to change.

² Includes purge losses.

³ Product lifetime is based on operation under standard operating conditions. Operation outside specified limits may reduce product lifetime and performance. Please contact Ballard for an application-specific assessment.

⁴ Dry.

⁵ The Product is designed and manufactured with reference to applicable provisions of the standards listed, to the extent relevant to the Product as a component. As many of these standards apply at the vehicle or system level, the Product in isolation is not intended to demonstrate full compliance with such standards. Certification and compliance of any system incorporating the Product remains the responsibility of the integrator. This information is provided for general guidance and does not constitute certification of compliance with these standards.