

Preliminary



FCe™ 10 Fuel Cell Engine

Fuel Cell Engine for Transportation

Purposed-built for Light Duty vehicles and GSE applications

Combustion-Less Engine providing Zero Emission Electric Power

The 10kW Fuel Cell engine is our most robust engine with up to 4 kW/sec transient power capabilities offering a fully integrated freeze capable system with a rapid startup design and industry leading power density specifically designed for extended range logistics equipment and unmanned vehicles.

Performance Characteristics

Electrical

Output Power‡	1 - 10kW
Output voltage	36 - 65V _{DC}
Ramp rate	Up to 4 kW/sec

Efficiency

System Efficiency†	56.9 to 46.3% (10% to full power)
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Temperature

Ambient Temperature	-40 to 50°C
Cooling Inlet	Up to 62°C (50/50 WEG)

Fuel

Fuel Flow	0.6 kg/hr @ full power
Fuel Pressure	1200 ±300 kPa _g
Fuel Type	SAE J2719 Hydrogen

Physical Characteristics

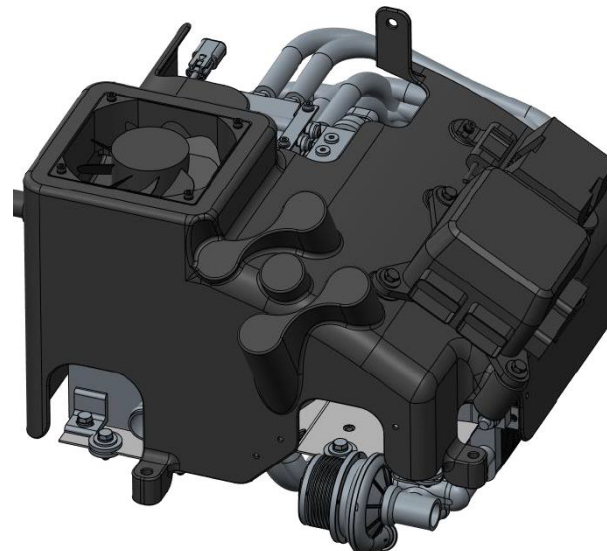
Dimensions (L x W x H)	350 x 400 x 430 mm
Weight	20 kg,

Interface

Vehicle Communications	CAN SAE J1939
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Startup / Shutdown

Startup Time	30 seconds
Startup from Frozen Time	1 minutes
Shutdown Time	10 seconds



FCe™10 is an integrated fuel cell engine that is purposed-built for light duty vehicles meeting automotive and GSE shock and vibration and environmental requirement, including freeze capability. The FCe™10 engine is the most efficient fuel cell engine with all BOP components integrated. The low-pressure operation allows fast transient response with high efficiency even at low power range. The FC engine is designed for easy installation, command and control like conventional engine with J1939 diagnostics. Cooling is 50/50 WEG system with no external DI water-cooling or circulation pump.

† System efficiency Electrical power out per H2 energy fed in the form of hydrogen (calculated on an LHV basis).

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