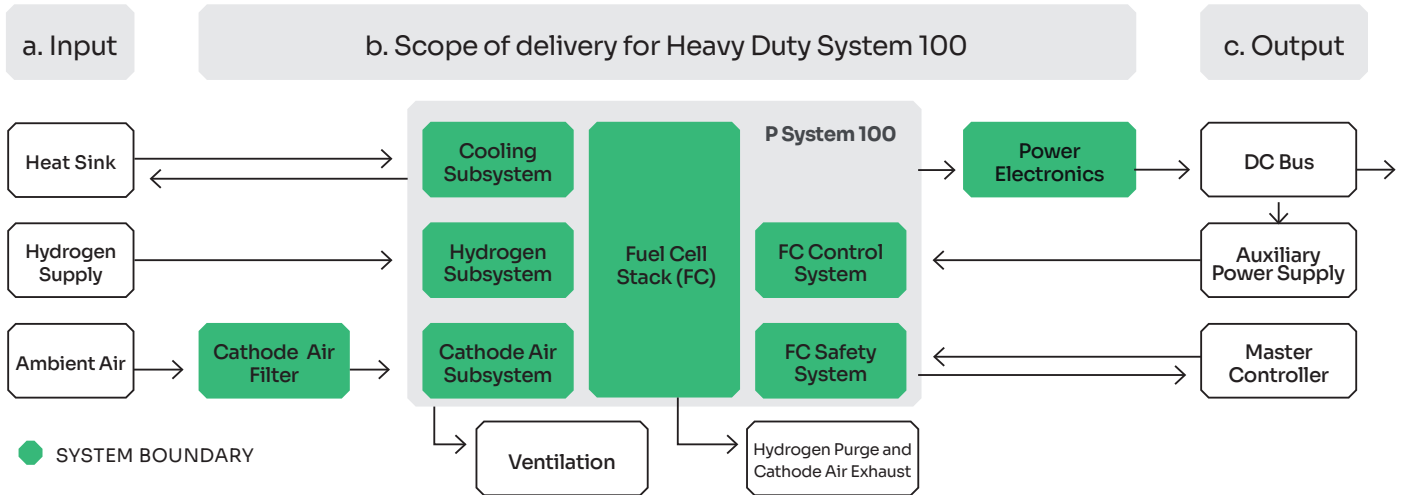


PowerCellution Heavy Duty System 100

PowerCellution products create electric power based on fuel cells using hydrogen. All of our solutions have minimal environmental impact through the use of zero emission hydrogen electric technology.

Heavy Duty System 100 is a fuel cell system that enables powerful and flexible use, with an electric output of up to 100 kW. The system has been tested and developed according to the standards in heavy duty applications.

Heavy Duty System 100 is specifically designed for compact integration with high power output. The system has a robust construction for both fast dynamic and stable load operations. The fuel cell stack with steel-based bipolar plates ensures lasting and reliable use across a wide range of conditions with an operational lifetime of 20 000 hours.



Scope of supply for standard configuration

Fuel Cell System	
Fuel Cell Stack	Converts hydrogen into electrical energy in a clean and efficient way.
Hydrogen Subsystem	Regulates incoming hydrogen to the fuel cell stack and recirculates the hydrogen to increase the fuel efficiency.
Cooling Subsystem	Manages cooling and produces heat that can be utilized for external use.
Air Subsystem	Regulates incoming air to a specific humidity, flow rate, pressure and temperature.
FC Safety System	Passive and active protections mechanisms based around continuous monitoring and control of the system.
FC Control System	Process monitoring and control within the fuel cell system.
Power Electronics Module	
	Converts and stabilizes voltage output from the fuel cell stack.
Air Filter	
	Provides chemical filtration of air feed to match the requirements of the fuel cell stack.



Physical data

Specifications

Max net power	100 kW
Dimensions	606 x 696 x 674 mm
Volume	284 l
Weight	170 kg

Performance (without DC/DC)

Gross output (rated power)	292 V / 380 A
Voltage output	Normal operation 250–500 VDC, max 570 VDC ⁱ
Current output	45–420 A
System heat output (max)	Up to 140 kW + 10 kW ⁱⁱ
Coolant outlet temperature	80°C
Fuel quality	Pure hydrogen ⁱⁱⁱ
Fuel inlet pressure	8–12 bar(g) ^{iv}
Communication and control	CAN bus 500 kpbs
System efficiency (peak, BOL)	55%
System efficiency (rated power, BOL)	45%
Operational lifetime	20 000 h ^v

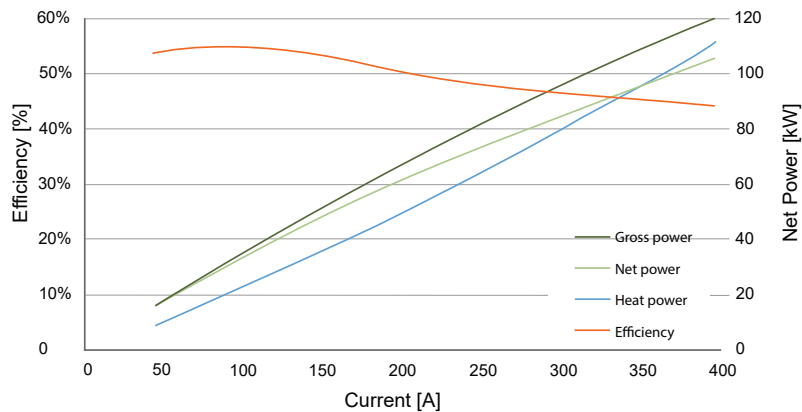


Figure: Performance measured at reference conditions and BOL

Environment

Ambient temperature	-30–45°C ^{vi}
Humidity	30–95% relative humidity; non-condensing
Regulation and standards	E/ECE/324/Rev.2, /Add.99/Rev.2, FMVSS 305-01, ISO 23273:2013, SAE J1766:201401, SAE J2578:201408 ^{vii}
IP classification	IP54

ⁱ Peak power EOL to OCV (Open Circuit Voltage, i.e. no-load condition, 0 A) BOL.
ⁱⁱ Fuel cell stack and BoP components (cathode compressor + intercooler).
ⁱⁱⁱ Hydrogen ISO 14687:2019.
^{iv} 3-8 bar(g) optional configuration.
^v Expected lifetime, actual lifetime depends on use case.
^{vi} Start-up from sub-zero degrees requires external power assistance.
^{vii} Fuel Cell System is designed according to the listed standards.