

POWERFLOW™

Fuel Cell Power Module



PowerFlow™ is a complete, fully automated fuel cell power module that can be used either as a stand-alone motive power source or as the heart of a larger hybrid system. With power outputs of up to 32 kW, PowerFlow provides the average power needs for a system, allowing for efficient and cost-effective operation. Now in its fourth generation, the PowerFlow design has evolved according to best-practice industry standards, based on feedback from customers who are using PowerFlow in productive service today.

For high-volume customers, we can provide custom-designed integrated systems. If more versatility and flexibility in packaging is needed, PowerFlow can be delivered as separate subsystems to allow the integrators to customize the components to a specific product or application.

Product Features

Modular System Design PowerFlow can be delivered as separate subsystems or as an integrated assembly, allowing OEMs the most flexibility in packaging.

Serviceable Industrial Stack Nuvera's industrial stacks are designed to be completely serviceable. Single cells in the fuel cell can be swapped out without replacing gaskets or any other materials, providing a significant cost savings to customers.

Metallic Bipolar Plates Metallic stacks are best suited for off-road vehicles because of their resistance to shock and vibration, and are significantly lower in manufacturing cost than graphite stacks.

Cathode Water Injection (CWI) Proven in a broad range of applications, CWI provides simultaneous cooling and humidification of the stack, which, in turn, means controls simplicity and fewer balance-of-plant components, and high system reliability. Nuvera's CWI is maintenance-free.

Efficiency Improvements in both our stack technology and balance-of-plant component selections have boosted peak DC efficiency to 56 percent.

Compact The size and factor of PowerFlow are well-suited to many industrial vehicle installations.



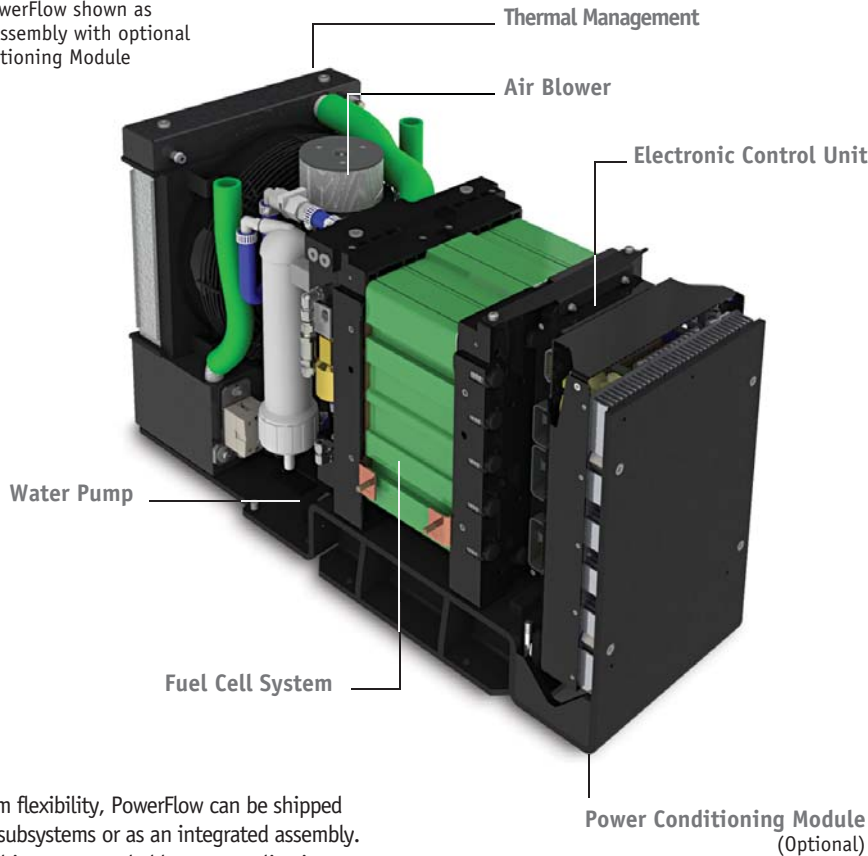
Near-Term Technology

POWERFLOW™

Applications and Specifications

PowerFlow can be used as the fuel cell "engine" in any number of hybrid systems.

Standard PowerFlow shown as integrated assembly with optional Power Conditioning Module



For maximum flexibility, PowerFlow can be shipped as separate subsystems or as an integrated assembly. Add optional items as needed by your application.



Standard PowerFlow Specifications

DC Power Output	2.5 to 5.0 kW and Idle
DC Power Type	Unregulated
DC Generation Efficiency	56% Peak
Fuel ¹	Hydrogen
Exhaust Emissions	Saturated Air
Operating Temperature ²	25°F to 95°F (-4°C to 35°C)
Controls Protocol	Open CAN (DeviceNet)
Water Balance	Neutral

Batteries recommended for startup/shutdown power supply

¹ Specifications upon request

² Systems must be stored and started above freezing conditions (4°C/39°F minimum)

Standard PowerFlow

Fuel Cell System with Hydrogen Recirculation Module
Electronic Control Unit (ECU)
Thermal Management
Air Blower and Water Pump

Options

Power Conditioning (38/48 VDC)
Safety Module
User Interface
Regen Module
Wiring Harness



POWERFLOW™

5 kW
fuel cell power module

For more information, contact :

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