Fuel Cell
Backup Power Solutions

Power to Change the World®
The FCgen®-H2PM is a future-proof investment.

Fuel cell backup power modules are solid state power generators with few moving parts and no degradation in standby mode regardless of temperature.

The FCgen®-H2PM system has built-in unique predictive maintenance features and automated self-testing.

10 years of experience with systems in operation within critical infrastructure and a 99.99% reliability rate. Ballard offers a service warranty of up to 15 years.
In our increasingly connected world, power outages are severely disruptive. Reliable and cost-effective fuel cell backup power solutions ensure critical infrastructure availability during unexpected power outages.

Fuel cell backup power solutions allow operators to harden networks and improve customer satisfaction while also reducing operating costs. At the same time, the flexibility of the solutions ensures that any future legislation requirements can be met.

Why Fuel Cell Backup Power?

The thousands of systems installed and millions of hours of backup power provided validate fuel cell technology and the maturity of Ballard’s FCgen®-H2PM system. The fuel cell backup power solution consists of:

- Fuel cell module (DC and AC output option)
- Integrated ultra-capacitor module or external battery
- Master system controller (for multiple module interconnection)
- Module casing (such as a 19” rack or outdoor enclosure or shelter with integrated hydrogen storage)

The duration of backup power delivered can easily be increased by connecting more hydrogen cylinders to the systems on site. Solution options include an indoor or outdoor enclosure and a ‘cold climate kit’ for operation as low as -40°C.

Technical details about Fuel Cell Backup Power

Product Portfolio

<table>
<thead>
<tr>
<th>TECHNOLOGY</th>
<th>FCgen®-H2PM 1.7kW</th>
<th>FCgen®-H2PM 5.0kW</th>
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<tbody>
<tr>
<td>MAXIMUM POWER kW</td>
<td>1.7kW</td>
<td>5.0kW</td>
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<tr>
<td>PARALLEL OPERATION</td>
<td>12 modules can be coupled for systems with up to 60 kW of power output</td>
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<tr>
<td>DIMENSIONS, cm</td>
<td>45 x 63 x 36</td>
<td>50 x 57 x 62</td>
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<tr>
<td>WEIGHT</td>
<td>40kg</td>
<td>75kg</td>
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Added Benefits

- Recycling: The system uses recycled materials and all parts are recycled or reused in future systems
- Zero-emission operation with no harmful or toxic substances, waste or fuel
- The modularity means an easy scale to fit and upgrade of the solutions
What is a Fuel Cell Backup Power System?

A Fuel Cell Backup Power System is a cost effective, environmentally friendly, easy to install, reliable power generator that converts chemical energy (hydrogen and air) into regulated DC power, providing up to 60kW of reliable backup DC power on demand.

The intended application of this system is backup power for critical infrastructure networks like telecom, optical fiber and emergency communication networks. The system continuously monitors the DC bus voltage in standby mode and operates during power outages as soon as the DC bus voltage drops to a set point, which is defined by the customer.

Who are we?

We are Ballard - making a meaningful difference with our fuel cell technology that will continue far into the future. We are committed to develop innovative and reliable clean energy solutions.

CASE STUDY I

Eniig Energy Group
Putting fuel cell technology to commercial use

In 2007, Ballard put the first ever commercial solution based on hydrogen and fuel cell technology into service on the fiber-optic broadband network operated by the Danish power company Eniig.

Since the first installations in 2007, the Eniig network has continued to expand. Today, approximately 90 Ballard FCgen®-H2PM units have been installed, which ensures that more than 170,000 Danes can surf the internet at breakneck speeds even if the main power supply fails.

CASE STUDY II

Denmark’s public safety network
SINE supported by fuel cell backup power systems

Ballard has developed an integrated outdoor cabinet solution for the approximately 120 critical radio stations established all over Denmark in connection with the SINE network. Rolled out during 2009, these systems continue to operate and are serviced by Ballard Power Systems Europe.

The SINE network is used by government authorities, such as the police, as well as regional emergency services, such as the ambulance service, firefighting service and rescue preparedness.