**HYPM-XR POWER MODULES**
for reliable backup and standby power

The technology benchmark for meeting critical power needs.

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**TECHNICAL SPECIFICATIONS**

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# The Hydrogenics Advantage

At Hydrogenics, we are committed to safety and reliability in everything that we do. Our fuel cell technology enables us to deliver flexible and customized solutions that meet your business needs.

## Advanced Hydrogen Solutions

Hydrogenics’ low pressure PEM (Proton Exchange Membrane) fuel cell technology is the benchmark in meeting your critical power needs. Our proven low pressure PEM fuel cell stack architecture is at the core of all Hydrogenics solutions.

The HyPM™ Power Module is designed to deliver superior performance, durability, and reliability. We bring our integration experience to help you get the most out of your fuel cell system.

## Proven Technology – 65 Years in the Making

Our PEM fuel cell technology is the result of 65 years of experience and innovation. Our stack technology is designed to deliver superior performance and reliability, with proven reliability and efficiency. We work closely with our customers to understand their needs and develop custom solutions that meet their specific requirements.

## Technical Specifications

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WHY CHOOSE HYDROGENICS HYPM-XR?

Our flexible technology solutions ensure reliable power.

- Liquid-cooled advanced MEA PEM stack
- Integral Balance of Plant
- Advanced on-board control and diagnostics
- Low pressure cathode air delivery
- -40°C sub-zero shutdown capability
- Rapid start-up and dynamic response
- No water required (for humidification)
- No nitrogen purge requirement
- Designed for ease of UL and CE system certification

HIGH QUALITY STANDARDS

Manufacturing of the HYPM is done in several stages, each ending in a quality monitor or “gate”. No HYPM moves to its next stage without signoff from our quality personnel. Every HYPM that leaves our factory has been tested over its full operating range.

Hydrogenics complies with ISO 9001 and our HYPM products are designed to meet all applicable world engineering codes and standards, including CE, RoHS, UL/CSA, ASME and relevant components of NEBS.

BACKUP POWER SOLUTIONS

Backup power systems incorporating Hydrogenics HyPM-XR Fuel Cell Power Modules offer consistent power, seamless switching and virtually limitless runtime.

- HyPM outdoor rack mounted units provide 4-30 kW of clean, reliable, low maintenance DC power for telecom operations, preserving the run-time advantages of a genset, without its disadvantages.
- HyPM indoor rack mounted units provide 10-1,000 kW of AC power for data centres on a small footprint, and can easily be scaled up to meet growing power requirements.

STANDBY POWER SOLUTIONS

For applications with longer run time requirements, Hydrogenics’ HyPM-XRL Power Module, built around our High Durability PEM stack, offers the right solution. HyPM-XRL can be integrated into any of our backup power systems or into a customized site specific standby power project.

RELIABLE POWER IS ESSENTIAL TO EVERY BUSINESS OPERATION.

This is why companies are increasingly choosing Hydrogenics for critical backup and on-demand power needs. Our fuel cell power solutions help companies reduce operating costs, improve network reliability and lower their overall environmental impact. HYPM-XR is in numerous applications around the world with customers ranging from financial and government institutions, to internet service providers and off-grid communities.

THE POWER OF EXPERTISE

Our HyPM-XR Power Module is cost-effective and reliable:

- Lower Lifecycle Costs
  - With unlimited start/stop cycles, HyPM-XR offers a lower cost of ownership compared to batteries and diesel generators
- Enhanced Reliability
  - HyPM-XR’s 99.95% reliability rate ensures your network equipment will have uninterrupted power during utility power failures.
- Extended Run Power
  - Our fuel cell stacks are rated for runtimes of over 10,000 hours with unlimited start/stop cycles.
- Ease of Integration
  - Hydrogenics provides easy-to-use electrical and mechanical interfaces, efficient heat removal, and increased compatibility with system components.
- Industry Leading Power
  - Complete solution with a reduced parts count, simplified control and diagnostic replacement and lower failure modes.
- Lower Lifetime Costs
  - With unlimited start/stop cycles, HyPM-XR ensures minimal life cycle maintenance and lower lifetime cost.
- Extended Fault-Load
  - HPF-100, 200, 300, 400 and 500 kW units are specifically designed to provide clean, reliable power during utility power failures.

HYDROGENICS POWER PLANT IN KOREA

The world’s first one MW PEM fuel cell power plant. The facility is in operation and has already reached full power. This new technology will be key in the future of energy generation in Korea and will provide a clean energy alternative to the current mix of thermal generation and renewable energy sources.

FUEL CELL POWER ESSENTIAL TO EVERY BUSINESS OPERATION.

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Hydrogenics’ Power Plant in Korea, providing multi-MW continuous clean power to the grid
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HyPM-XR is in numerous applications around the world with customers ranging from financial and government institutions, to internet service providers and off-grid communities.

Our power modules offer distinct advantages in deployment and ensure a positive Total Cost of Ownership when compared to competing solutions such as diesel generators, battery banks and other suppliers.

THE POWER OF EXPERTISE

Our HyPM-XR Power Module is cost-effective and reliable:

- **Lower Lifecycle Costs**: With unlimited start/stop cycles, HyPM-XR offers a lower cost of ownership compared to batteries and diesel generators.
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Hydrogenics’ Power Plants in Korea, providing multi-MW continuous clean power to the grid.

BACKUP POWER SOLUTIONS

- R900 outdoor rack mounted units provide 250 kW of clean, reliable, low maintenance DC power for telecom operations, preserving the run-time advantages of a genset, without its disadvantages.
- HyPM indoor rack mounted units provide 10-1,000 kW of AC power for data centres on a small footprint, and can easily be scaled up to meet growing power requirements.

STANDBY POWER SOLUTIONS

Our modular and flexible solutions are ideal for a wide range of applications, enabling cost-effective, energy-efficient solutions for diverse power requirements. Our modular systems can be scaled to meet any power need, making them ideal for businesses of all sizes.
The Hydrogenics Advantage

At Hydrogenics, we are committed to safety and reliability in everything that we do. Our fuel cell solutions allow customers to achieve financial and environmental benefits.

Advanced Hydrogen Solutions

Hydrogenics has developed a comprehensive range of fuel cell product solutions for commercial, industrial and institutional applications. Our Fuel Cell Technology and Solutions for Customers is designed to maximise performance and reliability, reducing the total cost of ownership.

Proven Technology - 65 Years in the Making

As the world leader in fuel cell technology, Hydrogenics’ experience dates back to 1952. Our first fuel cell product was the ‘F100’, a commercial fuel cell designed for use with primary CO2 and water management, which saw typical lifetime performance. Since then, our fuel cell technology has been improved and expanded to a broad range of applications. Today, Hydrogenics delivers the world’s most reliable and efficient PEM fuel cell systems.

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We’re ready.

www.hydrogenics.com

The above data is for reference only and is subject to change without notice. Other configurations (indoor/outdoor) are possible. © Hydrogenics 2017

Advanced Hydrogen Technologies

Hydromax, the new line of fuel cell products for commercial, industrial and institutional applications, is designed to maximise performance and reliability, reducing the total cost of ownership.