

**BALLARD™**

**FCwave™**

# Fuel Cell Power for Stationary Power Applications

Ballard's FCwave™ hydrogen fuel cell solution, provides zero-emission, uninterrupted backup power to a wide range of power-intensive stationary applications and industries including data centers, health care centers, commercial buildings, charging points for electric vehicles, or shore connections at ports.

Available from 200kW to MWs, FCwave™ can meet stationary power needs for markets with scalable power requirements.

Based on more than 44 years of field experience and over 150 million kilometers of in service vehicles, the FCwave™ leverages Ballard's proven technology to deliver a reliable, scalable and flexible power solutions.



## Features

### Reliable and always-available power

Fuel cells provide the highest level of reliability supplying seamless and uninterrupted power. With gigawatts of fuel cell systems produced to date, the technology has demonstrated its reliability in all operating conditions.

### Modular and scalable solution

Available in 200kW modules, FCwave™ facilitates scalable power up to 1.2 MW and allows for flexible integration with minimal use of space. FCwave™ modules, can easily be coupled in parallel to meet power output requirements and can be delivered as stand-alone modules or as a containerized solution.

### Safe Operation

FCwave™-XD is developed, tested and prepared for installation with an uncompromising focus on safety. The fuel cell module is CE marked, which certifies that the solution meets the highest safety, health, and environmental protection standards.

### Technology Leadership

The same Ballard fuel cell technology has already proved itself in more than 3,600 fuel cell electric trucks and buses deployed worldwide.

### Ease of Integration

The FCwave™-system is developed for easy installation. Integrated into a simplified and streamlined cabinet with easy-to-access doors and all interfaces accessible from the front for service and maintenance.

### No risk

Fuel cell backup power systems are solid state power generators with few moving parts and no degradation in standby mode regardless of temperature. Diagnostic connections allow customers to monitor performance data remotely and plan for preventative maintenance.

### Low Lifecycle Cost

Low total-cost-of-ownership, achieved through product performance optimization, common components across product platforms and low maintenance requirements

## Product Specifications

### Performance

Rated power	200kW
Minimum power	50kW
Peak fuel Efficiency	53.5 %
Operating voltage	350 – 720 V DC
Rated current <sup>1</sup>	2 x 300 A or 1 x 550
System cooling output	Max 65° C

### Stack technology

Heat management	Liquid cooled
H2 Pressure	3.5 – 6.5 Barg

### Physical

Dimensions (L x w x h) <sup>2</sup>	1210 mm x 738 mm x 2195 mm
Weight (estimate) <sup>3</sup>	1050 kg
Environmental protection	IP44
Engine room (DNV CG-0339)	+0°C – +45°C
Minimum start-up temperature	0°C
Short-term storage temp	-20°C – +60°C

### Reactants and Coolant

Type	Gaseous hydrogen
Composition	As per SAE spec. J2719. ISO 14687:2019, grade D or GB/T 3244-2018
Oxidant	Air
Composition	Particulate, Chemical and Salt filtered
Coolant <sup>4</sup>	Water or 50/50 glycol

### Safety Compliance

Certifications	CE Marked
Enclosure	Sealed secondary barrier for hydrogen

### Monitoring

Control interface	Ethernet, CAN
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### Emissions

Exhaust	Zero-emission
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<sup>1</sup> System output is 2 x 300 A (1 x 550A output still under development). <sup>2</sup> Target size. <sup>3</sup> Includes: framed skid base, fuel cell stacks, plumbing and wiring, H2 enclosure, cooling system, air system, electrical panel, and miscellaneous (sensors, cable tray, etc.). <sup>4</sup> Customer coolant type.