

# A path to reliable, clean electricity:

## Accelera's custom PEM fuel cell stationary solutions

**Hello!**

Are you looking for a proven stationary power system provider?

PEMFC (Proton Exchange Membrane Fuel Cells) present an effective zero emission alternative to conventional gensets that supplement grid power.

Accelera™ by Cummins stands at the forefront of the PEM Fuel Cell Stationary Power market, with over a century of expertise in collaboration with Cummins Power Generation business. Recognized as industry pioneers, we have consistently provided proven solutions that have enabled clean, sustainable power across the globe. Our PEMFC power systems excel in generating on-site zero emission electricity, grid-tied or off-grid, in peak-shaving, demand response, and/or stand-by conditions.

### Stationary applications ideal for PEM Fuel cells



**EV charging**  
onsite power



**Industrial**  
I/c hydrogen production sites



**Utility power**  
substation powering



**Marine power**  
on-shore + off-shore



**Commercial**  
sea ports + airports



**Portable power**  
construction

### Greening the grid: custom solutions for emission reduction and reliable power

In a world where the need for dependable, eco-friendly energy is ever-expanding, collaborating with a company that possesses expertise and reaches all corners of the globe is a strategic investment in your success. Accelera has delivered MW scale stationary power fuel cell projects, including the following four sample projects:



Capacity Firming - Korea

A major refining and petrochemicals facility in South Korea chose Accelera to help them produce continuous power for the grid from hydrogen.

Two 40-foot outdoor containers, one holding rack-based PEM fuel cells and the other ancillary apparatus, were installed to generate the required level of power. The solution also included the necessary inverters to convert the DC power produced by the fuel cells into the AC power required by the grid. The result – a 1 MW stationary fuel cell plant that converted the site's surplus hydrogen into clean prime power.



Vessel/Shore Power - Hawaii

Working as a partner in the deployment of a pilot hydrogen fuel cell pod at one of Hawaii's major commercial ports, Accelera supplied a containerized 100 kW fuel cell system incorporating four 30kW fuel cells, power-conversion equipment, and 75 kg of on-board hydrogen storage.

Designed to show how the technology could provide a viable and clean alternative to the port's diesel generators, the system delivered portable clean power to operate refrigerated containers that ran on a duty cycle of 20 continuous hours, while also reducing the facility's fuel costs and carbon footprint.

### Renewables Integration - Belgium + Thailand



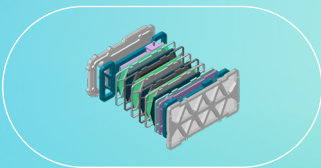
When a Belgian supermarket group wanted to run a test setup of a renewable energy-hydrogen plant to produce its own hydrogen for powering the forklifts and smart grid at one of its distribution sites, Accelera brought concept to life.

Its solution centered on a 30 Nm<sup>3</sup>/h alkaline electrolyzer that converted energy from a wind turbine, photovoltaic solar panels, and a 100kW fuel cell power system. The finished station allowed the site to function independently of the utility grid, with the ability to either dispense hydrogen to the fuel cell forklifts and other vehicles or feed the generated electricity into the utility grid.

### Peak Shaving/Backup Power - Northern Canada



In the challenging conditions of Northern Canada, Accelera deployed a system that integrated hydrogen and fuel cell technology to ensure continuous power supply. The solution included a state-of-the-art 350kW electrolyzer, hydrogen storage systems, a 200kW PEM fuel cell power system. These elements aligned with a 3 MW Arctic wind to help deliver clean hydrogen power.



PEM single cell/stack



Fuel cell module



Fuel cell rack



Integrated system

## Clean stationary power solutions

At the core, our approach to stationary solutions lies in a commitment to accurate craftsmanship, beginning with the creation of a single Proton Exchange Membrane (PEM) cell. Each PEM cell serves as the foundational building block. A single PEM fuel cell can produce a voltage in the range of 0.6 to 1 V. Several fuel cells are connected in series, forming a fuel cell stack to increase the output voltage.

Cell stacks convert chemical energy to electricity through an electrochemical reaction involving an anode and a cathode. This is where hydrogen is converted into clean electricity. These cell stacks are seamlessly integrated into our **fuel cell power modules**, the heart of our systems, ensuring efficiency and reliability while improving system economics with optimized balance of plant design.

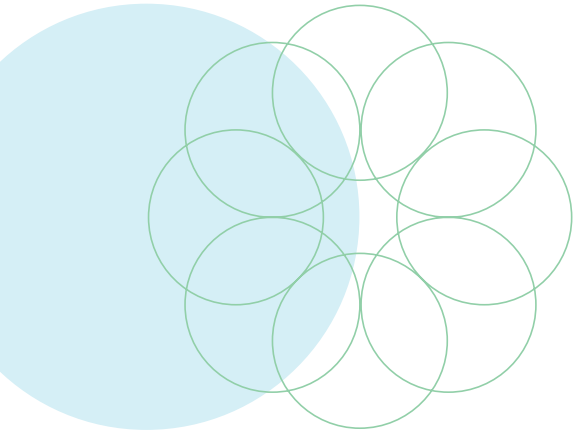
Working with integration partners, including Cummins' Power Generation group with decades of genset packaging experience, multiple power modules are easily configured into fuel cell racks to form fuel cell blocks. This forms the framework of Accelera's energy solutions. As these racks come together, so does the integration of power conditioning, energy storage, innovative control hardware and software, and a secondary cooling system. The racks are integrated into containerized solutions for multi-megawatt power plants.

Accelera's holistic approach guarantees a dependable and sustainable power system truly designed to meet customer needs.

- **High runtime applications** - we analyze duty cycles and load profile to size the fuel cell block and batteries in the most cost-effective way
- **Technical performance** - evaluated by considering site-specific criteria and risks, such as fuel availability, projected electrical load growth, on-site integration, equipment efficiency, and changing weather patterns
- **Economics** - Where high is required for a longer duration, fuel cells power systems offer economic advantages compared to battery alternatives

## Powering project excellence: the Accelera advantage

Beyond the strength of our core fuel cell module offering, partnering with Accelera to deploy a PEM fuel cell power system delivers value well beyond the individual kilowatt-hours supplied:



**Extensive experience in Fuel Cell and Electrolyzer technology**, encompassing core component development and commitment to continuously advancing our core product roadmap



**A globally established leader** in project design, on time and within budget delivery, and support, with a strong commitment to upholding safety standards



Part of an **extensive partnership network** that includes hydrogen suppliers, integrators, and EPCs to facilitate turnkey solutions and streamlined processes



Sustainability is in our DNA and our **diverse product portfolio** enables solution synergies to help customers achieve their financial and environmental objectives with zero emissions at the forefront

### We are Accelera.

Accelera – a business segment of Cummins Inc. – is a global leader in zero-emission technologies empowering the shift to a sustainable future. With 100+ years of technology experience and industry partnerships, Accelera is an expert in fuel cells, hydrogen and power generation solutions.

**H<sub>2</sub> 70+**

years of hydrogen experience



**3,000**

fuel cell systems deployed globally

**600+**

electrolyzers deployed globally

**190+**

countries and territories in our distribution and support network

**2,000**

of the world's brightest minds focused on decarbonizing technologies

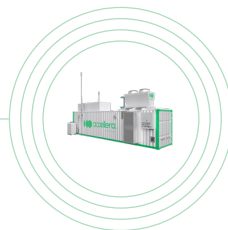
### And we're committed to advancing the hydrogen ecosystem.

Accelera remains a leader in the design and manufacture of end-to-end hydrogen solutions. Our portfolio includes fuel cells and engines that run on hydrogen for both stationary and mobile applications, battery and electric powertrain technologies including e-axes and traction systems, and electrolyzers for hydrogen production.

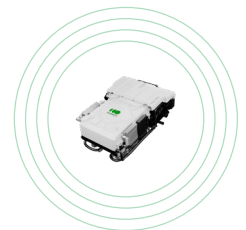
Stationary fuel cell power systems



Electrolyzers











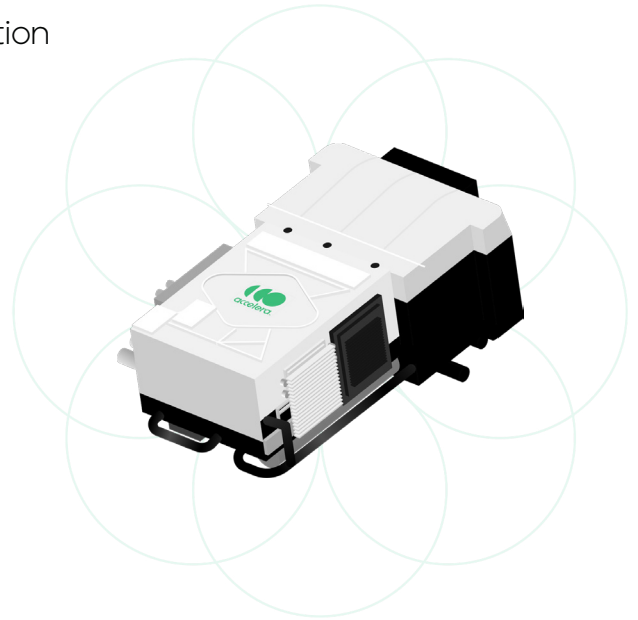
Fuel cell engine



## A commitment to safety

At Accelera we prioritize safety more than anything else. Our practices continue to display our firm commitment to creating a secure and risk-free environment for our team and customers. Safety measures include:

-  Forced **ventilation** prevents high H<sub>2</sub> concentration
-  Employ **fire detection** sensors
-  Provide operation and service **training**
-  **Safety sensors** detect H<sub>2</sub> concentration
-  Automatic **shut-off** in case of malfunction
-  Use only safe, approved **materials**
-  Remote **monitoring** of system status
-  **Design** for safe human interaction



Accelera is proud to be a valued partner of choice across stationary and mobility sectors. We will continue to harness Cummins' size, global footprint, and rich history to successfully scale, support and refine fuel cell technology. Each program we partner on serves as a valuable catalyst in the transition towards a greener future. **Learn more at [accelerazero.com](https://accelerazero.com)**

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