



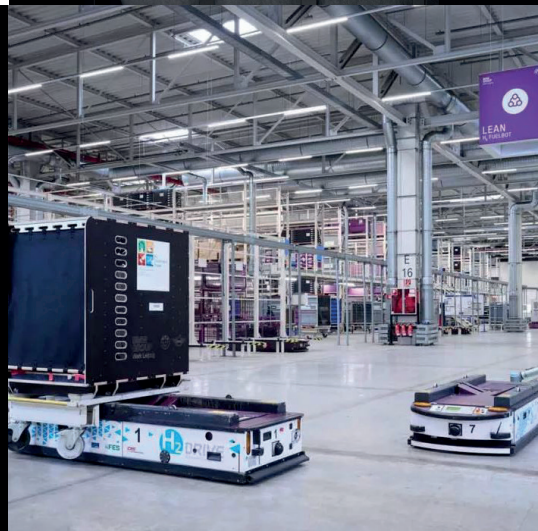
Powering the hydrogen future™



Zero  
emission



Compact  
power  
solution



Increased  
efficiency



# Powering the hydrogen future™

*“The science is clear, to avoid the worst impacts of climate change, business, government and society must work together to transition to a Net Zero economy [and avoid catastrophic climate change]”*

**Committing to Net Zero by 2030, PwC.**

## Why hydrogen?

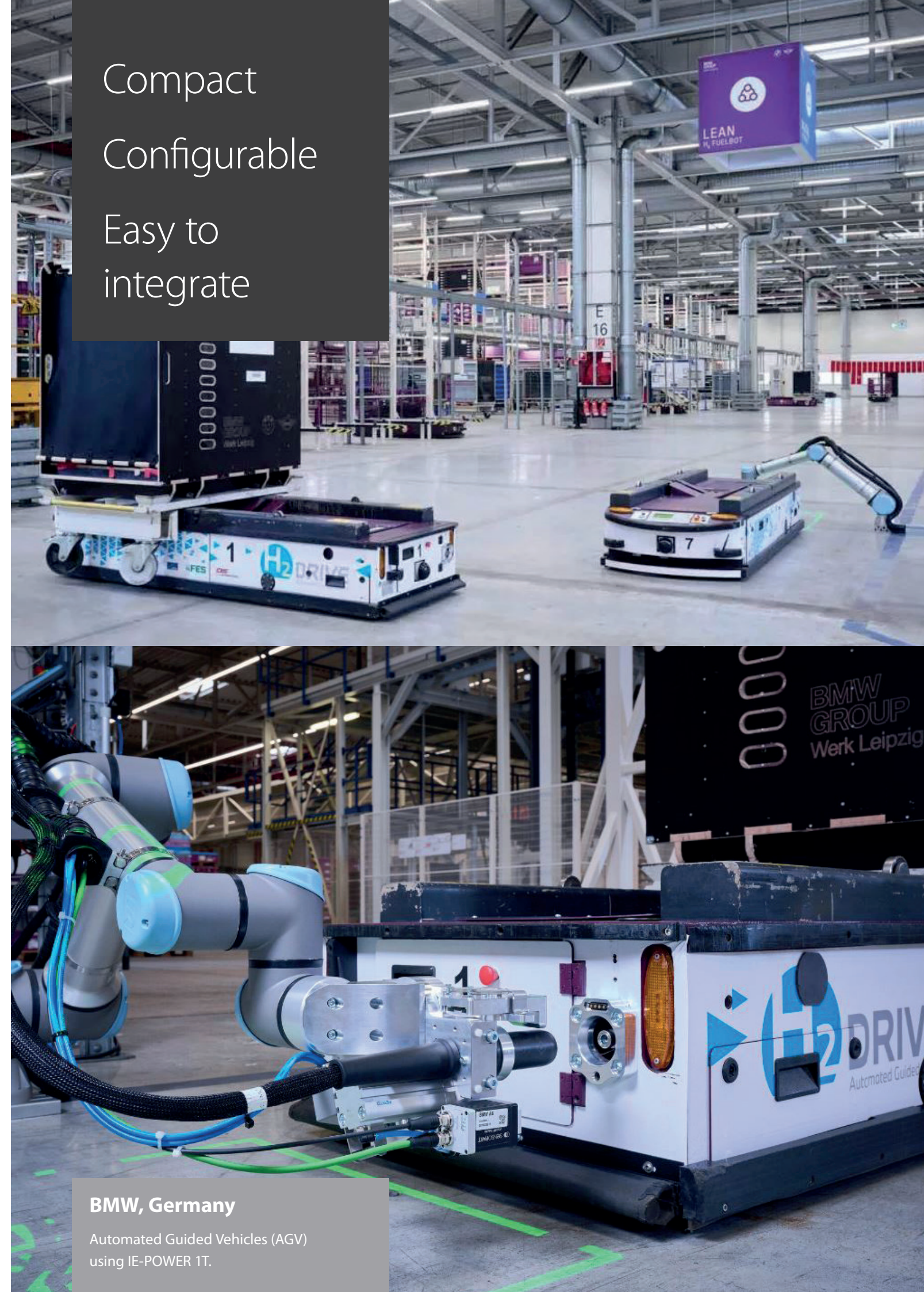
Hydrogen and fuel cells are increasingly being recognised as the ideal solution to replace the use of fossil fuels and engines in many applications. Hydrogen is a fuel that can be stored as a gas in cylinders are converted to power through a fuel cell on demand, replicating traditional engine technology but without creating CO<sub>2</sub> or NO<sub>x</sub>.

Intelligent Energy's fuel cell technology provides power with no emissions at source, other than water, and using green hydrogen, achieves zero emissions from production to usage.

Hydrogen fuel cell modules can be used in the following areas where challenges around emissions can be seen:

- ✓ **Replacing diesel engines** – fuel cells can deliver long term power generation across a number of applications without impacting or interrupting day-to-day operations.
- ✓ **Materials handling** – increasing truck optimisation and productivity with a 'plug and play' solution enables fleets to run more efficiently and for shift patterns to no longer be constrained by battery charging time.
- ✓ **Telecoms & micro-grids** – when used in conjunction with an electrolyser, our IE-POWER fuel cell modules can form clean, self-sustaining energy solutions, keeping critical applications working when needed the most.
- ✓ **Construction** – improved health & safety benefits for onsite workers due to reduced noise and greenhouse gas emissions.

Compact  
Configurable  
Easy to  
integrate



## BMW, Germany

Automated Guided Vehicles (AGV)  
using IE-POWER 1T.



# IE-POWER Fuel Cells

Zero emission hydrogen fuel cell solutions to meet your net zero targets.

IE-POWER is our eco-friendly hydrogen fuel cell used across a wide range of applications including standby power, materials handling, telecoms, micro-grids and construction delivering zero emission energy.

The IE-POWER hydrogen fuel cell range includes the IE-POWER 1T, IE-POWER 1U and the IE-POWER 4 products. These modules deliver power from 1kW – 32kW through parallel operation, producing zero carbon emissions, zero greenhouse gases, and reducing noise.

### IE-POWER features:

- ✓ Small, light, **power dense** hydrogen fuel cells
- ✓ Modular and **scalable**
- ✓ **Compact** and easy to integrate
- ✓ Unique **patented** airflow management
- ✓ **Configurable** to work with all major battery technologies
- ✓ No power degradation during periods of operation
- ✓ **Quiet** operation

Zero emissions  
no NO<sub>x</sub>, SO<sub>x</sub>, CO<sub>2</sub>

Power dense fuel cells

Unique airflow management

Improved productivity  
compared to batteries

Less downtime  
with rapid refueling

Easy integration  
Scalable and modular

Small  
Light  
Power dense

### EGAT, Thailand

Off-grid power generation test site using IE-POWER 4.

### Pestech, Papua New Guinea

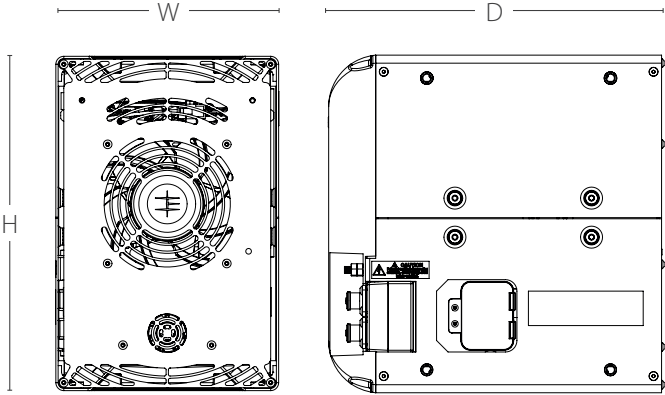
Micro-grid using IE-POWER 4 to support a rural hospital.



# Our POWER product range

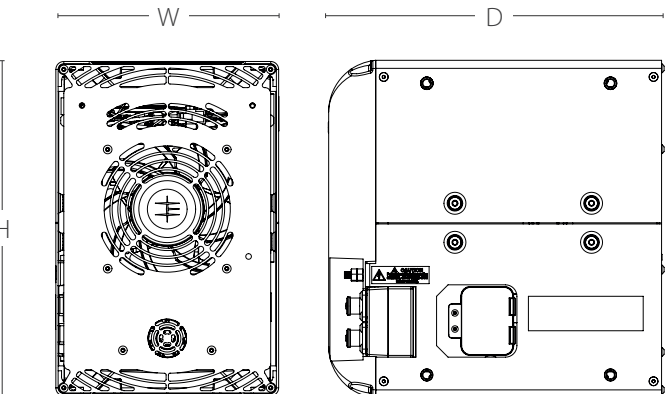
## IE-POWER 1T

Through life power:	1kW
Voltage range:	24V – 48V
Module mass:	~10kg
Dimensions:	196mm (W) × 294mm (H) × 294mm (D)
Mobile lighting towers and welfare cabins. Construction, telecoms, power generation.	
Traditional through-flow for air cooling.	



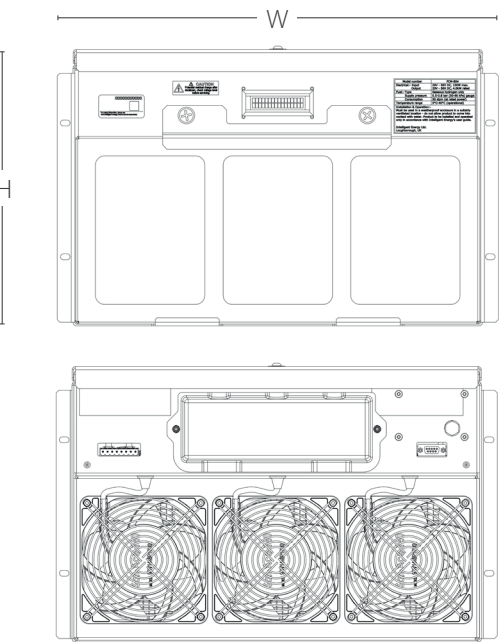
## IE-POWER 1U

Through life power:	1kW
Voltage range:	24V – 48V
Module mass:	~10kg
Dimensions:	196mm (W) × 294mm (H) × 294mm (D)
Materials handling equipment, AGVs. Warehousing and logistics.	
Patented u-flow air cooling.	



## IE-POWER 4T

Through life power:	4kW @ 48V
Voltage range:	24V – 48V
Module mass:	~20kg
Dimensions:	450mm (W) × 300mm ('7U') (H) × 500mm (D)
Stationary and standby power units. Telecoms, construction, micro-grids.	
Traditional through-flow for air cooling.	



# Applications



## TELECOMS

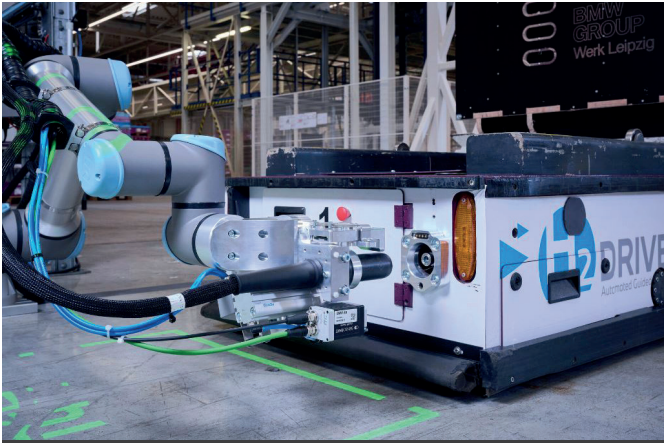
In some countries, data is being used as the primary tool for internet access, calling for reliable, robust, long-running standby power at cellular signal relay sites where grid supply is intermittent or unreliable.

Replace polluting diesel generators with carbon emissions-free standby power for telecom sites.



## CONSTRUCTION

Emission-free solutions can be implemented to create a safe working environment without compromising on performance, equipment quality, efficiency or power output. Commercially available solutions for the construction sector already include welfare cabins, lighting towers and standby power.



## MATERIALS HANDLING

Working closely with our partners, we have developed direct battery replacement products for a range of materials handling equipment. The uniquely compact, robust design and high-power output make these modules perfect for forklift trucks, cherry pickers, AGVs and other demanding applications where efficiency and reliability are key.



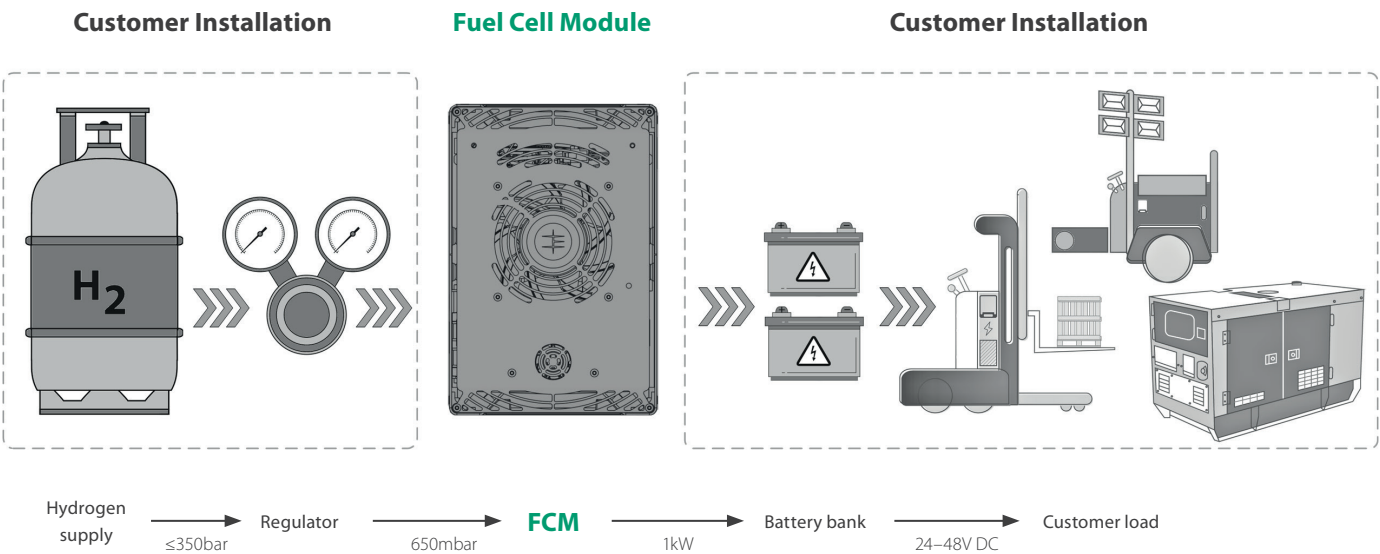
## STATIONARY POWER AND MICRO-GRIDS

Hydrogen fuel cells provide the means for zero-emission electrification. When working as a hybrid system with batteries and electrolyzers, hydrogen fuel cells can be self-sufficient and are an ideal alternative to diesel generators, supplying power to areas that cannot rely on the grid.

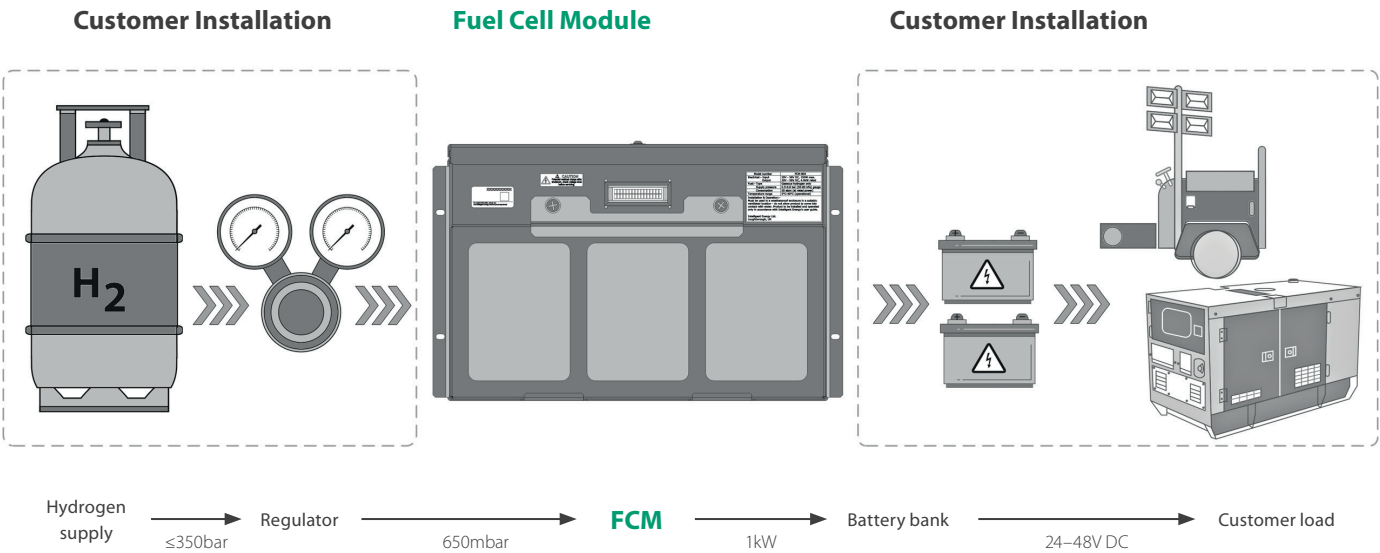


# System Integration

IE-POWER modules are easy to integrate and are designed to work with most types of batteries making them suitable for a wide range of applications including materials handling, telecoms and micro-grids. The basic overview of a typical system incorporating our **IE-POWER 1** fuel cell module can be seen below.



The basic overview of a typical system incorporating our **IE-POWER 4** fuel cell module can be seen below.



For more information about our modules or to discuss your specific application, please [contact us](#).

# IE-POWER products

## IE-POWER 1T/1U



## IE-POWER 4





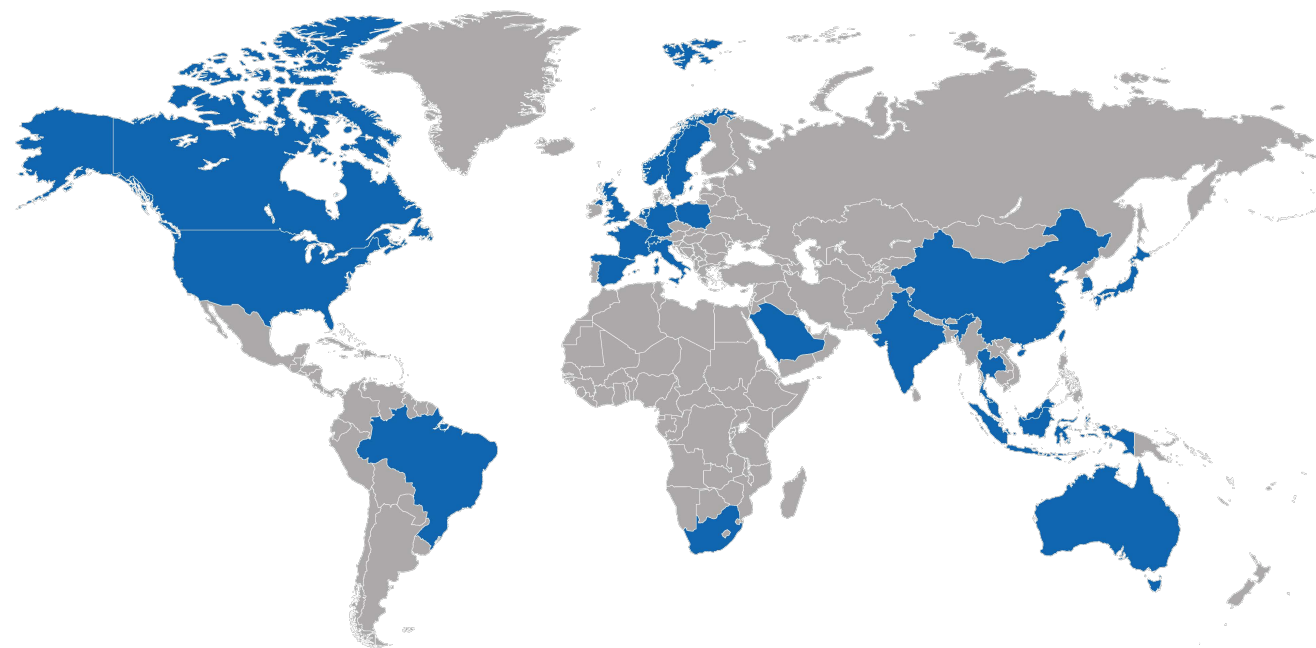
# Who are we?

Since 2001, Intelligent Energy has been dedicated to building a successful hydrogen fuel cell manufacturing business focused on the development of its lightweight, high efficiency, fuel cell systems.

The fuel cells range from sub-1kW to 100kW+ for demanding applications across automotive, aerospace, power generation, telecoms, unmanned aerial vehicles and material handling equipment.

# Where are we?

Our headquarters and manufacturing are based in the UK, with our systems being used by our partners and customers worldwide.



## Intelligent Energy Headquarters

Charnwood Building, Holywell Park, Ashby Road, Loughborough. LE11 3GB. United Kingdom

## Powidian, France

Portable power generation in the Alps using IE-POWER 4.



## AJC, UK

Zero-emission welfare cabin on HS2 construction site





## Powering the hydrogen future<sup>™</sup>

**[www.intelligent-energy.com](http://www.intelligent-energy.com)**

© Intelligent Energy Limited 2023. The Intelligent Energy name, logo, and other trade brands/names referenced herein are trademarks or registered trademarks of Intelligent Energy Ltd or its group companies, whether or not they are used with trademark symbol "TM" or "®".

Disclaimer: The information contained in this publication is intended only as a guide and is subject to change as a result of the constant evolution of Intelligent Energy's business and its technology. This publication and its contents (i) are not definitive or contractually binding; (ii) do not include all details which may be relevant to particular circumstances; and (iii) should not be regarded as being a complete source of information. To the fullest extent permitted by law, Intelligent Energy offers no warranty as to the accuracy of the content of this publication, shall not be liable for the content of this publication and no element of this publication shall form the basis of any contractual relationship with a third party or be used by any third party as the basis for its decision to enter into a contractual relationship with Intelligent Energy. Published by: Intelligent Energy Ltd, Charnwood Building, Holywell Park, Ashby Road, Loughborough LE11 3GB (Registered in England with company number: 03958217). Printed April 2023. All information correct at time of going to print. 75984-IE-BR-202304