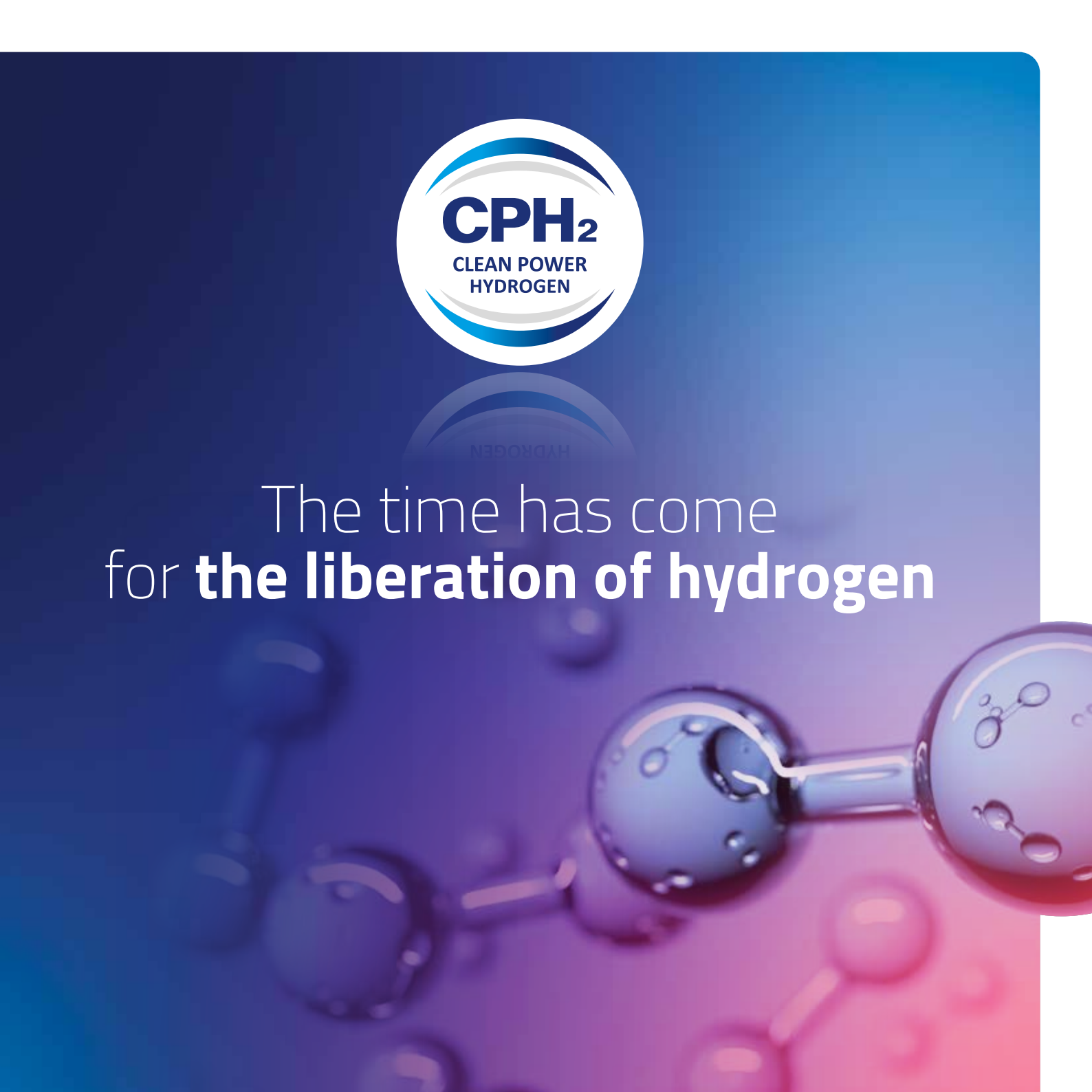
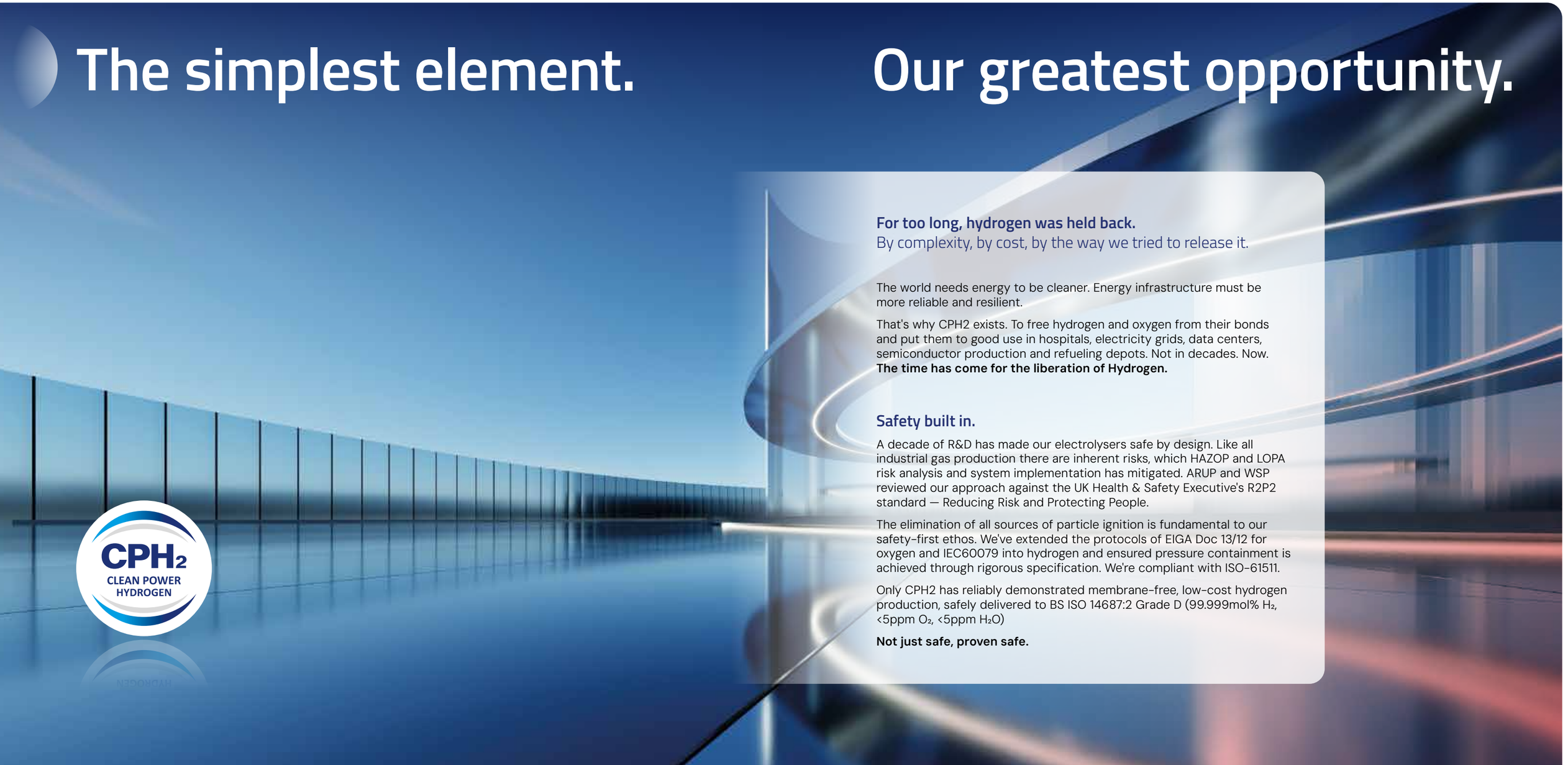
CPH2
CLEAN POWER
HYDROGEN

The time has come for **the liberation of hydrogen**



The simplest element.

Our greatest opportunity.



CPH2
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For too long, hydrogen was held back.

By complexity, by cost, by the way we tried to release it.

The world needs energy to be cleaner. Energy infrastructure must be more reliable and resilient.

That's why CPH2 exists. To free hydrogen and oxygen from their bonds and put them to good use in hospitals, electricity grids, data centers, semiconductor production and refueling depots. Not in decades. Now. **The time has come for the liberation of Hydrogen.**

Safety built in.

A decade of R&D has made our electrolysers safe by design. Like all industrial gas production there are inherent risks, which HAZOP and LOPA risk analysis and system implementation has mitigated. ARUP and WSP reviewed our approach against the UK Health & Safety Executive's R2P2 standard — Reducing Risk and Protecting People.

The elimination of all sources of particle ignition is fundamental to our safety-first ethos. We've extended the protocols of EIGA Doc 13/12 for oxygen and IEC60079 into hydrogen and ensured pressure containment is achieved through rigorous specification. We're compliant with ISO-61511.

Only CPH2 has reliably demonstrated membrane-free, low-cost hydrogen production, safely delivered to BS ISO 14687:2 Grade D (99.999mol% H_2, <5ppm O_2, <5ppm H_2O)

Not just safe, proven safe.

A cleaner way to power the future.

Traditional electrolysers rely on membranes and precious metals. **Ours does not.**

At CPH2, we developed a patented membrane-free system that splits water into hydrogen and oxygen without using expensive platinum, iridium or so-called 'forever chemicals.' It's a cheaper and more reliable way to make clean fuel.

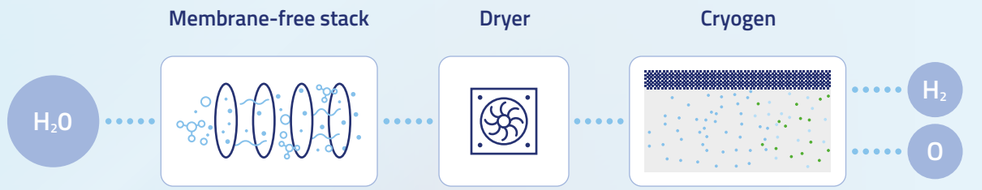
Our MFE™ technology is designed to work hand in hand with low-cost renewable energy. It's optimized to work with the variable electricity loads of wind and solar, maintaining efficiency despite the ups, downs and outs of the real world.

Membrane free electrolysis generates the wet gas mixture. It's dried and then we separate the hydrogen from the oxygen at minus 200 degrees Celsius using cryogenic cooling.

Our breakthrough patented heat exchanger recovers high purity oxygen, hydrogen and even most of the cooling energy used, improving performance and driving operating costs down.

Our customers are left with hydrogen at 99.999% purity and oxygen at 99.5%, for use in their specific applications.
No emissions and no fouling, clogging, breaking membranes.

The system is modular, scalable and proven. And thanks to our proprietary control software, it's as easy to operate as it is to explain.



Hydroxide ions dissolved in water to produce electrolyte.

Water in the electrolyte is consumed by CPH2's patented electrolyser and split into hydrogen and oxygen by electricity.

Wet mixed gases are dried to remove any water.

Oxygen and hydrogen are separated at -200°C, liquefying the oxygen and leaving pure hydrogen. Breakthrough heat exchanger technology recovers the energy used for cryogenic cooling and separation.

High purity oxygen and hydrogen outputs.

Market disrupting breakthrough technology.

- **Lowest lifetime levelized cost of hydrogen at this scale**
- **No expensive membrane or platinum group metals**
- **High operating efficiency even across variable electricity loads**
- **99.999% pure hydrogen and 99.5% pure oxygen**
- **Low stack degradation**
- **Modular, scalable design**
- **Optimized for wind and solar**

The liberation of hydrogen begins.

Waste Water Treatment

Keeping water clean takes a lot of energy — in fact, up to 3% of all electricity produced. But introduce oxygen into the treatment process and energy use falls while ammonia removal rises. The result? More capacity, less sludge, lower costs.

Our electrolysers produce 99.5% pure oxygen right where it's needed — no transport, no delay. And as a bonus, they also generate high-purity hydrogen. Sell it, store it, or use it on-site to fuel forklifts, service vehicles or even the local bus service.

Biomass and Energy from Waste Plants

Energy-from-waste plants reduce landfill and generate electricity and heat for communities. Today, there are over 2,800 worldwide — and counting.

Injecting high-purity oxygen into the system increases combustion efficiency, raises flame temperatures, improves heat transfer and reduces emissions — even soot. Our electrolysers make that oxygen on-site, cleanly and consistently at the scale required. They deliver hydrogen, too. Ready to fuel vehicles or be stored for future use.

Electricity Grid Support

In just the first half of 2025, Britain curtailed, which is to say deliberately disconnected 4.6 terawatt hours of electricity. Over £150 million was paid to generators to switch off.

Our on-site electrolysers turn curtailed energy into stored value — capturing wind and solar power that would otherwise go to waste. That power becomes green hydrogen, for sale or ready for fast-response, dispatchable power back to grid via fuel-cells. With longer duration storage than batteries, our hydrogen solution stands ready to stabilize the grid for hours or even months.

Data Centers

There are almost 1,000 hyperscale data centers today. In six years, it could be three times as many, as the A.I. backbone is built out around the world.

Uptime is everything. Many rely on diesel generators for backup — delivered, ironically, by diesel trucks. Our electrolysers offer a cleaner, quieter more resilient solution: hydrogen produced on-site to drive fuel-cells integrated into UPS systems, providing longer, more stable backup than batteries. With no emissions and no diesel deliveries. Just reliable, uptime security.

Life Sciences and Health Care

During the COVID pandemic, hospitals around the world ran short of oxygen. Lives were lost.

Our technology ensures supply never runs dry. It produces 99.5% pure oxygen — up to medical grade when specified as such in advance — and 99.999% pure hydrogen, right on-site. There are therapeutic uses, medical devices and drug developments too. No waiting for lorries. No wondering if it will arrive. For hospitals, labs and life science facilities, it's peace of mind.

Return-to-base Mobility

Hydrogen Fuel-cell electric vehicles outperform batteries in range, refueling time and utilization. They better suit real-world conditions — longer routes, colder climates and heavier loads. And because they return to base, refueling is simple, dispensed on site just as fast as diesel, and always available.

Our electrolysers make hydrogen where it's needed — whether it's at a ferry port, lorry depot, quarry or warehouse. Don't wait for deliveries; make it yourself from water and electricity.

Semiconductor production

The A.I. revolution, datacentre and 5G roll-outs and the computing power installed in every new car has driven the growth in semiconductor production. A trillion-dollar industry by 2030.

High purity hydrogen is required for annealing, epitaxy, deposition, passivation, plasma cleaning, and as a stabilizing agent. It ensures uniform heat transfer in production along with the removal of unwanted oxides, chlorines and other contaminants, to improve electrical resistivity.

CPH2 can safely and reliably deliver on-site hydrogen at 99.999% purity to support this growth.

Our global partners are **ready to serve**_____ local market needs with local experts.

With **worldwide patent protection**, our **UK designed and built technology** is finding its place on the global stage.

We've built long-term partnerships with trusted regional licensees who understand their markets and share our ambition. Together we're delivering lower cost, higher purity hydrogen and oxygen production to decentralized applications everywhere. Long duration datacentre backup, more energy efficient waste water treatment, pharmaceutical and semiconductor production and mobility uses in 18 countries and counting.

In the **Middle East and Europe**, Bentec, has secured rights to manufacture our electrolysers. They hold an exclusive license for Oman, Saudi Arabia, UAE, Qatar, Kuwait and Iraq, and non-exclusive agreements for Germany, Norway and Denmark.

In **Australasia**, Fabrum is leading the charge. Their focus is on hydrogen refueling and the decarbonization of heavy-duty transport. They are building the critical infrastructure for a cleaner future.

In **Ireland**, Hidrigín is deploying our technology alongside its own renewable energy assets. With a €500 million investment envisaged for solar and wind, they bring scale, momentum and the manufacturing support of Jones Engineering and Lagan MEICA.

From Doncaster to Doha. From Dublin to Dunedin.
Our technology is traveling well.

Technical **Specifications.**

Nominal Capacity	1MW	5MW	Notes
Average Efficiency (kWh/kg)	59	48	1MW at 48kWh/kg on 2030 deliveries
Stack lifetime (Yrs)	12	12	Guaranteed as part of maintenance contract
Unit footprint (m^2)	59	149	Excludes local siting / planning requirements for setback
H_2 production mass (kg/hr)	18.7	104	
H_2 purity (vol %)	99.999	99.999	ISO 4687 Type I/II Grade D
H_2 output pressure (bar(g))	20	20	
O_2 production mass (kg/hr)	149	827	
O_2 purity (%)	99.5	99.5	EIGA-33-18 with medical use approval by special order
O_2 output pressure (bar(g))	0.6	0.6	
Ramp up — from pressurized standby	1	1	Seconds
Ramp up — from cold	10	10	Minutes
Ambient temperature range	-5°C to 35°C	-5°C to 35°C	
Water usage (kg/kg H_2)	11.2	11.2	Potable water
Input electrical supply conditions (volts)	400-415	400-415	@50Hz, 3-phase

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Learn more:

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