




EMEC

HYDROGEN EQUIPMENT

Contact us

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WHO WE ARE

EMEC is an innovation catalyst, pioneering the transition to a clean energy future.

To accelerate the commercialisation of offshore energy and demonstrate new solutions for decarbonising power, heat and transport, we are driving innovation in the integration of renewables with complementary energy vectors and alternative offtake industries.

Most of EMEC's work is experimental, putting early stage, pre-commercial technological solutions to the test. Since 2016, EMEC has been at the forefront of green hydrogen R&D, hosting pilot demonstrations integrating ocean energy with novel hydrogen technology.

These projects have provided valuable insights into production, storage, transport and end use of hydrogen. Contact us for more details and ask about our **knowledge exchange workshops** for an in-depth review.

HYDROGEN EQUIPMENT - AVAILABLE NOW



With some R&D projects coming to an end, we're readying our sites for the next wave of innovation demonstrations – whether that's hydrogen, synthetic fuels, energy storage, direct air capture or something else.

Therefore, some of our hydrogen equipment is looking for a new home. Please review this brochure for a summary of the equipment available, and get in touch for more detail.

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HYDROGEN PRODUCTION TRAIN

MODULAR PRODUCTION AND STORAGE FACILITY

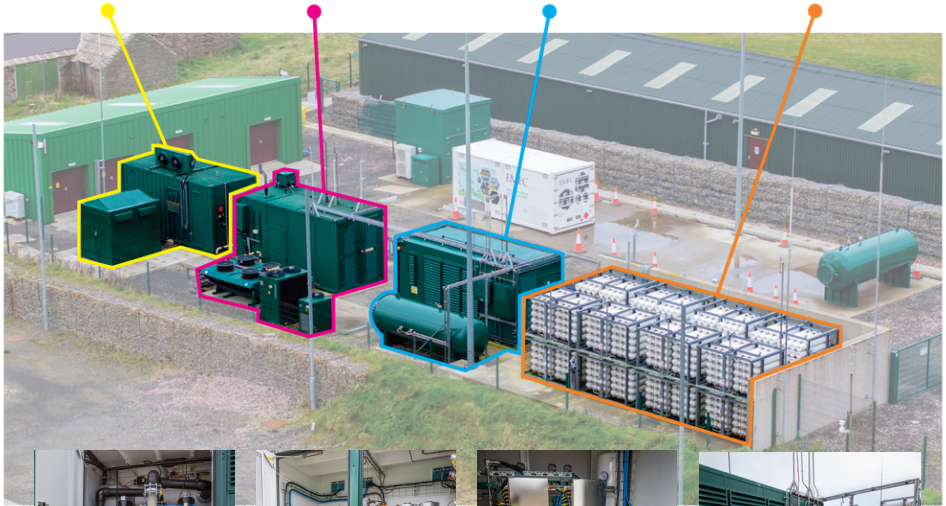
670 kW electrolyser, produces up to 260 kg of hydrogen in 24 hours.

POWER SUPPLY UNIT
AC/DC converter, power management and control.

ELECTROLYSER AND WATER PURIFIER UNIT
MEP Electrolyser, 267 kg/day.

HOFER COMPRESSOR UNIT
Suction capacity 190 M³/h, discharge pressure 204 bar.

HIGH PRESSURE STORAGE UNITS
8 x storage units, 1200m³ @ 300 bar.




- Requires up to 670 kW to run at full power
- Hydrogen purity of 99.999 %
- Output pressure at 20 bar (290 psi)



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HYDROGEN PRODUCTION TRAIN

TECHNICAL SPECIFICATIONS

POWER SUPPLY UNIT

Input supply: 400 Vac 1600 A

Step down transformer: 400 Vac / 2x 340 Vac AD/DC conversion unit.

Output supply: 260 Vdc 3000 A



HYDROGEN ELECTROLYSER

Type of electrolyser stack: MEP (Modular electrochemical production)

Maximum hydrogen production rate: 267 kg/day @ 100% demand

Water consumption: 20 L/kg hydrogen

Electrolyser operating pressure: 20 barg

Hydrogen purity: 99.999%

Power supply: 415 VAC, 3 phase and neutral, 50 Hz

Maximum power requirement: 900 kW

Load control: 30% to 90%



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HYDROGEN PRODUCTION TRAIN

TECHNICAL SPECIFICATIONS

HOFER COMPRESSOR

Suction capacity: 190 M3/h - 36 kg/h

Suction pressure: 18-19 bar

Discharge pressure: 204 bar

Motor power: 45 kW

20 ft container @ 9000 kg

HIGH PRESSURE STORAGE

X8 SM80 RoadGas AE2180 high pressure storage modules

Total gas volume per module: 1200 m3 @ 300 bar-92.5 kg
gas weight @15 degC

Individual cylinder water capacity: 50 Litres

Design pressure: 300 bar

Max working pressure: 300 bar

Dimensions: 2206 (W) x 1915 (D) x 2970 (H)
(3500mm over vent stack)



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COMBINED HEAT AND POWER UNIT (CHP)

TECHNICAL SPECIFICATIONS

2G AGENITOR 404 C-SERIES

100% green hydrogen (H₂) as a climate-neutral fuel for combined heat and power

Electrical output: 115 kW

Thermal Output: 129 kW / 440 MBtu

Efficiency: 80%



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MODULAR HYDROGEN PRODUCTION SYSTEM

This re-deployable modular hydrogen production system, built by Fuel Cell Systems, can be used for on-site small scale hydrogen generation in locations with no fixed production infrastructure.

Housed in a 10 ft container (pictured below), the unit consists of 10 stack anion exchange membrane (AEM) electrolyser technology with two gas dryer units from Enapter and a low-pressure buffer tank.

The 10 stack electrolyser is rated at 24 kW and generates high purity fuel cell grade ($\geq 99.999\%$) hydrogen at 30 – 35 bar which is then stored in the low-pressure buffer tank (500 litre capacity).



TECHNICAL SPECIFICATIONS


10 stack Enapter AEM electrolyser

Hydrogen production at 35 bar at a rate of 500 litres per hour per electrolyser module (10 modules)

500 litre low pressure buffer tank

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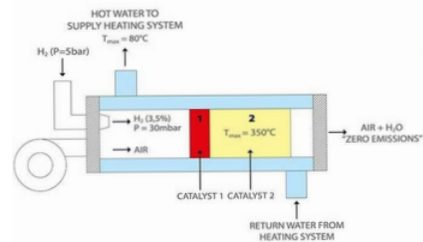
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GIACOMINI H2 5 KW BOILER

The CCF01-2018 hydrogen boiler is powered by pure hydrogen and designed for use in heating systems, particularly those with radiant heating that use low-temperature water (35-40 °C).

The boiler operates with flameless combustion, thanks to internal catalysts and provides reliable heating.

It has a delivery temperature range of 30 °C to 80 °C. The system is designed for efficient thermal energy recovery, making it a cleaner option for heating.



TECHNICAL SPECIFICATIONS

Optimised for radiant heating systems with low-temperature water (35 - 40 °C)

Delivery temperature range: 30 °C - 80 °C

Internal temperature range: 250 °C - 300 °C

H2 concentration: Approx 3-4 % inside the reaction canal

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PIONEER 145 REFUELLER

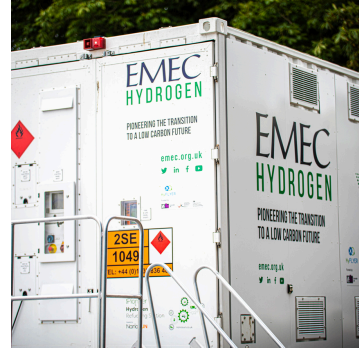
The Pioneer is a self contained, mobile hydrogen refuelling solution rated at 425 bar with a storage capacity of 420 kg.

Mounted on a triple-axle trailer, the unit is mobile, making it ideal for temporary deployments, pilot project or support in remote locations.

Previously used to support the refuelling of hydrogen-powered aircraft used in conjunction with the HyQube compressor for higher-pressure applications.*

The refueller can be reprogrammed to be compatible with other end applications.

*For higher pressure solutions, see HyQube asset listing.



TECHNICAL SPECIFICATIONS

9 x Type 4 fully composite cylinders

Refuelling ramp rate limit: <30 barg,
max 0.33 bar/min

Housed in ISO-standard 20 ft shipping container



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HYQUBE 500 REFUELLING STATION

The HyQube refuelling station is a compact, modular solution. Manufactured by Fuel Cell Systems Ltd, it enables flexible deployment and supports a range of refuelling needs across sectors. It dispenses gas at 350 bar, making it ideal for meeting small to medium sized refuelling requirements.

Please note: The HyQube does not include integrated hydrogen gas storage.

In previous use, it was paired with the Pioneer mobile refueller* for aircraft refuelling. In this set up, the compressor element of HyQube supported the Pioneer to reach maximum refuelling pressure requirements of the end use vehicle.

*For full system details, see the Pioneer 145 asset listing.



TECHNICAL SPECIFICATIONS

Air driven compressor

Electrical connection: 415 VAC

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MULTI ELEMENT GAS CONTAINER

These Calvera-manufactured multi element gas container (MEGC) units are designed to store and dispense hydrogen. When mounted on a chassis, they can transport hydrogen from point of production to end-use applications.

One unit is available to purchase.

Each MEGC can store 250 kg of hydrogen and consists of 59 lightweight composite cylinders (Type-3) made of aluminium with a Kevlar wrap.

The MEGCs have been successfully used to supply hydrogen for demonstration projects on both the Orkney mainland and UK mainland.



TECHNICAL SPECIFICATIONS

Gross weight: 10360 kg

Storage: 250 kg hydrogen at 200 bar

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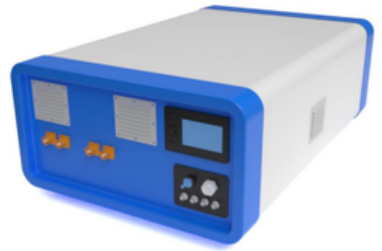


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MARINE FUEL CELL POWER SYSTEM


The Marine Fuel Cell Power System includes:

- Genevos HPM-15 hydrogen power module rated at 15 kW
- LiFePO4 48V 10.3 kWh single module battery
- CEM 030 bronze self-priming pump (230V, 75 l/min)



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For detailed specifications and pricing,
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