GREENHYDROGEN

HyProvide™ P-Series

Non-ATEX, lightweight and easy-to-handle kW-scale electrolysis solutions

The HyProvide P-Series is a compact, standardised and modular kW-scale electrolysis solution developed to help the green energy market move towards a fossile-free future.

Automotive

Laboratory and Small Industry

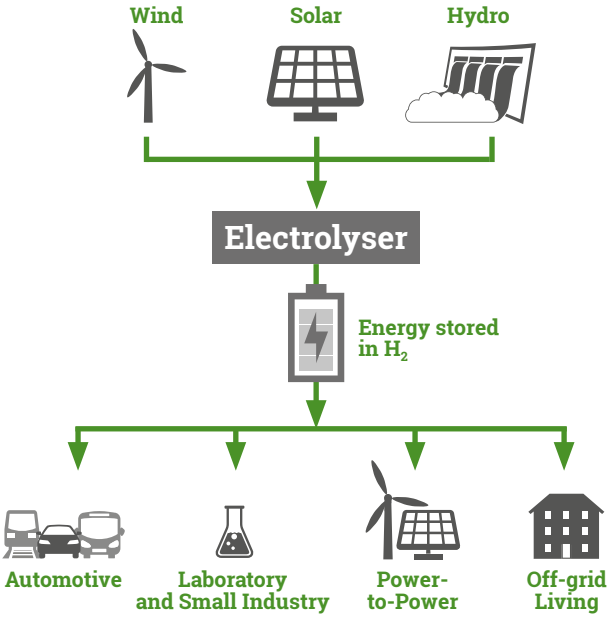
Power-to-Power

Off-grid Living

Green hydrogen made from green energy

The HyProvide™ P-Series meets emerging needs for high-efficiency PEM electrolysis. Designed specifically for green energy applications – including laboratories, power-to-power, off-grid living and hydrogen refuelling stations (HRS) – this modular kW-scale PEM solution delivers the performance and low TCO your operation needs to thrive.

Each HyProvide™ P-Series unit is a complete, modular electrolyser solution that includes everything you need – fully configured, pre-tested, and ready to deploy and power up. If you need the hydrogen to be extra dry, we also offer a matching HyDry solution – that dries the hydrogen and delivers it up to a -70°C DEW point.



How we minimize TCO

- Standardized modular systems for lower production costs
- Pre-tested turnkey systems
- Quick on-site installation
- High efficiency for minimal power consumption
- Low operating costs – low service needs
- Remote accessible for system control and diagnostics
- Long system lifetime and high availability

Major benefits

Easily accessible PEM electrolyser – proven and easy to install, operate and service

- High-efficiency stack
- High output pressure – up to 50 bar
- Optimized flow system in BOP
- Unique dynamic range (25–100%)
- Fast power up/down
- Designed for long lifetime – stack can be refurbished
- Designed to minimize total cost of ownership
- Electrolyser surroundings are non-ATEX

Modular and compact

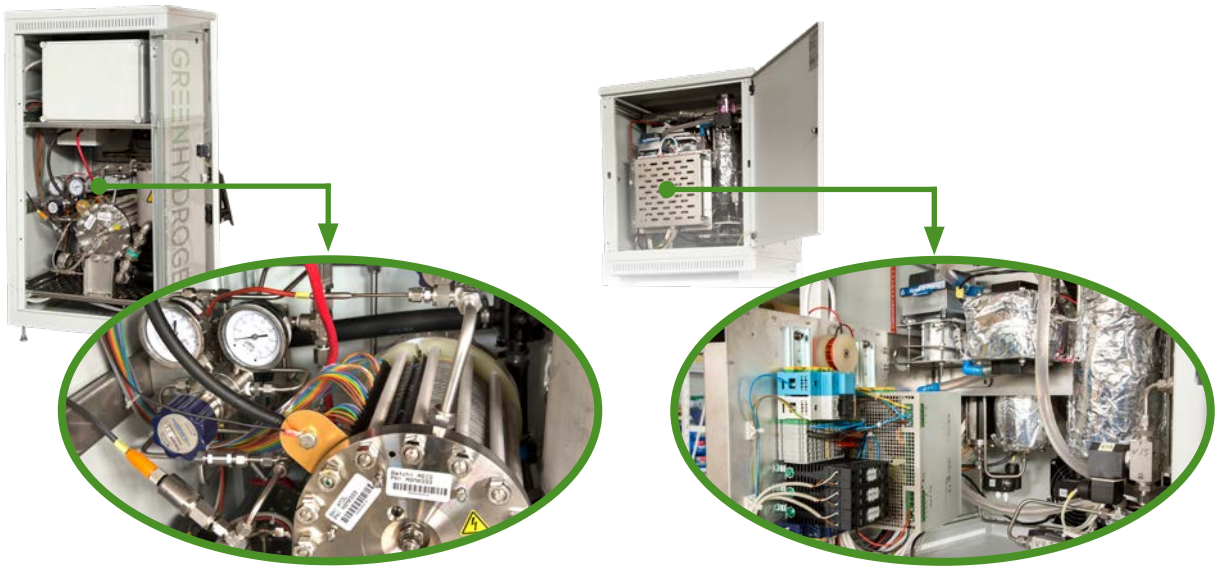
- Delivered as 1 Nm^3 H_2/ hour building blocks – pre-tested and ready for power-up
- For larger capacity requirements, multiple HyProvide™ modules connect in parallel
- Stand-alone for in-building/plant-floor installations, or fitted in 10 ft. containers
- Easy installation – no significant site preparation required
- Cables, pipes and hoses all connect at the back
- Minimal footprint – 60 x 60 cm for 2 kg. H_2 daily production

Versatile solution for many applications

HyProvide P-Series electrolysers can be supplied as single units – such as for on-site hydrogen generation in a power-to-power solution for a private home, or for use in a university laboratory – or as multiple units that comprise a 10–25 kW-scale solution for forklift refuelling stations and other larger-scale applications. Each unit comprises an individual building block that includes its own controller, and any number of units can be connected in parallel to supply up to 5 Nm^3 H_2/hour of capacity for redundant systems, for example.

The HyProvide P-Series is suitable for a wide range of applications – almost anywhere, in fact, where clean, green hydrogen is needed.

A 2 Nm^3 version, a rack-mounted version and a direct DC version are currently in development.



To learn more, visit GreenHydrogen.dk
or contact sales on +45 7550 3500 or at sales@greenhydrogen.dk

HyDry™ advanced self regeneration dryer – designed for the HyProvide P-Series

- Is placed on top of HyProvide units to save space – matching design
- Designed to work effectively with HyProvide via intelligent interface and SW
- Long lifetime and low power consumption
- Fully automatic operation

Easy maintenance and service

- Modbus TCP/IP interface lets you manage and operate complete HyProvide and HyDry system via a single interface
- Components are easily accessible for service from all sides of the system
- IonExchange filter in HyProvide unit is easy to access for changing

Supplied with standard 230 VAC or 400 VAC power connections. Option to connect directly to DC power from PV/Wind Turbine to improve efficiency.

Technical specifications

HyProvide P1:	
H_2 Production rate [Nm^3/hour]	1.0
H_2 pressure [bar]	15–50
H_2 purity [%]	>99.995
Dynamics [%]	25–100
Waste heat (process cooling requirement) [kW]	1.3
Power [kW]	4,95
AC voltage [V AC]	230/400
DC voltage [V DC]	48
Water quality [µS/cm (ASTM Type II)]	<2
Communications and control	
Communications interface type	Direct TCP/IP Ethernet
Remote system control	Browser interface – MOD-bus via TCP/IP
HyDry T1-70 | HyDry T1-30	
H_2 Drying capacity [Nm^3/hour]	0–1
H_2 consumption for regeneration af dryer column [%]	1–2
H_2 dewpoint	< -70 | < -30
Power max [kW]	0,4
Environment	
Location	Indoor/container
Ambient humidity [%RH, non-condensing]	0–90
Ambient temperature [°C]	+2–+40
Electrolyser enclosure	
Dimensions [mm (WxDxH)]	600x600x1100
Weight [kg]	130
Dryer enclosure	
Dimensions [mm (WxDxH)]	600x500x630
Weight [kg]	45
Approvals / Conformity	CE
Standards	Hydrogen generators (ISO 22734-1) EMC directive (2004/108/EC) Low voltage directive (2006/95 EC) Machine directive (2006/42/EC) PED directive (2014/68/EC)

About GreenHydrogen

GreenHydrogen has been supplying advanced electrolysers since 2007. We work closely with leading technology partners, universities, energy authorities and policymakers. We have spent more than 100 man-years on R&D, and participated in numerous publicly funded electrolyser demo projects in Denmark and other parts of Europe.

Our electrolysers have been tested in power-to-power installations (e.g., mobile base stations in remote/off-grid locations), as on-site hydrogen generators at hydrogen fueling stations, and in power-to-gas applications. In 2018, our electrolysers will be installed as part of a methanation solution, a solar-powered hydrogen refueling station, a power-to-power solution that enables apartments to go off grid using solar power, and a solution where wind-generated electricity is used to produce hydrogen for resale.

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