Green hydrogen production for every scale & purpose
Green Hydrogen Systems is a leading provider of standardised and modular electrolysis equipment for the production of green hydrogen solely based on renewable energy.

Green hydrogen provides the critical link between renewable electricity generation and hard-to-abate sectors such as industry, heavy transport and buildings. With its wide range of possible applications, green hydrogen plays a key role in the ongoing fundamental shift in our energy systems towards a net-zero emission society in 2050. As a result, the demand for green hydrogen is surging, requiring a significant scale-up of electrolysis capacity.

Our technology enables onsite production of green hydrogen and an energy supply system solely based on renewable energy. We are committed to helping customers decarbonise their operations and decrease dependence on fossil fuels.
Our role in the value chain

Green Hydrogen Systems is an original equipment manufacturer of pressurized alkaline electrolysis equipment and provides related services for the production of green hydrogen using renewable electricity.

Direct application
- buses & tucks
- smaller ships
- industry feedstock
- refineries
- steel production

Power-to-X (e-fuels)
- conversion via synthesis
- transport, aviation & shipping
- fertilizer (e-ammonia)
- replace natural gas

Grid stabilisation
- conversion via fuel cell
- electric grid
- H₂ storage
Electrolysis solution for every scale

Our standardised electrolysers are based on a modular design, and each module can be used as a stand-alone electrolyser or combined in clusters for larger multi-MW and GW applications.

We have explored different technologies and have decided to fully prioritise pressurised alkaline electrolysis as our core technology, which is well-positioned in terms of reliability, efficiency and physical footprint.

- **Mature Technology & Durability**: Based on commercially proven pressurised alkaline technology.
- **Modularity**: Suited for rapid scale-up, clustered solutions and serial production.
- **High Efficiency**: Competitive energy to hydrogen conversion.
- **Dynamic Operations**: Designed to operate handle variable loads from renewable energy.
- **Small Footprint**: Compact modular design increasing number of applications.
- **High Output Pressure**: 30 bar hydrogen output pressure.
- **High Durability**: Expected service lifetime of +100,000 operational hours.
- **Sustainable Process**: Independent from scarce and price sensitive materials.
- **Versatility**: Flexible and suitable for many different market segments.
Available in standardised, modular configurations for maximum efficiency, versatility and scalability, this next-generation technology makes the A-Series one of the most efficient alkaline electrolysers on the market. The unit is designed from the ground up to accommodate the input fluctuations that come with renewable energy sources. Its versatile design allows for application across many different market segments for green hydrogen production fully prioritise pressurised alkaline electrolysis as our core technology, which is well-positioned in terms of reliability, efficiency and physical footprint.
Upcoming

HyProvide® X-Series

The X-Series is based on the existing well-proven technology, optimised for use in the growing market for large-scale applications in, for example, industry, energy and heavy-duty transport sectors. Its unique multi-stack concept with power consumption of approx. 6MW allows the electrolyser to reach higher voltages crucial to utilise mass-produced, low-cost and high-efficiency power electronics from wind and solar markets. The X-Series will drive costs down for the production of hydrogen (LCOH) through increased system efficiency, serial production and a number of cost-out initiatives.

Example of an X-Series site configuration of 24 MW

- **1080 m²**
- **H₂ 10 320kg/24h**

For projects above 6MW and beyond 100 MW
used in

- shipping
- transport
- aviation
- trains
- eco village
- e-fuels
Safety & Efficiency

All modules are extensively tested at our factory in Denmark before being shipped to the customer. This approach allows for the highest quality, safety and rapid deployment on-site.
Partnerships are at the heart of what we do. Accelerating the global energy transition requires close collaborations across the whole value chain. Our technology is already in use in several places in Europe, where we are helping our customers to achieve independence from fossil fuels and designing the energy solutions for the future.

**Lowest levelised cost of hydrogen**

Our mission is to bring the levelised cost of hydrogen down to the cost-parity with fossil fuels and ensure the best total cost of ownership for our customers.

**Value Engineering**

Our experts analyse every project individually and make sure the best product, site and system configuration to ensure highest possible value for our customers.

**Partnership for the future**

We strive to be on the forefront of the ongoing energy transition and develop future-proof technology. By partnering with us you get unmatched equipment to support your hydrogen ambitions.

**Long-term performance guarantees**

Delivering business case certainty and lifetime asset optimisation by providing global service solutions & building data infrastructure as an enabler for performance guarantees.
Global service solutions adjusted to your needs

- Installation & commissioning
- Remote monitoring & support
- Performance guarantees
- Advanced asset analytics
- Spare parts
- Training
As part of a pioneering wind-to-hydrogen project, Green Hydrogen Systems' electrolyser was connected to a Siemens Gamesa 3 MW wind turbine near Brande, Denmark. Instead of feeding the power grid, the wind turbine feeds electricity into a GHS HyProvide A-Series electrolyser, which converts the electricity into hydrogen that will be stored for subsequent distribution and use as a fuel for hydrogen-powered buses, taxis and cars.
Customer Case

**GreenHyScale 100 MW**

Green Hydrogen Systems will develop, manufacture, install and test our first 6 MW high-efficiency pressurised alkaline water electrolyser module at GreenLab in Denmark. The solution employs pressurised alkaline electrolysis, the most cost-efficient type of electrolysis, and a technology that works efficiently with the variable load from renewable electricity sources. As a first step, the 6 MW X-Series electrolyser module will be demonstrated towards the end of 2022. Depending on certain performance criteria, the 6 MW module is planned to be expanded into a 100 MW electrolysis plant by the end of 2024.
Ongoing Expansion to up to 400 MW

possibility for further expansion of up to 1000 MW of annual electrolyser production
Green Hydrogen Systems has grown from 20 employees in 2020 to over 200 employees today and we expect to continue to grow our team as part of our planned scaling initiatives. Currently, we are in the process of expanding our production and administration facilities. The new facilities will increase the current yearly capacity from 75 MW to 400 MW worth of electrolyzers.
Green Hydrogen Systems
Selected projects in Europe

- **+120 MW**
  - Denmark

- **+1,4 MW**
  - The Netherlands

- **+3 MW**
  - UK

- **+2 MW**
  - Norway

- **+0,4 MW**
  - Sweden

- **+1,3 MW**
  - Germany

- **+0,5 MW**
  - Switzerland

- **+0,5 MW**
  - France

All numbers are accumulated

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