

GREEN HYDROGEN

Powering the Hydrogen Economy

High-power DC rectification systems for electrolysis: renewable integration, modular containerized deployment, and grid code compliance for green hydrogen production.

ELECTROLYZER POWER SUPPLY

High-power AC/DC rectification designed for alkaline (AEL) and PEM electrolyzers.

■ 5-100 MVA per Unit

Scalable power for electrolysis plants of any size, from pilot projects to industrial-scale production.

■ 20-100% Operating Range

Wide operating range that allows following variable renewable energy availability without degrading performance.

■ High Efficiency >97%

Minimal conversion losses maximizing hydrogen production per kWh of electricity consumed.

■ Precise V/I Control

Real-time current and voltage regulation to maximize electrolyzer conversion efficiency.

■ 80 MVA Modular Block

80 MVA rectifier as a modular building block for large-scale hydrogen production plants.

■ AEL & PEM Compatible

Adaptable design for the different load curves of alkaline and proton exchange membrane electrolyzers.

RENEWABLE INTEGRATION

Intelligent management of variable power input from wind and solar sources.

■ Variable Power Input

Dynamic tracking of available power from wind and solar farms, optimizing H₂ production at all times.

■ Grid Code Compliance

Compliance with national and international grid codes, including frequency and voltage regulation.

■ Energy Storage Buffering

Integration with energy storage systems to smooth variability and maximize electrolyzer operating hours.

■ Power Factor Correction

Active power factor compensation under variable load to minimize penalties and improve connection quality.

CONTAINERIZED DEPLOYMENT

Pre-assembled power supply systems for rapid deployment in electrolysis plants.

■ Standard Form Factor

ISO 20/40 ft plug-and-play containers, reducing civil engineering and field assembly time.

■ Renewable Co-location

Installation at remote or greenfield sites alongside existing wind and solar farms.

■ Phased Capacity Additions

Modular capacity additions as hydrogen demand grows, protecting initial investment.

■ Rapid Deployment

From factory to hydrogen production in weeks, not months — key to meeting decarbonization targets on time.

POWER QUALITY

Harmonic management and regulatory compliance for large rectification loads.

■ Rectifier Harmonics

Active filtering of harmonic currents generated by the electrolyzer high-power rectifiers.

■ Inverter Interaction

Management of interaction between electrolysis rectifiers and co-located wind/solar farm inverters.

■ Grid Code Compliance

Conformity with IEEE 519 and IEC 61000 harmonic emission limits for medium and high voltage grid connection.

■ Active Harmonic Filtering

Active compensation systems maintaining waveform quality within the strictest limits.

GREEN HYDROGEN APPLICATIONS

From steelmaking to transport, green hydrogen decarbonizes the hardest-to-abate sectors.

■ Green Steel (H2-DRI)

Direct reduction of iron with hydrogen instead of coal, eliminating up to 95% of steelmaking process emissions.

■ Refinery Decarbonization

Replacing grey hydrogen from natural gas reforming in hydrosulfurization and hydrocracking processes.

■ Power-to-Gas

Converting renewable surplus into hydrogen injectable into the natural gas grid or for seasonal storage.

■ Green Ammonia

Carbon-free ammonia production for fertilizers and as an energy vector for maritime transport.

■ Transport Fuel

Hydrogen for fuel cells in heavy-duty transport, buses, trains, and long-distance logistics.

KEY MARKET FIGURES

40 GW

EU target 2030

\$30B+

Global market

1.1 MW

Rectification per MW electrolysis

80 MVA

Modular blocks

CERTIFICATIONS

■ CE

European conformity

■ ATEX

Explosive atmospheres

■ IEC 62282

Fuel cells

■ PED

Pressure equipment

POWER YOUR GREEN HYDROGEN PROJECT

Our engineering team designs the optimal rectification and power quality solution for your electrolysis plant.

Eneraq

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European technology · In-house R&D