

06 MARZO 2025

LA TECNOLOGIA DI CONVERSIONE ABB PER LA PRODUZIONE DI IDROGENO VERDE

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ENGINEERED
TO OUTFIT

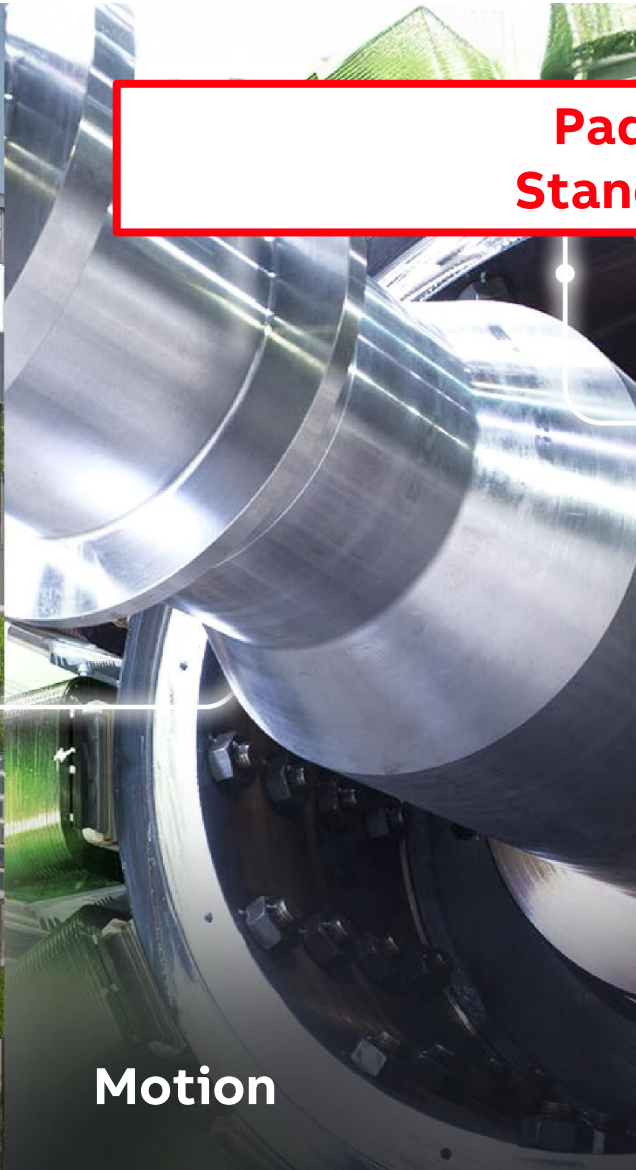
Our Presence in KEY – The Energy Transition Expo

**Pad. A1
Stand 100**



Electrification

**Pad. B3
Stand 440**



Motion

**Process
Automation**

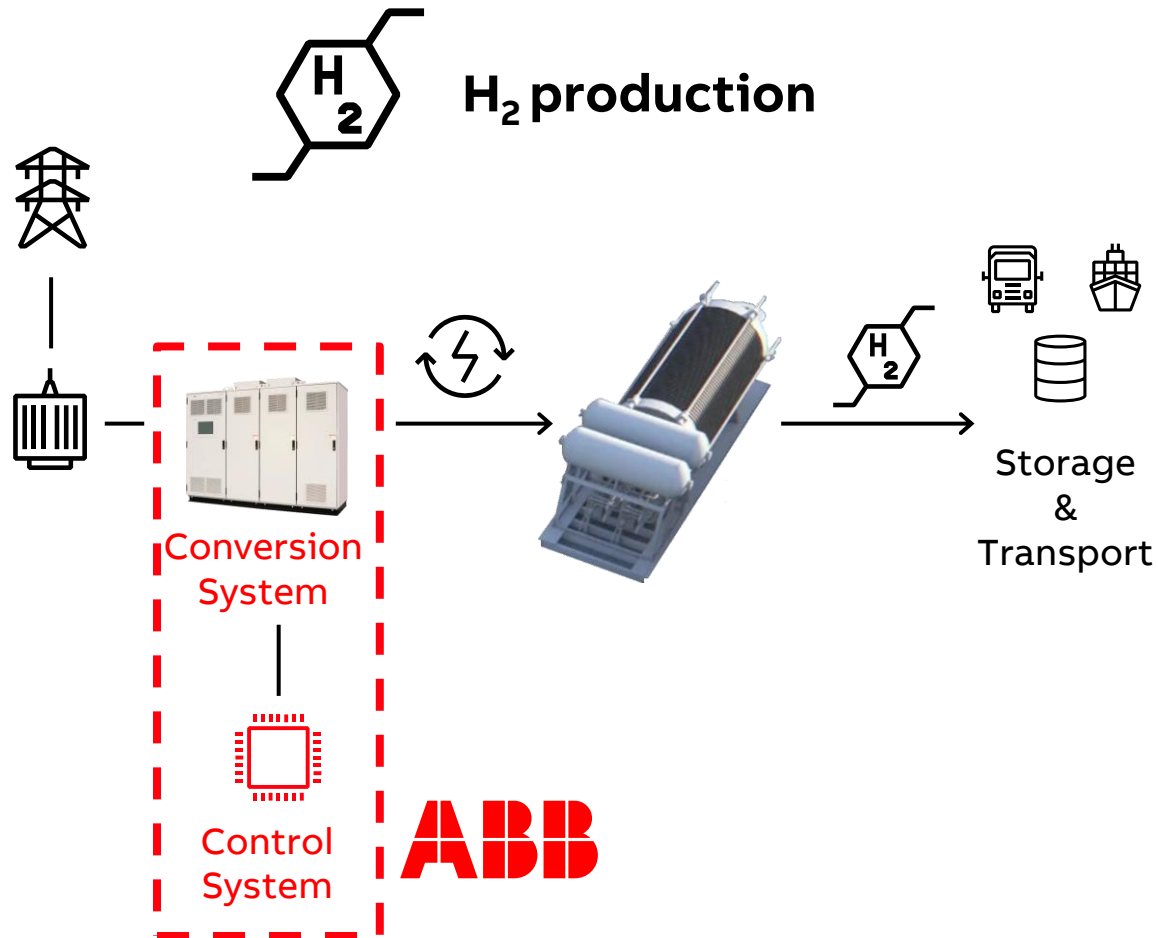


**Robotics & Discrete
Automation**



Most critical challenges OEMs are facing today

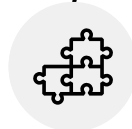
H2 production



- Unit performance guarantees on availability, efficiency and maintenance costs
- Committing on system performances without real field expertise
- Grid code compliance with related performance guarantees and penalties for OEM towards end customer, if compliance is not met
- Minimize CAPEX and OPEX
- Selection of suppliers for extended offering (turn-key plants), without increasing risks
- Bid turnkey solutions fast
- Optimized control / energy management of the whole plant

Power supply portfolio for H₂ production

Advantages of our products



Modular and easy-to-integrate



High efficiency leads to competitive total cost of ownership



Robust with low maintenance need



Reliable with built-in safety functions



Stack friendly with DC ripples < 1 %



Market leading series production solution, easy upscaling



Digital native with modern connectivity options



H₂ Plant Simulations to minimize risks



All major class approvals and certifications

Power supply portfolio for H2 production

Future-proof solutions for optimal performance



Thyristor-based

- up to 20MW
- Voltage DC: 10 to 1500 V
- Air-cooled or Water-cooled
- THDi 10-12% in 12- pulse, 5-7% in 24- pulse
- Power factor: 0.90 - 0.95
- Small footprint, 4500 kW/m²
- 6-, 12-, 18-, 24-pulse option available



IGBT or Diode with DC chopper-based

- up to 10MW
- Voltage DC: 50 to 1100 V
- Air-cooled or Water-cooled
- THDi < 3%
- Power factor: 0.98 - 1.00
- Ultra-low harmonic AC voltage
- Low to none reactive power



Outdoor IGBT

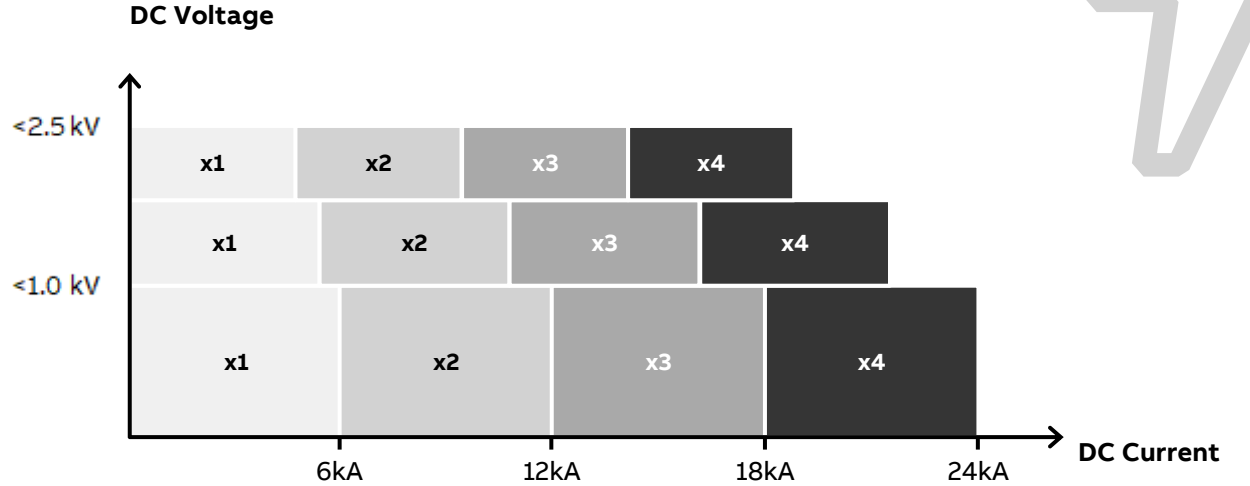
- up to 10MW
- Voltage DC: 850 to 1500 V
- Air-cooled
- Power factor: 0.99 - 1.00
- Skids or containers 6m and 12m

UNIREC H2

Thyristor-based rectifier solution



Modular approach

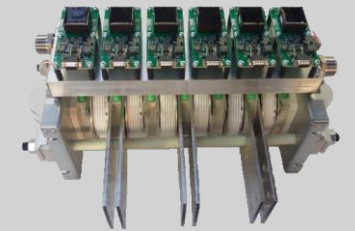


Water cooled module



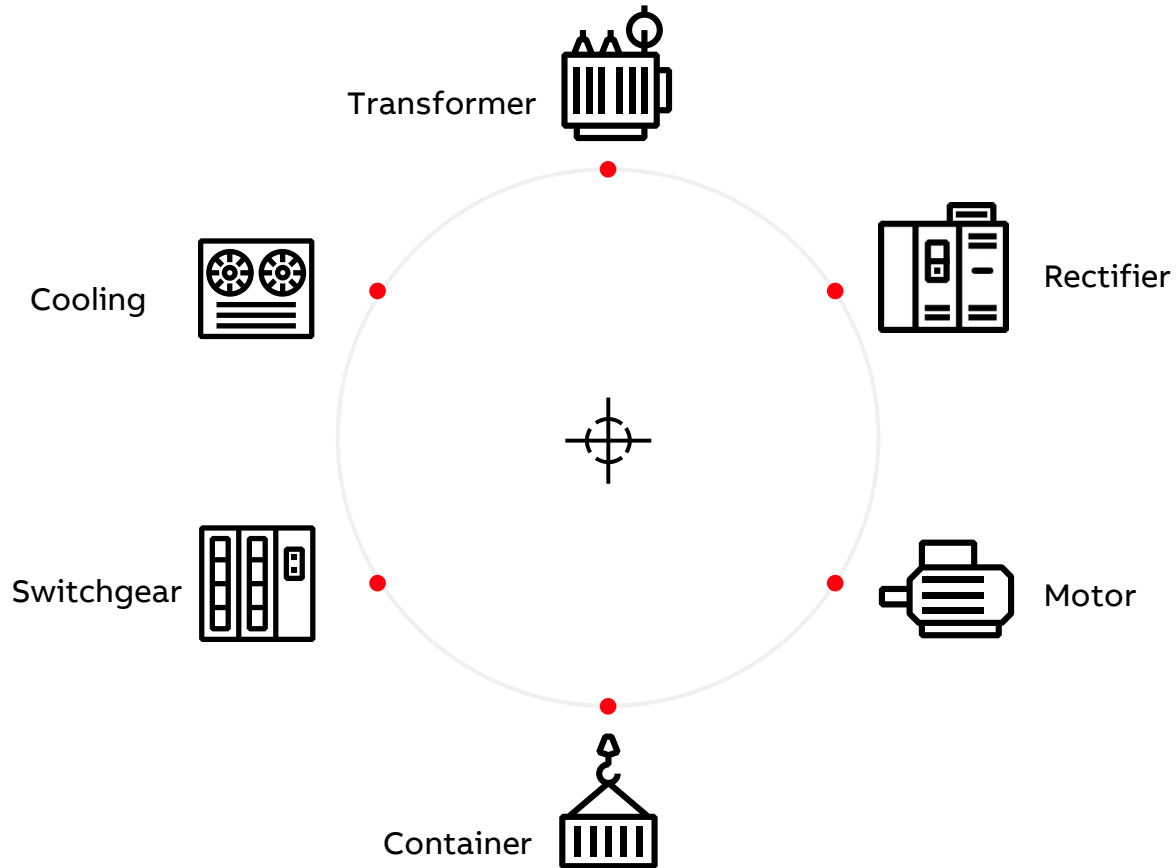
- DC current modules up to 6 kA
- Scalable up to 36 kA
- High power vs footprint \rightarrow Up to 3 times vs Air cooled design
- Closed loop cooling circuit \rightarrow No need of de-ionized water

Water Cooled Power Stack



- Compact design
- Isolated water heatsinks
- Higher power density
- Shared water-cooling circuits between rectifiers
- Scalable design

Package solution



- We **design holistically** for perfect fit and **complete package performance** including third party products.
- We **reduce complexity** by providing single point of contact and one contract for the entire package.
- We **save you cost and effort** in bidding, project management and engineering process. Our technical competence enables more cost optimized solution.
- We **smooth logistics and installation** by coordinating delivery, design interface and **commissioning of all elements**

ABB service portfolio

Services matching your needs

Your needs



Rapid response



Lifecycle management



Performance improvements



Operational excellence

Our services

Service Agreements – ABB Drive Care



Training



Engineering and Consulting



Installation and Commissioning



Advanced Services



Spares and Consumables



Extensions, Upgrades and Retrofits



Maintenance



End-of-Life Services



Repairs



Replacements

PERIC selects ABB to supply rectifier system to Texas pilot plant

ABB UNIREC H2

ABB's UNIREC H2 water-cooled power rectifier optimizes hydrogen production with smart control and low maintenance costs.

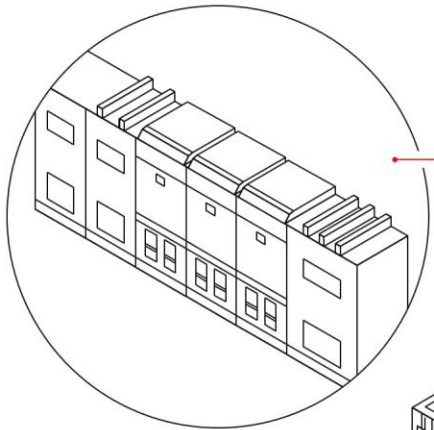
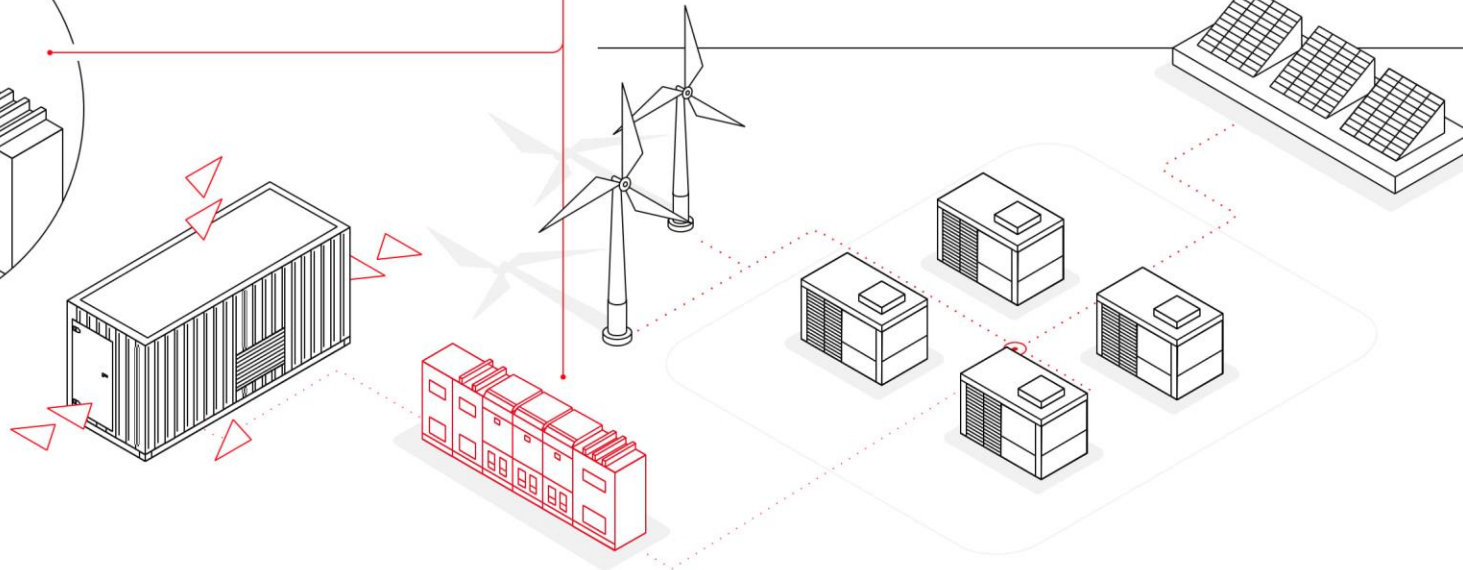
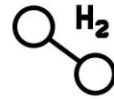


ABB & PERIC

ABB was selected by PERIC Hydrogen Technologies Co (PERIC), a Chinese electrolyzer producer, to support a green hydrogen pilot facility in the USA.

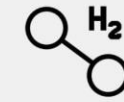


Space-saving, low-maintenance

The rectifier was designed to occupy less space and with low maintenance costs due to its compact features and reduced number of components.

Green hydrogen production facility

The facility will convert renewable energy into green hydrogen and combine it with industrially sourced carbon dioxide (CO2) to produce ultra-low carbon fuels.



ABB's thyristor-based rectifier

ABB's power rectifier for hydrogen electrolyzers is based on a proven full-wave thyristor converter and ABB's latest control technology with advanced regulation and protection functions.



Designed for extreme weather

Because of the plant's location in harsh desert environment, UNIREC H2 has been tested in extreme weather conditions through digital simulations based on historical climate data.



Ready for the plant

ABB has carried out the factory acceptance tests (FATs) for the rectifier to ensure it runs seamlessly and enhances the overall plant performance.

AABB