



DC power supplies for electrolyzers

Robust and flexible solutions for reliable hydrogen production



Powering the future of hydrogen to safely decarbonize the world for future generations to come

Powering the future of green hydrogen

ABB offers robust and flexible power supplies tailored for electrolyzers to enable the production of green hydrogen. Drawing from over 100 years of experience in developing rectifiers for power generation, with thousands of units operating worldwide, ABB presents a dedicated portfolio of hydrogen power supply systems featuring advanced rectifier technology.

Our rectifier solutions cover a wide DC voltage range and incorporate thyristor, diode, and IGBT technology. These technologies enhance efficiency, safety, and reliability by delivering precise current and voltage to the electrolyzer, ensuring compliance with operational requirements.

Safety and Reliability:

Leveraging decades of experience in hazardous industrial environments, we implement low-maintenance safety solutions that significantly mitigate risks.

Each rectifier undergoes rigorous factory testing to prevent outages and ensure continuous, reliable operations. With a focus on safe industrial practices, ABB stands at the forefront of empowering businesses to achieve their operational goals with unparalleled precision and care.

Simplify your power supply without limiting your flexibility.



Maximize efficiency and minimize OPEX, year after year



Choose the right technology – IGBT, Thyristor, and Diode



Plug and play solutions– from grid to electrolyzer input



Worldwide support and long-term service agreements

HERITAGE

ABB is one of the world's leading suppliers of power electronics. Since 1958, we have supplied over 750 rectifier systems for chemical plants worldwide. Today, we remain committed to advancing power supplies for green hydrogen production, enabling decarbonization efforts in heavy industries, and contributing to a low-carbon future.

WHAT WE DO



- **>100 years** of power conversion
- Quick & easy installation services
- Comprehensive project management
- Expert design support with simulation capabilities



DC power supply solutions

Reliable plug and play solutions designed to perform at optimal uptime for maximum efficiency.

Technical data*

Power per rectifier	Scalable solutions up to 10MW, 20MW on demand
Technologies	IGBT, Diode, Thyristor
Max. DC voltage	Up to 1,500 VDC
Cooling (rectifier)	Air-cooled or Liquid-cooled
Configuration	12, 18, 24 pulse and higher pulses on request
Rectifier Efficiency	≥98% for IGBT and ≥99% for SCR
Ripple factor	<1.5%
Power factor	>0.99 for IGBT, additional compensation to meet grid requirements for SCR
IP Rating	Indoor IP31 / Outdoor skid IP54
System	Stand alone panels / fully integrated solutions (MV switchgear, transformer, rectifier)
Outdoor solutions	Skids or containers (20ft and 40ft) C4 / C5-M corrosion protection
Standards and directives compliance	All IEC and IEEE relevant standards, CE labeled, converters UL/CSA certified, panels UL/CSA approved  
Typical nominal AC voltages	Up to 30kV (customizable for seamless integration in existing electrical distribution system)

as*) availability depends on the technology and ratings





Benefits

- Broad current and voltage range
- Embedded safety features
- Suitable for all type of electrolyzer technology
- Indoor and outdoor solutions
- Dedicated solutions for:
 - Reactive power compensation
 - Harmonics (THD)
 - Current ripple

Choosing the right power supply

Our engineering teams specialize in crafting power supply systems tailored to your project requirements and site conditions. To maximize overall efficiency, we meticulously match rectifier technology with semiconductor components that seamlessly integrate with the grid. Whether IGBTs, thyristors, or diodes with DC choppers; our solutions ensure optimal performance. Our systems are scalable and configurable, making them suitable for a wide range of electrolyzers.

Packaged solutions adapted to your plant

ABB's package is a complete power supply solution. The rectifier, controls, cooling, and auxiliary equipment are pre-assembled in a plug and play system ready to use.

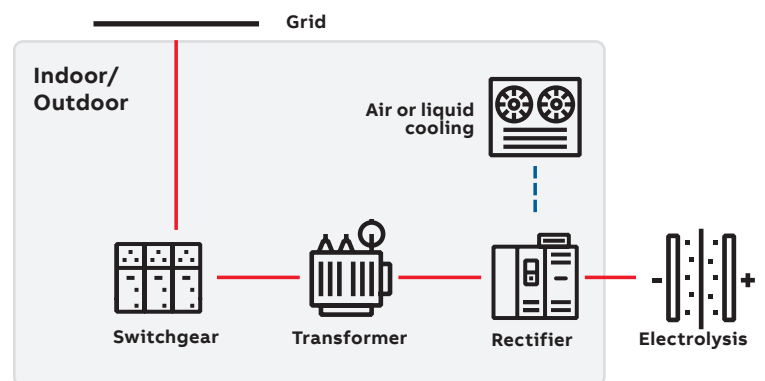
Design

ABB's holistic approach includes complete mechanical, electrical, and control design, resulting in a simple, standardized package. The complete system is fully tested before delivery, allowing for quick and easy integration.

The packaged solution requires minimal work to integrate into any plant. Additionally, packaged rectifier solutions offer scalability, allowing for easy replication for future projects. With integrated safety features and efficient space utilization, they optimize operational efficiency and minimize downtime, making them ideal for all size of hydrogen plants.

Benefits

- All compatible COT parts
- Onboard diagnostics
- Pre-assembled & pre-tested units
- Built-in safety features



Services to match your needs

Your service needs depend on your operation, life cycle of your equipment and business priorities. We have identified our customers' four most common needs and defined service options to satisfy them. What would you choose to keep your rectifier running at peak performance?

Is uptime your priority?

Keep your rectifier running with precisely planned and executed maintenance.

Example services include:

- ABB Ability Life Cycle Assessment
- Installation and commissioning
- Spare parts recommendations
- Preventive maintenance



Operational
excellence

Is rapid response a key consideration?

If your rectifiers require immediate action, our global network is at your service.

Example services include:

- Technical support
- On-site repair
- ABB Ability Remote Assistance
- Response time agreements



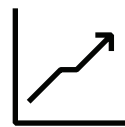
Rapid response

Need to extend your assets' lifetime?

Maximize your rectifier's lifetime with our services.

Example services include:

- ABB Life Cycle Assessment
- Upgrades, retrofits and modernization



Life cycle
management

Is performance most critical to your operation?

Get optimal performance out of your electrolyzers.

Example services include:

- Engineering and consulting
- Inspection and diagnostics
- Repair workshops
- Tailored services



Performance
improvement

Global service network

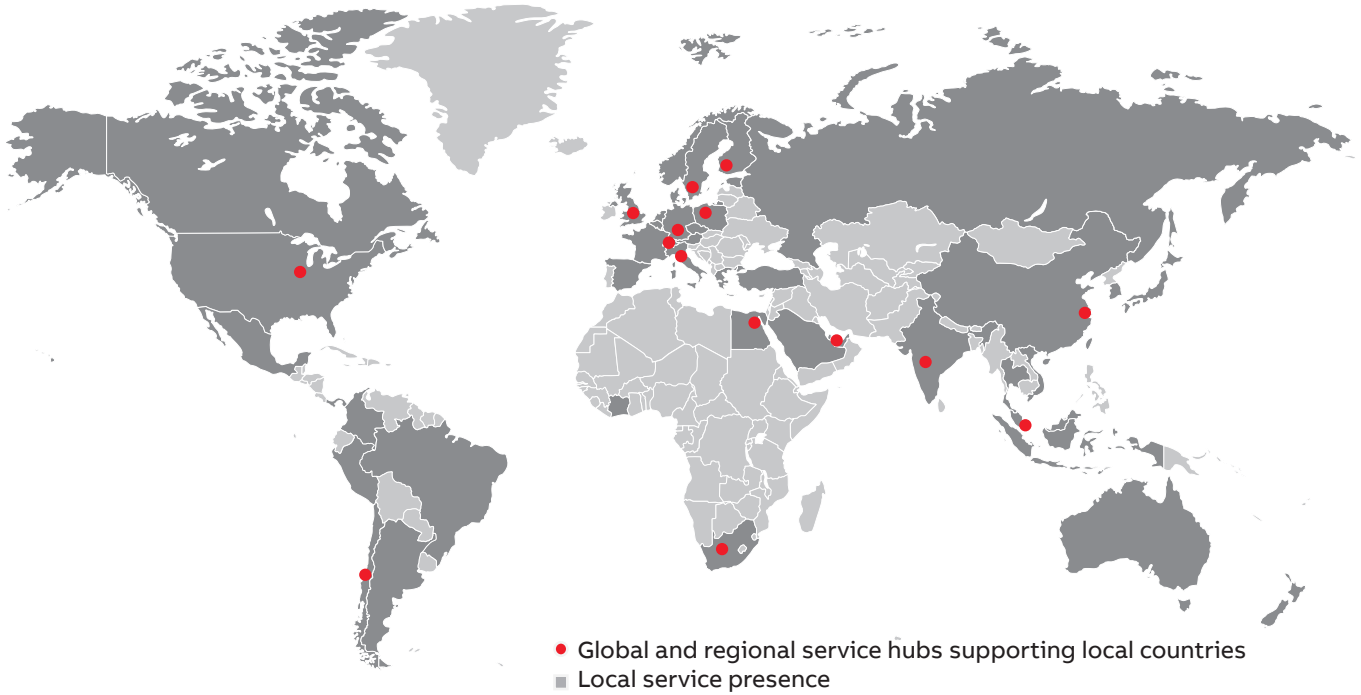


ABB Motion Services can guarantee the optimization of your uptime through expertise and fast intervention. Our global and local team of more than 1,200 field service engineers, together with over 600 service partners and approximately 50 workshops, are all fully certified to the highest level to support you, on-site or remotely with rapid response times.

ABB Ltd.

Contact us:

global-h2collaboration@abb.com

