# Scale up your hydrogen projects

Power Conversion for a grid friendly hydrogen production





# Scaling up the power supply of electrolyzers

We guarantee maximal grid compliance and high efficiencies. SMA Power Conversion Units (PCUs) are a proven solution for a reliable and scalable power supply of electrolyzers using PEM, Alkaline or SOEC technology. The innovative IGBT rectifier solution combined with carefully designed medium-voltage components and our large-scale serial manufacturing guarantees minimum project risk at maximum efficiency and quality. And that pays off: Our IGBT based solution ensures an attractive return on your investment.

The heart of the PCU is the Electrolyzer Converter (EC-UP) which converts AC power from the grid to DC power for the electrolyzer using a similar platform to our PV and storage converters. As a fully integrated package, which is easy to transport, install and commission, the PCU substantially reduces project costs and cuts construction time. Tested and installed in numerous countries and climates, we ensure industry-leading availability and robustness and offer a global service network that provides optimum support along plant lifetime.

Our IGBT based Power Conversion Units allow a smooth grid connection and reactive power management. They provide exceptionally low harmonic distortion and make additional filters or compensators obsolete.

SMA PCUs are fully type-tested with an excellent track record of more than 15,000 installations in over 45 countries. Our high-volume production capacity of 21 GW (2024) and 40 GW (2025) ensures your individual project needs will be covered even for large-scale projects.

### **Power conversion solution provider**





### SIMPLICITY

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- Fully integrated, containerized solution
- No need of harmonic filtering or power factor correction units due to IGBT technology

- **ROBUSTNESS** • 25 years lifetime
- Global proven track record
- Deployable under harsh conditions
- Integrated solution from DC to grid



#### COMPATIBILITY

- Compatible with PEM, Alkaline and SOEC
- Compatible with most grid codes, renewables and batteries
- Certified to international IEC and IEEE standards



#### **SCALABILITY**

- Modular design for solutions from 1.5 MW to 1.5 GW or even more
- Standardized serial high volume production with a high production capacity

# **Power Conversion**

## quality - versatility - turn-key

SMAs PCU has a wide DC operation window which enables to work with nearly all types of electrolyzers. The medium-voltage solution is designed for largescale projects with the following features:

#### Smooth start-up

Enables a smooth and healthy start-up for the electrolyzer stacks.

#### **Outdoor solution**

The fully integrated system design allows operation in almost all environments at minimum effort with practically no on-site construction required.

#### **Step-Down Transformer**

Optimum high efficient connection to nearly all power grid levels between 6 kV and 34.5 kV.

#### **Aux-Transformer**

PCU can provide power for auxiliary supply up to 130 kVA.

#### **Discharge function**

Provides an important safety function ensuring electrical discharge of the cell-stack upon request to allow safe conduct of maintenance activities.

#### Communication

High speed Ethernet communication to smoothly connect to Plant Control or SCADA system.

#### **Auxiliary Contacts**

SIL2/SIL3 safety integrity levels for maximum operational plant safety.

#### Harmonics

Ultra-low grid interference with our low harmonics IGBT technology.

# Integrated plug and play solution





# **IGBT technology enables high** grid compliance and a lean plant design without additional filters or compensation units

### Advantages

- Low implementation costs due to containerized plug-and-play solution
- No additional filters necessary due to IGBT technology
- Smooth grid integration due to additional grid services
- No external cooling necessary due to intelligent air-cooling system
- Fast project ramp-up due to large-scale serial production

### **Technical Data**

	20' PCU	40' PCU
Power	4.0 MW	7.0 MW
Max DC voltage	1500 V	1500 V
Max DC current	3.200 A (3.400 A <sub>max</sub> )	6.400 A (6.800 A <sub>max</sub> )
IP rating	Rectifier IP54, Station IP23D	
Max converter efficiency	98.7%	
Temperature range	Standard -25 to +55 °C, optional -35 to +45 °C	
Transformer	6 kV to 34.5 kV, efficiency: > 99%, KNAN, Optional Dry Type for up to 4 MVA	
MV switchgear	Ring Main Unit with 1 x circuit breaker transformer feeder	
Standards	IEEE C37.100.1, IEEE C57.12, C37.20.9, CSC Certificate, IEC 60076, IEC 62271-200, IEC 62271-202	

#### Services

- Commissioning
- After Sales Service and O&M
- Engineering and design support

# **Green hydrogen**

# New market meets proven technology

SMA Solar Technology AG is a leading global specialist in photovoltaic and storage system technology. The company is well known for its innovative system design, high-quality inverter products, and German engineering. With solutions for large-scale, commercial, or home applications, SMA has already installed over 155 GW of converter power in almost every country in the world. SMA Altenso GmbH, a wholly owned subsidiary of SMA Solar Technology AG, is committed to fostering the flexible use of renewable energies through innovative system solutions based on SMA products, holistic engineering, and comprehensive services. With a total capacity of over 1 GW of converter power sold for hydrogen applications, the company is a global leader in the power-to-gas sector.





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# **Best practices**

# in over 80 hydrogen references worldwide



Unlock the benefits of SMA Altenso

sold converter power for hydrogen applications

years of experience

projects in the hydrogen market







global subsidiaries with strong service capabilities and access to all channels



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