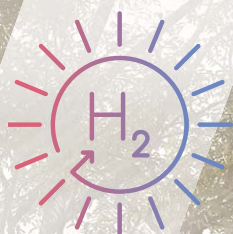




SMA ENERGY SYSTEM LARGE SCALE

Make your hydrogen production future-proof

Power Conversion for hydrogen applications



Scaling up quickly your electrolyzer business

Do you wish to become a part of the hydrogen gigawatt market and grow your business? Do you want to utilize more renewable energy, meet the CO₂ emissions requirements and minimize the risk of grid disruptions and the associated costs? Welcome to SMA Altenso.

Our Power Conversion Unit (PCU) for electrolyzer applications perfectly supports your needs for hydrogen production with electrolysis basing on PEM, Alkaline or SOEC.

The SMA Power Conversion Unit is a proven solution based on the existing inverter portfolio of the SMA Group. Apart from its high quality, the major advantage lies in its modular approach: Our innovative IGBT rectifier solution combined with carefully designed medium voltage components and our large-scale serial manufacturing ensures minimum project risk at maximum efficiency and quality. And that pays off: Our modular solution ensures an attractive return on your investment.

The SMA Electrolyzer Converter for hydrogen facilities converts the AC power from the grid to DC power for the electrolyzer. The Fuel Cell Converter works in the opposite way, it converts the DC power from the fuel cells to AC power.

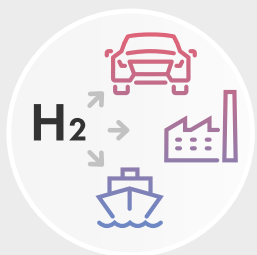
As a fully integrated package, which is easy to transport, install and commission, the Power Conversion Unit substantially reduces project costs and cuts construction time. Tested in numerous countries and climates, we ensure industry-leading availability and robustness and offer a global service network that provides you with optimum support for the lifetime of your plant.

Our IGBT based Power Conversion Units allow a smooth grid connection and reactive power management. The converters can also be used with standard transformers. Furthermore, they provide exceptionally low harmonic distortion and make additional filters or compensators redundant.

Proven scalability

SMA offers you a fully type-tested Power Conversion System with an excellent track record of more than 8000 installations in over 45 countries. Our high-volume production facility ensures your individual project needs will be covered.

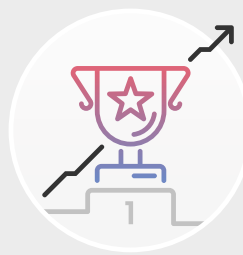
Benefits



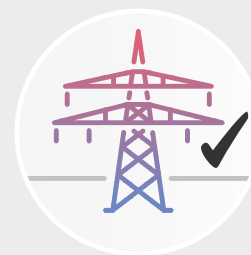
Modular design enables flexible project sizing



Low OPEX due to very high converter and connected transformer efficiency



Based on a technology platform with >30 GW global track record



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

Best practice Power Conversion

for high efficiency in hydrogen production

Our modular, containerized Power Conversion Units are optimized for high efficiency. Modular design reduces installation time, complexity and risk.

The converter has a wide DC operation window for the electrolyzer operation. This enables it to work with nearly all electrolyzer types. Carefully selected low and medium voltage components ensure highly efficient and reliable operation over the lifetime of your electrolyzer. Everything is fully integrated on a standard platform.



20 foot container with one unit



40 foot container with two units

Technical Data

Power classes	1 – 5 MW per converter
Technology	Insulated Gate Bipolar Transistor (IGBT)
Max. DC voltage	1 500 V _{DC}
Cooling (Converter)	Patented OptiCool cooling concept (air-cooling)
IP Rating	Outdoor (IP54/IP65)
System	Fully integrated outdoor station with rectifier, transformer and medium voltage switchgear
Container sizes	20' / 40' Container with CSC Certificate
Standards and directives complied with	All relevant IEC and IEEE Standards, CE Labelled
Typical nominal AC voltages	6 kV to 35 kV (other voltages on request)



Power 2 Gas

Your benefits at a glance



Advantages of our proven system technology

- Containerized, scalable plug-and-play solution
- Proven track record
- Competitive total cost of ownership
- Grid services
- Ultra-low harmonics
- No additional filters
- Intelligent air-cooling system
- Suitable for outdoor use
- Large scale serial production units

Additional services

- Feasibility studies
- Grid (impact) studies
- Integration of electrolysis into renewable power stations and battery plants
- Battery containerization
- Commissioning, Service and O&M
- Service training
- Engineering and design of the Power Conversion System
- Support along the whole project value chain



Green hydrogen

New market meets proven technology

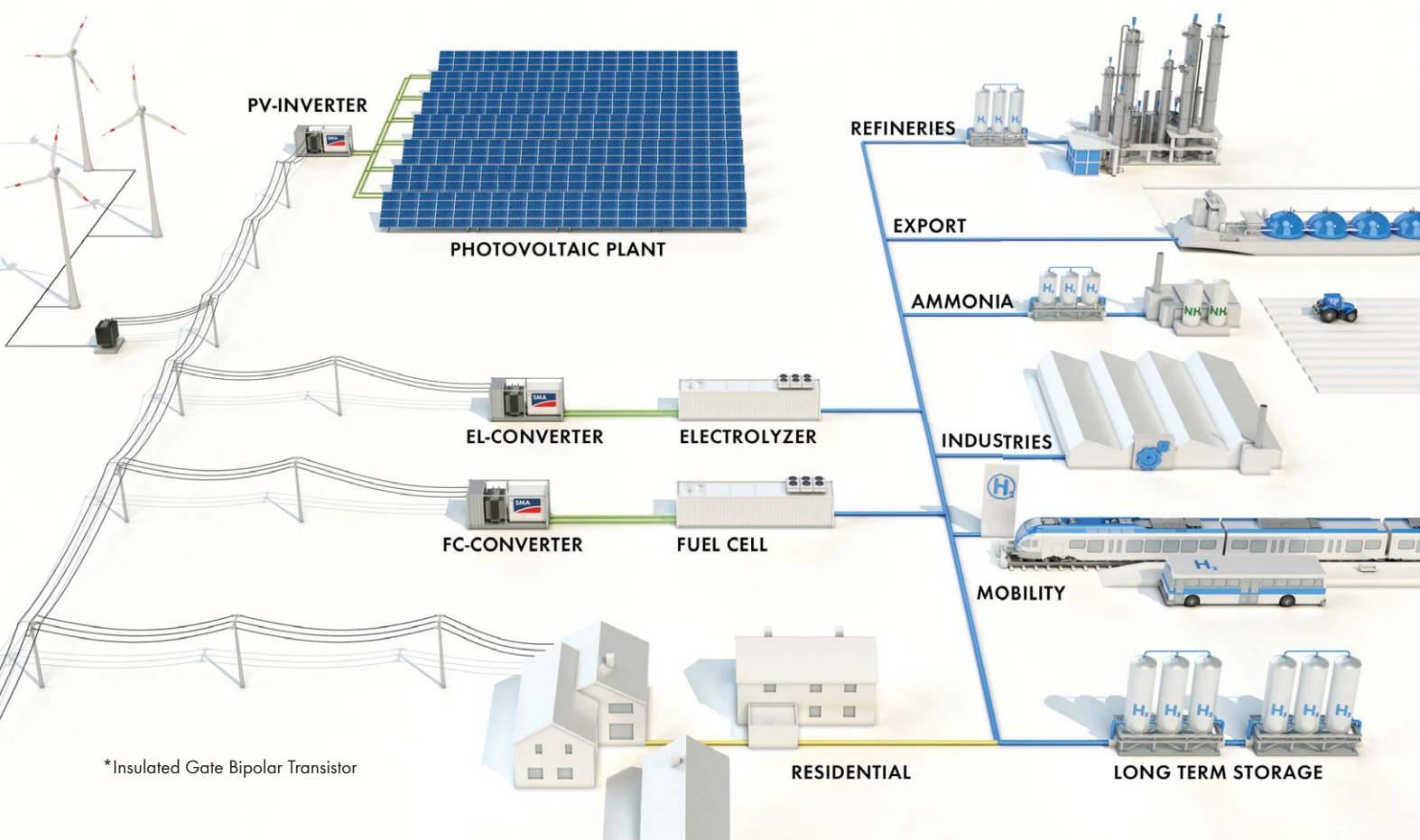
The world's energy supply is facing two major sustainability challenges: The increasing proportion of fluctuating renewable energies and reducing global CO₂ emissions in the industrial, mobility and energy sectors. The simple solution: Green hydrogen. Green hydrogen produced by electrolysis and renewable energy is 100 % CO₂ free, it can be stored and is key to de-carbonisation in major industrial processes such as refining, ammonia production, steel making and other chemical industries. Green hydrogen production with SMA Power Conversion Units is the key to sustainable energy management of your hydrogen application.

SMA – over 110 GW of Power Conversion Systems installed globally

The hydrogen gigawatt market demands a lot from the power grid and grid operators. Leading market research institutions predict a cumulative global electrolyzer power demand of more than 150 GW by 2030. To enable this electrolysis power to be connected to the power grid, expertise and the right tech-

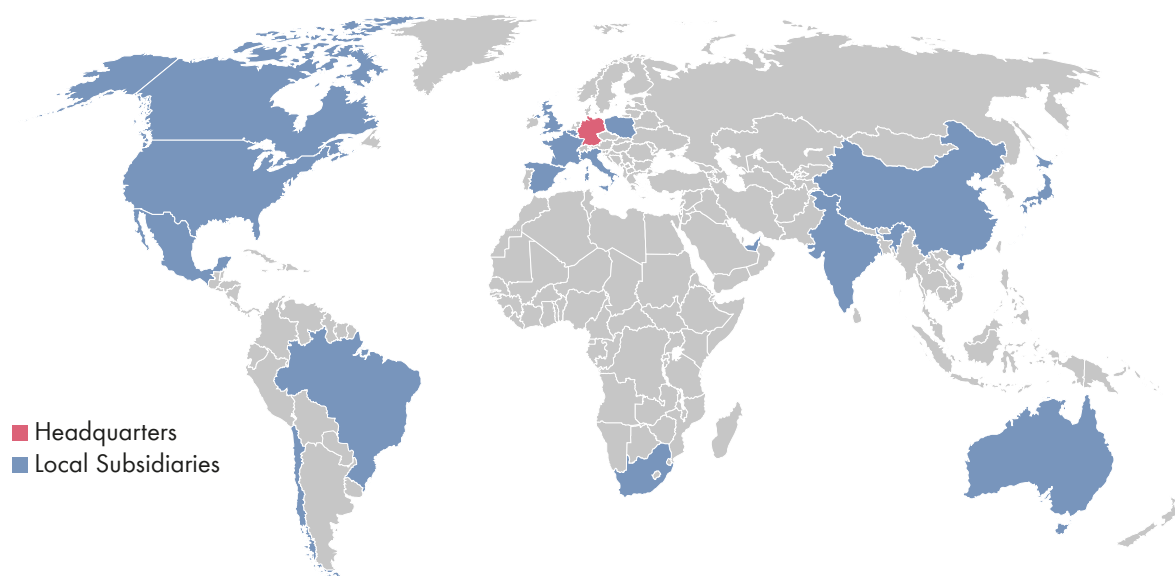
nology are needed. SMA is one of the leading solar and battery inverter manufacturers worldwide, known for its high-quality, leading-edge Power Conversion Systems and its German engineering. SMA has already installed over 110 GW of photovoltaic and storage inverters for its customers worldwide over the past 40 years.

SMA Altenso GmbH skilfully leveraged this experience in the exponentially growing electrolysis market. Using our best-in-class Power Conversion Systems for use in hydrogen facilities, our IGBT* rectifiers ensure that the transition to large scale electrolysis is performed with minimum impact on our sensitive power grids. With our Medium Voltage Power Station (MVPS) you get a proven Power Conversion System and the assurance that you have found the best possible solution for your needs.



*Insulated Gate Bipolar Transistor

A global network of the SMA Group for your projects



Key Facts SMA AG and SMA Altenso

SMA Solar Technology AG

- Founded in 1981
- >110 GW installed base
- Complete portfolio to serve all PV and storage segments
- 20 subsidiaries with strong service capabilities and access to all channels
- 40 GW installed capacity with same product platform as our Electrolyzer Converters
- First company to deliver >3 GW of storage Power Conversion Systems
- More than 1600 patents

SMA Altenso GmbH

- 100% subsidiary of SMA Solar Technology AG
- Focus on large scale battery and Power 2 Gas as well as off-grid and hybrid solutions
- Scope covers component and solution sales, system integration and project realization
- Extensive know-how and expertise in complex project engineering

Contact Us!

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ENERGY
THAT
CHANGES

