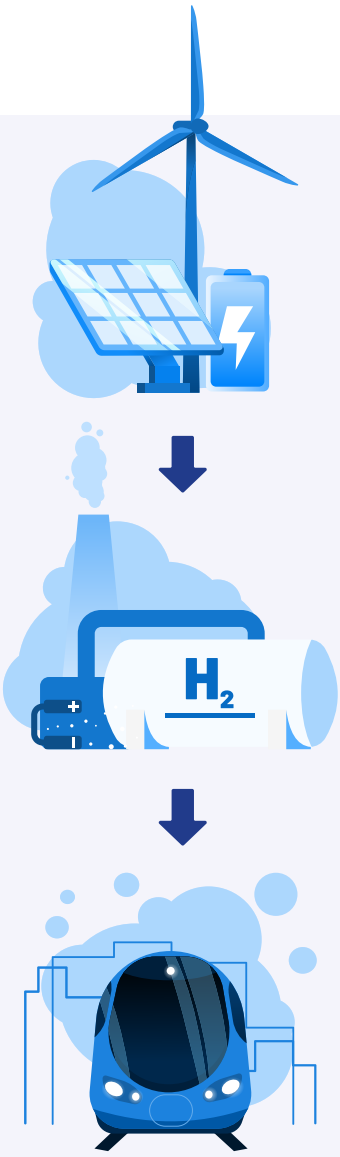

# MSc H2 SOLUTIONS

## Electricity for electrolyzers

# MSc – Expert in power conversion

**A greener and cleaner carbon neutral society requires electrification.**

MSc is at the core of electrification. Our power converters and solutions for a wide range of applications are built with 40 years and over 17,000 converters of experience to fulfil the needs of our customers in renewable energy production and supply, power quality, railway traffic and industrial applications. Our annual production capacity for rectifier solutions is currently 375 MW. The plan is to double that in the near future.




## MSc in H2

**MSc's expertise in power conversion enables optimized solutions for hydrogen ecosystems.**

The production of hydrogen in electrolysis process requires large amounts of electrical power ideally from renewable energy sources. Electricity from the grid has to be converted to a suitable form for each electrolyzer application. MSc converters offer an excellent solution for optimizing the process.

# MSc modular electricity supply for electrolysis DC power supply

**The solution is very maintenance and service friendly and also provides redundancy for the production.**

The system can easily be scaled from kW-level to hundreds of MWs. The system can be used with PEM, SOEC and ALKALINE electrolyzers.

The MSc rectifier system can be delivered as a complete containerized solution including the MV/LV transformer or as components for system integrators.

1 MW rectifier

## Advantages

- smallest footprint
- modular and scalable
- high efficiency, 99 % (AFE)
- grid compliant (no harmonics)
- SiC transistors
- low stack ripple
- suitable for all electrolyzer technologies


150 kW converter: 45 kg, 40 liters

# Technical data / Common features for all types

## MAIN POWER

| | | |
|---|---|---|
| **Input voltage:** | 3 ph 690–800 Vac | |
| **Input frequency:** | 45–66 Hz | |
| **Input power factor:** | Higher than 0,99 | |
| **Harmonics** | AFE:<br>Rectifier Buck: | less than 1 %<br>less than 2 % with external harmonics filter and 12 pulse grid connection |
| **Output voltage:** | AFE:<br>Rectifier Buck: | 1000–1500 Vdc (depending on the input voltage)<br>0–1000 Vdc (depending on the input voltage) |
| **Output voltage AC ripple:** | Less than 0,5 % | |
| **Output power:** | AFE:<br>Rectifier Buck: | max 165 kW<br>max 150 kW |
| **Output current:** | AFE:<br>Rectifier Buck: | max 165 Adc<br>max 300 Adc |

## CONTROL I/O

| **HW inputs:** | **HW outputs:** | **Bus: CAN (SAE J1939)** |
|---|---|---|
| ON/OFF/Reset | Ready/Running | Parameters |
| Iset/Uset | Fault/Alarm | Datalogging |
| | Iout, Uout | Fault and alarm codes |

## OTHER

| | | |
|---|---|---|
| **Control principle:** | Current control or voltage control<br>SIL 2 level enable/inhibit | |
| **Max efficiency:** | AFE:<br>Rectifier Buck: | max 99 %<br>max 98,5 % |
| **Weight, volume:** | 45 kg, 40 liters | |
| **IP class:** | IP21 | |
| **Cooling:** | Water/glycol mixture (depending on the lowest temperature)<br>Inlet liquid max 35 °C, outlet liquid +40 °C<br>Liquid flow 20–30 l/minute / 0,5 MW (depending on the water/glycol mixture) | |
| **Ambient:** | Ambient air temperature –10 °C ... + 40 °C | |
| **Safety standards:** | IEC 62477-2022 | |
| **EMC standards:** | EN 61000-6-2 / Immunity for industrial environment<br>EN 61000-6-4 / Emission for industrial environment | |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