STATCON ENERGIAA™

DC power supplies for MW-scale hydrogen

MW rectifiers for green hydrogen electrolysers

Statcon Energiaa designs, builds, tests and services high-current rectifiers that turn grid or renewable AC into the clean, steady DC an electrolyser stack needs.

Alkaline | PEM | Grid or renewable fed

Units from 250 kW, blocks to 15 MW

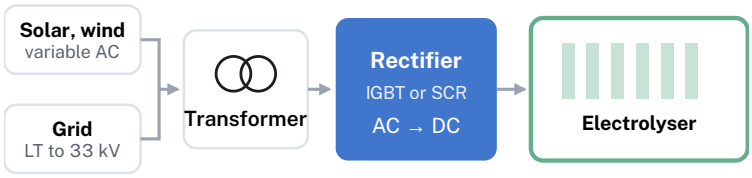
IGBT chopper rectifier

SCR (thyristor) rectifier

How it works

Constant current for the stack, a clean load for the grid

The rectifier converts three-phase AC into regulated DC. As the stack ages its voltage rises from beginning to end of life, so the rectifier holds the current steady across that whole window, while keeping ripple, harmonics and power factor within limits.



Our scope: rectifier, controls, stack interface; transformer optional

Two technologies, one engineering team

IGBT chopper rectifier

DC-3 technology from AEG PS, Germany, built, warranted and serviced in India by Statcon Energiaa under a technology licence.

- Bridge at fixed voltage; IGBT chopper regulates stack current at 3.2 kHz
- High power factor and low harmonics without extra filters
- 3200 A modules, up to 8 in parallel
- Fast response that follows solar and wind

Best for renewable-coupled, MW-scale plants

SCR (thyristor) rectifier

Our own 6, 12 and 24 pulse thyristor technology, proven in defence since 2010.

- Phase angle control: rugged, simple, easy to maintain
- Up to 10 kA and 1200 V DC from one engineered unit
- Forced air cooled, rated for 50 °C outdoors
- Indoor panels, containers or trolley-mounted units

Best for grid-fed plants and very high currents

≈100 MW
green hydrogen rectifier order in execution

60 MW
thyristor rectifiers supplied for defence since 2010

350 MW+
DC-3 platform rectifiers installed worldwide

1987
building static rectifiers and converters since

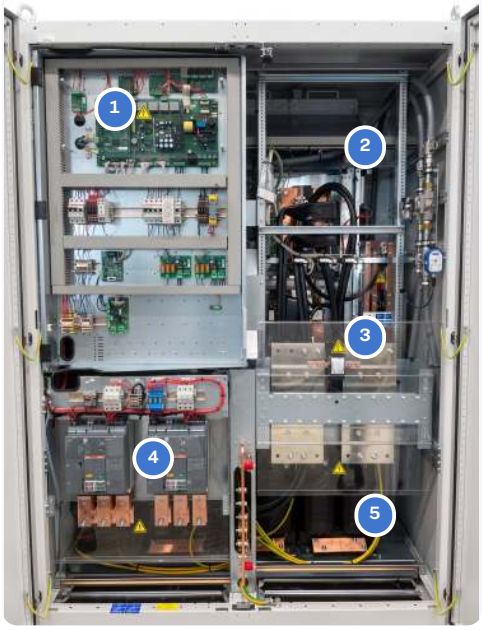
IGBT chopper rectifier

IGBT chopper on AEG PS DC-3, engineered in India

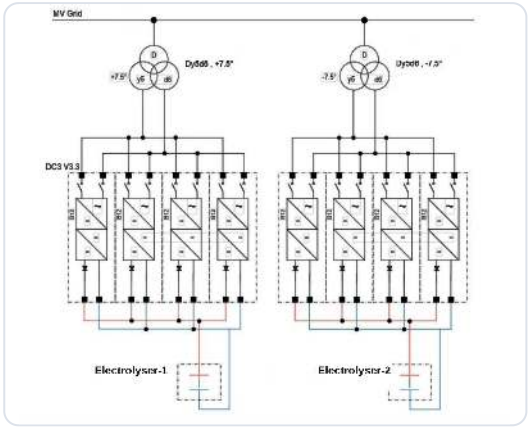
1.84 MW per module, up to 8 modules in parallel

Closed door

Open door, two-panel cabinet



Single-line diagram



1. Controls and auxiliary supply
2. B12 diode / thyristor bridge and AC chokes
3. IGBT chopper
4. 2 AC circuit breakers
5. DC output and coolant flowmeter

Open-door image courtesy: AEG Power Solutions GmbH

SCR (thyristor) rectifier

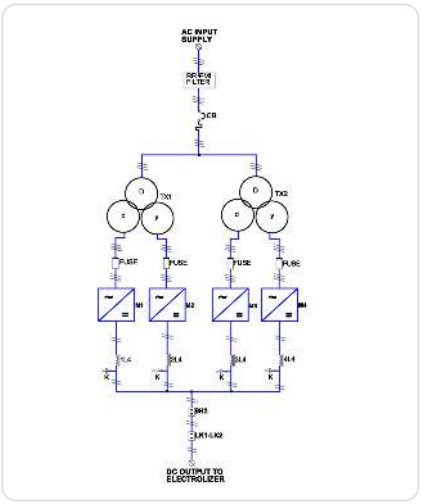
12 and 24 pulse thyristor converter, engineered in India

Up to 10 kA per unit

Closed door

Open door

Single-line diagram



Two phase-shifted transformers feed four thyristor bridges: a 24 pulse system with low input harmonics.

Defence heritage

The same SCR technology, running in naval dockyards since 2010

Shore-supply rectifiers and mobile battery chargers for dockyards and shipyards in India and overseas.

1.65 MW largest single defence rectifier

4,500 A submarine battery chargers

1520 kW mobile rectifier chargers

IGBT chopper rectifier

Based on AEG PS DC-3 technology

Input

AC input	0.4–35 kV via multi-winding converter transformer (optional from us); 50 / 60 Hz ±5%
Topology	B12 diode / thyristor bridge with 3-phase interleaved IGBT chopper, 3.2 kHz; 12 pulse, 24 pulse effect with 15° phase-shifted transformer
Power factor	≥0.95 lag at MV input, 30–100% load
Current THD	<3% at 24 pulse above 30% load, <7% at 12 pulse; IEEE 519-2022

Output

DC voltage	50–1000 V DC
DC current	3200 A per module; up to 25,600 A with 8 in parallel
Power	1.84 MW per module; 4.4 MW per three-module rectifier; up to 15 MW per block
Control	Constant current, voltage or power, ±1%; continuous duty
DC ripple	<1% RMS

Efficiency

Peak	Up to 98.5%, excluding transformer
With DC reactor	≥98.0% at BOL, ≥98.4% at EOL, 40–100% load
System	≈97.6% peak measured, incl. transformer and AC cable

Build and protection

Cooling	Water / glycol, closed loop
Ambient, enclosure	5–50 °C indoor, IP40; −20 to 50 °C outdoor option, IP54
Module	1500 (W) × 800 (D) × 2200 (H) mm; design life 25 years
Protections	Electrical, thermal, cooling and stack protection, emergency stop; polarisation current for idle alkaline stacks

Controls and standards

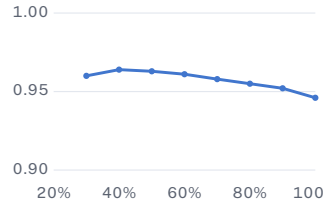
Interface	HMI; Modbus, PROFINET and 4–20 mA
Standards	IEC 60146, IEC 61000, IEEE 519

Proven at full load

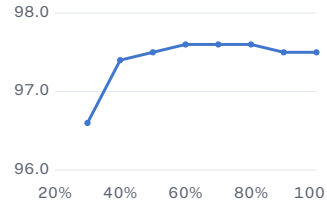
x axis: output current, % of rated

DC-3 full load type test: 6.5 MVA, 13,000 A at 450 V, on a 30 kV grid

Power factor 0.95–0.96



System efficiency ≈97.6%



Current THD, 12 pulse

7 %

at full load, falling from 15% at 30% load; below 3% at 24 pulse

DC current ripple

0.2 % RMS

about 2% peak to peak against a 3% p-p limit, 30–100% load

Type test of the DC-3 V3.3 platform, May 2026, 12 pulse configuration without filters; 24 pulse operation brings current THD below 3%. System efficiency includes transformer and AC cable. Values are typical; binding guarantees are given in the project datasheet. Data courtesy: AEG PS, Germany.

SCR (thyristor) rectifier

Statcon Energiaa 6, 12 and 24 pulse technology

Input

AC input	415 V LT; 6.6, 11 and 33 kV via multi-winding converter transformer (optional from us); 50 / 60 Hz
Pulse number	6, 12 or 24 pulse
Power factor	>0.85 at rated load and nominal input
Current THD	<5% at 24 pulse above 30% load; IEEE 519-2022

Output

DC voltage	50–1200 V DC
DC current	Up to 10 kA; up to 25 kA on request
Regulation	Stepless constant voltage or current, 10–100%, ±1%
DC ripple	≤2% RMS
Efficiency	Up to 97%; up to 95% at system level

Build and protection

Cooling, ambient	Forced air (water cooling on request); up to 45 °C indoor and 50 °C outdoor without derating; 95% RH; working at up to 3,500 m
Construction	Indoor panel up to IP31, outdoor container or trolley-mounted; air or oil-cooled isolation transformer; design life 25 years
Protections	Electrical and thermal protection, including over-current, short circuit and over-voltage

Controls and standards

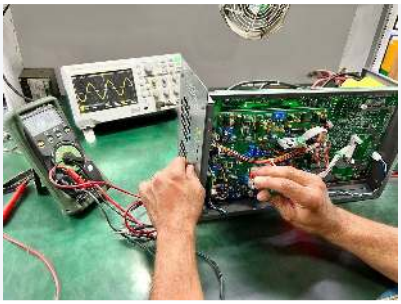
Interface	PLC with touchscreen HMI; Modbus and PROFINET
Standards	IEC 60146, IEC 61000, IEEE 519

In-house manufacturing and testing

Built and tested at Pilkhuwa

1,50,000 sq ft works · in-house R&D, transformers and chokes
ISO 9001, 14001 and 45001 certified

Heat run testing
Rectifiers under load in our test bay



Electrical testing
Control and protection board checks

Rain testing
Outdoor container under water spray

Statcon Energiaa green hydrogen supplies

Rectifiers delivered and in execution

≈100 MW **Green hydrogen rectifier order in execution**, India's first at this scale, built on IGBT chopper technology.

2 × 558 kW, 155 V / 3600 A
Thyristor, outdoor container, high-altitude mobility project

1.43 MW, 328 V / 4350 A
Thyristor with 33 kV transformer, North India

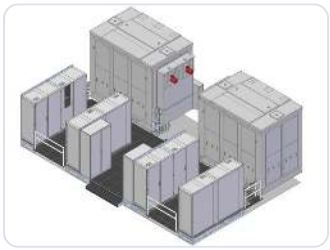
192 V / 2920 A
Indoor thyristor rectifier, refinery project, South India

IGBT rectifiers
60 V / 1050 A, 2 × 105 V / 550 A and 70 V / 1430 A

DC-3 platform worldwide

350 MW+ installed for electrolysers

Europe, South America and India



100 MW · Germany
Green steel (DRI)

16 MW · French Guiana
Base-load power plant

2.5 MW skid · France
Hydrogen mobility

60 MW · Germany
Mobility, 1–2 MW systems

Customer names withheld; detailed reference lists available on request. DC-3 platform photographs: image courtesy AEG Power Solutions GmbH.

STATCON ENERGIAA™

Power without pause
Static rectifiers and converters since 1987
Service: 7 regional offices, 80 service staff

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Share your stack data for a sizing proposal

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Specifications are typical and subject to change without notice; binding values are confirmed in the project datasheet. Images are representative. Statcon Energiaa presents the IGBT chopper rectifier under its licence and supply agreement with AEG PS, Germany, for rectifier technology.