

Industrial Rectifier



Functions

Industrial Rectifiers are used to convert AC power to DC power for many different applications and utilise silicon diodes for uncontrolled applications and thyristors for controlled.

General characteristics

Industrial Rectifiers could be convection cooled, forced-air cooled (using blowers), or water-cooled in conjunction with a cooling tower and are usually installed

- In modular, metalclad enclosures to customer specified protection rating (IPxx)
- As a self-contained, open-frame unit in a secured (inter-locked) area

Typical Applications:

Applications involved with to date include but are not limited to:

- electro-winning
- arc-furnace control
- haulage truck assist
- winder/elevator armature & field converters
- electro-plating
- soft starters
- heater control etc.

Semiconductor Solutions, an ISO 9001:2008 company based in South Africa, have built up extensive experience in the design and manufacture of customised rectifiers, in accordance with SANS60146 (IEC146) standards and customer requirements, for industry (e.g. mining operations & plating plants) in the last two decades.

References

(Extensive experience and know-how in forced-air and water-cooled, controlled, high current rating per mechanical volume systems)

Industrial diamond manufacturing	Rectifier, Thyristor (100V, 40kA, Water-cooled)
Haul-truck propulsion (on-board & fixed)	Rectifier, Diode (2.5MW, 2.6kV, Forced-air cooled)
DC Arc-furnace supply	Rectifier, Thyristor (900V, 76kA, Water-cooled)
Hoist system DC drive	Rectifier, Thyristor (690V, 2kA, Forced-air cooled)
Electro-plating plants	Rectifier, Thyristor (760V, 40kA, Water-cooled)

Main Characteristics

Construction	Open-frame / Metal-clad enclosure
Cooling type	Natural convection, forced-air & water-cooled

Power Systems ¹¹

Technical Characteristics

Rated current [kA]	Up to 75
Rated DC output voltage [Vdc]	0 - 3000
Rated AC input voltage [Vac]	0 - 2400
Rated frequency [Hz]	50 / 60
Heatsink	Aluminium (air-cooled) / copper (water-cooled)
Duty class	To customer specification
Rectifier Connections	Series & parallel bridges, hexa-phase
No. of pulses	6 & 12-pulse
Semiconductor type	Capsule diode or thyristor (hockey-puck)
Redundancy	N-1 (Customer to specify)
Protection degree	IPxx (Customer to specify)
Ambient temperature [°C]	-5 / +50
RC snubber	Normally included
Over-temperature protection	Included (Fibre-optically connected)
Diode fuse protection	Optional
Failed diode monitoring	Optional (Fibre-optically connected)
DC surge protection	Optional (Fuse protected)
Metering	Optional (Voltmeter & Ammeter)

Features

Diode monitoring (optional)	Failed diode LED identification & signal output via potential-free contact
Maintenance & repair	Quick & easy diode module change-out
Connection	Many different rectifier connections/configurations possible

