



# **Silicon Power**

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## **Rectifiers**



**Electroplating • Cleaning • Etching • Stripping • Barrelling**  
**Anodising • Hydrogenation • Electrowinning • Electroextraction**  
**Other Electrochemical Processes**

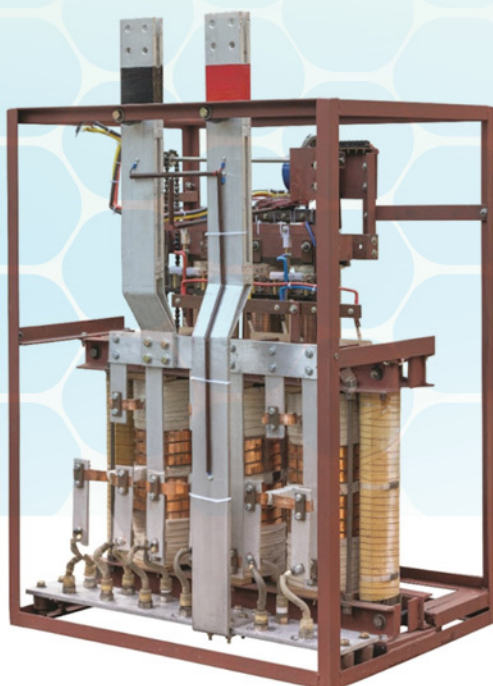
# About us:

With humble beginnings, today Pooja Group is into the manufacturing of electroplating rectifiers, power and distribution transformers, HT and LT automatic voltage controllers, variable voltage transformers, isolation transformers, and other special purpose transformers, apart from manufacturing sewing machines & fans in South Asia since 1975.

The Power controller manufacturing division of POOJA Group is a part of JINDAL Group who are pioneers in this field. The consolidated group is one of the South Asia's largest power control company with largest client base and service network in the industry.

The group operates from 4 factory complexes which are spread in Himachal Pradesh, Punjab and Haryana. All our facilities are ISO 9001:2008 certified.

Pooja follows stringent quality control measures starting from designing to selection and assembly of raw materials along with rigorous testing after every process. Our products are designed and developed with modern techniques and with optimum utilization of raw materials, ensuring cost-effectiveness and trouble free running of our equipments.



## Rectifiers:



Silicon Rectifier is an equipment that converts AC into DC supply. Silicon Rectifiers are widely used in Electroplating, Anodising, Hydrogenation and all other electrochemical processes. **POOJA** Silicon Power Rectifiers are trusted for their energy efficiency and long life for numerous electrochemical applications across the world.

### Brief Specifications:

**POOJA** Silicon Power Rectifiers are designed for continuous rated current with adequate margin of safety and are capable of working at 100% load factor.

Input Voltage	400/415 Volts, 3-Phase 50Hz., AC supply or any other voltage
Output Voltage	Fixed maximum rated DC voltage or variable from zero to maximum rated voltage
Output Current	From zero to rated maximum DC current
Temperature Rise	Designed for 30 °C- 35 °C rise above ambient at full load (against IEC std. of 45 °C)
Efficiency	2 V Rectifier: 86-88% 24-50 V Rectifier: 92-94% 100 V Rectifier: 94% 200V Rectifier: 96% More than 250 V Rectifier : >97%
Ripple Content	Less than 5%. (optional feature of 1 to 1.5% Ripple Content also available)
Insulation	'A' class for oil cooled

We also specialize in manufacturing as per customer requirements / specifications

### Starting Circuitry:

**POOJA** Rectifiers are designed for 3 phase, 50 Hz, 400/415 Volts, AC input supply. It is recommended that the input of the rectifier should be connected through a proper protective device, to provide positive protection to personnel and the system, in the event of maintenance or in case a fault occurs.

**Note:** Incoming protection switch gear (Contractors/MCCB etc.) can be provided as optional features, if required.

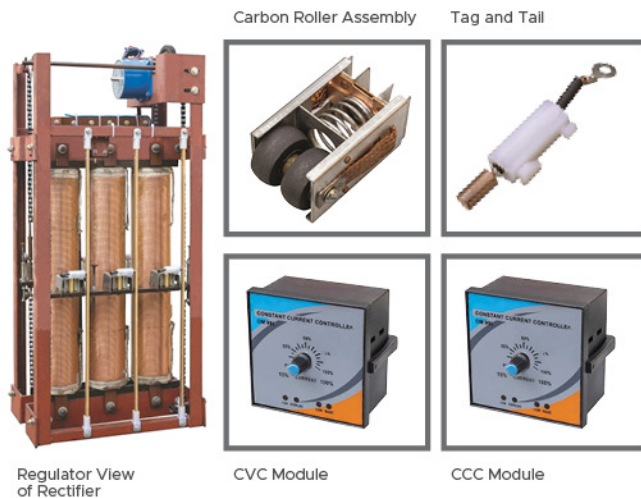
### DC Output Control:

The function of the variable output controls is to control the voltage or current or its operating range by varying input voltage to the main transformer primary. The DC output voltage variation is achieved 0-100% by means of an ON LOAD roller type **POOJA** make Linear Voltage Regulator.



## The standard equipment consists of:

- » Linear type continuously variable Rolling Contact type ON- LOAD Voltage Regulator (with straight  $\pm$  connection) can be operated electrically with the help of raise/lower push buttons/ toggle switches and a step - synch motor or manually with the help of a 'T' handle
- » Copper wound delta/double star (hexa - phase) step down transformer as per IS 2026/IEC 60076
- » Copper wound Inter phase transformer
- » Junction Box for three phase Input terminals and aluminum Bus Bars for DC Output ( Cu Bus Bars optional)
- » Meter panel with DC Voltmeter and DC Ammeter and raise/lower push buttons/toggle switches
- » Thermometer Pocket
- » Oil fill plate
- » Oil level gauge
- » Oil drain out valve
- » Lifting lugs
- » Wheels for uni-directional movement
- » Name plate with complete specs of the equipment
- » Earthing terminals
- » Indicator lamps for RYB input AC supply, as per IS-1248
- » First Filling of Oil

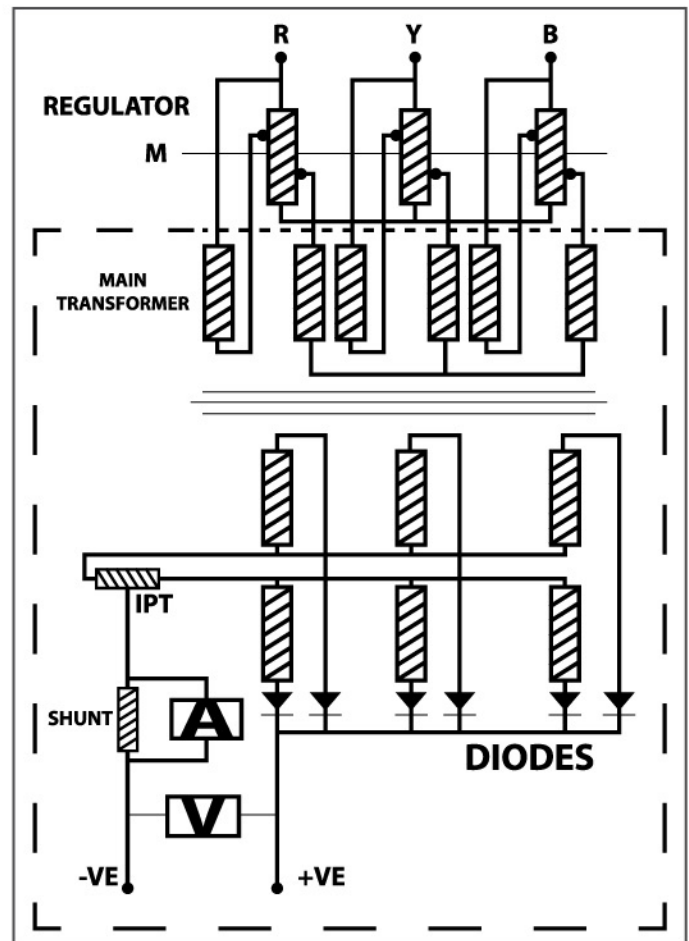


## Special Features of POCJA Rectifiers :

- » **On Load Voltage Regulator:** POCJA Rectifiers are equipped with vertical Rolling contact type ON LOAD Voltage Regulators, which are manufactured by us in-house & is actually our forte across the country. Our Voltage Regulators are +/- type wound with heavy section of copper strip and fitted with carbon Rollers (As illustrated in our Corporate Brochure). The cross section of copper used in our regulators is 3-4 times than that used in the conventional dimmer/thyristor controlled rectifiers, and hence, losses are less than 1/6th compared to the latter. The efficiency of our Regulators is more than 99% (which is 4-5% better than conventional types) and they are designed to deliver 100% continuous duty cycle. These regulators have economic life of about 20 years without trouble.
- » **Design:** POCJA Rectifier equipments are wound with electrolytic prime grade copper strip to minimize power losses, in comparison to Aluminum conductor used by many other manufacturers. Our equipments are designed liberally

as per capacity and are also suitable for marginal over load conditions.

- » **Busbars:** Aluminum Bus Bars / annealed copper bus bars of electrolytic grade with conductivity greater than 99.99% as per IS:613- 1984 are used.
- » **Diodes:** Silicon diodes are tested in house, similar PIV batch and same forward drop diodes are used in the equipment for equal load sharing and reducing the power losses of diodes. The diodes in the rectifiers are fitted with suitable heat sink whenever necessary.
- » **IPT:** Inter phase Transformer-IPT is connected between two stars points of the secondary of the main transformer. The IPT improves the commutation, thereby increasing the rating of Rectifier.
- » **Lamination Core:** We use imported CRGO Lamination of grade M3 or M4 which has minimum power losses and result in better efficiency of equipment and savings in energy bills.
- » **Paints:** We paint the equipment with epoxy paint after two coats of epoxy primer, which is resistant to acidic environment of plating process and enhances the life of the equipment by preventing it from corrosion.
- » **Meter:** We use high quality DC meters only (Digital / Analog), which are very accurate & durable.
- » **Servicing:** POCJA have maintained a enviable reputation in after sale & Service right since its inception. Our service engineers, stationed across the sub continent, deliver prompt pre sales and post sales support to our clients.

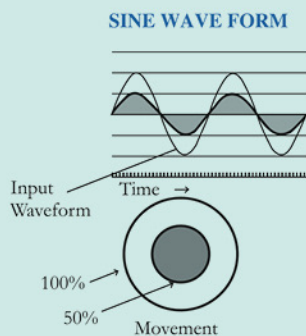


Basic Circuit of Rectifier

## Advantages of Linear Type Regulator as compared to Thyristorised Control:

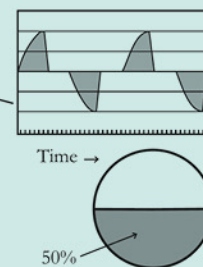
### Linear Type Regulator

- » No wave form distortion at any load. Electrical wave form is like a moving wheel. For 50% Rated Voltage the dia of wheel is reduced accordingly i.e. magnitude of a wave is decreased.
- » Higher power factor of more than 0.95 is achieved.
- » The system is simple and can be repaired and maintained even by simple mechanic/electrician.
- » Virtually maintenance free, cost of spares is very negligible.
- » Proven extra long life of 30+ years.
- » Over all losses are less.



Output Waveform

### SINE WAVE FORM



### Thyristorised Control

- » There is wave form distortion in thyristorised type. It is like cutting the wheel by 50% and then moving the wheel i.e. wave form is cut as shown at full magnitude.
- » The power factor is lower i.e. between 0.5 to 0.9 .
- » The system is specialized and needs specially trained electronic engineer to repair and maintain.
- » The cost of replacement is very high.
- » Life of electronic cards/thyristors is very short and unpredictable
- » Over all losses are more.

## Our Other Products:

Power and Distribution transformer

Automatic voltage controllers (AVC)

Compact Substation (CSS)



[www.poojaelectrotech.com](http://www.poojaelectrotech.com)

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