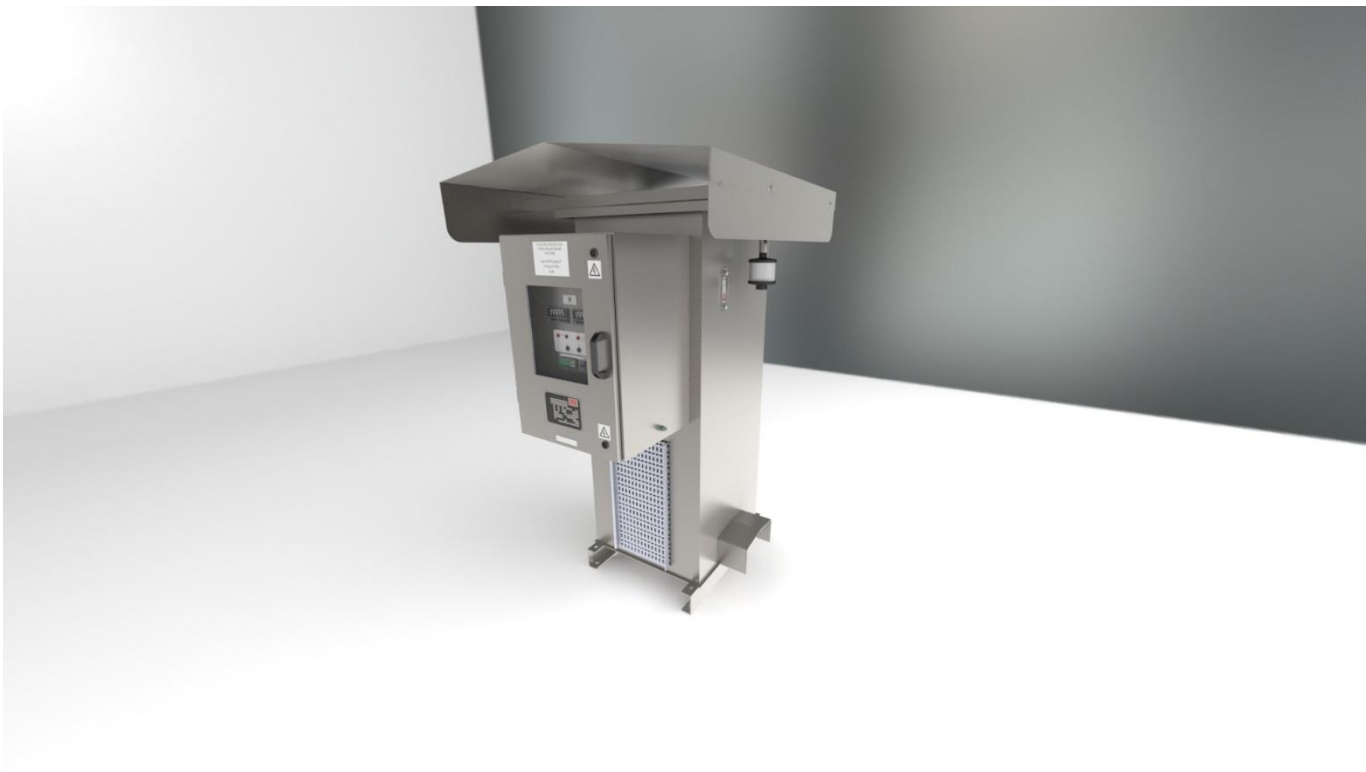
TRANSFORMER RECTIFIERS OIL COOLED VARIAC CONTROL

DATASHEET 1.17

TRS

BAC Corrosion Control Ltd design, manufacture and test a complete range of Transformer Rectifiers and Power Control systems under their Infinity Power brand name.

We cater for a wide range of specifications and functionality requirements and work with our clients to provide reliability, value and quality at every step of the process.



The transformer rectifier is housed inside an oil tank and control box with the control and indication mounted on an internal hinged door. The control box is fitted with a viewing window to enable easy viewing of the control and indication of the rectifier. The user is protected from High voltages via door interlocked isolator

The power transformer, choke, diode assembly and shunt are mounted inside the oil tank. The primary MCB, DC fuses, thyristor firing PCB and AC/DC lightning arrestors are mounted on the back panel of the control box.

The DC voltmeter, DC ammeter, DC voltmeter fuses, AC On lamp, door interlocked isolator, 4mm test points and control potentiometer are all mounted on the internal door.

BAC®
CORROSION CONTROL

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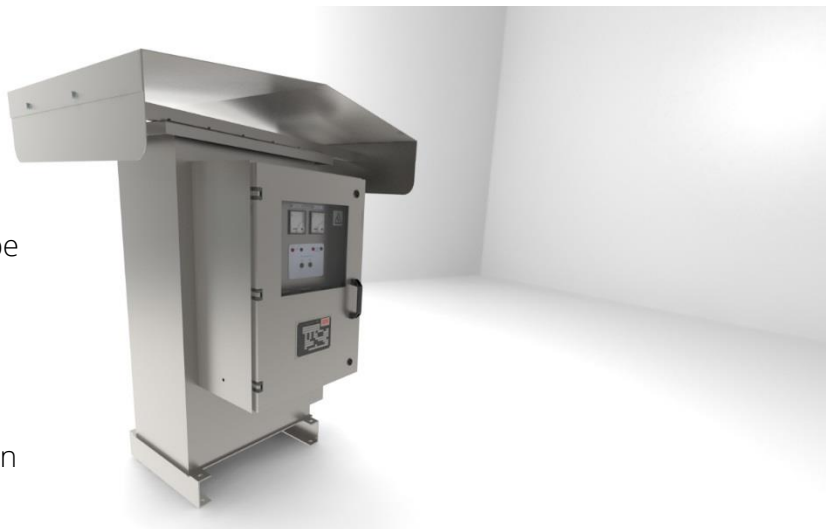
The transformer rectifier converts a three-phase or single phase AC power supply into a direct current which will be used for providing an impressed current for cathodic protection.

The AC input is supplied to the main transformer via the AC isolator, MCB and variable transformer. The main transformer steps down the voltage and steps up the current to that required for the maximum DC output. The reduced voltage is then applied across the diode assembly which provides full wave rectification. To control the DC output a manually operated variable transformer is used.

For the control and indication of the rectifier the voltmeter is feed directly from the DC output terminals and the signal for the ammeter is from a shunt resistor. The AC 'ON' lamp is fed direct from the power supply. Protection against high transient voltages is achieved using a varistor on both the AC and DC sides of the circuit.

Enclosure



The sides and top of the oil tank will be constructed from 3.0mm thick mild steel sheet. The base of the oil tank will be constructed from 5mm thick mild steel sheet. The oil tank will be formed into shape and will be fully welded inside and out on all joints.

The tank top will be Bolt down type. A single piece neoprene gasket shall be used to give an IP 65 rated seal between the oil tank and tank lid.

The oil tank and enclosure will be mounted onto a base frame that is constructed from 2 off 100mm U-channels. These channels will be welded to the oil tank and holes drilled into them to enable the tank to be fixed to a plinth.

All the components (diode assembly, transformer etc), which will be situated inside the oil tank, will be mounted onto a single chassis. It will be fitted with two lifting points and will be able to be unbolted from the oil tank above the oil level. All interconnecting wiring between the oil tank and control enclosures will be easily accessible from the top of the tank.

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Supply Voltage
Please state AC input rating as available at site.

Rated Output
Various to suit application, please request DC Voltage and Amperage as required.

Type
Outdoor, plinth mounting. safe area locations.

Control
Manual Variac Control

Temperature Range
Minimum: -10°C to Maximum: 55°C as standard.

Cooling
ONAN (oil immersed, natural convection air cooled)

Control Voltage
230V

Protection
The equipment is provided with the following devices as standard for protection against over voltage and over current conditions:
- Primary MCB
- Transient over voltage surge suppression on AC and DC sides of rectifier
- Semiconductor fuses on secondary of the transformer
- Voltmeter fuses
- Fuse fitted to the DC output
- Control circuit fuse
- Electronic over voltage & current limit

Optional features
- Remote monitoring and control equipment and software interface.
- GPS timer with RS 485 for remote communication / operation.
- Auto Potential Control.
- Non Synchronous Timer
- Removable Sunshade
- Digital meters

Power Transformer
The transformer rectifiers are designed and built to BSEN 60076. The transformer has high conductivity copper windings on low loss steel core and is varnish impregnated under vacuum after assembly. It is fitted with an earth shield situated between the primary and secondary windings.

Rectification
Silicon diodes / thyristors mounted on an aluminium heat sink and bridge connected for full wave rectification. Diodes and thyristors both have a reverse voltage of 1200V.

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Finish

A range of surface preparation and paint finishes are available, as standard we offer as follows:

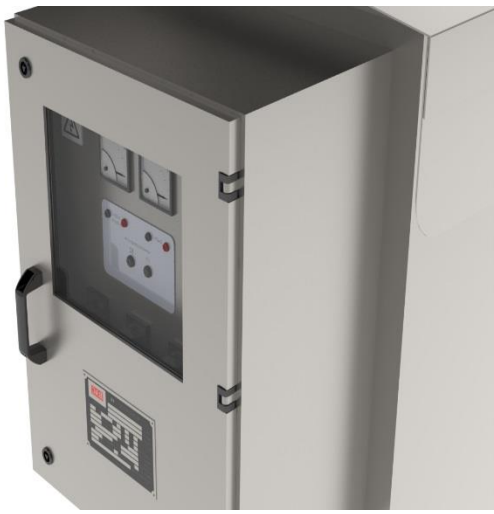
Surface preparation: Shot Blast SA2.5
Primer: Zn (100µm)
Intermediate: Epoxy (50µm)
Finish: Polyurethane (50µm)
Finish Colour: Light Grey Shade (RAL 7035)

Cable Entry

The equipment is arranged to allow for bottom cable entry.
The AC cable enters the control box via a suitable rated gland and terminates at the AC terminals.
The DC cables enter the control box via a suitable rated gland and terminates at the M10 brass bolt DC terminals.

DC Ripple

Less than 5% from 5% to 100% of the DC output.



Meters

The equipment is fitted with the following meters as s
- DC voltmeter
- DC Ammeter

Optional metering can be included as follows :
- AC Voltmeter
- Potential meter
- Hours run meter

Digital or Analogue meters can be specified as requir

Analogue :
The DC voltmeter is directly connected and protected by 2 x 0.5 amp fuses.
The DC ammeter is shunt operated and has a full-scale deflection of 0-75mV.
The shunt is brass-ended type to BS89 class 1.5.

Digital :
Digital meters are powered via a 230v auxiliary supply and have a 1999 full-scale display with 14.2mm 7-segment LEDs.
The potential mV meter can be used with the reference cell selector switch to enable the user to switch between multiple reference cell signals and to monitor the set potential.
The unit is fitted with 4mm test points to enable monitoring of the DC output voltage, DC output current and potentials.

Accessories

The equipment is supplied with the following as standard:
- Rating plate
- Operation and maintenance manual with circuit
- Test and inspection reports

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Tests

Insulation resistance test at 1000V DC between:

1. Input and earth
2. Output and earth
3. Input and output

No load test conducted at rated supply voltage and frequency:

1. No load input losses and current
2. Polarity
3. Operation of output voltage control
4. Output voltage waveform

Load tests conducted at rated supply voltage and frequency, and at rated DC output voltage and current:

1. Full load input watts and current
2. Efficiency
3. Temperature rise of transformer windings, rectifier assembly and top of oil by thermocouple. Duration of test will be a minimum of 12 hours or until all temperatures have reached equilibrium, whichever is longer.

Function test to include test of the correct operation of the following as applicable:

- DC voltmeter
- DC ammeter
- mV meter
- Constant current operation
- Constant voltage operation

BAC Corrosion Control would be pleased to receive your valued enquiries and we look forward to being of assistance with your project.

Please email your enquiries to

sales@bacgroup.com

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