



**BAC**®

CORROSION CONTROL

**Infinity**  
POWER

**“The Worlds  
Leading Cathodic  
Protection Power  
Supplies.”**

 MEMBER OF  
MIDROC EUROPE

# Infinity Power Control Systems

BAC Corrosion Control Ltd design and manufacture the worlds leading cathodic protection power supplies. The Infinity range offers our clients the ultimate in choice, specification and reliability utilising decades of in house experience.

Our range of products covers the following :

- ▶ Thyristor Control Transformer Rectifiers
- ▶ Variac Control Transformer Rectifiers
- ▶ Step Control Transformer Rectifiers
- ▶ Switch Mode Power Supplies
- ▶ Hazardous Area Rated Junction Boxes and Power Supplies
- ▶ Remote Monitoring and Control Software and Hardware
- ▶ GPS Current Interrupters
- ▶ Solid State Surge Protection

We combine our bespoke manufacturing capability with true product innovation and support that enables our clients to design, specify and operate equipment safe in the knowledge that they are in the best hands possible when it comes to powering cathodic protection.

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Infinity Thyristor control board



Conventional control panel



Modular Thyristor Controlled Power Supplies



Air Cooled Thyristor Transformer Rectifier

## Transformer Rectifiers

We can offer a complete range of cathodic protection transformer rectifiers with either air or oil cooling. Control can be provided utilising our state of the art digital thyristor control board, or by variac / step control methods.

Constant current, constant voltage and auto-potential control modes are available with our digital thyristor models and the capability to set your required values and thresholds at site is done intuitively with our market leading HMI digital control panel.

Experience tells that cathodic protection systems require reliability, long service and robust technology to capture, record and process data. Our clients require data accuracy and integrity and the Infinity range of functions and features enable monitoring and control of your cathodic protection systems to the very highest of standards.

From the most basic of step control units to the most sophisticated remote monitoring and control systems we believe in the importance of product quality, intelligent design and cost effectiveness every step of the way.

Our UK based purpose designed manufacturing facility is ISO 9001/140001/18001 accredited.

“We believe in the importance of product quality, intelligent design and cost effectiveness”

# Switch Mode Power Supplies

BAC Corrosion Control Ltd has developed a range of Switch Mode Power Supply Units (SMPSU) which meet the ever more demanding requirements for impressed current cathodic protection systems in various applications worldwide.

SMPSU technology addresses the need for extremely efficient, accurate and low ripple control of both current and voltage at low levels and allows a reliable, compact and lightweight approach to converting mains alternating currents (AC) into a highly controllable and suitable direct current (DC).

The system moves away from traditional transformer rectifiers by using high frequency pulse width modulated switching to control the output which reduces component size and weight. The control system uses our standard HMI controller from which all parameters of the unit can be easily set and controlled.

With the integration of GPS remote switching is it now possible to take readings of instantaneous-off potential for entire pipeline networks supplied by multiple Cathodic Protection (CP) systems. This allows for greater accuracy when evaluating the levels of protection being provided.

“The system moves away from traditional transformer rectifiers by using high frequency pulse width modulated switching to control the output which reduces component size and weight.”



Multiple Switch Mode Power Supplies can be combined in a common cabinet and controlled and monitored both locally and remotely using the Infinity RM/RC Software Package.

Switch Mode Power Supplies can be offered in a range of standard output sizes, typically 48V/10A (without cooling fans) & 48V/20A (without cooling fans).



**Remote Monitoring and Control of the Power Supply Units from the Infinity Software Package**



**INFINITY RM/RC SOFTWARE FEATURES**

- Power Supply Monitoring of DC Output
- Reference Electrode and Coupon Monitoring
- Control Mode Selection
- Instant Off and Depolarisation Tests
- Environmental Monitoring
- Alarms and Threshold Setting
- GPS Synchronised Switching
- Managed Security Levels
- Project Documentation Storage
- Voltage and Current
- Data Logging

**Local Connectivity of Multiple Power Supplies via RS485 Copper Network To A Local Terminal Unit**



**Remote Connectivity Via Internet Connection**



**Connectivity between a local PC device at the TR unit station with Fibre / Copper Ethernet LAN network to a site Office / Control Room Station**



## Remote Monitoring and Control

BAC offer full remote monitoring and control functionality for their Thyristor controlled Transformer Rectifiers and Switch Mode Power supplies. Our clients have the flexibility to control the units and view their data both locally through a server / PC configuration or through a web based platform when operating remotely. The software is configured according to the client requirements and our aim is to provide a logical, well laid out platform that delivers accurate data and allows you full monitoring, control and security of the system.

- ▶ Our Remote Monitoring & Control Software is designed for ease of use and “Plug and Play” functionality.
- ▶ We recognise that individual clients have different needs – our software works for You.
- ▶ Your data is secure in an SGL database and available locally or remotely via the internet.
- ▶ Updates and improvements can be configured remotely
- ▶ Power supply units can be provided with local touch screen RM/RC functionality

“The software is configured according to the client requirements and our aim is to provide our logical well laid out software that deliver accurate data and shows you full control and security of the system.”

# Hazardous Area Rated Equipment

BAC Corrosion Control Ltd manufacture a wide range of hazardous area rated power supply, control and surge protection equipment including a range of transformer rectifiers which have been independently approved and certified for Zone 1 and 2 classification.

All units manufactured by BAC are accredited by a notifying body and can be certified to ATEX or IEC Ex classification standards.

## Features

- ▶ Approved for zones 1 & 2
- ▶ Both manual control and auto potential control
- ▶ Bespoke design to meet customer size requirements
- ▶ Viewing window for ease of monitoring
- ▶ High quality paint finish
- ▶ Surge protection
- ▶ Audited systems with complete traceability

## Unit Testing

Prior to dispatch all units undergo rigorous testing in accordance with (but not limited to) 94/9/EC. Technical Datasheet available upon request

## Flexibility Offered

- ▶ Single or dual channel units
- ▶ Internal non-synchronous timer
- ▶ GPS synchronous timer
- ▶ 4-20mA options for SCADA monitoring
- ▶ Phase fail alarm option
- ▶ Over temperature alarm option
- ▶ Digital or analogue meters

“All units manufactured by BAC are accredited by a notifying body and can be certified to ATEX or IEC Ex classification standards.”





**Each GPS DC Interrupter comes with:**

- ▶ 100A Integrated SSR
- ▶ Mains cable and power supply
- ▶ External Battery cable
- ▶ CP DC power cables
- ▶ Operating Manual
- ▶ Rechargeable batteries

**Other GPS DC Interrupters available**

- ▶ 60V 100A SSR
- ▶ 60V 240A SSR
- ▶ 60V 450A SSR
- ▶ 100V 200A SSR



## GPS DC Interrupter

Rugged GPS DC Interrupter for Cathodic Protection Surveying. Designed for easy, safe and reliable operation in all conditions.

**Main Features**

- ▶ GPS for time synchronisation of 1ms
  - ▶ Microprocessor driven
  - ▶ Fully programmable
  - ▶ Solid state relay (SSR) rated 60V / 100A DC
  - ▶ GPS DC Interrupter operator settings;
- Operator can set the following cycle parameters:
- Start date and time
  - Stop date and time
  - Start on command
  - Repeat Start/Stop hourly/daily/weekly/monthly
  - Start with Off or On
  - 0.1s to 99.9s On / Off periods

**Supply**

The GPS Interrupter can be powered from the following:

- ▶ Built in D cell rechargeable (or non-rechargeable) batteries (upto 5 days operation)
- ▶ External 12V battery i.e. car battery
- ▶ AC mains 100-260V AC
- ▶ The GPS DC interrupter includes power save mode to ensure battery life.
- ▶ Battery condition indicator
- ▶ Antenna; non powered GPS antenna with magnetic base
- ▶ IP66 Case
- ▶ Display and keypad, OLED graphical screen and 5 way navi-pad
- ▶ Operating temperature -20 to +70°C
- ▶ Storage temperature -40 to +85°C
- ▶ Auxiliary relay drive capacity 0.5A
- ▶ RS485 Modbus RTU ready
- ▶ SSR is surge protected

# “Infinity EDD” Solid State Surge Protection

The Electronic Decoupling Device (EDD) has been designed as a polarisation cell replacement device (PCR). The EDD is a solid state device used in the cathodic protection industry which prevents the flow of Direct Current (DC) volts across the terminals between +/- 2V DC, while simultaneously providing a grounding (coupling) path for steady state alternating current (AC), should AC be present.

A non symmetrical version is available which blocks +1V/-3V DC. The product has the added features of being rated to carry lightning and AC fault currents.

The EDD has been designed to be an ideal replacement for electrochemical polarisation cells as the solid state design eliminates the need for maintenance with potentially hazardous chemicals.

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## Models

The EDD devices are available in two types:

**EDD** - suitable for safe area installation

**EDDH2** - suitable for installation into a Zone 1 and 2 area

Both types have identical electrical ratings and are available in 4 standard ratings 5kA, 10kA, 15kA & 20kA

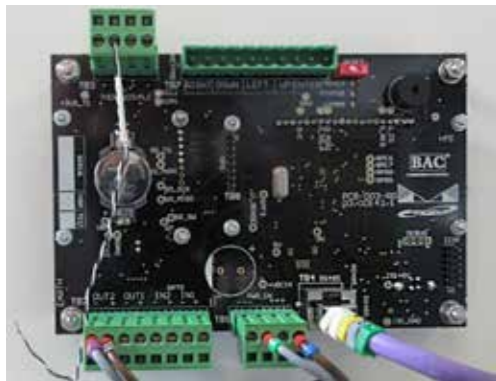
## Common Applications

- ▶ DC Isolation of Cathodically Protected structures from power utility grounding systems.
- ▶ Blocking Stray DC Voltages.
- ▶ Over Voltage protection of equipment from AC faults, lightning and switching transients.
- ▶ Over voltage protection of insulating joints.
- ▶ Mitigation of AC induced voltages on structures.





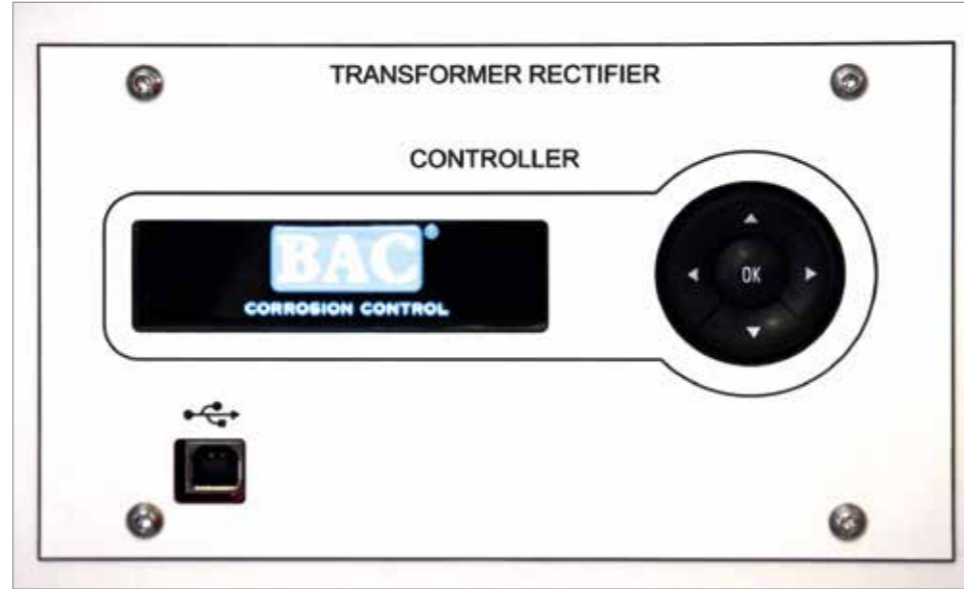
"Lifesaver" supplied in kit form



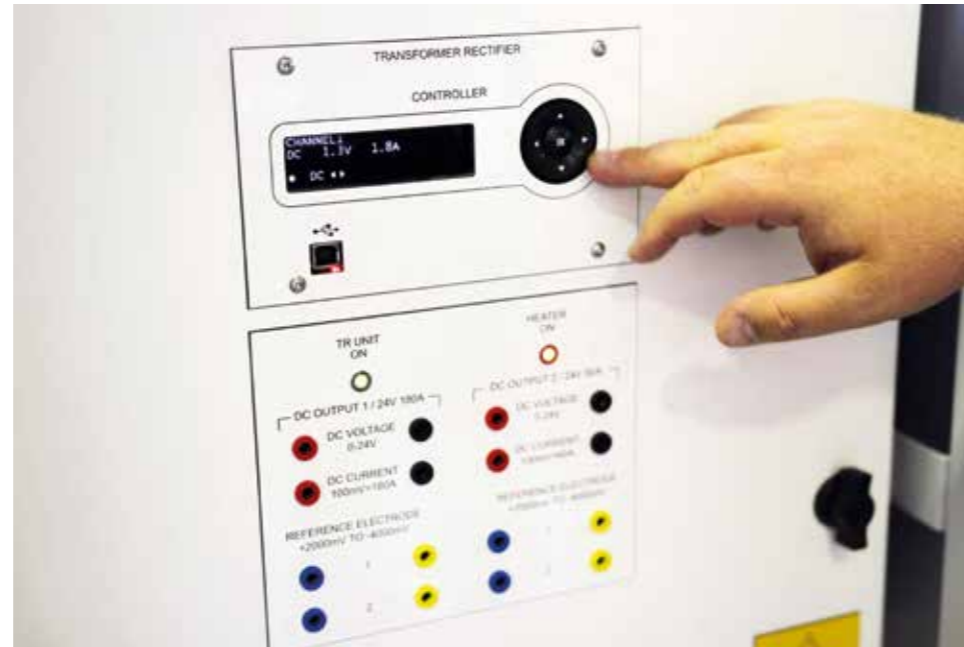
Infinity HMI Panel retrofitted to existing TR Facia Panel



Infinity Control Board retrofitted to TR unit.



All features and parameters of the TR unit can be controlled from the Infinity HMI control panel



Training in the operation of the unit can be provided by our staff worldwide. Local operators can be trained for future retrofit projects

BAC have developed "Lifesaver", a kit form product solution that can be installed at site to rehabilitate your Transformer Rectifier and restore full output capability and functionality.

## "Lifesaver" Thyristor TR Rehabilitation Kits

Clients worldwide are often operating and maintaining Transformer Rectifiers procured from a range of different OEM's over many years. It is quite common for those OEM's to change design, personnel or even close altogether over time rendering equipment in the field inoperable if the bespoke control cards and components are no longer available.

Whilst the rest of the Transformer Rectifier is in good physical condition it may require complete replacement of the unit unless spares can be sourced.

It is with this in mind that BAC have developed "Lifesaver", a kit form product solution that can be installed at site to rehabilitate your Transformer Rectifier and restore full output capability and functionality.

- ▶ Units can be supplied for almost all brands and types of Thyristor Control TR unit.
- ▶ Minimal cabinet rework is required.
- ▶ Digital and Analogue meters can be incorporated into the new control panel.
- ▶ BAC can supply experienced engineers to fit and / or train your personnel at site.
- ▶ Monitoring and Control functionality can be added to your existing unit.
- ▶ Can save approximately 75% on the price of complete TR unit replacement.

## Upgrade Kit

The upgrade kit includes:

- ▶ Thyristor Control board
- ▶ Control transformer
- ▶ Control fuses
- ▶ HMI (Human Machine Interface) for user controls and metering
- ▶ Assembly panels
- ▶ Installation wiring loom
- ▶ Capacitor
- ▶ Fitting instructions
- ▶ Photo of Kit:


# References and Experience

BAC Corrosion Control Ltd has a global reputation for quality and service. For more than 60 years we have been supplying cathodic protection and corrosion control solutions to a global client base that includes the following :

Shell • BP • Aramco • Tengizchevroil • GASCO • National Grid • Exxon Mobil • Bechtel • Saipem • CPECC • Fluor • GAMA.

BAC have completed many major Power Supply projects in recent years, some examples of which are shown opposite. We are available to help you specify, design, build, install and maintain any system from the simplest Variac to the highest complexity multi channel units.

Bespoke construction and functionality is a our key strength whilst maintaining quality and ease of use at every stage of the project.

**UNITED KINGDOM**  
 NATIONAL GRID:  
 FRAMEWORK PROJECT – 2013-15  
 Supply of > 150 Switch Mode Power Supply units for National Grid Network.



**ITALY / GREECE / ALBANIA**  
 RENCO / TERNA:  
 TAP PROJECT – 2017-18  
 Supply of 130 Thyristor Multi Channel Transformer Rectifiers with full Remote Monitoring and Control system.




**KAZAKHSTAN**  
 FLUOR KJV : FUTURE GROWTH PROJECT– 2016-18  
 Supply of 35+ Air Cooled Thyristor Transformer Rectifiers.




**NIGERIA**  
 SAIPEM:  
 SSGAS PROJECT - 2017  
 Supply of > 20 Thyristor Control single and multi channel units for Shell Nigeria.



**EGYPT**  
 BP / BECHTEL : WEST NILE DELTA PROJECT – 2017-18  
 Supply of Variac and Thyristor Multi Channel Transformer Rectifiers.



**KENYA**  
 KPC : MOMBASSA TO NAIROBI PIPELINE  
 Supply of 10 Variac Control single channel units for KPC Kenya.



**HONG KONG**  
 MODERN TERMINALS: PORT PROJECT – 2014-16  
 Supply of 200+ Multi Channel Switch Mode Power Supplies with full Remote Monitoring and Control system.



Please contact us at [sales@bacgroup.com](mailto:sales@bacgroup.com) to see how we can assist with your project.



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