

A SOLAR MINI IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM

REPLACE SACRIFICIAL ANODES & THEIR POOR CO₂ FOOTPRINT

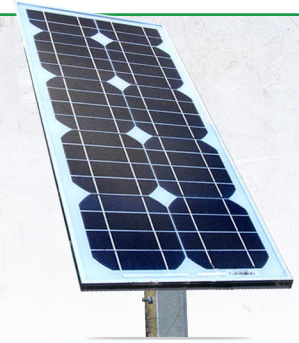
✓ REMOTE MONITORING

✓ SAVE ON COSTS

✓ SAVE ON MAINTENANCE

With the GreenAmp Mini ICCP System, you will save on costs and monitor your equipment from your computer or phone over its long life of up to 50 years!

Anode Engineering has recognised that the use of sacrificial anodes on buried steel structures such as pipelines is causing a huge cost to our community. The cost to Green House Gas emissions (CO₂ Footprint) as well as the cost to the community providers in excessive replacement costs over the life of the assets they are protecting.



CONVENTIONAL SACRIFICIAL ANODE SYSTEMS

Conventional systems are fitted to industrial structures such as pipelines, underground tanks, above ground tanks and many other steel structures cited on or in the ground. It is normal to provide them with corrosion prevention (Cathodic Protection – CP) by attaching a number of metal blocks (Anodes) of very active metals such as magnesium to the steel structures. This process results in the more active metal (magnesium) then corroding away and generating a small amount of cathodic protection DC current.

A typical magnesium sacrificial anode System has a life expectancy of ten years. The typical anode bed comprises of five or more anodes and will have a primary cost of AUD \$1250.00. The installation and commissioning costs of that anode bed including civil works and commissioning would typically be AUD \$2,000.00.

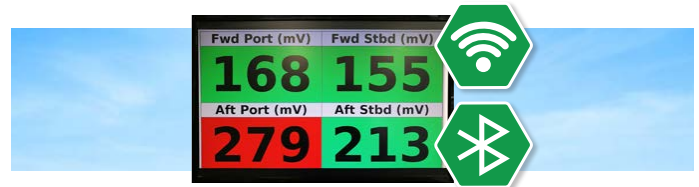
COST REGARDING REPLACEMENT SYSTEMS

Because many sacrificial anode systems are installed on pipelines often in congested city streets in urban development, the costs to excavate and install new anodes on a ten-year cycle can result in replacement costs as much as \$10,000.00 per site per 10 years. With such installations being installed every two to three kilometres along a pipeline route, the accumulated replacement costs over a fifty-year life cycle of a pipeline can be in the hundreds of thousands of dollars.

THE CO₂ FOOTPRINT

The production of one kg of magnesium generates a CO₂ Footprint of 42 kg of CO₂. The annual average magnesium tonnage per annum utilised by the cathodic protection industry in Australia alone is in excess of 400 tonnes. This equates to an annual CO₂ footprint of 16,800 tonnes of CO₂. At a cost for CO₂ at \$23.00 per tonne, this equates to an annual cost to industry before materials of \$386,400.00.

GREENAMP MONITOR



The GreenAmp Monitor system is designed to allow either sacrificial anode systems or impressed current systems to be monitored and logged electronically. The advantage is that it does not need 4-20mA signal conditioners and can be fitted with no other sophisticated power or PLC communication systems.

The system can simply be attached to reference cells and calibrated for any type of reference cell system. It then will data log readings for up to five years for each cell. The data can

be accessed via Wi-Fi, Bluetooth or any traditional 3G system or internet connection. No matter where in the world, the data can be accessed and managed by an Anode Engineering corrosion engineer.

The system operates at 12 or 24 volt DC supply and reveals to personnel at any time if any reference cell is reading high or low potentials. It can also be used to locate stray current electrolysis, wharves with Cathodic Protection or unwelcome earthing drainage.

GREENAMP IMPRESSED CURRENT SERIES GA3 RANGE PROTECTION UNIT

The GreenAmp GA3 series incorporates the latest high efficiency control for AC, or DC supplied units. Specifically designed with flexibility and high accuracy in mind, to encompass the lower powered impress current systems. Due to the design of the Automatic Control function, very little maintenance is required.

KEY DESIGN FEATURES:

- Constant Current & Voltage Control
- Reference Cell Auto Control
- Current & Voltage Limit
- Continuous Duty Cycle
- Cutting edge technology allows the unit to easily interface with other systems
- Easily adapted for remote monitoring/control

OPTIONAL FEATURES:

- Hi Efficiency Solar Power
- Increased output on request
- Can be Engineered for individual needs
- Can be built for locations where limited or no power is available

STANDARD UNITS:

Model	Output Current	Output Voltage	Input Power	Size mm	Weight
GA3-02-10-0-DC	0 to 2 Amps	0.7 to 10 Volts	12 Volt 2 Amp DC	200 x 120 x 75	2kg
GA3-02-20-0-DC	0 to 2 Amps	0.7 to 20 Volts	24 Volt 2Amp DC	200 x 120 x 75	2kg
GA3-08-10-0-DC	0 to 8 Amps	0.7 to 10 Volts	12 Volt 8 Amp DC	200 x 120 x 75	2kg
GA3-08-20-0-DC	0 to 8 Amps	0.7 to 20 Volts	24 Volt 8 Amp DC	200 x 120 x 75	2kg
GA3-08-240-M-AC	0 to 8 Amps	0.7 to 20 Volts	240 Volt 8 Amp AC	200 x 120 x 75	2kg