

BGCMAP

Rate of corrosion tester



The BGCMAP corrosion system has been designed to help develop effective maintenance schedules for the electrical power industry.

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The BGCMAP system glossary has been designed specifically for the power line industry and can be classified in terms of structure, component, line, segment, circuit and street. The user is also able to enter details of the inspector as well as soil and weather conditions.

The unit will automatically apply a current to the structure and determine E_{corr} , from which the operator can then choose the best fit line to measure R_p .

Software

The BGCMAP software operates under Windows XP and follows all of the usual file handling protocols. Files are downloaded from the site unit and are automatically entered into a report table.

From the table each file can be viewed independently and site data reviewed. The 'best fit' slope can be chosen to determine the polarisation resistance.

Benefits

- On-site measurement of full LPR curve, E_{Corr} and polarisation resistance
- Integrated GPS provides location date and time stamp for every test result
- Transmission line terminology
- Storage for over 700 results
- Battery operated, rugged unit for use in remote locations
- Lightweight and easy to transport
- User friendly Windows based software for reporting

How it Works

Corrosion of a steel element embedded in the ground is an electrochemical process. It acts as a galvanic cell in a similar way to a battery producing an electric current. This current can be measured on the surface as an electric field and compared with an electrode at a standard potential.

The BGCMAP operates by applying a current and recording the change in electric potential that occurs between the half-cell and the corroding sample. These values are plotted against each other. For small values around the free corrosion potential (Ecorr), the plot is assumed to be linear, the slope of which is the polarisation resistance (Rp).

Application to transmission tower legs

Carrying out the test on transmission tower legs is easy and rapid. The electrode spike is driven into the ground within 1m of the component, to a depth of at least 200mm.

The BGCMAP unit is connected to the component and the electrode using heavy duty steel clips. Any surface coating at the point of contact is removed beforehand. The copper / copper sulphate half-cell is then inserted firmly into the ground, in a small hole excavated alongside the component being tested. The test is carried out automatically by the BGCMAP, which applies a current and records the voltage. The GPS co-ordinates and the date and time of the test are also recorded with polarisation resistance (Rp).

BGCMAP user training

We can provide full training for all equipment purchased from us. Our training sessions are created and led by our in-house experts, providing you with the skills and knowledge needed to operate the equipment safely, efficiently and with confidence.

We offer classroom and site training within the UK, on-site training overseas and virtual classroom training. No matter what your needs or technical experience we can provide the right training solution for your requirements.

BGCMAP unit	
Features	Rugged site logger with waterproof connectors Daylight viewable screen Tactile large keys for operating with gloves Low power with long battery life Flash memory for instant start up and power down On site LPR measurement GPS tagged test data
Keypad	Sealed, tactile full alphanumeric keypad
Operating temp	0°C to +50°C
Display	Monochrome LCD transfective with back light Contrast keypad, adjustable backlit display. 122mm x 77mm with protective plate
Acquisition	2 channel, 16 bit acquisition at 10KHz sample rate Pre-trigger on both channels
Data transfer	USB-PC cable
Storage	700+ results, including full LPR curve, ECorr, Rp with full header information including site, structure, line, segment, weather, soil condition, date, time, latitude and longitude.
Voltage range	ECorr +/- 20mV
Current range	Auto
GPS	Trimble Lassen SQ module with integral embedded antenna Protocols are TSIP and NMEA 0183 Accuracy of the GPS is - Horizontal: <6m (50%) <9m (90%) Altitude: <11m (50%) <18m (90%)
Power	Battery - 1.2V NiMH rechargeable AA cells Auto power off and battery indicator
Battery life	8 hours + on full charge
Charge time	Approx 6 hours
Charging	Wall plug-in charger for 100/110/250VAC inputs (trickle charge) Cigar plug-in charger for 12VDC inputs (fast charge)
Dimensions	L 218mm x W 187mm x D 55mm
Weight	1.35kg

Half-Cell sensor	
Type	Commercial CuCuSO4 half-cell fitted with porous ceramic plug and supplied ready filled with crystals.

All equipment is supplied fully calibrated to UK national standards

