

### Marine Reference Cell – Silver/Silver Chloride

The MRC is a portable silver/silver chloride reference cell for use on structures immersed in sea water. It can be used to:

- Indicate the level of corrosion activity on steel structures such as underwater hulls, ballast tanks, docks, jetties and offshore platforms as well as aluminium boats and work barges.
- Indicate the efficiency of any cathodic protection system fitted and give warning of the necessity of anode replacement in advance of docking or repair schedules.
- Identify shrouded or unprotected area in a cathodic protection scheme.
- Identify the source of problems associated with stray currents.

MRC is an electrochemical device which has a stable and reproducible potential so it can be used as a reference point for voltage measurements. The cell consists of a silver wire, coated with a layer of silver chloride housed in a robust PVC cage. It is designed for use in clean seawater.

MRC can be used with standard multi-meters or with an Anode Engineering Cathometer instrument to take readings around the vessel or structure. The measured potential values are then compared to standard values to indicate the level of protection at each location. MRC works with most commonly available digital or analogue multi-meters with an input impedance of at least 10M $\Omega$  (megohms) and an accuracy of +/-10mV (millivolts) or better.

#### USING THE MRC

Using a DVM: the Reference Cell should be connected to the common or negative terminal and the connection to the structure should go to the positive terminal. Lower the MRC the sea or ballast water. In most cases the MRC should be positioned within approximately 2 metres of the structure to be examined. Make a connection to the hull or structure (paint and rust free).

Record the voltage reading shown on the meter and the position at which it was taken. A complete survey requires readings to be taken at various levels vertically down the structure, e.g., 5 metre intervals, and at as many locations in a horizontal direction as may be required. Regular potential surveys will indicate a rate of deterioration of immersed steel due to corrosion and, conversely, will indicate the effectiveness of any cathodic protection system fitted. *Note: the structure connection can be made anywhere on the structure, the cell position determines the relevance of the reading.*

#### READING INTERPRETATION OF STEEL POTENTIALS

(Salt Water)

0 - 0.65V:	Active Corrosion
0.65 - 0.78V:	Partial Cathodic Protection
0.78 - 1.10 V:	Complete Cathodic Protection
>1.20V:	Over Protection

When cathodic protection is fitted readings will rise as the reference cell approaches an anode, with maximum readings obtained when the reference cell is adjacent to an anode.

The MRC can be ordered with 5 or 25m cable attached. Part number:

5 meter cable: MRC-SC-05

25 meter cable: MRC-SC-25

To order an MRC and Cathometer assembly as a unit use part number CATH 001

