

Model **CORRATER[®]** LPR **Soil Corrosion Rate Monitor**



**Corrater® Aquamate™ Portable Instrument
with Soil Corrosion Rate Probe**

Features:

- **Quick and Easy Direct Corrosion Rate Measurements**
- **Quantitative Soil Corrosivity Determination for ECDA* Pre-assessment Process**
- **Heavy Duty Construction Suitable for Field Use**

Corrosion of underground pipelines costs the oil & gas industry millions of dollars each year. Due to more recent safety regulations enforced by the government, pipeline operators are coming under great pressure to provide enhanced protection of pipelines in high-consequence areas, in the form of pipeline integrity programs. These programs are developed to improve safety by assessing and reducing the impact of external corrosion on pipeline integrity. Pipeline operators are now required to follow a process called the External Corrosion Direct Assessment (ECDA). Such a program is laid out in the NACE International Recommended Practice RP0502-2002.

ECDA consists of four steps: Pre-assessment, Indirect Inspection, Direct Examination, and Post-assessment. Soil Corrosivity is a factor to be considered in the pre-assessment process and influences where corrosion is most likely to occur. Soil corrosivity is often estimated, or inferred from soil resistivity measurements, but this is not quantitative.

The new Corrater[®] Soil Corrosion Rate Monitor changes all of that, and allows a quantitative measurement to be made quickly and easily at the time of the pipe excavation and inspection. Multiple readings can be taken, at different locations around the pipe to check on the consistency of the soil corrosivity.

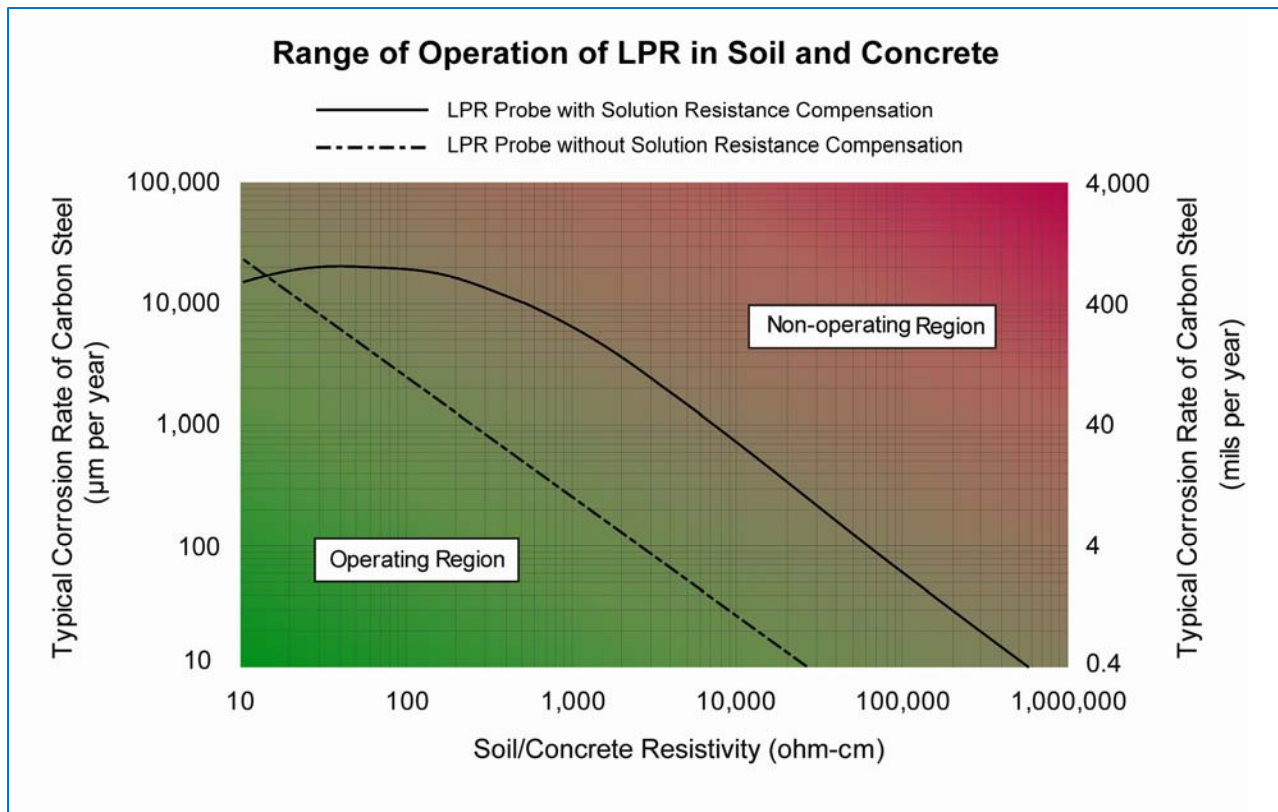


**Direct Corrosion Rate Measurement using the
Aquamate™ and Soil Rate Corrosion Probe**

The Aquamate™ Corratel LPR (Linear Polarization Resistance) instrument is an electrochemical corrosion rate measurement with an added patented Solution Resistance Compensation (SRC) to extend the range of soils in which measurements can be made (see graph), and the instrument gives a direct corrosion rate measurement. Typically the soils have a level of hydration that gives sufficient conductivity to allow corrosion rate readings to be taken directly. On the rare occasion that the soil is too dry (too high a resistivity), this is detected by the instrument. Such dry conditions correspond to very low corrosion rates. In these conditions, distilled water may be added to soil to check the corrosion rate if and when the soil becomes hydrated. On the "Range of Operation" graph, the area to the lower left is permissible. The area to the upper right is not suitable without the addition of distilled water.

The horizontal axis shows soil resistivity and the vertical axis the maximum corrosion rate. The solid curved line shows the limit of operation based on a nominal 20% maximum error in corrosion rate. The dotted line shows more limited range when SRC compensation is not used. For more information on the Aquamate™ Instrument see Bulletin #304 – Model Aquamate™ Portable Corratel® Instrument.

The Soil Corrosion Rate Probe has been developed specifically for this application. The heavy duty construction makes it suitable for field use and the probe head is replaceable. Typically the probe element is carbon steel but may be supplied in other alloys if required. Exact matching to the pipe grade is not typically required as this usually has little effect on the corrosion rates.



Ordering Information:

AquaMate™ Portable corrosion rate, imbalance, temperature, and conductivity monitor with test probe
 P/N Aquamate

Soil Corrosion Rate Probe P/N 850-K03005 (Other alloys also available)



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