CORROSION CONTROL – SUPERVISORY MANAGEMENT delivers long-term, large scale reduction in real water loss caused by pipe leaks & bursts

Supervisory management of corrosion control delivers long-term, large scale reduction in real water loss caused by pipe leaks and bursts. Pipe line corrosion is usually the biggest single cause of real water loss in distribution networks.

The first step in reducing long tem water loss by controlling corrosion is to understand the level of corrosion activity in your network and any changes that occur.

People say death and taxes are certainties. So is corrosion of metal water pipes! You can only minimise corrosion. Isoil offer an extremely cost-effective and simple way of monitoring the corrosion activity at strategic points in your network so that you can take informed decisions on how to manage the situation. This is a strategic level early warning system which monitors trends to identify unusual potential shift or erratic activity, automatically on an on-going basis. This will warn corrosion personnel of potential problems with the CP protection criteria on the pipe.

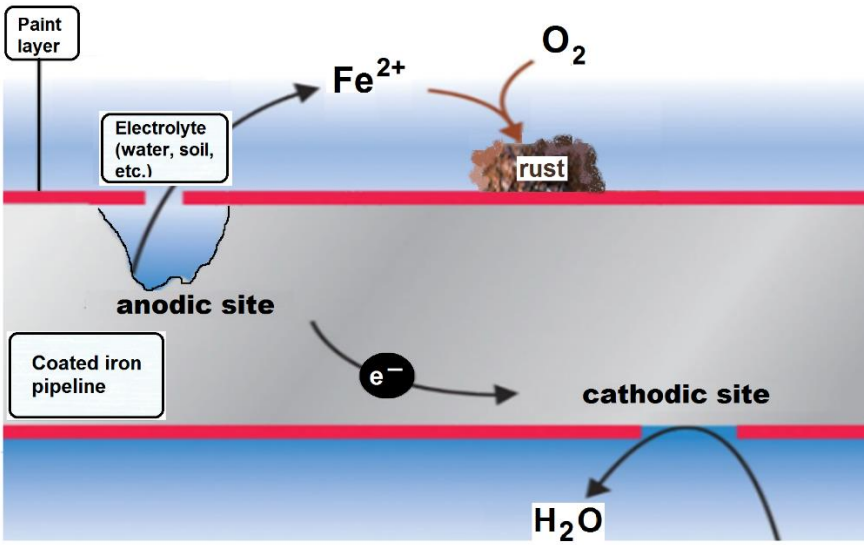
Corroded pipe with large holes and expensive real water loss

What Causes Corrosion?

Corrosion naturally occurs when an un-protected metallic pipe line is buried in soil. The soil acts as an electrode and a voltage will develop between the metal and soil electrolyte. This is a natural electro chemical process which leads to corrosion.

The most importation protection against corrosion is a coating on the metal pipe. But in the real world coating inevitably acquire nicks or breaks due to handling, installation, abrasions, etc., and corrosion commences. The second most important method to minimise corrosion is to maintain the pipeline voltage at a potential of -850 mV with reference to the surrounding earth (in practice the earth voltage is measured by a copper sulphate half-cell). In many cases high cost cathodic protection systems are installed to maintain this pipe-to-soil potential. Corrosion accelerates where the pipe-to-soil potential deviates from -850 mV.

Therefore, by monitoring the pipeline potentials daily and plotting the results on a trend, the asset owner can determine at a strategic level whether the pipe coating is deteriorating, stray currents are present and/or whether the Cathodic Protection (CP) System is on or not. Once a change in the trend is noted, more detailed testing by trained personnel can occur and corrective action implemented rapidly to mitigate the irrecoverable loss of pipe metal.



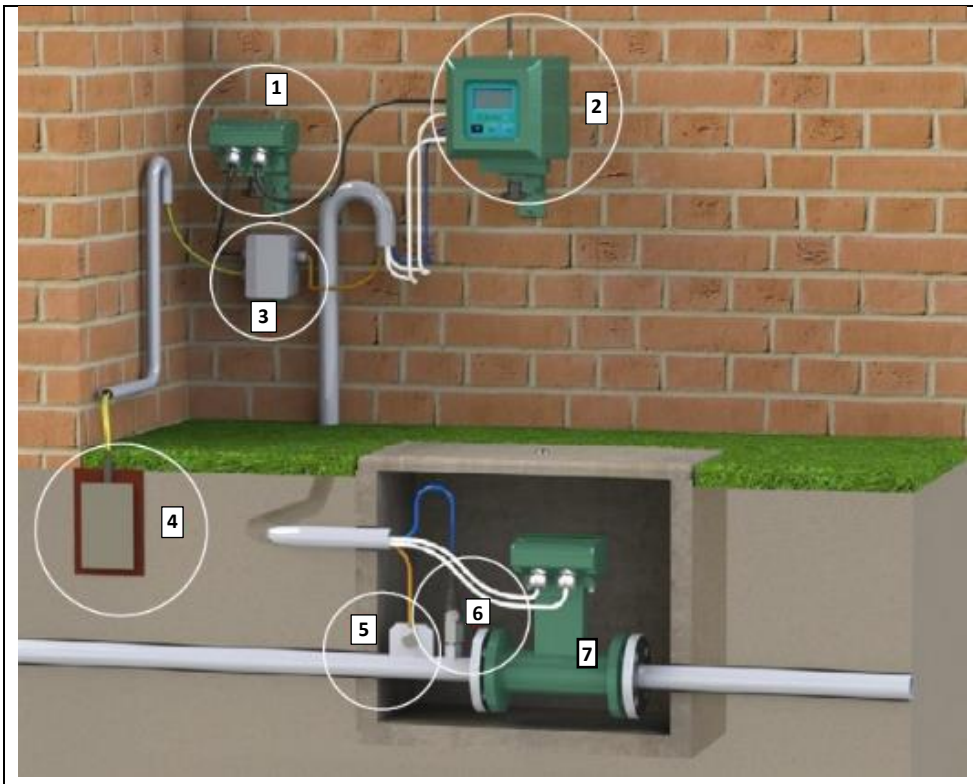
Pipeline is protected at the cahtodic site (gain of electrons) and corrosion occurs at the anodic site (loss of electrons). Corrosion is an electro-chemical process.

Cathodic Potential between pipe and earth

The **Isoil battery powered flow meter** is an ideal solution for economically and automatically monitoring corrosion potential. This flow meter has an optional cathodic potential module which measures the pipe-to-soil voltage typically at 15 minute intervals. This information is sent daily by GPRS to a web-based monitoring system which automatically emails trends and measurements to user defined personnel.

These trends of the structure-to-electrolyte potential reveal change in corrosion pattern over time.

The incremental capital cost of this cathodic potential monitoring is a small, and incremental running costs are zero. This efficient and cost-effective monitoring system enables strategic management to take control of the pipe line corrosion scenario.



1. Cathodic Potential Module

2. Isoil battery powered flow meter convertor

3. Connection box

4. Earth reference electrode

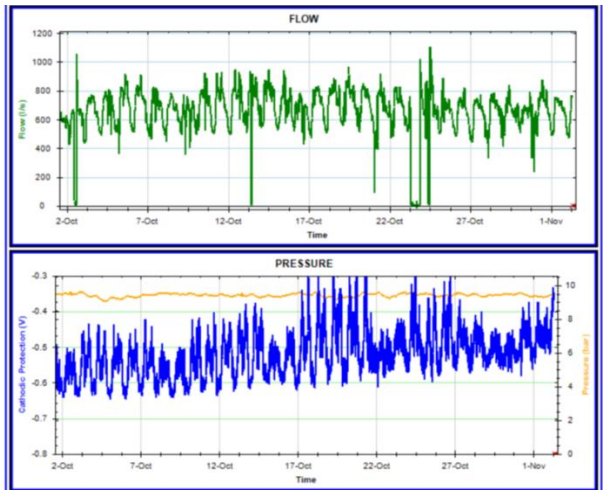
5. Electrical connection to the pipe.

6. Pressure Sensor (optional)

7. Isoil battery powered flow sensor

Isoil battery powered flow meter with optional cathodic potential monitoring. In this configuration the meter measures flow rate, flow totals, line pressure and cathodic potential

Isoil Cathodic Potential Module



Cathodic Potential Trend

"Manage your water delivery effectively."

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