INSTANT MPY
INSTANT CORROSION MONITORING

The CM2012 Instant Corrosion Monitoring System is a microprocessor-based, field-mountable corrosion rate meter. This instrument measures the instantaneous corrosion rate and electrochemical current between the electrodes of any standard 2-electrode linear polarization resistance (LPR) probe.

Corrosion rate measurements are made using the linear polarization resistance technique. The instrument measures the electrical current required to polarize the electrodes of a probe to a known potential. From the polarization potential and the measured current, polarization resistance can be calculated. Instantaneous corrosion rate is then calculated from polarization resistance.

Alloy multipliers for mild steel, copper, brass, and lead are incorporated into the instrument. The multiplier is selected using a switch on the front panel of the instrument.

The CM2012 also offers a high precision zero resistance anmeter (ZRA) for measuring the electrochemical current between electrodes. This function is used to measure the galvanic current between electrodes of dissimilar alloys.

The instrument is housed in a weather-tight wall mountable case making the CM2012 suitable for use in almost any indoor or outdoor environment.

THE BENEFITS

CONTINOUS MONITORING
Current corrosion rate displayed throughout the day

HISTORICAL RECORD
Record corrosion rates and chart with temperature, orthophosphate residual and pH recorded in the lab for trend analysis

MONTHLY REPORT
With easy to read graphs, summary and recommendation

HOW THE INSTANTMPY CORROSION METER WORKS

Corrosion meters have been used for many years in the oil and gas industry to detect internal corrosion in pipelines. Oil and gas pipes are under substantially greater pressure than the 60 to 100psi pressure experienced in drinking water systems, but the concern and cost of internal corrosion is the same.

The corrosion meter uses the linear polarization resistance method of calculating corrosion rates. Since corrosion is an electrochemical reaction, we send an electrical impulse down one side of the corrosion meter probe and the metal tips at the end of the probe then measure the corrosion rate through a measure of the "electrical noise" generated by this electrical impulse. This method has proven a reliable measure of corrosion in drinking water systems for more than 25 years.

The electrical impulse travels back up to the corrosion meter through the probe where the unit measures and then calculates the current internal corrosion rate. The corrosion meter then displays the corrosion rate in terms of mils per year.

The mils per year reading is the same information that is reported during the use of corrosion coupons, only with the corrosion meter, we have access to this measurement after 45 seconds while a corrosion coupon

requires at least 60 days and preferably 90 days of time before we can measure the average corrosion rate.

Obviously many changes can take place in the corrosion rate during a 90 day period so the corrosion coupon only provides an average rate of corrosion over the 90 days, while a corrosion meter monitoring program can provide us readings as often as once every three minutes. Generally a reading in the morning and a reading in the afternoon is sufficient to capture enough information to understand the trends in corrosion rates. By comparing the corrosion meter readings over a 90 day period, we can plot out 180 data points in comparison to just one reading provided by a corrosion coupon during that same time period.

Corrosion rates during cold weather months are typically lower than corrosion rates during warm weather months. A lower feed rate during months when the water is less corrosive offers savings, while a higher feed rate during months when the water is more corrosive offers control of corrosion rates when needed the most.

By understanding the corrosion rates associated with our corrosion control program, we can better evaluate the success of the program and make adjustments to the product feed rate to improve efficiencies and effectiveness.

GRAPH EXAMPLE FROM CURRENT CUSTOMER