

Monitoring of the pH Evolution at a Cathodically Protected Steel Surface Subject to an AC Perturbation

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Abstract

Assessing AC corrosion with respect to an E-pH or Pourbaix diagram is widely done in literature. No common agreement on the influence of pH on the AC corrosion rate exists however. This paper presents a literature review of the effect of pH on AC corrosion, as well as an in situ investigation of pH and potential of a steel surface at various cathodic protection levels and various AC potential levels. The results are directly correlated to AC corrosion rates measured by the ER technique and discussed in relation to the current EN 15280:2013 standard. Furthermore, the effects of faradaic rectification of AC currents on the pH evolution at an electrode surface is illustrated by a novel visualisation experiment.