”AC Corrosion of Cathodically Protected Pipelines – A Summary”

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Abstract:
This paper presents a summary of the results obtained during 3 years of PhD studies in “AC Corrosion of Cathodically Protected Pipelines” at the Technical University of Denmark and MetriCorr. Amongst the findings are: an improved understanding of AC corrosion as different corrosion phenomena under low and high levels of cathodic protection respectively, an enhanced understanding of the reactions in soil systems that lead to establishment of corrosive environments, discovery of a close correlation between current density criteria and the Pourbaix diagram, improved understanding of the influence of the CP level on the electrochemical double-layer characteristics and presentation of a new model for AC corrosion that considers ionic dissolution and hydrogen evolution in the passive film destabilisation mechanism. The results are discussed in relation to literature and relevant cathodic protection and AC interference standards.