

Effect of Coating Defect Geometry and Orientation in AC Corrosion of Buried Pipelines

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Abstract

Coupons for investigation of AC corrosion on cathodically protected pipelines acts as artificial coating defects of a well-defined area of 1 cm², typically circular, according to the EN 15280:2013 Standard. This is convenient for current density calculations, but real life coating defects can be expected to have multiple sizes and geometries, which is known to affect critical parameters such as the spread resistance, AC and DC current density and ultimately the AC corrosion rate. The effect of size, geometry, length/width-ratio, coating thickness and defect orientation is investigated at different protection levels in the present study, using electrical resistance measurements, electrochemical impedance spectroscopy and microscopical methods.