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AC Corrosion Induced by High Voltage Power Line on Cathodically Protected Pipeline

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Abstract: The implications of the influence of alternating currents on buried pipelines are of great concern to all pipeline owners in world. The relevance of the interference is always increasing for operational personnel and for the protection of buried metallic structures from corrosion. The paper studies the electromagnetic interference problem between an existing high voltage power line and a newly designed underground pipeline cathodically protected. Induced voltages and currents are evaluated for steady state operating conditions of the power line. It is found that on pipelines suffering from A.C. interference traditional pipe-to-soil potential measurements do not guarantee efficient cathodic protection against corrosion. A specific approach to assess the effectiveness of cathodic protection should be adopted.

Keywords : Induced Voltages, Electric Power Transmission Lines, pipeline, AC Corrosion, cathodic protection, soil resistivity, AC interference