Study of Impressed Current Cathodic Protection (ICCP) on the Steel Pipeline under DC Stray Current Interference

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In this work, a detection method of stray direct current on buried pipelines and a determination method for anodic/cathodic regions on pipelines is proposed. To compensate for the current interference, a current requirement test is adopted to provide a reference for an additional impressed current cathodic protection system. When the buried pipeline is severely disturbed, the implemented impressed current cathodic protection system, which is based on the results of the requirement test, negatively shifts the instant-off potential of the pipeline by at least 350 mV during the measurement period. This shift meets the cathodic protection criteria, suggesting that the impressed current cathodic protection system can effectively suppress stray subway current-induced corrosion.

Keywords: Impressed current cathodic protection; Current requirement test; DC stray current; Drainage; Instant-off potential

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