

Abstract

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Experimental investigation of erosion-corrosion phenomena in a steel fitting due to plain and slurry seawater flow

The present work presents an experimental characterization of the erosion-corrosion phenomena caused by confined slurry seawater flow. A set of experiments were conducted under a carefully controlled environment to estimate the erosion-corrosion severity in a 90° pipe bend. Sand particle concentration ranged from 0 to 9 g/l. Accurate spectrometric measurements of eroded iron concentration in the drain flow were carried out in order to characterize the erosion-corrosion severity in the bend. Both the flow Reynolds number and sand particle concentration were directly correlated to the onset of erosion phenomena. Consequently, this study proposes empirical correlations to predict the erosion-corrosion rate as a function of sand concentration and Reynolds number with two sets of coefficients for both laminar and turbulent flow regimes.