

Effect of Sand Particle Distribution in Oil and Gas Pipeline Erosion

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Abstract : Erosion in pipe bends caused by particles is a major obstacle in the oil and gas fields and might cause the breakdown of production equipment. This work studied the effects imposed by flow velocity and impact of solid particles diameter in an elbow; erosion rate was verified with experimental data using the computational fluid dynamics (CFD) approach. Two-way coupled Euler-Lagrange and discrete phase model was employed to calculate the air/solid particle flow in an elbow. One erosion model and three-particle rebound models were used to predict the erosion rate on the 90° elbows. The generic erosion model was used in the CFD-based erosion model, and after comparing it with experimental data, results showed agreement with the CFD-based predictions as observed.

Keywords : erosion, prediction, elbow, computational fluid dynamics

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