INTERCORR 2008
28° Congresso Brasileiro de Corrosão
2nd International Corrosion Meeting
Mar Hotel, Recife / PE • 12 a 16 de maio de 2008

Effect of Flow on Corrosion

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Abstract:

The assessment of corrosion in oil and gas pipelines in the presence of wet carbon dioxide is complex. The chemistry of the corrosion process is reasonably well understood and several experimental methods have been devised to investigate the corrosion process. However, the effect of flow on corrosion is not well understood especially when multiphase flow is considered. The change in pipeline inclinations can cause changes in the flow regime transitions and flow characteristics, which have a definite effect on the corrosion rate experienced by these pipelines.When evaluating corrosion inhibitors, it is important that tests adequately represent field conditions. If this is not done then many parameters that are fundamental to inhibitor performance may not be sufficiently addressed to allow prediction of their field performance. These include the flow characteristics and the effect of the flow on the nature of the fluids.The effect of inclination on the flow characteristics (e.g. flow pattern and slug frequency) and their subsequent effect on corrosion rates will be presented. The performance of corrosion inhibitors under severe slugging conditions will be also described.

Key-word: Multiphase Flow, Flow Pattern, Flow Characteristics, Pipeline Inclination

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