World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

# NaCl Erosion-Corrosion of Mild Steel under Submerged Impingement Jet

**Authors :** M. Sadique, S. Ainane, Y. F. Yap, P. Rostron, E. Al Hajri

**Abstract :** The presence of sand in production lines in the oil and gas industries causes material degradation due to erosion-corrosion. The material degradation caused by erosion-corrosion in pipelines can result in a high cost of monitoring and maintenance and in major accidents. The process of erosion-corrosion consists of erosion, corrosion, and their interactions. Investigating and understanding how the erosion-corrosion process affects the degradation process in certain materials will allow for a reduction in economic loss and help prevent accidents. In this study, material loss due to erosion-corrosion of mild steel under impingement of sand-laden water at 90˚ impingement angle is investigated using a submerged impingement jet (SIJ) test. In particular, effects of jet velocity and sand loading on TWL due to erosion-corrosion, weight loss due to pure erosion and erosion-corrosion interactions, at a temperature of 29-33 °C in sea water environment (3.5% NaCl), are analyzed. The results show that the velocity and sand loading have a great influence on the removal of materials, and erosion is more dominant under all conditions studied. Changes in the surface characteristics of the specimen after impingement test are also discussed.

**Keywords :** erosion-corrosion, flow velocity, jet impingement, sand loading
**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development
**Conference Location :** Chicago, United States
**Conference Dates :** December 12-13, 2020