

Corrosion Risk Assessment/Risk Based Inspection (RBI)

Authors : Lutfi Abosrra, Alseddeq Alabaoub, Nuri Elhaloudi

Abstract : Corrosion processes in the Oil & Gas industry can lead to failures that are usually costly to repair, costly in terms of loss of contaminated product, in terms of environmental damage and possibly costly in terms of human safety. This article describes the results of the corrosion review and criticality assessment done at Mellitah Gas (SRU unit) for pressure equipment and piping system. The information gathered through the review was intended for developing a qualitative RBI study. The corrosion criticality assessment has been carried out by applying company procedures and industrial recommended practices such as API 571, API 580/581, ASME PCC 3, which provides a guideline for establishing corrosion integrity assessment. The corrosion review is intimately related to the probability of failure (POF). During the corrosion study, the process units are reviewed by following the applicable process flow diagrams (PFDs) in the presence of Mellitah's personnel from process engineering, inspection, and corrosion/materials and reliability engineers. The expected corrosion damage mechanism (internal and external) was identified, and the corrosion rate was estimated for every piece of equipment and corrosion loop in the process units. A combination of both Consequence and Likelihood of failure was used for determining the corrosion risk. A qualitative consequence of failure (COF) for each individual item was assigned based on the characteristics of the fluid as per its flammability, toxicity, and pollution into three levels (High, Medium, and Low). A qualitative probability of failure (POF) was applied to evaluate the internal and external degradation mechanism, a high-level point-based (0 to 10) for the purpose of risk prioritizing in the range of Low, Medium, and High.

Keywords : corrosion, criticality assessment, RBI, POF, COF

Conference Title : ICCDM 2024 : International Conference on Corrosion and Degradation of Materials

Conference Location : Montreal, Canada

Conference Dates : May 23-24, 2024