

Abstract

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Time-dependent Corrosion Wastage Effect on the Ultimate Strength Performance of FPSOs

Recently, various types of offshore structures are built and constructed to fulfil the high demand of sea exploration especially in oil and gas industry. In this regards, the deep sea (or called "Blue Ocean") area is becoming more and more important field for exploration activity. Floating Production Storage and Offloading (FPSO) is one of the popular structures used to exploit the sources of oil and gas in subsea area. Basically, FPSO is exposed to ocean environment and thus faces age-related problems such as corrosion damage. In the present study, the time-dependent effect of corrosion wastage on the Ultimate Limit State (ULS) based structural safety assessments of FPSOs in terms of stiffened panels and hull girders was determined. An empirical time-dependent corrosion wastage model, which was obtained using real corrosion measurement database, was adopted to predict the progress of corrosion damages. Ultimate strengths of stiffened panels and hull girders for converted FPSOs (single hull type and double hull type) were compared with a new-built FPSO. Important insights obtained from the present study were documented.