Modelling of Crack Propagation for Embedded Crack Structure

HA Haziq A, MRM Akramin, MNM Husnain and MS Shaari

Faculty of Mechanical and Automotive Engineering Technology,
Universiti Malaysia Pahang,
26600 Pekan, Pahang

Abstract. Inner or embedded cracks were created in the structures of nuclear power plant by fatigue after years of operation time. Embedded cracks which generated in nuclear power plant is modelled as circular cracks in a plane normal to tension loading direction in Probabilistic S-version Finite Element Model (Prob-SFEM). Prob-SFEM which can generate the model with fatigue loading and crack growth due to number of fatigue cycle realistically by using uncertainty parameters from Monte Carlo method. Fatigue life and crack growth were generated from ProbS-FEM simulation. A simple model for embedded cracked structure was shown in this paper. Crack propagation of the embedded crack was analyse using deterministic S-version Finite Element Model and ProbS-FEM. Comparison between those two methods were investigated in this paper.

Keywords: Embedded Crack, S-FEM, ProbS-FEM