몬테카를로 모사에 의한 고온 요소의
크리프 균열성장 파손확률 평가

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Evaluation of Creep Crack Growth Failure Probability
for High Temperature Components Using Monte Carlo Simulation

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Key Words: Creep Crack Growth(크리프 균열성장), Probabilistic Fracture Mechanics(확률론적 파괴역학), Monte Carlo Simulation(몬테카를로 모사), Residual Life Prediction(잔여수명 예측), High Temperature(고온)

Abstract : A procedure of estimating failure probability is demonstrated for a pressurized pipe of Cr-Mo steel used at 538°C. Probabilistic fracture mechanics were employed considering variations of pressure loading, material properties and geometry. Distributions of the major variables were reflected in Monte Carlo simulation by statistical analyses of implemented data obtained by previous experiments. Failure probability as a function of operating time was determined. Sensitivity analysis for each input variable was also conducted to understand the most influencing variables to the residual life analysis.

화력발전 플랜트의 정량적 RBI 기법 개발을 위한 FTA 평가

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Assessment of FTA for Quantitative RBI for Fossil Power Plant

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Key Words: RBI(Risk Based Inspection / 위험도 기반 검사), FTA(Fault Tree Analysis / 이상 트리 분석), Fossil Power Plant(화력발전 플랜트), Quantitative(정량적)

Abstract: The estimation of PoF(Probability of Failure) and CoF(Consequence of Failure) are very necessary for the development of quantitative RBI(Risk based Inspection) method which is suitable in the fossil power plant. There are many approach for the estimation of PoF and CoF such as plant specific data, plant specific data merged with generic data, Generic data augmented by expert opinion, FTA(Fault Tree Analysis), ETA(Event Tree Analysis), etc. In this study, we tried FTA approach for boiler unit of the fossil power plant.