

정지 저출력 운전시 소형 냉각재상실사고 민감도 분석

윤덕주[†] · 정광국*(한전 전력연구원)**Sensitivity Analysis for Small Break Loss of Coolant Accident at Shutdown and Low-Power Operation.**

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Key Words: LOCA(냉각재상실사고), PORV(과압보호밸브), PZR(가압기), PWR(가압경수로)

Abstract : Various small-break loss-of-coolant accident (LOCA) analyses, including the pressurizer (PZR) power-operated relief valves (PORVs) stuck-open accidents and the recovery actions in a pressurized water reactor (PWR) during shutdown operations, were performed in this paper. This research aims to verify the effectiveness of the emergency operating procedure (EOP) and of the emergency core-cooling system (ECCS) on reactor safety during shutdown operations. The break sizes were from 0.0254 m to 0.3 m in diameter, which is equivalent to the diameter of the branch pipe of the plant's reactor coolant system. The analysis results indicate that a high-pressure safety injection (HPSI) should be administered manually within 15 minutes to meet the ECCS design criteria in a LOCA during shutdown operations.

구동기의 웜 기어 결함에 대한 연구

박성근* · 이도환[†](한전 전력연구원) · 정성희** · 채장범**(아주대)**A Study on the Worm Gear Deficiencies in MOV Actuators**

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Key Words : MOV(모터구동밸브), Deficiency(결함), Worm Gear(웜 기어), Wear(마모), Breakage(파손), Motor Torque Signature(모터 토크 신호)

Abstract : An MOV(Motor Operated Valve) is a valve system which is operated by an electric motor. The actuator in an MOV is composed of a motor, a worm, a worm gear and bearings. Deficiencies of these components affect the performance of MOVs. Therefore detecting the faults of components before their breaks will contribute greatly to the safe operation of power plants. However it is very difficult to inspect the components without disassembly. In this paper, we diagnose the worm gear by examining motor torque signature, since the condition of the worm gear is related to the motor torque signature. We tested a worm gear and broken teeth. The rotating parts such as the valve shaft was checked additionally. For the tests, a simulator was designed and manufactured.