

## LSVF 혼합날개를 장착한 17 X17 봉다발의 열유동 해석

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### Study on the optimization of mixing vane for LSVF(Large Scale secondary Vortex Flow) in 17 X17 rod bundle

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**Key Words:** Rod bundle(연료봉), Subchannel(부수로), LSVF(대형 이차 와류 유동)

**Abstract :** Cross-flow of the sub-channel of nuclear reactor makes high thermal energy transfer from rod bundle to the flow and prohibits hot spot production which can induces thermal crack of rod bundle. To produce more cross-flow, various types of mixing vane were investigated. In this study, LSVF mixing vane in 17x17 rod bundle is simulated. RSM(Reynolds Stress Model) solver in FLUENT code is used. Mixing vanes decrease maximum temperature in rod and increase cross-sectional turbulence intensity. Comparison of LSVF mixing vanes with Split mixing vanes shows each characteristics.

## 지열-태양열원 복합이용시스템의 연간 성능평가에 관한 연구

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### A Study on the Annual Performance of Hybrid Energy System with Ground and Solar Heat Source

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**Key Words:** Geothermal heat pump(지열 히트펌프), Solar energy(태양에너지), Hybrid energy system(복합에너지시스템), Coefficient of Performance(성적계수)

**Abstract :** This study summarizes the performance of a hybrid energy system with ground and solar heat source for hot water, space heating and cooling of test house. The system was commissioned in August 2004 and the performance tests have been carried out since then. From the annual experiment, the average cooling and heating coefficient of performance of hybrid energy system are measured as 4.5 and 3.8, respectively. And the average annual efficiency of solar hot water supply system is measured as about 35 percent. The energy supply characteristics of the hybrid energy system met the cooling and heating load of the test house efficiently.