

고든형 열유속 센서의 민감도 관련 인자에 대한 수치 해석적 연구

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Parametric Study for Sensitivity of Gardon Gage Type Heat Flux Sensor Using the Numerical Analysis

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Key Words : heat flux sensor(열유속센서), sensitivity(민감도)

Abstract : The sensitivity of Gardon gage type HFS(heat flux sensor) is affected by some factors that are changeable by fabrication. We investigated effects of parameters on HFS using the numerical analysis. Fluent 6.2 was used for the numerical simulation. The sensitivity and thermal characteristics of the sensor corresponding to four parameters such as constantan foil thickness, copper wire diameter, copper wire position, and coolant velocity were analyzed. The results showed that the change of constantan foil thickness caused a dominant effect on sensitivity of the Gardon gage type HFS, however the others made relatively nominal effects.

수직관 내 비응축가스 존재 하에서의 층류 막응축에 관한 수치적 해석

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Analysis of the Laminar Film Condensation in Presence of a Noncondensable Gas in a Vertical Tube

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Key Words: Laminar Film condensation(층류 막응축), Noncondensable Gas(비응축가스), Vertical Tube(수직관)

Abstract : A theoretical model has been developed to study the local heat transfer coefficient of a condensing vapor in the presence of a noncondensable gas inside a vertical tube. The gas/vapor mixture side is modeled using the analogy between heat and mass transfer. Interface roughness, developing flow, and suction effect are considered. In the laminar liquid film side, a comparative study of the condensate mass flow rate and the heat transfer coefficient has been made with various film thickness models, film heat transfer models, and friction factor correlations. The best models will be used to the analysis of the PRHRS condensation heat exchanger in a SMART.