

실린더를 포함한 2차원 Lid-Driven 캐비티 내의 유동과 열전달에 관한 수치해석

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Numerical Study on fluid flow and heat transfer inside 2-D Lid-Driven Cavity with a moving cylinder

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Key Words: Immersed boundary method(가상경계법), Lid-Driven Cavity(캐비티유동)
Heat transfer(열전달), Oscillation(진동)

Abstract : The Numerical simulation of steady two dimensional flow with heat transfer in lid-driven cavity with moving cylinder. The validation of lid-driven cavity flow is done using the immersed boundary method and obtained for configuration with a Reynolds number up to 1000 with oscillating or stationary cylinder. Thus frequencies of cylinder are primary variables that based on lid velocity and total length of cavity, $Fo=0.25$. Results are compared with those in the literature. and they are in good agreement. Heat transfer from cylinder to fluid is increased when the cylinder oscillates.

코안다 효과를 이용한 제트 특성에 관한 연구

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A Study on the Jet Characteristic by Using of Coanda Effect in Constant Expansion Rate Nozzle

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Key Words: Coanda Effect(코안다 효과), Constant Expansion(균일 팽창), Convergent Nozzle(축소 노즐), Pressure Drop(압력 강하), Subsonic Flow(아음속 유동).

Abstract : Jets issuing from a conventional nozzle and convergent nozzles of a constant expansion rates and a certain normal using an annular slit are compared to investigate the characteristics of the 3 jets. In experiments, to compare the characteristics between jets, the nozzle exit mean velocity is fixed as 90m/s. The pressures along the jet axis and radial directions is measured by scanning valve system moving with 3-axis auto-traverse unit, and the velocity distribution can be obtained by calculation from the measured static and total pressures. To obtain the highly stable and convergency jets, a nozzle has to be designed with an annular slit connected to an conical cylinder, furthermore, the flow through a constant expansion rate nozzle using annular slit is the most probable. And the pressure drop along the nozzle for the constant expansion rate nozzle is small.