

엔진 윤활용 제로터 오일펌프 유동해석

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Numerical simulation in the engine lubricating gerotor oil pump

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Key Words: Gerogor, oil pump, cavitation, CFD

Abstract : Numerical simulations were conducted on the gerotor type oil pump. Three oil pump models having different port and groove shape were considered. Firstly, two original models (baseline & variant.1 model) were simulated in order to validate the accuracy of the simulation results and to better understand the flow characteristics in the pump. It was found that the cavitation phenomenon as well as the teeth tip leakage is most important parameter on the pump performance. Based on simulation results of the original models, final model (variant.2 model) which have improved port shape and pressure relief valve is suggested to enhance pump performance and to reduce driving torque. The volumetric efficiency and the hydraulic torque of the Variant.2 model is improved 4% and reduced 6.1% each at 2000RPM in experiment.

오리피스 유량계의 유량헌팅 원인파 특성파 관한 해석적 연구

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The Numerical Analysis about the Flow-Hunting Characteristics of the Orifice Meter

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Key Words: Orifice Meter(오리피스 유량계), Flow Hunting(유량 헌팅), Pressure Difference(차압)

Abstract : Generally, the flow hunting is observed in almost all of the orifice meters but the intensity of the flow hunting is different at each metering system. So, we are getting the questions as follows; why such a difference occurs and whether it influence to metering error rate or not. To investigate the flow hunting characteristics, we are trying to examine the flow characteristics around the orifice meter when the transient flow or pressure is generated at after the PCV(Pressure Control Valve) by 3D CFD method. And we have compared numerical results with experimental results at M - PCV station in order to clarify the relations with both the metering-pipeline diameter and flow rate. Finally, we can show some major factors influencing to the flow hunting and propose some correcting scheme of the flow hunting equation.