

케스캐이드 날개 후단소음 특성에 관한 연구

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A Study on Trailing Edge Noise from a Blade Cascade in a Uniform Flow

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Key Words :Broadband Frequency Noise, Trailing Edge, Cascade, Sirocco Fan

Abstract : It is addressed that the turbulent broadband sound power from a sirocco fan can be modeled by the trailing edge noise. The trailing edge noise is usually influenced by inflow turbulence, separation, and boundary layer on the blade. The design parameters such as solidity(c/s) and stagger angle are specified to predict performance and noise level because the separation and slip velocity are strongly affected by them along with the flow coefficient. This paper reports the effects of the solidity and the stagger angle upon the trailing edge noise with respect to the trailing edge shape from the circular arc-shaped blade of sirocco

비정상 점성 유동 해석에 의한 부등피치 횡류팬의 이산소음 주파수 변조 특성 예측

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Prediction of Frequency Modulation of Discrete Noise for Random Pitch Cross-Flow Fans by Unsteady Viscous Flow Computations

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Key Words : Cross-Flow Fan(횡류팬), Discrete Noise(이산소음), Frequency Modulation(주파수 변조), Random Pitch Fan(부등피치 팬), Unsteady Flow Computation(비정상 유동 해석), Noise Modeling(소음 모델링)

Abstract : Unsteady flow characteristics and associated blade tonal noise of a cross-flow fan are predicted by a computational method. The incompressible Navier-Stokes equations are time-accurately solved for obtaining the pressure fluctuations between the rotating blades and the stabilizer, and sound pressure is predicted using Curle's equation. The computed fan performance is favorably compared with experimental data, and also indicates that the performance is not significantly altered by the random pitch effect at $\phi > 0.4$. In the present study, the narrow-band noise characteristics of three impellers with a uniform and two random pitch (type-A and -B) blades are compared by the SPL (Sound Pressure Level) spectra, and their frequency modulation characteristics of the BPF (Blade Passing Frequency) noise are also discussed.