굽힘파 신호의 연속 웨이블렛 변환을 이용한 결함 크기 평가

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Damage Size Estimation by the Continuous Wavelet Transform of Bending Wave Signals

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Key Words : magnetostriction, non-contact, bending wave, diagnosis, Timoshenko

Abstract : This work is concerned with the damage size estimation by using propagating benging wave signals in a beam. To this end, we apply the continuous wavelet transforms to the incident waves and the reflected waves from a small damage in a long cylindrical beam. In particular, we propose to use the relative magnitudes of the two kinds of waves along the ridges in the wavelet transformed time-frequency planes. In this work, we apply the present technique to the signals measured by non-contact magnetostrictive sensors, and show that the present results agree well with the theoretical prediction by the Timoshenko beam theory and the experimental results obtained from strain gages.

KSR-III Rocket 종합 추진 시험 설비에서 발생한 열-음향학적 진동의 특성

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The characteristics of thermo-acoustic oscillation happened at PTA-II of KSR-III rocket

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Key Words : thermoacoustic oscillation, liquid rocket engine, propulsion test facility

Abstract : Thermoacoustic oscillation, which stems from phase correlation between unsteady heat release and acoustic fluctuation, can cause severe vibration and incite the excessive local heat transfer inside the rocket engine. It is very important to understand and prevent this phenomenon in the way of rocket engine developement. In this study, the propulsion test facility of KSR-III, which is the first liquid propellant rocket developed by KARI, will be introduced, and the characteristics of thermoacoustic ocillation occurred at the facility will be examined.