

유연보의 과도 진동 감쇠를 위한 점탄성 재료의 최적 분포

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Optimal Distribution of Viscoelastic Material for Transient Vibration Suppression of a Flexible Beam

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Key Words : Viscoelastic damping, GHM model, Eigenvalue sensitivity, Unconstrained damping treatment

Abstract : Eigenvalues are taken as performance criteria for structural damping design using viscoelastic material. Given material properties, optimal distribution of damping material is sought based on eigenvalue sensitivity. For eigenanalysis of frequency dependent viscoelastic material treated structures, Golla-Hughes-McTavish(GHM) model is used and some dominant modes are chosen for consideration. To ease the intensity of computation caused by increased problem size, an approximate method is proposed which uses elastic modes and can be applied under small damping assumption. A cantilever beam treated with unconstrained viscoelastic layer is tested and optimal distribution of thickness of the layer is illustrated. Partial coverage configurations are compared with the one-sided full coverage case.

기어 박스에서의 베어링 결함 진단

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Bearing Fault Diagnostics in a Gearbox

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Key Words : Bearing diagnostics, self adaptive noise cancellation, envelope analysis

Abstract : Bearing diagnostics is difficult in a gearbox because bearing signals are masked by the strong gear signals. Self adaptive noise cancellation(SANC) is useful technique to separate bearing signals from gear signals. While gear signals are correlated with a long correlation length, bearing signals are not correlated with a short length. SANC separates two components on the basis of correlation length. Then we can find defect frequency component in the envelope spectrum of the bearing signals.