Vibration of Thin Steel Plate Under Magnetic Field Using Permanent Magnets

by

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Abstract

In this study, the vibration of a thin steel plate under a magnetic field using permanent magnets was examined. In particular, the effects of the polarity and arrangement of the magnets were considered.   On the basis of the result of the basic study using a single-degree-of-freedom model, a steel plate was examined.   The attractive force of the permanent magnets was analyzed by the finite element method, and the vibration of the steel plate was calculated by the finite difference method. To verify the usefulness of a permanent magnet system, experiments were performed on a steel plate. As a result, it was confirmed that the permanent magnets could increase the damping factor of the vibration of the steel plate.

Keywords: Permanent Magnet, Arrangement of Magnets, Steel Plate, Aluminum Plate, Damping, FEM

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