

# **EFFECT OF VIBRATION DAMPING COATINGS ON VIBRATION PROPERTIES IN LOW FREQUENCY**

**Lt Cdr V P Singh Chib & Lt Cdr Anuj Sharma (DDND, IHQ MOD(N)DND SSG, New Delhi)**

This paper is an attempt made to clearly identify and define the effect of vibration damping coatings and its importance aboard naval platforms towards stealth and deterioration of hull. This study is aimed to experimentally determine the vibration damping capacity of various coating materials and their effect on vibrations. As a preliminary investigation, Finite Element and analytical modelling has been carried out to determine the length of specimen, so that its corresponding resonant frequencies fall within the required frequency range. Abaqus/CAE 6.14-1 is used for Finite element modelling of the beam specimen required for the experiments. Mild Steel (MS) of cross-section 24mm x 03mm is used as base metal for test specimens, on which different combination of composite layers are applied. An epoxy based High Damping Material (HDM), Neoprene rubber, Random Glass Fibre Mat with Epoxy (Araldit CY 230-1), are used individually and in different combinations, to make 13 test specimens. The test specimens are tested in a cantilevered boundary condition. Response of each test specimen is obtained using a Laser vibrometer. Free decay method is used to conduct experiment and damping ratio is calculated at each mode using log decrement method. Results of the damping test for each of the HDM coated, composite coated and Glass Fibre mat coated test specimen exhibits a marked increase in damping capacity from that of uncoated test specimen. This study has enabled us to find out the effect of different coating materials and layer thicknesses on the overall damping capacity of a system.

Key words :-

HDM; DAQ; FFT; Dampling; Coatings;