ACTIVE VIBRATION REDUCTION OF COMPOSITE BEAM

Kundan Mishra

Asst. Professor, Dept. of Mechanical Engineering
MITAOE, Alandi,
Pune-412105, Maharashtra, India.
mishrakp18@gmail.com
K.M Markad
Asst. Professor Dept. of Mechanical Engineering
P.D.V.V.P. College of Engineering
Vilad Ghat, Ahmednagar-414111, Maharashtra, India.
k_markad@rediffmail.com

ABSTRACT

High levels of vibration and noise are key issues of concern for various application of Mechanical Engineering. Active vibration control is defined as a technique in which the vibration of a structure is reduced or controlled by applying counter force to the structure that is appropriately out of phase but equal in amplitude to the original vibration. A smart composite box beam model is developed to find flap deflection, lag deflection & twist .Due to application of voltage on smart composite box beam strain produced in the form of flap deflection, lag deflection & twist. The procedure is implemented using finite element method. Proof of concept of piezoelectric effect and vibration reduction of a cantilever beam by application of voltage on PZT patch is also demonstrated experimentally.

WEAR RATE ANALYSIS OF HYDRODYNAMIC JOURNAL BEARING

Vijay Guleria & Harbansh Sen
Assistant Professor,
Department of Mechanical Engineering.
TRAMIET, Tanda, Mandi (Himachal Pradesh) India
Vijay.guleria287@gmail.com
harbanshsingh9999@gmail.com

ABSTRACT

Friction and wear always occur at machine parts which run together. This affects the efficiency of machines negatively. Hydrodynamic journal bearings are widely used in industry because of their simplicity, efficiency and low cost. Wear due to relative motion between component surfaces is one of the primary modes of failure for many engineered systems. Unfortunately, it is difficult to accurately predict component life due to wear as reported wear rates generally exhibit large scatter. An attempt has been made to study the influence of wear parameters like load, speed, type of lubricant used, temperature, and viscosity of lubricant. The main objective of the study is to evaluate the wear rate of different journal bearing materials (brass and white metal) under similar conditions. The materials are tested in dry and wet lubrication under similar operating conditions. For this purpose we use Pin-on-disc apparatus. It was found that the wear rate of both materials is more in dry conditions compared to lubricated conditions (when tested under similar working conditions). We also found that wear rate of white metal is more as compared to brass and higher frictional force is observed in case of the brass material.