

The Cracks Propagation Monitoring of a Cantilever Beam Using Modal Analysis

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Abstract : Cantilever beam is a simplified sample of a lot of mechanical components used in a wide range of applications, including many industries such as gas turbine blade. Due to the nature of the operating conditions, beams are subject to variety of damages especially crack propagates. Crack propagation may lead to catastrophic failure during operation. Therefore, online detection of crack presence and its propagation is very important and may reduce possible significant cost of the whole system failure. This paper aims to investigate the effect of cracks presence and crack propagation on one end fixed beam's vibration. A finite element model will be developed for the blade in which the modal response of the structure with and without crack will be studied.

Keywords : blade, crack propagation, health monitoring, modal analysis

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