

Health of Riveted Joints with Active and Passive Structural Health Monitoring Techniques

Authors : Javad Yarmahmoudi, Alireza Mirzaee

Abstract : Many active and passive structural health monitoring (SHM) techniques have been developed for detection of the defects of plates. Generally, riveted joints hold the plates together and their failure may create accidents. In this study, well known active and passive methods were modified for the evaluation of the health of the riveted joints between the plates. The active method generated Lamb waves and monitored their propagation by using lead zirconate titanate (PZT) disks. The signal was analyzed by using the wavelet transformations. The passive method used the Fiber Bragg Grating (FBG) sensors and evaluated the spectral characteristics of the signals by using Fast Fourier Transformation (FFT). The results indicated that the existing methods designed for the evaluation of the health of individual plates may be used for inspection of riveted joints with software modifications.

Keywords : structural health monitoring, SHM, active SHM, passive SHM, fiber bragg grating sensor, lead zirconate titanate, PZT

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