Title: 3D Scanning Laser Doppler Vibrometer based investigations for identification of defects in honeycomb composite panels

Sponsoring Agency: GE India industrial Pvt Ltd

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Scope/Objectives:

(i) Actuation of composite panels through PZT transducers

(ii) 3D scanning using 3D-SLDV at the required frequency on the specified grid

(iii) Processing and analysis of 3D-SLDV scanning measurements for identification of defects (with comparison to the reference measurements)

(iv) Preparation of the technical report on 3D-SLDV measurements and observations

Objectives Achieved/ Progress made:

In this project, two composite honeycomb panels were tested using the 3D scanning laser Doppler Vibrometer (3D SLDV) to locate the delamination present in the panels. PZT sensors were used to generate the actuation signals at different frequencies ranges from 10 kHz to 500 kHz. The panels were scanned with specified grid size (less than the wavelength/20) for the different frequencies using 3D SLDV. It was found that the multiple delamination locations present in the test panels were able to be identified.

Fig. 1: (a) Experimental setup and (b) Linear composite honeycomb panel

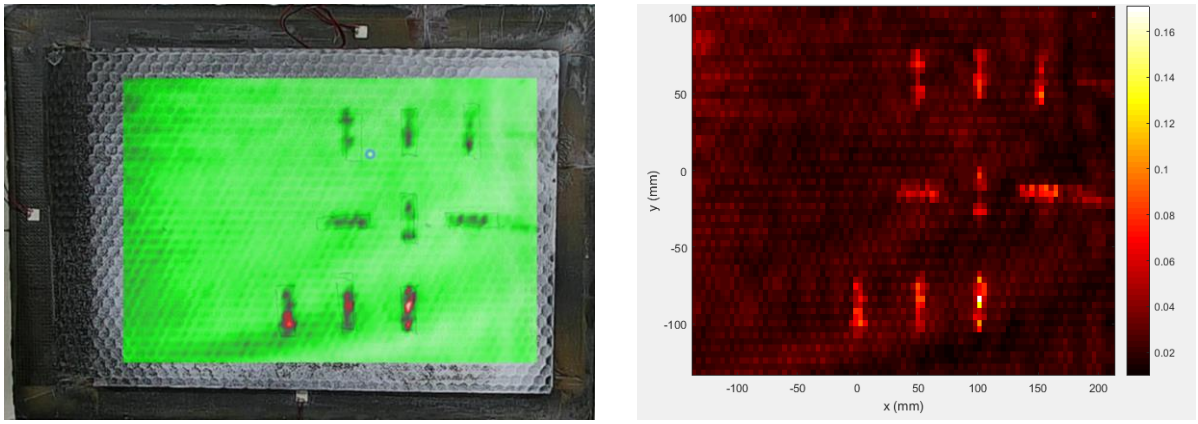

Fig. 2: Identified defect locations through 3D laser Vibrometer scanning (a) RMS plot and (b) weighted RMS plot