

Experimental analysis of thermoplastic composite stiffened panel under compression

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The paper presents the experimental strain and stress analysis of a thermoplastic composite stiffened panel subjected to compression load. The panel has five stringers with a non-symmetric design, with an artificial crack at the middle stringer interface and is made from a fast-crystallizing polyetherketoneketone (PEEK) carbon composite. The experimental strain and stress analysis is based on digital image correlation, and strain gauges measurements and LVDT sensors. The crack subcritical extension was defined and analyzed. The results show that crack propagation starts rather early after buckling and the crack growth behavior is influenced by the buckling shape, which consists of two main modes (with three and four half-waves) in longitudinal direction in each bay.

Keywords: carbon, composites, thermoplastic, stiffened panel, experimental analysis, compression.

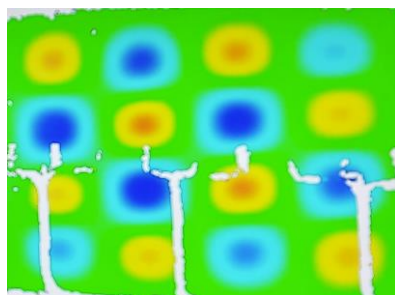


Fig.1 Typical image of the stiffened panel with four half wave buckling shape

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