عنوان مقاله:

Experimental and Numerical Analysis on Compression Properties of Corrugated Core Composite Sandwich Panel

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خلاصه مقاله:

This paper presents experimental and numerical investigation of compression behavior of corrugated core composite sandwich panel (CCCS) subjected to quasi-static loading taking into account the skins made of continuous glass fibers. Sandwich panel structures have been used extensively for different engineering applications. So, the importance of this research is to provide detailed experimental and numerical models of the CCCS under compression test. In this regard, an investigation on the manufacturing method and an evaluation of the mechanical characteristics of the CCCS under compression loads are presented and analyzed. Two CCCS specimens are prepared. The core geometry of the specimens are trapezoidal in shape. The corrugated core were manufactured using an aluminum alloy 6063. The composite skin of the specimens are made of four layers with continuous glass reinforced epoxy composites. The specimens are prepared by wet hand lay-up and cured at room temperature. To evaluate the compression properties of CCCS panel, the compression tests is carried out using a servo–electric H25KS 25 Ton testing machine at loading rate of 0.5 mm/min. Force–displacement and stress–strain diagrams and the calculation of the area under the curves for the specimens are obtained. Furthermore, Finite Element Method (FEM) is proposed to study the numerical analysis of the compression properties of CCCS panel. So, a 3D FE model is built and developed using the ANSYS commercial FE code. The numerical results are in good agreement with the experimental result

کلمات کلیدی:

Experimental analysis, Sandwich panel, Corrugated core, Compression properties.

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