STUDY OF MECHANICAL BEHAVIOUR OF STRUCTURES MANUFACTURED BY 3D PRINTING

[1]ABDELWAHAB ZERROUKI, [2]HOUSSEM FIALA

[1,2]Center of Research in Mechanics CRM-Constantine
Email: [1]4wzerrouki@gmail.com, [2]houssemfiala@gmail.com

Abstract - This study presents an experimental analysis of the mechanical behavior of hybrid honeycomb sandwich's panels manufactured by using 3D printing. This study aims to highlight the influence of the geometry of the constituent cells on the mechanical strength of the overall structure to understand, evaluate and improve the mechanical performance of these structures for various industrial applications. Standardized test specimens in the form of hybrid honeycomb sandwich's panels from have been used two different types of cells, hexagonal honeycomb cells and other reentrant ones. Through the change of the order and the number of the constituent cells, different geometrical configurations obtained were experimented on bending loads following different loading rates, as well as resilience tests in order to evaluate the mechanical resistance in bending and tenacity respectively.

Keywords - Sandwich Panel Structure, Hybrid Honeycomb, 3D Printing, Mechanical Behaviour, Mechanical Resistance.