

Simulation of Non-Crimp 3D Orthogonal Carbon Fabric Composite for Aerospace Applications Using Finite Element Method

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Abstract : Non-crimp 3D orthogonal fabric composite is one of the textile-based composite materials that are rapidly developing light-weight engineering materials. The present paper focuses on geometric and micro mechanical modeling of non-crimp 3D orthogonal carbon fabric and composites reinforced with it for aerospace applications. In this research meso-finite element (FE) modeling employs for stress analysis in different load conditions. Since mechanical testing of expensive textile carbon composites with specific application isn't affordable, simulation composite in a virtual environment is a helpful way to investigate its mechanical properties in different conditions.

Keywords : woven composite, aerospace applications, finite element method, mechanical properties

Conference Title : ICAMAME 2015 : International Conference on Aerospace, Mechanical, Automotive and Materials Engineering

Conference Location : Istanbul, Türkiye

Conference Dates : June 18-19, 2015