Finite Element Analysis of the Delaminated Composite Plates Reinforced by Unidirectional Fibers

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Composite materials play an important role in the machine design. Laminated composites have a lot of advantages but in some cases they show different limitations that are caused by stress concentrations between layers. Discontinuous change of material properties is the reason for occurrence of interlaminar stresses that often cause delamination failure. Delaminations in layered plates and beams have been analysed by using both cohesive damage models and fracture mechanics. Modelling of composite structures by finite element (FE) codes to effectively model delamination failure. Delaminations in layered plates and beams have been analysed by using both cohesive damage and quasi-static fracture data. Improvements to these modelling procedures can be made by using an approach based on fracture mechanics. This approach allows us to predict the growth of a pre-existing crack or defect. A study of modelling delamination using the FE code ANSYS was conducted.

Keywords: Delamination, Composite, Energy Release Rate, FEM, ANSYS

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