

Prediction of thermal shock reliability of thin metal coatings on composites using VCCT techniques

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Abstract

Delamination of a coating layer often occurs in case that thin metal coatings for composites are exposed to thermal shock. In this study, the process for predicting the delamination by thermal shock is investigated. Firstly, adhesive energy is evaluated from the result of DCB(Double Cantilever Beam) test, and then analyzed using FEA with VCCT techniques. Criteria of delamination are established from the results of FEA and fatigue test. Finally, weak points could be observed from the behavior of overall parts. The long-term fatigue life at the weak points is found using submodeling technique.