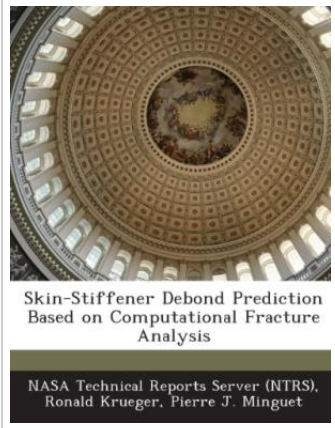

Skin-Stiffener Debond Prediction Based on Computational Fracture Analysis

By Ronald Krueger

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 46 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.Interlaminar fracture mechanics has proven useful for characterizing the onset of delaminations in composites and has been used with limited success primarily to investigate onset in fracture toughness specimens and laboratory size coupon type specimens. Future acceptance of the methodology by industry and certification authorities however, requires the successful demonstration of the methodology on structural level. For this purpose a panel was selected that is reinforced with stringers. Shear loading causes the panel to buckle and the resulting out-of-plane deformations initiate skinstringer separation at the location of an embedded defect. For finite element analysis, the panel and surrounding load fixture were modeled with shell elements. A small section of the stringer foot and the panel in the vicinity of the embedded defect were modeled with a local 3D solid model. Across the width of the stringer foot the mixed-mode strain energy release rates were calculated using the virtual crack closure technique. A failure index was calculated by correlating the results with the mixed-mode failure criterion of the graphiteepoxy material. For small applied loads the failure index is well below one across...

Reviews

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