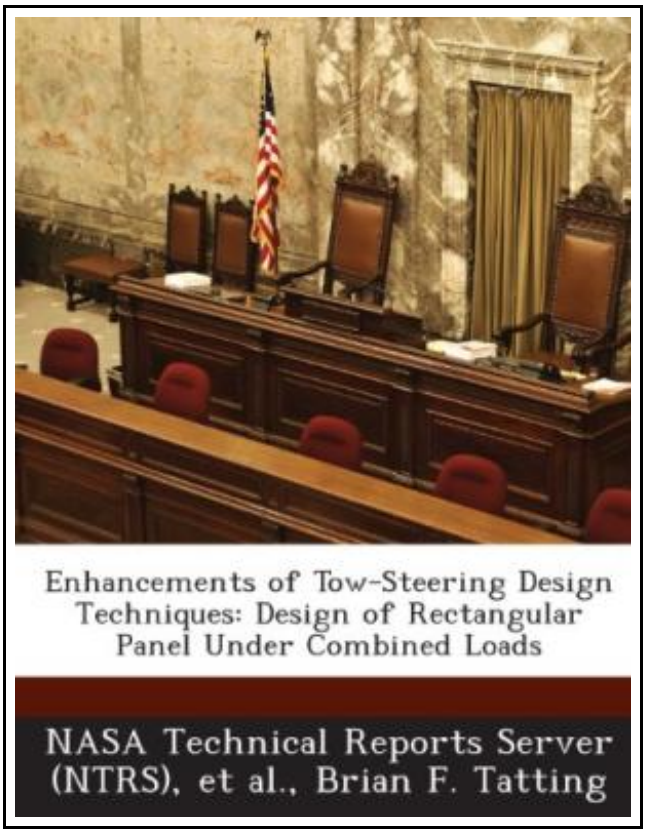
Enhancements of Tow-Steering Design Techniques: Design of Rectangular Panel Under Combined Loads



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Reviews

This written book is great. I am quite late in start reading this one, but better then never. You will not really feel monotony at at any moment of your time (that's what catalogues are for about when you check with me).

(Abe Reichel DDS)

ENHANCEMENTS OF TOW-STEERING DESIGN TECHNIQUES: DESIGN OF RECTANGULAR PANEL UNDER COMBINED LOADS

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 42 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.An extension to existing design tools that utilize tow-steering is presented which is used to investigate the use of elastic tailoring for a flat panel with a central hole under combined loads of compression and shear. The elastic tailoring is characterized by tow-steering within individual lamina as well as a novel approach based on selective reinforcement, which attempts to minimize compliance through the use of Cellular Automata design concepts. The selective reinforcement designs lack any consideration of manufacturing constraints, so a new tow-steered path definition was developed to translate the prototype selective reinforcement designs into manufacturable plies. The minimum weight design of a flat panel under combined loading was based on a model provided by NASA-Langley personnel and analyzed by STAGS within the OLGA design environment. Baseline designs using traditional straight fiber plies were generated, as well as tow-steered designs which incorporated parallel, tow-drop, and overlap plies within the laminate. These results indicated that the overlap method provided the best improvement with regards to weight and performance as compared to traditional constant stiffness monocoque panels, though the laminates did not measure up to similar designs from the literature using sandwich and isogrid constructions. Further design studies were conducted using various numbers of the selective reinforcement plies at the core and outer surface of the laminate. None of these configurations exhibited notable advantages with regard to weight or buckling performance. This was due to the fact that the minimization of the compliance tended to direct the major stresses toward the center of the panel, which decreased the ability of the structure to withstand loads leading to instability. This item ships from La Vergne,TN. Paperback.

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