



Optimization of Blended Wing Body Composite Panels Using Both Nastran and Genetic Algorithm

By Andrew E Lovejoy

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.The blended wing body (BWB) is a concept that has been investigated for improving the performance of transport aircraft. A trade study was conducted by evaluating four regions from a BWB design characterized by three fuselage bays and a 400,000 lb. gross take-off weight (GTW). This report describes the structural optimization of these regions via computational analysis and compares them to the baseline designs of the same construction. The identified regions were simplified for use in the optimization. The regions were represented by flat panels having appropriate classical boundary conditions and uniform force resultants along the panel edges. Panel-edge tractions and internal pressure values applied during the study were those determined by nonlinear NASTRAN analyses. Only one load case was considered in the optimization analysis for each panel region. Optimization was accomplished using both NASTRAN solution 200 and Genetic Algorithm (GA), with constraints imposed on stress, buckling, and minimum thicknesses. The NASTRAN optimization analyses often resulted in infeasible solutions due to violation of the constraints, whereas the GA enforced satisfaction of the constraints and, therefore, always ensured a...

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