



Preliminary Structural Design of Composite Blades for Two- And Three-Blade Rotors (Paperback)

By -

Bibliogov, United States, 2012. Paperback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****.A computerized method has been developed to aid in the preliminary design of composite wind turbine blades. The method allows for arbitrary specification of the chord, twist, and airfoil geometry along the blade and an arbitrary number of shear webs. Given the blade external geometry description and its design load distribution, the Fortran code uses ultimate-strength and buckling-resistance criteria to compute the design thickness of load-bearing composite laminates. The code also includes an analysis option to obtain blade properties if a composite laminates schedule is prescribed. These properties include bending stiffness, torsion stiffness, mass, moments of inertia, elastic-axis offset, and center-of-mass offset along the blade. Nonstructural materials-gelcoat, nexus, and bonding adhesive-are also included for computation of mass. The code includes an option to format the output properties that can be directly input to advanced aeroelastic codes. This report summarizes the structural layout of composite laminates within the blade, the design approach, and the computational process. Finally, we present the results of two composite blades designed using this code in support of a project covering comparison of two- and three-blade rotors for a hypothetical...



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