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Multi-Objective Optimization of a Turbofan for an Advanced, Single-Aisle Transport

By Jeffrey J. Berton

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 30 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.Considerable interest surrounds the design of the next generation of single-aisle commercial transports in the Boeing 737 and Airbus A320 class. Aircraft designers will depend on advanced, next-generation turbofan engines to power these airplanes. The focus of this study is to apply single- and multi-objective optimization algorithms to the conceptual design of ultrahigh bypass turbofan engines for this class of aircraft, using NASA s Subsonic Fixed Wing Project metrics as multidisciplinary objectives for optimization. The independent design variables investigated include three continuous variables: sea level static thrust, wing reference area, and aerodynamic design point fan pressure ratio, and four discrete variables: overall pressure ratio, fan drive system architecture (i. e. , direct- or gear-driven), bypass nozzle architecture (i. e. , fixed- or variable geometry), and the high- and low-pressure compressor work split. Ramp weight, fuel burn, noise, and emissions are the parameters treated as dependent objective functions. These optimized solutions provide insight to the ultrahigh bypass engine design process and provide information to NASA program management to help guide its technology development efforts. This item ships from La Vergne,TN. Paperback.

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