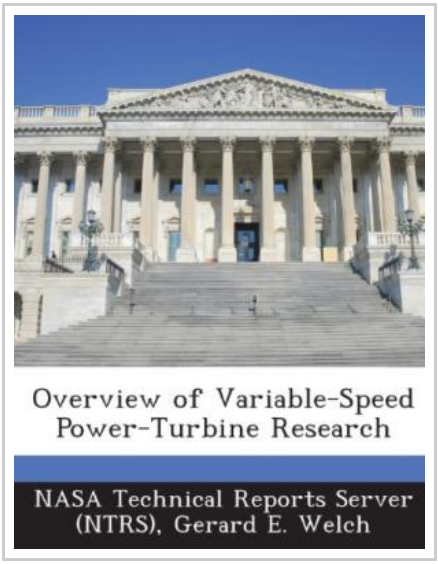

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Overview of Variable-Speed Power-Turbine Research (Paperback)

By Gerard E Welch

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.The vertical take-off and landing (VTOL) and high-speed cruise capability of the NASA Large Civil Tilt-Rotor (LCTR) notional vehicle is envisaged to enable increased throughput in the national airspace. A key challenge of the LCTR is the requirement to vary the main rotor speeds from 100 at take-off to near 50 at cruise as required to minimize mission fuel burn. The variable-speed power-turbine (VSPT), driving a fixed gear-ratio transmission, provides one approach for effecting this wide speed variation. The key aerodynamic and rotordynamic challenges of the VSPT were described in the FAP Conference presentation. The challenges include maintaining high turbine efficiency at high work factor, wide (60 deg.) of incidence variation in all blade rows due to the speed variation, and operation at low Reynolds numbers (with transitional flow). The PT -shaft of the VSPT must be designed for safe operation in the wide speed range required, and therefore poses challenges associated with rotordynamics. The technical challenges drive research activities underway at NASA. An overview of the NASA SRW VSPT research activities was provided. These activities included conceptual...

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