



Aircraft Engine On-Line Diagnostics Through Dual-Channel Sensor Measurements: Development of an Enhanced System

By -

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 26 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. In this paper, an enhanced on-line diagnostic system which utilizes dual-channel sensor measurements is developed for the aircraft engine application. The enhanced system is composed of a nonlinear on-board engine model (NOBEM), the hybrid Kalman filter (HKF) algorithm, and fault detection and isolation (FDI) logic. The NOBEM provides the analytical third channel against which the dual-channel measurements are compared. The NOBEM is further utilized as part of the HKF algorithm which estimates measured engine parameters. Engine parameters obtained from the dual-channel measurements, the NOBEM, and the HKF are compared against each other. When the discrepancy among the signals exceeds a tolerance level, the FDI logic determines the cause of discrepancy. Through this approach, the enhanced system achieves the following objectives: 1) anomaly detection, 2) component fault detection, and 3) sensor fault detection and isolation. The performance of the enhanced system is evaluated in a simulation environment using faults in sensors and components, and it is compared to an existing baseline system. This item ships from La Vergne, TN. Paperback.



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