



## Broadband Noise Reduction of a Low-Speed Fan Noise Using Trailing Edge Blowing

By Daniel L Sutliff

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.An experimental proof-of-concept test was conducted to demonstrate reduction of rotor-stator interaction noise through the use of rotor-trailing edge blowing. The velocity deficit from the viscous wake of the rotor blades was reduced by injecting air into the wake from a continuous trailing edge slot. Hollow blades with interior guide vanes create flow channels through which externally supplied air flows from the blade root to the trailing edge. A previous paper documented the substantial tonal reductions of this Trailing Edge Rotor Blowing (TERB) fan. This report documents the broadband characteristics of TERB. The Active Noise Control Fan (ANCF), located at the NASA Glenn Research Center, was used as the proof-of-concept test bed. Two-component hotwire data behind the rotor, unsteady surface pressures on the stator vane, and farfield directivity acoustic data were acquired at blowing rates of 1.1, 1.5, and 1.8 percent of the total fan mass flow. The results indicate a substantial reduction in the rotor wake turbulent velocity and in the stator vane unsteady surface pressures. Based on the physics of the noise generation, these indirect measurements...



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