Comparison of Far-Field Noise for Three Significantly Different Model Turbofans

By Richard P Woodward

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.Far-field noise sound power level (PWL) spectra and overall sound pressure level (OASPL) directivities were compared for three significantly different model fan stages which were tested in the NASA Glenn 9 15 Low Speed Wind Tunnel. The test fans included the Advanced Ducted Propulsor (ADP) Fan1, the baseline Source Diagnostic Test (SDT) fan, and the Quiet High Speed Fan2 (QHSF2). These fans had design rotor tangential tip speeds from 840 to 1474 ft/s and stage pressure ratios from 1.29 to 1.82. Additional parameters included rotor-stator spacing, stator sweep, and downstream support struts. Acoustic comparison points were selected on the basis of stage thrust. Acoustic results for the low tip speed/low pressure ratio fan (ADP Fan1) were thrust-adjusted to show how a geometrically-scaled version of this fan might compare at the higher design thrust levels of the other two fans. Lowest noise levels were typically observed for ADP Fan1 (which had a radial stator) and for the intermediate tip speed fan (Source Diagnostics Test, SDT, R4 rotor) with a swept stator. Projected noise levels for the ADP fan to...

Reviews

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