



Measurements of Infrared and Acoustic Source Distributions in Jet Plumes

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 24 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. The aim of this investigation was to use the linear phased array (LPA) microphones and infrared (IR) imaging to study the effects of advanced nozzle-mixing techniques on jet noise reduction. Several full-scale engine nozzles were tested at varying power cycles with the linear phased array setup parallel to the jet axis. The array consisted of 16 sparsely distributed microphones. The phased array microphone measurements were taken at a distance of 51.0 ft (15.5 m) from the jet axis, and the results were used to obtain relative overall sound pressure levels from one nozzle design to the other. The IR imaging system was used to acquire real-time dynamic thermal patterns of the exhaust jet from the nozzles tested. The IR camera measured the IR radiation from the nozzle exit to a distance of six fan diameters ($XD_{sub FAN} 6$), along the jet plume axis. The images confirmed the expected jet plume mixing intensity, and the phased array results showed the differences in sound pressure level with respect to nozzle configurations. The results show the effects of changes in configurations to...

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