

Nozzle Aerodynamic Stability During a Throat Shift

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By Edwin J Kawecki, Gregg L Ribeiro

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English. Brand New Book \*\*\*\*\*\* Print on Demand \*\*\*\*\*\*. An experimental investigation was conducted on the internal aerodynamic stability of a family of two-dimensional (2-D) High Speed Civil Transport (HSCT) nozzle concepts. These nozzles function during takeoff as mixer-ejectors to meet acoustic requirements, and then convert to conventional high-performance convergent-divergent (CD) nozzles at cruise. The transition between takeoff mode and cruise mode results in the aerodynamic throat and the minimum cross-sectional area that controls the engine backpressure shifting location within the nozzle. The stability and steadiness of the nozzle aerodynamics during this so called throat shift process can directly affect the engine aerodynamic stability, and the mechanical design of the nozzle. The objective of the study was to determine if pressure spikes or other perturbations occurred during the throat shift process and, if so, identify the caused mechanisms for the perturbations. The two nozzle concepts modeled in the test program were the fixed chute (FC) and downstream mixer (DSM). These 2-D nozzles differ principally in that the FC has a large over-area between the forward throat and aft throat locations, while the DSM has an over-area of...



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