



## A Multidisciplinary Approach to Mixer-Ejector Analysis and Design (Paperback)

By Eric S Hendricks

Bibliogov, United States, 2013. Paperback. Condition: New. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*. The design of an engine for a civil supersonic aircraft presents a difficult multidisciplinary problem to propulsion system engineers. There are numerous competing requirements for the engine, such as to be efficient during cruise while yet quiet enough at takeoff to meet airport noise regulations. The use of mixer-ejector nozzles presents one possible solution to this challenge. However, designing a mixer-ejector which will successfully address both of these concerns is a difficult proposition. Presented in this paper is an integrated multidisciplinary approach to the analysis and design of these systems. A process that uses several low-fidelity tools to evaluate both the performance and acoustics of mixer-ejectors nozzles is described. This process is further expanded to include system-level modeling of engines and aircraft to determine the effects on mission performance and noise near airports. The overall process is developed in the OpenMDAO framework currently being developed by NASA. From the developed process, sample results are given for a notional mixer-ejector design, thereby demonstrating the capabilities of the method.



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