

عنوان مقاله:

Numerical Study of Changes in Length-to-Diameter Ratio of a Cylindrical Diffuser, Used in a Vacuum Test Stand

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خلاصه مقاله:

The vacuum test stand simulates the space systems' engines with a high expansion ratio at high altitudes and vacuum pressure for static tests. This article investigates the flow stability in the diffuser to use in a vacuum stand. Several variables are essential in the operation of this system, including the diffuser length, the location of the nozzle relative to the diffuser, the dimensions of the vacuum chamber, and the diffuser length-to-diameter ratio. In this numerical study, the diffuser length-to-diameter ratio is investigated applied at different pressures by the rocket engine to the stand. These results are performed in three length-to-diameter ratios of 6, 8, and 10, and the applied pressure varies from 30 to 50 bar. With an increase in the geometric ratio of diffuser length-to-diameter, stable conditions can be created in the diffuser at lower applied pressures.

کلمات کلیدی:

Vacuum Test Stand, Stable Pressure Ratio, Diffusion Length, Vacuum Chamber

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