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International Journal of Recent Technology and Engineering

Volume 8, Issue 2 Special issue 3, July 2019, Pages 953-958

Effect of area ratio on base pressure and control effectiveness (Article) [\(Open Access\)](#)

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Abstract

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Reducing the base drag and increasing the base pressure from aerodynamic devices involving suddenly expanded flows is of vital importance due to the higher rate of drag associated with them. The experimental effort put into understanding the variation in base pressure using active control of suddenly expanded flows employing microjets is reported in this article. The effect of tiny jets and nozzle pressure ratio (NPR), and length to diameter (L/D) ratio on the percentage change in base pressure is investigated at supersonic Mach numbers at 1.7, 2.3, and 2.7, for area ratios of 2.56, 5.06, and 7.56. Apart from NPR, the L/D ratio has an influential role in percentage change in base pressure at different Mach numbers. An improvement of up to 360% in base pressure is obtained with the use of sonic micro jets at a particular Mach number and L/D ratio. © BEIESP.

Author keywords

[Active control](#)
[Area ratio](#)
[Expanded flows](#)
[Mach number](#)
[Microjets](#)

ISSN: 22773878

Source Type: Journal

Original language: English

DOI: 10.35940/ijrte.B1179.07825319

Document Type: Article

Publisher: Blue Eyes Intelligence Engineering and Sciences Publication

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