

< Back to results | 1 of 1

Export Download Print E-mail Save to PDF Add to List More... >

View at Publisher

2018 IEEE 5th International Conference on Engineering Technologies and Applied Sciences, ICETAS 2018

28 January 2019, Article number 8629196
5th IEEE International Conference on Engineering Technologies and Applied Sciences, ICETAS 2018; AIT Conference CenterBangkok; Thailand; 22 November 2018 through 23 November 2018; Category numberCFP18N08-ART; Code 144743

A Comparison of the Effect of Single and Multiple Cavities on Base Flows (Conference Paper)

Asadullah, M.^a, Khan, S.A.^a, Soudagar, M.E.M.^b, Vaishak, T.R.^b

^aDepartment of Mechanical Engineering, International Islamic University Malaysia, Gombak, Kuala Lumpur, 53100, Malaysia

^bDepartment of Mechanical Engineering, University of Malaya, Mangalore, Kuala Lumpur, 50603, Malaysia

Abstract

View references (24)

The paper represents a novel approach to understand the effect of single and multiple cavities on base pressure. We considered a control plate of 1 mm thick between a square nozzle of the cross-sectional area of 100 mm² and square duct of the cross-sectional area of 625 mm². Both single and multiple cavities results are compared for a different level of expansion. The nozzle pressure ratio taken are 1.27, 1.33, 1.53 and 1.7. The high-speed compressible subsonic nozzle is being used with internal flow apparatus to achieve flows ranging between Mach 0.6 to Mach 0.9. The comparison between single and multiple cavities are shown graphically with and without control. The multiple cavities were found to be more effective as compared to a single cavity for controlling the base pressure. © 2018 IEEE.

SciVal Topic Prominence ⓘ

Topic: Pressure | Nozzles | micro jets

Prominence percentile: 32.217 ⓘ

Author keywords

Base pressure Mach number Nozzle pressure ratio Passive control

Indexed keywords

Engineering controlled terms: Aerodynamics Mach number

Engineering uncontrolled terms: Base pressure Control plate Cross sectional area Internal flows Multiple cavities Nozzle pressure ratio Passive control Single cavity

Engineering main heading: Nozzles

Metrics ⓘ

0 Citations in Scopus
0 Field-Weighted Citation Impact



PlumX Metrics
Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:

Set citation alert >
Set citation feed >

Related documents

Active control of base pressure with counter clockwise rotating cylinder at Mach 2
Asadullah, M. , Khan, S.A. , Asrar, W.
(2018) 4th IEEE International Conference on Engineering Technologies and Applied Sciences, ICETAS 2017

Base pressure control by supersonic micro jets in a suddenly expanded nozzle
Khan, S.A. , Chaudhary, Z.I. , Shinde, V.B.
(2018) International Journal of Mechanical and Mechatronics Engineering
Optimization of area ratio and thrust in suddenly expanded flow at supersonic Mach numbers
Pathan, K.A. , Dabeer, P.S. , Khan, S.A.
(2018) Case Studies in Thermal Engineering
View all related documents based on references

References (24)

[View in search results format >](#)☐ All ☐ Export ☐ Print ☐ E-mail ☐ Save to PDF ☐ Create bibliography

-
- ☐ 1 Hsu, T.-R.
(2008) *MEMS and Microsystems: Design, Manufacture, and Nanoscale Engineering: John*. Cited 129 times.
Wiley & Sons
-
- ☐ 2 Asadullah, M., Khan, S.A., Asrar, W., Sulaeman, E.
Low-cost base drag reduction technique

(2018) *International Journal of Mechanical Engineering and Robotics Research*, 7 (4), pp. 428-432. Cited 5 times.
<http://www.ijmerr.com/uploadfile/2018/0709/20180709112530996.pdf>
doi: 10.18178/ijmerr.7.4.428-432

[View at Publisher](#)
-
- ☐ 3 Viswanath, P.R.
Flow management techniques for base and afterbody drag reduction

(1996) *Progress in Aerospace Sciences*, 32 (2-3), pp. 79-129. Cited 61 times.
doi: 10.1016/0376-0421(95)00003-8

[View at Publisher](#)
-
- ☐ 4 Asadullah, M., Khan, S.A., Asrar, W., Sulaeman, E.
Passive control of base pressure with static cylinder at supersonic flow ([Open Access](#))

(2018) *IOP Conference Series: Materials Science and Engineering*, 370 (1), art. no. 012050. Cited 4 times.
<http://www.iop.org/ejproxy.um.edu.my/EJ/journal/mse>
doi: 10.1088/1757-899X/370/1/012050

[View at Publisher](#)
-
- ☐ 5 Asadullah, M., Khan, S.A., Asrar, W.
(2017) *Control of Base Pressure with Variable Location of Clockwise Rotating Cylinder*
-
- ☐ 6 Shih, W.C.L., Wang, C., Coles, D., Roshko, A.
Experiments on flow past rough circular cylinders at large Reynolds numbers

(1993) *Journal of Wind Engineering and Industrial Aerodynamics*, 49 (1-3), pp. 351-368. Cited 141 times.
doi: 10.1016/0167-6105(93)90030-R

[View at Publisher](#)
-
- ☐ 7 Lim, H.-C., Lee, S.-J.
Flow control of circular cylinders with longitudinal grooved surfaces

(2002) *AIAA Journal*, 40 (10), pp. 2027-2036. Cited 65 times.
doi: 10.2514/2.1535

[View at Publisher](#)
-