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‹ Back to results | 1 of 1

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Research onflows for NACA 2412 airfoil using computational fluid dynamics method (Article) (Open Access)

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Abstract

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The comparison between incompressible and compressible flow for aerodynamic coefficients and flow characteristics has been made for NACA 2412 airfoil. The FEM is used to obtain results. The fluid domain of 10C has been constructed to initialize the boundary conditions of incompressible and compressible flow conditions. The structured mesh has been applied in order to achieve accurate results. The Spallart-Allmaras turbulence model has been used to solve both incompressible and compressible flow conditions. The method validation that has been conducted at incompressible flow has shown close agreement between numerical and experimental lift coefficient. From velocity magnitude and static pressure, contours, the compressible flow has the highest-pressure distribution compared to incompressible flow. Therefore, it has been proven that the coefficient of force at ninety degrees to the direction of the flow direction of the airfoil subjected to a variable density flow was much higher compared to incompressible flow. © BEIESP.

SciVal Topic Prominence

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References (37)

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1 Patel, K.S., Patel, S.B., Patel, U.B., Ahuja, P.A.P.
CFD Analysis of an Aerofoil
(2015) *Int. J. Eng. Res*, 3 (3), pp. 154-158. Cited 26 times.

2 S. Gowda, A.
Comparison of Aerodynamic Performance of NACA 4412 and 2412 using Computational Approach
(2019) *Int. J. Eng. Trends Technol*, 67 (4), pp. 73-75.

3 Merryisha, S., Rajendran, P.
(2019) *CFD Validation of NACA 2412 Airfoil*

4 Akhtar, M.N., Bakar, E.A., Aabid, A., Khan, S.A.
Numerical simulations of a CD nozzle and the influence of the duct length
(Open Access)

(2019) *International Journal of Innovative Technology and Exploring Engineering*, 8 (9 Special Issue 2), pp. 622-630.
https://www.ijitee.org/wp-content/uploads/papers/v8i9S2/I11270789S219.pdf
doi: 10.35940/ijitee.I1127.0789S219

View at Publisher

5 Aabid, A., Khan, A., Mazlan, N.M., Ismail, M.A., Akhtar, M.N., Khan, S.A.
Numerical simulation of suddenly expanded flow at mach 2.2

(2019) *International Journal of Engineering and Advanced Technology*, 8 (3), pp. 457-462. Cited 16 times.
www.ijeat.org

6 Pathan, K.A., Dabeer, P.S., Khan, S.A.
Optimization of area ratio and thrust in suddenly expanded flow at supersonic Mach numbers (Open Access)

(2018) *Case Studies in Thermal Engineering*, 12, pp. 696-700. Cited 14 times.
http://www.journals.elsevier.com/case-studies-in-thermal-engineering/
doi: 10.1016/j.csite.2018.09.006

View at Publisher

7 Khan, S.A., Aabid, A., Ghasi, F.A.M., Al-Robaian, A.A., Alsagri, A.S.
Analysis of area ratio in a CD nozzle with suddenly expanded duct using CFD method

(2019) *CFD Letters*, 11 (5), pp. 61-71. Cited 10 times.
http://www.akademiabaru.com/cfdl.html

8 Fharukh Ahmed, G.M., Alrobaian, A.A., Aabid, A., Khan, S.A.
Numerical analysis of convergent-divergent nozzle using finite element method
(Open Access)

(2018) *International Journal of Mechanical and Production Engineering Research and Development*, 8 (6), pp. 373-382. Cited 20 times.
http://www.tjprc.org/publishpapers/2-67-1541583801-42.IJMPERDDEC201842.pdf
doi: 10.24247/ijmperddec201842

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