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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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