

CFD Competition

6th International Conference on Computation Methods in Engineering & Health Sciences (ICCMEH 2023)

Problem description:

Re-Design and optimize NACA 4412 Aerofoil profile for a subsonic flow regime that minimizes the drag and maximizes the lift with following conditions.

- Flow Regime: Subsonic with Mach number below 0.8
- Range of Angle of attack: 2 to 5 degrees
- Maximum Thickness: should be less than 15% of Chord Length
- Minimum Lift to Drag ration(L/D): 15
- Minimum Lift coefficient: in range of 0.6 to 1.2
- Flying altitude: 36,000 feet.
- Manufacturing/structural constraints: Aerofoil should be able to be fabricated with minimum manufacturing complexities and be able to sustain the structural loads.
- Validate the CFD results with theoretical/experimental findings from a standard literature

Metrics for Evaluation:

Meshing and accuracy, Geometric domain definition, Physics definition and boundary conditions, Validation with literature, Uniqueness of solution proposed, Results and main findings justified with appropriate fundamentals.

Note:

Commercial software (Ansys, Comsol or any other), open source like Open Foam or any other can be used for simulation.

Important:

- All the tools should be licensed. Students are advised to download the student version of the software or else use Institutional license of your department for carrying out the work.
- MAHE or the organizers will not be responsible for any breach of official software licenses and the candidate will be solely held responsible for unethical usage of any material otherwise.



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