IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 1, August 2024

Design, Analysis and Optimization of Centrifugal Pump Impeller using CFD

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Abstract: *In this project work, head of centrifugal pump impeller, was obtained by analytical calculation and its validation is done by simulation result. Head results was obtained by keeping different impeller blade angles of 30°, 34°, 38°, 42°. By comparing head results, optimum blade angle for a particular impeller was obtained. Using the dimensions of the impeller, the 3-D model of the Centrifugal pump impeller was created in solidworks. Then Fluid domain is created from impeller model, in solidworks software. The fluid domain model is then converted into a parasolid file, and then imported in ANSYS Workbench. Then the rotation of 3000rpm is applied. Water is given as the rotating fluid. Then meshing is done, and solution is obtained as per CFD analysis.*

Keywords: Centrifugal Pump, Impeller, Head, Pressure, Velocity, Computational Fluid Dynamics

DOI: 10.48175/IJARSCT-19358