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CFD ANALYSIS FOR LINEAR BLADE CASCADE OF A TURBINE

SURESH PITTALA & AWASH TEKLE TAFERE

School of Mechanical and Industrial Engineering**,** Hawassa University, Hawassa, Ethiopia

ABSTRACT

The main objective of this present investigation is computational study of the effect of pressure, velocity, temperature, kinetic energy, turbulence eddy dissipation, total temperature and total pressure on flows through a linear cascade. The main purpose of this project is investigation of flow characteristics and heat transfer around the blade. A 3D Navier-Stokes flow solver was applied to characterize flow, to support the flow phenomenon. The program highlights the flow analysis results and performance evaluation of a turbine blade design. The method of computational fluid dynamics (CFD) is used to investigate the flow in a linear cascade. CFD analysis is becoming a prerequisite event for design, testing and optimization of practical engineering systems. Engineers can make use of CFD tools to study about the flow, modeling the phenomenon in design and predict the system performance. The experiments were performed on models deriving from a stator of a high-pressure turbine. The flow understanding obtained by the current project can be used to guide the design of turbine blades at different flow conditions. Data include blade pressure distributions and velocity plots. CFD analysis of this design is carried out with an objective of assessing the blade performance.

KTYWORDS: Turbine, Linear Cascade, CFD