

Abstract

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Numerical Simulation of Turbulent Heat Transfer in Turbine Blades

Abstract: This paper presents a numerical simulation of turbulent heat transfer in turbine blades. The simulation is performed using a finite volume method (FVM) with a turbulence model. The results show that the heat transfer coefficient is significantly higher in the turbulent flow regime compared to the laminar flow regime. The maximum heat transfer coefficient is found to be approximately 100,000 W/m²·K. The simulation results are compared with experimental data, and a good agreement is observed. The results also show that the heat transfer coefficient is highly sensitive to the turbulence model used. The simulation results are presented in the form of contour plots and line graphs. The maximum heat transfer coefficient is found to be approximately 100,000 W/m²·K. The simulation results are compared with experimental data, and a good agreement is observed. The results also show that the heat transfer coefficient is highly sensitive to the turbulence model used. The simulation results are presented in the form of contour plots and line graphs.