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DEPARTMENT OF MECHANICAL ENGINEERING

“NUMERICAL INVESTIGATION OF EFFECT OF SWIRLING AND NON-SWIRLING COOLING ON LEADING EDGE OF GAS TURBINE BLADE”

PROJECT PRESENTATION

PRESENTED BY:

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ABSTRACT

This project is entitled to compare the behavior of different cooling methods for gas turbine blade leading edge, configurations of **Impingement cooling, Vortex cooling** and **Double vortex cooling** will be established. Turbine designers often rely on multiple thermal protection techniques, including internal cooling, external film cooling, and thermal barrier coatings to efficiently cool components and limit the use of coolant. The single circular cooling proves to be good cooling methods with the highest heat transfer intensity.

3D numerical investigations will be performed to study the heat transfer coefficient, pressure loss and thermal performance of the turbine blades. The geometry of the problem and meshing of it will be done in ANSYS Workbench. The models have been solved by ANSYS CFX. The results will be shown that the use of impingement cooling, vortex cooling and double vortex cooling leads to an enhancement in the heat transfer.