

INVESTIGATION OF SUPERSONIC FLOW THROUGH CONICAL NOZZLE WITH VARIOUS ANGLES OF DIVERGENCE

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ABSTRACT

CFD studies are carried out on conical nozzles with different divergence angles using supersonic gas flows through the nozzle. In the present investigation the nozzles are modeled with axi symmetric condition and modeling is carried out using Gambit software. Fluent solver is adopted in the present study to investigate the flow characteristics by considering the throat diameter and exit diameter of nozzle is same for all cases.

The flow parameters, such as pressure ratio, Mach number of the flow at the nozzle exit, and the area of nozzle exit ratio are considered for the simulation studies. The result shows the variation in the Mach no., Pressure, Temperature, Velocity of flow, Turbulence Intensity at different divergence angles.

KEYWORDS: Conical, Pressure Ratio, Temperature, Turbulence Intensity, Mach Number