

EFFECT OF CD NOZZLE AT VARIOUS NOZZLE PRESSURE RATIOS WITH VARYING DEFLECTION ANGLES

Bhagyalakshmi A¹, Dharini S², Sheela M³ & Manikandan S⁴

*^{1,2,3}Research Scholar, Department of Aeronautical Engineering, Jeppiaar Engineering College, Chennai,
Tamil Nadu, India*

⁴Assistant Professor, Department of Aeronautical Engineering, Jeppiaar Engineering College, Chennai, Tamil Nadu, India

ABSTRACT

The thrust vector control is the ability to control the direction of thrust in a vehicle and it also plays a vital role in controlling the altitude and the angular velocity. The aim of this paper is to increase the mass flow rate and thrust vectoring of the nozzle by deflecting the wall at the divergent section of the nozzle at various deflection angles. A contour C-D nozzle is designed with a domain using Hypermesh and analyzed using ANSYS Fluent. The domain is created to capture the jet plume outside the nozzle. Various flow parameters such as pressure, density, Mach number are noted for various nozzle pressure ratios with respect to various deflection angles. The deflections are made at the divergent section of the nozzle and the analysis is carried out. The results of the base model and the other deflected models are compared to obtain the better nozzle geometry for thrust vectoring.

KEYWORDS: *Nozzle, Deflection, Thrust Vectoring, Efficiency*

Article History

Received: 15 May 2019 | Revised: 27 May 2019 | Accepted: 13 Jun 2019
