

# Design and Fabrication of LPG Refrigerator

Mohd Ahmad<sup>1</sup>, Yash Kasare<sup>2</sup>, Tejas Somkuwar<sup>3</sup>, Aishwarya Patil<sup>4</sup>,

Hakimuddin Husain<sup>5</sup>, M. Nematullah Nasim<sup>6</sup>

<sup>1,2,3,4</sup>Students Department of Mechanical Engineering

<sup>5,6</sup>Professors, Department of Mechanical Engineering

Anjuman College of Engineering and Technology, Nagpur, India

**Abstract:** *This study is based on experimental observations aimed at evaluating the coefficient of performance (COP) of a refrigeration system using liquefied petroleum gas (LPG) as a refrigerant. The LPG composition used in this experiment consists of 56.5% butane, 24.4% propane, and 17.2% isobutene. The focus of the research is to analyze how variations in the length of the capillary tube affect the system's COP. LPG is a cost-effective and environmentally friendly alternative to conventional refrigerants. Its use helps in reducing the global warming potential (GWP) and has negligible ozone depletion potential (ODP), making it a sustainable option. Since LPG is abundantly available as a byproduct in oil refineries, it serves as a practical refrigerant for widespread use. By modifying and optimizing key components such as the regulating valve and capillary tube under suitable operating conditions, it is possible to achieve improved cooling performance. The experimental setup demonstrated that the evaporator temperature gradually decreased over time, eventually reaching a minimum of 5 °C, indicating effective cooling performance using LPG as a refrigerant.*

**Keywords:** LPG refrigerant, refrigeration effect, household kitchen, COP, environment friendly

