

# Experimental Study on Domestic Refrigerators Using Liquefied Petroleum Gas (LPG) as Refrigerant for Continuous Electricity-Deprived Areas

Gangurde Vishal Gautam, Thete Rupesh Ramesh, Nikam Suraj Sunil,  
Nikam Tejas Bhagwan, Roshan S. Patil

Matoshri College of Engineering & Research Centre, Eklahare, Nashik, Maharashtra, India

**Abstract:** *This paper explores the potential use of Liquefied Petroleum Gas (LPG) as a refrigerant in domestic refrigerators and air conditioning systems. The supply of electricity remains unreliable in many parts of the world, and this work aims to provide a solution for the refrigeration of food and medicine in such areas. LPG is a by-product of petroleum refineries, comprising of propane, butane, and isobutene, with low boiling points. The use of LPG for refrigeration is environmentally friendly, as it has no ozone depletion potential, and the combustion products are CO<sub>2</sub> and H<sub>2</sub>O. The study analyzes the performance of a car air conditioning system designed with LPG as a refrigerant, where LPG is passed through a capillary tube, causing a drop in pressure and phase change in an isenthalpic process. The study concludes that the use of LPG as a refrigerant can be a viable solution in areas where electricity supply is limited, as LPG is easily transportable and locally available. However, it requires specialized equipment and expertise and should only be carried out by trained professionals.*

**Keywords:** Liquefied Petroleum Gas ,Refrigeration, Air conditioning, Electricity supply

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