DEPARTMENT OF MECHANICAL ENGINEERING
NSS COLLEGE OF ENGINEERING,
PALAKKAD - 8

BTECH FINAL PROJECT 2024-25

1. **Project No : B012025**
2. **Project Title : DESIGN OF VARIABLE FREQUENCY THERMOACOUSTIC REFRIGERATOR**

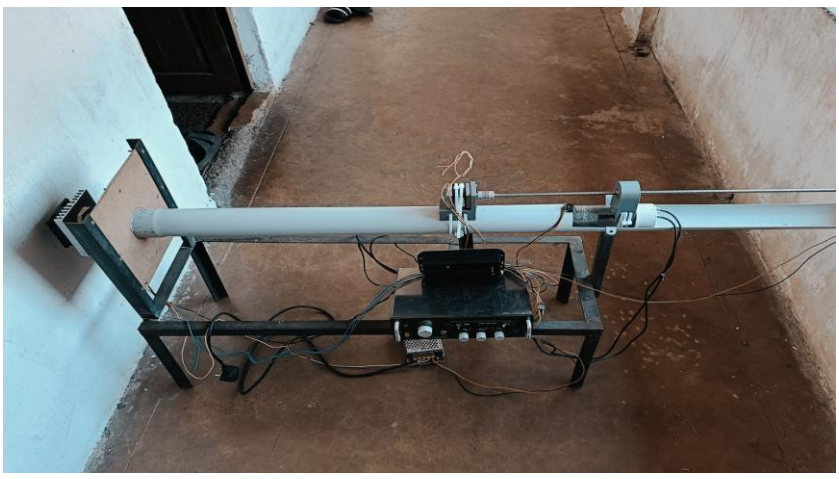
3. **Students Name :**

Register Number	Name	Roll No	Class
LNSS21ME122	ABHAY RAJ B	161	MB
NSS20ME079	KARTHIKA J	160	MB
NSS21MEO95	SANAL SREEKUMAR	135	MB
LNSS21ME135	SARANG P V	167	MB

4. **Project Guide : SANTHOSH KUMAR S**
5. **Abstract :**

This study designs and optimizes a variable-frequency thermoacoustic refrigerator to enhance cooling efficiency. Thermoacoustic refrigeration uses sound waves, offering an alternative to conventional methods. The system dynamically adjusts resonator length using a stepper motor, ensuring optimal frequency alignment. A microcontroller-based control system automates adjustments based on sensor inputs. The design was validated through numerical modeling and 3D printing. Results confirm that frequency-adaptive thermoacoustic systems improve efficiency, paving the way for sustainable, adaptable refrigeration technologies.

6. **Project Picture :**



7. **Project Report :**https://drive.google.com/file/d/1oar32BXNO7dVKKSP9-NrRu6p_Ts0Vv21/view?usp=sharing