TEAM 072

HVAC: Smart heating, ventilation, and air conditioning system

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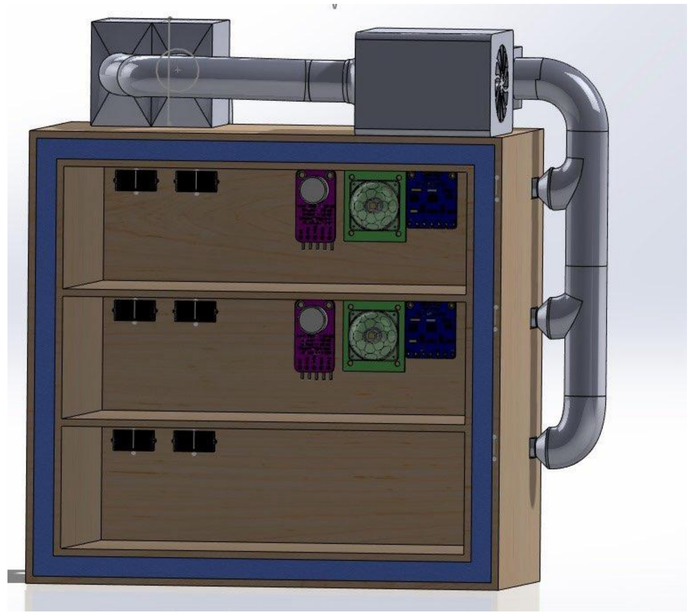
Problem Statement

To maintain the comfortable environment traditional HVAC systems often operate inefficiently, leading to energy waste and increased costs. The challenge is to develop an innovative smart HVAC system that efficiently distributes airflow based on real-time occupancy and environmental conditions in buildings.



Conclusions

project introduces a smart HVAC system that uses sensors and AI to optimize airflow based on occupancy and environmental conditions. The prototype enhances energy efficiency, reduces costs, and supports sustainable building practices, offering a dynamic alternative to traditional systems through real-time control and intelligent automation.

Constraints

- Energy Efficiency
- Eco-friendly Refrigerants
- Durability

Testing and Validation

- 25–30% reduction in energy consumption
- 10–15% longer system lifespan
- 60–70% lower (GWP) using refrigerants like R-1234ze instead of older ones like R-410A.

Specifications

- Energy Efficiency During Operation
- Dynamic Thermal Comfort
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- Comfortable Airflow
- Noise Reduction
- Temperature Rang
- Quality Chart
- Crowd Management