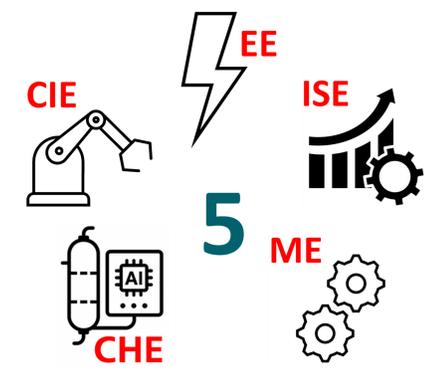# TEAM 066

Medi-Sort:
Automated Medicine Storage and Delivery System with Temperature Control

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Problem Statement

Manual storage in pharmacies leads to dispensing errors, inventory gaps, and spoilage of temperature-sensitive drugs, jeopardizing patient safety and efficiency. An automated, temperature-controlled system is needed to safeguard cold-chain medications and streamline operations—this is the challenge Medi-Sort solves.

Constraints & Specification

Constraints	Specifications
Specific-medication storage temperature (5°C)	Temperature recovery Time (Between 5 min to 60 min)
	Temperature difference Range (±2°C)
Response time for process (Less than 60 sec)	Mechanical Efficiency (> 85%)
	Robotic arm weight (2 Kg ± 0.5 Kg)
Cycle time for medication retrieval and delivery must be within a time limit (120 sec ± 20 sec)	Power consumption (approximately 506.75 W ± 5 W)
	Precision and reliability of the sensors (Latch Sensor 1%) (Ultrasonic 2%)
Motor Size (42x42x48(mm))	Raspberry Pi Clock Speed: 1.5 GHz
	Module support is Up to 10+ modules
The only possible power input is either 110 or 220 VAC	Medication Retrieval & Patient Interaction Simulation Accuracy (> 95%)
	User Interaction Steps (Less than 4 Steps)
Integrated Specifications	
High-Speed Operation and Accuracy (Overall > 90%)	
User-Friendly Interface and Minimal Process Steps (Multi-Language, less than 10 steps)	
Real-Time Operational Efficiency (20 – 30 sec per medicine)	

Prototype Design

Prototype Testing

Active Cooling Performance - 24-Hour Temperature Profile
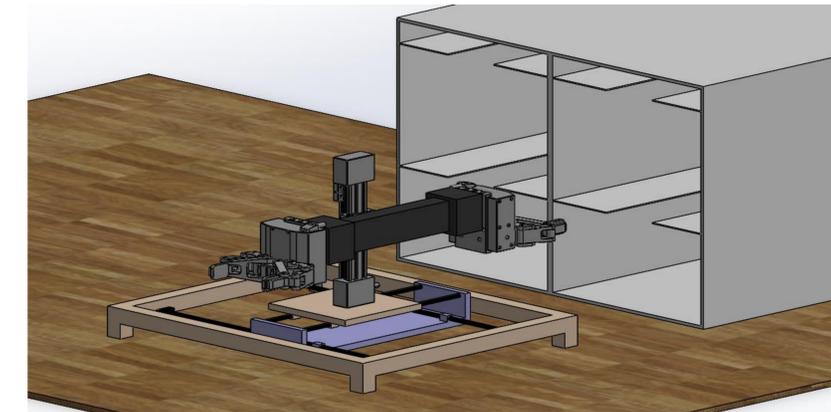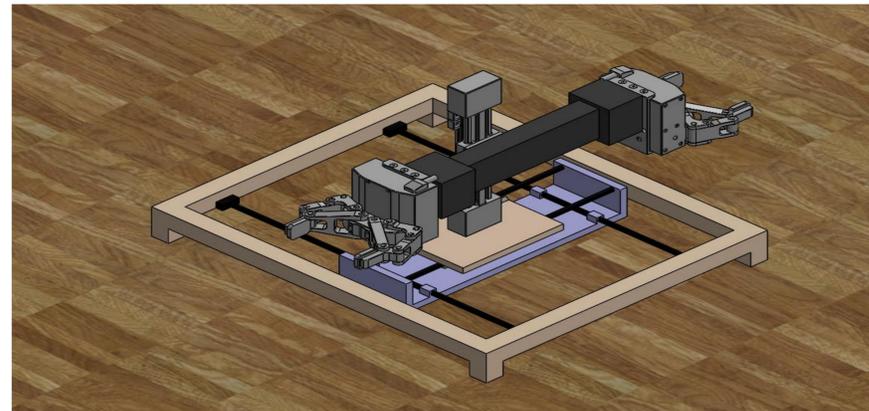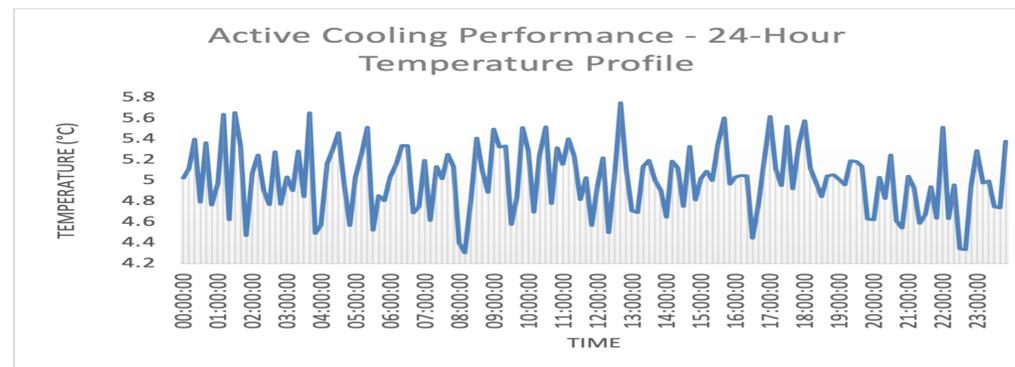
Test	Result
Stepper Motor Accuracy	95% positional accuracy (±1 mm)
Limit Switch Response	100% trigger success, no false signals
Ultrasonic Sensor Detection	85% detection accuracy
Robotic Arm Pick-and-Place	90% success rate
Full System Automation Test	95% successful deliveries
Emergency Stop and Reset	100% safe stop and reset functionality

Conclusion

Medi-Sort addresses critical challenges in medication storage by combining automation with precise temperature control. It minimizes human error, protects temperature-sensitive pharmaceuticals, and ensures organized, accessible storage. Testing confirms reliable performance and accuracy across various conditions. By automating retrieval and delivery, Medi-Sort enhances safety, streamlines workflow, and supports compliance. Its modular design allows for easy integration into different pharmacy environments, making it a strong solution for modern healthcare settings.