

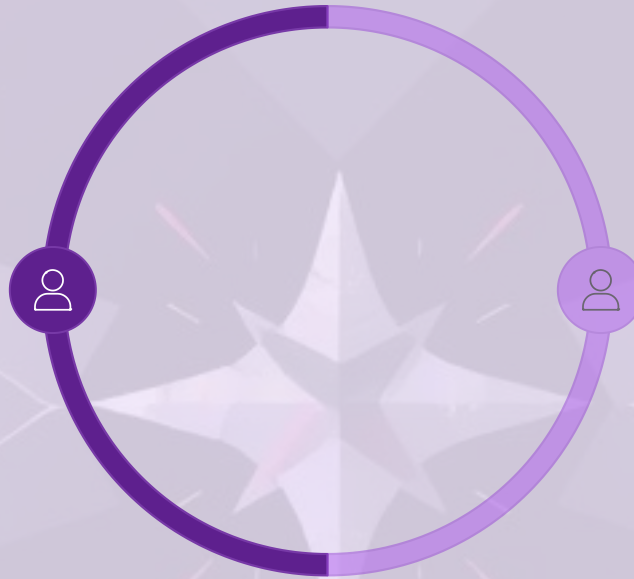
ICreamatic – Automated Ice Cream Production Line

"Ice cream, a cool delight that melts worries away, blending flavors of joy in every scoop."

An-Najah National University – Faculty of Engineering & IT

Meet Our Team

Basmala Samaneh



Aisha Abu Jeib



Dr. Raed Al-Qadi

Supervisor

What & Why ICreamatic?

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What is ICreamatic?

- A fully automated ice cream production line, from flavor selection to decoration.
- Combines mechanical design, cooling system, and Arduino-based control.

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Why This Idea?

- High local & global demand for ice cream.
- Very few fully automated small-scale systems exist.
- Practical + educational project that links engineering with real applications.

System Design & Operation

- Cooling System (Core Part):



Stainless steel cylinder



Mixing Auger



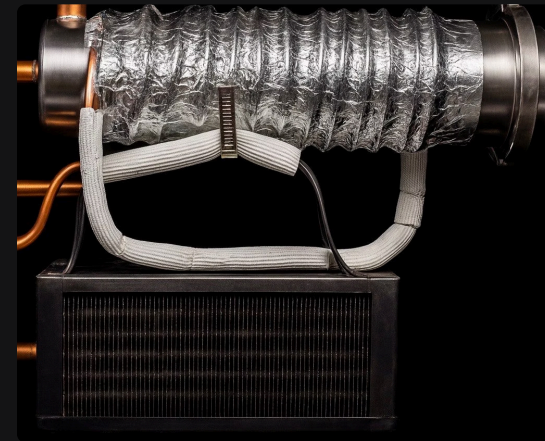
Copper pipes with circulating refrigerant (compressor + radiator).



AC Motor

Operation mechanism

The stainless steel cylinder is where the ice cream mixture is processed. Inside it, the mixing auger rotates continuously to keep the mixture uniform and prevent it from sticking to the walls. Around the cylinder, there are copper pipes that circulate refrigerant from the compressor and radiator, which absorbs the heat and reduces the temperature quickly. Finally, an AC motor drives the auger, ensuring strong and consistent mixing during the freezing process.



System Design & Operation

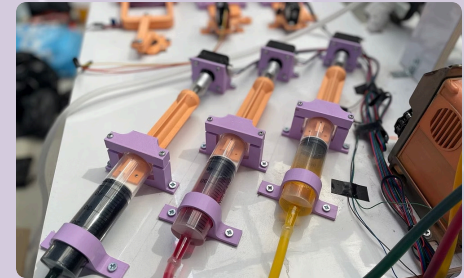
- Other Stages:



User Selection



Cup Dispensing



Flavor Dispensing



Ingredients Dispensing & Mixing



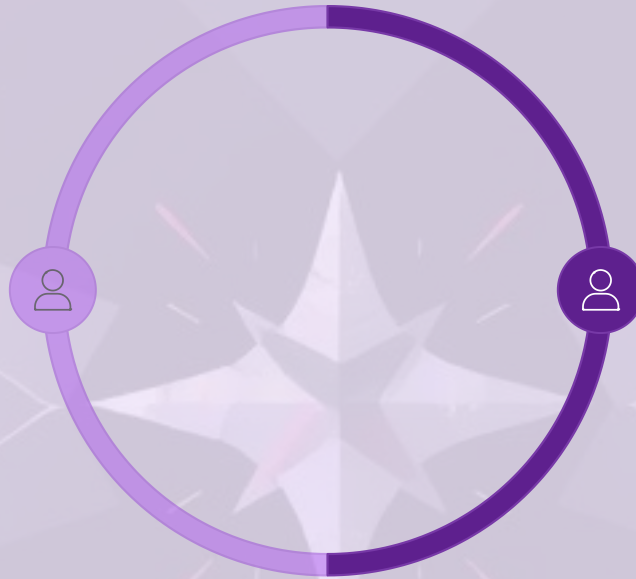
Ice Cream Release



Topping Release

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Key Components



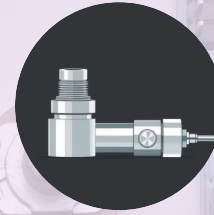
MCUs

2× Arduino Mega 2560 for robust control.



Motors

Compressor, AC, stepper, and servo motors for precise movement.



Sensors

Hall Effect, Limit switch and IR Sensors for accurate position detection.



I/O

Keypad and LCD (I2C) for user interface.



Drivers

L298N motor driver and relay modules for power control.



Power Supply



Compressor and Radiator



Pump

Challenges



**Cooling Efficiency:
achieving fast
freezing time.**



**Smooth dispensing
without clogs or
uneven flow.**



**Balancing low-cost
prototype with
effective
performance.**



**Limited timeframe
to complete a full
automated system.**

Future Work

Building on our current success, we envision several key areas for future development and enhancement of the ICreamatic system:



Automated Cleaning

Implement a self-cleaning cycle to minimize manual maintenance and ensure hygiene.



Smart Connectivity

Integrate Wi-Fi and mobile app control for remote monitoring and operation.



Enhanced Cooling System

Develop a more efficient and rapid cooling mechanism for faster production cycles.



Scalable Production

Design modular components to allow for easy scaling of production capacity.

Thank You for Your Attention!

We appreciate your time and interest in our project.
Your feedback and suggestions are always welcome!