Aromatic Light

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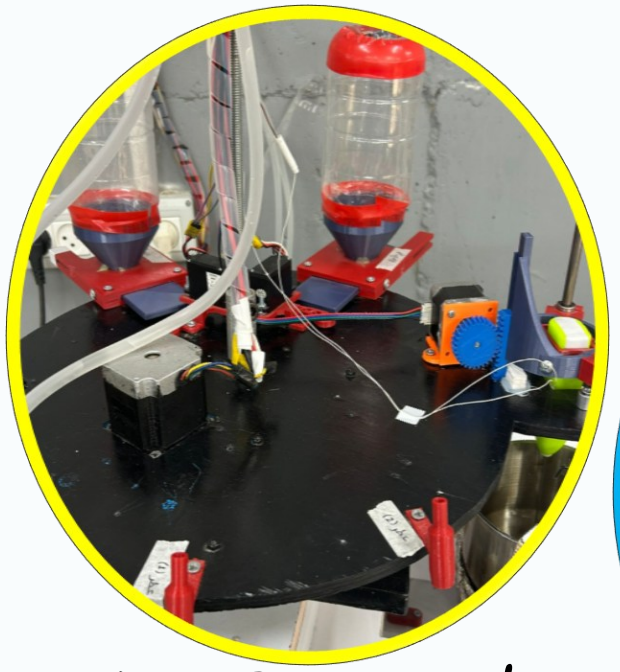
Our project is called Aromatic Light. It is an automated candle-making machine that controls the entire process, from melting the wax to pouring it into molds with colors and fragrances. The goal of this project is to save time, reduce manual effort, and create consistent high-quality candles with different options chosen by the user.

Machine Structure

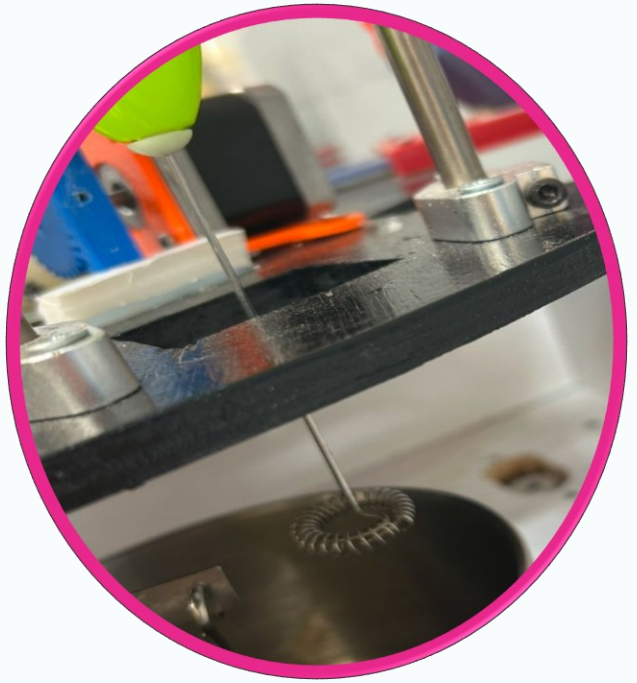
Features & Process



Move Rotary tabe

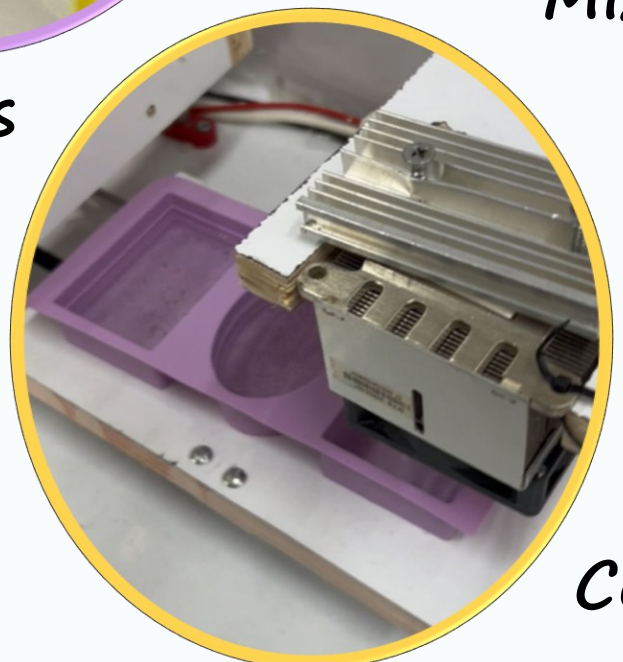
Heating

Add Dyes



Mixing

Casting



Cooling

Building Process

&

Hardware components

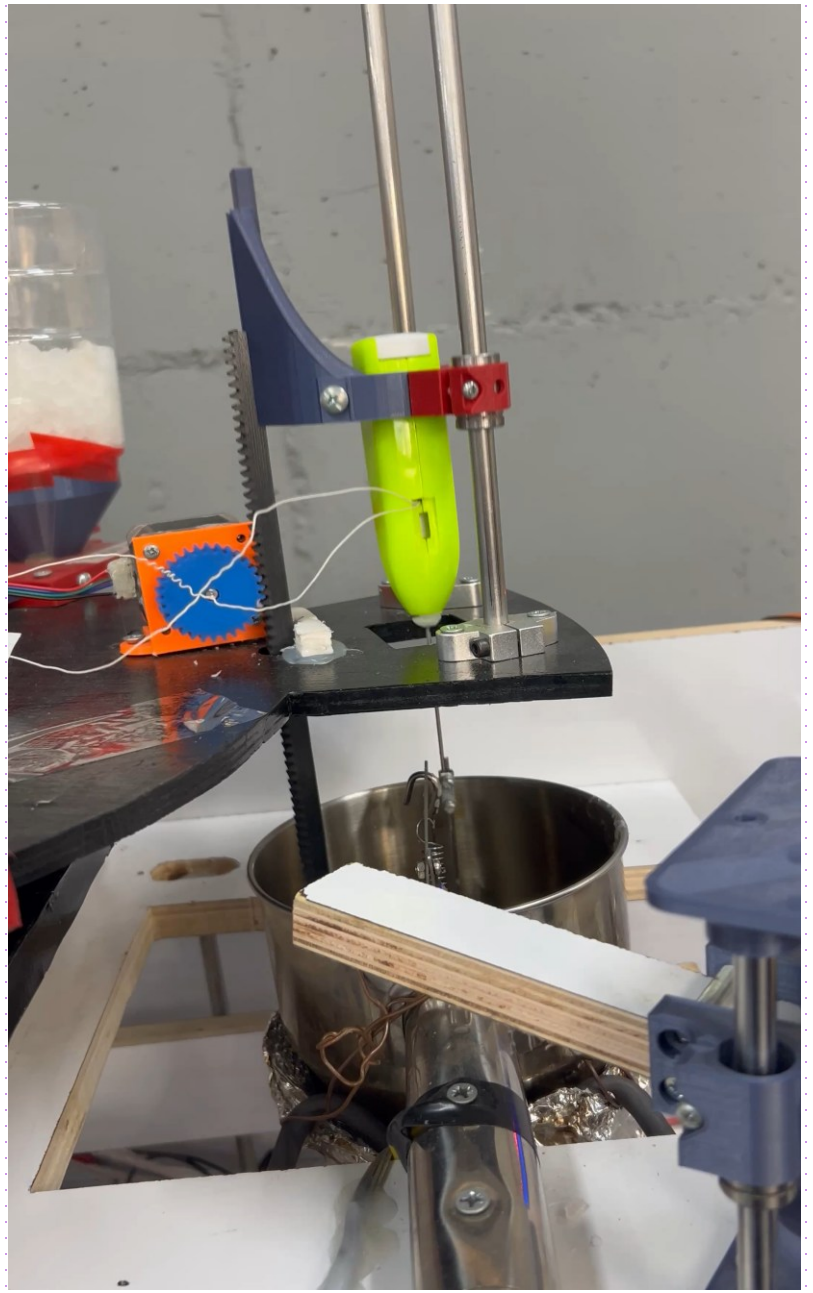
Move Rotary tabe

Hall Effect sensor

NEMA 23 Stepper Motor

TB6600 Stepper Motor Driver

A stepper motor rotates the disk until a magnet passes the Hall Effect sensor, which sets the Home Position. From this reference, the controller moves the selected wax container under the heater. Then a servo motor opens to release the wax, and the amount depends on the number of molds.



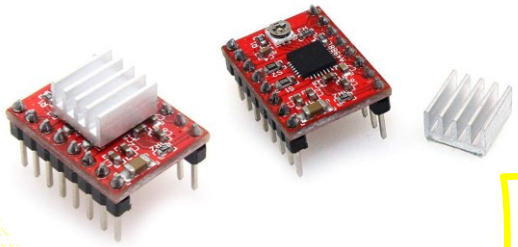
Heating

Relay

Heater

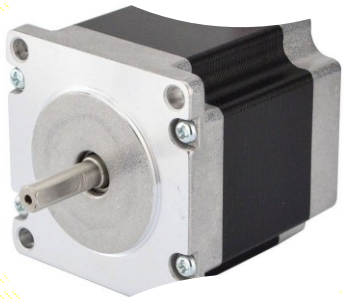
Temperature Sensor

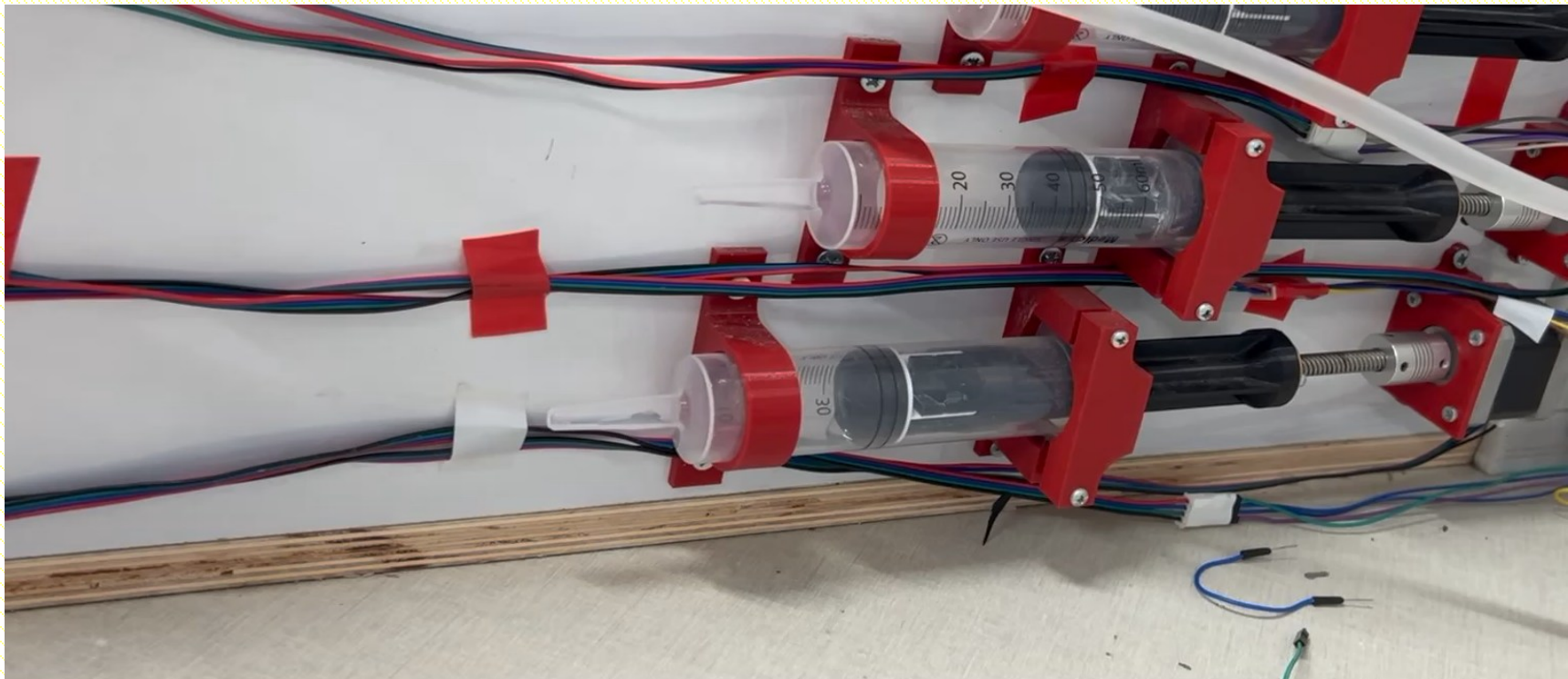
The wax melting starts here.The heater is connected to a relay, and a temperature sensor checks the heat.If the temperature goes up to 200 °C, the heater turns off.When it drops below 200 °C, the heater turns on again.This on-off cycle keeps going for 23 minutes.



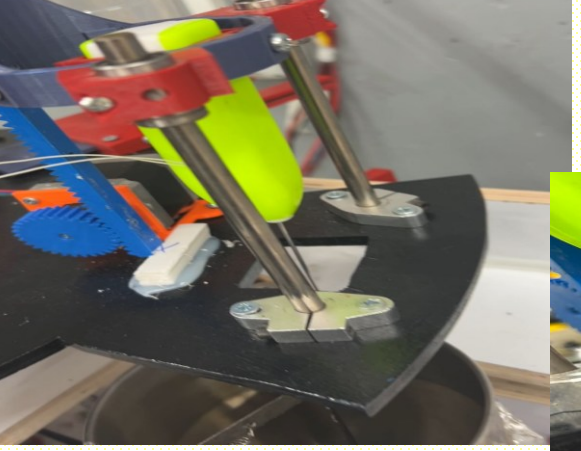
Add Dyes

In this stage, the rotary disk first moves to the color container. Stepper motors pump a controlled amount of dye into the wax. After that, the disk moves to the fragrance container, where another stepper motor dispenses the scent in a fixed ratio. The user can choose both the percentage of color and the intensity of fragrance, which gives flexibility to create different candle styles.





Mixing

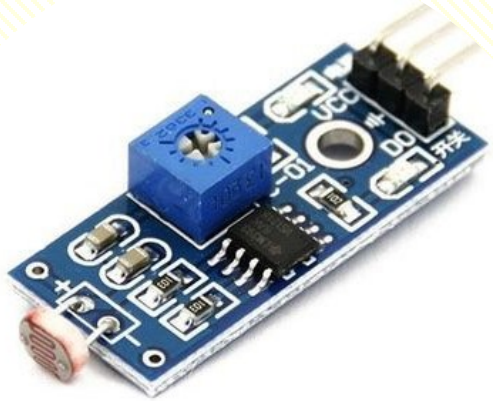


Dc Motor

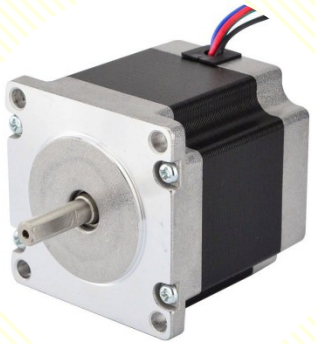
Driver

Once the color and fragrance are added, the mixer moves under the heater. A DC motor stirs the wax mixture for a few seconds, ensuring both the color and the scent are spread evenly. This step guarantees that the final candle has a uniform look and balanced aroma.

Casting

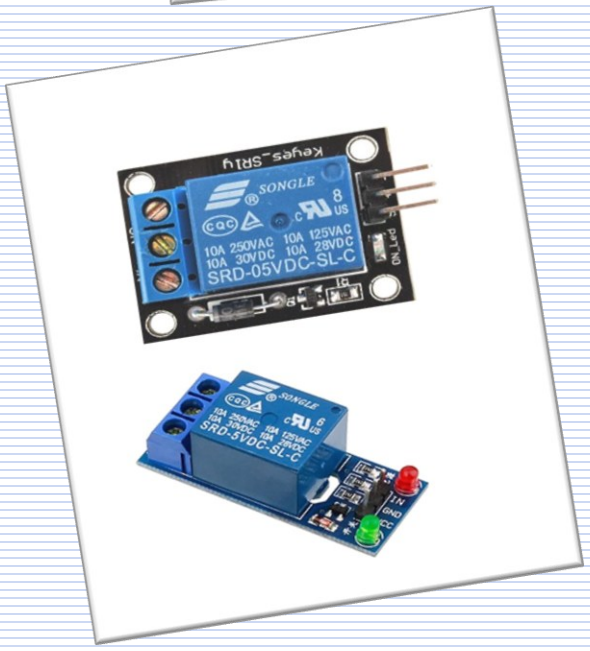


LDR Sensor Module



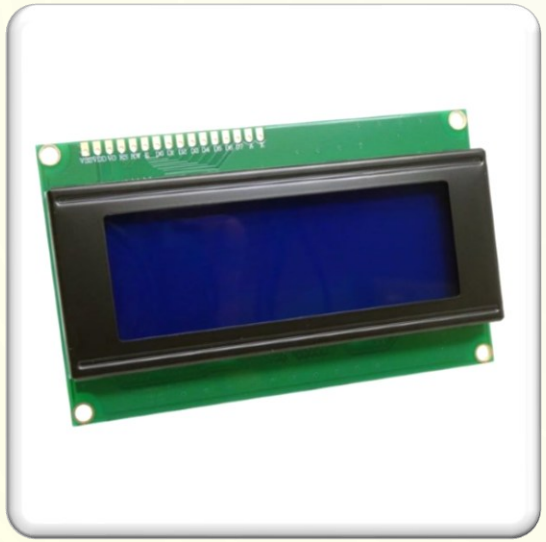
Molds move on a linear rail until each one is under the heater. A laser and LDR sensor detect the exact position to stop the mold for accurate pouring.

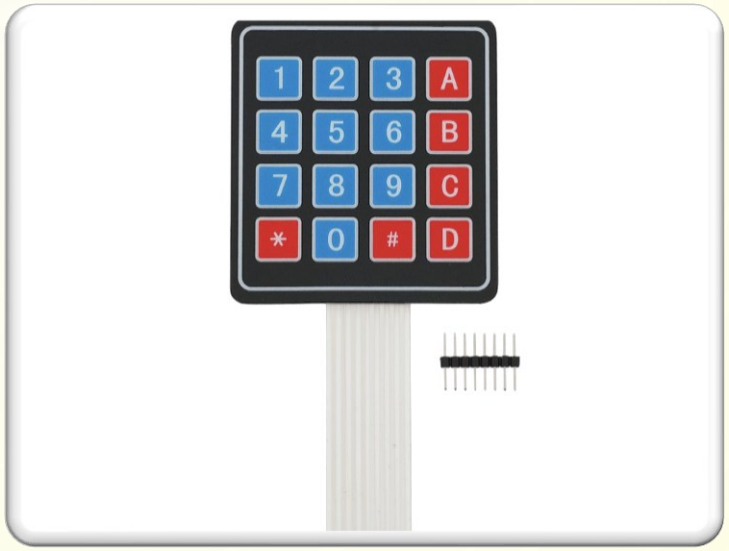
Cooling



A stepper motor lifts the heater cover to pour wax into the mold, then closes it. The process repeats for each mold. After pouring, a fan cools the molds until the candles solidify.

Control





Keypad with LCD

Constraints & Limitations

Temperature Management

Maintaining the proper temperature during pouring is crucial, as any increase or decrease can affect the final candle quality.

Accurate Measurements for Each Candle

Precise control of wax, color, and scent quantities is essential to ensure consistent quality for each candle.

future work

- Robotic arm for inserting wicks into candles

Thank you

Live Demo