Temperature and Humidity Monitoring System: THT-21

By Senior Design Team THT-21
Sponsored by: Alfambra Cigars

SDSU | San Diego State University

PROJECT OVERVIEW

The THT-21 device is a system designed to monitor the temperature and humidity conditions of drying and fermentation warehouses for a tobacco farm in Nicaragua.
This technology was needed by the sponsor, Alfambra Cigars, as the current tech used is not accurate enough to avoid losses in product that occur when the conditions of the warehouses fall out of ideal range. The team was tasked with this project in order to minimize losses and maximize profits for this operation. Alfambra Cigars hopes to use the THT-21 device en masse if the effects on production are as positive as intended.

ACKNOWLEDGEMENTS

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MEET THE TEAM

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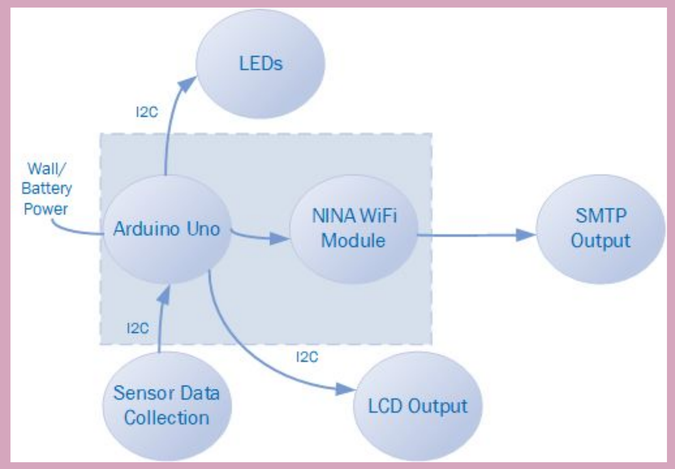
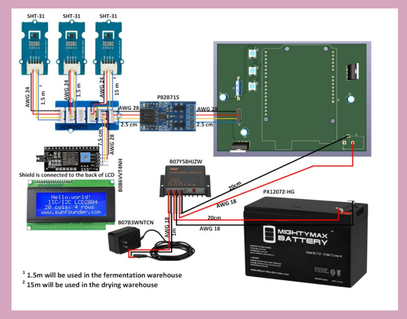
FIRMWARE FLOW

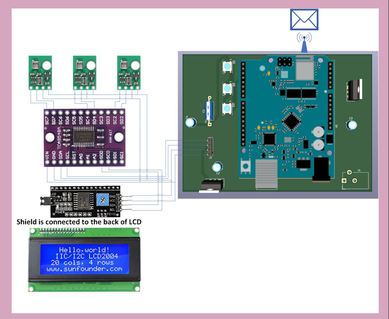


The THT-21 uses firmware to communicate with the I2C sensors, and send data results to LEDs, an LCD, and uses a Simple Mail Transfer Protocol ini cohesion with the Arduino's WiFi module to send data via email to the user.

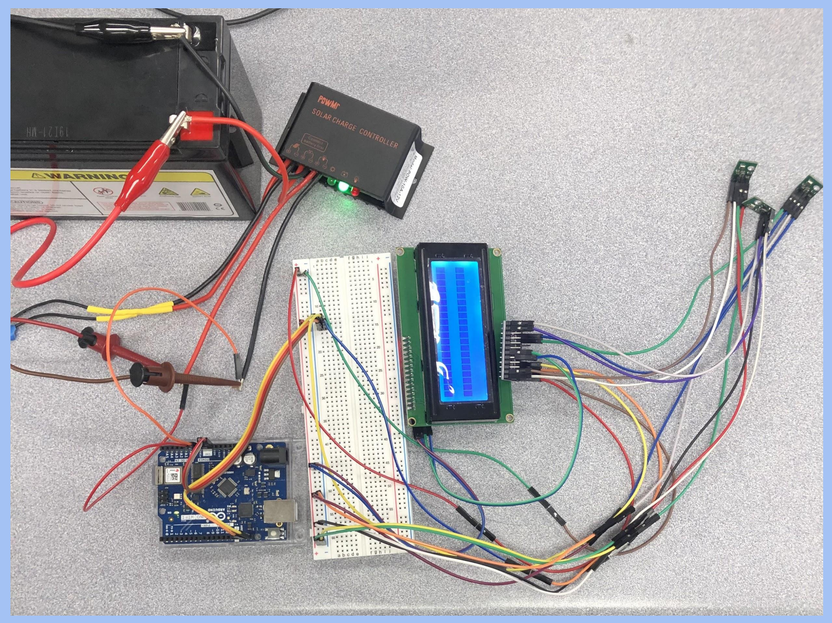
PHYSICAL DESIGN



The original design for the THT-21 included a controlled battery power supply, Arduino Uno, I2C Extender, SHT31 I2C sensors, and LCD display.



The updated design includes the same power system, output hardware, and microcontroller, but a new I2C multiplexer and AHT20 I2C sensors to increase system accuracy and speed.



The preliminary hardware set-up of the THT-21 is seen above. The final touches include PCB mating and final enclosure fitting. Pictured components from left to right are as follows: 9V battery, charge controller, Arduino Uno, LCD, I2C multiplexer, and AHT20 I2C combo sensors.

BUDGETING BREAKDOWN