Team #30

PHLA Controlled Environmental Chamber

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Mentors: Dr. Milton Aguirre Jr., Dr. Suranjan Panigrahi

Customer Background

Professor Kashchandra Raghothama is a professor of horticulture and landscape architecture at Purdue's college of Agriculture. He specialized in understanding how plants react to the mineral phosphate. He has delivered presentations for his work internationally as well published many high impact research papers.

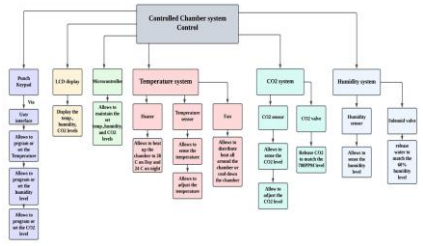
Problem Statement

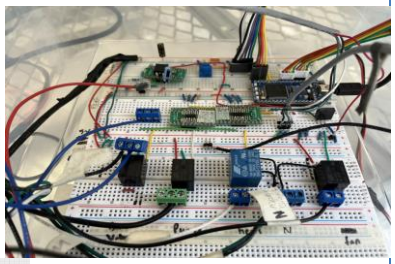
- Greenhouses are expensive to build, large, and the environment is costly to change
- A greenhouse can only support one environment
- Previous group's solution was messy and incomplete
- Arduino Microcontroller monitors and adjusts 3 environmental conditions
  - -Temperature – Heater and Fan
    - -Day: 28°C [4] | Night: 24°C [4]
    - -Incorporate the Real Time Clock to determine night and daytime
  - -Humidity – Mister
    - -Using ball and solenoid valves to control RH at 60%, +/- 5%
  - -CO2 – Gas Canister
    - -Controlling flow to maintain >700 ppm

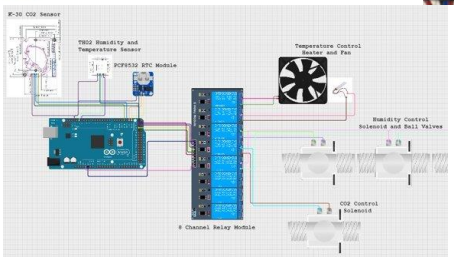
Requirements

Different Systems	Set Values
Humidity	60% (+5%)
Daytime Temperature	28 C
Night-time Temperature	24 C
CO2 value	700 PPM

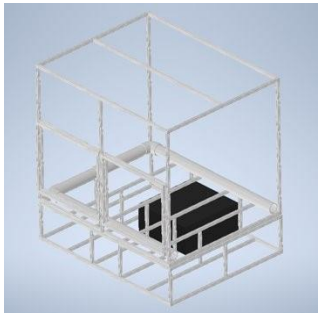
Experimentation and Concepts

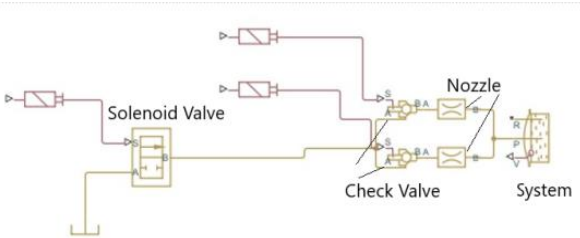






Final Design





Testing