Tethys:

Project Schedule Forecast

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Presenter: Khalifah Khalifah

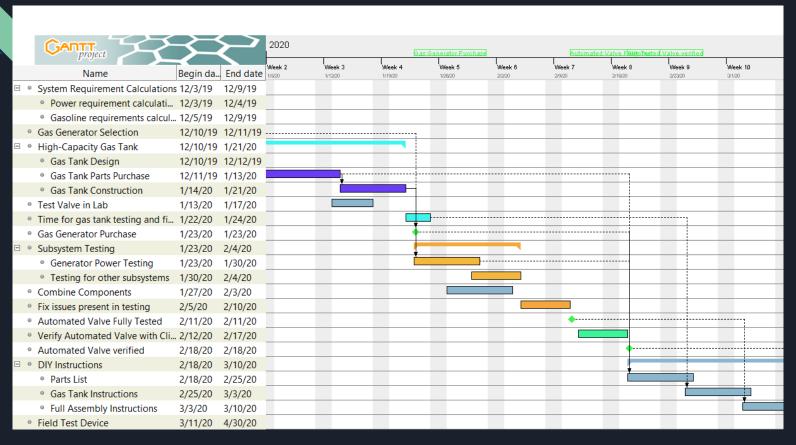
A Short Project Refresher

- Our client, Dr. Kimberly Samuels-Crow, is studying the process of water moving through the atmosphere.
- She has an instrument that makes real-time measurements of the isotopic composition of water vapor to accomplish her research.
- Our project is to design and install an automated valve for her instrument that will allow her to remotely control and analyze her readings.



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Overview of Schedule



Subsystem #1: Electronic

Valve

Determine An Adequate

Here we must understand the specifications that our valve must meet in order to function with our client's equipment in the field without failing.

Purchase Electronic Valve

Here we must purchase the best valve in regards to cost, ease of integration, durability, and availability.

Test Valve in Lab

Here we must test the valve's ability to integrate with our client's instrument inside her lab.

Determine An Adequate Micro-controller

Here we must determine the most robust and least complicated microcontroller for our design.

Purchase Micro-Controller

Here we must purchase the best micro-controller in regards to cost, ease of integration, durability, and availability.

Test Micro-Controller in Lab

Here we must test the MC's ability to integrate with our client's instrument inside her

Combine Components

Here we must combine our circuit components into a functioning circuit.

Test Device in Lab

Here we must test our circuit inside our client's lab with her instrument.

Packaging

Here we must integrate our circuit into a package that is ready for the field. It must be durable as well as weather resistant.

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Subsystem #2: Device Communication

Determine An Adequate Communication System

Here we must understand the specifications that our system must meet in order to transmit the necessary information reliably.

Guarantee Network Availability on Site

Here we must communicate with the managers of the site on which our client's instrument will be deployed to insure that a wireless network exists.

Install Microprocessor Control Software

Here we must install the Arduino software onto our client's outed operating system.

Communicate With Site Tech Support

Here we must communicate with the tech support of the site to determine if our client's instrument is capable of forming a wireless connection.

Lab Test Control Software on Client's Instrument

Here we must test the control software's ability to integrate with our client's instrument and control our electric valve inside her lab.

Field Test Control Software on Client's Instrument

Here we must test the control software's ability to integrate with our client's instrument and control our electric valve in the field.

Subsystem #3:

Power System

Lab Test Generator

Here we must test the capabilities of our generator against loads similar to our required load in a lab setting

Field Test Generator

Here we must power our system in the field with the generator to insure that it will function at the site.

Use Power Requirements and Cost Analysis to Purchase Ideal Generator

Here we must purchase a gas generator that will be reliable and cost-efficient in order to power our entire system.

Begin External Fuel Tank Addition Process

Here we must find an adequately sized fuel tank to install onto our generator in order to increase the amount of time that the system can run without interference.

Purchase Necessary Items

Here we must find and purchase the items necessary to expand our generator's fuel capacity.

Install the External Fuel Tank

Here we must install the external fuel tank to the generator in a robust manner to avoid leaks or failures after movement.

Route Exhaust

Here we must find and implement a way to route our generator's exhaust fumes away from sensitive equipment that will be nearby.

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Conclusion of Project Schedule

- We will first see our electronic valve subsystem all the way through from testing to deployment.
- Our power subsystem will be built and tested alongside the electronic valve subsystem.
- After our power source and valve are lab tested, we will design our communications subsystem to allow us to do a field test.
- After a successful field test, we will work on our DIY document and hand over our design to our client.

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