

Endeavour InvenTeam Invention

Progress & Plans #4

Current Status:

We are still currently conducting experiments with the motherboard and we are still trying to figure out how to build an independent sensor not reliant on a desktop computer. Also we are currently trying to find ways to improve the enclosure that we have.

Past Month:

This month our Endeavour InvenTeam has achieved a tremendous amount regarding our invention. We had people such as Mrs. Meade and Mrs. Kliever come in to discuss our project and how we can better understand what we are overall trying to accomplish as well as promoting ourselves to the public. Another aspect that we focused on this month was that we had begun the experimenting phase of our project. We tested things like an RF transmitter and receiver. The BASIC Stamp also proved useful as we formulated experiments such as transferring and storing binary codes and making a water quality sensor. We conducted an experiment using solar panels and a substitute prototype for our enclosure.

Presentations were a key thing starting our month. Mrs. Meade helped us to clearly understand where we are in our invention process as well as providing us with additional information on water quality. During the beginning of her presentation she had us each say something we knew that was relevant to our project. She set our mind in a clearer pathway by helping us analyze and clearly understand what types of sensors there are out there. She also helped us by telling us why those different types of sensors would be important like temperature, turbidity, and salinity. Mrs. Meade has also helped us realize that we shouldn't worry if our experiment prototype was immense in size because even the earlier cell phones and computers started out this way. Mrs. Kliever helped us with writing and she explained how providing information is essential to our sponsors at MIT but also in our local community as well. Mrs. Kliever gave us a very descriptive presentation on information content and as well as how we should address a letter or in this case a progress report.

In one of our experiments, preliminary testing was done with the RF transmitter and receiver. We had to set a code on both transmitter and receiver so that they could communicate with each other. Doing this was a bit of a step down from cell phone technology, although it was a step in the right direction. Other experiments dealt with using BASIC Stamp to make a water quality sensor that allowed us to create a way to read data and send it to the PC. Doing that was like a first step, although we are still figuring out how to send data to a remote module. BASIC Stamp also allowed us to be able to transfer and store binary colors using push buttons. Using this acquired

knowledge we were able to convert instrument reading into binary code to be transferred and translated. The next experiment was solar panel testing. We tested our solar panels in a variety of lighting situations such as a cloudy day compared to a lovely sunny afternoon. We also worked on building a voltage doubler to get more power. For enclosure however, we ran into the problem of how big we are going to make it and what materials we are going to make it. However for now we are using a tire for our substitute prototype enclosure.

This past month has been very productive. The experiments and guest speakers that we have had come in will surely help us during our invention process.

Challenges:

During this last month we were able to test and gain knowledge from several different things. For instance the RF transmitter and receiver was challenging at first after assembling it because after setting the code we had no communication between them. So in order to fix it we had to go back and check every individual solder on the board so that we could fix any bridging that was found. Then for our enclosure we are running into factors like the size and materials we need to build it. To fix this we will soon begin trying to make a ballpark figure on the amount of space we need and how big it's going to be. Also for the types of materials we will be doing further research on what type of metal we will use such as steel or aluminum. This will determine what type of tools to use. Other challenges included building a voltage doubler, because of the complex wiring involved, and also with the BASIC Stamp we are still figuring out how to send data to a remote module.

Next Month:

For this up coming month we have many things we would like to accomplish. We tried to order a cell phone module for our unit but we are currently still waiting for a reply from Nokia. We are planning on fabricating a sensor so that it will be able to operate without being reliant on a desktop computer. We also plan on building a more efficient prototype version of our enclosure by making several prototypes. Also, we are planning on doing more testing with solar panels to better equip our project with power. We planned to test our equipment and gain more understanding of each new material that comes in. This will hopefully help us to complete our project in the end.

Team Functioning:

Our InvenTeam as a whole has worked together very well. During our experiments we have not singled out anyone. We all have worked together to understand what is going on within our team. In our individual groups however, we have established coordinators of each group. They are the main people that will talk about our current progress during team meetings. Peter Oyler is for "Communications and Data Analysis," Hunter Boulware for "Sensors," Danny Lara for "Systems Integration and Control," and

Kevin Coons for “Enclosure and Power.” However, when the entire InvenTeam meets, Tyler Brigham will still act as chair.

Needs & Questions:

Right now we still have questions with the enclosure and what type of materials we should use for it. The size and space needed is a definite issue and as we begin to understand more, we are moving closer on to a ballpark estimate. Until we can hook up a cellular device, we are in need of a hard-drive and modem to send data.

Problem Statement:

Water quality is a problem in our local area especially considering all of the surrounding wineries. We are going to design and fabricate a device that will autonomously gather, store and transmit water quality measurements such as: temperature, turbidity, conductivity, flow rate, and pH levels. Our invention will be remote, autonomous, wireless, waterproof, buoyant, and provide accurate measurements. We want to focus on fresh water, but if we could use our invention in salt water it would be an additional benefit. We also have to integrate all of the systems into one streamlined system. We would like to make the information about water quality, which our invention gathers, available to the general public so that they may have accurate figures regarding water quality around this area.