Weekly report

Accessible Home Vital Signs Monitoring System
Week 7
March 21, 2007
Mike Kapinos

Work Completed

In the past couple of weeks I have been doing a lot of research regarding the research circuit for our system. I found a few different types of rechargeable circuits that were all very complicated and would be very difficult to complete correctly. I decided to search around the web and through other senior design projects and found that group 2 developed a very simple and successful approach in designing a recharge circuit. So I decided to save both time and frustration that there approach would also be the correct one for us. Instead of designing a complete circuit, a module is used to control the recharging of the battery. The module used is the BatMod™ Battery Charger Current Source Module shown below in Figure 1.

Figure 1. BatMod™ Battery Charger Current Source Module

The easy thing about this circuit is that the only thing needed to do is to determine the correct resistance of the circuit to allow for the correct charging current and floating voltage. As shown on the next page in Figure 2, the schematic for the BatMod module is very basic and not very hard to build. The only thing I will need to determine is the resistance values on the right side of the schematic.
Although it is possible to determine the needed resistor values on my own it would require the use of manipulating some difficult equations. To aid in the process the Vicor Corporation provides a program that will calculate the needed resistor values when different variable are entered in. These variables include output voltage, output current, and float voltage. The program is shown below in Figure 3.

**Figure 2.** Charging circuit Schematic for BatMod module

**Figure 3.** Resistance Calculation Program
Now that the idea of the recharge circuit is complete it is now time to determine the type of battery that would best fit this design. Our group has already ordered 3 9Volt batteries from Tenergy but these batteries will not work in this circuit. The needed battery has to have a 12Volt output to successfully fit into the circuit. Our group wanted to stray away from using lead-acid batteries for our project mainly for safety concerns. The only problem is after spending awhile on the internet searching for 12Volt batteries the only ones I could find were lead-acid. After searching the battery I decided to go with is from ragebattery.com and is shown in Figure 4 below.

![Rhino 12 Volt 3.0Ah Sealed Lead Acid Battery](image)

**Figure 4.** Rhino 12 Volt 3.0Ah Sealed Lead Acid Battery

**Future Work**

In the next week or so I plan to hopefully have the entire research circuit completed and tested to make sure that the battery will charge correctly. The only thing restricting me from doing this is that I need to order the BatMod module and the new battery. I will at least have the circuit needed to control resistance completed this week. I will then hopefully be able to move on to my next task in the system.

**Hours Worked**

Week 7- 10 Hours