

IOWA STATE UNIVERSITY

# Senior Design Weekly Report

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## Weekly Report 2

**Group: May-06**

**Group member: Chongli Cai, Qiaoya Cui, David Hoffman, Andrew Kom, Ailing Mei**

**Client: Garmin International**

**Advisor: Dr. Colin Christy**

**Period: 9/3/2012-9/8/2012**

**Date: 9/8/2012**

## Goals to Meet

The goals we set for the week were to host a teleconference with the representative from Garmin. We prepared a list of questions to ask Steve, and held the conference at 2pm on Thursday, September 6. We also had Dr. Christy present for the teleconference to keep him up to date with what our progress is.

## Weekly Progress

Through the meeting with Steve, we gained clarification on a number of things. One is that the temperature sensor is for ambient temperatures only. He gave us the option of adding a feature to plug in a thermal couple, but we determined that it would be best to focus on requirements first, and if time allows, we can add in additional features. We also determined that this device will have 2 modes. One will be for high currents and will utilize a sense resistor current sensor, and the other will be for low currents, and will use a hall-effect sensor or 'current-clamp' style sensor, to avoid significant loss that would be present with a sense resistor. Steve also got us started with a possible microprocessor that may fulfill the requirements it needs to. Among these ideas, we also were given the recommendation of using LT Spice to simulate the circuit, prior to building anything.

## Future Planning

Given the understanding developed from the meeting, we have determined to start focusing on 2 main areas to get functional first. The current sensing methodology will be the main focus, and we have divided up the team to learn the capabilities of each current sensing method. In conjunction with this, we will be analyzing the recommended PIC microprocessor to see if it has the capabilities we require. Specifically, it must have an ADC with accuracy that will allow for accurate measuring of both Voltage and Current. Our team software engineer will also be examining the proposed PIC to see how it functions, and how it interacts with the SD card memory.

## Pending Issues

We need to find a better way to hold a teleconference as we were only able to use a cell phone speaker. Our original plan to utilize Skype requires payment to connect to land lines, so perhaps a method that involves a different speaker will need to be sought out. In addition, we may run into issues with sensor compatibility with our microprocessor.

## Individual Contributions

### **Andrew:**

Wrote Project Log #2

Created Individual Contributions Google doc

Distributed the summary of our Garmin meeting to group members

Assigned individual tasks to group members

Participated in the group discussion with Garmin, leading to better clarification on project goals

Acquired the task of finding the PIC (specified above) and determining ADC capabilities

### **Chongli:**

Participated in the group discussion with Garmin, leading to better clarification on project goals

Acquired the task of find a “hall-effect” current sensor and determining its viability

### **Ailing:**

Participated in the group discussion with Garmin, leading to better clarification on project goals

Acquired the task of finding a “current-clamp” style current sensor

### **Qiaoya:**

Participated in the group discussion with Garmin, leading to better clarification on project goals

Acquired the task of learning LT Spice Simulations, and relaying it to the group

### **David:**

Asked several key questions during the meeting with Garmin, giving better clarification on project goals

Acquired the task of researching the above PIC MCU and finding out how SD cards interface