**Weekly Progress Report**

**Project Name**: Energy Management System (EMS)

**Date**: September 6, 2015

**Collaborators:**

Andrew Cope, Computer Engineering major, [ajc4630@rit.edu](mailto:ajc4630@rit.edu)

Jacob Lauzon, Computer Engineering major, [jfl4577@rit.edu](mailto:jfl4577@rit.edu)

Donald MacIntyre, Computer Engineering major, [djm4912@rit.edu](mailto:djm4912@rit.edu)

Ryan McLaughlin, Computer Engineering major, [rpm6651@rit.edu](mailto:rpm6651@rit.edu)

**Project URL:** TBD

**Updated Milestone Chart:**

Updates from previous revisions are italicized for clarity.

| **Task Description** | **Original Scheduled Completion Date** | **Responsible Team Member** | **Modified Completion Date** | **Comments** |
| --- | --- | --- | --- | --- |
| Critical Component Breakout Boards | 8/24/2015 | RM, DM | 9/28/2015 | Critical component breakout boards have been completed for all functions except PLC. |
| User Interface Implementation | 8/24/2015 | JL, AC | 9/28/2015 | Rest of system does not heavily depend on webapp so completion delay is not a large factor. |
| Web App Database Communication | 8/24/2015 | AC, JL | 9/28/2015 | Rest of system does not heavily depend on webapp so completion delay is not a large factor. |
| Order Parts | 8/24/2015 | All | 9/28/2015 | All parts ordered and received except for PLC parts. *PLC evaluation samples have been requested via Dr. Becker-Gomez and through contacts made on co-op at Moog.* |
| Initial PCB Design | 8/31/2015 | DM |  | Focusing efforts on vero-boarding initial hardware design instead of PCB design. Breadboard has been constructed. *PCB may still be constructed if time permits, but based on summer slippage time for spinning PCB my not be available.* |
| Obtain and Verify Parts | 9/7/2015 | All |  | All parts except PLC have been received and verified. |
| Verification of Power Supply Circuitry | 9/14/2015 | DM |  | On schedule |
| Verification of Breadboard Load Switch | 9/14/2015 | DM |  | On schedule |
| Verification of Breadboard Current Sense | 9/21/2015 | DM |  | On schedule |
| Verification of Breadboard Voltage Sense | 9/21/2015 | DM |  | On schedule |
| Outlet Communication with PLC | 9/28/2015 | RM |  | Deciding best approach still a subject of team meetings. |
| Interface PLC with Pi | 9/28/2015 | RM, JL |  | Deciding best approach still a subject of team meetings. |
| Verification of Breadboard Processor | 10/5/2015 | All |  | On schedule |
| Final PCB Design | 10/19/2015 | All |  |  |
| Finalized Database Structure | 10/19/2015 | AC, JL | 9/28/2015 | This will be a result of the webapp completion. |
| PI PLC API | 10/26/2015 | RM, AC, JL |  | Deciding best approach still a subject of team meetings. |
| System recognizes new outlets automatically | 11/2/2015 | All |  |  |
| Send Hardware Measurement over PLC | 11/9/2015 | RM, JL, DM |  |  |
| Receive and store measured data | 11/9/2015 | AC, JL, RM |  |  |
| View measured data | 11/9/2015 | JL, AC |  |  |
| Toggle state of single outlet from web interface | 11/16/2015 | All |  |  |
| Toggle state of a group of outlets | 11/16/2015 | All |  |  |
| Outlets and groups follow schedule | 11/16/2015 | All |  |  |
| Data Compression Verification | 11/16/2015 | AC |  |  |
| Full system test passed | 11/25/2015 | All |  |  |

**Current Milestones:**

| **Task Description** | **Original Scheduled Completion Date** | **Responsible Team Member** | **Modified Completion Date** | **Comments** |
| --- | --- | --- | --- | --- |
| **Critical Component Breakout Boards** | 8/24/2015 | RM, DM | 9/28/2015 | Critical component breakout boards have been completed for all functions except PLC. |
| **User Interface Implementation** | 8/24/2015 | JL, AC | 9/28/2015 | Rest of system does not heavily depend on webapp so completion delay is not a large factor. |
| **Web App Database Communication** | 8/24/2015 | AC, JL | 9/28/2015 | Rest of system does not heavily depend on webapp so completion delay is not a large factor. |
| **Order Parts** | 8/24/2015 | All | 9/28/2015 | All parts ordered and received except for PLC parts. *PLC evaluation samples have been requested via Dr. Becker-Gomez and through contacts made on co-op at Moog.* |
| Initial PCB Design | 8/31/2015 | DM | 9/6/2015 | Focusing efforts on vero-boarding initial hardware design instead of PCB design. Breadboard has been constructed. *PCB may still be constructed if time permits, but based on summer slippage time for spinning PCB my not be available. Completion of breadboard has met the intent of this task.* |

**Next Milestones:**

| **Task Description** | **Original Scheduled Completion Date** | **Responsible Team Member** | **Modified Completion Date** | **Comments** |
| --- | --- | --- | --- | --- |
| Critical Component Breakout Boards | 8/24/2015 | RM, DM | 9/28/2015 | Critical component breakout boards have been completed for all functions except PLC. |
| User Interface Implementation | 8/24/2015 | JL, AC | 9/28/2015 | Rest of system does not heavily depend on webapp so completion delay is not a large factor. |
| Web App Database Communication | 8/24/2015 | AC, JL | 9/28/2015 | Rest of system does not heavily depend on webapp so completion delay is not a large factor. |
| Order Parts | 8/24/2015 | All | 9/28/2015 | All parts ordered and received except for PLC parts. *PLC evaluation samples have been requested via Dr. Becker-Gomez and through contacts made on co-op at Moog.* |
| Initial PCB Design | 8/31/2015 | DM |  | Focusing efforts on vero-boarding initial hardware design instead of PCB design. Breadboard has been constructed. PCB may still be constructed if time permits, but based on summer slippage time for spinning PCB my not be available. |
| Obtain and Verify Parts | 9/7/2015 | All |  | All parts except PLC have been received and verified. |

**Status**

**Difficulties:**

Working on obtaining a PLC evaluation board and getting the project back on schedule.

**Surprises**

Cost of evaluation PLC boards. Group has reached out to Dr. Becker-Gomez and to contacts at Moog Inc. in an attempt to obtain free PLC evaluation boards for project research purposes.

**Successes:**

Parts have been obtained and vero-boarding construction of remote outlet prototype circuits is continuing. Web application and user interface development has begun.

**Questions/problems for consideration:**

We have decided not to make an overall PCB but to develop a working hardware prototype on vero-board which can be used to demonstrate the functionality of the system, and if time/budget permits then complete a PCB design.

Based on group meetings and discussions it has been determined that attempting to obtain a PLC evaluation kit is the best approach.

We are making a design change within the web application. We are switching from using the Python based Django framework to the Java based Vaadin framework. This is being done because the team is more familiar with Java and the Vaadin framework and also because Java is a more powerful platform for development. This means we will need a way for the Java app to talk to native Python scripts running on the Raspberry Pi (possibly Jython) and that the web application will use significantly more system memory. Some additional tests will be run in the near future to ensure the memory usage is not too high.

**Gantt Chart:**

