

**Texas Commission on Environmental Quality  
New Technology Research & Development (NTRD) Program  
Monthly Project Status Report**

**Contract Number:** 582-11-12630-3264

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**Grantee:** Ecopower Hybrid Systems (Ecopower)

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**Report for the** \_\_\_\_\_ **Date** January 9,  
**Monthly period:** December 2012 **Submitted:** 2013

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**Section I. Accomplishments**

*Provide a bulleted list of project accomplishments as well as a description of their importance to the project.*

**Electrical design:**

- New programmable logic control (PLC) programming validation was performed on current lead-acid design to test bench test modification required for the current project. Test bench modifications were completed and verified. PLC verifications in parallel with old PLC are completed. New PLC runs properly the EcoCrane test bench
- PLC programming to control the generator is on-going. Generator control for charging batteries without crane demand is verified successfully. PLC generator control programming comparison was performed.

**BMS:**

- Discussions with battery management system (BMS) supplier are completed to improve functionality of cell group module. We received improved version of cell group module.

**Battery:**

- Evaluation of cells in stock first batch of cells was completed in order to identify properly cells to be replaced.

**Thermal and mechanic:**

- Immersion test was done on individual cell.
- Battery rack assembly was fabricated and delivered at Ecopower.
- Battery rack inspection is completed
- Genset/electrical cabinet was manufactured and delivered at Ecopower.
- Inter-module power cable routing was verified.
- Electrolyte spray test cells and BMS system was completed.

*Indicate which part of the Grant Activities as defined in the grant agreement, the above accomplishments are related to:*

- All realizations are related to Task 2 of the project.

## **Section II: Problems/Solutions**

*Problem(s) Identified: Report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project*

- Some battery cells show higher self-discharge than expected.
- Schedule remains very tight.

*Proposed Solution(s): Report any possible solution(s) to the problem(s) that were considered/encountered*

- It was planned to replace all cells by new cells built with thicker separator. These cells were expected to be more robust. However, the manufacturer cannot deliver in due time.

*Action(s) Conducted and Results: Describe the action(s) taken to resolve the problem(s) and its effect*

- We are now discussing to replace defective cells with current 20 microns version. This is the only way to respect the delivery deadline for the project.
- Discussion and finalization of the plan will occur in January 2013 in order to have replacement in house in order to deliver EcoCrane to Houston, Texas, on time.
- We are still following carefully all activities to mitigate any potential delay on schedule.

### **Section III. Goals and Issues for Succeeding Period:**

*Provide a brief description of the goal(s) you hope to realize in the coming period and identify any notable challenges that can be foreseen*

#### **Electrical design:**

- Adaptation of PLC programming for lithium technology will be started.
- Second version of final electrical drawings including parallel slave BMS for redundancy completed.
- Check for direct current (DC) power cabling integration into crane E-room

#### **BMS:**

- To complete electromagnetic interference (EMI) testing with new improved group cell module.
- Further EMI test will be done with different cabling configurations.

#### **Thermal and mechanic:**

- Battery rack modification will be completed
- Genset enclosure check and modification will be completed
- Battery cyclers installation and configuration will be planned and started
- Communication wiring routing will be evaluated to fit the new electrical configuration
- Paint and lettering drawing for genset enclosure and battery rack will be completed

Date: January 9, 2013

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*Authorized Project Representative's Signature*

**NOTE:** *Please attach any additional information that you feel should be a part of your report or that may be required to meet the deliverable requirements for tasks completed during this reporting period.*