

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

<u>Contract Number:</u>	582-11-12630-3264		
<u>Grantee:</u>	EcoPower Hybrid Systems (Ecopower)		
<u>Report for the Monthly period:</u>	January 2013	<u>Date Submitted:</u>	February 8, 2013

Section I. Accomplishments

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

Electrical design:

- The final set of electrical drawings including the battery management system (BMS) parallel slave system added for redundancy is completed.
- Final bill of Material (BOM) is completed
- Request for quote was sent to control and power management panel (CPMP) assemblers.
- The integration check of the direct current (DC) power cabling into crane electrical-room (E-room) was completed.
- All E-room drives will be connected in DC. Different option for protection of DC power connection have been analyzed based on existing room configuration

Battery management syste (BMS):

- Electromagnetic interference (EMI) testing with new improved group cell module is completed and successful.
- EMI testing done with different cabling configurations is completed.
- A special electrolyte resistant coating was order to manufacturer for the cell board.
- Based on test, a customized cabling solution to ease mounting and avoid misconnections was ordered.

A verification tool has been design and assembled for module fan and BMS wiring verification.

Battery:

- The replacement of bad cells is ongoing.
- The recombination of the good cells in new cell bundle is restarted.

Thermal and mechanic:

- Battery rack check and modifications are completed
- Genset enclosure check and modifications are completed
- Battery cyclers were delivered and power connection was completed
- BMS wiring was revised to fit new BMS configuration
- Paint and lettering drawing for genset enclosure and battery rack are ready
- Battery rack heating, ventilation, and air conditioning (HVAC) configuration was finalized
- CPMP enclosure was adapted to fit a new HVAC
- Door limit switch were selected and ordered for battery rack safety.

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 (Engineering) and Task 3 (Manufacturing) 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

- Defective 20 microns cells will be replaced. New cells were approved and will be delivered second week of February 2013 at Ecopower.
- We have received tools from cell manufacturer to reassemble all good cells in bundles required to manufacture Ecopower battery modules. This is the only way to respect the delivery deadline for the project.
- Plan is finalized and the unit will be ready on time for shipping to Houston, Texas.
- 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:

- Location and physical verification of integration will be performed in Houston, Texas, on the rubber tire gantry crane to be retrofitted.
- Programmable logic control (PLC) programming for lithium technology will be started.
- Electrical design review of the system will be started
- Sequential Flow Chart of operation will be completed
- Shop test planning will be completed
- Failure mode and effects analysis (FMEA) of CPMP panel document will be ready

BMS:

- Module assembly verification and tests for fan and BMS wiring will be completed.
- Final conception of BMS system enclosure and connections to be installed in the battery rack will be completed.

Thermal and mechanic:

- Installation of the generator (genset) and auxiliary equipment inside the cabinet will be completed.
- Battery cyclers to be used for final module testing will be configured
- Rejected battery cells will be replaced in the module and re-bundled to start battery module assembly.
- Battery module assembly will be started
- HVAC system installation inside the battery rack will be completed
- Battery rack accessories will be installed

Date: February 7, 2013

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.*