

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

Contract Number: 582-11-12630-3264
Grantee: EcoPower Hybrid Systems
Report for the Monthly period: November 2011 **Date Submitted:** December 9, 2011

Section I. Accomplishments

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

- P-A Lavoie visited Energy CS (ECS) from November 15th to 18th to refine testing strategy and to complete a work plan for module assembly. Weekly meetings are held every week between EcoPower and ECS and a file transfer protocol (FTP) site was configured to share results and data files in real time between both teams.
- All cells to be evaluated are delivered at testing facility and were characterized for open cell voltage (OCV) and dynamic impedance.
- Characterization of baseline capacity, heat rejection, and power performance at 5 degrees Celsius, 10 degrees Celsius and 40 degrees Celsius is complete on two first cells(A123 32113 and A123 26650).
- Due to weak performances and very large impedance, FIR cells were rejected and replaced by K2 26650 energy cells. Procurement was expedited and cells delivered end of November 2012.
- Testing fixtures and cell preparation for 5 other cell models (BAK 26650, Gold Peak 42Ah, Lishen 15.5Ah, K2 26650 energy and K2 26650 power) are completed..
- In summary, the project remains on schedule defined since contingency plan was applied. We still expect to deliver the Phase 1 report by the end of January 2012.
- We revisited the possibility of evaluating one commercial module as potential fallback plan. After discussion with the supplier, they accepted to supply 2 modules and perform required testing. The value is \$25,000 and the company accepted to supply \$20,000 in kind. We are paying the residual \$5,000.

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

All these realizations are related to the Phase 1 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

- The technological risk of assembling sub-modules from cells is higher than to buy commercial sub-modules as originally anticipated.
- Welding procedure required to assemble tabs on cells for module assembly are more complex than expected. Supplementary testing and procedure development is required.

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

- We ordered 2 more cell types as contingency. As only cells meeting minimal performance criteria will be assembled in sub-modules; we wanted to be sure to be able to assemble what is required to complete the task.
- We are launching parallel testing for one commercial module as supplier proposed to offer 80% of testing cost in in-kind.
- We will support ECS on the welding procedure development with internal welding expertise. Richard Laliberte is metallurgist and expert in welding.
- The welder manufacturer Miyachi Unitek will be also contacted to help for procedure.

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

- We are currently working on welding issues. We expect to have it fixed by the end of the month and be ready to assemble from January 4, 2012. This does not delay current testing.

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

- To complete characterization of baseline capacity, heat rejection and power performance at 5 degrees Celsius, 10 degrees Celsius, and 40 degrees Celsius for all cells.
- To complete accelerated aging test planned on at least 5 cells.
- To determine cells to be used to fabricate modules for testing from impedance, heat rejection and power performance data.
- To order all cells required to assemble modules and have it shipped for beginning of January 2012.

Date: December 10, 2011

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.*