

**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 Inc.

Report for the Monthly period: July 2011 **Date Submitted:** Aug. 10, 2011

Section I. Accomplishments

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

- Comparison table and Pugh chart of battery technologies and manufacturers for the project have been completed. In this review of published data, the economical parameter was also considered since the developed system must represent a lifetime value for the customer. The analysis has also included an evaluation of the lithium battery manufacturers' apparent reliability, the projected performances as well as well as other non technological related parameters like sales, numbers of employees, date of foundation etc. The first conclusion shows that it would be appropriate to build modules with standard cells if the schedule can still be met. Assembling modules from cells could also be beneficial for the integration to the crane.
- A standard testing module protocol for modules was completed and sent to external labs or suppliers equipped with battery cycling equipments. We received three quotes. These quotes will be used as reference as they were obtained on the same scope of work. One of the companies to test module could also support us to design the battery pack.

Table 1 presents a summary of cost quotes supplied by laboratories for a standard Scope of work, including thermal chamber cost

Table 1. Comparative cost for module testing

| Supplier | A | B | C |
|----------------------------|--------------------|--------------------|--------------------|
| <i>Cost/day</i> | \$600.00 | \$689.66 | \$794.05 |
| 42 Test Days Total | \$26,100.00 | \$28,965.52 | Not Provided |
| Setup and Coding | \$7,500.00 | \$15,000.00 | Included |
| In-kind by Supplier | -\$7,500.00 | \$0.00 | \$0.00 |
| TOTAL | \$26,100.00 | \$43,965.52 | \$33,350.00 |

- We are currently contemplating the possibility to assemble our own module to reduce the production cost for the industrial units and to ease market introduction of the Li-ion hybrid power plant equipped with tier 4i small diesel engine. We are discussing with companies to define what are the required resources to develop modules with cells that would fit the application more adequately than adapting expensive module used in public transportation and not fully adapted for the crane application. One of the suppliers is equipped to design and to assemble prototypes and familiar with different Li-ion chemistries. The final decision on our orientation will be decided in August. The testing of the cells, the fabrication of prototype modules and testing of the modules would be the final result of the phase 1.
- The change in ownership of the company was completed end of July. The official press release was sent out on August 4th. We are now able to proceed with modules and potentially the procurement of the cells and currently working on procurement lead time. For the time being, modules and cells will be bought for their technical characteristics followed by their availability. The choice will be presented in the next report.

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

- All described work is related to phase 1 and will be included in the feasibility analysis that needs to be completed before the go-no-go to fully complete the phase 1.

Section II: Problems/Solutions

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

- a) No specific problem related to technology was identified during this period. The long lead time for modules and testing is still an issue.

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

- a) To finalize a plan and a schedule to design and assemble our own modules including procurement of the cells for phase one in collaboration with testing facility.

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

- a) We are currently preparing a plan to achieve the phase one with the support of a company which is equipped with testing equipment, can support at design level and own all required equipment to build testing module.

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

- a) To finalize discussion with potential service suppliers for testing and support for module fabrication.
- b) To complete final selection of cells to be tested based on projected performances, price and availability.
- c) To purchase cells for all preliminary testing. Those cells will potentially be usable for module building depending on the testing results.

Date: August 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.*