

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

Contract Number: 582-11-13472-2019

Grantee: Transportation Power, Inc.

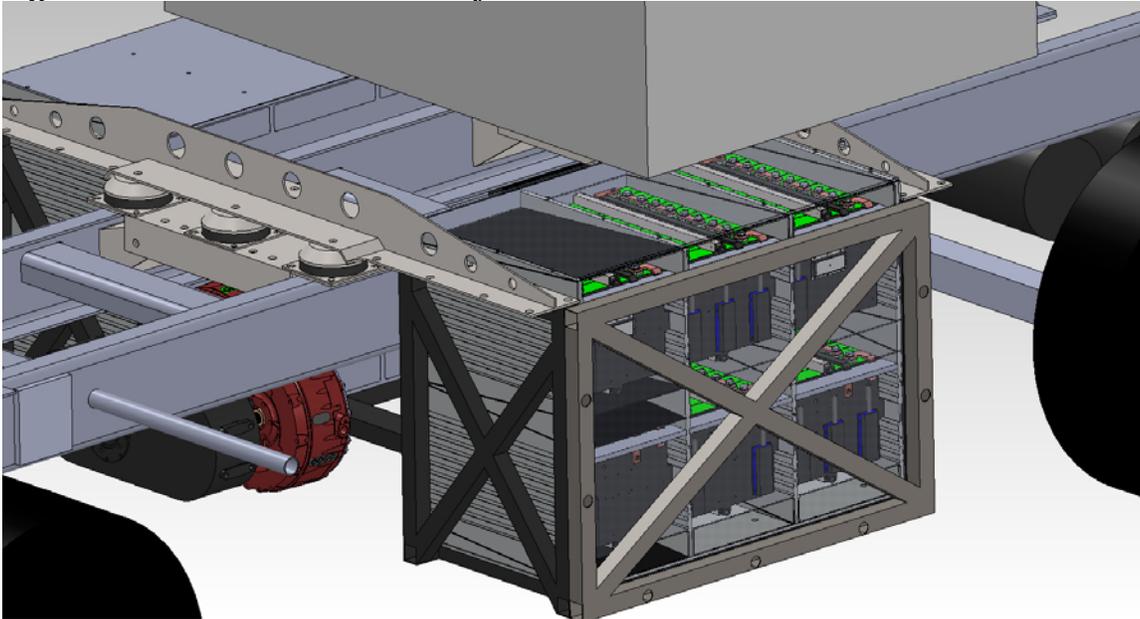
Report for the Monthly period: 07/09/2011 – 08/05/2011 **Date Submitted:** 08/10/2011

Section I. Accomplishments

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

- Completed the preliminary design of a standard battery enclosure, which is important to the project because physical integration of 2-3 tons of batteries into the prototype tractors is a major technical challenge. Figure 1 shows a CAD illustration of our standard battery enclosure.

Figure 1: CAD illustration of battery enclosure



- Completed acquisition of all major components for our first electrically-driven accessory subsystem, which enables us to move forward with testing of key subsystem elements.
- Initiated testing of electrically-driven accessory elements, which is an important step toward building an accessory system capable of powering steering, braking, and other auxiliary loads on the prototype tractors.

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

- All three of the accomplishments listed above relate to Task 2.1.1, “Final Component Selection and Procurement.”

Section II: Problems/Solutions

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

- a) An internal review of our battery enclosure design identified several integration issues including high weight and possible exposure of batteries to ground water.
- b) The cost of the integrated scroll compressor assembly purchased for the prototype accessory subsystem exceeded expectations.

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

- a) Several steps are being taken to reduce the weight of the battery enclosure while also protecting the batteries from standing water. These potentially conflicting goals will be achieved in part by utilizing efficient aluminum designs for load-bearing structural elements while using lighter materials (e.g., plastics) for environmental protection.
- b) We are exploring alternative approaches to powering the accessory air system that would save money by enabling us to utilize lower cost components and perform the assembly of this element ourselves. We believe this approach could save approximately \$1,000 per vehicle as compared with the cost of the current compressor assembly.

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

- a) Our updated battery enclosure design uses lightweight beams to transfer loads and provide crash protection, and plastic covers to protect batteries from standing water.
- b) A search for lower cost compressor components has been initiated, but we have not yet made a final selection of alternative components to the higher cost compressor assembly that we've already acquired.

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

For the coming period, the level of activity will remain relatively modest as we await delivery of the first tractor vehicle and continue focusing our attention on design of subsystems and components that support both our on-road truck and tractor programs. During the next period, we expect to complete the design and analyses of our integrated battery enclosures and electrically-driven accessories. As addressed in our previous monthly report, the only notable challenge foreseen is the effect of not having a tractor vehicle in our possession until September, which is forcing us to design components without having the benefit of being able to see a vehicle first-hand. To compensate for this, we are focusing our efforts on components whose designs are relatively independent of vehicle geometry.

Date: 08/10/2011

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.*