

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

**Contract Number:** 582-11-11145-3264

**Grantee:** The University of Texas at Austin (UT-CEM)

**Report for the Monthly period:** February 2013 **Date Submitted:** March 11, 2013

**Section I. Accomplishments**

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

- In February 2013, the hydrogen station reformer was operated for about 28 hours and produced 21 kilograms of hydrogen. The bus was not in operation for the majority of the month. Average refueling times have been approximately 10 minutes.
- Gas Technology Institute (GTI) specified and ordered a new computer for the hydrogen generation station. The existing computer is experiencing occasional memory allocation errors.
- GTI specified and ordered power measurement equipment for the hydrogen generation station. The power metering equipment will allow UT-CEM to assess the "cost" of the hydrogen per National Renewable Energy Laboratory (NREL) request.
- Proterra completed the transmission rebuilt in January 2013 and performed road trial tests early in February 2013. A preventative maintenance inspection was also required by Capital Metro before putting the bus back into service. The bus went into service the week of February 18, 2013.
- On Friday February 22nd, the bus experienced an air system problem. Proterra corrected the issue the following week and the bus returned to service at the beginning of March 2013.

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

*“Task 2.5: The PERFORMING PARTY will operate the hydrogen fuel cell hybrid-electric bus in a realistic working environment over a twelve month period, including using the hydrogen generation and fueling station as the bus’s primary fuel source.”*

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

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

- a) On February 24, 2013, the control system registered an over pressure error in the DM type compressor. At the site, a relief valve was heard discharging and approximately 10 kilograms of hydrogen was discharged through the relief valve.
- b) On February 28, 2013, during filling of the bus it was noticed that the air actuated valves on the low and high banks were not opening.

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

- a) After evaluated the process lines, UT personnel determined that two check valves in the tubing from the compressor discharge to the mid storage bank were malfunctioning.
- b) The actuating solenoid valves in the dispenser were evaluated and found to be leaking.

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

- a) There was one spare check valve at the site. UTCEM personnel replaced one check valve in the mid storage bank priority fill line. The station was turned back on and ran for about 24 hours without incident. GTI will look for another vendor for high pressure check valves for this application.
- b) The solenoid valves were removed from the dispenser and cleaned, resolving the problem.

### **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*

- The hydrogen generation system will be operated to replenish hydrogen consumed by the bus throughout the period.
- Install new computer and software at hydrogen station.
- GTI will order a membrane dryer to condition the air supply feeding the hydrogen generation trailer.
- GTI will plan a visit to the site to install the power measurement equipment, the computer, and the membrane air dryer.
- Continue passenger service with the bus and continue data collection and reporting efforts.

*Date:* 03/11/2013

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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.*