FINAL REPORT

Project Title:	Sustainable Hydrogen Fueling Station, California State University, Los Angeles
Covering Period:	January 1, 2010 to December 31, 2012
Date of Report:	January 25, 2013
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Project Objective:	The College of Engineering, Computer Science, & Technology at California State University, Los Angeles as part of its alternative and renewable energy leadership efforts has built a sustainable hydrogen station to teach and demonstrate the production and application of hydrogen as the next generation of fully renewable fuel for transportation. The requested funding was applied toward the acquisition of the core hydrogen station equipment: electrolyzer, compressors and hydrogen storage.

Project Summary

The project consisted of one task divided into 4 subtasks:

Task 1.0 Hydrogen Station Equipment Acquisition

The equipment under this funding is purchased through General Physics. The equipment integration and station design is through Weaver, Inc.

The current funding provides for a single task of acquisition of the core hydrogen station equipment: electrolyzer, compressors and hydrogen storage.

Subtask 1.1 Electrolyzer
Order, receive and install station electrolyzer: HySTAT-A 1000D-30-10.
Completed.

Subtask 1.2 350 Bar Compressor
Order, receive and install station 350 bar compressor: PDC-4-1000-6500.
Completed.

Subtask 1.3 700 Bar Compressors
Order, receive and install station two (2) 700 bar compressors: Hydro-Pac C12-60-10500LX.
Completed.

Subtask 1.4 Hydrogen Storage Tanks
Order, receive and install station three (3) 350 bar storage tanks:
Completed.

Introduction

The California State University, Los Angeles hydrogen station deploys the latest technologies with the capacity to produce 60 kgH2/day. This is sufficient to fuel 15 vehicles or a bus and five more vehicles in one day. The station utilizes a Hydrogenics electrolyzer, first and second stage compressors capable of fast filling at 10,000psi (700bar), 60kg of hydrogen storage, water purification and equipment cooling system. The station is grid-tied and powered by 100% renewables.

The station will also be used as an applied research facility for equipment testing and verification of fuel purity and dispensing accuracy. Another primary function of the station is to introduce hydrogen as a safe transportation fuel through community education and demonstrations.

Report

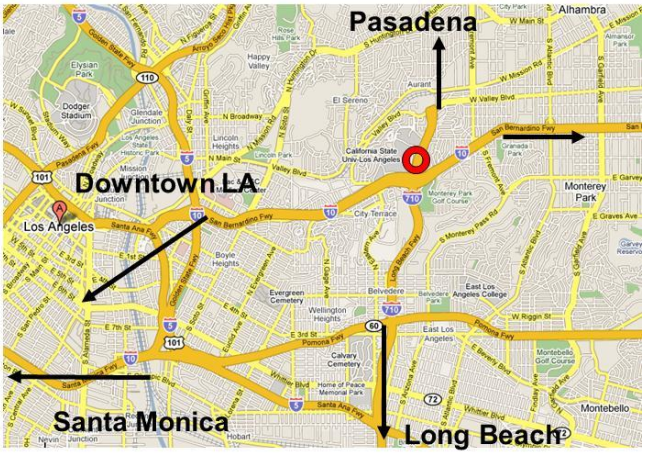

Figure 1. CSULA Hydrogen Station geographic location.

The CSULA Hydrogen station is conveniently located at the intersection of two major Los Angeles Highways 10 and 710, see Figure 1. The drivers from a number of key locations in the region can have access to the station.

Under this funding, CSULA procured, installed and integrated five pieces of major station equipment: the electrolyzer, three compressors and hydrogen storage tanks. These items are shown in Figure 2.
The electrolyzer was delivered and installed at night to avoid interference with local traffic.

Figure 2. CSULA Hydrogen Station equipment procured with this funding. Left: storage tanks and three compressors. Right: electrolyzer is being installed.

The station is designed to represent CSULA and provide visual appeal consistent with the advanced vehicle technologies it represents, see Figure 3. The station has performed initial vehicle fuelings at both 350 and 700 bar pressures, see Figure 4, and is currently in the commissioning phase to assure full functionality when the stations opens to customers.

Figure 3. CSULA Hydrogen Station.

Figure 4. Test fueling at 750 bar as part of the commissioning process.

As continued effort to utilize the station as a research facility, two major federally funded projects were secured. DOE, $ 400K, “CSULA Hydrogen Refueling Facility Performance Evaluation and Optimization” will collect data for NREL studies. And, NSF, $512,000, “MRI: Acquisition of a Multifunctional Hydrogen Gas Analyzer for the Center for Energy and Sustainability” will allow for testing hydrogen purity.

CSULA would like to acknowledge the California Air Resources Board and other project funding agencies: South Coast Air Quality Management District, Mobile Source Air Pollution Reduction Review Committee, the Ahmanson Foundation, and the Automotive Club.

Conclusions

CSULA has met the objectives under this funding to procure and install major equipment for the hydrogen station, which is currently in the commissioning phase. The station will support future research activities in associated technologies and educational programs in alternative transportation.