VII.9 Sustainable Hydrogen Fueling Station, California State University, Los Angeles*

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Subcontractor:
General Physics Corp., Elkridge, MD

Project Start Date: January 1, 2009
Project End Date: 2012

*Congressionally directed project

Fiscal Year (FY) 2011 Objectives

- Procure core equipment for the CSULA hydrogen station.
- Install/integrate the core equipment.

Technical Barriers

This project addresses the following technical barriers from the Technology Validation section of the Fuel Cell Technologies Program Multi-Year Research, Development and Demonstration Plan:

(C) Lack of Hydrogen Refueling Infrastructure Performance and Availability Data

(D) Maintenance and Training Facilities

(E) Codes and Standards

Contribution to Achievement of DOE Technology Validation Milestones

This project will contribute to achievement of the following DOE milestones from the Technology Validation section of the Fuel Cell Technologies Program Multi-Year Research, Development and Demonstration Plan:

- **Milestone 26.** Validate refueling site stationary storage technology provided by the delivery team. (4Q, 2012)
- **Milestone 28.** Validate the cost of compression, storage and dispensing at refueling stations and stationary power facilities to be <$.80/gge of hydrogen. (4Q, 2013)

FY 2011 Accomplishments

- Identified, procured, and installed station electrolyzer: HySTAT-A 1000D-30-10. **(M26)**
- Identified, procured, and installed 350 bar compressor: PDC-4-1000-6500. **(M26, M28)**
- Identified, procured, and installed two 700 bar compressors: Hydro-Pac C12-60-10500LX. **(M26, M28)**
- Identified, procured, and installed three 350 bar storage tanks: CPI-20 kg. **(M26, M28)**

Introduction

The College of Engineering, Computer Science, & Technology at California State University, Los Angeles (CSULA) as part of its energy curriculum is building 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 funding is applied for the acquisition of the core hydrogen station equipment: electrolyzer, compressors and hydrogen storage.

Approach

The CSULA hydrogen station will deploy the latest technologies with the capacity to produce 60/kg/day, sufficient to fuel 15 vehicles or a bus and five more vehicles. The station will be utilizing a Hydrogenics electrolyzer, first and second stage compressors capable of fast filling at 10,000 psi (700 bar), 60 kg of hydrogen storage, water purification and equipment cooling system. The station will be grid-tied and powered by 100% renewables.

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

Results

The equipment under this funding is purchased through General Physics. The equipment integration and station design is through Weaver Construction. The team consisting

of representatives from CSULA, Weaver and General Physics have bi-weekly meetings to regularly discuss the construction progress.

The grant provided funding for acquisition of the core hydrogen station equipment: electrolyzer, compressors and hydrogen storage. The compressors and storage arrived in November 2010, see Figure 1. The electrolyzer and other units were moved onsite on their foundations in January 2011, see Figure 2. After the payments for the equipment from DOE and non-federal funding cost share, the project will be essentially complete, see Figure 3.

FIGURE 1. CSULA Hydrogen Fueling Facility, Compressors and Storage, January 2011

FIGURE 2. CSULA Hydrogen Fueling Facility, Electrolyzer Delivery, January 2011

FIGURE 3. CSULA Hydrogen Fueling Facility, Current Status, June 2011

Conclusions and Future Directions

This year work concentrated on procuring and integrating the core equipment for the CSULA Hydrogen station. This task was completed in January 2011. The construction has continued and the expected station commissioning is in the August-September 2011. Future research into station/vehicle performance is planned.