

SIU Sustainability Council Projects
Final Report

Project title: Campus Utility Vehicle Conversion to Plug-in Electric Vehicle

Project I.D. # 101105

Award date: December 2010

Completion date: May 2013

Funds used (if different from award amount)

Brief write up of project/project experience (not to exceed 250 words)

This project began in January of 2011 as a collaborative effort between the department of Automotive Technology and the Electronic Systems Technology (EST) program to convert a campus utility vehicle to an electric vehicle using state-of-the-art components. All materials were purchased in the first year but there was a delay in procuring a suitable vehicle for the conversion from Grounds – Physical Plant Services. During the 2011-2012 academic years, students in the EST program developed the microcontroller software and several scrapped utility vehicles were inspected by students in the Automotive Tech program until a suitable conversion platform was found. Progress was slowed by the move of Automotive Tech from the Carterville campus to the new Transportation Education Center and vehicle conversion work on the project was not started until the spring 2013 semester. The conversion was made part of a special projects course and 14 Auto Tech students completed the work during the 15 weeks of the spring semester. The vehicle is now operational as a plug-in electric with final testing and evaluation to take place this semester as part a hybrid and electric vehicle course in the Automotive Tech program.

Best things learned/produced from project

This project was a great learning experience for the students that participated in the vehicle conversion. By making this project a part of a hybrid and electric vehicle technology course, it allowed the students to see how the various components that make up an electric vehicle work together. It also gave them the experience of working on a large team with numerous assigned tasks and working with project management tools and techniques. Several students expressed an interest in pursuing a career in green transportation technology as a result of their experience on this project. It was gratifying to take a highly-polluting, inefficient machine and convert it into a non-polluting, highly-efficient machine.

How do you define sustainability?

Sustainability for me is removing or reducing a reliance on non-sustainable, finite energy sources such as fossil fuels.

Has this changed over the course of your project? If so, how?

No. The goal of this project was to do just that; transform a fossil-fueled vehicle into an electric vehicle and we have succeeded.

What do you see as the next step for the project?

Although the vehicle is operational we would like to continue working on it to characterize and enhance the performance of the vehicle in terms of efficiency, usable range (hours), and battery life. This vehicle utilizes new lithium battery chemistry with very little real-world data. We have the capability to fully instrument the vehicle and collect some valuable data with no additional cost to the program. There is also interest in integrating a roof-mounted solar array and explore other ideas of energy conservation and harvesting in regards to electric vehicles.

Optional: Suggestions for the SIU Sustainability Council

Every time I drive by the student center and see the vehicle used for campus tours, I think of how cool it would be to convert it to a quiet, zero-emission electric vehicle. I hope that the Sustainability Council shares my passion for making our campus a little greener one vehicle at a time.

Attach a minimum of five images – these will be used to promote interest in Sustainability Council projects.