

## **NEW FUEL CELL TECHNOLOGY FOR GALVESTON**

Galveston Island will become a leader for fuel cell technology development in the United States within the next two years. Almost one megawatt of electrical energy will be produced from fuel cells located within the City of Galveston.

The Port of Galveston recently installed a fuel cell at the Cruise Terminal Complex. The University of Texas Medical Branch currently has two cells on site and plans to initiate the installing/connecting process to supplement their electrical needs.

Last year, the Port of Galveston realized a need for backup for its communication and security requirements for Cruise Terminal No. 2 and the area at Pier 27 and began researching the installation of a large diesel-generator set to support electrical needs.

At the same time Texas A&M University at Galveston became interested in the development of a teaching curriculum where marine engineering students could gain an insight into power generation. The University was unable to teach the actual application because of a lack of an actual teaching laboratory.

Then the Port and the university realized that their needs were similar. The Port needed backup equipment for electrical needs as the Port continued to develop and grow. The university needed a place to demonstrate distributive generation or electrical backup for an emergency system.

The Port is partnering with Texas A&M to provide the laboratory environment for the teaching curriculum which will in turn allow the port to evaluate new fuel technology from the standpoint of reliability and efficiency plus satisfy the requirement for stand-by power. The students will be provided with the venue to allow for the observance of the fuel cell and the development of reports of the cell's efficiency and operational reliability

The Department of Defense (DOD) had surplus fuel cell equipment and agreed to transfer the asset to an educational facility provided a curriculum was developed to extend the department's charter as to new teaching technologies and actual application.

The Port determined that the cost of installing a fuel cell was comparable to the cost of installing a large diesel generator-set and the benefits to the University of the establishment of a real setting to teach the actual application were great. The Port agreed to provide an actual working laboratory to observe the fuel cell where the students could complete the reporting function required by the Department of Defense to gain insight as to how fuel cells work and how the energy would be managed.

The University management approved a curriculum for a two semester course based on the observance and management of the fuel cell operation. An outline of the curriculum was submitted to the DOD and accepted and the transfer of the cell was approved.

The next step involved locating a cell and obtaining permission from the military to enter the base and remove the equipment.

This was accomplished and the fuel cell has been installed on the west end of Cruise Terminal No. 1. The Port is in the process of tying the cell into the port's electric system.

Once that is complete, the Port of Galveston begins its involvement in making Galveston part of the Green Port initiative, moving into clean electrical generation.

“It came down to dollars and cents,” stated Steven M. Cernak, Port Director. “The cost of electric energy continues to rise, and we felt it our obligation to explore all options available to us. The efficiency of fuel cells allows us to buy natural gas and convert it to electricity at a cost savings. We realize the our savings may fluctuate as the price of gas goes up and down, but due to the thermal efficiency of the fuel cell, the Port can save anywhere from 2 ½ to 4 cents per kilowatt hour. That could be a significant savings as the port uses a lot of energy to operate our facilities. Even with the costs associated with the installation of the fuel cell, the Port anticipates breaking even on this project within a two-year period.”

The Port of Galveston intends to participate with other governmental partners in advancing the understanding of how fuel cell energy can be generated and used as the program expands. The Port will not only share experiences, but will also share expertise as the use this type of technology begins.

“We feel that the Port of Galveston, through its aggressive stance toward environmental stewardship, is making a difference,” stated Benjamin Holland, Chairman of the Board of Trustees of the Port of Galveston. “Texas A&M is also producing an example for others to follow as these environmental initiatives are established. The problem-solvers of tomorrow are going through the university systems today. And as the Port and Texas A&M work together to provide this kind of exposure and experience to these students, the benefit to future generations will be a reality because of what is being done today.”

The fuel cell is the first step in achieving a reduced-emission footprint for the Port of Galveston. The Port is evaluating other clean energy programs including alternative fuel sources for port vehicles, solar panels at Cruise Terminal No. 2 and a wind project to dovetail into the Port’s goal of producing renewable energy.

“We want to emerge through our rebuilding process at the Port as a significant economic contributor to the region while providing a long-term goal of clean, renewable energy to our customers and the local community through innovative practices,” concluded Cernak.