
Colleges & Universities

FuelCell Energy

Ultra-Clean, Efficient, Reliable Power

# SUNY-ESF

## problem:

The State University of New York at Syracuse, College of Environmental Science and Forestry (SUNY-ESF), a leader in the implementation of commercial applications of renewable resources since 1911, was looking to offset campus power needs and reduce pollutant emissions.

## solution:

The college installed a 250 kilowatt Direct FuelCell® (DFC®) DFC300A™ power plant from FuelCell Energy in February 2006 at Walters Hall, an 85,000 square foot learning and research building. The DFC system utilizes hydrogen produced from internally reformed natural gas to generate power in a noncombustion, electrochemical process. The power plant emits negligible amounts of harmful pollutants (NOx and SOx) and significantly less greenhouse gas ($CO_2$) in comparison to traditional, fossil-fuel powered technologies. Additionally, waste heat from the fuel cell is captured and used for building heat and hot water.

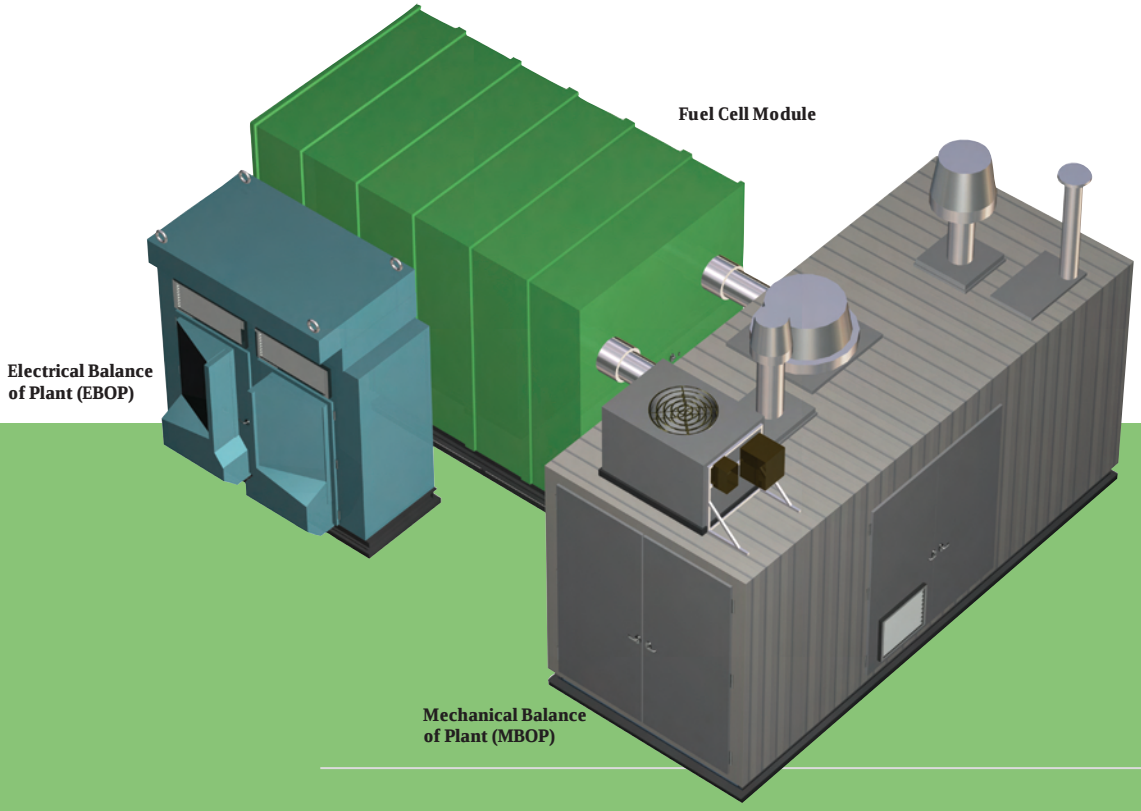
## result:

Supplying approximately 17% of the electricity used on campus, the DFC power plant has proven itself to be a reliable means of producing Ultra-Clean, onsite power. In fact, an EPA Environmental Technology Verification Report released in the fall of 2007 gave the SUNY-ESF fuel cell system high marks for both electrical efficiency and emissions reductions. Test results showed that the DFC unit operated at 48.4% electrical efficiency while maintaining a 99.9% power availability rating throughout the seven day test period. The report also estimated that operating the DFC system would result in annual reductions of atmospheric emissions of 3.5 tons of NOx and 1,020 tons of $CO_2$.



About DFC Power Plants

*Direct FuelCell power plants operate on a variety of fuels, including methane from biogas, waste gas from industrial processes, and natural gas.*




Direct FuelCell power plants are comprised of three major functional elements: Electrical Balance of Plant, Mechanical Balance of Plant, and Fuel Cell Modules.

The fuel cell installation at SUNY received financial assistance from the New York Power Authority (NYPA), which provided $2.3 million towards the project, including co-funding aid from the New York State Energy Research Development Authority (NYSERDA) in the amount of $1 million, and $250,000 from the US Department of Energy (DOE). The success of the fuel cell installation at SUNY-ESF has cemented the school's affinity for alternative energy technologies and environmental conservation. In 2007 the college added a photovoltaic solar panel array to Walters Hall, and the building has also been given a "Green" roof—a vegetated cover that aids in controlling storm water run-off and conserves building energy. Combined, these technologies have made Walters Hall and SUNY-ESF a prime role model of effective, environmentally-friendly facility management for the entire 64 campus State University of New York education system.

### About SUNY-ESF

Founded in 1911, the State University of New York College of Environmental Science and Forestry is the nation's oldest school dedicated to the study of the environment, renewable technologies, and sustainable development. Located in Syracuse, New York, the school offers one of the most respected environmental science education programs in the United States. **www. esf.edu**

### About FuelCell Energy

FuelCell Energy develops and markets Ultra-Clean power plants that generate electricity with higher efficiency than distributed generation plants of similar size and with virtually no air pollution. For more information on the company, its products, and its world-wide commercial distribution alliances, please visit **www.fuelcellenergy.com.**



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