

Greenhouse Gas Technology Center Completes Verification of UTC Fuel Cells PC25C Power Plant

FOR IMMEDIATE RELEASE

Cell operating on renewable biogas provides on-site power and heat generation

RESEARCH TRIANGLE PARK, N.C. (January 25, 2005) - The Greenhouse Gas Technology Center (GHG Center) today announced that it has independently verified the performance of a fuel cell operating on renewable biogas and an associated gas processing unit. The United Technologies Company (UTC) Fuel Cells PC25C Power Plant is a phosphoric acid fuel cell capable of producing nominal 200 kW of electrical power with the potential to produce an additional 205 kW of heat. This performance verification was conducted in partnership with the New York State Energy Research and Development Authority (NYSERDA).

The PC25C selected for this verification is owned and operated by the New York Power Authority (NYPA) and is located at the Red Hook Water Pollution Control Plant operated by the New York City Department of Environmental Protection. At this facility, two PC25Cs are operated on renewable biogas generated on-site in anaerobic sludge digesters. The raw digester gas is conditioned using a gas processing unit manufactured by US Filter Westates and specifically designed for use with the PC25C. The gas processing unit removes H₂S, excess moisture, and other pollutants from the raw gas, as these gas components can damage the fuel cell. Results of the verification are favorable. Emissions from the PC25C are very low, electrical efficiency was around 37 percent, and potential combined heat and power efficiency was approximately 90 percent. Synopses and final performance evaluation reports for both the PC25C and the gas processing unit can be accessed on the U.S. EPA ETV website at <http://www.epa.gov/etv/verifications/vcenter3-14.html>.

"Power generation with the PC25C can greatly reduce nitrogen oxides and carbon dioxide emissions, and can provide additional environmental and operational benefits through the use of recovered heat," said Tim Hansen, deputy director of the GHG Center at Southern Research Institute. "Efficiencies are higher than other distributed generation technologies we have tested. Also, the system evaluated here utilizes renewable biogas that might otherwise be flared or vented."

The GHG Center is a public/private partnership between the U.S. Environmental Protection Agency (EPA) and Birmingham, Alabama-based Southern Research Institute, operating under the EPA's Environmental Technology Verification (ETV) program. The GHG Center looks for promising greenhouse gas mitigation technologies, subjects them to independent third-party performance testing, and provides performance results to the public free of charge. To date, the GHG Center has verified-or is in the process of verifying-36 different environmental and energy technologies that can significantly impact greenhouse gas and other emissions.

Verifications generally involve the measurement of energy conversion efficiency, air pollution emission rates, secondary environmental impacts, operational performance, cost performance, and other variables of interest to purchasers and other stakeholders. Technology performance verifications are accomplished using measurement and analysis methods that have been reviewed and approved by independent expert stakeholder panels.

"Once we've verified a technology's performance, not only does the company who developed it benefit, but it gives potential purchasers of the technology some insurance about its worth," said Hansen. Currently, the GHG Center is verifying commercial ready technologies in the following areas: Advanced Electricity Production, Renewable Energy, Energy Efficient Technologies, Oil and Gas Production and Transmission, GHG Monitoring, Refrigeration systems, and Transportation technologies. The GHG Center is planning for performance assessments of clean electricity generation technologies including biomass and biogas fuels and additives, new I.C. and Stirling engines, improved fuel cell and

microturbine systems, industrial cogeneration and combustion systems, carbon sequestration and monitoring systems, and others.

Southern Research is an independent, not-for-profit organization that conducts scientific research at facilities in Birmingham, AL, Frederick, MD, and Research Triangle Park, NC. Southern Research provides contract research in the fields of engineering, automotive research and testing, chemical and biological defense, homeland security, environmental and energy-related research, and pre-clinical drug discovery and drug development. The Institute is affiliated with the University of Alabama at Birmingham (UAB.) For more information, see <http://www.southernresearch.org> .

Companies interested in verification testing of their greenhouse gas technologies can download the Application for Testing at the GHG Center website (<http://www.sri-rtp.com>) and submit the form as instructed. For additional information, interested persons may contact Timothy Hansen (hansen@sri.org or 919-806-3456).

Media Contact: Rhonda Jung, Southern Research Institute, 205-581-2317, jung@sri.org