More Power Comes to the Clarion Science and Technology Center

For Immediate Release –

National Fuel has awarded Clarion University of Pennsylvania a grant valued at $163,996 for a Distributed Generation Laboratory in their new Science & Technology Center.

Dr. Joshua Pearce, physics professor and principle investigator on the grant, said "The National Fuel Distributed Generation Laboratory will not only instruct Clarion students about state-of-the-art energy technologies, but it will also produce prodigious amounts of electrical power and heat for the Science & Technology Center."

The National Fuel demonstration will contain a 65kWe microturbine for co-generation of electricity and heat from clean natural gas, which will work in tandem with the 26kWe solar photovoltaic array integrated into the roof of the $36.4 million building – the largest in the Pennsylvania State System of Higher Education. The environmentally-focused high-performance design being used for the Science & Technology Center to demonstrate distributed generation mirrors the key focus of sustainability of the science programs at Clarion University. Faculty and students inhabiting the Center in all of the science disciplines for Clarion University's main campus are collaborating on a host of research projects revolving around the study of energy and the environment and solutions to environmental problems. The icing on the proverbial "environmental solution cake" will be the distributed generation systems demonstrated on the roof.

Dr. Pearce explains, "A gas microturbine is a rotary engine that extracts energy from a flow of hot gas produced by combustion of natural gas in a stream of compressed air. The microturbine is truly state-of-the-art technology. While spinning at incredible speeds it levitates on maintenance-free 'air bearings'. To get an idea of the speed, a car engine redlines at 5,000 rpm [revolutions per minute], a race car might get up to 15,000 rpm, but the Clarion microturbine will spin at 96,000 rpm."

"Distributed generation (DG) systems with Combined Heat and Power (CHP) such as our future microturbine can be very efficient. The microturbine system, which runs on clean natural gas, is 80% efficient compared to only 33% efficiency for conventional and polluting coal-fired power plants. Despite these advantages, CHP and other DG systems are currently not very widespread in the U.S., while in other parts of the world the superior technology has gained ground much faster. For example, in Denmark the distributed share in the gross electricity production increased from 1% in 1980 to 35% in 2001 using 24% decentralized CHP and 11% wind turbines. At Clarion University we want to use and demonstrate technologies that will be the future of clean, efficient, and safe future", continues Pearce.

"Clarion will save a lot of money and fuel with the microturbine, while improving our environmental performance.", says Pearce. Microturbines are also good for the environment as they have digital power conversion and the lowest emissions of any non-catalyzed fossil fuel combustion from burning clean natural gas. The microturbine will diminish heating load and dehumidification load in addition to peak shaving and offsetting a portion of the building's

electrical energy, which will thereby decrease both the air and water pollution caused for the operation of the building.

The microturbine will form a hybrid distributed electricity generation system with the solar photovoltaic array. Both technologies will be monitored in real-time and the data made available to the public in an information kiosk and distributed energy exhibit in the grand entryway of the building. In addition to the display the microturbine will integrated into the curriculum at the University by having the system publicly accessible on the roof, including it in lectures, and "micro-field trips".

Additional information about the system can be found at the distributed generation web portal: http://www.clarion.edu/energy

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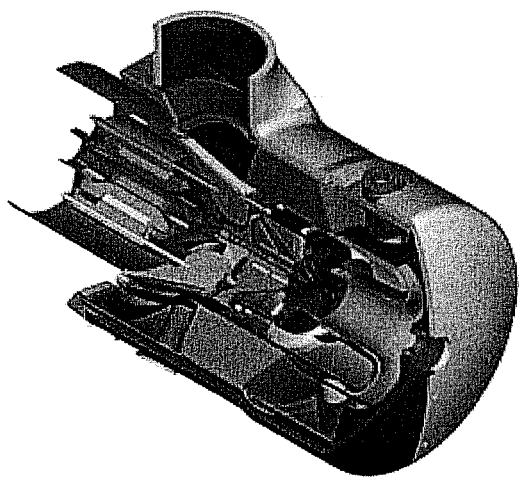

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