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University of Minnesota, Morris demonstrates new power technology

Summary: Diesel generator to be powered by biomass.

(June 22, 2012)-The University of Minnesota, Morris is a national leader in sustainable energy and green living. As a leader, Morris is at the forefront of new sustainable energy technologies, such as the PowerTainer—a transportable diesel engine generator (genset) powered by biomass.

The unit, completely housed in a standard 20 foot shipping container, is the result of a partnership among the University of Minnesota, Morris, Cummins Power Generation, and the University of Minnesota Center for Diesel Research. The unit was built by All Power Labs in Berkeley, California. Funding for the project was provided by the National Energy Technology Laboratory (U.S. Department of Energy, under award number DE-EE0003239).

The unit comprises a gasifier, gas cleanup, fuel hopper, fuel handling system, diesel genset, and control system. The project focuses on the integration of a biomass gasifier with a commercially available diesel powered genset and aims to distinguish the characteristics of producer gas that may be useful or harmful to the system. The anticipated outcome of the research is a new transportable generation platform capable of displacing fossil fuel use in diesel generators.

The genset, when run on diesel, can generate up to 100 kW of electricity. A target for the genset when run on producer gas is 80 kW. One key benefit of this technology will be a 90 percent or greater potential decrease in greenhouse gas emissions by substituting renewable fuel sources for diesel fuel. The operating efficiency of this prototype system will be compared with the efficiency of the biomass gasification combined heat and power plant already in service on the Morris campus.

The PowerTainer has several potential applications. On farms, the shaft power can be used to run farm machinery, and the producer gas can be used to fuel grain dryers in addition to powering the generator. In disaster areas, wood and debris can be used to fuel the generator and provide electricity or mechanical power. Other potential applications include military and small industry use.

Through personal and academic discovery, the University of Minnesota, Morris provides opportunities for students to grow intellectually, engage in community, experience environmental stewardship and celebrate diversity. A renewable and sustainable educational experience, Morris prepares graduates for careers, for advanced degrees, for lifelong learning, for work world flexibility in the future, and for global citizenship. Learn more about Morris at morris.umn.edu or call 888-866-3382.