NREL Evaluates UPS Hybrid-Electric Van Performance

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(PhysOrg.com) -- The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) has collected and analyzed fuel economy, maintenance and other vehicle performance data from UPS's first generation hybrid diesel step delivery vans powered by an Eaton Corp. electric hybrid propulsion system.

The diesel hybrid delivery vans improved the on-road fuel economy by 28.9 percent resulting in a 15 percent improvement in total cost per mile while maintaining similar reliability and operational performance as compared to conventional vehicles.

Funded by the DOE's Advanced Vehicle Testing Activity (AVTA), NREL's Fleet Test & Evaluation (FT&E) team performed a 12-month evaluation of six of these hybrid vans at a UPS location in Phoenix.

The report released this week details the year-long demonstration project, including how the FT&E team collected and analyzed fuel economy, maintenance and other vehicle performance data on the vans, which are being used in delivery service. The project also tested a conventional and hybrid delivery van in NREL's ReFUEL laboratory in Denver, Colo., and documented fuel economy and emissions performance on various test cycles.

Robert Hall, UPS director of maintenance and engineering, said he hopes the evaluation will speed up market acceptance of hybrid diesel systems. "NREL's report on the performance of our hybrid delivery

vehicles is helping make this type of energy-efficient vehicle a standard in the industry."

Eaton Corp. provided the hybrid propulsion systems for the vehicles, which were manufactured by Freightliner Corp. The hybrid system employs an Eaton automated transmission with an integrated motor/generator and advanced lithium ion batteries. Both the Freightliner hybrid model and the conventional model use a Mercedes-Benz MBE 904 four-cylinder diesel engine. UPS has recently ordered an additional 200 Eaton hybrid electric powered vans.

The Eaton hybrid system was developed in part under a previous $7.5 million, 33-month contract from DOE's Advanced Heavy Hybrid Propulsion System program.

"Having provided funding for the development of the Eaton hybrid system, DOE was eager to participate in testing the system in a commercial fleet," Lee Slezak, DOE's AVTA program manager said. "Our goal is to help develop more efficient vehicle technologies and then document their on-road performance."

The evaluation of UPS' new diesel hybrid vans follows a 2002 UPS/DOE demonstration of 13 compressed natural gas delivery vehicles in UPS' Hartford, Conn., fleet. NREL's FT&E team also provided direction and analysis on that project. A second generation study is currently planned for 2010 to look at more advanced versions of the Eaton hybrid in operation within the UPS fleet.

Provided by National Renewable Energy Laboratory