CHEMREC
Energy to succeed

MEDIA RELEASE

DME as Diesel Fuel Alternative Gaining Ground as Engine Manufacturers, BioDME Biorefineries Gear Up for Renewable Motor Fuels

DEERFIELD, IL, September 2, 2009 – Testing of DME as a diesel fuel alternative by the Volvo Group and Ford Europe -- along with Chemrec AB's recently announced groundbreaking for a BioDME plant in Sweden – are kindling renewed interest in this ultra-clean, carbon-neutral motor fuel.

DME or dimethyl ether, made from a variety of renewable materials and fossil fuels, burns soot-free, produces almost no GHG upon combustion and is very energy efficient. With a high cetane number (the measure of combustion of diesel fuel under compression) and with no particle formation during combustion, DME provides a very cost effective way to meet stringent exhaust emission targets.

Unlike conventional DME produced from fossil-based feedstocks, BioDME made through the Chemrec black liquor gasification technology – black liquor is a waste stream of the pulping process – uses residual forestry biomass as its feedstock, thus no foodstocks or farmable acreage is used. BioDME offers a very high reduction of carbon dioxide emissions -- around 95% -- compared to conventional diesel fuel, and it can be produced with very high conversion efficiency at relatively moderate capital cost.

Chemrec recently broke ground for a demonstration BioDME plant in Piteå, Sweden**,** and the plant is expected to be producing BioDME and methanol in 2010, said Chemrec CEO Richard J. LeBlanc.

"America has been slower than Europe and Asia to catch on to DME as a motor fuel, as DME technology research and development in those areas are mostly government funded, but it is the belief of DME supporters in the U.S. -- from government energy researchers, academics and industry -- that DME and in particular BioDME has an important role to play in America's security and energy sustainability," said LeBlanc, who is also CEO of Chemrec USA.

Jim McCandless, CEO of Alternative Fuel Technologies, Inc., Redford, MI., which designs and manufactures common rail and injection systems designed for DME delivery in diesel engines, said DME has unique advantages for truck lines, bus fleets, materials handling equipment and other vehicles that refuel at central refueling depots.

"Although DME's energy density is lower than diesel, the overall engine thermal efficiency is the same or higher. Also, DME will cost less than diesel on an equal energy basis; 1.8 gallons of DME will cost less than 1 gallon of diesel, assuming $70/bbl or higher oil price," he said.

"DME is a liquefied gas, like propane, that becomes liquid under low pressure of 60 psi. It is an ideal diesel fuel because it has very high oxygen content, 35 percent by weight, and no carbon-carbon bonds. What that means is that it cannot produce soot particulates or black smoke. This permits the use of very high EGR or exhaust gas recirculation rates to lower NOx emissions without having to use exotic and expensive after-treatment devices like particulate traps and SCR catalysts that require the injection of urea to lower NOx," McCandless said.

"Another positive factor is the fuel injection pressures can be much lower than are currently needed by diesel engines. DME engines need injection pressures of about 6,500 psi where diesel engines currently require pressures upward of 30,000 psi. The lower pressure requirements greatly simplify the fuel injection equipment," McCandless added.

The International DME Association notes that according to many lifecycle analysis studies, DME based on renewable feedstock is the most efficient fuel when the entire chain is taken into account. DME can be up to five times more efficient than traditional fuels, resulting in less energy wastage and better use of our resources. For automotive use, DME has the highest total efficiency of all synthetic liquid fuels and a 30-40 percent higher fuel economy than gasoline in passenger cars. Because it burns so cleanly, expensive exhaust after-treatment devices are unnecessary.

In study of various biofuels from a range of feedstocks, Volvo showed that the production of DME from harvest forestry woody biomass using the black liquor gasification process yields the highest miles per acre per year than biofuels produced by most other processes. Other studies show that the technology also yields the highest well-to-wheel greenhouse gas reduction and energy efficiency.

DME has been used for decades in the personal care industry, as a benign propellant in aerosols and other personal care products. It is non-carcinogenic, non-mutagenic and virtually non-toxic. Like other fuels, DME is highly flammable but has proven to be extremely safe when handled properly.

The Chemrec BioDME plant will demonstrate the production of this advanced biofuel, as well as bio-methanol, and will also demonstrate the use of this fuel in heavy vehicles in commercial service. This demonstration plant is a continuation of demonstration-scale plants designed by Chemrec to yield green fuels and green chemicals. In June, Chemrec announced that its DP-1 black liquor gasification development plant, also in Piteå, had reached 10,000 accumulated operating hours. This plant is the only gasification plant in the world producing high-quality synthesis gas, from which DME and other biofuels can be produced, based totally on renewable woody biomass feedstock.

“The Chemrec BioDME project will not only be a technical demonstration but will also showcase the opportunity for the pulp and paper industry to play a major role in the production of high-value, high-performance biofuels from low quality forest and agricultural residues,” LeBlanc said. “It is the proven capability of the Chemrec process and its advantages to the paper industry that has attracted the attention of mill owners, investors and state governments in the U.S. and who want to bring this technology to their states.”

LeBlanc pointed out that forestry states with BioDME biorefineries integrated into pulp and paper mills will offer unique renewable fuel alternatives to industry and transportation in those states. Chemrec studies show that, for instance, upper Midwest biorefineries could provide DME fuel for municipal fleets, local trucking firms and manufacturers operating in such major cities as Minneapolis, Milwuakee, Chicago and Detroit.

To facilitate its ability to ramp-up commercial scale black liquor gasification biorefineries at U.S. pulp mills, Chemrec is actively pursuing federal and state grants and loan guarantees.

For more information, contact Rick LeBlanc, CEO, Chemrec, at rick.leblanc@chemrec.se.

-30-

Contact
Jim Leman
Leman Public Relations
847-543-1090 (Office)
847-840-0784 (Cell)
jim@lemanpublicrelations.com