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## Hybrid tugboat designed in Seattle

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SEATTLE — A large tugboat company hopes to give the shipping industry's grimy workhorse an ecological makeover, adding an electric hybrid system to the tug's powerful diesel engines.

Foss Maritime, a top U.S. tug and barge operator based in Seattle, is teaming with the ports of Los Angeles and Long Beach, Calif., to build the electric-diesel hybrid tug.

The first boat could start production later this year and be delivered in 2008 to the Los Angeles area, home of the nation's largest port complex, officials told The Associated Press on Thursday.

The pilot project is part of ongoing efforts to cut pollution from the locomotives, trucks and ships that flood the country's two busiest container ports.

Use of the hybrid tugs could be expanded if they perform to the standards set by their dirtier cousins, port officials said. Foss also hopes to offer hybrid engines for retrofitting older tugs.

"It should have a profound impact on tug technology in the decades ahead," said Port of Los Angeles spokesman Arley Baker. "It's a huge step forward."

Foss' hybrid design is generally similar to the technology used in hybrid cars such as the Toyota Prius, although the tug's engine was more directly inspired by diesel hybrids used in some railroad vehicles.

The hybrid tug would still have diesel engines, which provide the horsepower needed to guide a massive container ship or pull a loaded barge.

But when idling in a harbor or doing less strenuous tasks, the hybrid would rely on electric batteries, supplemented by diesel generators, for its power.

Since diesel engines burn fuel less efficiently at lower speeds, switching to battery power could cut particle and nitrous oxide emissions by 44 percent, along with reducing fuel use and noise, Foss said.

The hybrid is based on a conventional tug model that usually costs about \$6 million. Adding the new hybrid engine increases the price by up to \$3 million, said Susan Hayman, a Foss vice

Susan Hayman, vice president of Foss Maritime, holds up a model of an electric-diesel hybrid tugboat.  
AP Photo



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