

U.S. Gas Boom Helps Power Sea-Going Vessels

Source: *Wall Street Journal*; September 25, 2013



Coming U.S. regulations on engine exhaust and cheap natural gas are encouraging some commercial marine operators to power their vessels with liquefied natural gas instead of diesel.

Ferries, tugboats, cruise ships and cargo vessels are mostly powered by diesel and marine oil, which have higher sulfur and nitrogen oxide emissions than the diesel used in trucks and cars. The regulations will require ships operating within 200 miles of the U.S. coast to reduce sulfur emissions beginning in 2015.

Additional regulations that take effect in 2016 would require exhaust treatment to reduce nitrogen oxide emissions in new vessels. Both sets of standards are expected to drive the adoption of cleaner burning, and less expensive, liquefied natural gas, which sells for about \$1.70 a gallon, about half the cost of marine diesel.

New Orleans-based Harvey Gulf International Marine LLC, which operates a fleet of 40 supply boats that transport drill pipe and other materials to offshore rigs in the Gulf of Mexico, has ordered six new boats with engines that run on either LNG or diesel.

Sea Star Line LLC, a cargo ship operator owned by Tote Inc., plans to put two LNG-powered container ships into service between Florida and Puerto Rico starting in late 2015. Two other LNG-powered ships will follow elsewhere beginning that year.

"We operate within [200-mile coastal zone] and in order to comply the most logical thing to do would be to move to LNG for our cargo ships," said Sea Star Line chief Peter Keller. "Environmentally it's the best way to go."

Harvey Gulf Chief Executive Shane Guidry said that he expects the about 50% fuel cost savings will allow the company to attract new customers and negotiate longer term contracts. Even with the \$58 million price tag on each ship, "They're more cost effective," said Mr. Guidry, who figures on using the boats for at least 25 years.

"As long as the current spread [between diesel and LNG] continues, the case for converting to run on gas is quite compelling," said Cliff Gladstein, president of Gladstein, Neandross & Associates, a fuel consulting firm. "It is the only strategy for complying with the regulations that will save money for a marine operator."

Caterpillar Inc., General Electric Co. and Finland's Wartsila Oyj, which is supplying the engines for Harvey Gulf, are stepping up their development of natural gas-fueled engines and conversion kits for the marine industry to meet coming environmental standards.

Not all big shipowners are giving up on petroleum fuels. Cruise operator Carnival Corp. CCL -0.18% said earlier this month it would spend \$180 million on sulfur scrubbers to bring 32 of its ships into compliance with the 2015 emissions standard. The Miami-based company expects the equipment will allow the company to avoid switching to more expensive, low-sulfur fuel or natural gas.

"LNG has a lot of potential, but it requires a great deal of storage capacity and on a cruise ship we don't have that," said Tom Dow, a Carnival vice president.

Natural gas-powered engines have been in use for decades, mostly in backup power generators for office buildings, hospitals and factories. But the availability of large domestic reserves of gas from U.S. shale fields has dropped the price

of gas below diesel and extended the market for gas into diesel-engine domains such as marine vessels and railroads. Liquid natural gas is converted from gas to a liquid by lowering its temperature.

The maritime industry is one of the largest commercial consumers of fuel in the U.S. Sales of diesel fuel for marine vessels reached 2.1 billion gallons in 2011, the latest year available from the U.S. Energy Information Administration. An additional 4.5 billion gallons of marine oil was sold in 2011. Marine oil is a thick oil typically burned by large oceangoing cargo ships.

By comparison, the U.S. railroad industry consumed 3.1 billion gallons of diesel in 2011, while the construction industry used 1.8 billion gallons. The U.S. trucking industry bought more than 36 billion gallons of fuel.

LNG advocates say the use of natural gas by marine vessels could occur faster than in commercial trucks, which require an extensive network of filling stations to support interstate travel. Ships remain in service for decades, giving operators more time to recover the higher initial cost of LNG engines and refrigerated storage, where the gas is cooled to minus 260 degrees Fahrenheit to maintain its liquid state.