

## **Maersk Oil and Siemens join forces for clean power generation**

*Maersk Oil announced on Thursday that Siemens has agreed to develop and build turbines for Maersk Oil's novel TriGen clean power generation technology.*

TriGen is a power generator the size of a Maersk shipping container which burns gas with pure oxygen to produce clean power, pure water and 'reservoir ready' carbon dioxide. The high purity CO<sub>2</sub> is captured, making the power generation emission-free, and is then transported to oil and gas fields for Enhanced Oil or Gas Recovery (EOR/EGR).

Maersk Oil acquired license rights to the pure oxygen combustor, whose technology is derived from the space industry, from U.S.-based Clean Energy Systems (CES) in January 2011. Now, Siemens will build turbines specially adapted to the combustion process to significantly increase the efficiency of the electricity produced.

"The agreement with Siemens is another milestone for our innovative clean power project, helping to mature the TriGen technology to a stage where it can be used widely and commercially," said Bob Alford, TriGen Project Manager at Maersk Oil.

"Our goal is to be able to offer a unique product that for the first time joins oil and gas production together with power generation in one integrated project. This offers not just zero-emission electricity and pure water but also the ability to extract oil and gas that would otherwise be non-producible through EOR/EGR," Alford said.

"It is an ideal solution for water-parched Gulf states that have reservoirs that can benefit from CO<sub>2</sub> driven-EOR. It is also well suited for countries in South East Asia where many stranded contaminated gas fields could be unlocked using the flexible TriGen technology," Alford said.

Maersk Oil and Siemens will sign today a Memorandum of Understanding at the 20<sup>th</sup> World Petroleum Conference, held in Doha, Qatar. Under the agreement, Siemens will fund and further develop the 'oxyfuel' turbines over the next 5 years.

CES has proven the TriGen technology on a small scale over that past 15 years. Now, in collaboration with Maersk Oil, Siemens and the U.S. Department of Energy, it is testing TriGen on a commercial scale power plant in California.

"We at Siemens are very pleased to work with Maersk Oil on the development of this promising technology," said David Henson, Head of the Conceptual Engineering and Services business segment of Siemens Energy.

"The new turbine, named SXT-150, is backed by our vast experience in turbine development. Siemens' turbine work is focused on providing the materials capable of withstanding high pressures and temperatures, handling the corrosive environment

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resulting from the CO<sub>2</sub> and steam mixture, and implementing changes to increase power. In addition, Siemens will design and deliver the associated equipment to complete the TriGen power system.”

Siemens is currently converting a conventional gas/air turbine to a gas/oxygen turbine for the commercial project in California. The converted turbine will be hooked up to a power grid in North Los Angeles next year and has the capacity to deliver 150 megawatts of electricity – enough to provide energy to over 100,000 homes.

***A signing ceremony will take place at Maersk Oil's WPC stand, Exhibition Hall 4, Stand 4101, at 10.30 am Doha time. This will be followed by a presentation by Pieter Kapteijn, head of Innovation at Maersk Oil, on Trigen's potential. Maersk Oil and Siemens officials will be available for interviews.***

### **About Maersk Oil**

Maersk Oil is an international oil and gas company with operated production of about 650,000 barrels of oil equivalent per day offshore Denmark, UK and Qatar, as well as onshore Kazakhstan and Algeria. Exploration activities are ongoing in Angola, Brazil, Norway, the US Gulf of Mexico, Greenland and in producing countries. Turning marginal and challenging fields into commercial successes has been the cornerstone of Maersk Oil's business since 1962. Maersk Oil focuses on pioneering technologies and harnessing talent to continue to operate safely and successfully, creating value for Partners and host governments. Maersk Oil and its subsidiary companies are part of the Danish A.P. Moller – Maersk Group. For more information about Maersk Oil, please visit our website at [www.maerskoil.com](http://www.maerskoil.com).

The **Siemens Energy Sector** is the world's leading supplier of a complete spectrum of products, services and solutions for power generation in thermal power plants and using renewables, power transmission in grids and for the extraction, processing and transport of oil and gas. In fiscal 2011 (ended September 30), the Energy Sector had revenues of EUR27.6 billion and received new orders totalling approximately EUR34.8 billion and posted a profit of more than EUR4.1 billion. On September 30, 2011, the Energy Sector had a work force of more than 97,000. Further information is available at: [www.siemens.com/energy](http://www.siemens.com/energy).