

## Siemens presents subsea power grid - Large-scale subsea processing at 3000 meter

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# SIEMENS

At the Offshore Technology Conference (OTC) in Houston, Texas, Siemens Energy is presenting an innovative concept for supplying power to subsea oil and gas facilities located on the seabed. The subsea power grid will be a first in supplying power to processing systems located at water depths of up to 3000 meters at ultra long step-outs from the coast. The Siemens solution will be available for deployment by late 2012.

"Full subsea processing is unthinkable without an industrial, heavy duty, high reliability power grid directly on the sea bed," said Tom Blades, CEO of the Oil and Gas Division of Siemens Energy. "The depletion of onshore reserves is forcing oil and gas companies to exploit fields in the remotest places at ever greater water depths." However, the tremendous water pressure in subsea environments leads to a recovery gap as compared to traditional surface wells that can be as high as 30%. The Siemens subsea power grid is an enabler in closing this gap, opening the way for full fledged subsea processing.

Addressing power distribution to remote facilities to exploit these reserves is becoming an ever greater technical challenge. The Siemens subsea solution encompasses power cables, transformers, switchgear and variable speed drives, to power and control electrical driven pumps or turbo-compressors, separators and other processing equipment. The requisite power is provided by an industrial onshore or topside combined cycle power plant remote to the subsea facility. Siemens specialists are currently optimizing existing solutions to enable reliable subsea deployment at extreme pressure and low temperatures. Siemens is now opening two new subsea competence centers in Houston, Texas and Rio de Janeiro in addition to its existing center in Trondheim, Norway.

"The complete power grid solution provided by Siemens is mounted on a single base frame directly on the seabed," said Bjoern Einar Brath, who is responsible for subsea applications at Siemens Oil & Gas. "A pressure compensated design will dramatically lower the weight and increase the robustness of our tailor made subsea solutions, enabling us to advance subsea processing even further to meet the operators' need for reliable and environmentally friendly production on remote subsea wells. A further central feature is our proprietary seal-less STC-ECO compressor driven by a bearing-free and hence 'zero maintenance' integrated electrical drive."

Siemens has accumulated extensive experience in subsea applications. Ten years ago Siemens supplied a complete control system operating at a depth of 350 meters for Statoil's Snorre project. Together with Shell/NAM Siemens developed the STC-ECO compressor, suitable for seabed deployment and dirty gas applications. Since 1998, Siemens transformers have been in operation at a depth of 1000 meters in Petrobras' Carapeba oil field off the Brazilian coast.

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