Success of Troll-A HVDC Light Project is Paving the way Offshore

Success of Troll-A HVDC Light project is paving the way for ABB's groundbreaking transmission cable system's progress offshore.

Since their inauguration last October, two 40 MW HVDC Light systems are delivering power from shore to Troll-A platform, located about 70 km from the shore. And in an innovative dual role system's converters on the platform are serving also as Variable Speed Drives to direct drive two, 60 kV and 55'000 Horsepower Very High Voltage (VHV) compressor motors supplied as well by ABB.

Statoil employee at Troll A signals successful conclusion of commissioning tests. HVDC Light's offshore converter, named Electronic Drive System or EDS module, directly drive newly installed nearly 55'000 HP gas pre-compressors.

Brought in on schedule and to budget, this development has boosted gas pressure on the platform. As a result Troll-A's natural gas deliveries to Europe, via an onshore processing plant, has increased from 85 million cubic meters prior to the pre-compression to 110 million cubic meters now, constituting nearly 15% of entire European daily usage. Also as a result, Troll-A platform has begun to benefit from a reliable power supply with close to 100% of availability, reduction in offshore workers and overall enhancement in Health Safety and Environment. The platform avoided annual emissions of 230'000 tons of CO2 and 230 tons of NOX, equivalent to the pollution from 75'000 cars.

The core component of ABB's HVDC Light system is power electronic converter consisting of power semiconductor devices. The converter valves are shielded and suspended from the ceiling in an extremely compact module. No rotating equipment is required, adding to the safety offshore.

On Troll A platform ABB has deployed two key technologies - HVDC Light converter serving as Electronic Drive System (EDS module) and a Very High Voltage Motor - to help power the two 40-megawatt compressor units on the platform without any local power generation. This adds up to major savings in emission and costs.

Establishing the first offshore footstep with a project to the significance of Troll-A gas pre-compression can be expected to earn a leap forward in confidence building for this alternative solution to power requirements offshore. As an immediate and obvious consequence, Statoil is considering to reapply the ABB solution to address the power demand for the next phase of Troll-A pre-compression project.

Also encouraged, BP Norway has recently signed a Front End Engineering & Design contract with ABB to design a HVDC Light power link from the Norwegian shore to the Valhall field in the North Sea, as part of the Valhall Re-Development Project. ABB will

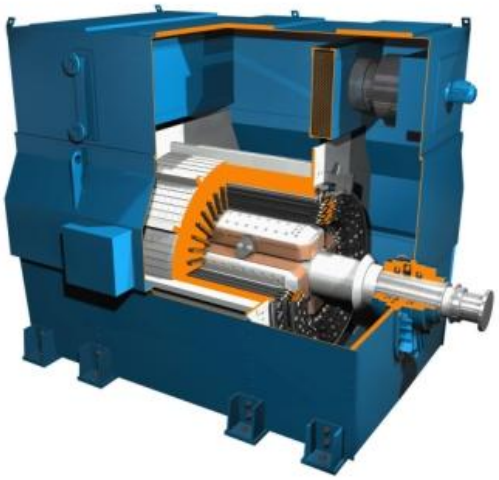
have the responsibility for the system engineering including the design of the HVDC Light stations, with an option to perform the construction. The construction option is pending regulatory approval by Norwegian authorities, expected in mid-2006. The milestone was culmination of a number of feasibility and pre-engineering studies to evaluate the performance of HVDC Light and to develop a solution for Valhall requirements.

It is of relevance that BP has designated Valhall as a **"Flagship for the Field of the Future"** and has placed it at the forefront of implementing advanced technologies. ABB system will deliver 78 megawatt power for the running of Valhall field located nearly 300 km from Norwegian shore. The offshore gas turbines will be decommissioned and HVDC Light will take over the responsibility to deliver all power needs for the offshore operation. The new production platform is planned to be in operation during 2009 and will have production capacity of 150 thousand barrels of oil per day.

Loaded on a cable-laying vessel, ABB's subsea cables arrive at Troll-A having carried out installation operation on the seabed by conventional submarine operation along the 70 kilometer distance. The cables are protected by water jetting into seabed or by rock dumping.

While Norwegian CO2 taxation has played crucial role in HVDC Light's first success offshore other global economic factors, such as gas turbine fuel costs and the costs of having offshore employees are emerging stronger than ever, and can be expected to

play similarly strong role in favor of power from shore. In fact it can be shown that in vast majority of the instances HVDC Light power-from-shore would lower operating expenditures even in absence of CO2 taxation. The capital expenditure for HVDC Light system on other hand tends to be higher with respect to the gas turbines, but particularly for smaller, few 10s of MW systems. Depending on platform's power requirement and distance from shore, considerable saving in overall life cycle costs can be demonstrated with HVDC Light power from shore, for applications worldwide.



ABB's VHV Motor: Polyethylene-insulated cables replace conventional epoxy-insulated conductor windings. The result is Very High Voltage Motor which can be directly driven by HVDC Light's offshore converter, without requiring bulky step-down transformer.

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