FEATURE STORY

ROV EVOLUTION in the Deepwater Market

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Subsea Tree Forecast: Courtesy of Quest Offshore

During the last decade, global subsea oil production has increased from around 2 million to 6 million Bbls/day. Quest Offshore states that the total number of subsea wells that have come onstream during this timeframe is in excess of 3,000 and over the next 5 years is forecast to increase by approximately the same level again. The trend toward developing subsea fields in increasingly deeper waters is also clearly illustrated from the forecast for Subsea Tree Awards (Ref: Figure 1).

The deepwater subsea market has proven to be a relatively resilient and robust sector during the recent economic cycle. Leading indicators of the forecasted market growth include an increasing number of sanctioned deepwater projects and positive trends such as the forecasted increase in 2010 E&P spending by approximately 11% (Barclays Capital), and general consensus of >$70/Bbl oil going forward.

With these facts and figures in mind, it is interesting to look at the ROV market and assess how this sector has evolved, and how it will further develop as a result of these macro industry trends. While a significant amount of data is available for the subsea production systems market, the ROV sector is generally not covered to the same degree. However, there is direct correlation to the available market statistics as the ability to effectively increase subsea oil production relies on ROV technology to support all key phases of the field's lifespan including; Drilling, Construction and IMR (Inspection, Maintenance and Repair).

The Construction market has dominated capital investment in new ROV assets during recent years, with a focus on high powered (150Hp-200Hp) ROV systems. These heavy-duty work-class systems have been essential to address the challenges associated with deepwater field development, but this increase in capability has resulted in ROV systems that require a significant amount of deck space on the host vessel or platform. The technology advances in the ROV industry over the last few years have fundamentally enabled the installation of the extensive global subsea infrastructure now in place, and these systems will continue to support the even higher levels of construction activity as we enter the next growth phase in deepwater field development.

As a result of the expansion in subsea infrastructure over the last decade, the IMR market will also drive growth for the ROV industry. While currently dominated by shallow water activity, deepwater IMR activity will rapidly increase. Vessel Operators continue to increase their fleets of DSVs, MSVs and other support vessels that have the flexibility to perform varying levels of IMR operations. The available deck space on vessels which perform this work is generally at a higher premium compared to large construction and pipe-laying vessels, hence there is a need for ROVs that are still highly capable and adaptable, but optimized in terms of the footprint required.

The Drilling market is similar, with new ultra-deepwater rigs and drill-ships facing similar ROV performance requirements, while having limited space to accommodate the necessary equipment. The high utilization rates of deepwater drilling vessels and forecast for new deepwater projects continues to drive a substantial increase in the number of new rigs entering the market, especially in Brazil where the pre-salt developments are creating unprecedented growth in this region.

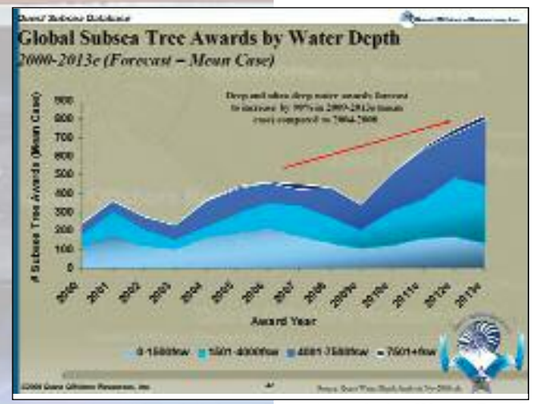

Figure 1 – *Global Subsea Tree Awards by Water Depth (Quest Offshore)*

These fundamental market factors indicate a healthy growth path for the ROV industry, and the increase in deepwater IMR and Drilling operations somewhat offsets the short term decline of new field construction projects. As a result, there is a growing market need for ROV systems that have to be highly adaptable and flexible to address a broader range of industry operational requirements.

Figure 2 – *Schilling's 125Hp HD™ ROV*

Schilling Robotics is addressing this market evolution with the deployment of the HD™ ROV system (ref: Figure 2), scheduled for launch in mid-2010. In addition to realizing the need for increased flexibility across market segments and a smaller system footprint, Schilling has also focused on increasing productivity levels. With deepwater operations commonly occurring in depths of up to 10,000 feet, any non-operational time can translate into tens of thousands of dollars depending on the type of support vessel. It is therefore essential to focus on delivering solutions that increase operational uptime. The two key approaches for achieving this include addressing the hardware design from an integrated systems perspective, and improving the situational aspects that affect overall performance, particularly the user experience from an operational and maintenance perspective.

The need for technology evolution within the ROV industry is analogous to the automobile industry, where vehicles previously required a high degree of maintenance. Today, we give little thought to the maintenance of our automobiles as reliability has generally reached exceptionally high levels, which is a direct result of integrated design philosophies. In a similar manner, ROV systems such as the HD™ have evolved to incorporate similar integrated design practices that enable a significant reduction in the number of interconnections (mechanical, hydraulic and electrical), which are the most common causes of failure in any system.

From an operational perspective, ROVs have generally required a crew with a multitude of talents to effectively pilot the vehicle and perform all mechanical, hydraulic, electrical and electronic system maintenance. To improve the operational aspects of piloting the ROV, Schilling has developed and enhanced a range of Auto-functions over the last decade including; StationKeep™, AutoTrack™ and AutoDisplacement™, that provide precise automated navigational control of the ROV, allowing the crew to focus on performing complex intervention tasks. In a similar manner, ROV system maintenance has been greatly simplified by utilizing discrete modules and visual diagnostics (Ref: Figure 3). This synergistic approach to system design ultimately results in more efficient field operations.

Overall, the subsea sector has evolved and expanded quite dramatically over the last decade. As commodity prices drive greater focus on efficiency, advancements in subsea technology will play a significant role in ensuring the viability of deepwater oil and gas production. ROVs will evidently play an increasing role across all segments of the subsea business and there will be a need for systems that reflect advances in productivity similar to what we have seen in other industrial markets.

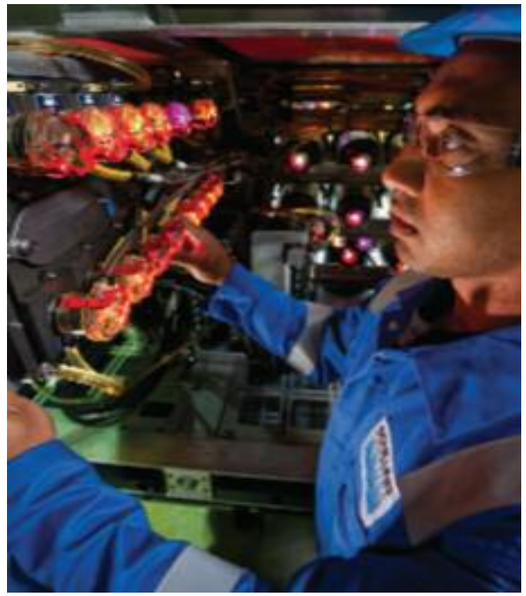

Figure 3 – *Example of Schilling's Modular Controls (Digital Telemetry System™)*