

What lies beneath

Why following the development of subsea activity points the way forward offshore



BARRY PARKER — NEW YORK

AS THE offshore energy sector has moved into ever-more remote and deepwater locations the rising importance of subsea production systems has witnessed a corresponding rise to power.

While the fate and fortunes of the key players are necessarily removed from the day to day offshore shipping sector, a closer inspection of subsea deals and operations offers an enticing glimpse of opportunities yet to emerge for the rest of the maritime sector.

Offshore specialist FMC Technologies, is one of the market leaders and the slew of deals it concluded this month points to great prospects for 2012.

Last week FMC announced a \$325m deal to supply Chevron with production systems for its Wheatstone project. The Western Australia offshore project, together with adjacent fields, is set to produce gas to be piped 200 miles to a plant on the Pilbara coast which will then export liquefied natural gas.

FMC's scope of work consists of 11 wellheads and production trees, three manifolds and associated underwater and topside controls.

FMC Technology's work will enable production of gas that will find its way to Asian markets.

Initial plans call for two trains with an annual export capability of 8.9m tonnes and so far 20-year contracts have been signed to deliver 3.1m tonnes of gas per year to Tokyo Electric and 0.8m tonnes per year to Kyusho Electric.

FMC followed this deal with another agreement — to provide oil-and-gas independent Anadarko with subsea systems, bundled with a wider services package.

Anadarko's activities include a string of recent gas discoveries in East Africa, which the independent has now indicated

that it might consider monetising through a full or partial sale of its interests.

Earlier this year oil major BP signed a similar, albeit non-exclusive, deal with Cameron, which competes against FMC in the subsea arena.

Subsea activities now represent some two-thirds of FMC revenues and the company is confident that sub-sea processing will drive growth over the coming years.

FMC Technologies investor-relations director Brad Alexander, speaking at a Dalhman Rose-sponsored oil services and drilling conference recently indicated that the company cornered half the market for new orders between 2006 and 2010.

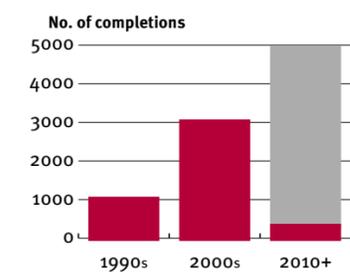
According to Douglas-Westwood data, FMC commands a 46% share of the market followed by Cameron at 23%, GE with 13%, Aker with 11% and Dril-Quip with 7%.

And the growth in subsea is dramatic. Mr Alexander told the conference that his company's annual capital expenditure for overall deepwater activity is growing by 15% a year and will increase further during 2012.

Citing data provided by Quest, he said that FMC expected to conclude 2011 with 300 tree orders and predicted 500 awards a year between 2012 and 2016.

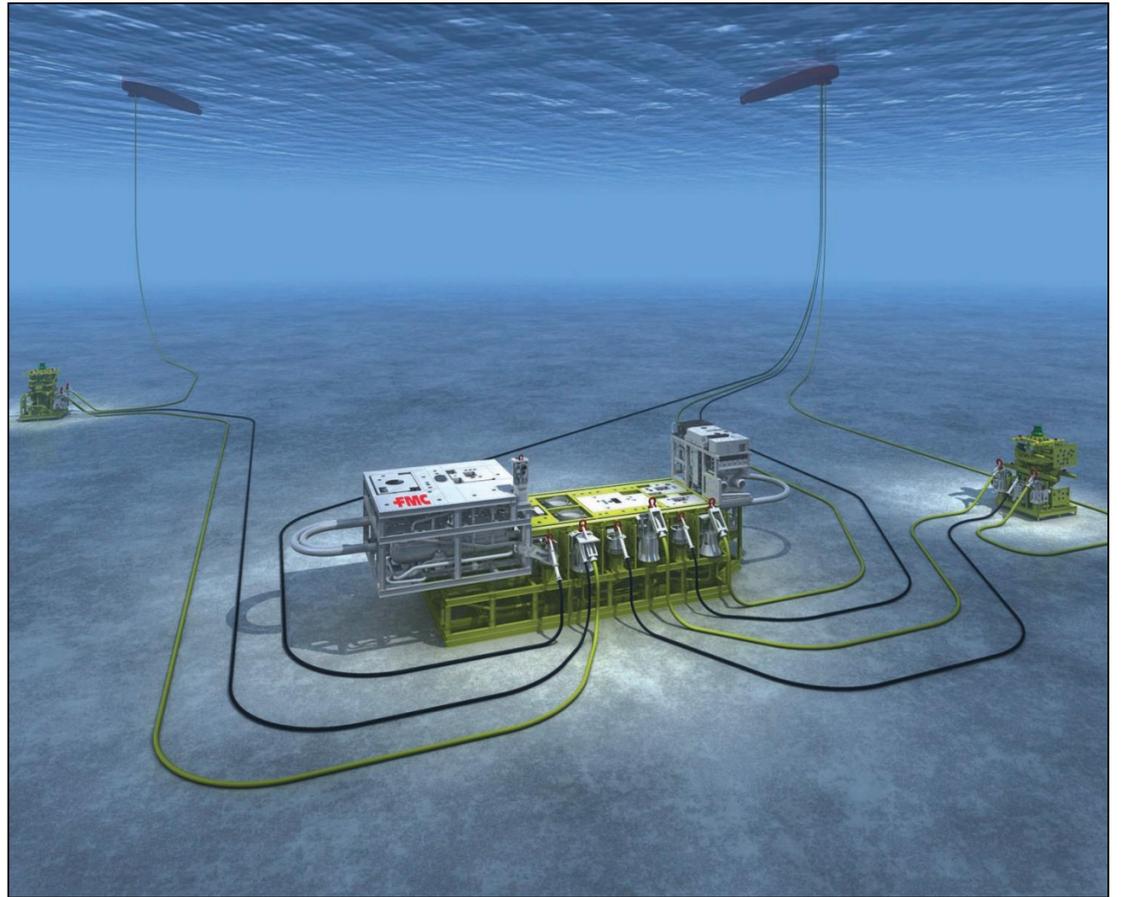
FMC expects 405 of these to come from Petrobras, 241 from Chevron, 235 from BP, 219 from Shell, and 195 from Total. Other familiar names include ExxonMobil, with 165 anticipated orders, Statoil with 146, ENI with 108, Hess with 91 and Anadarko with 69.

WORLDWIDE SUBSEA COMPLETIONS



■ Completed
■ Estimated

Source: Quest Offshore Resources



The Marlim subsea separation system separates heavy oil, gas, sand and water at a depth of approximately 2,950 feet.

FMC Technologies

The outlook from the companies is clearly bullish. However, the location of FMC's opportunities mirrors industry-wide growth areas, such as Shell's Perdido field and Petrobras's Cascade, currently producing into BW Offshore's FPSO BW Pioneer in the US Gulf.

In Brazil, FMC serves the Congro-Corvina fields in the Campos basin where underwater production is replacing an existing Petrobras platform. It also serves Shell's BC-10 deepwater block and has recently delivered separation equipment to the Marlim project.

Marlim, a Petrobras-operated field in the Campos Basin, has attracted attention because, at a water depth of 3,000 feet, it is the world's first deepwater separation project.

Petrobras faces challenges at other ageing wells in the Marlim development, where water needs to be re-injected to bolster declining rates of oil production. FMC is once again pioneering technological answers to these problems.

FMC's relationship with Schilling Robotics, described as an enabling technology, supporting manipulation and control of underwater manifolds and valves, has been key to the company's progress.

Another reason to start paying close attention to FMC's progress in the subsea

sector is its latest incursion into light-well intervention, traditionally the province of rigs.

The target market for this service is ageing wells that need to increase production. West Africa is a particular hotspot for ageing wells that will need such units in future.

In the meantime, FMC has three intervention units working in the North Sea, performing tasks that would otherwise require drilling units. According to Mr Alexander, FMC can offer a 50%-70% reduction compared to conventional rig employment.

Wireline services, which include sampling of flows and pressures, can be performed with the intervention units tethered to a support vessel on the surface, creating further shipping opportunities.

Two of FMC's units are working for Statoil and one is working for BP under long-term contracts. Mr Alexander is counting on additional demand for this type of equipment from individual customers and from a consortium of producers within a region, although FMC will not build units speculatively.

"We've been successful in actually using the one that's on contract to BP for Shell and some other operators," FMC Technology's chairman, John Gremp, told investors during the company's last

Subsea technology explained

Demand for subsea technology is considered a leading indicator of activity in the offshore sector.

Key equipment includes the production trees and the actual manifold which is then complemented by processing hardware for boosting flows, separating gas and water from crude oil production then compressing gas.

The installation and maintenance of this equipment will continue to provide huge opportunities for vessels constructing and servicing underwater fluids supply lines. ■

conference call. "...We've got other people, other operators, that are actually using the system and we're pleased with it, but haven't put together enough commitment to trigger a fourth stack." ■

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Remotely operated vehicles take drilling to new depths

THE industry-wide shift towards deeper drilling is creating demand for remotely operated vehicles, an integral part of exploration and production across the oil and gas underwater landscape that is also a leading indicator of offshore opportunities, writes Barry Parker in New York.

Following the Macondo blowout, companies are putting new emphasis on risk reduction in deep waters. This has, as marketing departments like to put it, reinforced the ROVs' "value sell".

More significantly, however, it is worth noting that investment in this growing sector is based on long-term commodity prices. Keeping up to speed on the latest developments in the ROV market is now required reading for other maritime sectors.

Oceanering International, which describes itself as the largest operator of work-class ROVs, has a fleet of 250 units and is the largest manufacturer of these systems in the world.

President and chief executive Kevin McEvoy says the market is growing rapidly, partly due to recent acquisitions.

Speaking at the recent Dalhman Rose offshore conference, he pointed to significant growth in demand for inspections, particularly in Norway, following OI's purchase of AGR's field operations subsidiary, which brought an opportunity for geographic expansion.

OI's later purchase of Stavanger-based Mechanica, which makes remotely



Remotely operated vehicles are an integral part of exploration and production.

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operated subsea tools, has further strengthened its position.

Fellow market leader Subsea-7 has cemented a tie-up with Acergy that was announced in mid-2010 and approved by Brazilian regulators earlier this month.

Subsea-7's latest announcements include an award from Petrobras worth \$200m for work in the Campos Basin for undersea oil lines and umbilical risers linking an underwater production platform to an oil storage and loading buoy some 50 miles off the coast.

Earlier this year, Subsea-7 landed a \$1bn contract for work in the Santos Basin, installing subsea umbilical risers and flowlines at the Guará-Lula NE fields.

The Subsea-7 fleet includes more than 150 ROVs, divided into work-class units rated for depths of 4,000 m and smaller camera-equipped observation units designed for depths to 1,200 m.

Subsea-7 will order an additional vessel able to work down to 3,000 m, as part of a five-year contract for pipeline

construction from Petrobras worth an estimated \$500m.

Subsea-7 will build the new pipelayer, which costs about \$350m and can lay flexible flowlines and umbilicals, equipped with two ROVs.

In a similar deal announced in late November, Petrobras awarded contracts worth an overall \$1bn to a Technip/Odebrecht consortium. The package will see two flexible pipelayer vessels built at Daewoo, both with 550-tonne high-tension capacity, the same specification as the Subsea-7 newbuild, that can work to depths of 2,500 m.

Most recently, Subsea-7's well-intervention division, I-Tech, won a five-year service contract, with additional renewal options, for Hong Kong-listed China Oilfield Services. COSL is building two semi-submersible rigs, Innovator and Promoter, at Yantai Raffles.

Each rig will include two work-class ROVs and two observation-class units.

Innovator and Promoter are the second and third in a series of three COSL rigs that will work for Statoil. Pioneer, began working in the third quarter of 2011. COSL expected Innovator to leave for Norway in December.

Statoil is a leading customer for intervention, as it seeks to revive production in ageing wells in the North Sea. In late 2008, COSL acquired the Norwegian stalwart, Awilco Offshore.

Subsea-7 has also captured two contracts with Shell in the Gulf of Mexico,

where it has chartered construction, pipe and flexline layer Skandi Neptune to install flow and control lines 3,000 ft down. One of Skandi Neptune's two onboard ROVs became well-known during the Macondo incident last year, beaming images of the leaking oil well to television viewers.

Business relationships are intertwined. The working units in Subsea-7's ROV fleet feature manipulator arms sourced from Schilling Robotics, which is 45% owned by FMC Technologies.

Schilling has sold entire ROV systems to operators Smit, to Ezra Holdings company Emas and to DOF Subsea. In this field of overlapping roles, several players, including FMC Technologies, and Subsea-7 compete to provide value-added engineering services on subsea projects.

But there is also co-operation. In January, Subsea-7's Acergy Polaris installed three subsea separation units, deployed 800 m down, supplied by FMC Technologies from the Total-led Pazflor project, at Block 17, offshore Angola.

According to Total: "Pazflor comprises a vast subsea-gathering network, the most complex ever built in Angola; 180 km of lines tying in 49 subsea wells, 10,000 tonnes of subsea equipment and the giant Pazflor floating production, storage and offloading (FPSO) vessel."

The field came online this summer. ■

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