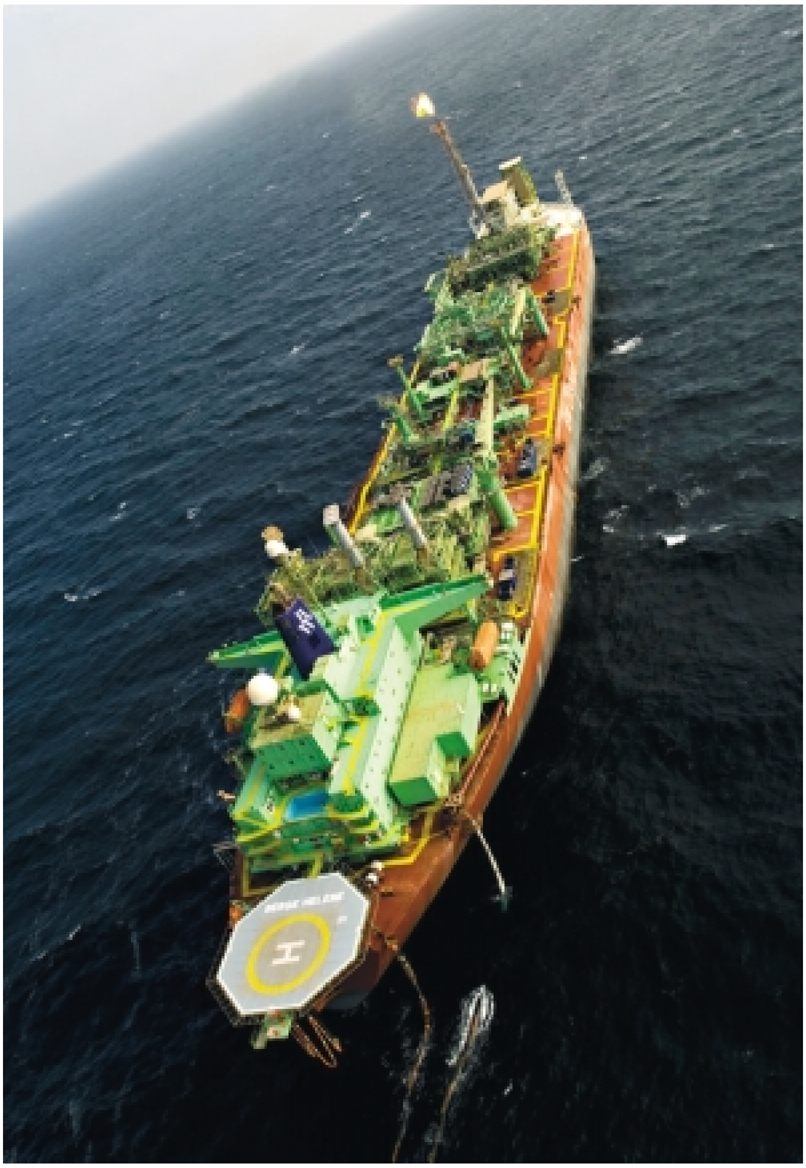
Future fields

Easy oil may be history but oil is not. New discoveries are increasingly offshore and bring with them considerable challenges. Floating Storage, Production and Offloading (FPSO) vessels are set to play an integral role in developing these fields.



As global energy consumption soars, oil and gas companies are looking offshore for new fields to keep up with the world's insatiable thirst for oil. Reliable, easily-accessible fields are expected to see a decline in production, which has led to a broader search for new reserves in areas previously overlooked or thought to be too difficult to access.

New discoveries and developments are increasingly in deep waters, remote areas and marginal fields – all of which have challenging characteristics and require the expertise of companies such as BW Offshore and its subsidiary APL.

High oil prices have also contributed to the development of fields that were once considered too costly to develop. Spurred on by the record-high oil price, energy companies are aggressively investing in exploration and production (E&P) activity, which is helping to rectify the industry's underinvestment of the last 20 to 30 years. Lehman Brothers recently estimated that Exxon Mobil, Shell, BP, Chevron, Total and ConocoPhillips will spend a record USD 98.7 billion this year on E&P. The investment is certainly needed. According to energy investment banker Matthew Simmons, over the past 30 years there has not been a single field discovered that is able to produce more than 1 million barrels per day. In addition, one in every five

barrels consumed daily comes from a field that is over 40 years old. As fields age, output declines, and as much as two-thirds of new capacity goes towards covering the slowdown at maturing fields.

"Easy oil is on its way out," says Svein Moxnes Harfjeld, BW Offshore CEO. "New oil is in deeper waters, deeper below the seabed, the reservoirs are smaller, and the fields are often further away from shore and in harsher environments. Overall, these issues make it more difficult to produce the oil."

The industry increasingly recognises that FPSOs are the most cost-effective means of developing remote offshore fields. And considering the record day rates for drillships and semi-submersibles, along with revenue backlog for drilling contractors, further growth can be expected in floating production.

"Three or four years ago, FPSOs represented between 55 and 60 per cent of the floating production applications," Harfjeld says. "There are other units such as semi-submersibles and Spar platforms also being used. Today, FPSOs represent about 70 per cent of floating production. This tells us that the FPSO will increasingly be the chosen application."

NEW FIELDS, NEW CHALLENGES

FPSOs are uniquely suited to tackle the new challenges.

Says Carl Arnet, president of business development for BW Offshore and managing director of APL: "The first oil that was found came seeping out of the ground on its own. Then you had to start drilling a hole in the ground to extract the oil out. We are now drilling far offshore and in deep waters to access new reservoirs."

As an example of the challenges involved in new developments, consider the Cascade and Chinook fields in the US Gulf of Mexico (US GoM). The BW Pioneer, which will be the first FPSO in the US GoM, will operate in waters 2,600 metres deep – the deepest ever for an FPSO.

TECHNOLOGY LEADERSHIP

More complex field developments and the harsh environmental conditions associated with offshore fields means that technology will play an important role as oil companies look for partners who can deliver a broader range of services to help tap hard-to-reach wells. The combination of BW Offshore's experience and installation services, along with leading technology solutions through its subsidiary APL, positions the company for a lead role.

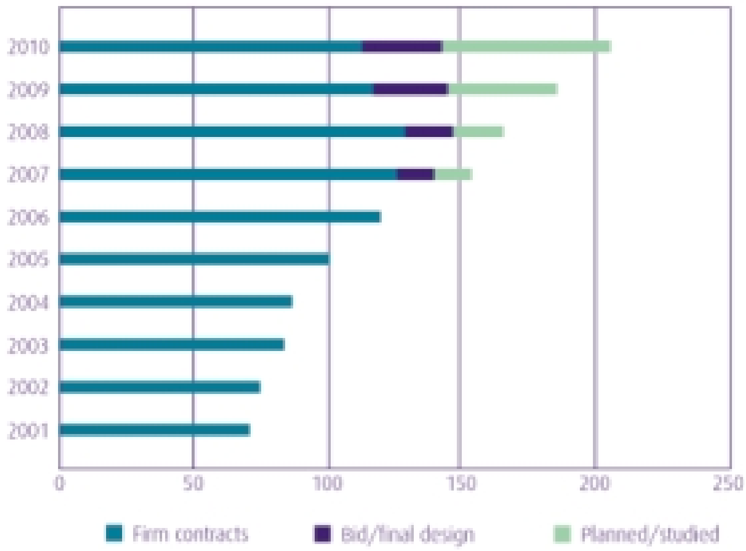
"To answer the challenges of the future you certainly need to have good technology, if not the best technology. You need technology leadership," Arnet says.

Harfjeld adds: "Mooring technologies and turret systems are important for harsh environments. The FPSO we are building for Petrobras in the US Gulf, for example, will be in very deep waters and the requirement is for this to be disconnectable to avoid named storms. APL's superior technology ensures we can meet these demands."

COST BENEFITS

Despite high oil prices, cost remains a key driver in the decision to develop future offshore fields. One of the main

RECORD HIGH FPSO DEMAND



Source: BW Offshore

advantages of FPSOs over alternative offshore production systems is that they are moveable. Hence there is no need to install costly infrastructure connecting production to shore in fields that may have a relatively short lifespan.

"When you develop these more difficult fields that are deeper, further away or smaller, and if the lifespan is short and the environment challenging, then it is more expensive to build infrastructure such as pipelines," Harfjeld says. "The US Gulf, for example, is full of pipelines, which is one of the reasons FPSOs have not really been a choice in that area. But when you are moving further away and perhaps the life of a field is 10 to 15 years, as opposed to 30 years, the cost of developing that fixed infrastructure is going to be very high."

BRAZILIAN BONANZA

While a lot of focus will go into developing marginal fields with short lifespans, recent discoveries in Brazil have proven to be the exception to this trend.

The giant Tupi field – whose developer Petrobras will employ the BW Peace FPSO for testing – was discovered off the Brazilian coast in November 2007 and is estimated by Petrobras to hold five to eight billion barrels of oil. Then in January this year, Petrobras announced the discovery of the Jupiter field, located 37 kilometres from Tupi. Although Petrobras has yet to provide specific details, it says Jupiter could be similar in size to Tupi. However, a recent find may trump them both and will undoubtedly secure Brazil's place amongst the world's leading energy producers. The Carioca field was discovered in April this year and at the time a Brazilian regulator said the field could have as much as 33 billion barrels of oil. While this off-the-cuff estimate may be an overstatement, the field appears to have significant potential.

An additional challenge in the recent discoveries in Brazil is the so-called sub-salt element. This means that the hydrocarbons are located a great distance below the seabed, below large layers of salt. Already in deep waters, the Tupi field being in 2,500 metres, this will increase challenges related to flow assurance during operations. Here again, technology will play an important part in assisting Petrobras in producing these fields.

With the price of oil at record highs and the never-ending demand for energy, exploration activity is set to continue and Arnet is confident that there will be further discoveries. These will be needed given the rate at which the world is consuming its oil and gas.

"There is definitely scope for more offshore drilling and to some extent, these are uncharted waters. But even with the activity level we have now, which is certainly much higher than it was just a few years ago, we are nowhere near replacing the barrels that we burn," he says.

West Africa, Brazil and the Gulf of Mexico have so far yielded large offshore finds. As more areas are explored, energy producers will hope for more discoveries – be they smaller marginal fields or huge depositories like those in Brazil. BW Offshore's track record and resources mean it is well-positioned to help develop the offshore fields of the future, wherever they are located.