Oil- and Gas-Field Chemicals

Fluctuating Energy Prices and Interruptions to Production Can Undermine Strong Growth in Demand

Soaring Costs - For a rising number of chemical companies, an increasingly profitable market is the sale of chemicals to aid the extraction of oil and gas from deep and geologically complex reservoirs. Production from these difficult locations is accounting for a growing proportion of the world's oil and gas output. But its costs are soaring.

This is good news for companies in the oil- and gas-field chemicals market because their products - from surfactants, defoamers and demulsifiers to gels and polymers - are accounting for a rising percentage of these production costs.

The global oil and gas services market for chemicals - which includes well additives such as drilling fluids or muds and cementing chemicals, as well as pipeline chemicals such as anti-corrosion and cleaning products - is worth around $5 billion to $6 billion annually and growing by an average of 4 % per year.

This represents only 1 % to 2 % of the total $350 billion oil and gas services sector, a high proportion of which comprises the provision and operation of engineering equipment. But with some wells the share of costs taken by chemicals can be considerably higher.

Risks in Oil and Gas Services

For chemical companies investing in the sector, particularly through acquisitions, there are pitfalls. One of the largest of these is the possibility that oil prices will tumble to a level well below the prevalent benchmark price of North Sea Brent crude - around $100 per barrel. A steep decline would make oil and gas fields with high production costs and a big use of chemicals uneconomic.

Another risk, less drastic than a long-term weakening of oil prices, is a period of sharp fluctuations in supplies of oil and, to a lesser extent, natural gas for economic, political or safety reasons.
In 2010, the Macondo blowout at the Deepwater Horizon drilling rig, which killed 11 people and caused an oil spill of nearly 5 million barrels, prompted a six-month drilling moratorium in the Gulf of Mexico, one of the world’s largest offshore centers of oil and gas production. For suppliers of chemicals to the area, demand disappeared overnight.

In addition, it is a highly competitive sector technologically so that R&D capabilities are crucial.

Nonetheless technological expertise by itself is not sufficient.

Successful chemical companies in the sector need to be able to distribute their products directly or indirectly to well heads with a local technical backup. Since oil and gas reservoirs are often in remote areas, many of them offshore, this requirement for on-site services can be difficult and expensive to fulfill.

**Untraditional Methods**

The big driver behind the increasing demand for chemicals is a switch to production methods other than the traditional ones of natural pressure and water injection to bring oil and gas to the surface.

Instead, due to a large proportion of existing recoverable oil and gas being in deep offshore water reservoirs or in tight rock formations, complex enhanced oil recovery (EOR) systems have had to be applied. These include the chemical-assisted application of steam, CO₂ and other gases; chemical-based methods using polymers and surfactants; and use of microbes.

By next year, deep-water drilling will account for 25 % of offshore oil production, which makes up around half of total oil output globally, according to Clariant, a Swiss-based specialties chemical company and one of the world’s leading oil-field chemical producers. By 2025 the deep-water share of offshore output will have risen to half and to 25 % for all oil production.

The Edinburgh-based consultancy Wood Mackenzie predicts that expenditure on deep-water drilling will rise by more than 2.5 times from $43 billion in 2012 to $114 billion in 2022. The rising spending looks likely to continue well into the 2020s since over the last decade the deep-water sector has accounted for 41 % of newly discovered oil volumes, according to Wood Mackenzie.

Deep-water operations require a wide range of chemicals in addition to surfactants and polymers, such as emulsifiers and demulsifiers, flow stimulants, dispersants
and scale, corrosion and hydrate inhibitors. These have to be able to function in extreme conditions, in particular in high temperatures, pressures and salinity, and with heavy and other unconventional oils.

They also have to comply with tough environmental regulations and safety standards, which are tending to be applied uniformly throughout the world. These have become even stricter after the Macondo accident, even in developing countries such as West African states.

"Safety is the number one priority with all activity being focused on reducing risk," John Dunne, Clariant's vice president, general manager of oil and mining services, told a recent company news briefing in Zurich. "With the environment, there are increasing regulatory controls associated with chemicals applied in deep-water operations. We have to offer solutions which have a big focus on environmental protection and sustainability."

**More Than Chemicals**

Oil-field chemical suppliers like Clariant also have to back up their business in the sector with a worldwide network of manufacturing plants and services centers.

"A very important aspect of the oil chemicals business is to have a presence where your customers are," Dunne said. "You have to be able to respond quickly to customer needs."

The chemicals provided to meet these requirements have often to be versatile to deal with local conditions and to be innovative.

"Difficult requirements call for an innovation-driven company," Dunne said. "It's important for an oil-field chemicals business to be part of a large chemicals company with big R&D capabilities. We have, for example, adapted a personal care compound developed by Clariant to aid oil production."

**Strategic Takeovers**

Chemical companies have been making a growing number of strategic takeovers in order to obtain technologies or a stronger regional presence in the sector. In most cases these have been add-on acquisitions.
Critical mass can be a major competitive advantage in a market in which big services companies, such as Halliburton, Baker Hughes and Schlumberger, all based in Houston, Texas, develop and supply chemicals. Some of the international (IOC) and national (NOC) oil companies also have chemicals operations.

Ecolab in St. Paul, Minnesota, a global leader in water, hygiene and energy technology services, has in recent years emerged as a major player in oil- and gas-field chemicals through acquisition. First it took over in 2011, in a $5.4 billion deal, Nalco Holding Co., Naperville, Illinois, a producer of chemicals for water treatment and pollution control in the oil, paper and other sectors.

Then in October 2012 it agreed to acquire for $2.2 billion Champion Technologies, Houston, a big global supplier of specialty oil-field chemicals with employees in 30 countries.

General Electric Co. (GE) is now a leading operator in oil and gas production after building up a strong presence through its divisions of GE Oil and Gas and GE Water and Process Technologies, through which it is a big provider of chemical solutions. The GE Oil and Gas business has grown rapidly over the past 10 years after more than 30 acquisitions.

Mergers and acquisitions in oil- and gas-field chemicals have been frequent in the last few years in the U.S., which as a result of the shale oil and gas boom is forecast to overtake Saudi Arabia to become the world's leading oil producer by 2020.

M&A activity has helped to stimulate a lot of technological innovation, not just in the development and formulation of chemicals but also in their distribution. The oil and gas sector has as a result become an area of expansion for distribution specialists both in North America and worldwide.

nivar Inc., Redmond, Wash., for example, has been building up a strong presence in the global sector - not just in North America and Europe, where it is already a major distributor in the whole chemicals market, but also in South America, the Middle East, Africa and Australia.

"Our focus (in oil and gas) is on innovative transportation options to get the right chemicals to the right place at the right time," said Chris Oversby, president, Univar Oil, Gas & Mining. "On-site, real-time delivery is changing the way oil and gas companies and the broader industry view distribution. Time is critical at the well site."
The company reckons it is helping small and medium-size enterprises (SMEs) in chemicals enter the unconventional oil and gas segment, especially shale gas production in North America where many shale basins are located in remote areas.

"We can give smaller companies access to world class chemicals that are generally only available in very large batches," Oversby said.

**Beyond The Basics**

Distributors such as Univar are also extending their activities in the oil and gas sector beyond the storage and transportation of chemicals to their blending and formulation at the production site. It acquired in December 2012 Texas-based Magnablend, a custom chemicals manufacturer and blender for the oil and gas market.

"Magnablend focuses on manufacturing products for each customer's individual specifications and assists in the development of new chemical formulations for the well site," Oversby said.

As oil and gas production becomes more intricate with the types of chemicals used being dictated by local conditions, the sector will increasingly offer openings to flexible specialty chemical companies and distributors with a skill for on-site formulations. The market for oil- and gas-field chemicals is thriving but it is also becoming much more fragmented.

**Autor(en)**

Sean Milmo, freelance science and business journalist, Essex, United Kingdom

**Kontaktieren**

*Chemical Market Reporter*

32 Queenborough Lane
Braintree, Ess. CM7 8QE
United Kingdom
Telefon: +44 1376 331051
Telefax: +44 1376 322752