

CNG: a market waiting to happen

With CNG marine-transport technology maturing, a new door is opening for firms looking to deliver gas to market. But companies remain wary of being the first to adopt the technology, writes Martin Clark

SHIPS CAPABLE of transporting natural gas in compressed form are close to commercial use. They have the potential to unlock stranded gasfields and to deliver to smaller markets over intermediate distances. Unlike liquefied natural gas (LNG), compressed natural gas (CNG) does not require large investments in liquefaction or regasification capacity, although the ships themselves are unlikely to be cheap.

The economics are still largely unknown, but the niche market appears to be between 200 and 3,000 nautical miles from the source gas – although these distances vary from one source to another.

A complementary role

Those active in this embryonic sector, say CNG will play a complementary, rather than competitive, role in the gas industry. “All three solutions have their own sweet spot for gas transportation,” says Gary Baron, director of business development at Teekay Gas Services. Although there are no CNG ships on the seas, the first orders could be close, he claims. “Teekay is unlikely to see any CNG vessels in operation before 2010, but this is largely the result of a lack of available shipyard slots.”

According to the American Bureau of Shipping (ABS), which has established classification rules for CNG containment systems and transportation, the technology can be deployed where pipelines or liquefaction are not viable. Gas can be loaded directly onto CNG ships from offshore production facilities, where it is compressed and contained, eliminating the need for a liquefaction process.

In some designs, CNG carriers can also discharge gas directly into offshore terminal facilities for delivery into the local transmission system. However, this is an area where the technology is mostly untested.



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Sea NG's Coselle ship is the only marine vessel fully approved by any classification society for CNG carriage. Last year, ABS gave its full approval to the company, enabling it to lodge its first construction orders, although these have yet to be sanctioned by the company. It has been a long journey: the design received ABS' Approval in Principle in 1997. Several other proponents have also received this interim backing for their CNG technologies.

CNG has been used for decades on land – it is an established vehicle fuel in many countries. Offshore compression and marine transportation could bring around a third of the world's stranded gasfields into play, says Wood Mackenzie. Over these shorter distances, CNG is likely to give a market value to many smaller gas prospects that have, so far, not been economically viable.

Plenty of scope for trade

The distances involved, up to 3,000 miles, offers plenty of scope for CNG trade. Among the areas commonly cited as being ideal for potential CNG projects are the Mediterranean and the Caribbean. In these two geographic zones, gas-rich areas such as North Africa are separated from large consumer markets, such as Europe, by just a few hundred miles. The eastern coast of Canada, around Newfoundland, Labrador and Nova Scotia, is another prime market, says the Centre for Marine CNG.

In a bid to step up the deployment of its Coselle technology, in January, Sea NG formed a strategic alliance with Teekay and Marubeni. Dave Stenning, Sea NG's president and chief executive, calls it a “dream team” with the consortium working together to develop projects around the world, although it has not disclosed which ones.

Tomohiko Hirano, from Marubeni's energy department, agrees there is “enormous potential” for CNG marine transportation, which “will open the door to a new energy-business opportunity”. How big this opportunity is remains to be seen, says Teekay's Gary Baron, given that no-one would have predicted the unprecedented LNG expansion of recent years after decades of slow growth.

Several well-known industry groups are developing their own unique CNG technology for this high-potential market. Knutsen OAS Shipping is devising its version of CNG technology – known as PNG (pressurised natural gas) – with Europipe, of Germany.

In 2003, EnerSea received Approval

in Principle from ABS gained in 2003 for its Votrans CNG shipping system, a variation on the same theme. It has worked on project studies on behalf of Australia's Oil Search to take 50m-100m cubic feet a day (cf/d) from Papua New Guinea to New Zealand, a distance of around 1,500 nautical miles. TransCanada has similar initial backing from ABS for its GTM (gas transport modules) system.

Per Lothe, responsible for the PNG programme at Knutsen, says the problems holding the sector back are not technology-based, but commercial. “Everyone is trying to get the first project going,” he says. “There is lots of interest from oil companies, but no-one wants to be first.”

There was excitement last year as India's state-owned Gail floated a CNG tender, the first of its kind, to bring gas across from neighbouring Myanmar. It drew a lot of interest from the CNG hopefuls, but the project stalled, reportedly because of political complications. Gail was looking to import between 350m and 0.7bn cf/d, over around 350 nautical miles across the Bay of Bengal.

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But Lothe says there is now more of a push by the industry to make the first projects happen. “There is a lot of opportunity and we are ready to start building the ships,” he says. Additionally, these projects may not require the services of the large Asian shipyards. He says the first CNG projects are likely to be based on smaller vessels that could be produced in Europe. This strategy mirrors the early LNG vessels with their 27,000 cubic metre capacities.

It is not quite all systems go. Although the Coselle ship may have the green light from ABS – and others could soon follow – there are still hurdles to jump. Teekay's Baron says there are still some statutory issues that must be resolved in terms of certification of the CNG vessels themselves and areas such as crew training. And, as yet, the International Maritime Organization does not have specific CNG regulations, which means operators must work closely with the relevant flag and port states.

It is a learning experience for all. “There is also a need to work with the insurance underwriters to ensure they are aware of all the studies that have been conducted to ensure CNG transportation will meet or exceed the safety requirements for LNG vessels,” says Baron. □