

Challenges for the Liquefied Natural Gas Industry

a report by

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The past 12 months have seen some exciting developments in the liquefied natural gas (LNG) industry. Not only did the volume of gas traded as LNG increase to 211 billion cubic metres (BCM) or 162 metric tons per year (mtpy) – a staggering 10% increase over the previous year – but we also saw three new plant start-ups, continued increases in material and equipment costs and a new entrant into the qualified engineering, procurement and construction (EPC) contracting fraternity.

The major increase in traded LNG reflected both new capacity coming onstream and the fact that supplies in the previous year had been disrupted by plant outages and interruptions to, or shortages of, gas supply. The underlying growth trend is still strong at 7–9% per year, and it seems that the developed markets in Europe and the US can absorb all the available gas when the price is right. So, the last 12 months have seen a continued development of short-term trades into the US, where the price has remained firm, but sluggish activity in Europe, where the warm winter dampened demand and has kept prices depressed.

In the Gulf of Mexico we have seen the Exceleerate Energy Gulf Gateway get more use, but the new entry terminal into the UK, Teesport Gas Plant, where high-pressure gas can be discharged directly into the grid, has seen only the unloading of the commissioning cargo. The development of this terminal in just under 12 months has attracted the attention of several interested parties as a potential business opportunity for LNG trading. However, so far only Petrobras has pushed forwards to initiate work to bring these low-cost and short-schedule gas terminals onstream.

The commissioning of the new train in Equatorial Guinea took place in May this year, thus opening up a new African country to the international LNG trade. This plant uses the ConocoPhillips (COP) Optimised Cascade Process, and means that COP now produces 16% of the 194mtpy installed LNG production capacity. The project had to overcome some formidable challenges in construction, such as a 60m elevation of the plant above sea level, which necessitated the construction of a 300m suspension bridge for the LNG transfer

lines. Earlier in the year, RasGas brought Train 5 onstream, increasing the LNG production in Qatar to 30.7mtpy and making Qatar the world's largest LNG-exporting country. Given the planned development of six further trains at 7.8mtpy each, which will bring the total capacity to more than 77mtpy, Qatar will be the largest exporter for the foreseeable future.

Interestingly, both of these trains were delivered ahead of schedule and on budget, benefiting from experience from previous projects. This is not something that can be said of the third plant to start up this year – Snøhvit in northern Norway – which is some 12 months

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late and over the original budget by a large margin. However, the plant has attained several firsts and significant achievements: it is the first all-electric drive plant, it introduces a new liquefaction technology and it has demonstrated some innovative concepts for modular construction in remote and hostile environments.

The industry has been keenly awaiting the outcome of this project development, and already some of the modular concept ideas are being used in Australia for the construction of Train 5 for the North West Shelf partners. There is more potential from these ideas, such as even larger modules, and schemes are being developed for the even more remote Kimberley region of the northern Australian coast where significant gas resources are awaiting development.

Not only has a new liquefaction technology licensor become a viable alternative, but we have also seen a new entrant into the select club of competent EPC contractors with the award of the Peru LNG project to the Chicago Bridge and Iron Company (CB&I). This is a welcome addition at a time when resources in the industry are very stretched, and will provide new project developers with some additional options.

The year has seen continued escalation in plant equipment and material costs, and it is estimated that LNG facility costs have doubled in the past 24 months. This has clearly caused great concern to the development teams for new projects, and many have been stalled while costs and economics are re-evaluated. In reality, the



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industry has capacity for only three to four LNG trains a year, so some prospects will need to wait their turn.

Looking to the future, perhaps the most interesting consideration is where the next tranches of gas are going to be found. Once Qatar completes its current programme and the Browse basin area in Australia has been opened up, the next large potential areas are in Russia and Africa (north-western coastal regions). The Russian gas is located in very remote hostile climate areas, and would be difficult to develop even if it were clear whether Russia wanted to develop these areas or whether, instead, they plan to rely on pipelines to export natural gas.

It could be that in five years' time project developers will be hard pressed to find new gas sources to feed the ever-increasing consumer demands for cheap and clean power. It is a far cry from 10 years ago when, in a keynote address to the Flame conference in

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Trondheim, Dr Haldor Topsoe suggested that it was a waste of valuable resources to burn natural gas as fuel, and that instead it should be used as a chemical feedstock. How the world has changed in 10 years. Now, with the ever-increasing clamour to minimise the impact of global warming, the pressure is for ever more efficient gas-fired power stations. In today's climate, one must challenge the frenetic hubris for gas to liquid (GTL) as a transportation fuel. This is a process where more than 30% of the feedstock is used as energy to convert molecules into diesel fuels, and where the capital cost is two to three times that of an equivalent LNG plant. Can this really be justified? ■

Further Reading – www.touchoilandgas.com

The Future is Gas?

Jeroen van der Veer, Chief Executive, Royal Dutch Shell

Liquefied Natural Gas – Balancing Security and Flexibility

Peter de Wit, Executive Vice President, Shell Gas & Power

The Extinguishing of the Lights

John Busby, Author, *A National Plan for Survival in the 21st Century*

Small-scale LNG Plant Technologies

Christian D T Begazo, Erica C Carvalho and José R Simões-Moreira SISEA, Alternative Energy Systems Laboratory, Mechanical Engineering Department, Escola Politécnica, Universidade de São Paulo

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