

Core questions

This month we asked industry experts for their perspectives on the global LNG sector and what technologies will be in demand as the industry continues to grow



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What technologies are most important to the global gas sector right now?

From the perspective of floating offshore developments in the global gas sector, we see the development of large floating LNG producing facilities. Important technologies in this field are the offloading of the gas to a LNG tanker. This can be done either in side by side or tandem configuration.

An important aspect is the workability of these offloading operations. Understanding the LNG vessel motions in close proximity of the FLNG is a challenge, especially when taking in to account that the internal sloshing of the LNG in the tanks may also affect the dynamic motions of the whole system.

The internal sloshing of LNG in the cargo tanks is also subject to further research. We are starting a new project that addresses the impacts of LNG on the tank wall. This is a challenging subject because both the liquid and gas properties play a role in the physics of the impact. That is also why we will build a special testing facility where we can control the

properties of the liquid and the gas, the temperature and the pressure. From this we will understand the loading process on the inside of the LNG tank.

A further aspect is the tandem offloading – where the LNG carrier will be behind the FLNG to take on the cargo. Typically, this will be done using a dynamically positioned (DP) vessel, controlled in such a way that it will follow the stern of the FLNG. The challenge is to have a safe DP operation where the gas carrier can dynamically follow the FLNG – the yaw motions of the long FLNG vessel especially can lead to difficult situations.

In our experience a combination of a stern thruster on the FLNG with a DP operated LNG carrier leads to the most stable situation, but we believe there is still room for innovation of multi vessel DP systems and we are starting a project to address this.

How has the proliferation of LNG affected the sector and gas markets?

At this moment we still see a number of large FLNG projects that are in pre-FEED or FEED stage. This means that projects are currently under development, but we have to wait and see if they will actually be built. Next to the large projects there are also concepts being developed for smaller LNG production fields. As a hydrodynamic

research institute we are a bit further away from the actual gas market, but we see that there is a lot of activity around floating LNG projects in 2015 and early 2016.

Are there any aspects – from up- to downstream- which are in need of more innovation(s)?

There is always a need to innovate the overall chain from offshore production, transport and offloading to regasification units. An important aspect is to reduce the operational cost of the overall system. Increasing the uptime of the terminal, for example by appropriate heading control of the FLNG can improve the overall performance.

Designing the operation of berthing the LNG carrier to the FLNG for a specific field may be helpful. At MARIN we believe it is important to close the gap between engineering and operations and to think about the operation from the very early design stage. By designing the operation itself, we try to question how the facility will be used before it has been built. In the design stage, we can still optimise the operation – for example by adding a heading control thruster or choosing the height where the bollards are on the FLNG. Once the structure has been built, a refit is usually too expensive. ■