InterDam

LNG terminals

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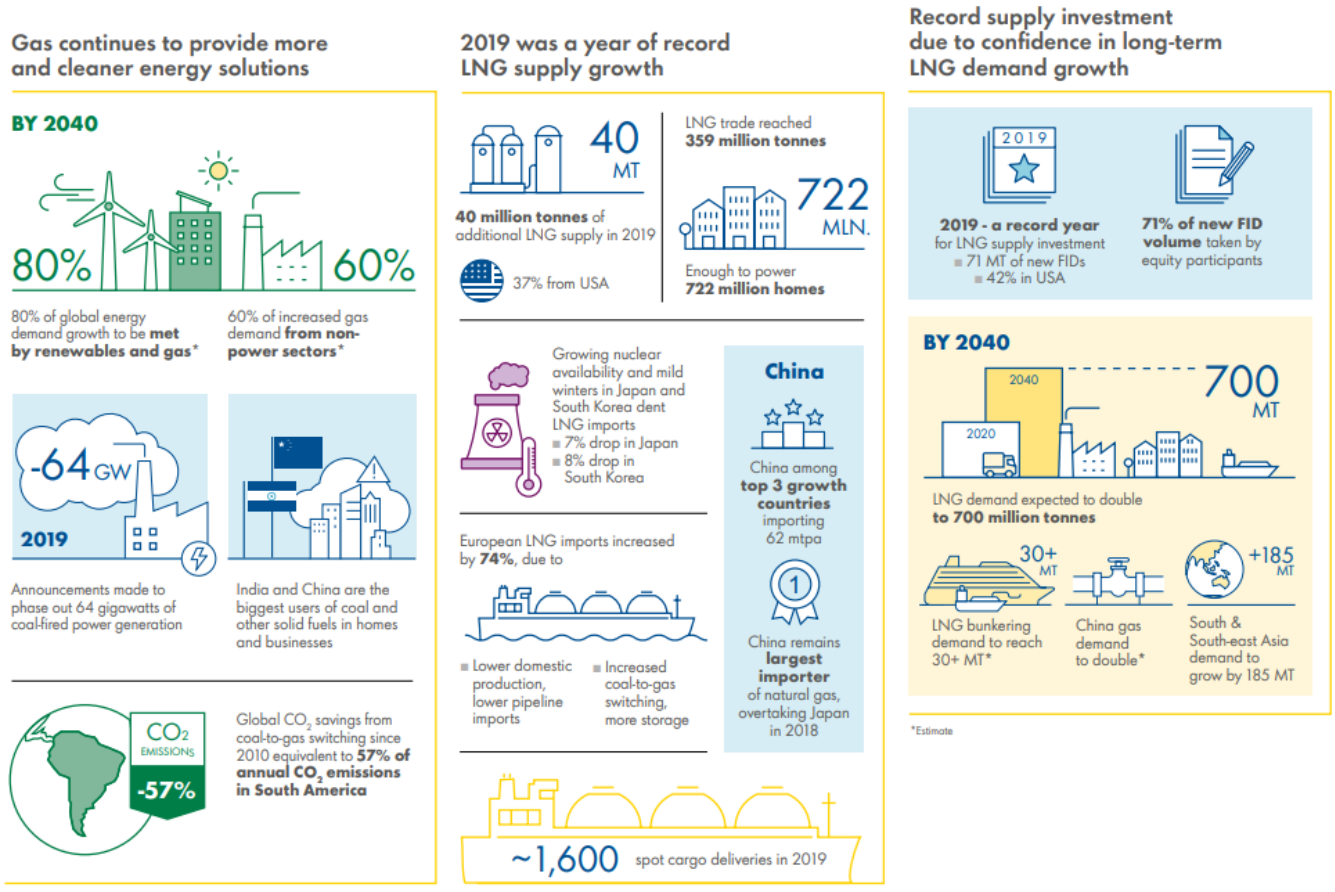
Shell LNG Outlook 2020

The Shell LNG Outlook, now in its fourth year, highlights key trends in 2019. It finds that global demand for liquefied natural gas (LNG) grew by 12.5% to 359 million tonnes in 2019, a significant increase that bolsters LNG's growing role in the transition to a lower-carbon energy system.

Europe absorbed the majority of 2019 supply growth as competitively-priced LNG furthered coal-to-gas switching in the power sector and replaced declining domestic gas production and pipeline gas imports. There was a modest rise in imports to Asia in 2019, compared to the previous two years, a result of mild weather and rising electricity generation from nuclear power in Japan and South Korea, two of the three largest global importers.

In the short-term, supply growth is expected to slow down as the last of the new LNG projects under construction will be completed by 2021, restoring equilibrium.
Longer-term demand is expected to double to 700 million tonnes by 2040 according to forecasts



Source: Shell LNG Outlook 2020

LNG facility challenges

There are two types of facilities where LNG can be produced, liquefied, regasified, stored and transferred:

- LNG terminals and,
- Floating LNG facilities (FLNG)

A liquefied natural gas (LNG) terminal is a structure where liquefied natural gas is stored and imported or exported. Liquefied natural gas terminals can be divided into two types: liquefication terminals export and regasification terminals or receiving terminals (import).

A LNG terminal has four conventional functions:

- Berthing of LNG tankers and unloading or reloading of cargoes,
- Storage of LNG in cryogenic tanks (-160°C),
- Regasification or liquefication of LNG,
- Emission into the transmission system.

The FLNG facility produces, liquefies, stores and transfers liquefied natural gas (LNG) at sea. The ship transport the LNG to shore and where it is directly transported to markets around the world. An FLNG facility does not yet exist but there are projects in development to realize it.

The industry has set strict safety rules on how to handle the process of LNG import of export. The structures need to be designed to protect against fires and explosions by controlling and mitigating severe consequences of any LNG release.

The main risks for fire and explosion hazards at LNG facilities could be a result of the presence of combustible gasses and liquids, oxygen and ignition sources during loading and unloading activities. Also, the risk of leaks and spills of flammable products pose a serious risk for hazards. The accidental release of LNG may result in a pool fire, and when dangerous fuels come into the mix, even hydrocarbon or jet fire following a cryogenic spill.

LNG vapors are flammable within a certain concentration range. This is called the ‘flammable range’; the limits are commonly called the ‘Lower Flammable Limit’ (LFL) and the ‘Upper Flammable Limit’ (UFL). For natural gas (methane) the range is 5-15%. This means that LNG will only ignite when the vapor concentration is between 5-15%; vapor concentrations outside this range contain either insufficient fuel or oxygen to ignite.

LNG facility solutions

LNG (floating) facilities need to be designed, constructed and operated in line with international standards for the prevention and control of fire and explosion hazards. Provision for safe distances between tanks in the facility and between the facility and buildings nearby should also be taken into account.

By keeping LNG at an exceptionally low temperature, it retains its non-flammable and low volume liquid state. It its liquid form LNG does not pose any danger, other than possibly changing the properties of protective materials in case of a cryogenic spill. When LNG vaporizes, it is dangerous and can cause a fire. A rupture or leak in a containment unit or pipeline can result in a spill, in which the liquid LNG turns to gas very rapidly. Should fire break out in such a situation it can result in a highly dangerous situation, especially where space is confined and/or where wind can spread the flames.

Passive fire protective (PFP) systems are mainly installed within LNG facilities in the design stage of the project. These systems help to compartmentalize a facility through the use of fire and blast rated architectural compounds, such as fire and blast rated wall systems, doors, and windows. During fire events, PFP systems help to slow or prevent the spread of fire and explosions.

Fire and blast rated walls, doors and windows

The choice for installing PFP systems is to be made during the design phase after the risks of fire events and explosions have been assessed. Since LNG fuels might pose dangers when in contact with an ignition source, it can lead to hydrocarbon or jet fires. In this case, fire and blast rated walls, doors and windows need to be rated accordingly.

Products that protect against hydrocarbon and jet fires are classified into the H and J fire ratings, which have a fire integrity time of 2 hours. This gives enough time to shut down engines, to evacuate people and to provide firefighters time to put out the fire. A class or El class fire ratings can of course still be installed when the fire integrity time needs to be 60 minutes.

Fire and blast rated doors can be manually, electrically and pneumatically operated. Electrical and pneumatic doors provide a higher level of safety against fires and explosions because they do not require the help of people when opening/closing since it is done automatically. Doors can be selfclosing , so safety is preserved.All products can be provided with intumescent seals in order to fill up any open holes during fire, so that the fire cannot pass through. The combination of these products lead to an effective division of compartments within the facility.

In the engineering phase it is important to take a holistic approach to all required architectural products as also this chain is as strong as its weakest link. Attention should be paid to properly certified solutions that are inclusive. In case of use of sandwich panels as light weight bolted blast and fire resistant wall solutions proof should be given that the complete wall system including all types of penetrations and project required solutions are in place. Sandwich panels should have been tested with the required specific penetration types: HVAC, PIPES and MCT's. and certified to the required fire and blast resistance. In case of area's with possible cryogenic spill of the cold liquified LNG change of the material properties of the used passive fire protection needs to be prevented or the PFP solution needs proper certification.

About InterDam

InterDam creates the safest area possible for people and equipment working in hazardous environments. We are a market leader in our field due to our innovative character and offer a broad and complete portfolio of fire and blast architectural products. We set new standards and raise our shield for fire-post-blast protection. Your shield in the field.

We innovate and can define new standards. We can offer a wide scope of solutions to our clients and become the best certified partner with the most up-to-date and fit-for-purpose solutions available in the industry. At the same time, we build a true leader in the field worldwide. InterDam presents you the pros in protection. We will not settle for anything less.

Our field

Protecting priceless human lives and saving essential resources and capital property with our fire and blast resistant doors, walls, windows and cladding. We optimize choice of welded, built-up or sandwich panels for people's safety. This expertise has become indispensable for areas where shielding is key.

Our products protect people and assets at offshore wind substations, LNG and petrochemical installations, offshore oil and gas platforms, at defense ships and installations and at infrastructural objects. In our production and delivery process we cover the total scope: from setting new standards, to production, to installing, to maintenance and repair.

Our shields

We join forces and can now offer the broadest and most complete portfolio of fire and blast architectural products in the entire world.

Walls - Generation II, Generation III, Generation IV (G21)
Doors - Medium duty and heavy duty, single hinged, double hinged, sliding and specials, heavy duty, gas and watertight
Windows - Fire-post-blast resistant (G21)
Cladding - Heatshield, windshield, explosion relief
Roofs - Generation IV (G21)
Transportable prefabricated buildings - Road transportable dedicated fire-post-blast resistant units.

Services

As InterDam we offer a wide range of services to our clients. Not only 24/7 maintenance and repair, but also installation support, upgrades, refurbishment, replacement, supervision, quality inspections, surveys, spare parts, EPC and turn-key execution, offshore and voyage repairs. So either onshore, at a yard, quayside or offshore, our clients rely on us to keep their shields up.

Location

The heart of the office is located in Ridderkerk, The Netherlands, where the global production and sales network is being managed and maintained. A genuine project organization where all departments contribute to the successful completion of a quest: to provide protection and shield from harm.

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