

Fact Sheet



Liquefied Natural Gas

- Liquefied natural gas is natural gas that has been cooled to a liquid
- Natural gas has the lowest carbon emissions of all fossil fuels
- Gas is considered the fuel of choice as the world makes the transition to renewable energy
- Liquefaction technology makes it possible to transport gas economically around the world

Liquefied natural gas, or LNG, is natural gas that has been cooled until it becomes a liquid, making it easier to safely store and transport over great distances.

While natural gas was first liquefied in the 19th century, it is in the past few decades that the technology has transformed international gas markets.

Today liquefied natural gas is in great demand worldwide as a cleaner supply of energy and is forecast to account for 14% of total gas consumption by 2015.

BG Group's Australian business, QGC, is leading the development of a new liquefied natural gas industrial precinct on the east coast of Australia, near Gladstone.

The company's Queensland Curtis LNG Project initially involves a plant on Curtis Island with two processing units, or "trains", with combined production capacity of 7.4 million tonnes of liquefied natural gas a year.

Approval is being sought for annual production of 12 million tonnes, enough energy to power every household in metropolitan Brisbane for 15 years.



Gas properties

Natural gas is a colourless and odourless mixture of gases made up mostly of methane.

It has the lowest carbon emissions of all fossil fuels and is regarded as the world's transition fuel as we move away from hydrocarbons to cleaner energy sources.

Liquefied natural gas is merely natural gas that has been cooled to about -162°C using the same principles that work in household refrigerators and air-conditioning units.

At such low temperature the gas becomes a liquid, taking up about 1/600th of its original volume: that's about the equivalent of reducing a 30cm-diameter beach ball to a ping pong ball. This makes the gas easier to store and transport.

Liquefied natural gas processing units are referred to as "trains". Liquefied natural gas produced by these trains is stored at low pressures, slightly above ambient pressure, in tanks made from materials such as nickel-steel alloys and pre-stressed concrete.

When liquefied natural gas is returned to ambient temperature, it becomes the same natural gas used every day to cook meals, warm homes and fuel buses, cars and power plants.

Liquefied natural gas is colourless, odourless, non-corrosive and non-toxic.

History

Natural gas was first liquefied in the 19th century, with the first liquefaction plant constructed in the United States in 1912.

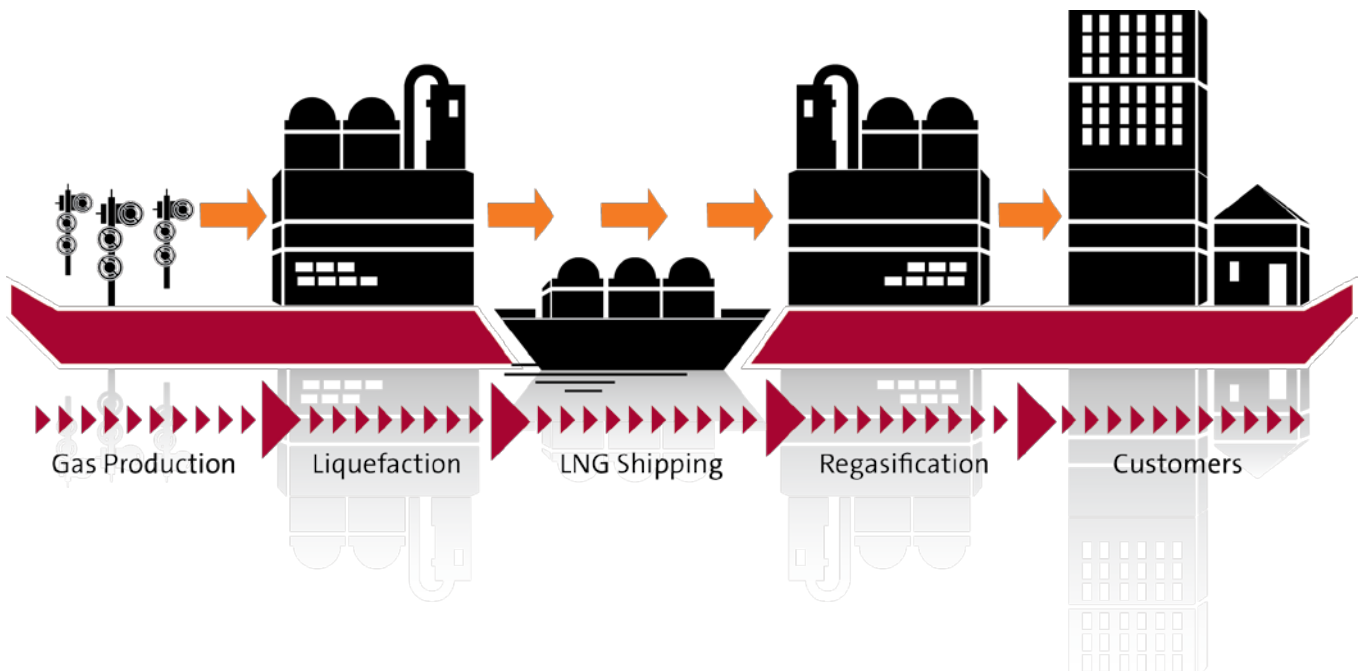
The inaugural trans-Atlantic shipment of liquefied natural gas occurred in 1959, between Louisiana in the United States and Canvey Island in the United Kingdom.

The British Gas Council, one of those involved in the historic trans-Atlantic shipment, was a forerunner to BG Group.

Today, BG Group is one of the world's leading energy companies, managing total liquefied natural gas volumes of about 13 million tonnes in 2008.

Australia began exporting liquefied natural gas from the North West Shelf Project in 1989 and in 2007-08 had total liquefied natural gas exports of about 15 million tonnes.

LNG technology allows natural gas to be more easily and efficiently transported over great distances in specially-designed ships.





LNG ships have completed more than 80,000 voyages without a major incident.

Benefits

Liquefaction technology is proven, safe and efficient.

Natural gas emits 22% less carbon dioxide than oil and 40% less than coal in producing the same amount of energy.

These qualities give natural gas an important role in helping address climate change.

Also, gas is the most energy efficient fossil fuel – it offers important energy saving benefits when it is used instead of oil or coal.

Markets

Liquefied natural gas is transported in specially insulated, double-hull ships that usually carry about 138,000m³ to 170,000m³ of gas.

That's enough energy to power every household in Brisbane, a city of about 1 million people, for about four-and-a-half weeks, or the entire Brisbane metropolitan area for two-and-a-half weeks.

When it reaches market, the liquefied natural gas is unloaded and stored until it is needed, when it is warmed and converted back to a gas.

The natural gas is then sent through pipelines for distribution to businesses and homeowners.

The global trade in liquefied natural gas increased 7.6% to 171 million tonnes in 2007.

World liquefied natural gas demand is forecast to rise to 400 million tonnes a year, the equivalent of 14% of total gas consumption, by 2015.

Major exporters of liquefied natural gas include the Middle East, Indonesia, Australia, Algeria, Egypt, Trinidad and Tobago, Nigeria, Equatorial Guinea and Malaysia.

At the beginning of 2009 there were 19 nations importing liquefied natural gas with the leading buyers including Japan, South Korea, China, Spain, the United States, Taiwan and India.

Since liquefied natural gas was first shipped commercially in 1959, operators have completed more than 80,000 voyages, including more than 2600 cargoes from Australia, without a major incident.

Safety and security

The liquefied natural gas industry has earned an enviable reputation for safety in half a century of commercial operations.

This record is the product of continuous improvement of technology, safety equipment, comprehensive safety procedures, training and equipment maintenance.

Liquefied natural gas is stored at near atmospheric pressure, unlike the gas we use in cylinders for our barbecues or motor vehicles, which is kept at high pressure.

In the unlikely event that liquefied natural gas is released, it can ignite under limited conditions. For this reason, the liquefied natural gas industry goes to extreme lengths to prevent sparks and naked flames in liquefied natural gas plants.

Liquefied natural gas vapours can only burn in a narrow concentration between 5% and 15% natural gas in the air.

This means that at a concentration of less than 5% natural gas in the air, the vapours are too diluted to burn. At greater than 15% natural gas in the air there is not enough oxygen to burn.

Australia's Commonwealth Scientific and Industrial Research Organisation, the CSIRO, has shown that liquefied natural gas poses less of a potential hazard than many commonly used fuels.

For example, liquefied natural gas is harder to ignite than diesel.

And although liquefied natural gas vapours may burn when released to the atmosphere, they do not release energy quickly enough to create the overpressures, or force, associated with explosions.

When liquefied natural gas mixes with water or comes in contact with land, it warms to form a white vapour cloud that dissipates in air, leaving no lasting residue.



Contact

If you would like more information about the Queensland Curtis LNG Project and liquefied natural gas, please contact us at:

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