SINGAPORE LNG TERMINAL

Helping to Secure Singapore's Energy Future

SLNG
Singapore LNG Corporation

OUR VISION

To be a World-Class LNG Terminal Operator enabling the growth of the Energy Market and LNG Hub in Singapore

IMPORTANCE OF **LNG TO SINGAPORE**

More than 90% of Singapore's electricity is generated using imported natural gas, and this demand is expected to continue to rise as Singapore's economy and population grows.

Natural gas is also the most practical fuel option for Singapore in terms of balancing between security of supply, cost effectiveness and environmental friendliness.

With such a high reliance on natural gas, there is a vital need to strengthen Singapore's energy security by diversifying our supply sources and ensuring global access to competitively-priced gas. As such, the Singapore Government decided in 2006 to build a Liquefied Natural Gas (LNG) Terminal to import LNG and meet Singapore's future energy demand.

DEVELOPMENT OF THE **SINGAPORE LNG TERMINAL**

Singapore LNG Corporation Pte Ltd (SLNG) was formed by the Energy Market Authority (EMA) in June 2009 to develop, build, own and operate the Nation's very first LNG Terminal.

Construction of the S$1.7 billion mega-project began in 2010 and just three years later, the first phase of the project was delivered on time, within budget and with a world-class safety record of 15 million man-hours worked on site without a Lost Time Injury. At its peak, there were some 2,900 people working at the Terminal construction site.

On 7 May 2013, the Singapore LNG Terminal received its first commercial LNG cargo and began commercial operations.

KEY FEATURES **OF THE TERMINAL**

Situated on a 40-hectare plot at the southern-most tip of Jurong Island, the Singapore LNG Terminal is the first open-access, multi-user LNG terminal in Asia; and one of the first in the world to be designed with both importing and re-exporting capabilities.

The Terminal started commercial operations with one jetty, two LNG storage tanks and an initial regasification capacity of 3.5 million tonnes per annum (Mtpa). A second jetty, third tank and additional regasification facilities were subsequently added to bring the throughput capacity of the terminal to 6 Mtpa currently.

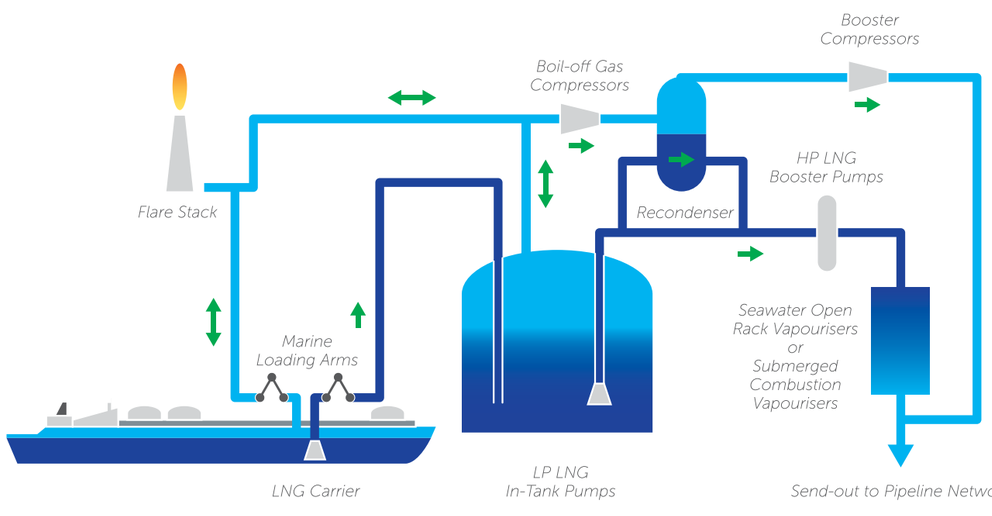
Designed with the future in mind, the Terminal can accommodate LNG carriers of all sizes, and has the flexibility and scalability to expand its facilities as necessary, in response to future market demand.

The next phase of expansion of the Terminal, termed "Phase 3", is in progress and will see the addition of a fourth tank and facilities to further increase throughput capacity to about 11 Mtpa by 2018.

Depending on future opportunities, the design basis of the Terminal allows for the possibility of further expanding its throughput capacity to 15 Mtpa and total storage capacity to 1,500,000m^3, should there be the need to do so.

COMMITMENT
TO SAFETY

LNG TERMINAL GENERAL FLOW DIAGRAM



KEY EQUIPMENT CAPACITIES

LNG Storage Tank	3 x 180,000m³ (540,000m³ total LNG working capacity)
Main Jetty	Designed for 120,000m³ to 265,000m³ LNG carriers
Secondary Jetty	Designed for 60,000m³ to 265,000m³ LNG carriers
Unloading/Reloading Facilities	4 x 16" Marine Loading Arms per jetty (2 x liquid, 1 x vapour return, 1 x dual service)
Unloading/Reloading Rate	12,000m³ of LNG per hour
Pumps	· 3 x Low Pressure LNG In-Tank Pumps per LNG tank for LNG send-out · 2 x LNG Reloading In-Tank Pumps per LNG tank for LNG reload · 6 x High Pressure LNG Booster Pumps for send-out at 40 bar pressure
Vapour Handling System	· 1 x Recondenser · 3 x Combined Boil-off Gas / Booster Compressor
LNG Vapourisers	· 4 x Seawater Open Rack Vapourisers · 1 x Submerged Combustion Vapouriser

Safety is a top priority at SLNG and one of the company's Core Values.

We believe that any work at the Terminal should be carried out safely, or not at all.

We aim to provide a safe working environment at the Terminal for everyone, and to safeguard our assets and the environment.

Sophisticated alarms and multiple back-up systems, which include emergency shutdown (ESD) systems, are core components of the Terminal's facilities.

The ESD systems are linked to fire, spill and gas detection systems that identify possible problems and shut down operations in the event of a gas leak.

Impoundment basins are located at potential leak sources, and these basins are served by a network of drainage channels that direct and contain any spillage.

TERMINAL
SERVICES

The primary role of the Singapore LNG Terminal is to provide Throughput Services, mainly in support of Singapore's power-generation companies.

Throughput Services, which is regulated by EMA, include the berthing of LNG carriers, LNG unloading and storage, as well as regasification and send-out of regasified LNG to end users, via the Singapore Gas Network.

SLNG is committed to ensuring that our facilities are designed, our people are trained and our plant is operated to deliver the highest reliability and availability in the send-out of natural gas to the Singapore market.

To this end, a high level of redundancy is built into the Terminal's design and operations. Just about everything, from pumps to vapourisers to send-out pipelines have backups or spares.

Leveraging on the facilities already in place, the Terminal can also offer:

VESSEL COOL-DOWN SERVICES

LNG carriers that are newly built or fresh out of dry-dock after completing repairs need to have their storage tanks cooled from ambient to cryogenic temperatures, before they can proceed to load LNG cargoes. Operators of such carriers will find it convenient and cost-effective to undergo Vessel Cool-down at the Terminal.

STORAGE AND RELOAD

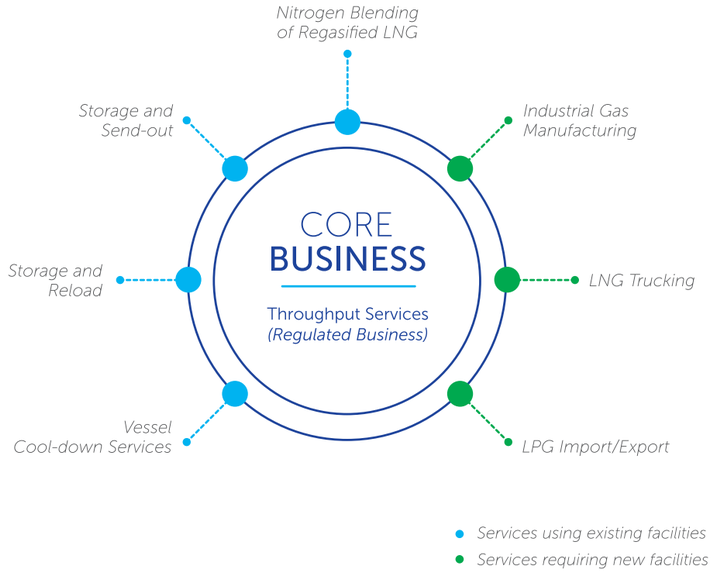
LNG cargoes can be temporarily stored in the Terminal's tanks and reloaded into another LNG carrier at a later date for re-export to other countries or for bunkering activities.

STORAGE AND SEND-OUT

Ownership of LNG quantities can be transferred in-tank and stored for regasification and send-out in the future.

NITROGEN BLENDING OF REGASIFIED LNG

Regasified LNG can be blended with Nitrogen at the Terminal to reduce calorific value, to meet the specifications.



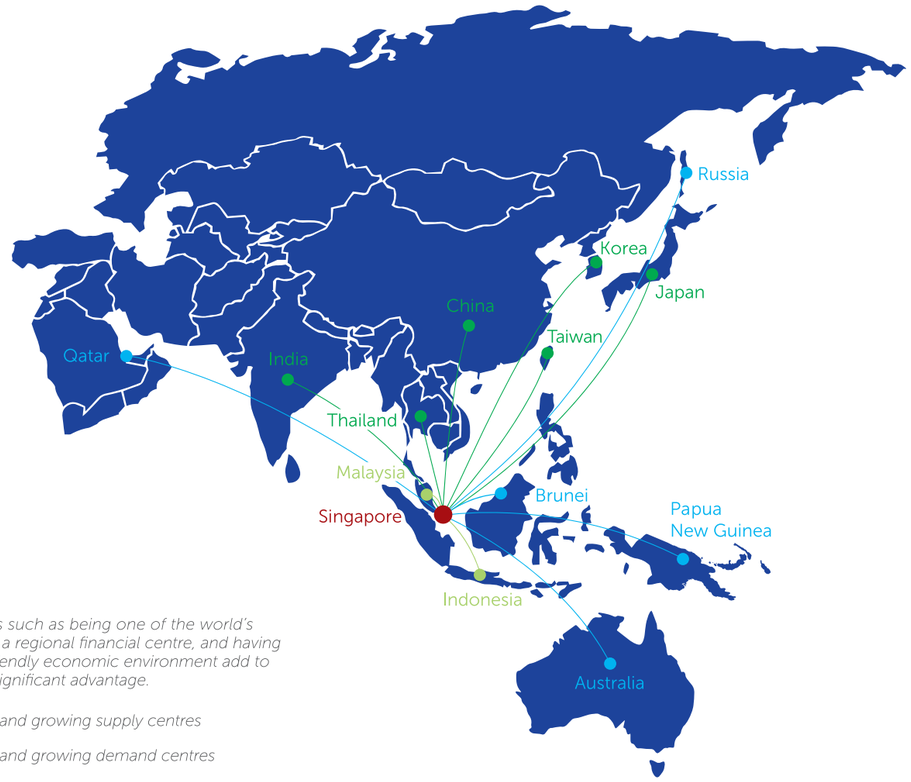
Depending on the business opportunities available, existing facilities can be expanded or new facilities added to the Terminal in the future to enable more services, such as **Industrial Gas Manufacturing, LNG Trucking or LPG Import/Export,** to be introduced.

LNG HUB
FOR THE REGION

Singapore's providential geographic location provides the ideal platform for its development as a vibrant LNG trading hub for the region, as it places the Singapore LNG Terminal at the centre of major trade routes; between LNG demand centres and major supply sources.

Natural gas is fast becoming the primary fuel of choice in many countries; and given that it is clearly not possible to pipe natural gas from its sources to everywhere in the world, LNG is on its way to becoming the fuel of the future.

Singapore and the Singapore LNG Terminal are in the right place and at the right time, not just to tap into the global gas market, but to become a major player in it.



Other factors such as being one of the world's largest ports, a regional financial centre, and having a business-friendly economic environment add to Singapore's significant advantage.

- *Existing and growing supply centres*
- *Existing and growing demand centres*
- *Existing and growing demand and supply centres*

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