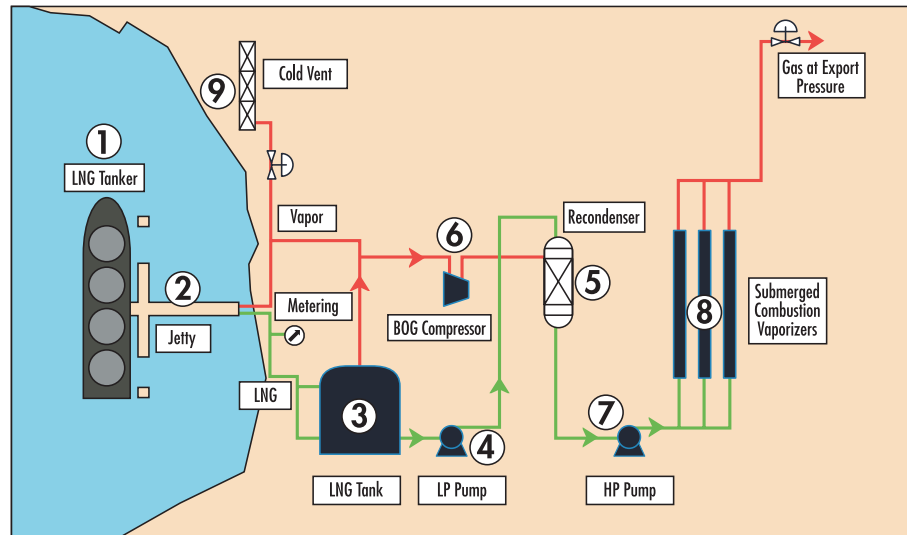


## LNG: Ship to Shore

1) **LNG Tankers:** These ships are designed with a double hull, and will vary in size from 65,000 m<sup>3</sup> (2.3 million cubic feet) to 160,000 m<sup>3</sup> (5.65 million cubic feet). The inner storage tanks are well insulated to maintain their cargo's cold temperature.

2) **Multi-purpose Jetty:** The LNG is transferred from the ship to the terminal using the ship's pumps. The jetty consists of three unloading arms and one vapor return loading arm. The LNG is then transferred to the terminal using an insulated pipeline.



The unloading rate is approximately 10,000 m<sup>3</sup>/hr (353,147 f<sup>3</sup>/hr). Vapor from the tank is returned to the ship using an insulated pipeline.

3) **LNG Tanks:** Each tank is 160,000 m<sup>3</sup> (5.65 million cubic feet) in volume and is approximately 90 metres (295 feet) in diameter by 45 metres (148 feet) high. The internal tank steel is made of nine percent nickel while the outer shell is made of carbon steel. In between the two tanks, a thick layer of insulation is added to minimize heat loss.

4) **Low Pressure Pumps:** These pumps are designed to move the LNG from the tanks to the Recondenser vessel.

5) **Recondenser:** The ambient heating of the LNG tank causes some LNG to vaporize. This Boil-off gas is removed and transferred to the Recondenser. The Recondenser allows the boil-off gas to mix with LNG from the low pressure pumps to allow condensing of the natural gas vapor back to a liquid.

6) **Boil-off Gas (BOG) Compressor:** This compressor transfers the in-process gas before it is adjusted to pipeline pressure, or boil-off natural gas, from the LNG tanks to the Recondenser.

7) **High Pressure Pumps:** The LNG is transferred from the Recondenser to the Vaporizers. These pumps build the pressure of the LNG to pipeline pressure.

8) **Submerged Combustion Vaporizers:** This design uses warm water surrounding the outside of process tubes to provide heat to the LNG. A natural gas fired burner is used to keep the water warm. The natural gas leaves the process tubes in a vapor state at 10 degrees Celsius (50 degrees Fahrenheit).

9) **Cold Vent:** During some periods of commissioning, an extended loss of electrical power during operation, or the maintenance of particular pieces of equipment, the vapor in the LNG tanks is safely vented through the cold vent.