



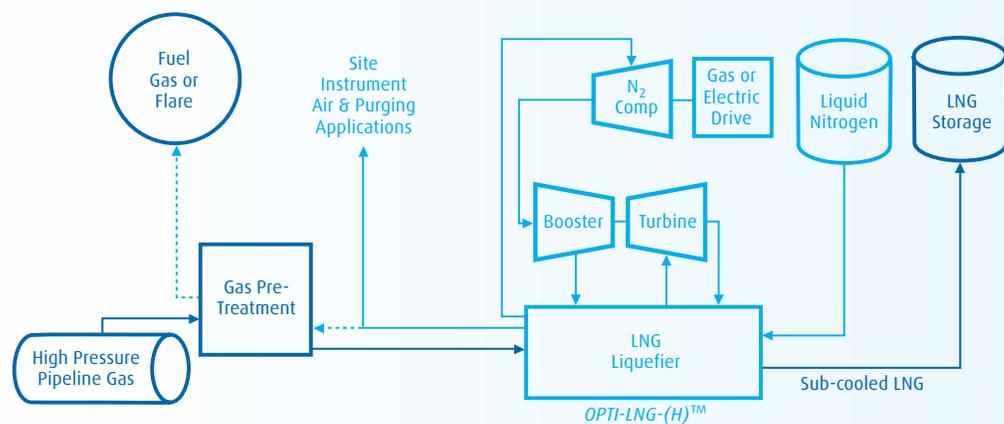
OPTI-LNG-H™: Mini LNG Production Plants from 30 to 50 Thousand Gallons per Day



Demand and recognition for Liquefied Natural Gas (LNG) as a more sustainable and lower cost fuel continues to grow. In addition, the number of LNG applications within the transportation, heating, power generation and utility sectors is also increasing. LNG use as an alternative fuel allows for a reduction in carbon emissions and other emissions such as NO_x, SO_x and particulate matter which are harmful to air quality. In regions where there is little to no access to natural gas pipeline distribution networks, LNG distribution has enabled the creation of virtual pipelines through on road and maritime transportation of the fuel.

Smaller scale distributed LNG production has allowed producers to locate LNG supply within regions of high demand, thus reducing the cost of LNG distribution. With small scale production, there is now the possibility for stranded gas resource owners to monetize their gas assets which could not be connected to a natural gas pipeline network.

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| Features | <ul style="list-style-type: none">→ Fully skidded, modular design for gas liquefaction→ Enables production of sub-cooled LNG→ Choice of natural gas drive or electric drive compression | <ul style="list-style-type: none">→ Efficient turndown capability→ Fast response cool-down and start-up→ Dry nitrogen availability for various applications |
| Benefits | <ul style="list-style-type: none">→ Minimizes installation cost and enables compact footprint.→ Lower power consumption→ Utilities optimization and selection flexibility→ Liquid nitrogen accelerates plant cool down and time to full production. | <ul style="list-style-type: none">→ Economic campaign mode operation→ Nitrogen available to regenerate molecular sieve pre-purifiers as well as for purging, drying, cooling and instrument gas applications at site |



Distributed LNG Production

Within the LNG industry a new trend has emerged for distributed LNG production: smaller plants built in regions where demand exists and will grow over time or regions where attractive sources of low cost gas are available. For plant capacities in the range of 30 to 50 thousand gallons per day, Linde now offers a new option which leverages its own distributed refrigeration network of liquid nitrogen plants. OPTI-LNG-H is a skidded and modular plant design for LNG production. Linde's patent pending design leverages the low temperature refrigeration available from liquid nitrogen to sub-cool the LNG produced. By combining liquid nitrogen with a conventional nitrogen-based refrigeration cycle, Linde has developed a hybrid process which simplifies plant architecture for lower plant cost and reduced utility consumption. OPTI-LNG-H benefits from access to Linde's state-of-the-art nitrogen liquefier cycles and proprietary cryogenic turbine designs. Linde's established network of liquid nitrogen supply plants ensures a highly reliable and competitive supply of liquid nitrogen for OPTI-LNG-H operation.

Design Parameters

Feature	US	Metric Units
LNG Capacity	30 to 50 kgpd 4400 to 7333 lbs/hr	4725 to 7875 l/hr 48 to 80 MTPD
Natural Gas Flow	2.5 to 4 MMSCFD	2700 to 4500 Nm ³ /hr
Required Feed Gas Pressure	> 700 psig	>48 Barg
LNG Temperature	-258 to -261°F (7 psig saturation)	-161 to -163 deg. °C
Plant Foot Print	100 x 100 Ft	31 x 31 m
Power Consumption		Less than 1 MW

A Growing Number of Applications

- Natural Gas Pipeline Pressure Support
- Uninterrupted Supply During Pipeline Maintenance
- Back up Energy/Fuel Storage
- Oil and Gas Drilling/Stimulation Operations
- Mining Operations
- Mobile Asphalt Plants
- Grain Drying
- On Road Heavy Transport
- Marine and Rail Fuel Supply
- Remote Communities Power/Heat Supply

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