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Global Small-Scale LNG Market By Type (Liquefaction Terminal and Regasification Terminal), Mode of Supply (Trucks, Shipment & Bunkering, Rail Tanks, Pipeline and Others), Storage Tank Capacity (Atmospheric, Pressurized and Floating Storage (FSU)), Application (Transportation, Industrial Feedstock, Power Generation and Others), By Region, By Competition Forecast & Opportunities, 2018-2028F

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Abstracts

The Small-scale LNG Market is projected to witness substantial growth, with a predicted increase from USD 9.95 billion in 2022 to USD 14.19 billion by 2028, at a CAGR of 9.08% during the forecast period (2023-2028). In the long run, the escalating demand for LNG in bunkering, road transportation, and off-grid power is anticipated to be the key driver for the small-scale LNG market in the upcoming years. However, challenges such as the high operational costs of small-scale LNG, inadequate supporting infrastructure in regions like the Middle East and Africa, and the significant CAPEX requirements resulting in a payback period of over 12 years are expected to impede market growth. Nonetheless, the development of cost-efficient small-scale LNG infrastructure is likely to present lucrative opportunities for technology providers and transporters in the small-scale LNG sector.

Key Market Drivers

Rising demand for LNG in bunkering, road transportation, and off-grid power

The demand for small-scale LNG (liquefied natural gas) has been experiencing

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significant growth across various sectors, including bunkering, road transport, and off-grid power. Bunkering, the process of supplying fuel to ships, is increasingly adopting LNG as a cleaner alternative to traditional marine fuels. With the implementation of stricter emissions regulations, LNG provides a solution that effectively reduces sulfur and particulate matter emissions, thereby contributing to cleaner maritime operations. In the domain of road transport, small-scale LNG is gaining momentum as a viable option for heavy-duty vehicles, such as trucks and buses. It offers lower emissions, improved air quality, and enhanced fuel efficiency compared to diesel. Moreover, in remote areas or regions with limited access to centralized power grids, small-scale LNG is emerging as a reliable and cleaner alternative for off-grid power generation. The inherent flexibility and scalability of small-scale LNG infrastructure make it well-suited for diverse applications, effectively meeting the rising demand for cleaner energy solutions across these sectors.

The rising number of LNG-fueled fleet

The growing electricity demand in recent times has resulted in an increased need for liquefied natural gas (LNG), leading to higher LNG production. Moreover, numerous remote areas lack access to electricity, and government initiatives for rural electrification have further fueled the demand for LNG in recent years. Additionally, the industrialization and increasing household requirements have driven the demand for electricity generation, thereby expected to drive the global market for small-scale LNG.

Key Market Challenges

Depletion of natural resources and volatility in prices of raw materials

The depletion of natural resources and price volatility in raw materials are significant constraints that have a substantial impact on the growth of small-scale liquefied natural gas (LNG). The U.S. Energy Information Administration (EIA) estimates proved reserves by analyzing data collected from oil and gas companies annually. According to their latest report from the end of 2021, the total estimated proved reserves of natural gas in the United States, including liquid gases, amounted to approximately 625.4 trillion cubic feet (Tcf) in 2021. Excluding liquid gases, the remaining dry natural gas reserves were around 589 Tcf. LNG production relies on the extraction and processing of natural gas, which is a finite resource. As the demand for natural gas and LNG continues to rise, the availability of easily accessible reserves becomes more limited, resulting in increased exploration costs and declining production rates. This depletion of natural gas reserves presents a significant challenge for small-scale LNG projects, as they often

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operate with limited financial resources and struggle to compete with larger players in securing long-term gas supply contracts. Furthermore, the price volatility of raw materials, particularly natural gas, further exacerbates the challenges faced by small-scale LNG projects. Natural gas prices are influenced by various factors, including supply and demand dynamics, geopolitical tensions, and weather conditions. Fluctuations in natural gas prices can have a significant impact on the profitability of small-scale LNG projects, as they typically lack the resources and flexibility to absorb sudden price spikes or negotiate favorable long-term contracts. These price volatilities create uncertainty and risk, making it difficult for small-scale LNG ventures to secure financing and attract investors.

Fluctuating price of small-scale LNGs

Liquefied natural gas (LNG) is utilized for cooking and heating purposes. With the growing population, the small-scale LNG market is projected to witness significant growth during the forecast period. Moreover, the decrease in natural gas prices and fluctuations in crude oil prices resulting from excessive crude oil production are anticipated to further drive the growth of the small-scale LNG market in the forecast period.

Key Market Trends

Integration of new technology

The integration of new technologies presents a promising opportunity for small-scale LNG plants. By implementing innovative solutions, these facilities can significantly reduce costs and enhance various aspects of the value chain. For instance, the utilization of prefabricated tanks instead of large capacity storage tanks can contribute to cost savings. Additionally, small-scale LNG terminals can opt for pressurized storage tanks instead of atmospheric storage tanks, which are readily available from multiple suppliers in smaller increments. One of the key advantages of pressurized storage tanks is their effective handling of boil-off gas (BOG). In small-scale LNG terminals, the generated BOG can be directly channeled into the gas pipeline or used for electricity generation to supplement utilities. This approach considerably reduces the cost associated with BOG handling by allowing the pressure to increase within the storage tanks. Subsequently, the high-pressure gas can be injected into the pipeline or burned for auxiliary power generation. In contrast to traditional LNG terminals, small-scale LNG facilities can achieve LNG vaporization through the use of atmospheric vaporizers utilizing ambient air, a technology that has long been employed in nitrogen facilities.

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Segmental Insights

Mode of Supply Insights

Utilizing trucks for LNG transportation offers a high degree of flexibility and accessibility. LNG trucks can navigate diverse routes and deliver LNG to remote or challenging locations that may lack access to pipelines or other infrastructure. This versatility renders trucking an appealing option for small-scale LNG distribution. For small-scale LNG operations, investing in pipelines or dedicated infrastructure can prove costly. Conversely, using trucks provides a more cost-effective approach by eliminating the need for extensive infrastructure development. This renders trucking a viable solution for small-scale LNG projects. Additionally, LNG trucks are well-suited for regional distribution, particularly in areas where LNG consumption is concentrated in smaller volumes. They can efficiently transport LNG to various end-users within a specific region, serving industries, power plants, and individual consumers alike, effectively meeting their energy requirements.

Type Insights

The liquefaction terminal segment is projected to hold the largest market share. This growth can be attributed to the rising export of LNG, which necessitates liquefaction for efficient transportation between ports. Moreover, the global increase in demand for LNG is driving the establishment of more liquefaction terminals. These factors are anticipated to stimulate demand during the forecast period.

Regional Insights

Asia-Pacific is expected to dominate the growth of the small-scale market during the forecast period. In recent years, the Asia-Pacific region has emerged as a frontrunner in implementing small-scale LNG projects worldwide. The growing demand for natural gas in countries such as China, India, Singapore, Japan, and others has fueled the interest in small-scale LNG (SSLNG). As of 2021, China stands as one of the leading countries driving LNG demand globally, importing approximately 64.4 million tons in 2022. This surge in demand has positioned China as one of the largest LNG importers, with Chinese LNG buyers securing long-term contracts exceeding 20 million tons per year. The Chinese natural gas market encompasses both domestic production and imports through pipelines and LNG terminals. In China, the primary sectors driving the demand for small-scale LNG include industrial, residential, and power generation, with the

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transportation sector showing the highest potential. The increase in the number of LNG trucks, driven by the higher price of diesel compared to natural gas, has been a key factor contributing to the growth of small LNG facilities in China. Meanwhile, India is in the early stages of small-scale LNG adoption, with a few LNG stations and LNG transportation via trucks. With the goal of increasing the share of natural gas to 15% in its energy mix by 2030, India is expected to develop small-scale LNG facilities to supply natural gas to remote areas without pipeline infrastructure. For example, in June 2022, GAIL Limited, a government-owned natural gas exploration and production company, announced plans to establish small liquefaction facilities in non-pipeline connected regions. Additionally, GAIL is considering setting up two pilot small-scale liquefaction plants. In Singapore, the small-scale LNG business is primarily driven by LNG bunkering facilities in its ports. Singapore, renowned for its prominent trade ports and international marine shipping, achieved a significant milestone in May 2021 when FueLNG and the Maritime and Port Authority of Singapore (MPA) completed the first LNG bunkering of an LNG-fueled oil tanker, Pacific Emerald.

Key Market Players

Linde plc

Wartsila Oyj ABP

Baker Hughes Company

Honeywell UoP

Chart Industries Inc.

Black & Veatch Holding Company

Anthony Veder Group NV

Engie SA

Evergas AS

PJSC Gazprom

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Report Scope:

In this report, the Global Small Scale LNG (SSLNG) Liquefaction Plant Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Global Small-Scale LNG Market, By Type:

Liquefaction Terminal

Regasification Terminal

Global Small-Scale LNG Market, By Mode of Supply:

Trucks

Shipment & Bunkering

Rail Tanks

Pipeline

Others

Global Small-Scale LNG Market, By Storage Tank Capacity:

Atmospheric

Pressurized and Floating Storage (FSU)

Global Small-Scale LNG Market, By Application:

Transportation

Industrial Feedstock

Power Generation

Others

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Global Small-Scale LNG Market, By Region:

North America

Europe

Latin America

Middle East & Africa

Asia Pacific

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Small-Scale LNG Market.

Available Customizations:

Global Small-Scale LNG Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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