

Small-scale LNG production can be implemented by two technologies. Traditional - throttling technology using replaceable refrigerants. This is how large-scale LNG is produced.

LOW-TONNAGE LNG - RUSSIAN ENGINEERING KNOW-HOW



THE TECHNOLOGY OF LOW-CAPACITY PRODUCTION OF LIQUEFIED NATURAL GAS ALLOWS TO RADICALLY INCREASE THE CONSUMER PROPERTIES OF HYDROCARBON FUEL, OPENS NEW OPPORTUNITIES FOR ITS APPLICATION AND EXPANDS THE SALES MARKET

Russia has developed and patented its own unique energy-efficient technology for low-tonnage LNG production using energy the flow of the transported gas at a pressure difference between the main and distribution gas pipelines using a turboexpander unit. It has proven to be cost effective.



The concept was based on the principles of the maximum possible use of secondary energy sources, which are, in fact, energy losses during the main gas transportation. Russian engineers managed to find a way to use them effectively by using a turbo expander.

The energy consumption for LNG production in a turbo-expander cycle is 13 times less than for conventional LNG production. To liquefy gas according to a typical scheme, up to 1 kilowatt of electricity is required for 3 kg of LNG. With the technology based on differential pressure, the flow rate is 0.007 kW per 3 kg of finished product.



Techno-Sfera LLC set up a Design and Engineering Center to develop new technological solutions for the production and use of low-tonnage LNG for their partners. It unites design and engineering departments, and has its own pilot production.

The pressure in the main gas pipeline is maintained at a level of 50 to 75 atmospheres. At the gas distribution station, it drops to 3–12 atm, after which it goes to the consumer. When reducing (lowering the pressure), a large amount of "waste" cold is released. Engineers have suggested using it to liquefy natural gas. This is how a unique LNG production technology was developed.



Russia has mastered and successfully applied two technologies for low-tonnage LNG production. High pressure double throttling technology and Turbo expander cycle technology.

Partners of Techno-Sfera LLC have LNG production facilities with a nominal annual production program of up to 18 thousand tons per year. A great deal of practical experience has been accumulated in the use of LNG both for gas supply to housing and communal services and industrial enterprises, and in transport as a motor fuel.

In 2016, on behalf of the Russian government, the first and only test site for LNG technology in Russia was created. Domestic and foreign heavy vehicles powered by methane are tested here.



The technology is protected by the patent "Method for the production of liquefied natural gas and a complex for its implementation" until July 16, 2033

LLC "Techno-Sfera" (Saratov)

Tekhno-Sfera's partners have significant experience in working with cryogenic technology and have a full range of their own equipment for the manufacture of all the necessary equipment for LNG plants. We manufacture reinforcement and expander blocks for cryogenic LNG plants under construction.



Our plants use block equipment and industrial valves of our own production, heat exchangers and atmospheric evaporators are purchased from third-party specialized Russian manufacturers. The production capabilities of Techno-Sfera LLC will confidently allow us to implement our joint projects.

Techno-Sfera LLC has a long-standing experience of cooperation with a design bureau that has been engaged in the design and launch of LNG facilities, including liquefaction complexes and regasification units, for a long time. Since 2014, the partners of Techno-Sfera LLC have been developing and manufacturing cryogenic pipeline valves and have extensive experience in supplying leading companies in the cryogenic industry and facilities for obtaining and regasification of LNG. In particular, the Turan regasification station in Astana was fully equipped with cryogenic valves produced by NPO "Regulator"





Factories of our holding have participated in supplying of cryogenic equipment for the facilities of the following companies:

- *Federal State Unitary Enterprise "Center for the Operation of Terrestrial Space Infrastructure Facilities" - "Design Bureau of Transport and Chemical Engineering"
- *Uralkriomash JSC
- *SCIENTIFIC-PRODUCTION ENTERPRISE "GKS"
- *LLC "Kirov Plant Gas Technologies"
- *Cryogenservice
- *PJSC "ZiO-Podolsk"
- *PJSC "Cryogenmash"
- *JSC "Research and Design Institute of Rolling Stock"
- *SCIENTIFIC-PRODUCTION ENTERPRISE "GKS"
- *LLC Irkutsk Oil Company
- *FPC Cosmos-Oil-Gas LLC
- *JSC Uralkriomash
- *JSC Metalist-Samara
- *JSC Vakuummash
- *PROFPROEKT LLC
- *JSC RUZKHIMMASH
- *Ural Cryogenmash JSC
- *JSC "Scientific and Production Association" GELIYMASH "
- *TOO Global Gas Regazificatin
- *JSC "Orenburg Helium Plant" Orenburg
- *Gazprom Gazenergoset LLC
- *LLC " Stroyinvest"
- *Gazprom Gazenergoset LLC
- *Lukoil-Energoengineering LLC
- *JSC " Kriomash-BZKM"