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LNG EXERGY UTILIZATION. WATER PRODUCTION AS A BY-PRODUCT OF LOW PRODUCTIVITY LNG REGASIFICATION IN ARID REGIONS OF THE WORLD

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Over the past few decades the market for liquefied natural gas (LNG) has been expanding. This is due to a number of advantages characteristic of LNG transportation relative to compressed gas or pipeline transportation of natural gas. The main objective of introducing the technology for the production and supply of liquefied natural gas is to ensure the stable development of the energy sector.

To reduce the degree of thermal pollution, the regasification of liquefied natural gas is rational at the expense of heat taken from the environment or a "waste" source of low-potential thermal energy. Low capacity plants are usually equipped with atmospheric evaporators and do not use cold regasification.

Population growth and environmental problems have led to difficulties in supplying the population with clean water. The volume of fresh water suitable for use is only 0.5% of the total volume of water on Earth.

In the process of operation of evaporators of cryogenic liquids, moisture is frozen on its outer side. Since the disposal of frozen water does not require significant capital expenditures, this direction is quite promising for water supply to the population of countries located in areas with arid climate

This work presents the results of calculating an atmospheric evaporator designed for gasification of 250 m^3 per hour of LNG with a different number of external ribs (6, 8 and 12). During its operation for 10 hours, a layer of frost with an average thickness of up to 20 mm is formed on the surface of the atmospheric evaporator. The specific volume of water that can be obtained during regeneration of the evaporator is from 1 to 2.7 l/(m^3/h) depending on the duration of the evaporator and air humidity.

Using a fan to intensify heat transfer processes from the air side reduces the value of the heat transfer surface; while the volume of frozen water is reduced by 15-20%.

Assessment of the volume of fresh water that can be obtained in the process of recycling hoarfrost has shown that this volume is quite significant and can provide the daily intake of several people. Water utilization with regasification of only 1%

of the supplied LNG, provided that atmospheric evaporators are used for this, can provide water needs for several million residents. Therefore, this source can be considered as a promising alternative source of water supply in the case of placing regasification plants in the arid regions of our planet.