

DESFA LNG Terminal Revithoussa



DESFA LNG Terminal “Revithoussa” serves as the entering point of LNG at Hellenic gas transmission system. At its facilities can be performed the process of:

- a. Unloading of LNG vessels.
- b. Storage of LNG.
- c. Recovery of boil off gas from storage tanks
- d. Vaporization of LNG and
- e. Natural Gas export to the Hellenic gas transmission system

At Revithoussa Jetty can be unloaded one vessel each time. The unloading system consists of three liquid Z-3101A/B/C, one vapour return arm Z -3102 LNG and piping system transferring LNG to storage tanks. The maximum LNG unloading rate is $7.250\text{m}^3/\text{h}$.

Two cryogenic storage tanks 65.000m^3 each are used to temporarily accommodate the LNG before its regasification and export to gas grid. LNG is transferred and stored at a temperature of -160°C and at about atmospheric pressure.

LNG is stored at its boiling point and continuously evaporates physically. This process called auto refrigeration of LNG. Boil of gas produced from this physical process are methane and nitrogen. To keep pressure of storage tanks constant, without losses, boil off gas should be always sending out and recovered. Recovering system consists of cryogenic reciprocated compressors, the recondenser and the appropriate piping system. Recondenser is a pressure drum with internal special design to re-liquefy boil off gas from storage tanks in direct touch with cryogenic LNG.

Sending LNG out of storage tanks to vaporization process area eight (8) in tank low pressure pumps (LP) (J-3201 A/B/C/D/E/F/G/H) are used. These LP pumps feed normally Recondenser, or alternatively at high vaporization rates directly to the high pressure pump system. Recondenser is also suction drum for the high pressure pumps J-3101 A/B, J-3102 A/B and J-3103 A/B.

High pressure pumps increase pressure of the LNG at adequate level for making easier the vaporization process of LNG and sent it to high pressure gas grid.

The vaporizers (M-3101 A/B/C and M-3102 A/B/C/D) are cryogenic heat exchangers with heating capacity adequate to regasify LNG continuously. Additionally they raise the temperature of gas at least to +3,5°C before entering the Hellenic natural gas grid.

Two submarine gas pipelines (2x24”), having length of 510m and 620m connect LNG Terminal sendout pipe with Agia Triada metering station which is the entry point to the Hellenic gas transmission system.

L.N.G. Terminal Capacities

1. Sustained Maximum Send out Rate (SMSR): **1.000 m³/h.**
2. Peak Send out Rate (Peak): **1.250 m³/h.**
3. Minimum Send out Rate: **85 m³/h.**
4. Yearly Average Send out Rate: **365 days x 24 hours x 1000 m³/h.**

Main Equipment

Description	Tag No.	Capacity	Operating Pressure
Low Pressure pumps	J3201A/B/C/D /E/F/G/H	200 m³ LNG/h	12 barg
High Pressure Pumps	J3101A/B	120 m³ LNG/h	82 barg
	J3102A/B	220 m³ LNG/h	82 barg
	J3103A/B	300 m³ LNG/h	82 barg
Vaporizers			
Open Rack Vaporizers (O.R.V.)	M-3101 A/B	125 m³ LNG/h	26 - 64 barg
	M-3101 C	381 m³ LNG/h	26 - 64 barg
Submerged Combustion Vaporizers (S.C.V.)	M-3102 A/B	125 m³ LNG/h	26 - 64 barg
	M-3102 A/B	190 m³ LNG/h	26 - 64 barg

Cryogenic Boil-Off Gas Compressors	V-3101 A/B/C	4800 Kg/h	100mbarg – 7barg
Sea Water Pumps	J 4101A/B/S	2035 m³/h	6 barg
	J4102 A/B/S	3035 m³/h	6 barg

Cogeneration Plant of Power & Heat

Cogeneration power plant of high efficiency (> 87%) has been operating from 2009, supplying the necessary power to LNG terminal.

The two (2) internal combustion, 16 cylinders-V form gas engines, are combined with two generators producing 6,5 MW of power at 6.000 volts each.

Each generator can work alone or together supplying total power for LNG terminal operation giving high reliability to vaporization process. In addition each generator or both can be synchronized and parallelized to the national power grid.

In case of total power loss (total loss of grid also), the necessary electrical power to restart all the auxiliaries of the power plant provided by two auxiliary emergency Diesel Generators, 2MVA each, at 6.000 V. Power Plant and EDGs assure terminal's total independency of power supply.

In addition to power supply, heat recovered from the plant gives a high thermal energy benefit to terminal for vaporization of LNG. Heat recovery system from exhaust gases and cooling water of power plant provides of almost 13 MW of thermal energy to the LNG terminal.

The heat recovering system includes a semi-closed hot water circuit involving pumps, and heat exchangers. Hot water is transferred to the modified submerged combustion vaporizers (SCVs) for the regasification process of LNG.

