

LNG Plant – 85 TPD (5 MMSCFD)

Condition: All equipment are new (never use), assembling in skid mounted

Machines are sold in “as is condition”

Need some more works to enable plant equipment to liquefy NG to LNG such as inter connecting piping and control wiring.

Design Criteria.

1. Feed gas properties:

Table 1: Pipe gas composition analysis		
Composition		Pipe gas % by mole
Methane	C1	98.194%
Ethane	C2	0.559%
Propane	C3	0.259%
i-Butane	iC4	0.063%
n-Butane	nC4	0.055%
i-Pentane	iC5	0.022%
n-Pentane	nC5	0.015%
n-Hexane	nC6	0.044%
n-Heptane	nC7	0.00%
Carbon dioxide	CO2	0.46%
H2O	H2O	0.002%
Nitrogen	N2	0.441%
Total		100.00%
Flow rate	MMscfd	5.0
Temperature	°C	30
Pressure	Barg	25-30

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2. Products and Power Requirement

a) Product Yield and Specification

LNG product (Design)	85.5	ton/day
LNG product (Operating)	80-85.5	ton/day
Regen. Mol.Sv and feed gas to CNG	13-18.5	ton/day
Feed gas 5 MMSCFD	98.5	ton/day
Product yield (LNG/Feed gas)	81.2%	ton/day

Table 2 : LNG Product composition		
Composition		Pipe gas % by mole
Methane	C1	98.68%
Ethane	C2	0.58%
Propane	C3	0.27%
i-Butane	IC4	0.02%
n-Butane	nC4	0.02%
i-Pentane	iC5	-
n-Pentane	nC5	-
n-Hexane	nC6	-
n-Heptane	nC7	-
Carboon dioxide	CO2	30 ppm max
H2O	H2O	5 ppm max
Nitrogen	N2	0.34%
	Total:	100.00%
LNG Production (Design)	ton/day	85.5 TPD
(Operating)	ton/day	80-85 TPD
Temperature	°C	-145
Pressure	Barg.	2.5

b) Power Requirement

No.	Equipment	VOLTAGE(V)	PHASE(P)	FREQUENCY(HZ)	POWER(KW)	SPEED(RPM)		STARTER TYPE
1	Compressor							
1.1 MR1 Precool Refrigeration Skid A								
1.1.1	COMPRESSOR MOTOR	6600	3	50	750	2950		REACTOR
1.1.2	LUBE OIL PUMP	380	3	50	22.5	1450		Y-D
1.1.3	SPARATOR OIL HEATER 1.1	380	3	50	3	-		DOL
1.1.4	SPACE HEATER	220	1	50	0.2	-		DOL
1.1.5	PLC & INSTRUMENT	220	1	50	0.36	-		ON/OFF
1.2 MR1 Precool Refrigeration Skid B								
1.2.1	COMPRESSOR MOTOR	6600	3	50	750	2950		REACTOR
1.2.2	LUBE OIL PUMP	380	3	50	22.5	1450		Y-D
1.2.3	SPARATOR OIL HEATER 1.2	380	3	50	3	-		DOL
1.2.4	SPACE HEATER	220	1	50	0.2	-		DOL
1.2.5	PLC & INSTRUMENT	220	1	50	0.36	-		ON/OFF
1.3 MR2 Precool Refrigeration Skid A								
1.3.1	COMPRESSOR MOTOR	6600	3	50	560	2950		REACTOR
1.3.2	LUBE OIL PUMP	380	3	50	15	1450		Y-D
1.3.3	SPARATOR OIL HEATER	380	3	50	2	-		DOL
1.3.4	SPACE HEATER	220	1	50	0.2	-		DOL
1.3.5	PLC & INSTRUMENT	220	1	50	0.36	-		ON/OFF
1.4 MR2 Precool Refrigeration Skid B								
1.4.1	COMPRESSOR MOTOR	6600	3	50	560	2950		REACTOR
1.4.2	LUBE OIL PUMP	380	3	50	15	1450		Y-D
1.4.3	SPACE HEATER	220	1	50	0.2	-		DOL
1.4.4	PLC & INSTRUMENT	220	1	50	0.36	-		ON/OFF
2 Molecular Sieve								
2.1	Electrical Heater	380	3	50	110	-		THYRISTOR
3 MAIN PLC								
3.1	MAIN PLC	220	1	50	2	-		ON/OFF
Total					2817.24			

Utilities: 350 kw

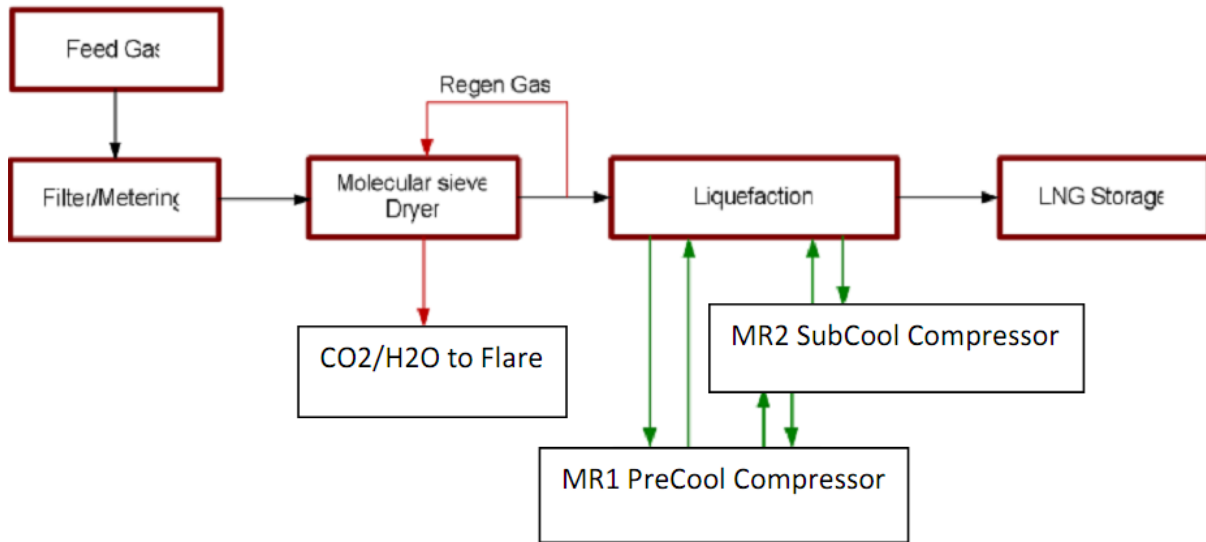
3. Process description

Feed gas is sent to the gas filter piping skid unit to remove solid particles. Then send to the molecular sieve dryer unit operated by operating piping skids and regeneration piping skid, where Carbon dioxide and water is removed. Then the sweet gas will be liquefied.

The gas liquefaction consists of the Cold Box, a liquefaction unit which combines shell and tube exchangers, and the braze aluminum heat exchanger (BAHX), integrated in one box filled with insulation.

The gas will be cooled by a close loop mix-refrigeration system MR1 (Precool). The liquid –gas is further sub-cooled by MR2 to below saturation temperature. The product LNG is sent to the storage tank at an estimated pressure of 2.4 barg @ -147.2 deg C.

4. Process block diagram



5. Equipment 3D layout

