



StirLNG-4 Cryogenerator

Liquefier for micro scale LNG conditioning

Stirling Technology

For over sixty years Stirling Cryogenics has been designing and manufacturing gas liquefaction systems, serving customers all over the world under all possible conditions. This experience is incorporated in our Methane liquefiers called StirLNG. They have three specific fields of application:

- Micro scale production of LNG from a purified gas source such as pipe line or biogas.
- Re-liquefaction of boil off gas to compensate for losses in a cryogenic (storage) system (fuel stations, storage tanks, etc.).
- Re-liquefaction of boil-off gas on vessels. The StirLNG-4 is available in an adapted version specifically for maritime use.

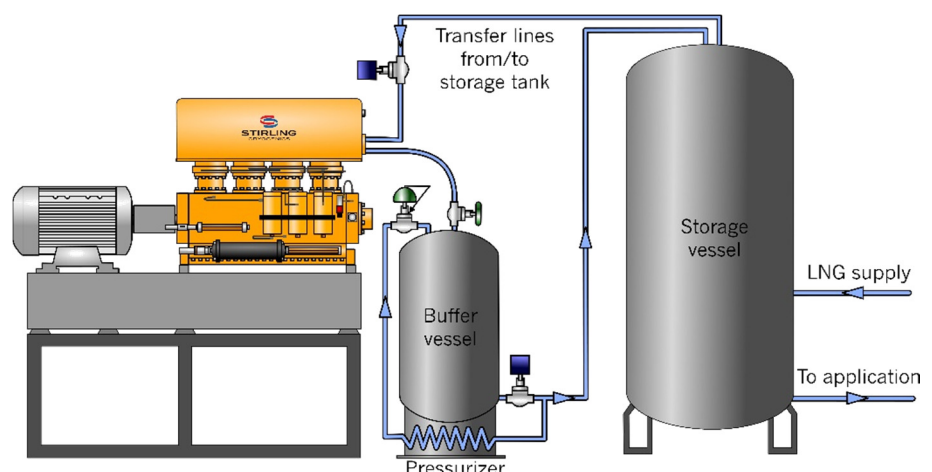
The cooling power of the StirLNG is created by the so called reversed Stirling cycle: compression and expansion of helium gas in a closed cycle by mechanical pistons. The gas to be liquefied is not used to create this cold: it will just flow through a cold heat exchanger where energy is extracted and the gas will liquefy. The gas will only encounter a phase change and there is no pressure difference between the gas and the liquid.

LNG Conditioning with StirLNG-4

The StirLNG-4 is our SPC-4 Cryogenerator specifically modified for micro scale LNG re-liquefaction. Depending on the gas pressure, the StirLNG-4 can re-liquefy around 1800 kg/day of LNG (1,8 metric tpd, 1350 gal/day).

The Stirling Cryogenerator operates stand-alone, driven by an electrical motor and has its own control unit. Boil-off gas can be taken from a storage tank, re-liquefied by the StirLNG, and fed back into the storage tank.

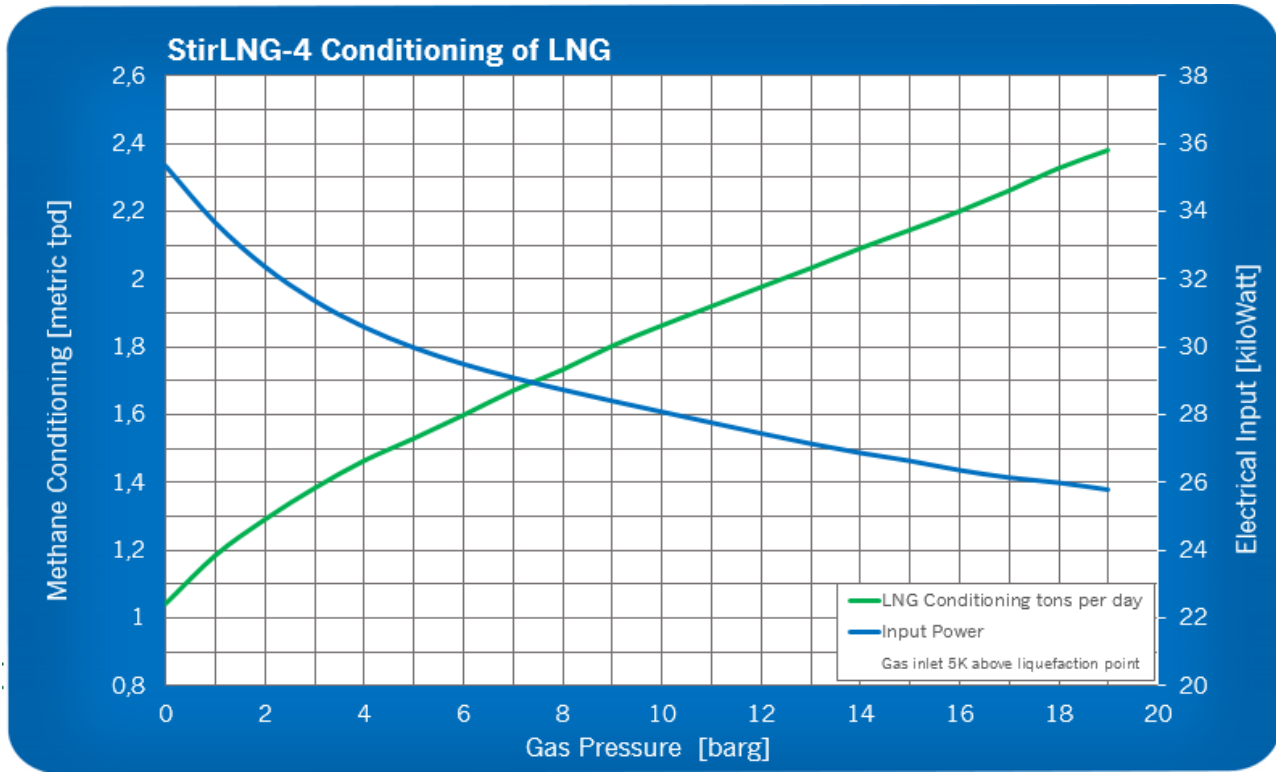
As an alternative, liquid can be taken from the bottom of the storage tank, sub cooled and sprayed back in the tank, reducing the overall pressure of the system, eliminating boil off gas.



Stirling Cryogenics is a registered trade name of DH Industries BV

For more information on the Stirling Cryogenics product range, please contact:
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StirLNG-4 Specifications



Gas Pressure	Temp. Liquid	Cooling Power	Electrical Input	Capacity based on pure methane				
				Nm ³ /hr	kg/hr	l/hr	T/day	Gal/day
Barg	K	W	kW					
0	112	6320	35,6	60,5	43,5	103,0	1,04	653
2	127	7350	32,0	74,5	53,6	134,1	1,29	850
4	136	7990	30,8	84,8	61,0	158,5	1,46	1005
6	142	8390	29,7	92,7	66,8	178,5	1,60	1132
8	147	8790	28,9	100,4	72,3	198,5	1,73	1259
10	152	9114	28,0	108,1	77,7	218,7	1,86	1387
12	156	9362	27,2	114,3	82,3	236,8	1,98	1502
14	160	9580	26,1	121,2	87,2	256,6	2,09	1627
16	162	9740	25,2	127,1	91,4	275,1	2,20	1745
18	165	9949	24,2	135,0	97,1	298,4	2,33	1892
20	168	10111	23,3	141,4	101,8	319,8	2,45	2028

Specifications		Feed gas composition limits	
Explosion proof classification	ATEX Zone 2 or 1 Nec 500, Class 1 Div 2 or 1, gas group D Other, upon request	Deviations from pure methane will affect capacity above.	Main stream: CH ₄ C _x H _y (C2 to C4) 10% C _x H _y (C5+) < 1 ppm CO ₂ < 50 ppm(°) H ₂ O < -70°C dew point H ₂ S < 3,3 ppm Oil content < 0,01 mg/m ³ Particles < 0,1 micron N ₂ /O ₂ < 10%.(°)
Max. gas pressure	20 barg 290 psig	Please contact us with your gas composition for a specific calculation	
Water consumption (incl. 20% EG)	4.000 l/hr @ 15°C		
System size (l x w x h)	1,75 m 0,75 m 1,22 m		

1: The amount of allowable CO₂ in the feed gas depends on the working pressure. Higher amounts can be allowed, due to its solubility in LNG. However at decreasing pressure, further in the logistic chain, solid CO₂ may deposit.
2: The actual re-liquefaction capacity might be lower, based on the composition of the boil off gas. Especially N₂ and O₂ will lower the re-liquefaction temperature and therefor will reduce the available cooling power and liquefaction capacity

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