



# StirLNG-1 Cryogenerator

Liquefier for nano 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 two specific fields of application:

- Nano 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.

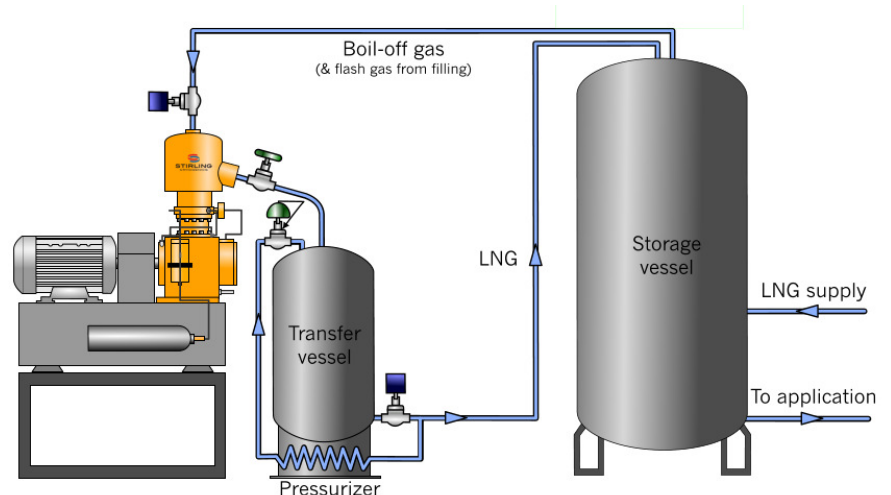
The cooling power of the StirLNG is created by the so called reversed Stirling cycle: compression and expansion of helium gas in a closed cycle by mechanical pistons. The gas to be liquefied is not used to create this cold: it will just flow through a cold heat exchanger where energy is extracted and 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-1

The StirLNG-1 is our SPC-1 Cryogenerator specifically modified for small nano scale LNG production and re-liquefaction. Depending on the gas pressure, the StirLNG-1 can re-liquefy around 450 kg/day of LNG (340 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 cooler, and pushed back into the storage tank.

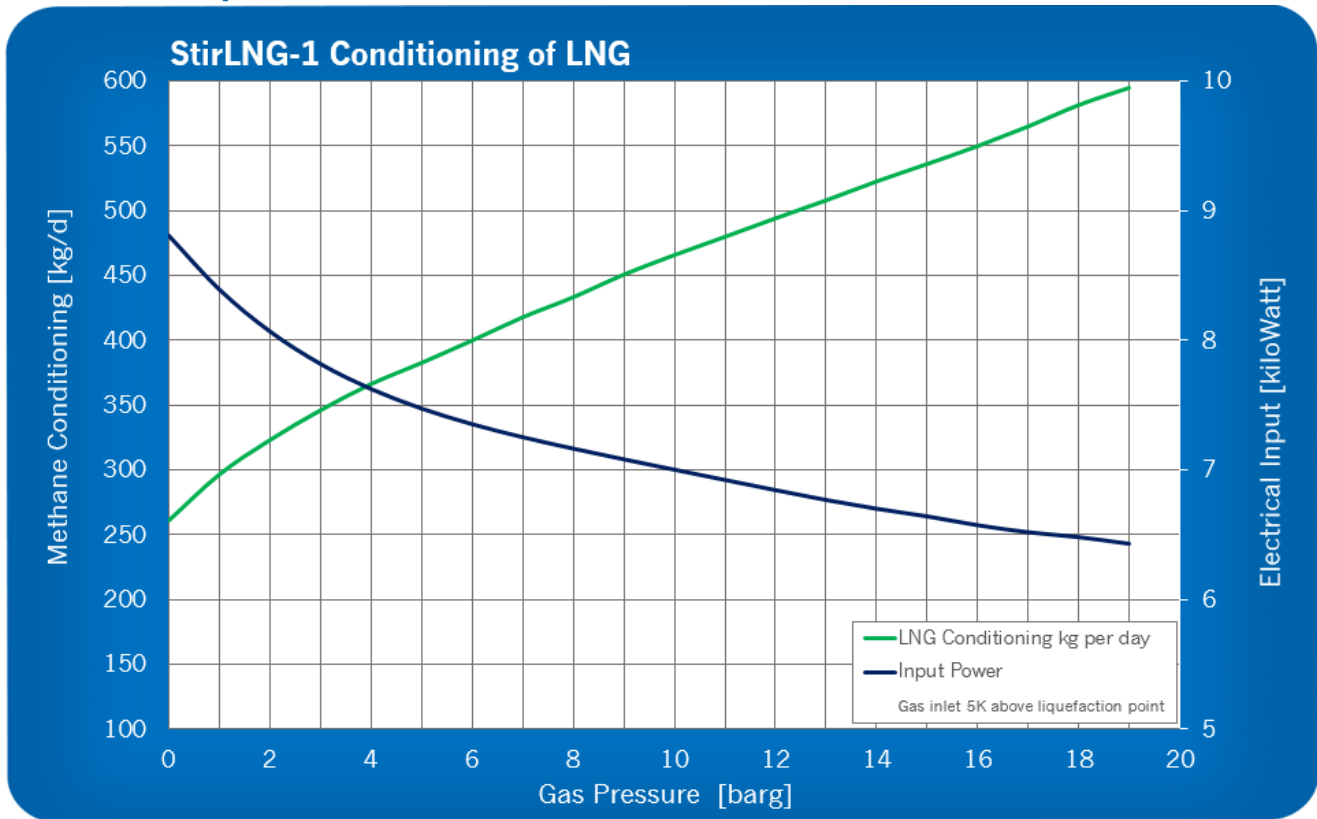
As an alternative, liquid can be taken from the bottom of the storage tank, sub cooled and sprayed back in the tank, reducing the overall pressure of the system, eliminating boil off gas.



**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-1 Specifications



Gas Pressure	Temp. Liquid	CO <sub>2</sub> ( <sup>1</sup> )	Cooling Power	Electrical Input	Capacity based on pure methane				
					Nm <sup>3</sup> /hr	kg/hr	l/hr	kg/day	Gal/day
Barg	K	PPM	W	kW					
0	112	72	1570	8,9	15,1	10,8	25,7	260,7	163
2	127	250	1830	8,1	18,7	13,4	33,7	322,7	214
4	136	528	1990	7,7	21,2	15,3	39,6	366,0	251
6	142	870	2090	7,4	23,1	16,7	44,5	399,6	282
8	147	1318	2190	7,2	25,1	18,0	49,5	433,0	314
10	152	1996	2270	7,0	27,0	19,3	54,6	465,6	346
12	156	2784	2332	6,9	28,6	20,6	59,3	493,9	376
14	160	3881	2386	6,7	30,1	21,7	63,9	522,4	405
16	162	4583	2426	6,6	32,1	23,1	69,7	549,7	442
18	165	5880	2478	6,5	33,4	24,1	74,0	581,5	469
20	168	7545	2518	6,4	35,7	25,7	80,7	609,5	511

Specifications			
Explosion proof classification	ATEX Zone 2 or 1 Nec 500, Class 1 Div 2 or 1, gas group D Other, upon request	Feed gas composition limits Deviations from pure methane will affect capacity above.  Please contact us with your gas composition for a specific calculation	Main stream: CH <sub>4</sub> C <sub>x</sub> H <sub>y</sub> (C2 to C4) 10% C <sub>x</sub> H <sub>y</sub> (C5+) < 1 ppm H <sub>2</sub> O < -70°C dew point H <sub>2</sub> S < 3,3 ppm Oil content < 0,01 mg/m <sup>3</sup> Particles < 0,1 micron N <sub>2</sub> /O <sub>2</sub> < 10%.( <sup>2</sup> )
Max. gas pressure	20 barg 290 psig		
Water consumption (incl. 20% EG)	750 l/hr @ 15°C		
System size (l x w x h)	1,10 m 0,80 m 1,20 m	1: Solubility of CO <sub>2</sub> as function of liquid TEMPERATURE. Pressure for indication only, relative to pure methane. Other components such as N <sub>2</sub> will lower the liquid temperature relative to the saturated pressure, decreasing the allowable CO <sub>2</sub> level.  2: The actual re-liquefaction capacity might be lower, based on the composition of the boil off gas. Especially N <sub>2</sub> and O <sub>2</sub> will lower the re-liquefaction temperature and therefor will reduce the available cooling power and liquefaction capacity	

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