



StirLNG-1 Cryogenerator

Liquefier for nano scale LNG production

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:

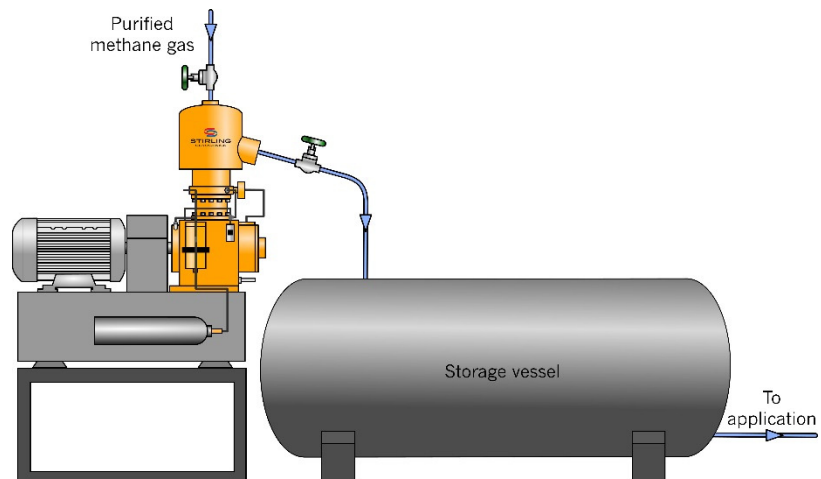
- Nano scale production of LNG from a purified gas source such as pipe line or biogas.
- Re-liquefaction of boil off gas to compensate for losses in a cryogenic (storage) system (fuel stations, storage tanks, etc.).
- Re-liquefaction of boil-off gas on vessels. The StirLNG-4 is available in an adapted 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 production with StirLNG-1

The StirLNG-1 is our SPC-1 Cryogenerator specifically modified for nano scale LNG production and re-liquefaction. Depending on the gas pressure, the StirLNG-1 produces around 250 kg/day of LNG (185 gal/day).

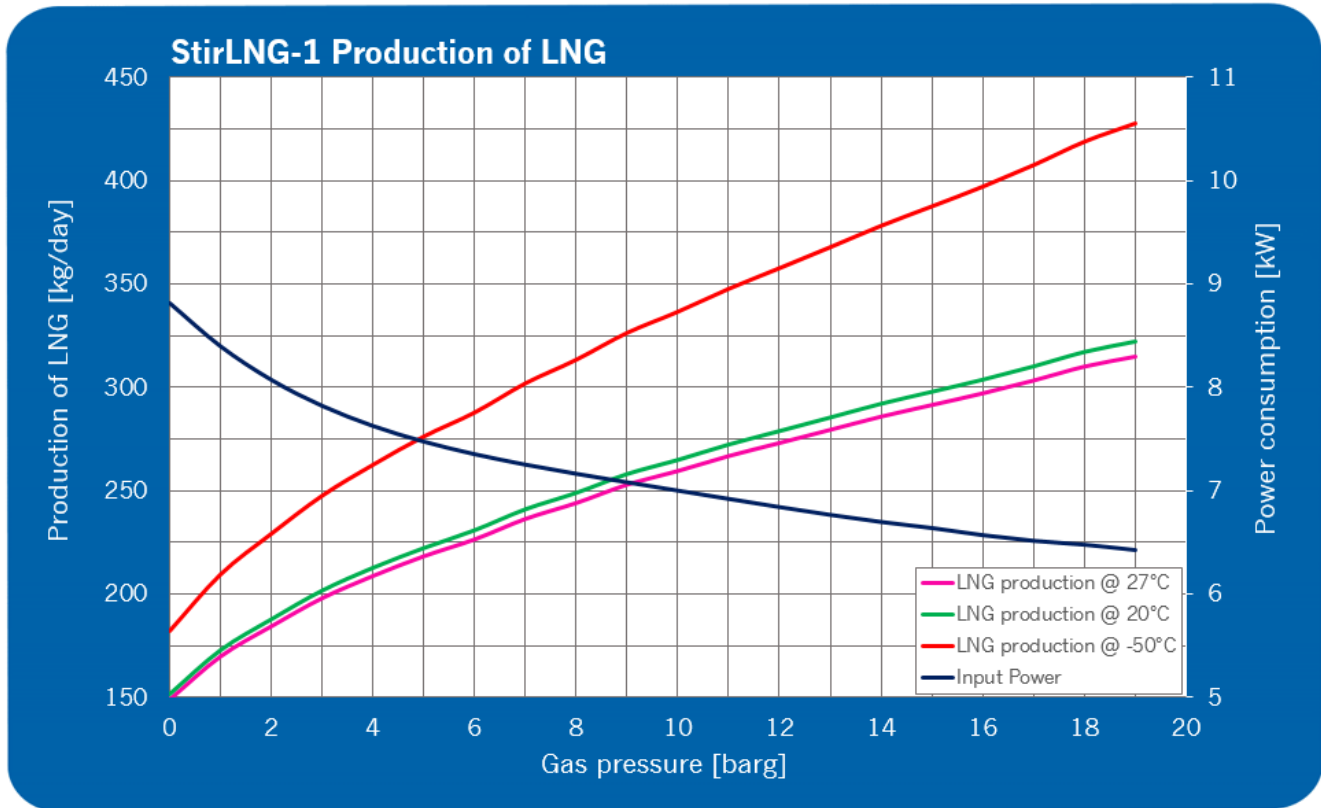
The Stirling Cryogenerator operates stand-alone, driven by an electrical motor and can have its own control unit. Clean Methane gas, with a maximum pressure of 20 barg (290 psi), either from a well, biogas production plant or pipeline is fed to the StirLNG-1 liquefier. In the cold head, energy is extracted from the gas until it liquefies. By gravity, the formed liquid drains into an (intermediate) storage tank for further use.



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 ₂ (¹)	Cooling Power	Electrical Input	Capacity Inlet gas temperature 20°C based on pure methane					Capacity Inlet gas temperature -50°C based on pure methane				
					Nm ³ /hr	kg/hr	l/hr	kg/day	Gal/day	Nm ³ /hr	kg/hr	l/hr	kg/day	Gal/day
0	112	72	1570	8,9	8,8	6,2	14,9	151,3	95	10,5	7,6	17,9	181,9	114
2	127	250	1830	8,1	10,8	7,6	19,5	187,5	124	13,3	9,5	23,9	228,9	152
4	136	528	1990	7,7	12,3	8,6	23,0	212,5	146	15,2	10,9	28,4	262,3	180
6	142	870	2090	7,4	13,4	9,4	25,7	230,6	163	16,7	12,0	32,1	287,6	203
8	147	1318	2190	7,2	14,5	10,0	28,5	248,7	181	18,1	13,1	35,9	313,2	227
10	152	1996	2270	7,0	15,3	10,6	31,0	264,7	197	19,4	14,0	39,4	336,4	250
12	156	2784	2332	6,9	16,2	11,2	33,4	278,7	219	20,7	14,9	42,9	357,5	271
14	159	3572	2386	6,7	16,9	12,1	35,8	291,9	227	22,0	15,8	46,5	378,0	295
16	162	4583	2426	6,6	17,6	12,7	38,1	303,6	242	22,9	16,5	49,6	396,9	315
18	165	5880	2478	6,5	18,4	13,2	40,7	317,0	258	24,4	17,5	53,7	418,7	342
20	168	7545	2518	6,4	19,2	13,8	43,4	331,0	275	25,4	18,3	57,4	437,1	364

Specifications	
Explosion proof classification	ATEX Zone 2 or 1 Nec 500, Class 1 Div 2 or 1, gas group D Other, upon request
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
Feed gas composition limits	Main stream: CH ₄ C _x H _y (C2 to C4) 10% C _x H _y (C5+) < 1 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%.(²)
Deviations from pure methane will affect capacity above.	
Please contact us with your gas composition for a specific calculation	
<small>1: Solubility of CO₂ as function of liquid TEMPERATURE. Pressure for indication only, relative to pure methane. Other components such as N₂ will lower the liquid temperature relative to the saturated pressure, decreasing the allowable CO₂ level. 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 therefore will reduce the available cooling power and liquefaction capacity</small>	

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