

# SPC-4T Cryogenerator

Remote cooling by closed loop Helium circulation for 15-60K



## Stirling Technology

For over sixty years Stirling Cryogenics has been designing and manufacturing cryogenerators for extreme low temperature cooling, serving customers all over the world under all possible conditions. This experience is incorporated in our 2-stage Cryogenerators called SPC-4T (Stirling Process Cryogenerator). The SPC-4T is a two-stage cryogenerator that provides cooling power in the range of 120-700W @ 15-60K. The SPC-4T is mostly used for (indirect) cooling of a subject by means of forced flow Helium gas.

The cooling power of the SPC-4T is created by the so called reversed Stirling cycle: compression and expansion of a working gas in a closed cycle by mechanical pistons. This cooling power becomes available in a heat exchanger, through which the medium to be cooled is forced and energy is extracted.

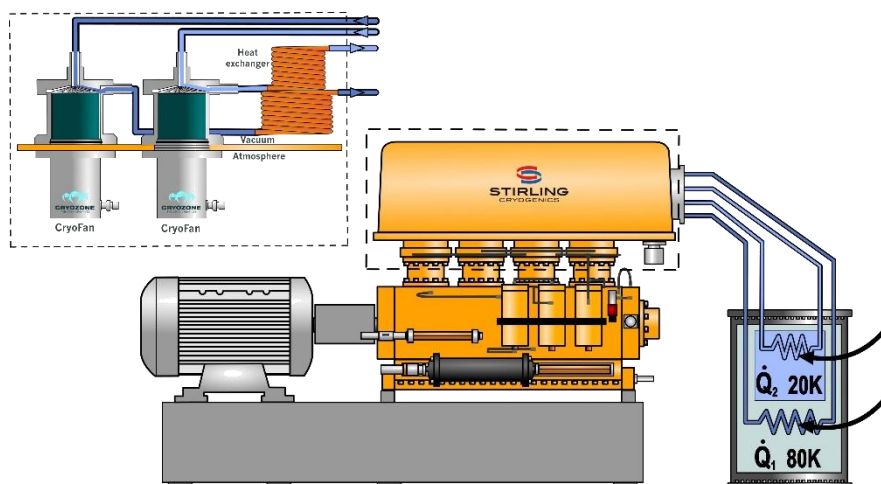
## SPC-4T, two-stage cooling

The Stirling Cryogenics Cryogenerator operates stand-alone. It's driven by an electrical motor and has its own control unit. Typically, pressurized helium gas is used as cooling medium to remotely cool a load. In a closed loop (e.g. 20K), cold Helium gas is circulated by means of a gas pump; the CryoZone CryoFan. The helium gas will absorb heat and cool the application. After this the helium gas will reject its energy in the coldhead of the Cryogenerator. If useful, a separate secondary loop on the first stage of the cryogenerator (approx. 80K) can be used for shielding or pre-cooling. Other configurations are also possible.

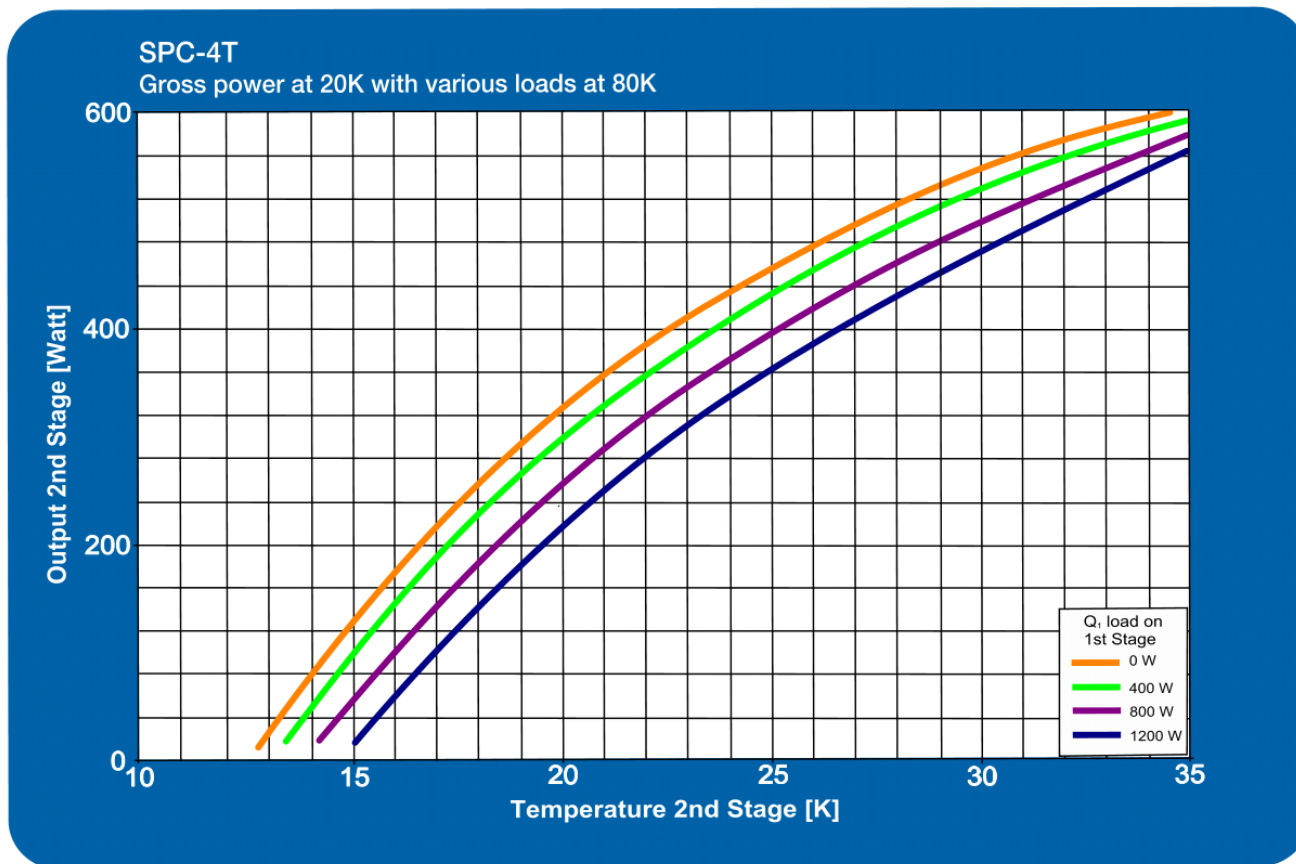
## The Stirling SPC-4T

Cryogenerator is equipped with integrated CryoZone CryoFans (cryogenic circulators) in the vacuum space of the cold head. In many cases this eliminates the need for a separate cryostat. The CryoFans are selected based on the heat load, flow and dP of the customer's system.

Our CryoFans are designed for maintenance free cryogenic operations and minimum heat input.



## SPC-4T Specifications



### Graph conditions

Helium pressure	30 barg
RPM	1455
Water temperature	15°C
Water consumption	4.000 l/hr (20% glycol added)

### Specifications

Power supply	3ph 400V, 50Hz 3ph 480V, 60Hz Other, upon request
Max gas pressure	20 barg 290 psig

Cold production	See graph
Power consumption	45 kW
Environmental conditions	Enclosure required 5°C - 45°C 20 % - 95% humidity

Weight	1.150 kg 2.535 lbs
System size (l x w x h)	1,74 m 0,75 m 1,22 m

### Helium gas flow & dP

CryoFan size will be selected upon process conditions

### For more information see:

[www.stirlingcryogenics.com](http://www.stirlingcryogenics.com)

[www.cryozone.nl](http://www.cryozone.nl)

[www.dh-industries.com](http://www.dh-industries.com)

The indicated cooling power is of the 2nd stage of the coldhead. It can vary based on the heat load on the 1st stage of the cryogenerator, indicated by the different lines. The net cooling power available for the customer's application will by definition be less than shown in the graph. This is because the helium temperature will be about 1K higher than the coldhead and the thermal load of additional equipment has to be subtracted. These typically are the heat losses of the connection lines and the CryoFan. They will depend by system requirements such as T, P, dT and the resulting flow and dP. Stirling Cryogenics can assist in the selection of the optimum CryoFan.