

ChillCon – High-performance chilled water plant

The principle

The ChillCon represents a compact, completely preassembled, container-based and ready-to-use refrigeration plant for a centralized chilled water supply. Important fields of application are **process water cooling**, **air conditioning** and **industrial cooling purposes**.

The cooling capacities vary from approximately 100 kW up to 2,500 kW or even higher.

The ChillCon combines the advantages of both **exterior** and **interior** installation and is suitable for **chilled water** temperatures from +3 °C up to +20 °C.

When operated with a **water-glycol mixture or brine**, the temperatures even range from -5 °C up to +20 °C.

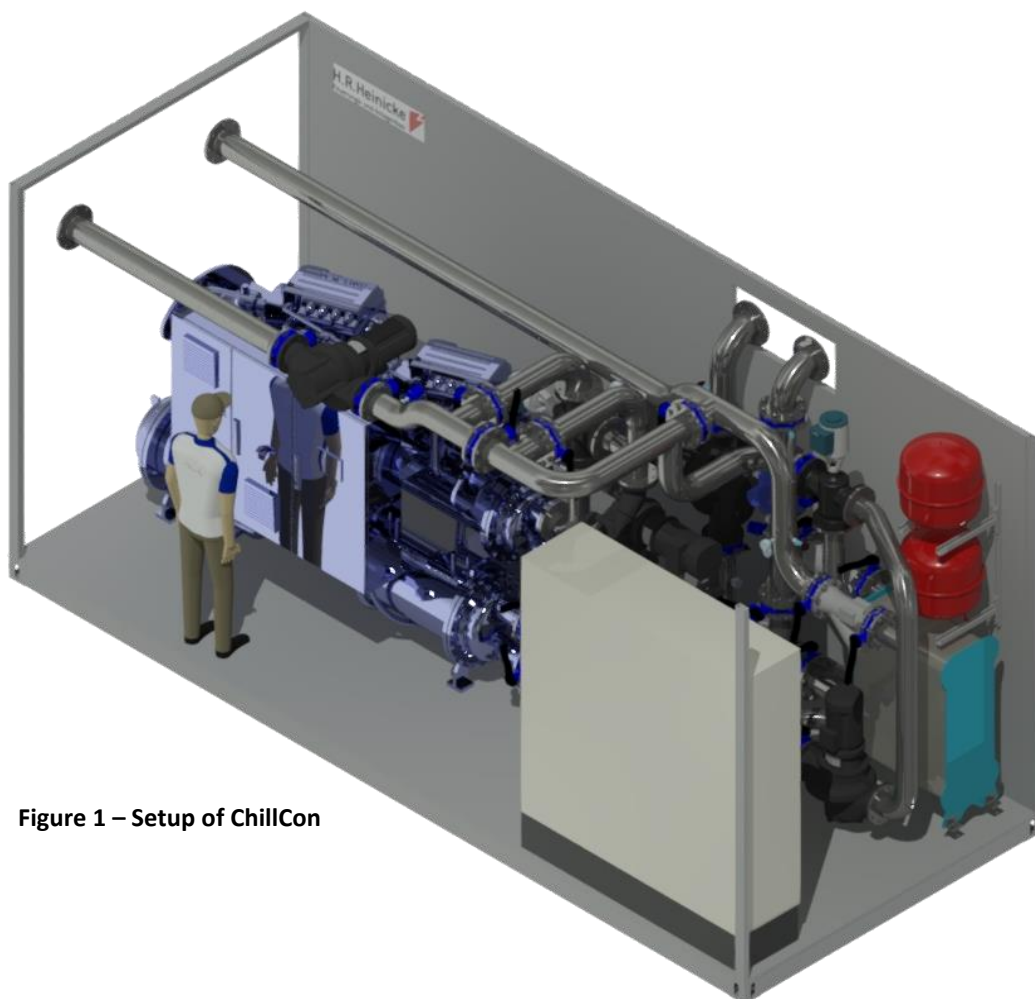


Figure 1 – Setup of ChillCon



The functions – Cooling and freecooling

The ChillCon includes a preassembled and high efficient compact chiller, based on oilfree turbo compressors. It supplies chilled water at an **adjustable temperature range**. The turbochiller reaches energy efficiency ratios (EER) from 5 to 12. It is composed of a compact preassembled unit with R134a refrigerant (optionally with R1234ze).

For increasing the efficiency at low ambient temperatures, an optional **freecooling system** is included inside the central chilled water supply. The heat-exchanger for this purpose is integrated inside the container, if required by the **individual concept** of the ChillCon.

Herewith, EERs significantly above 75 during freecooling operations can be reached, depending on the ambient and needed chilled water temperatures.

The circulation of chilled and cooling water is ensured by frequency inverter controlled pumps. Electrical cabinets for power supply, automation and visualization are integrated inside the container in order to secure a safe and optimized operation.

Depending on the chilled water temperatures, recooling is done via an external high efficiency drycooler, an adiabatic cooler or a cooling tower.

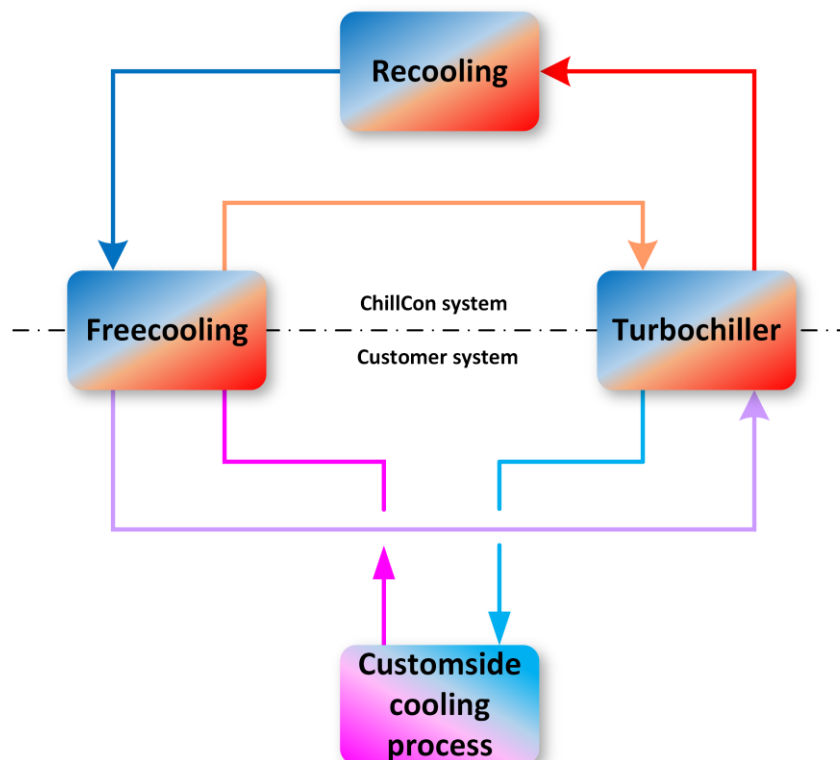


Figure 2 – Cooling cycle schematic



Highest energy efficiency

The implementation of freecooling as well as a high efficient water-cooled TurboCore-based Quantum chiller unit assure a **significant saving** in electrical power consumption. Due to the **innovative concept** of the ChillCon, the freecooling heat exchanger is used for freecooling and/or precooling prior to recooling the turbochiller in just one single cooling cycle.

The following figure illustrates the **decrease in electrical power consumption of over 60 %** by the installation of the ChillCon, equipped with a freecooling-heatexchanger.

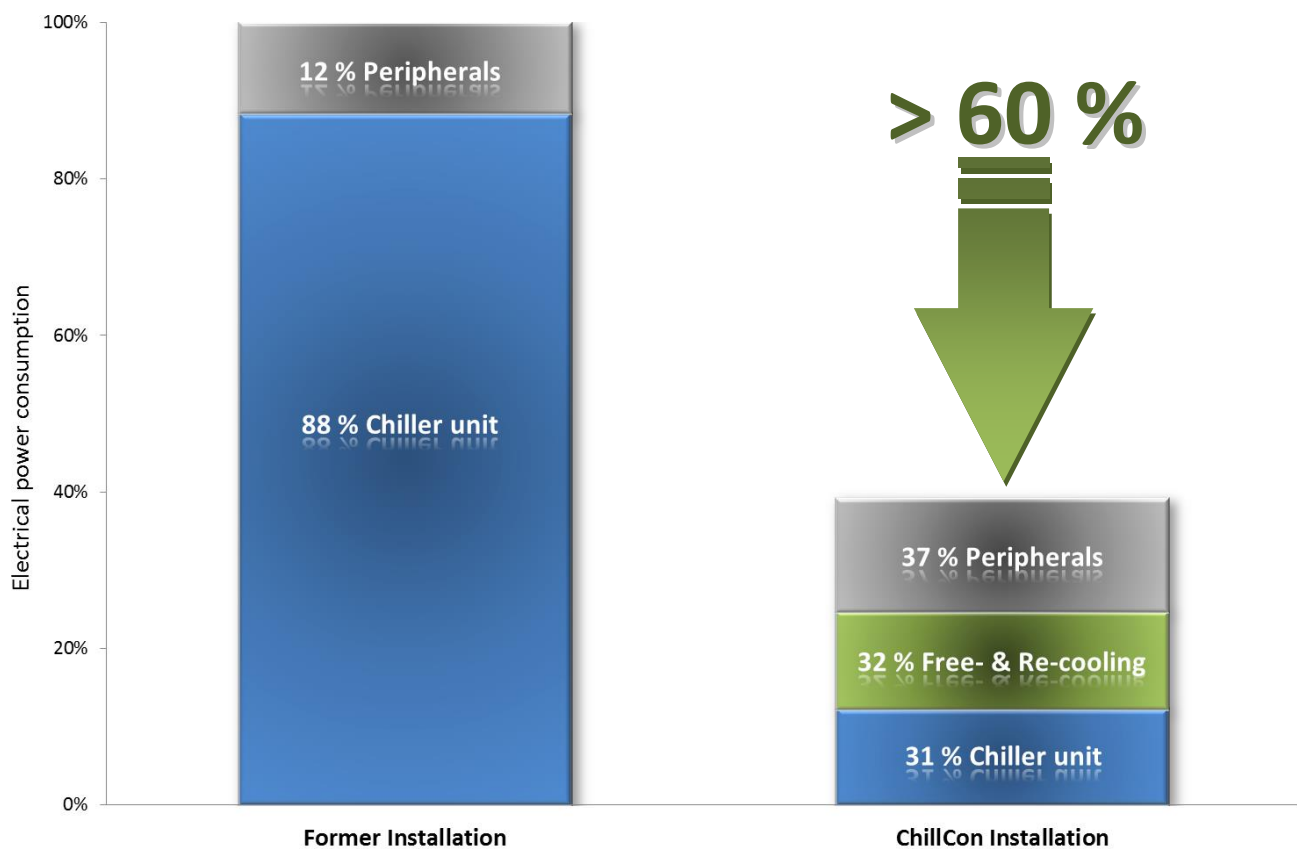


Figure 3 – Electrical power consumption comparison of former installation and ChillCon installation*

*Project data: Region – Northern Germany; Chilled water temperatures +18/+14 °C; Operating hours > 8.000 h/a
Former installation: Air-cooled chillers without freecooling. New installation: Combined freecooling and high efficient water-cooled Quantum TurboCore compressor & drycooler



Overview technical data

ChillCon	chilled water power	305 ¹⁾ 325 ²⁾		610 ¹⁾ 605 ²⁾		930 ¹⁾ 965 ²⁾		1545 ¹⁾ 1745 ²⁾		2170 ¹⁾ 2330 ²⁾		
	Dimensions Container (L x W x H)	6,1 x 2,5 x 3,0 m		6,1 x 2,5 x 3,0 m		12,2 x 2,5 x 3,0 m		on request		on request		
	Freecooling	yes										
	Freecooling heat exchanger	Sealed or soldered / welded										
	Recooling (external)	Drycooler, adiabatic cooler or cooling tower										
	Coolant											
	- Cooling circuit	Glycol-Water-Mix										
	- Chilled circuit	Water or Glycol-Water-Mix										
	chilled water temperature range	-5 °C ... +20 °C										
	Normal ambient temperature range	-25 °C ... +38 °C										
	Pumps	Inline, e.g. Grundfos										
	Electrical components	Rittal, Siemens, Phoenix, Jumo or equivalent										
	Control unit	Siemens S7										
Quantum-Chiller	Total power consumption	62 kW	40 kW	122 kW	70 kW	185 kW	115 kW	313 kW	231 kW	433 kW	287 kW	
	Energy Efficiency Ratio (EER)	4,93	8,11	5,00	8,69	5,04	8,42	4,94	7,57	5,02	8,12	
	Sound pressure level ³⁾	68,4 dB (A)		70,5 dB (A)		70,6 dB (A)		72,3 dB (A)		73,3 dB (A)		
	Number of compressors	1		2		3		5		7		
	Refrigerant	R 134a (R 1234ze optional)										

¹⁾ Evaporator 12 °C / 7 °C, condenser 30 °C / 35 °C

²⁾ Evaporator 23° C / 18 °C, condenser 30 °C / 35 °C

³⁾ Distance 1m

Dimensions:

