Beverage Process Chiller

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Chiller systems include water-cooled chillers and air-cooled chillers for beverage industry. One of the more popular applications for modern industrial chillers is in the beverage industry, which uses cooling systems to remove heat gained from the process after mixing, cooking, or pasteurizing products. Our chiller machines are used in the production of beverages from wine and beer to milk ,carbonated beverage filling production line and juice beverage production line, etc. Whether it's the fermentation of grapes or grains, or the pasteurization of milk, a cooling system is a wise investment.

Beverage Processing

1.What is Beverage Process Chiller?

A Beverage process chiller is a specialized cooling machine designed to cool or chill beverages during various stages of production or storage. It‘s an essential component in industries like beverage manufacturing, where precise temperature control is crucial for quality and safety.

60 Ton Water Cooled Screw Beverage Process Chiller

2.How Does Beverage Process Chiller Work?

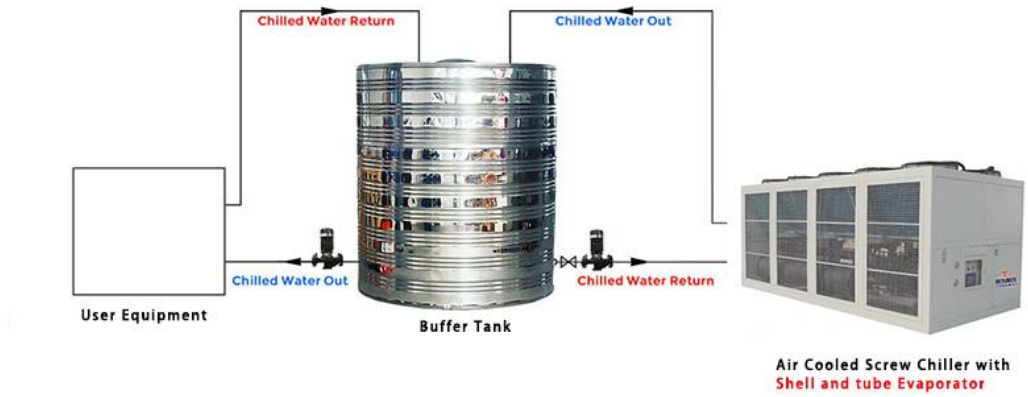
The principle of the beverage process chiller is to inject a certain amount of water into the internal water tank of the beverage production machine, cool the water through the refrigeration system of the chiller, and then use the water pump inside the chiller to inject low-temperature chilled water into the beverage production that needs to be cooled in the device. The chilled water takes away the heat inside the beverage production equipment and returns the high-temperature hot water back to the water tank for cooling. This kind of circulation and exchange cooling achieves the cooling effect on the beverage and juice production line equipment.

3.What’s the Difference Between Air-cooled & Water-cooled Beverage Process Chillers?

There are two types of brewery chiller: one is **air-cooled Beverage Process chiller** ,the other is **water-cooled Beverage Process chiller** ;

Air-cooled Beverage Process chillers use ambient air to dissipate heat from the brewing processes. They are energy-efficient, space-saving, and less maintenance that helps save money.

Water-cooled Beverage Process chillers use water from an external water cooling tower to dissipate heat from the brewing processes. These systems are longer lifespan, Relatively quiet, and more consistent cooling performance than the air-cooled Beverage Process chiller.



Air-cooled Beverage Process Chiller Installation Drawing

Water-cooled Beverage Process Chiller Installation Drawing

Should you choose an air-cooled or water-cooled Beverage Process chiller? *Contact Us* for help determining the best solution for you.

4.What is the Difference Between Beverage Process Scroll

Chiller and Beverage Process Screw Chiller?

Beverage Process Scroll Chiller	Beverage Process Screw Chiller
▪1/2HP-60HP(2KW-170KW)	Above 60HP(Above 170KW)
▪Danfoss/Panasonic Scroll Compressor	Hanbell/Bitzer Screw compressor
▪Built with water tank and water pump	Without water tank and water pump

Air-cooled Beverage Process Scroll Chiller

Air-cooled Beverage Process ScrewChiller

Water-cooled Beverage Process Scroll Chiller

Water-cooled Beverage Process Screw Chiller

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5.What Are The Main Components of Beverage Process Chillers?

5.1 Compressor

The compressor is the key mover in Beverage Process chiller because it produces pressure variations to stir the refrigerant around.

From 1/2HP(1/2 Ton) to 60HP(5oTon) Beverage Process chiller , which is with **Panasonic** or **Danfoss brand Scroll compressor** ,

Above 80HP(70 Ton) Beverage Process chiller , which is with **Hanbell** or **Bitzer brand Screw compressor** ,

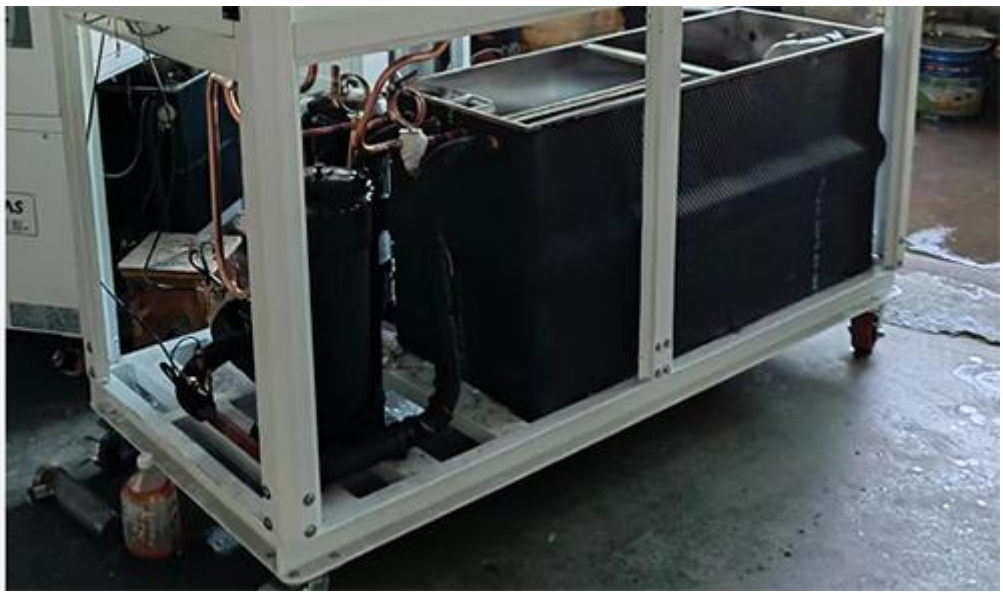
These brand compressors are with high refrigeration efficiency,low noise ,energy saving,environmental protection and durability,safety and stability.

Panasonic Compressor

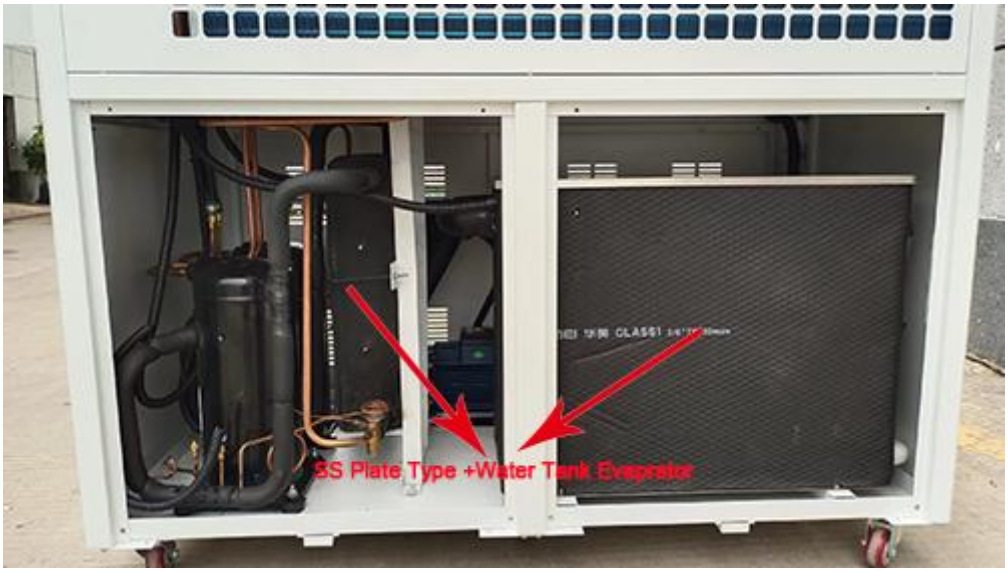
Danfoss Compressor

5.2 Evaporator

The evaporator is a crucial component of air-cooled Beverage Process chiller, as it is responsible for extracting heat from the liquid being cooled,it is located between the compressor and the expansion valve. There are three types of evaporators : **coil in water tank evaporator , shell and tube evaporator, 304SS stainless steel plate type evaporator.**



Coil in SS Water Tank Evaporator

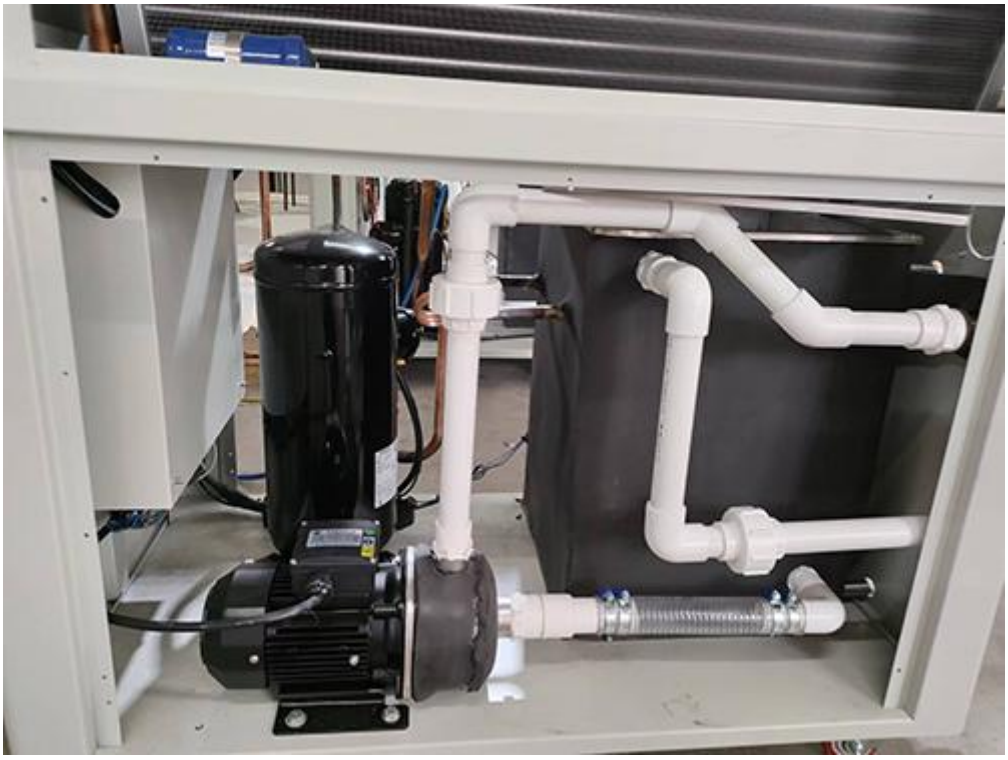


SS Plate Type+ Water Tank Evaporator

Shell and Tube Evaporator

5.3 Water Pump

The water pump is designed to increase the pressure and the flow of the chilled water in a closed space.



Water Pump

High Pressure Water Pump

5.4 Condenser

The condenser for air-cooled Beverage Process chiller is equipped with efficient cross-seam fins and female threaded copper tubes for high heat exchange efficiency and good stability.Its function is to cool down the refrigerant steam released from the compressor into a liquid or gas-liquid mixture.

Aluminum fin+fan Condenser for air -cooled brewery chiller

The condenser for water-cooled Beverage Process chiller is shell and tube ,with the internal copper tubes employing an outer thread embossing process.This design effectively enhances the heat exchange efficiency between the refrigerant and water during the process. Compared to traditional smooth copper tubes, the outer thread embossing process increases the surface area of the copper tubes, thereby expanding the contact area for heat exchange and improving the thermal conductivity of the condenser. This optimization design allows the condenser of the water-cooled chiller to transfer heat from the refrigerant to the water more rapidly and consistently, enabling the water to carry away the heat.

Shell and tube Condenser for water-cooled brewery chiller

5.5 Controller Panel

Beverage Process chillers use precision digital temperature controller, it RS485 communication port，which can do remote monitoring and control. Simple operation, low failure rate, high safety factor, easy installation.

Controller Panel

6.What Applications Do A Beverage Process Chiller Used In?

Beverage process chillers play a critical role in ensuring that beverages are produced and stored at the ideal temperatures,it is widely used in many applications , some as below:

Breweries: In beer production, chillers are used to cool the wort (unfermented beer) after boiling and to maintain fermentation temperatures.

Wineries: >They‘re used in various stages of wine production, including fermenting and aging.

Soft Drink Production: Chillers are used to cool carbonated beverages before packaging.

Juice and Beverage Processing: In the production of fruit juices and other non-alcoholic beverages, chillers are used for various steps like pasteurization and cold filling.

7.How to Choose Right Chiller for Your Beverage Process Process?

How to calculate right cooling capacity for your Beverage Process chillers?

One of the most frequently ask about how we can know the cooling capacity for chillers. Let’s see the below formula.

Cooling Capacity(kw)= Flow Rate(m3/h)*Temp Change(T1-T2)/0.86

Heat Load= C(specific heat)* M(quality output per hour)*Temp Change(T1-T2)

Oversize the chiller by 20% Ideal Size in KW = KW x 1.2
Noted : T1:Incoming Water Temperature (℃) T2:Required Chilled Water Temperature(℃)

For example, what size of chiller is required to cool 5m³ water from 25°c to 15 °c in 1 hour?

Temperature Differential = 25℃-15℃=10℃
Water Flow Rate = 5 m³/hour
Cooling Capacity in KW = 5 x 10 ÷ 0.86 = 58,14 KW
Oversize the chiller = 58.14 x 1.2 = 69.76 KW
69.96kw cooling capacity for chiller is required.

Types of Beverage Process chiller system?

There are two types of chiller :**Air Cooled Beverage Process Chiller** and **Water Cooled Beverage Process Chiller**.

Water cooled chiller needs a separated water cooling tower and water cooling pump ,if you don‘t have exsiting water cooling tower,we suggest you use air cooled chiller; But if your ambiemt temperature is very high above 55℃ ,we suggest you use water cooled chiller , as it is easier to dissipate heat for water cooled chiller with water cooling tower.

Whether chillers need built-in Tank or not?

In a chiller system, a tank is usually equipped to buffer the thermal load of the chiller.

But should we choose a built-in type of tank or an external type of tank?

A chiller with a built-in tank is easier to install and can be used simply by connecting a water pipe to your application.

But it has a limited capacity and is not suitable for applications with larger chilled water demands.External tank’s capacity can be customized according to specific needs.

It can buffer a larger heat load, store more chilled water, but the installation will be more troublesome.

If you don‘t have external water tank ,we suggest our chiller built-with water tank ,which is easy for you to install.

Cooling capacity unit conversion?

1 KW=860 kcal/h ;
1 TON=3.517 KW;
1 KW=3412 Btu/h;

8.Contact us to Learn More About Our Beverage Process Chillers

Don’t delay in making the best decision for your manufacturing business and your future by increasing your production capabilities with an Beverage Process chiller. Contact us today for more information on a Beverage Process chiller.
Our probessional team will help you with any questions you have on our Beverage Process chiller units. We look forward to hearing from you!