Chemical Chiller

Content

Tongwei Chiller is specialized in manufacturing *packaged chiller*,*portable chiller* ,*stationary chiller* and *explosion-proof chiller* to reduce the temperature of the chemical machinery.
Now, we have installed many chillers in breweries where our experience and expertise are meeting the needs of chemical industry around the world.

We can also custom design and manufacture chemical chillers to meet your specific needs.If you need a chemical chiller for a different brewing process? **Contact Us–**we're here to help.

1.What is Chemical Chillers ?

Chemical &Pharmaceutical Chillers are cooling machines providing low-temperature cooling water, reduce the temperature of the chemical machinery and pharmaceutical cooling processing.

The pharmaceutical industry prepares medicines by processing through different heating and cooling parameters as blending, extrusion, mixing firmly adjusted by the unique efficient working of Pharmaceutical& Chemical Chiller.

60 Ton Water Cooled Screw Medical Chiller

2.Applications of Chemical Chiller in Chemical Mechanical Cooling:

(1). Low-boiling point organic matter condenses rapidly. In chemical reactions, the chemical chiller can accurately control the temperature;

(2).Chemical chillers determine the quality, output and cost of chemical products to a large extent.

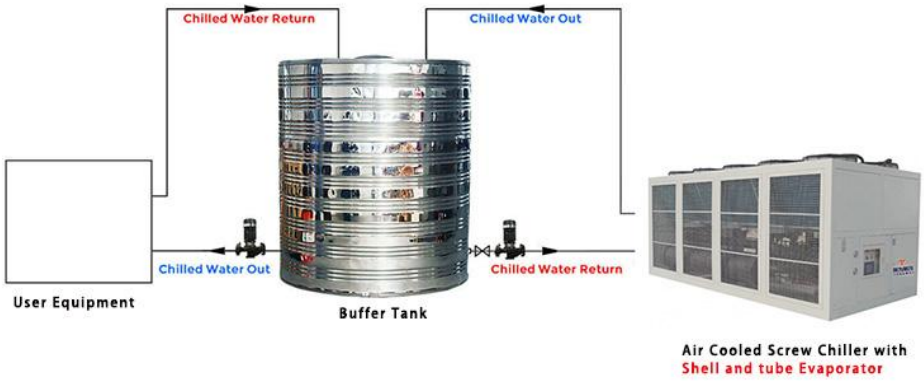
(3). In the reactor kettle, biochemical reactions need to maintain low temperature conditions. The chiller can provide rapid cooling of raw materials to prevent drug deterioration, low-temperature crystallization extraction, low-temperature extraction and low-temperature drug synthesis.

3.What's the Difference Between Air-cooled & Water-cooled Chemical Chillers?

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

Air-cooled chemical 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 chemical 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 chemical chiller.



Air-cooled Chemical Chiller Installation Drawing

Water-cooled Chemical Chiller Installation Drawing

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

4.What is the Difference Between Chemical Scroll Chiller and Chemical Screw Chiller?

Chemical Scroll Chiller	Chemical 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 Chemical Scroll Chiller

Air-cooled Chemical ScrewChiller

Water-cooled Chemical Scroll Chiller

Water-cooled Chemical Screw Chiller

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5.What Are The Main Components of Chemical Chillers?

5.1 Compressor

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

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

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

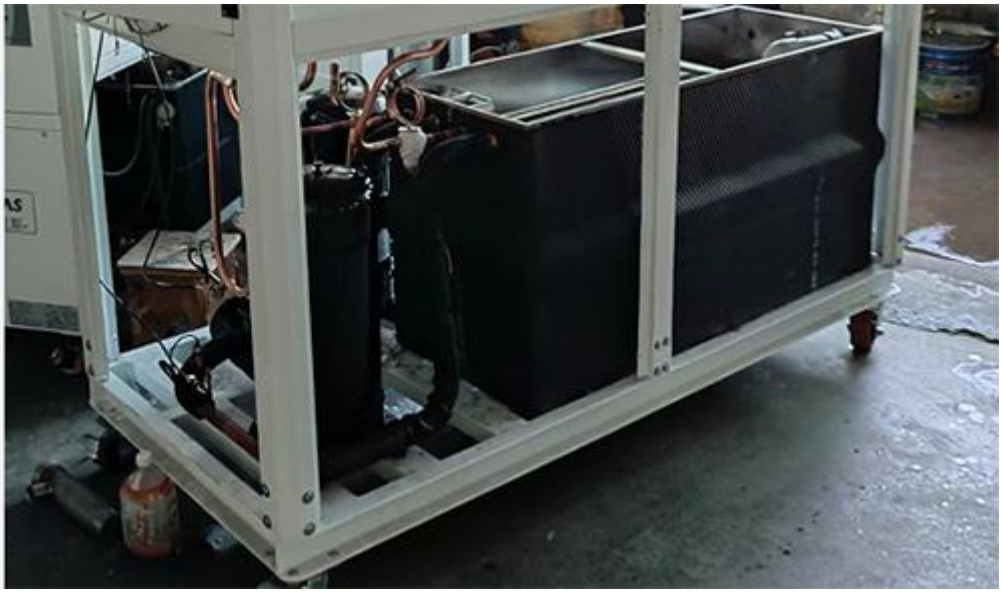
These brand compressors are with high refrigeration efficiency,low noise ,energy saving,environmental protection and durability,safety and stability.

Panasonic Compressor

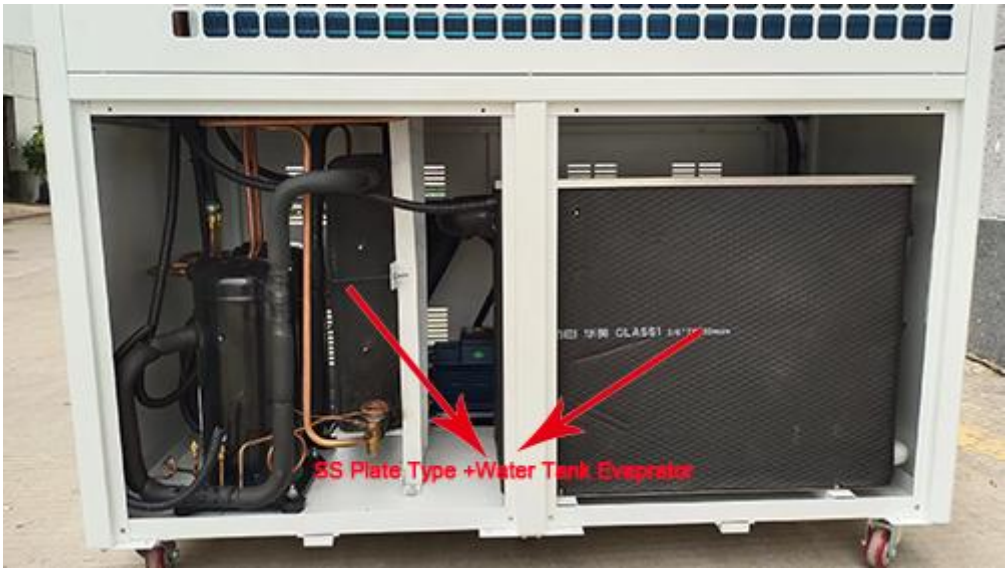
Danfoss Compressor

5.2 Evaporator

The evaporator is a crucial component of air-cooled chemical 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

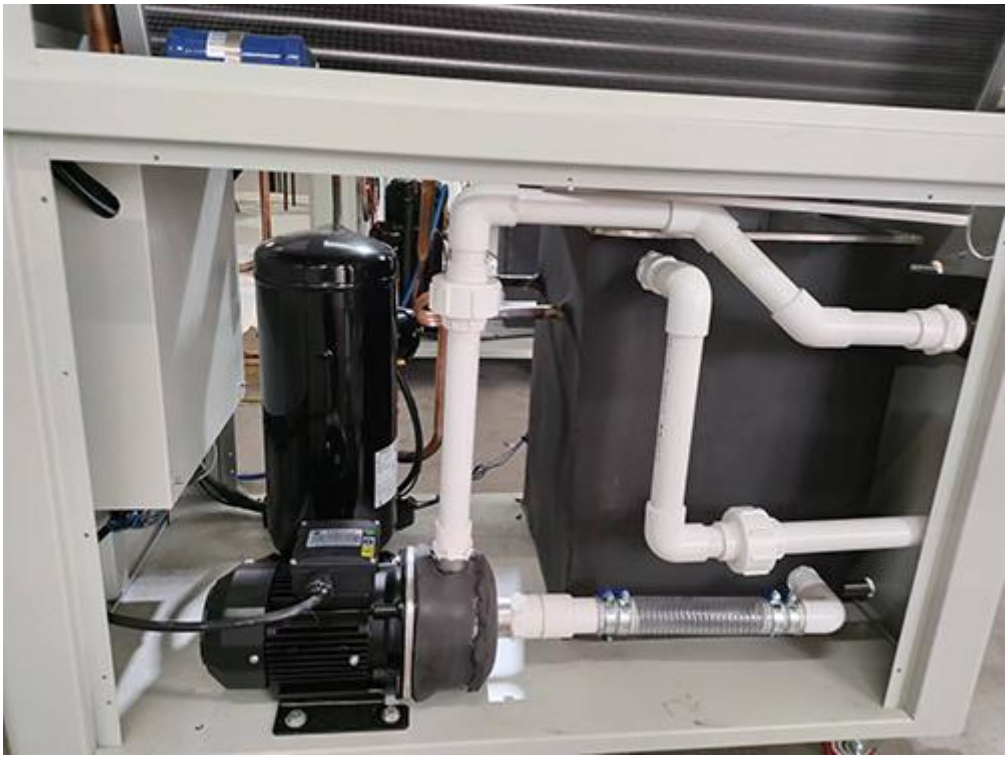


SS Plate Type+ Water Tank Evaporator

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 chemical 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 chemical 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

Chemical 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.How to Choose Right Chmecal Chiller for Your Chemical Process?

How to calculate right cooling capacity for your chemical 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 chemical chiller system?

There are two types of chiller :**Air Cooled chemical Chiller** and **Water Cooled Chemical 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;

7.***Contact Us*** to Learn More About Our Chemical Chillers

Don’t delay in making the best decision for your manufacturing business and your future by increasing your production capabilities with an chemical chiller. Contact us today for more information on a chemical chiller.

Our probessional team will help you with any questions you have on our chemical chiller units. We look forward to hearing from you!