

Bakery Chiller

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1.What is A Bakery Chiller?

A bakery chiller is a portable water chiller that provides on-demand cold water at low flow and low pressure at temperatures around 2°C. This frozen water stabilizes the yeast and prevents its growth.

2.Why Bakery Need A Water Chiller?

The type of chiller needed for the bakery is one that provides on-demand chilled water at around 2°C. Portable frozen bread water is used in dough making to control yeast growth. Cold water slows yeast growth.

3.What is Special About a Bakery Chiller?

Bakery chillers are special or different from regular ready-made chillers in several different ways. First of all, a bakery chiller requires potable water (clean drinking water). our bakery chillers use a Stainless steel coil with SS water tank as heat exchanger to help prevent refrigerant and oil from contaminating the water on the refrigeration side if there is a breach.

There is should be a 316 stainless steel PHE connect with chiller for clean water.

4.What is batch cooling?

Batch cooling is were a specified amount of water is drawn out of the system to be used in a batch type application like the designated amount of cold water required as part of an ingredient list. A batch is different than a continuous flowing single pass chiller.

5.Batch Cooling for Your Bakery Water Chillers

Because water temperature is critical to the consistency of the dough ingredients process, our chillers use water tanks that provide a buffer during the cooling process. This means your custom bakery chiller produces portable water with a stable internal temperature to minimize any inconsistent yeast growth.

6.What's the Difference Between Air-cooled & Water-cooled Bakery Chillers?

There are two types of Bakerychiller: one is **air-cooled Bakery chiller** ,the other is **water-cooled bakery chiller** ;

Air-cooled bakery 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 bakery 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 bakery chiller.

Air Cooled Bakery Scroll Chiller



Air Cooled Bakery Scroll Chiller



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

7.What Are The Main Components of Bakery Chillers?

7.1 Compressor

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

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

Above 60HP Bakery chiller,which is with **Hanbell** or **Bitzer screw compressor**;



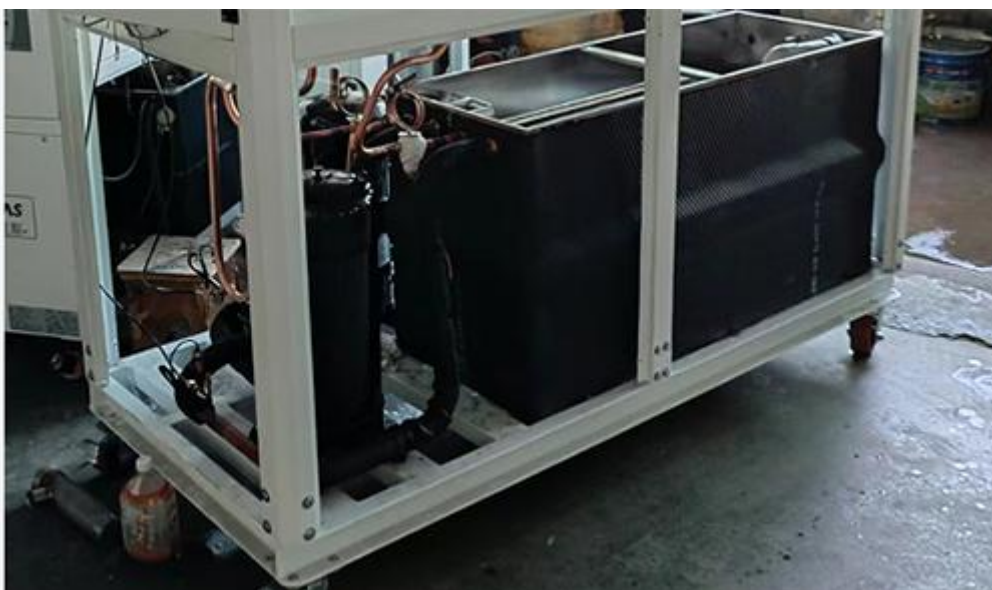
Panasonic Compressor



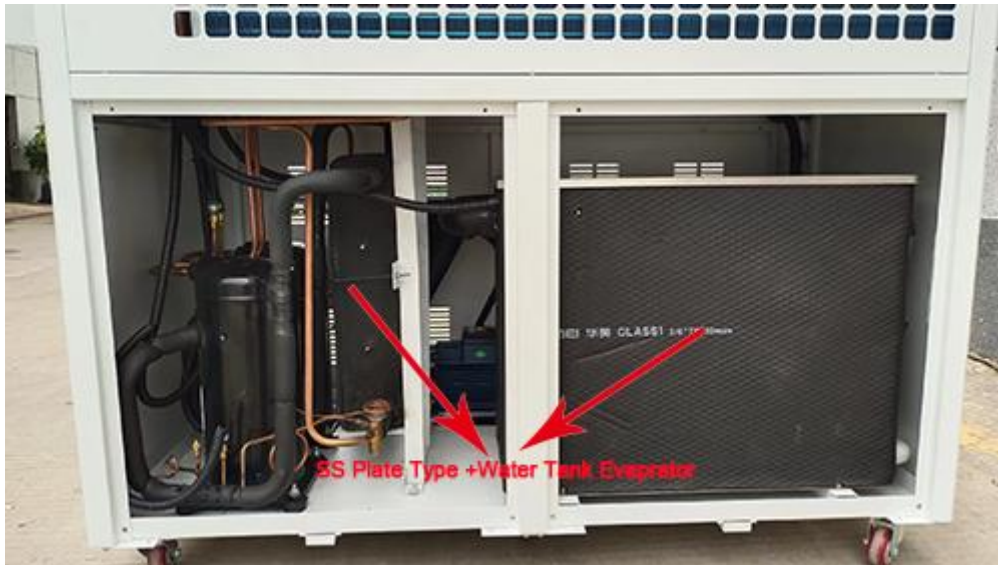
Danfoss Compressor

7.2 Evaporator

The evaporator is a crucial component of air-cooled water 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

7.3 Water Pump

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

Bakery Chiller is used with 304 Stainless Steel Water pump.



Water Pum

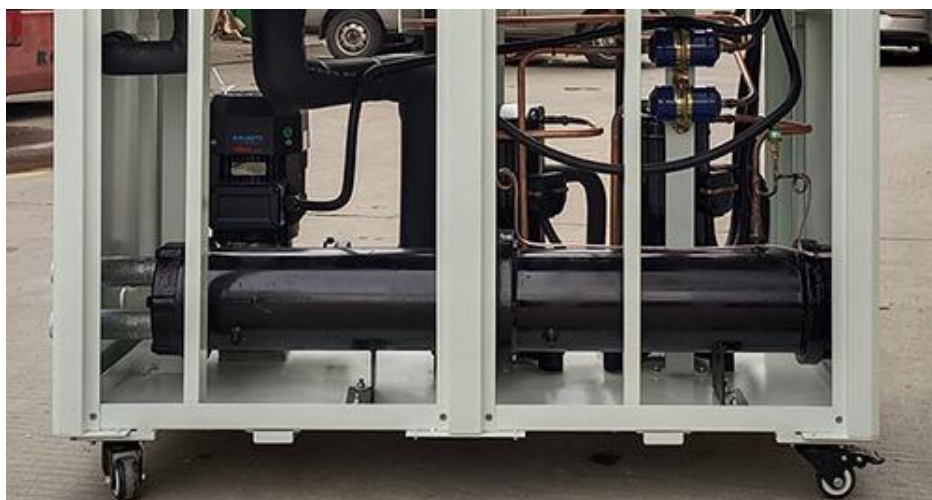
7.4 Condenser

The condenser for air-cooled Bakery cooler 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 Bakery chiller

The condenser for water-cooled Bakery cooler 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 Bakery chiller

7.5 Controller Panel

Water 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

8. What are the Key Features of a Bakery Chiller?

- Energy-efficient Panasonic/Danfoss compressor
- 304 Stainless steel water pump
- Chilled Outlet water temperature control 7°C to 25°C
- Precise temperature controller
- Environment-friendly refrigerant R407c/r410a
- PID temperature controller
- Easy installation ,operation and low cost of maintenance
- 304 Stainless Steel Coil in SS water tank /Shell And tube as evaporator

9.What Application Does Portable Chiller Used in Bakery Industry ?

▪ **Cool high-speed mixers.** The chilled fluid is pumped through a jacketed portion of the mixer base to cool the flour mixture during the blending process.

▪ **Cool frosting and fillings.** The product is heated and blended in a jacketed tank. A chiller removes the heat from the tank to decrease the product temperatures so they can be used in the final bakery product.

•**Chill water for dough mixing applications.** The chiller is combined with a temperature control unit to chill water.

Use Portable chillers for baking and food production applications, allowing you to maintain temperatures of approximately 2°C. This temperature provides a stable environment for controlled yeast growth during the dough mixing process.

10.How to Choose Right Bakery Chiller for Your Bakery Process?

How to calculate right cooling capacity for your Bakery chillers?

One of the most frequently ask about how we can know the cooling capacity for chillers.

The range of a chiller at which it can discharge heat from a heated fluid is called cooling capacity.

The cooling capacity of a laser Chiller ranges from 1/2KW to 100KW.

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 (°C) T2:Required Chilled Water Temperature(°C)

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

Temperature Differential = 25°C-15°C=10°C

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 Bakerychiller system?

There are two types of chiller :**Air Cooled Bakery Chiller** and **Water Cooled Bakery 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



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ambient temperature is very high above 55°C, we suggest you use water cooled chiller, as it is easier to dissipate heat for water cooled chiller with water cooling tower.

But Most customers use air cooled Bakery chiller, which is more easily install and save space.

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;

11. Get a Quote on Bakery Chillers Now

As a leading *industrial chiller manufacturer*, we engineer and produce high-quality process chillers compatible with a broad range of industrial processes.

Depending on your needs, we also offer *custom chillers* to ensure that each client receives the industrial chiller best suited to their unique process.

Request a quote now on our Bakery water chillers or learn about the other