

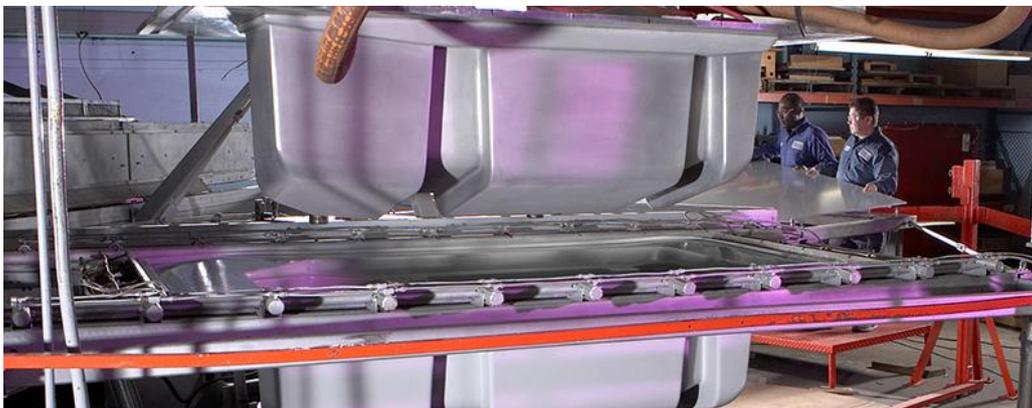
Thermoforming Chillers

Contents Table

- ▷ 1.What Is Thermoforming ?
- ▷ 2.What is A Thermoforming Chiller?
- ▷ 3.Why Need A Industrial Chiller Used In Thermoforming Process?
- ▷ 4.What's the Difference Between Air-cooled & Water-cooled Thermoforming Chillers?
- ▷ 5.What Are the Differences Between Thermoforming Scroll Chiller and Thermoforming Screw Chiller?
- ▷ 6.What Are The Main Components of Thermoforming Chillers?
 - 6.1 Compressor
 - 6.2 Evaporator
 - 6.3 Water Pump
 - 6.4 Condenser
 - 6.5 Controller Panel
- ▷7. What are the Key Features of A Thermoforming Chiller?
- ▷8.How to Choose Right ThermoformingChiller for Your Thermoforming Process?
- ▷9.Get a Quote on Industrial Thermoforming Chillers Now

1.What Is Thermoforming?

Plastic thermoforming is a manufacturing process in which a plastic sheet is heated to a pliable forming temperature, formed into a specific shape in a mold, and trimmed to produce a usable product. The process requires precise temperature control, especially during thin and thick plate plastic thermoforming, to improve process efficiency and product quality.



Thermoforming Process

2.What is A Thermoforming Chiller?

A thermoforming chiller is a specialized type of chiller machine designed specifically for use in thermoforming processes. It is a refrigeration system that provides controlled and precise cooling to the molds and equipment used in thermoforming operations.

Thermoforming chillers work by circulating coolant through the cold side of the process water system, removing excess heat from the mold and transferring the heat to the surrounding environment.

When it comes to cooling your thermoforming process, quality and reliability should be your top considerations when choosing the right thermoforming chiller.



Thermoforming Chiller

3.Why Need A Industrial Chiller Used In Thermoforming

Process?

A thermoforming chiller is an essential part in thermoforming process, which contributing to the production of high-quality, dimensionally accurate, and aesthetically pleasing plastic parts. It plays a crucial role in controlling the temperature during the cooling phase of the process, which ultimately impacts the final quality and performance of the thermoformed products.

Cooling the Mold: Similar to other forming processes, thermoforming involves heating the

material (in this case, thermoplastic sheet) to make it pliable and shapeable. Once the plastic sheet has been formed into the desired shape using a mold, it needs to cool and solidify quickly to maintain its shape. A thermoforming chiller provides the necessary cooling to achieve this.

Maintain accuracy and dimensional stability: Thermoformed parts often require precise dimensions and consistent quality. Proper cooling ensures that formed parts maintain their accurate shape and size, reducing the possibility of warping or deformation.

Reduce stress and improve material properties: Controlled and uniform cooling helps reduce thermal stress on formed parts. This is important to prevent defects such as cracks, warping, or surface imperfections. Furthermore, it helps achieve the desired material properties in the final product.

Enhanced surface finish: Rapid and controlled cooling helps achieve a smoother and more consistent surface finish on thermoformed parts. This is especially important for applications where appearance and aesthetics are critical.

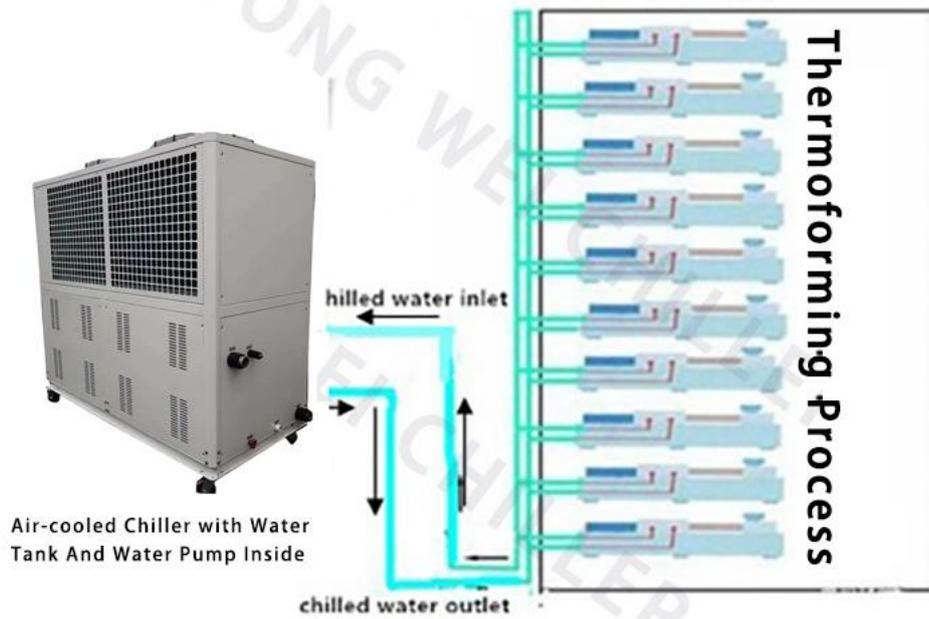
Prevent equipment wear and damage: Proper cooling helps extend the life of thermoforming molds and equipment. Rapid cooling reduces the potential for thermal stress on the mold, which can lead to premature wear and damage.

4.What's the Difference Between Air-cooled & Water-cooled Thermoforming Chillers?

There are two types of Injection Molding chiller: one is **air-cooled Thermoforming chiller**, the other is **water-cooled Thermoforming chiller**;

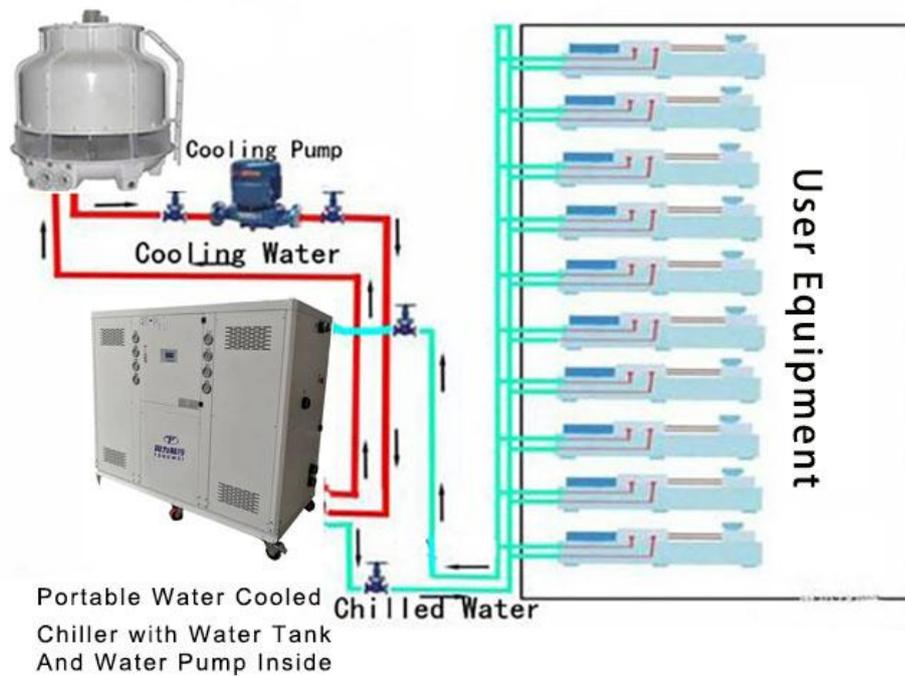
Air-cooled Thermoforming chillers use ambient air to dissipate heat from the brewing processes. They are energy-efficient, space-saving, and less maintenance that helps save money.

Water-cooled Thermoforming 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 Thermoforming chiller.



Air-Cooled Thermoforming Chiller installation

Cooling Tower



Water-Cooled Thermoforming Chiller installation

Should you choose an air-cooled or water-cooled Thermoforming chiller? [Contact Us](#) for help determining the best solution for you.

5.What Are the Differences Between Thermoforming Scroll Chiller and Thermoforming Screw Chiller?

Thermo forming Scroll Chiller

- 1/2HP-60HP
- Danfoss/Panasonic Scroll Compressor
- Built with water tank and water pump



Air-cooled Thermoforming Scroll Chiller



Water-cooled Thermoforming Scroll Chiller

Thermoforming Screw Chiller

- Above 60HP
- Hanbell/Bitzer Screw compressor
- Without water tank and water pump



Air-cooled Thermoforming Screw Chiller



Water-cooled Thermoforming Screw Chiller

6.What Are The Main Components of Thermoforming Chillers?

6.1 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) Thermoformingchiller , which is with **Panasonic** or **Danfoss brand Scroll compressor** ,

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



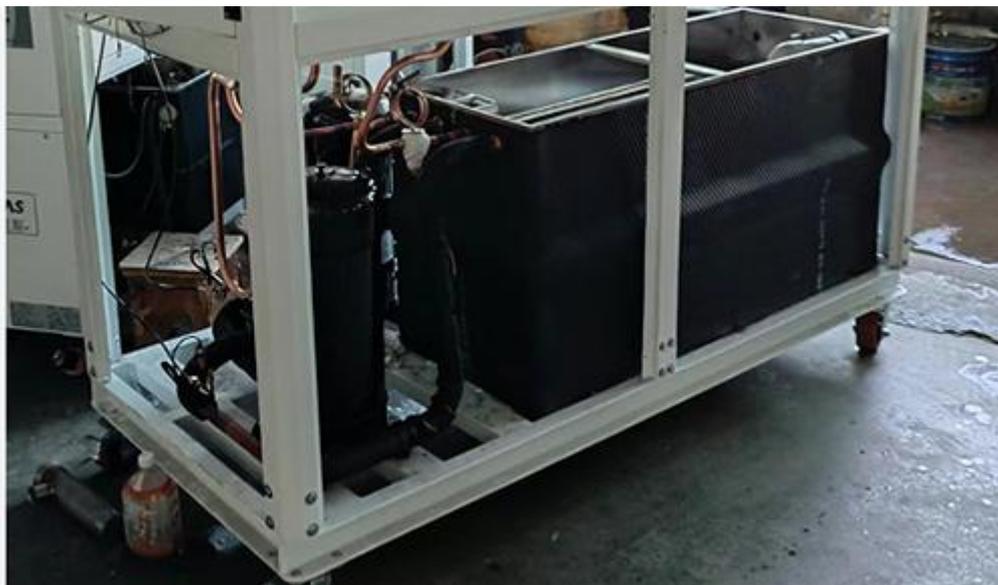
Panasonic Compressor

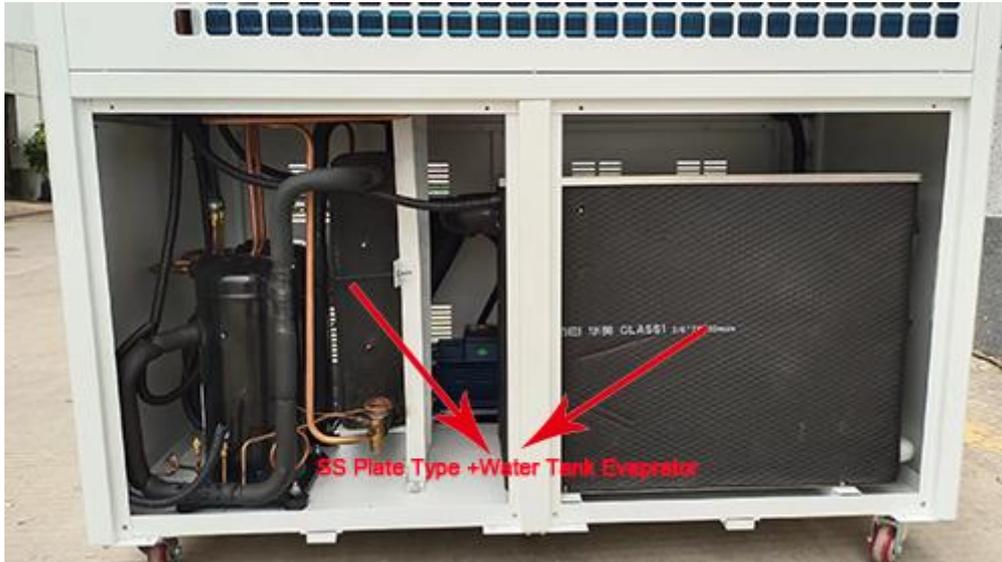


Danfoss Compressor

6.2 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**.





SS Plate Type+ Water Tank Evaporator

6.3 Water Pump

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



Water Pump

6.4 Condenser

The condenser for air-cooled Thermoforming 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 Thermoforming chiller

The condenser for water-cooled Thermoforming 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 Thermoforming chiller

6.5 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

7. What are the Key Features of A Thermoforming Chiller?

- Energy-efficient Panasonic/Danfoss/Hanbell/Bitzer compressor
- 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

8.How to Choose Right ThermoformingChiller for Your Thermoforming Process?

How to calculate right cooling capacity for your Thermoforming chillers?

Choosing the right size of an Thermoformingchiller is crucial for ensuring optimal performance and efficiency in your Thermoformingprocess. How to calculate the correct cooling capacity for your Thermoformingchiller,pls see below:

- ▷ pls tell us the production for your thermoforming machine;
- ▷ how many degree of outlet water temperature from the chiller you request ;

Types of Injection Moldingchiller system?

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

Water cooled chiller needs a separated water cooling tower and water cooling pump ,if you



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don't have existing water cooling tower, we suggest you use air cooled chiller; But if your 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 Injection Molding chiller, which is more easily installed and saves 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;

9. Get a Quote on Industrial Thermoforming 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 Injection Molding water chillers or learn about the other *air-cooled chillers* and *water-cooled chillers*.