

Extrusion Chiller

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1.What is Plastic Extrusion ?

Plastic extrusion is a manufacturing process that creates an object with a uniform cross-section by forcing melted plastic material through a shaped opening called a die. This process is ideal for manufacturing a wide range of plastic products, including pipes, tubes, sheets, and various profiles with complex cross-sectional designs.

Common applications of plastic extrusion include:

Pipes and Tubing: Pipes and tubes are the most common plastic extrusion products. The mold requirements are also the simplest, as the only thing you need is a simple cylindrical profile. PVC pipe is also very common in the industry, but you can find other alternatives as well. No matter what material you use, there's a good chance that pipes and tubes have been plastic extruded.

Profiles: Extrusion is used to make a variety of profiles for use in construction, automotive and other industries. This includes window and door frames, trim and complex architectural shapes.

Sheet and Film: Extruded plastic sheet and film are used in packaging, signage and other industries.

Filament: In 3D printing, plastic filament is usually produced using extrusion technology. plastic extrusion is a fundamental process in the plastics industry, playing a crucial role in the production of a wide range of everyday products.



Extrusion Machine

2.What Is An Extrusion Chiller?

Extrusion chillers are specialized cooling machine used to regulate and maintain precise temperatures during the extrusion process. Plastic extrusion includes manufacturing a continuous profile of products from raw plastic in high volumes.

In the case of plastic extrusion, the plastic material is melted and passed through a mold to form a specific shape. The extrusion chiller plays a vital role in this process, controlling the temperature of the plastic material and extrusion equipment. This ensures that the material is at the optimal temperature to form the desired shape and maintain product quality.

The main functions of extrusion chillers in plastic extrusion include:

Cooling Extruder: An extruder is a machine that melts and shapes plastic materials. The chiller unit helps dissipate the heat generated during this process, preventing overheating.

Cooling mold: The mold is responsible for the molding of plastic materials. Keeping it at a controlled temperature ensures consistent product quality.

Maintain consistent temperatures: Precise temperature control is critical to achieving uniformity in extruded product size and performance.

Prevent warpage and defects: Incorrect temperatures can cause extruded products to warp, deform, or have defects. A chiller can help prevent these problems.

Improved production efficiency: By maintaining stable temperatures, the extrusion process can run more efficiently and consistently, resulting in increased output.



Extrusion Chiller

3.Why to Use Industrial Chiller In Plastic Extrusion?

The plastic extrusion chiller provides chilled water to cool the barrel of each extruder to maintain the melt temperature of the base material and additives within a specific temperature range, thereby obtaining high-quality plastic products. Manufacturers often use a chiller for intensive cooling at the end of the extrusion process: depending on its shape and contour, cooling is crucial for the resulting extrudate. Additionally, these chiller machines are necessary for precise temperature control of plastic extrusion lines.

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

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

Air-cooled extrusion 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 extrusion 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 Extrusion chiller.



Air-Cooled Extrusion Chiller installation

Water Cooled Chiller Installation Drawing



Water-Cooled Extrusion Chiller installation

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

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

Extrusion Scroll Chiller

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

Extrusion Screw Chiller

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



Air-cooled Extrusion Scroll Chiller



Air-cooled Extrusion Screw Chiller



Water-cooled Extrusion Scroll Chiller



Water-cooled Extrusion Screw Chiller

6.What Are The Main Components of Extrusion 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(50Ton) Extrusion chiller , which is with **Panasonic** or **Danfoss brand Scroll compressor** ,

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



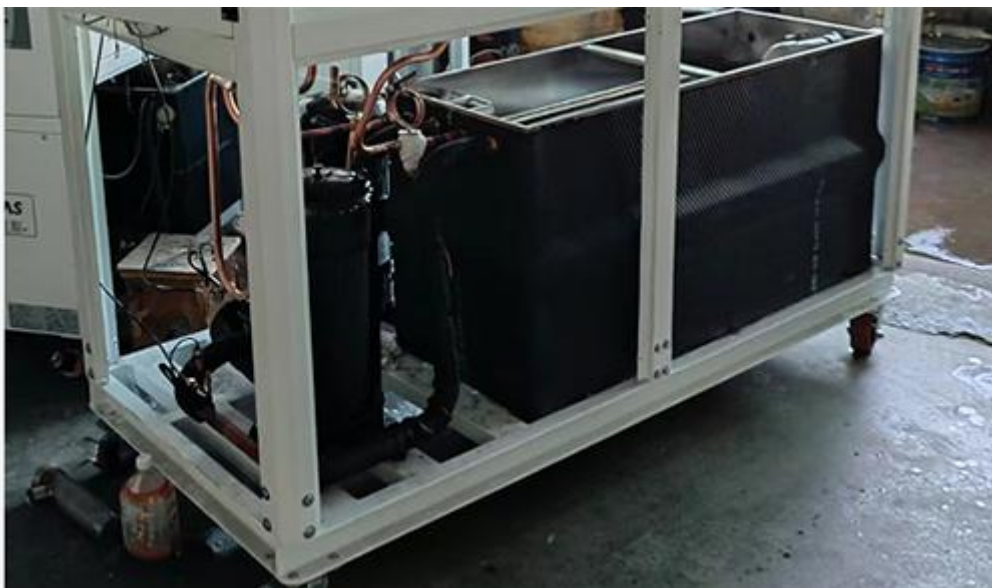
Panasonic Compressor

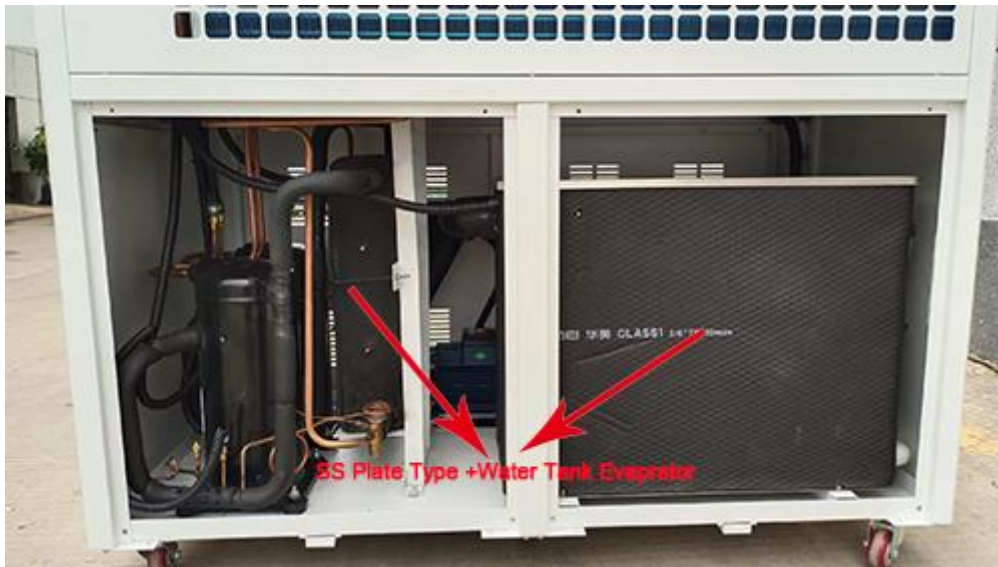


Danfoss Compressor

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.

Extrusion Chiller is used with 304 Stainless Steel Water pump.



Water Pump

6.4 Condenser

The condenser for air-cooled Extrusion 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 Extrusion chiller

The condenser for water-cooled Extrusion 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 Extrusion 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 Extrusion 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 Extrusion Chiller for Your Extrusion

Process?

How to calculate right cooling capacity for your Extrusion chillers?

- Tell us the weight (KG) of material per hour being processed.
- Tell us the material such as polyethylene or polypropylene or Polystyrene or PVC
- How many degree for inlet and outlet water temperature

Types of Extrusionchiller system?

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

Water cooled chiller needs a separated water cooling tower and water cooling pump ,if you don't have existing 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 Extrusionchiller ,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;

9.Get a Quote on Industrial Extrusion 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 Extrusionwater chillers or learn about the other *air-cooled chillers* and *water-cooled chillers*.