

Die Casting Chiller

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Die casting is one of the most reliable technologies used in many metal casting industries today. While this method is highly efficient, it is associated with generating a large amount of heat energy. Maintaining an optimal thermal environment within a die casting facility is critical if manufacturers hope to consistently produce high-quality finished parts.

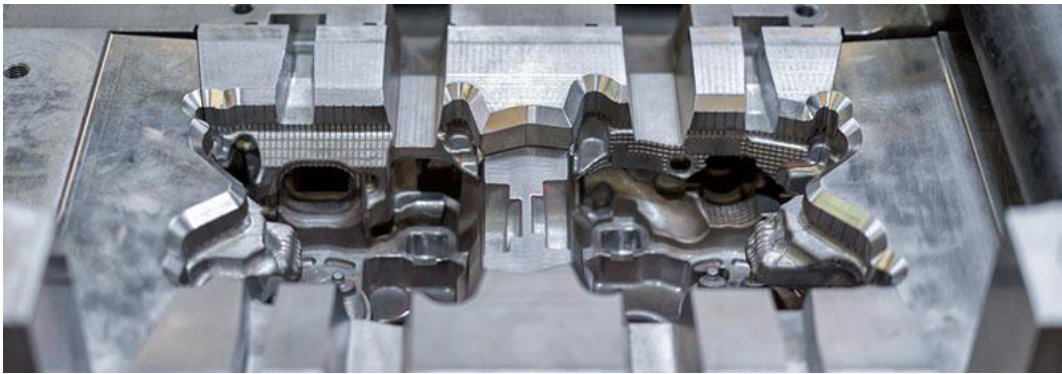
>Die casting process cooling products include oil and water heating/cooling systems, [industrial packaged chiller](#), [industrial portable chillers](#), [water cooling towers](#). Applications for our die casting chillers include die cast machine cooling, quench applications, melting furnaces and induction units.

1.What Is Die Casting?

Die casting is an industrial process that requires precise temperature control, which is a widely employed metalworking technique. This is a process in which molten metal is poured into a steel mold or die under high pressure. Commonly used metals in die casting include: zinc, copper, aluminum, magnesium, lead, tin and tin-based alloys. Depending on the type of metal being cast, either the hot chamber method or the cold chamber method may be used. The die casting process steps are relatively straightforward, but allow for a high degree of accuracy and replication.

Benefits of Die Casting

- Die casting offers a variety of advantages, including the following overview:
- Die cast metal parts are produced to predetermined specifications with a high degree of consistency and accuracy
- Reduced need for post-casting machining
- Create complex castings with exquisitely intricate interior and exterior details
- High levels of dimensional tolerances can be achieved
- Fast production cycle will improve overall efficiency
- Economical process limits the amount of scrap metal produced
- Die casting allows for longer tool life, especially when used in zinc and magnesium casting operations.



Die Casting Process

2.What is Die Casting Chiller?

Die Casting chillers are uniquely designed cooling machines that effectively remove heat from die casting processing systems, which used to preheat and keep the dies at a temperature set point by circulating heat transfer fluid (water or oil) through the die.



Die Casting Chiller

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

Die Casting Chillers?

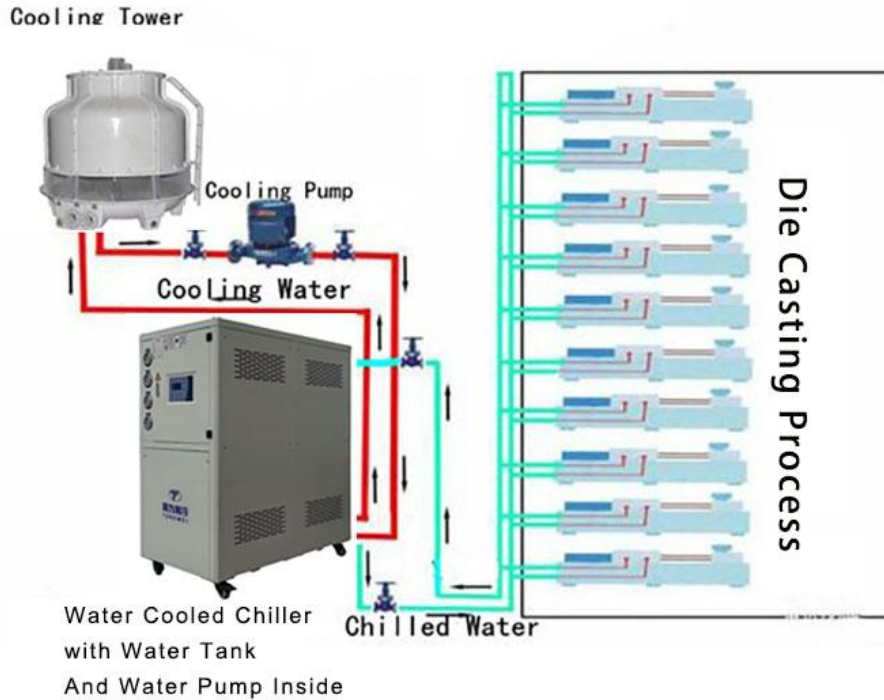
There are two types of Die Castingchiller: one is **air-cooled Die Casting chiller** ,the other is **water-cooled Die Casting chiller** ;

Air-cooled Die Casting 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 Die Casting 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 Die Casting chiller.



Air-Cooled Die Casting Chiller installation



Water-Cooled Die Casting Chiller installation

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

4.What Are the Differences Between Die Casting Scroll Chiller and Die Casting Screw Chiller?

Die Casting Scroll Chiller

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

Die Casting Screw Chiller

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



Air-cooled Die Casting Scroll Chiller



Air-cooled Die Casting Screw Chiller



Water-cooled Die Casting Scroll Chiller



Water-cooled Die Casting Screw Chiller

5.What Are The Main Components of Die Casting Chillers?

5.1 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) Die Casting chiller , which is with **Panasonic** or **Danfoss brand Scroll compressor** ,

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



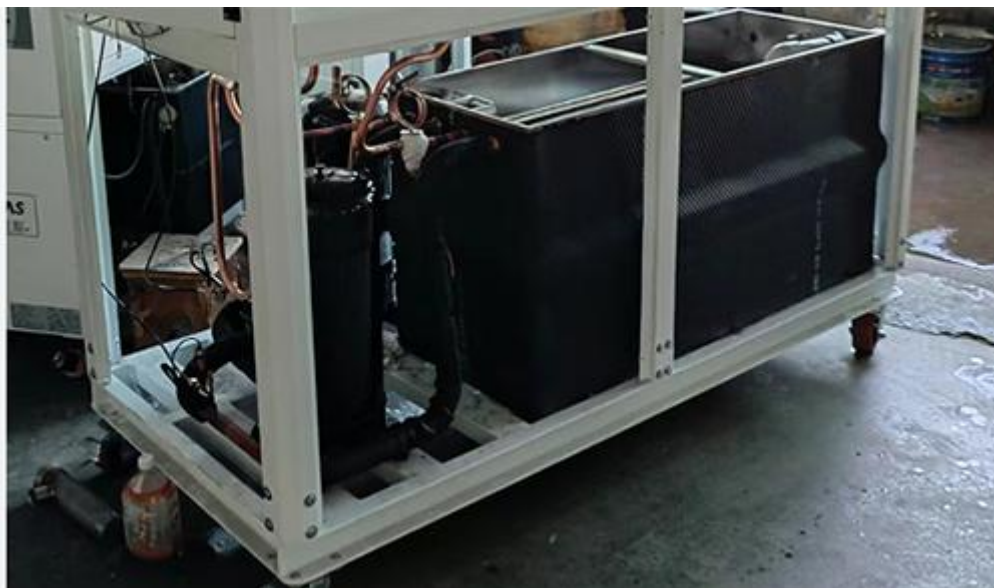
Panasonic Compressor

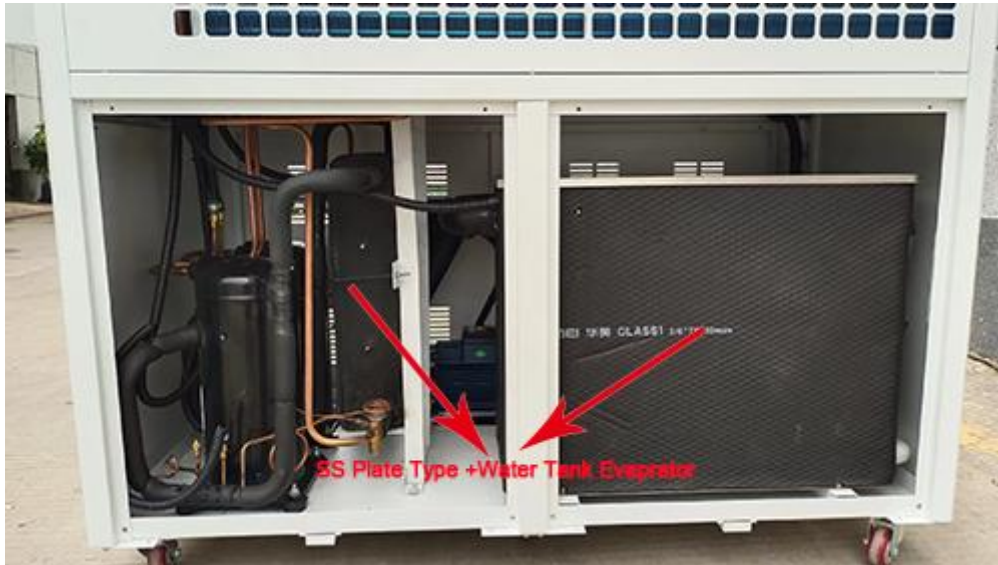


Danfoss Compressor

5.2 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

5.3 Water Pump

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

Die Casting Chiller is used with 304 Stainless Steel Water pump.



Water Pump

5.4 Condenser

The condenser for air-cooled Die Casting 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 Die Casting chiller

The condenser for water-cooled Die Casting 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 Die Casting chiller

5.5 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

6. What are the Key Features of a Die Casting Chiller?

- Energy-efficient Panasonic/Danfoss/Hanbell/Bitzer 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

7.How to Choose Right Die Casting Chiller for Your Die Casting Process?

How to calculate right cooling capacity for your Die Casting 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 Die Castingchiller system?

There are two types of chiller :**Air Cooled Die Casting Chiller** and **Water Cooled Die Casting 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°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 Die Castingchiller ,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.



Guangdong Tongwei Machinery Co.,Ltd. www.refrigerationchillers.com

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.Get a Quote on Industrial Die Casting 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 Die Casting water chillers or learn about the other *air-cooled chillers* and *water-cooled chillers*.