PET Chiller

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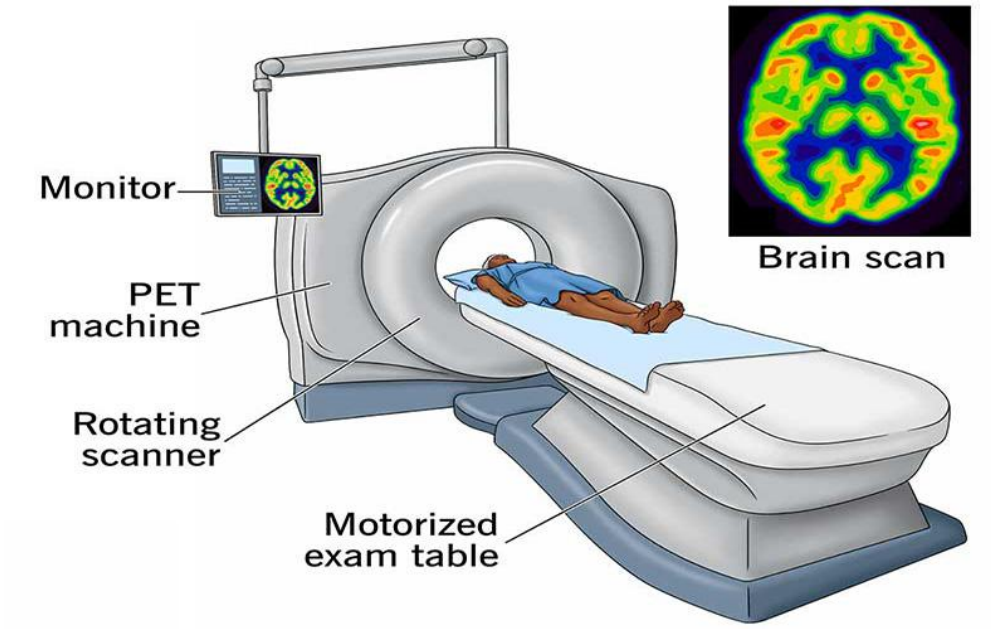
1.What is PET ?

PET is the abbreviation for positron emission tomography,which is a test that uses a special type of camera and a tracer (chemical substance) to look at the body's organs.

During the test, the tracer is drawn into a vein (injection or IV) in the arm. This tracer travels beyond your body, where most of it collects in specific organs or tissues. The tracer releases tiny positively charged devices (positrons). The camera records the positrons and converts the recording into a picture on the computer.

PET scan images do not show as much detail as computed tomography (CT) or magnetic resonance imaging (PET) because the image only shows the location of the tracer. PET images can be matched to images from CT scans, correlating the location of tracers. More detailed information on agent locations.

PET scans are often used to find cancer, check blood flow, or see how well organs are working.



PET Scan

2.What is A PET Chiller?

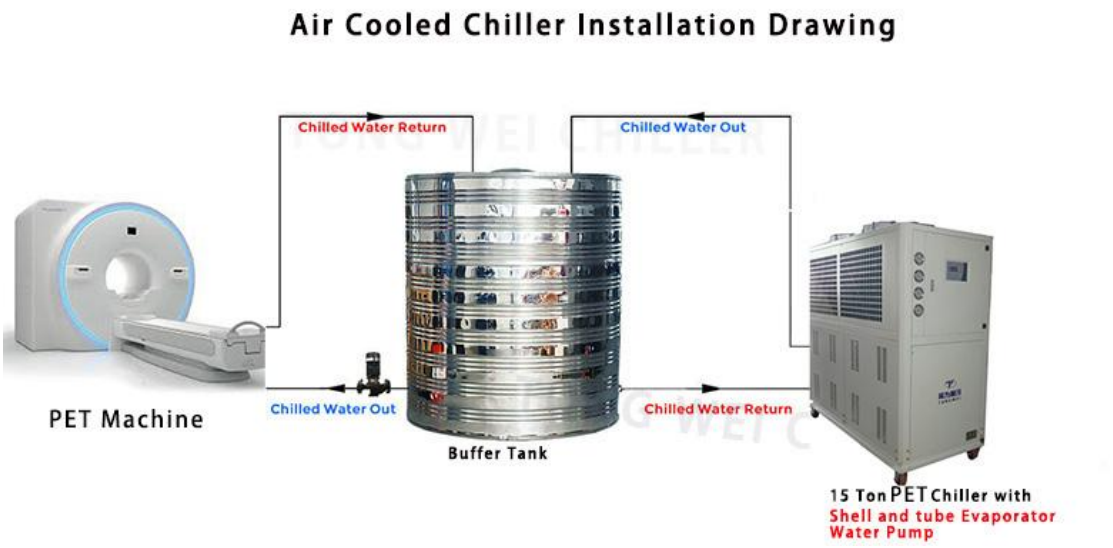
An PET chiller is a medical device used to keep PET machines cool. PET scanners generate a ton of heat when they’re in operation.A chiller circulates water through coils inside the PET machine to maintain a constant temperature. Without a PET chiller, the PET machine will heat up and possibly be damaged,which leads to a delay in patient care. That’s why it’s essential to not only have a chiller for your PET scan machine, but to have a chiller that’s dependable and delivers consistent performance.

15 Ton Air Cooled PET Chiller

3.How Does A PET Chiller Work?

A PET machine chiller works by circulating refrigerant around a series of coils. As the refrigerant circulates, it absorbs heat from the PET scanner. This process helps keep the scanner cool and prevents it from overheating. The cold refrigerant then passes through the condenser, which turns it back into a liquid. The liquid refrigerant then circulates back to the PET scanner, starting the process all over again.

Installation I



Installation II

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

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

Air-cooled PET 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 PET 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 PET chiller.

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

5.What is the Difference Between PET Scroll Chiller and PRT Screw Chiller?

PET Scroll Chiller	**PET 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 PET Scroll Chiller

Air-cooled PET Screw Chiller

Water-cooled PET Scroll Chiller

Water-cooled PET Screw Chiller

6.What Are The Main Components of PET Chillers?

6.1 Compressor

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

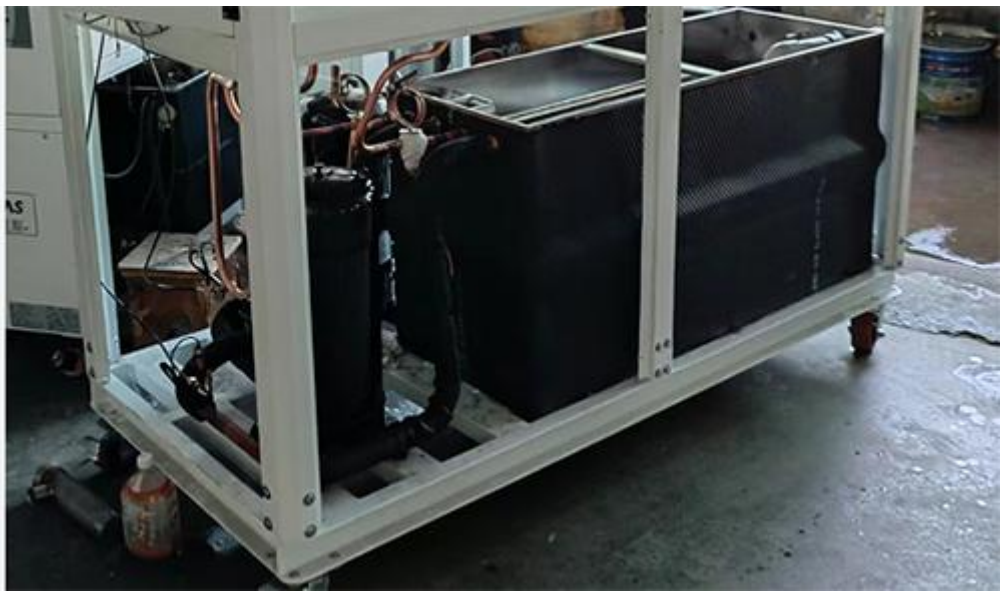
From 1/2HP(1/2 Ton) to 60HP(5oTon) waterjet cutting chiller , which is with **Panasonic** or **Danfoss brand Scroll compressor** ,

Panasonic Compressor

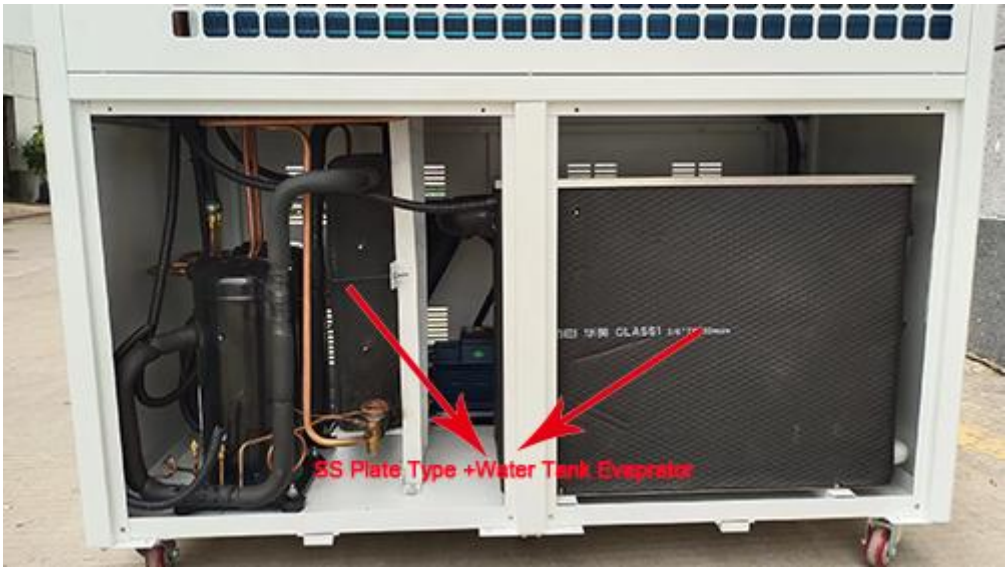
Danfoss Compressor

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.**



Coil in SS Water Tank Evaporator

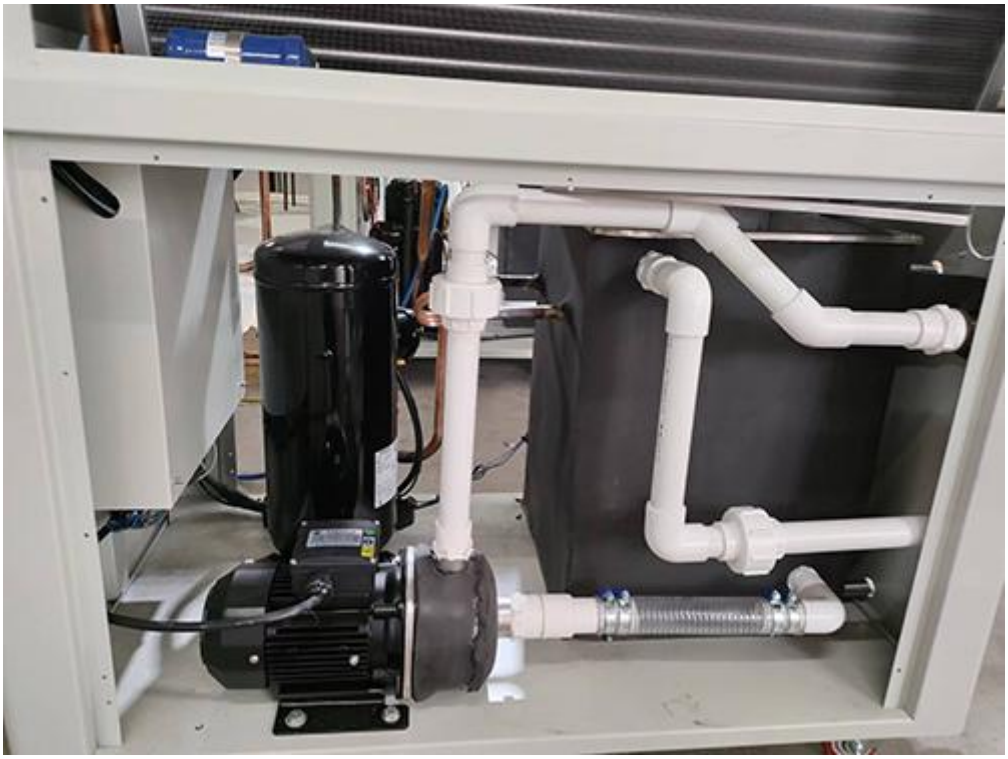


SS Plate Type+ Water Tank Evaporator

6.3 Water Pump

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

PET Chiller is used with 304 Stainless Steel Water pump.



6.4 Condenser

The condenser for air-cooled PET 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 PET chiller

The condenser for water-cooled PET 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 PET 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 PET Chiller?

- Energy-efficient Panasonic/Danfoss compressor
- 304 Stainless steel water pump
- Chilled 0utlet water temperature control 7℃ to 25℃
- 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 as evaporator

8.How to Choose Right PET Chiller for Your PET Process?

How to calculate right cooling capacity for your PET 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 (℃) 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 PET chiller system?
There are two types of chiller :**Air Cooled PET Chiller** and **Water Cooled** PET **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.
But Most customers use air cooled PET 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;

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