



Closed Circuit Cooling Tower

Thermal Performance Absolutely Guaranteed



High efficiency



Less drift loss



Low energy consumption



Low noise



Less maintenance



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Innovation-oriented Quality-Establishment Mutual Benefit and Mutual Sharing

Qualification and Certification

- GB/T 7190.3 Drafting Unit of National Standards for Closed Circuit Cooling Towers
- GB/T19001–2008 idt ISO9001:2008 Quality Management System Certification
- GB/T24001–2004 idt ISO14001:2004 Environmental Management System Certification
- GB/T28001–2011 idt OHSAS18001: 2007 Occupational Health Safety Management System Certification
- GB/T 27922–2011 Product After–Sales Service Evaluation System Certification
- CTI Certification (American Cooling Technology Institute)
- National Hi–Tech Enterprise



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Closed circuit cooling tower is suitable for the cooling system with high requirements for circulating water quality, which is widely used in electric motor, petrochemical, iron and steel, photovoltaic, automobile, food, electronic and other industries, matching with commercial water-cooled air-conditioning, air compressor, coating equipment, induction furnace, injection molding machine and other equipment.

Advantages

- Improve production efficiency, softened water circulation, no scaling, no blockage, and no loss.
- Prolong the service life of equipment , secure equipment reliable and stable operation, reduce failure, and prevent accidents.
- Full closed circuit, no impurity enters, no medium evaporation, no pollution.
- Improve the plant's utilization coefficient, no pool, reduce floor area, save space.
- Small space, convenient to install, move and arrange, compact structure.
- Convenient operation, stable operation, high degree of automation.
- Operation cost savings.
- A wide range of uses, medium of no corrosion to the heat exchanger, direct cooling.
- The maintenance and operation cost for the cooling tower are low.

Model Description

• Model : YCH-1501FS

①		②	③	④	⑤
YCH	—	1501	F	S	Blank

- ① : Product Line: refer to YCH cross-flow closed circuit.
- ② : Fan Module: refer to the module of the fan.
- ③ : Filling code: F means with the filling.
- ④ : Motor code: refer to the motor model size.
- ⑤ : No suffix: the coil is made of 304 stainless steel tube, the collecting basin, the casing, the fan stack and structure parts are of hot-dip galvanized steel;
 - SS: the coil is made of 304 stainless steel tube, the collecting basin, the casing, the fan stack and structure parts are of 304 stainless steel;
 - SF: the coil is made of 304 stainless steel tube, the collecting basin, the casing, the fan stack are made of FRP, and structure parts are of hot-dip galvanized steel;
 - CZ: the coil is made of copper tube, the collecting basin, the casing, the fan stack and structure parts are of hot-dip galvanized steel;
 - CS: the coil is made of copper tube, the collecting basin, the casing, the fan stack and structure parts are of 304 stainless steel;
 - CF: the coil is made of copper tube, the collecting basin, the casing, the fan stack are made of FRP, and structure parts are of hot-dip galvanized steel.

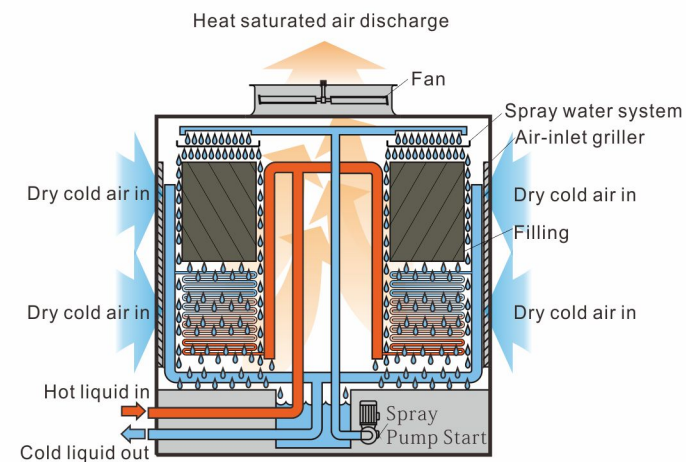
• Model : YCN-1801FM

①		②	③	④	⑤
YCN	—	1801	F	M	Blank

- ① : Product Line: refer to YCN counter-flow closed circuit.
- ② : Fan Module: refer to the module of the fan.
- ③ : Filling code: F means with the filling.
- ④ : Motor code: refer to the motor model size.
- ⑤ : No suffix: the coil is made of 304 stainless steel tube, the collecting basin, the casing, the fan stack and structure parts are of hot-dip galvanized steel;
 - SS: the coil is made of 304 stainless steel tube, the collecting basin, the casing, the fan stack and structure parts are of 304 stainless steel;
 - SF: the coil is made of 304 stainless steel tube, the collecting basin, the casing, the fan stack are made of FRP, and structure parts are of hot-dip galvanized steel;
 - CZ: the coil is made of copper tube, the collecting basin, the casing, the fan stack and structure parts are of hot-dip galvanized steel;
 - CS: the coil is made of copper tube, the collecting basin, the casing, the fan stack and structure parts are of 304 stainless steel;
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Schematic Diagram

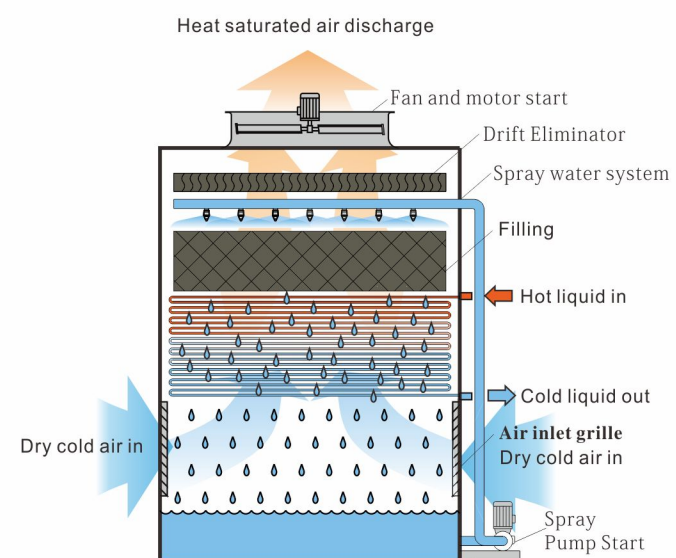
YCH-F CROSS-FLOW CLOSED CIRCUIT COOLING TOWER



Principle:

The water in the water basin is transported to the water distribution basin through the spray pump, and then to the fillings through the water distribution nozzle, and then flows into the middle water collection basin after being cooled by evaporation. The water is sprayed to the heat exchange coil after the second spraying by the water distribution nozzle, and forms a uniform water film on the outer surface of the tube wall. The outdoor dry and cold air enters the tower through the air inlet on the outside of the tower. The contact heat transfer and a part of the spray water evaporate and radiate heat to absorb the heat in the coil. The saturated hot and humid air after absorbing the heat is discharged into the atmosphere by the fan at the top of the cooling tower, and the remaining spray water flows into the water collecting basin at the lower part of the tower, sent by the spray pump to the spray system.

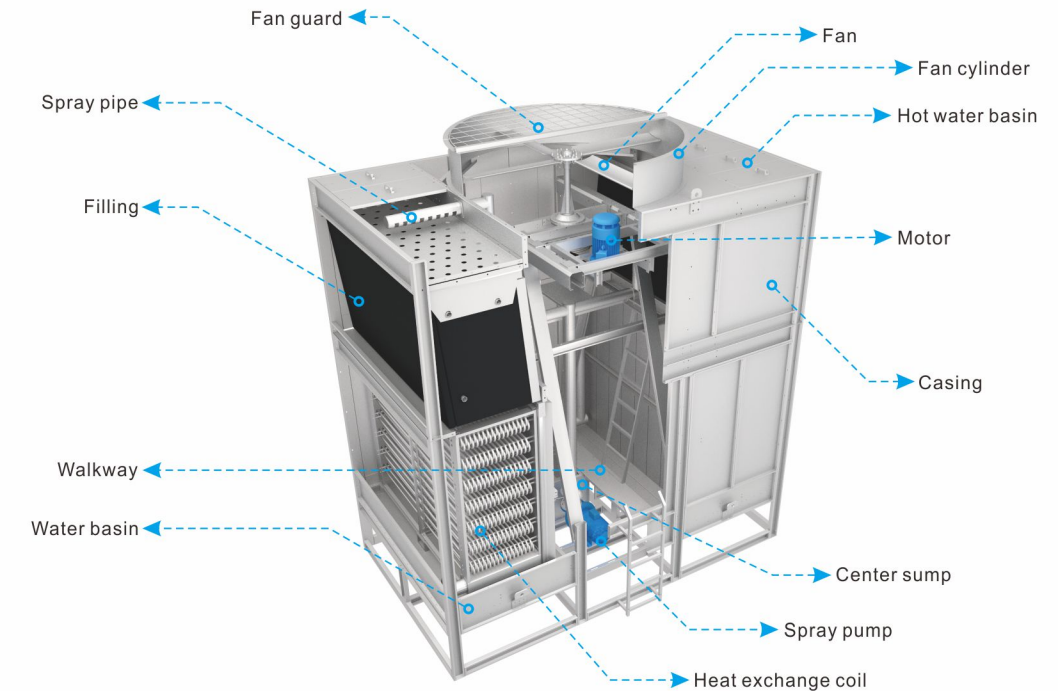
YCN-F COUNTER-FLOW CLOSED CIRCUIT COOLING TOWER



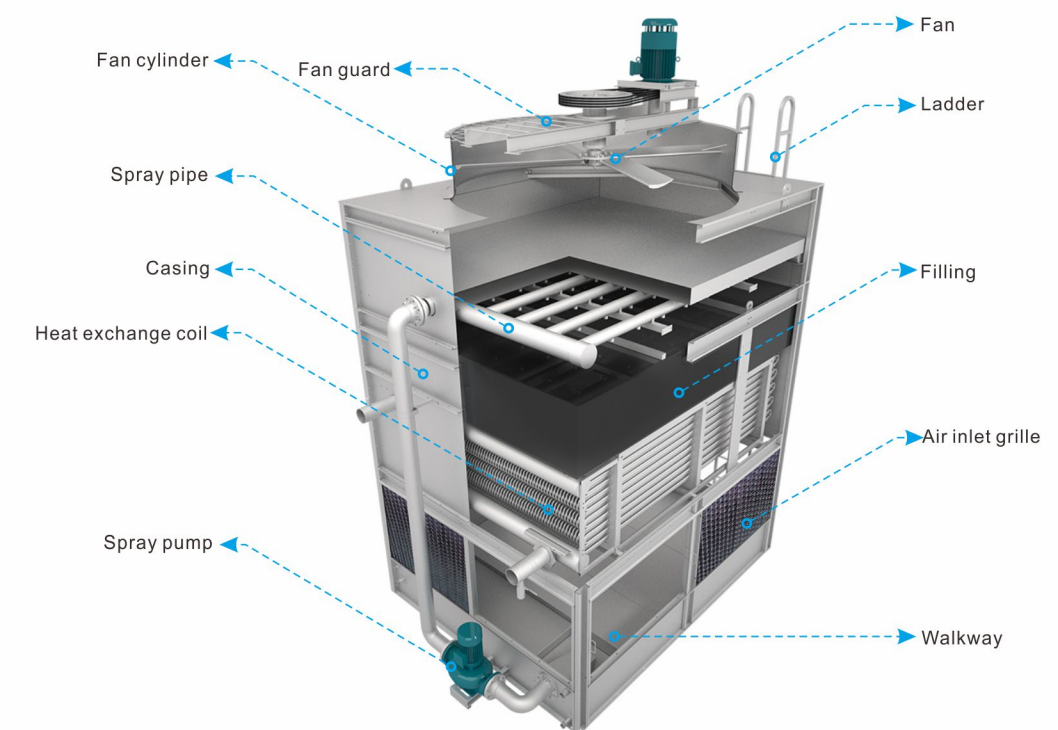
Principle:

The water in the water basin is transported to the water collecting pipe through the spray pump, and then to the heat exchange coil through the water distribution nozzle. A uniform water film is formed on the outer surface of the pipe wall. The outdoor dry and cold air enters the tower through the air inlet on the outside of the tower. The contact heat transfer and a part of the spray water evaporate and radiate heat to absorb the heat in the coil. The saturated hot and humid air after absorbing the heat is discharged into the atmosphere by the fan at the top of the cooling tower, and the remaining spray water flows into the water collecting basin at the lower part of the tower, sent by the spray pump to the spray system.

Structure Diagram



CROSS-FLOW CLOSED CIRCUIT COOLING TOWER



COUNTER-FLOW CLOSED CIRCUIT COOLING TOWER

Components



Heat-exchange coil pipes

Standard configuration is SUS304 material, Cu coil is optional. With high cost performance, strong anti-corrosion ability, long service life and no leaking after 1.0MPa air pressure test with the assembled coil, and it can also be selected according to customer requirements either titanium tube or SUS316 coil.



Hot-dip galvanized steel

Steel structure design can meet the requirements of wind withstand and seismic impact, Use galvanized steel for standard, SUS304 and SUS316 stainless steel structures are available when there are special requirements for corrosion protection.



Spray Pump

Yuanheng closed cooling tower with spray water pumps are customized according to the characteristics of the cooling tower products, spray pump with large flow and low lift advantages, equipped with the international brand of the motor and bearings.



High efficiency drift eliminator

Drift eliminator is made of PVC materials. Saturated moist air condenses into water drop when across the drift eliminator, and falls to the bottom basin, This effectively reduces the water drift and saves water resources.



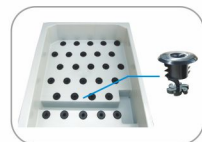
Low noise fan(Patent number ZL.200620052517.6)

Patented streamlined airfoil fan, aluminum alloy material, light weight, high strength, large air volume, low speed operation, low energy consumption, low noise, long service life. The angle can be adjusted according to operating load at will, maximize the use of motor rated output power and achieve the best operating condition.



Motor

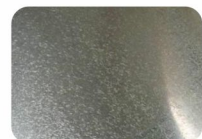
Special totally-enclosed air-cooled motor, protection class IP55, insulation class F, suitable for 380V/3P/50HZ power supply, can also provide motors with other power supply. Two-speed or variable frequency motors can be equipped according to users' requirements.



Water distribution system

Even water distribution to ensure cooling efficiency(patent number ZL 200620052518.0)

The use of unique overflow device and the changes of the nozzle diameter and quantity, so that the cooling water can achieve a smooth and uniform water distribution under different loads of the system (the cooling water flow will change), to meet the goal of the system energy saving. The device completely eliminates the splash loss of spray water.

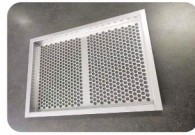


Z700 galvanized steel sheet

High corrosion resistance, long service life; After long term exposure test in all regions of world, the results confirm that at the same thickness, the service life of Z700 galvanized steel is 3-6 times of hot dip galvanized steel, the humidity tolerance is improved by more than 3 times, the heat reflection is 4 times, which can effectively reduce the casing absorbing heat from the environment, prevent the tower body from temperature increase. The overall structure is beautiful, the material can be recycled, which is environment friendly.

Components

Filter



The inlet of spraying water pump can be installed with filter screen, which can effectively prevent the dust into the pump. The filter screen is easy to disassemble and clean.

Filling



The water filling is made of polyvinyl chloride (PVC) with self-extinguishing properties. It has an ultra-high fire resistance rating that meets or exceeds the "CTI STD-136" standard. Ultraviolet-resistant, highly weather-resistant. Hardly affected by the chemical degradation of acid, alkali, fat, fatty oil and biological growth (such as algae breeding).

Electrical heater (Optional)



Electric heater is immersed in the basin. Because of the lower water level protection device, heating can't be started without water. When the ambient temperature reaches at -10°C, the temperature of water in the basin can still remain over 7°C. There is a relay switch in control cabinet.

PVC Air inlet grille



The air inlet grille used by Yuanheng cooling tower is made of corrosion-resistant PVC. Its dual channel design can prevent the water splashing, stop the algal breeding in the splash unit, and reduce water treatment requirements and maintenance costs. The air inlet grille has the characteristic of small air resistance, small pressure drop can reduce the energy consumption of fan, reducing the operating cost of the equipment.

Maintenance walkway



The tower is equipped with a wide non-slip inspection walkway and a movable maintenance platform to facilitate maintenance and inspection. The fan protection cover is densely distributed, the size of the inspection door is large, and the width and length of the working platform are reasonably designed, which effectively guarantees the safety and convenience of maintenance personnel's inspection work. Product mechanical parts adopt protective equipment such as motor cover, belt cover, etc. to achieve the protective effect on mechanical parts and prolong the service life.

Intelligent control cabinet(Optional)



Electric control design makes automatic control, protection, display, alarm function of the closed circuit cooling tower integrate with central control system, and provides the appropriate standard control interface and necessary technical support. Swiss ABB inverter or other well-known brand inverter, intelligent controller, and pressure sensor are available to make close cycle control system with fan and pump. Digital display of water temperature makes simple operation. Automatically adjust speed of water pump and fan, and running numbers, so that the system can use minimum energy and achieve maximum efficiency.

Factory package



Yuanheng closed circuit tower usually adopts modular design, and the modules are spliced on site, which greatly shortens the installation time. And the quality is guaranteed.



Notes to Engineering Design

Air Environment

There must be plenty of fresh air supply in the air inlet. If the location is close to the wall or in a confined space, corresponding measures must be adopted to ensure that the high temperature and saturated air cannot divert directly into the air inlet. The distance between the cooling tower and the wall is larger than 3 meters, the distance from the fan is 3 meters. For details on the layout of Yuanheng cooling tower, please call our company and a professional engineer will design it for you.



Coil freeze protection

When the environment temperature is below freezing point, even if the circulating water pump and the fan don't run, there is also heat loss from industrial fluid cooling equipment. When circulation fluid without heat loads, even under full flow, coil will be icing. In order to avoid the possible icing problem, if the system allows, the best protection measures are to use antifreeze solution. For the proportion of antifreeze added to the closed tower during winter operation, please consult our after-sales personnel. The coil of our product is designed in an inclined manner, and the water in the coil can be drained by opening the drain valve to avoid freezing in the coil.

Basin freeze protection

When the environment temperature is below the freezing point and cooling tower is designed to shut down, measures should be adopted to anti-freeze the water in the basin. Further protection against icing should be provided, either by drawing off the water in the basin or by electric immersion heater, steam heating coils or hot water coils to provide auxiliary heating to the water in the distribution basin. All the non-draining exposed pipes and make-up pipes should be combined with electric heating to preserve heat during the shutdown.

Noise

All Yuanheng closed circuit cooling towers provide acoustic rating data that can be used to calculate the sound pressure level of the cooling tower. In making such calculations, the designer must consider the distance between the cooling tower and the voice sensitive area and Orientation.

Transport and lifting

- A. The company suggests lifting if the situation allows. If lifting, attention should be paid to avoiding great pressure to the tower body when the lifting slings and the metal sheets contact, obliterating the paint on the sheet metal paint. If necessary, strut supports should be adopted when lifting.
- B. No matter what type of transport shall be carefully handled, not swing, no excessive collision, so as not to damage the equipment, and endanger the safety.

Maintenance

- A. For air cooled closed cooling tower, please keep the cooling coil (cooler) surface clean and ensure that the ambient air circulating smoothly. Regularly clean the dust, grease and other debris on the heat exchanger and the filters, so as not to affect the airflow and heat dissipation.
- B. If closed circuit cooling tower is out of service for a period of time, due to water dirt deposition, pump blades may be polluted by sediments and blocked, and when start up, it must be to turn loose the pump rotors first, to avoid the blades blocking and lead to fuse burning.
- C. If the closed cooling tower is used in the environment of large dust, the outer wall of the exchanger pipe may be scaling after a period of use, scaling shall reduce the cooling capacity. So it's recommended descaling periodically.



Piping

The cooling tower pipeline design and installation should accord with the general engineering practical experience. In the multiple-cells assembly, the pipeline layout should be symmetric; the flow is designed considering low velocity and low pressure drop. The closed cooling system should be provided with a constant pressure device (such as: expansion water tank, etc.) to constant pressure in the cooling water system and can be used as an air exhaust facility. All the connecting pipe should be with properly designed hangers and supports, avoided any load on connection, and the pipeline can't be fixed in the tower frame either.

Fluid compatibility

The cooling fluid should be compatible with the coil material. Non-compatible fluid may cause corrosion and damage to coils. Certain fluid may require irregular pressure washing or mechanical cleaning to inside of the coils. In this case, the coils provided must be specially designed when ordering.

Water treatment

The cooling tower must control all potential pollutants and must adopt relevant water treatment methods. In general, simple discharge devices are sufficient to control fouling and corrosion. The use of biocides can control biological pollutants, such as algae, Legionella, etc. The biocide treatment should start when the system is started, and continue to be used regularly thereafter. Water treatment of cooling towers must take into account the corrosion of various materials used in closed cooling towers. The ideal pH of the circulating water should fall to between 6.5 and 9.0. It is easy to cause partial damage to the closed circuit cooling tower by directly pouring a batch of chemicals into the closed cooling tower.

What is CTI certification and international credibility

CTI association and CTI certification

CTI certification-The American Cooling Technology Institute established the CTI certification for cooling towers, based on the standards: the production line thermal performance certification standard is STD-201, the cooling tower thermal performance test standard ATC-105.



(Cooling Technology Institute)



CTI engineers test on Yuanheng cooling tower full performance test platform

CTI certification process

- CTI performs thermal calculations on the technical data of all models provided by the applying company, and all of them must meet the requirements.
- Select any model among them, and an independent, professional testing agency appointed by CTI will send a certified test engineer to perform a thermal performance field test (according to ATC-105, the testing instrument is provided by CTI).
- After passing the test, CTI issued CTI certification for all models of this series of cooling towers, and published relevant information on the CTI website. (www.coolingtechnology.org)

Companies that have obtained CTI certificates are also subject to the following supervision

- Annual retest, field test of any other model in this series.
- All technical data and certified series and models are announced on the CTI website, and the CTI website links to the reporting enterprise website and the CTI website. The website of the application company, the sales information of the application company, and the on-site inspection data of the CTI certified test engineer must be consistent.
- CTI will send information about certified companies to all other CTI certified companies for their supervision.

Through the above methods, CTI has ensured that the thermal performance of all models in the CTI-certified product series can reach the same as claimed by the enterprise. CTI has gained unanimous recognition and trust from the world's cooling tower industry and customers, and has become a third-party thermal performance testing and certification institution with international credibility. Obtaining CTI certification has become the highest honor in the cooling tower industry. The products of the world-class cooling tower brands have been CTI certified. The bidding for cooling towers for important global projects will obtain CTI certification as a necessary condition for participating in the bidding.

Why do you need CTI certification?

User

Users do not need to choose larger cooling towers than needed, saving unnecessary investment. For cooling towers that have not obtained CTI certification, designers often enlarge the design selection by a margin of 15-20%. Users also agree to enlarge the selection based on safety considerations.

Designer

The designer can directly select the cooling tower model based on the theoretical calculation results, without the need for additional enlargement, and without worrying about the insufficient cooling capacity of the cooling tower.

General contracting company

Avoid disputes caused by insufficient cooling tower cooling capacity.

Dealer

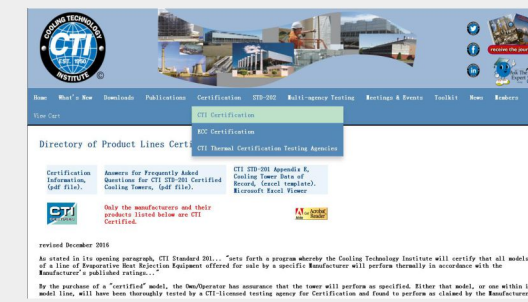
The thermal performance of the cooling towers you sell is absolutely guaranteed, it is easier for you to get approval from your customers, and to avoid disputes caused by insufficient cooling tower cooling capacity.

Information consistency-open and transparent

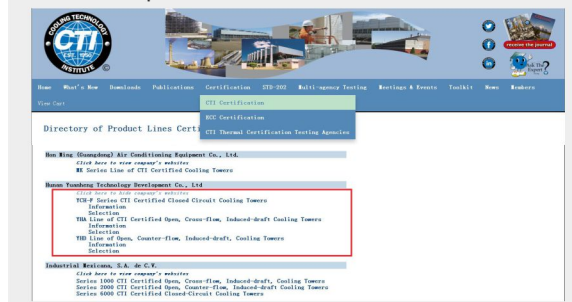
How to check whether the product you purchased is CTI certified

(Take YCH-F series as an example)

Step 1 Enter www.cti.org to enter the website, click Certification / CTI Certification.



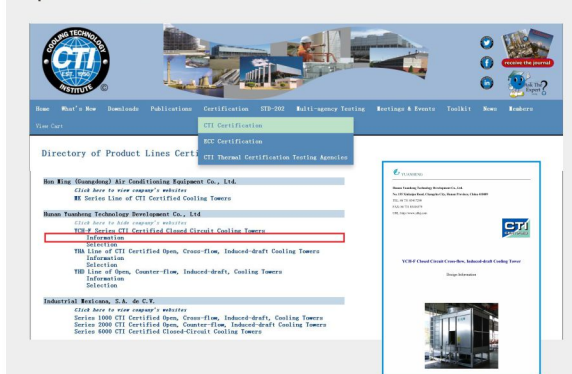
Step 2 Enter the following window, click the red area to expand the relevant content.



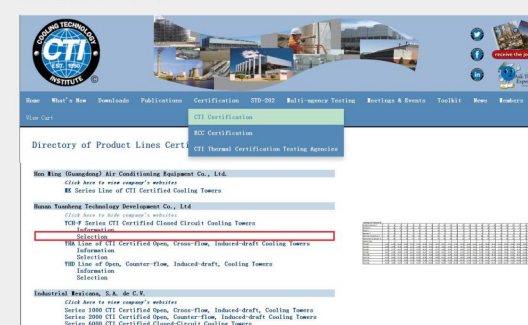
Step 3 Click YCH-F Series CTI Certified view product certificate.



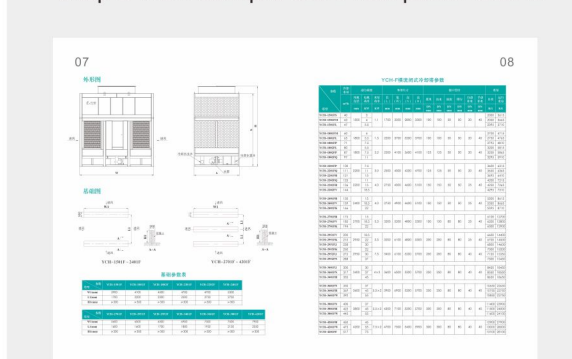
Step 4 Click information to view product parameters.



Step 5 Click Selection to view the product selection table.



Step 6 View sample technical parameters.



Through the above steps, if you check the information from the CTI website, company website, product samples, CTI certification certificate: product model, cooling water flow, fan diameter, motor power, and external dimensions can be consistent, then the product you choose does get CTI certification.