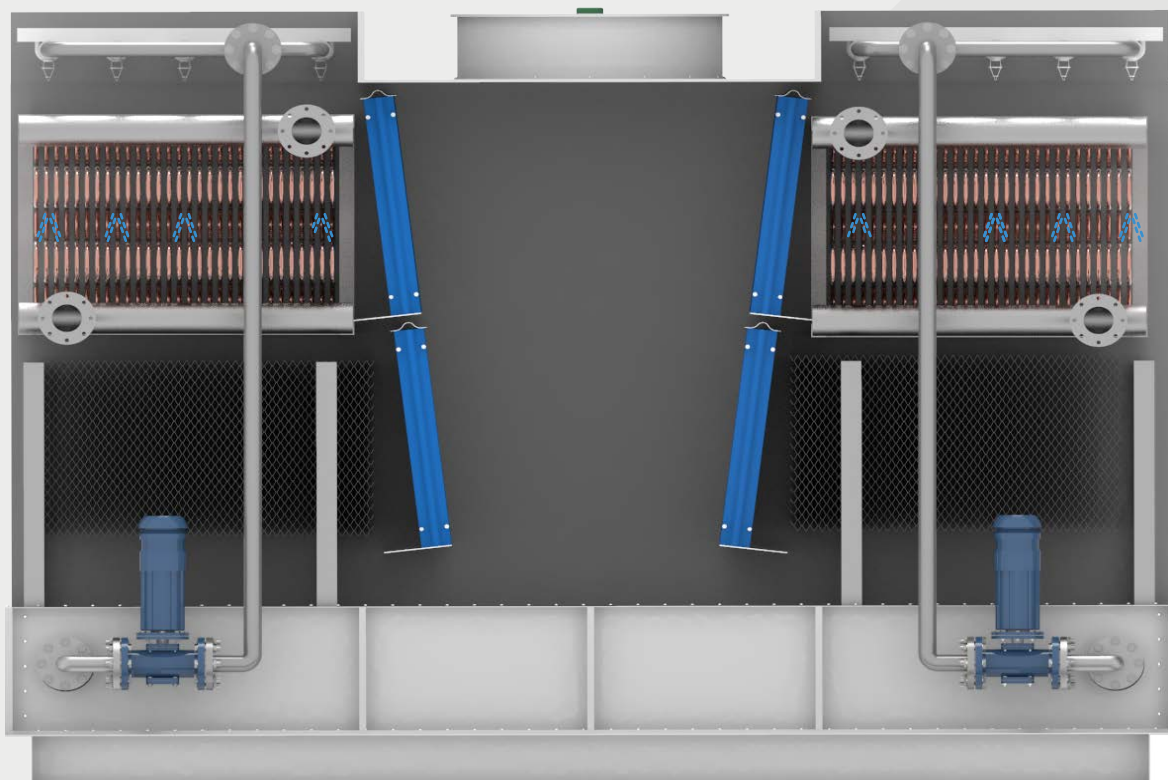




FEIYU Cooling

# COOLING TOWERS

- Closed Circuit Cooling Towers
- Open Circuit Cooling Towers
- Hybrid Wet Dry Cooling Towers
- Air Cooled Heat Exchangers



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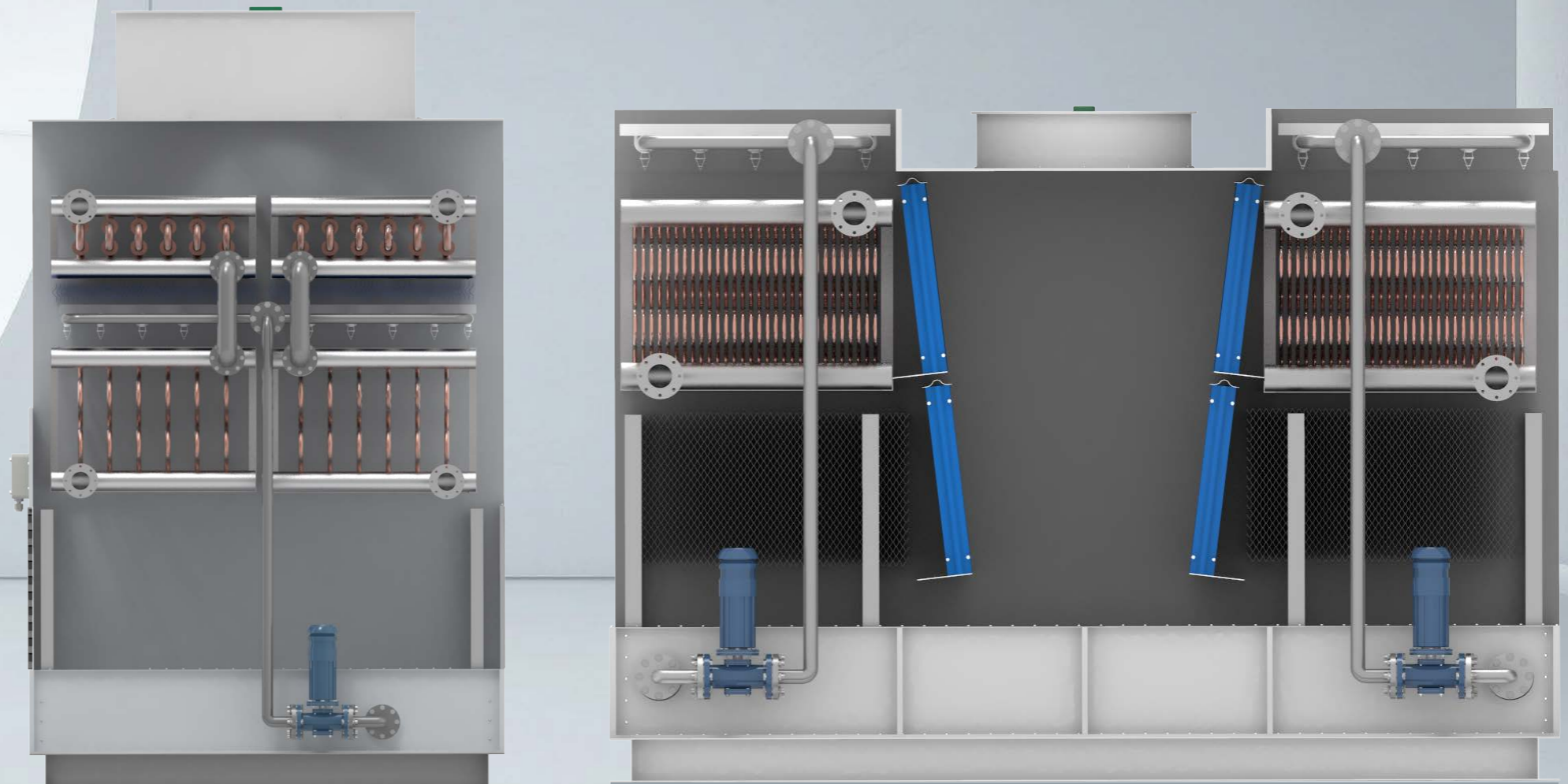
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## About FEIYU COOLING



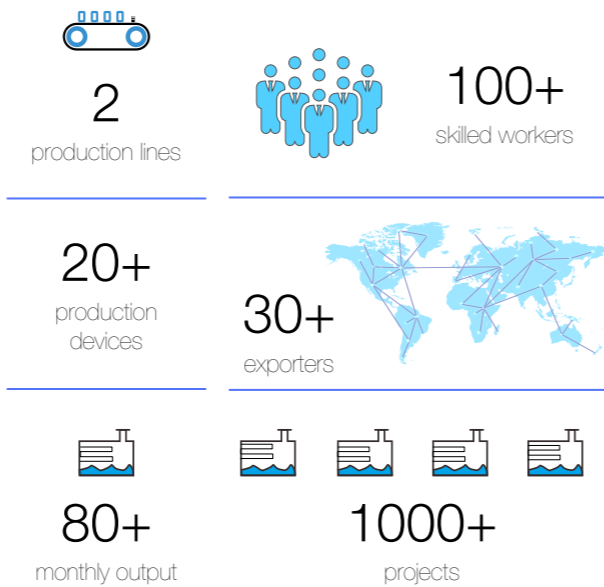
Hebei Feiyu Cooling Equipment Co., Ltd. is an industry-leading cooling equipment manufacturer. We are committed to designing and manufacturing best cooling tower products for global customers involving in evaporative cooling & refrigeration industries.

Formerly known as Hebei RuiD Cooling Tower Parts Manufacturer Co., Ltd., we have two factories with a total construction area of 15,000 square meters. We have a group of brilliant R & D talents with over 10 years' professional experience in high end cooling equipment development. Besides, we have hundreds of manufacturing elites, including 3 senior engineers, 12 engineers, 32 technicians and 100 skilled workers.

Our cooling tower series mainly include: counter flow closed circuit cooling towers, cross flow closed circuit cooling towers, mixed flow closed cooling towers, open circuit cooling towers, hybrid wet dry cooling towers, flat & V-shaped dry type air coolers and V-shaped adiabatic type air coolers. We can customize cooling tower devices upon request to suit to their specific working environments.

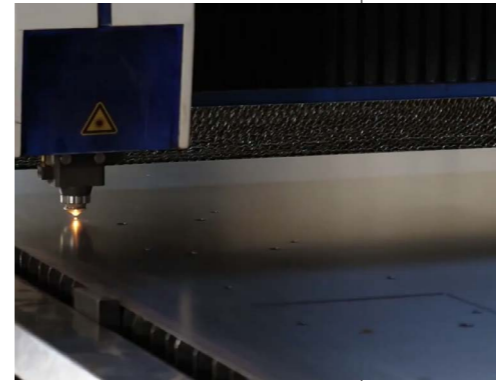
### Our Capacity

As a leading cooling tower manufacturer, we have full capacity to meet our customers' needs for large and urgent orders. We can provide our customers with strong technical support, fast delivery and considerate services.



### Quality Control

Adhering to the concept of quality first, we conduct strict quality control over all products before leaving the factory to ensure that all cooling towers we offer are qualified.



CNC laser cutter



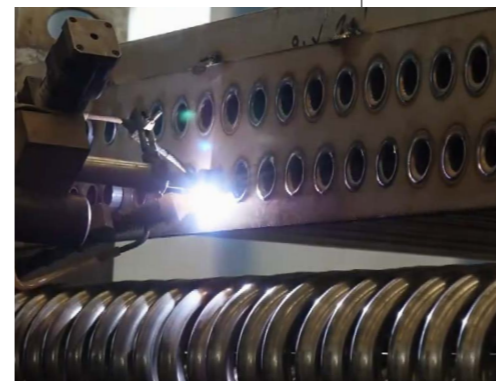
Cooling fill high temperature testing



CNC bending machine



Coil leakage test



Laser welding machine



Fin thickness test



CNC plate shearer



Cooling tower thermal performance test



### Advanced equipment creates high quality products

We have introduced a large batch of state-of-the-art CNC laser cutters, hydraulic plate benders, automatic welding devices, packing production devices, impact testers, tensile testers, leakage testers, etc.



### Stable tower structure

- Reasonable reinforced framework design
- The joints of the tower body are fastened with bolts and bolts are reasonably and densely arranged.



### 100% cooling capacity assurance

- We have professional thermal performance test platform.
- All series of products have passed normative tests.
- A certain margin for the area of heat transfer pipes, motor power, fan delivery, and spray capacity are reserved to ensure 100% cooling effect.

# 8

## Major Advantages of Feiyu Cooling Towers

From overall design to individual accessory manufacturing, every detail is a quality testimony.



### Great cooling effect

- Advanced system design
- Efficient fan
- High quality coil, packing and heat transfer



### Various design types for your option

- Counter flow cooling tower
- Cross flow cooling tower
- Air cooled heat exchangers
- Hybrid wet dry cooling towers



### Energy Saving & Environment Protection

- Save water and sewage treatment costs.
- Reduce noise pollution.
- The metal part of the cooling towers is recyclable.
- Provide superior operational advantages to our customers.



### All-round corrosion protection

- Tower body is made of stainless steel 304 or DX51D+AZ120 aluminized zinc plate.
- Coil is constructed of stainless steel or copper pipes.
- Framework and lifting lugs are made of hot galvanized plate.
- Bolts and fasteners are made of stainless steel materials.



### Easy maintenance, repair & cleaning

- Cross flow & hybrid cooling towers are equipped with large access doors and channels.
- Counter flow cooling tower maintenance does not require whole tower disassembly.
- Remove panels at the ends of water condenser and the maintenance can start.
- Efficient water tank can avoid channel blockage and reduce cleaning frequency.

## Closed Circuit Cooling Towers

Closed circuit cooling tower, also known as closed circuit cooler, closed cooling tower or closed loop cooling tower, is a cooling device that is designed to remove the heat of the process fluid, thereby cooling the process fluid. With coil exchangers placed in the tower, the whole cooling process is achieved through heat transfer among the air, spray water & circulating water via coil exchanger inside.

Closed circuit cooling tower is an upgrade and replacement of open circuit cooling towers. The process fluid circulates in the coil, thereby eliminating the efficiency reduction and system failures caused by floaters, dirt and other matters entering the cooling water system. As a result, it is generally used for cooling projects that require high cleanness of process fluid.

According to water flow direction and air intake direction, closed circuit cooling tower can be divided into counter flow cooling tower, cross flow cooling tower and mixed cooling tower.

In the counter flow closed circuit cooling tower, the air is introduced at the bottom of the tower and flows from bottom to top, in the opposite direction of spray water, therefore, it is named as counter flow closed circuit cooling tower.

In the cross flow closed circuit cooling tower, the air is introduced from the side of the tower and flows horizontally, making a right angle to the direction of spray water, therefore, it is named as cross flow closed circuit cooling tower.

Mixed flow closed circuit cooler has two air inlet directions. In one direction, the air enters from the top of the cooling tower and flows from top to bottom, in the same direction as the spray water. In the other direction, the air enters from one side of the tower at the bottom and flows from bottom to top, in the opposite direction of spray water, therefore, it is called as mixed flow closed circuit cooling tower.



### ✓ All-round corrosion protection

- Tower body is made of stainless steel 304 or DX51D+AZ120 aluminized zinc plate.
- Coil is constructed of stainless steel or copper pipes.
- Framework and lifting lugs are made of hot galvanized plate.
- Bolts and fasteners are made of stainless steel materials.

### ✓ Stable tower structure

- Reasonable reinforced framework design
- The joints of the tower body are fastened with bolts and bolts are reasonably and densely arranged.

### ✓ Great cooling effect

- Advanced system design
- Efficient fan
- High quality coil, packing and heat transfer

### ✓ 100% cooling capacity assurance

- We have professional thermal performance test platform.
- All series of products have passed normative tests.

### ✓ Various design types for your option

- Counter flow cooling tower
- Cross flow cooling tower
- Mixed flow cooling tower

### ✓ Easy maintenance, repair & cleaning

- Cross flow & mixed flow cooling towers are equipped with large access doors and channels.
- Efficient water tank can avoid channel blockage and reduce cleaning frequency.

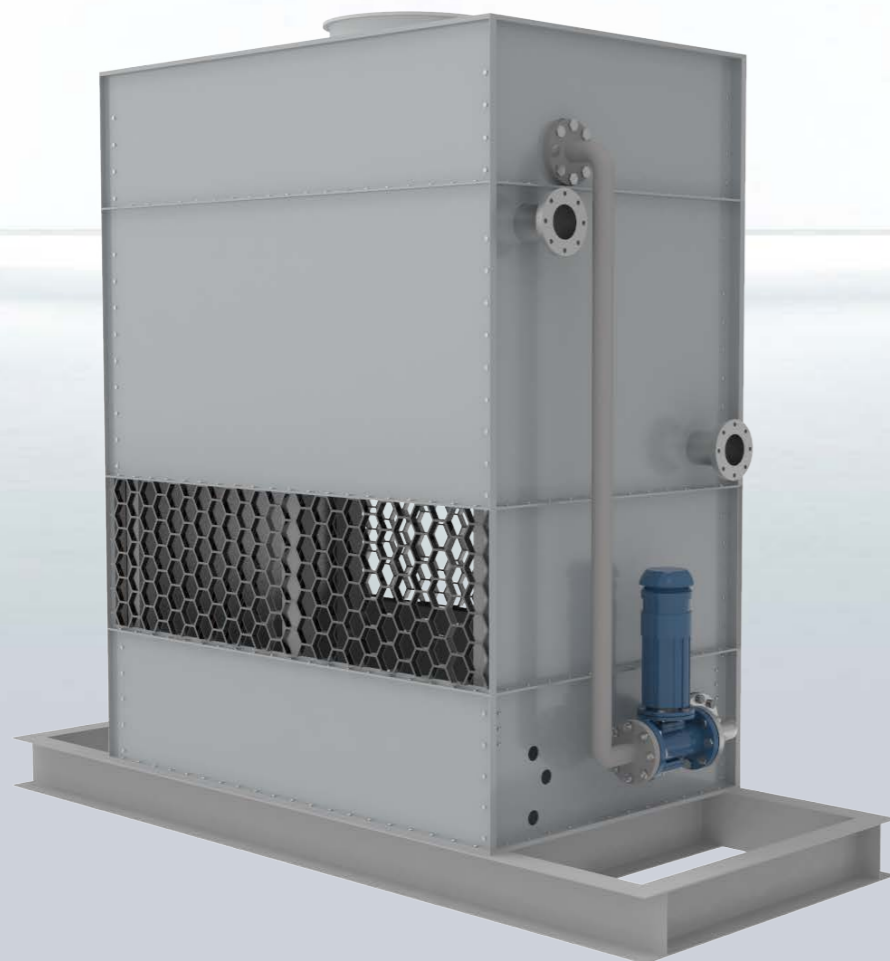
## Closed Circuit Cooling Towers

### Counter Flow

Counter flow cooling tower is a cooling device that is designed to remove the heat of the process fluid, thereby cooling the process fluid. With coil exchangers placed in the tower, the whole cooling process is achieved through heat change among the air, spray water & circulating water via coil exchanger inside.

In the counter flow closed circuit cooling tower, the air is introduced at the bottom of the tower and flows from bottom to top, in the opposite direction of spray water, therefore, it is named as counter flow cooling tower. It is widely used in industrial refrigeration, commercial air conditioning, process processing, district cooling, power industry, etc.

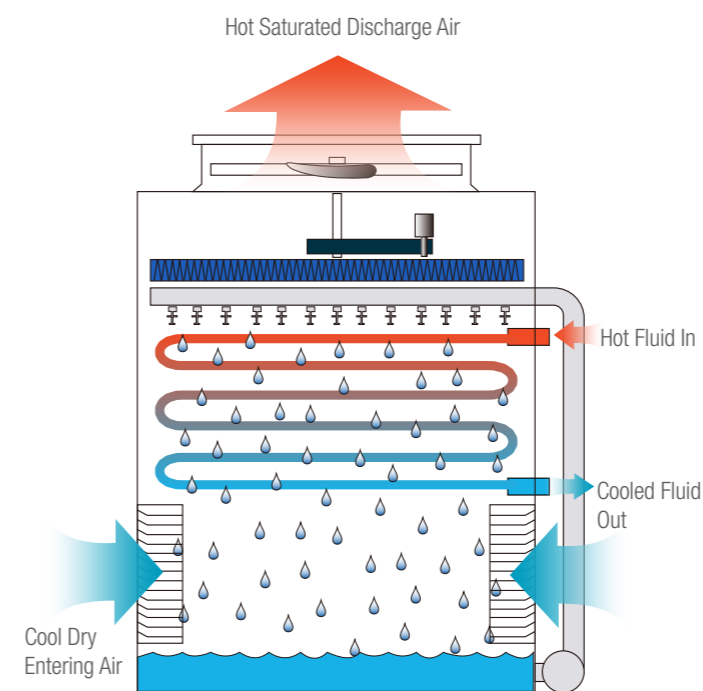
Fan is a mechanical device that is used to increase the air pressure in the cooling tower and discharge the air out. There are two types of fans for counter flow closed circuit cooling tower. One is forced draft fan and the other is induced-draft axial fan. Closed circuit cooling tower with a low height generally adopts a forced shaft fan and is suitable for indoor installation and air duct installation. It is your ideal choice for precise replacement projects.



## Counter Flow Closed Circuit Cooling Tower

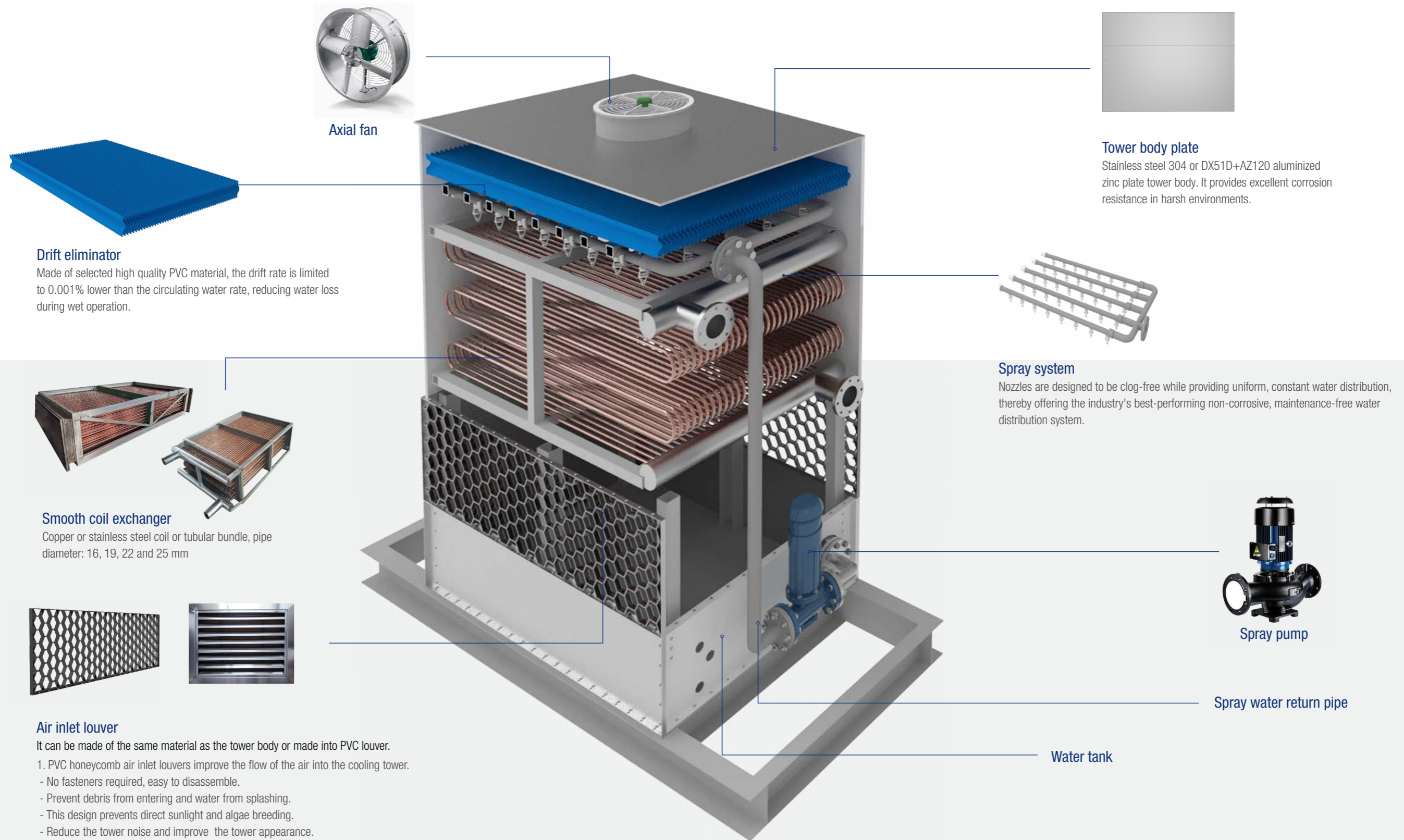
- ✓ The process fluid circulates in the coil, thereby eliminating the efficiency reduction and system failures caused by floaters, dirt and other matters entering the cooling water system.
- ✓ Compact structure, small floor area, super small model is available.
- ✓ The coil has a large heat transfer area, realizing high efficiency and water saving.
- ✓ No packing design, suitable for high temperature fluid cooling and antifreeze in winter.
- ✓ Reliable, easy operation, low maintenance cost and low annual operating costs.
- ✓ Wide range of heat rejection
  - Heat rejection capacity of cooling towers with a forced shaft fan: 170–4119 MBH
  - Heat rejection capacity of cooling towers with an induced-draft axial fan: 91–37765 MBH.
- ✓ Customized solutions, tailored for your projects, bringing you more reasonable suggestions and assurance.

### How Does It Work?

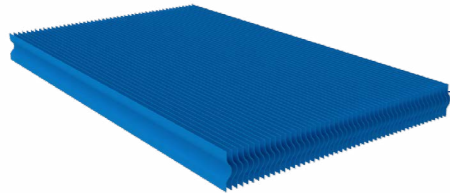


Hot process fluid enters the coil (or tube bundle) from the water intake, and the spray system and fan system are started at the same time. The heat of process fluid undertakes heat transfer via tube walls and is transferred to the spray water running through the outer surface of the tube. The process water becomes cool and then flows out from the water outlet for internal circuit. Driven by the fan, the air outside the unit enters from the air intake, in the opposite direction of water flow, and moves upward through the coil. A small amount of water evaporates and flows through the drift eliminator, collecting the excess moisture into the water tank. Meanwhile, the hot and humid air is dispatched into the atmosphere from the top of the tower. The rest of the water falls into the water tank at the bottom, recycles to the spray system via the water pump, and then returns to the tube bundle.

# Structure & Components

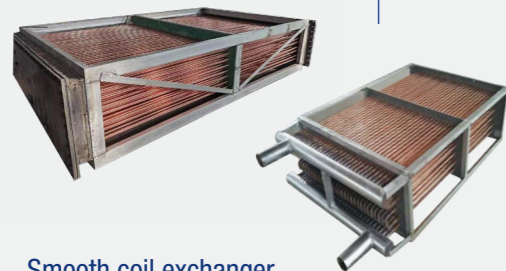


**Axial fan**



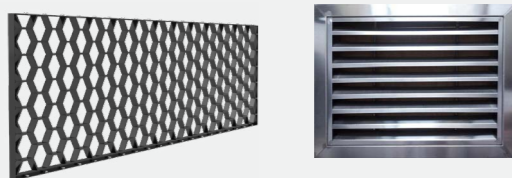
### Drift eliminator

Made of selected high quality PVC material, the drift rate is limited to 0.001% lower than the circulating water rate, reducing water loss during wet operation.



### Smooth coil exchanger

Copper or stainless steel coil or tubular bundle, pipe diameter: 16, 19, 22 and 25 mm



### Air inlet louver

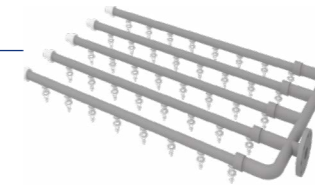
It can be made of the same material as the tower body or made into PVC louver.

- PVC honeycomb air inlet louvers improve the flow of the air into the cooling tower.
  - No fasteners required, easy to disassemble.
  - Prevent debris from entering and water from splashing.
  - This design prevents direct sunlight and algae breeding.
  - Reduce the tower noise and improve the tower appearance.
- Air inlet louvers made of stainless steel or galvanized steel plate provide excellent corrosion protection.



### Tower body plate

Stainless steel 304 or DX51D+AZ120 aluminized zinc plate tower body. It provides excellent corrosion resistance in harsh environments.



### Spray system

Nozzles are designed to be clog-free while providing uniform, constant water distribution, thereby offering the industry's best-performing non-corrosive, maintenance-free water distribution system.



**Spray pump**

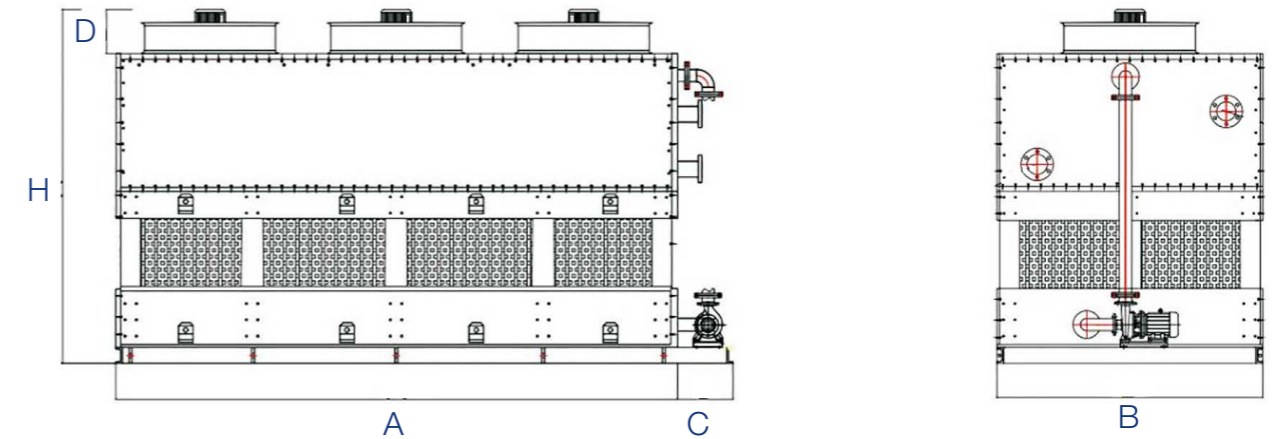
**Spray water return pipe**

**Water tank**

# Performance Technical Data

Model	Normal Heat Rejection kcal/h	Axial Fan		Spray Water Pump		Weight		
		Amount Unit	Blowing Rat (m <sup>3</sup> /h)	Power (kW)	Flow Rate (m <sup>3</sup> /h)	Power (kW)	Net Weight (kg)	Operating (kg)
FYBN-6	30135	1	10000	0.55 × 1	12.5	0.75	287	730
FYBN-10	50000	1	11800	0.75 × 1	12.5	0.75	402	950
FYBN-15	74900	1	13000	1.1 × 1	12.5	0.75	465	1200
FYBN-20	100000	2	20000	0.55 × 2	22	0.75	490	1300
FYBN-30	150000	2	23600	0.75 × 2	25	0.75	650	1800
FYBN-40	200000	2	25000	1.1 × 2	25	0.75	750	1950
FYBN-50	254000	2	28000	1.1 × 2	25	0.75	980	2200
FYBN-60	300000	2	33000	1.1 × 2	25	0.75	1050	2400
FYBN-70	350000	2	40000	1.5 × 2	44.5	1.5	1280	3050
FYBN-80	400000	2	52000	2.2 × 2	44.5	1.5	1450	3600
FYBN-100	500000	2	52000	2.2 × 2	44.5	1.5	1870	4100
FYBN-125	625000	2	76000	3.0 × 2	87	3	2450	5200
FYBN-150	750000	2	88000	3.0 × 2	87	3	2850	6050
FYBN-175	875600	2	110000	3.0 × 2	100	4	3150	6700
FYBN-200	1000000	2	125000	3.0 × 2	140	5.5	3600	7680
FYBN-250	1251000	2	160000	4.0 × 2	140	5.5	5400	12300
FYBN-300	1501500	2	200000	5.5 × 2	176	7.5	7900	16700
FYBN-350	1751000	2	230000	7.5 × 2	176	7.5	8700	18500
FYBN-400	2001800	2	280000	7.5 × 2	200	4.0 × 2	10900	22900
FYBN-450	2250000	2	360000	11 × 2	200	4.0 × 2	12300	26600
FYBN-500	2500000	2	420000	15 × 2	280	5.5 × 2	13600	28800
FYBN-550	2750000	3	480000	11 × 3	280	5.5 × 2	15600	33200
FYBN-600	3000000	3	570000	11 × 3	352	7.5 × 2	17500	37250

# External Dimension Specifications



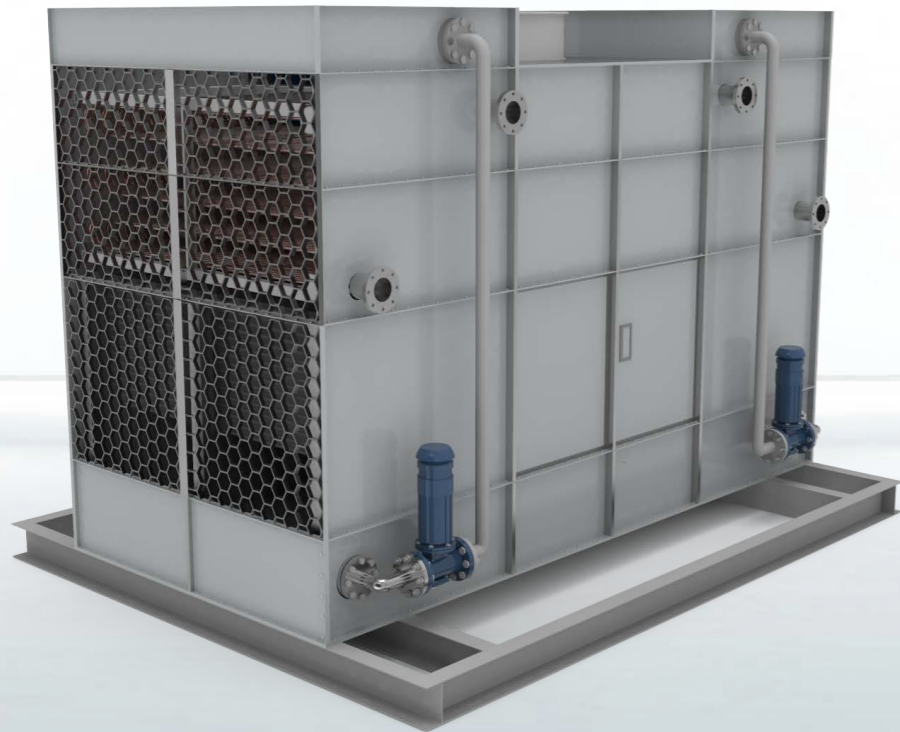
Model	External Dimensions					Intake	Outlet	Make-Up Water Inlet	Drain	Over Flow
	A (mm)	B (mm)	C (mm)	D (mm)	H (mm)					
FYBN-6	1350	1000	300	300	2000	DN40	DN40	DN16	DN32	DN32
FYBN-10	1500	1000	300	300	2000	DN40	DN40	DN16	DN32	DN32
FYBN-15	2350	1000	300	320	2100	DN50	DN50	DN16	DN32	DN32
FYBN-20	2350	1000	300	300	2200	DN50	DN50	DN20	DN32	DN32
FYBN-30	2850	1220	350	300	2400	DN65	DN65	DN20	DN40	DN40
FYBN-40	2850	1220	350	320	2500	DN65	DN65	DN20	DN40	DN40
FYBN-50	2850	1220	350	320	2600	DN80	DN80	DN20	DN40	DN40
FYBN-60	2850	1220	350	320	2600	DN80	DN80	DN20	DN40	DN40
FYBN-70	2850	1500	400	320	2750	DN80	DN80	DN20	DN40	DN40
FYBN-80	2850	1700	400	360	2800	DN100	DN100	DN25	DN40	DN40
FYBN-100	2850	1700	400	360	2900	DN100	DN100	DN25	DN40	DN40
FYBN-125	3150	1800	450	490	3100	DN125	DN125	DN25	DN40	DN40
FYBN-150	3350	1900	500	420	3300	DN150	DN150	DN25	DN50	DN50
FYBN-175	4000	1900	500	420	3400	DN150	DN150	DN25	DN50	DN50
FYBN-200	4350	2000	500	600	3600	DN200	DN200	DN32	DN50	DN50
FYBN-250	4800	2200	500	650	3800	DN150 × 2	DN150 × 2	DN32	DN50	DN50
FYBN-300	6500	2500	500	700	4000	DN150 × 2	DN150 × 2	DN32	DN65	DN65
FYBN-350	7500	2700	550	750	4200	DN150 × 2	DN150 × 2	DN40	DN65	DN65
FYBN-400	8000	2700	600	750	4400	DN200 × 2	DN200 × 2	DN40	DN65	DN65
FYBN-450	8000	3000	600	750	4400	DN200 × 2	DN200 × 2	DN40	DN65	DN65
FYBN-500	9000	3000	600	800	4600	DN200 × 2	DN200 × 2	DN40	DN80	DN80
FYBN-550	9000	3300	600	800	4600	DN200 × 2	DN200 × 2	DN40	DN80	DN80
FYBN-600	9000	3500	600	850	4750	DN250 × 2	DN250 × 2	DN40	DN80	DN80



# Closed Circuit Cooling Towers

## Cross Flow

Cross flow cooling tower is a cooling device that is designed to remove the heat of the process fluid, thereby cooling the process fluid. With tubular exchangers placed in the tower and combed with the packing as the heat exchanger, the whole cooling process is achieved through heat change among cross flow air, spray water & circulating water via tubular exchanger inside.



### The Difference Between and Counter Flow Cooling Tower:

They have different air inlet directions. In the cross flow cooler, the air is introduced from the side of the tower and flows horizontally, making a right angle to the direction of spray water. However, in the counter flow cooler, the air is introduced at the bottom of the tower and flows from bottom to top, in the opposite direction of spray water.

Cross flow cooling tower is equipped with access doors and channels in the middle of the tower, while the counter flow cooling tower does not.

In the counter flow cooling tower, coil or tubular bundle serves as heat transfer, however, in the cross flow cooling tower, a combination of coil and packing or a combination of tube bundle and packing serves as heat transfer.

### The Difference Between and Mixed Flow Cooling Tower:

They have different air inlet directions. In the cross flow cooler, the air inlet direction and spray water flow direction make a right angle. However, mixed flow closed circuit cooler has two air inlet directions. In one direction, the air enters from the top of the cooling tower. In the other direction, the air enters from one side of the tower at the bottom.

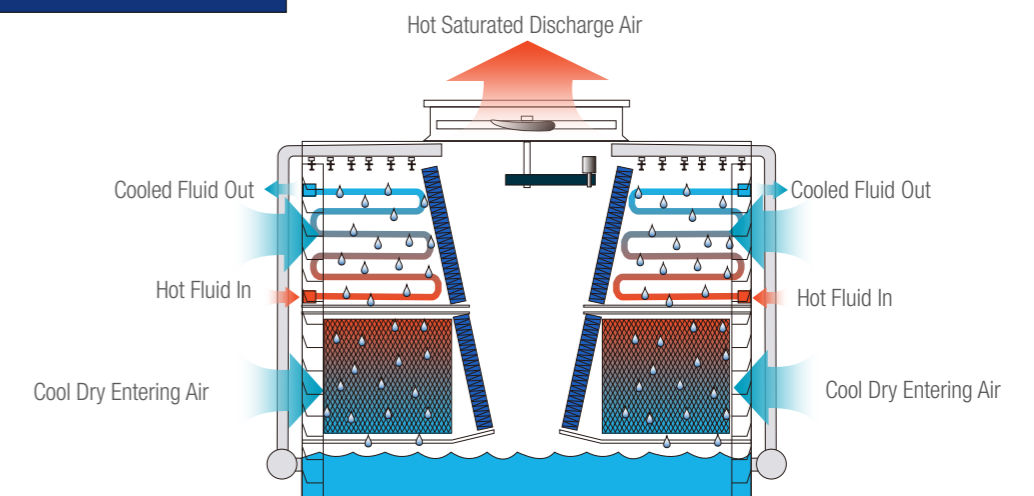
### The Similarity Between Mixed Flow Cooling Tower:

Both cooling towers are equipped with access doors in the middle to create convenient access conditions. They are specifically developed for high capacity applications, such as data centers, factories, and large HVAC systems.

## Cross Flow Closed Circuit Cooling Tower

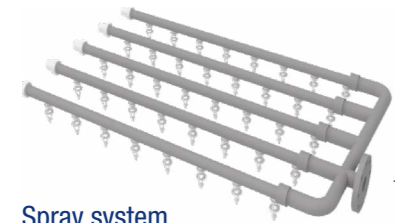
- ✓ Softened cooling water circulates in the closed circuit, thereby eliminating the efficiency reduction and system failures caused by floaters, dirt and other matters entering the cooling water system.
- ✓ The optimized layout of the new heat transfer and high-performance packing makes the maintenance and cleaning of the heat transfer coil & packing easier and more convenient.
- ✓ New fan blades are employed to further improve its exhaust capacity and reduce the running noise.
- ✓ Spray pipes are installed inside the cooling tower. It not only saves the external piping, but also makes the tower body more beautiful and lowers the on-site piping costs.
- ✓ Equipped with access channels to facilitate tower maintenance and repair.

## How Does It Work?



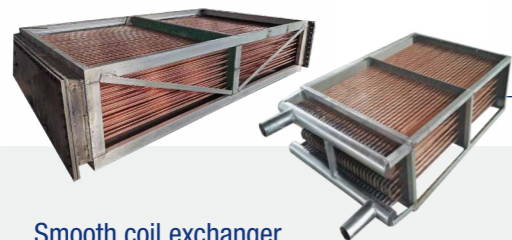
Hot process fluid enters the tube bundle from the inlet, and the spray system and fan system are started at the same time. The spray water flows downward. The heat of process fluid is transferred to the circulating spray water running through the outer surface of the tube bundle in a way of tube wall heat transfer. The process fluid becomes cool and then flows out from the outlet. A large amount of the air enters from the air intake louver and flows through the unit at right angles to the spray water. A small amount of water evaporates, and flows through the drift eliminator, collecting the excess moisture into the water tank. The rest of the water is dispatched into the atmosphere from the top of the unit in the form of hot saturated steam. Most of the heat is absorbed by the spray water. The hot spray water flows downward through the packing and becomes cool via heat transfer with the packing. And then it falls into the water tank at the bottom, recycles to the spray system via the water pump, and then returns to the tube bundle.

# Structure & Components



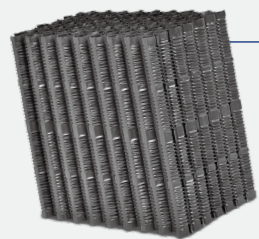
## Spray system

Nozzles are designed to be clog-free while providing uniform, constant water distribution, thereby offering the industry's best-performing non-corrosive, maintenance-free water distribution system.



## Smooth coil exchanger

Copper or stainless steel coil or tubular bundle, pipe diameter: 16, 19, 22 and 25 mm

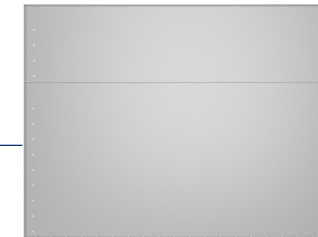


## PVC packing

- It allows the air and water to be fully mixed for efficient heat transfer.
- Special inclined tank design can withstand high water load without causing excessive pressure drop.
- Operating temperature up to 65 °C.

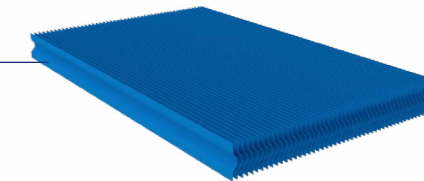


## Ultra-low noise fan



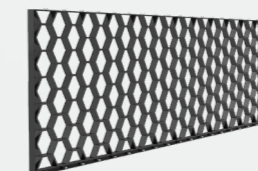
## Tower body plate

Stainless steel 304 or DX51D+AZ120 aluminized zinc plate tower body. It provides excellent corrosion resistance in harsh environments.



## Drift eliminator

Made of selected high quality PVC material, the drift rate is limited to 0.001% lower than the circulating water rate, reducing water loss during wet operation.



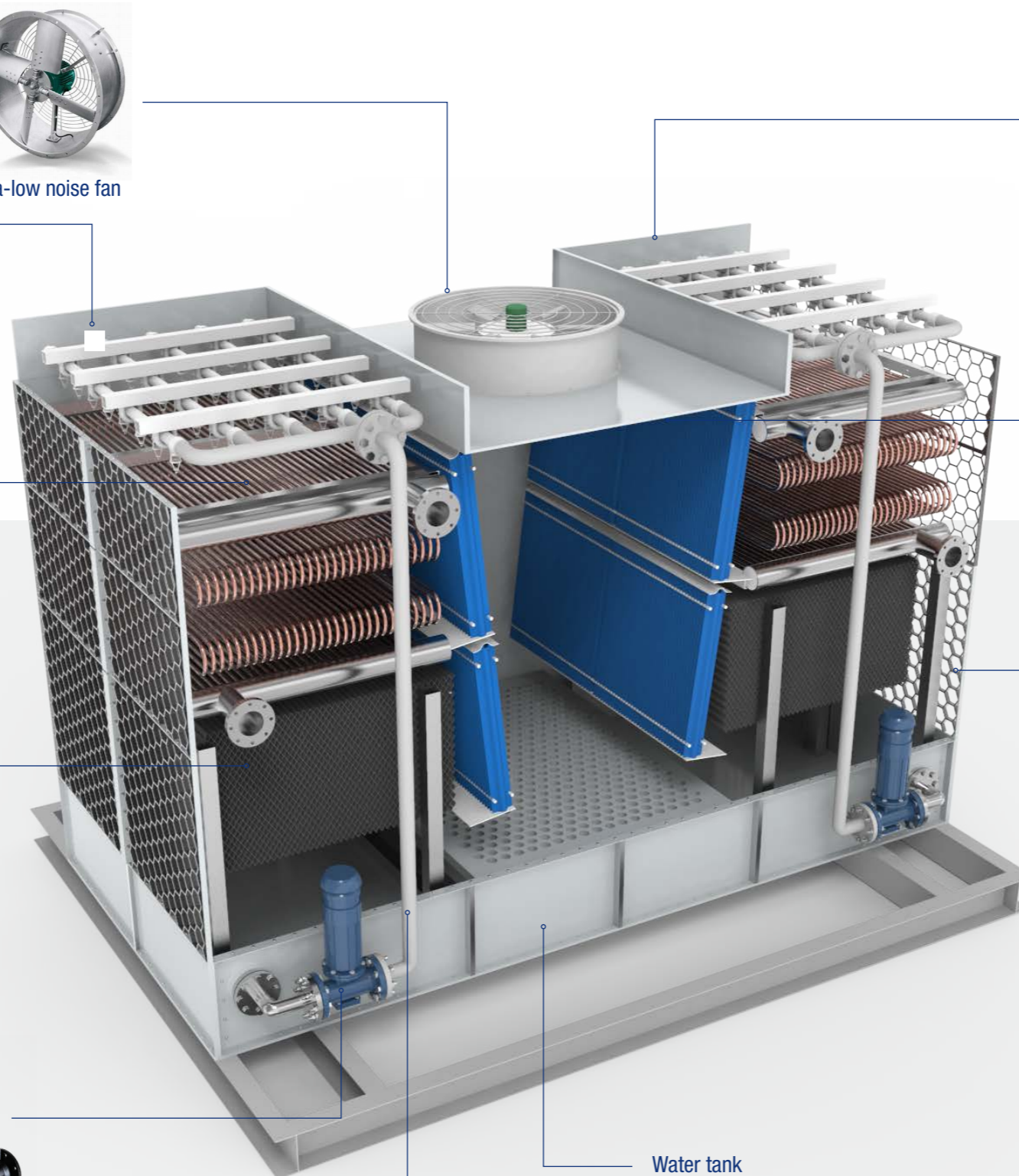
## Air inlet louver

It can be made of the same material as the tower body or made into PVC louver.

1. PVC honeycomb air inlet louvers improve the flow of the air into the cooling tower.
  - No fasteners required, easy to disassemble.
  - Prevent debris from entering and water from splashing.
  - This design prevents direct sunlight and algae breeding.
  - Reduce the tower noise and improve the tower appearance.
2. Air inlet louvers made of stainless steel or galvanized steel plate provide excellent corrosion protection.



## Spray pump



## Water tank

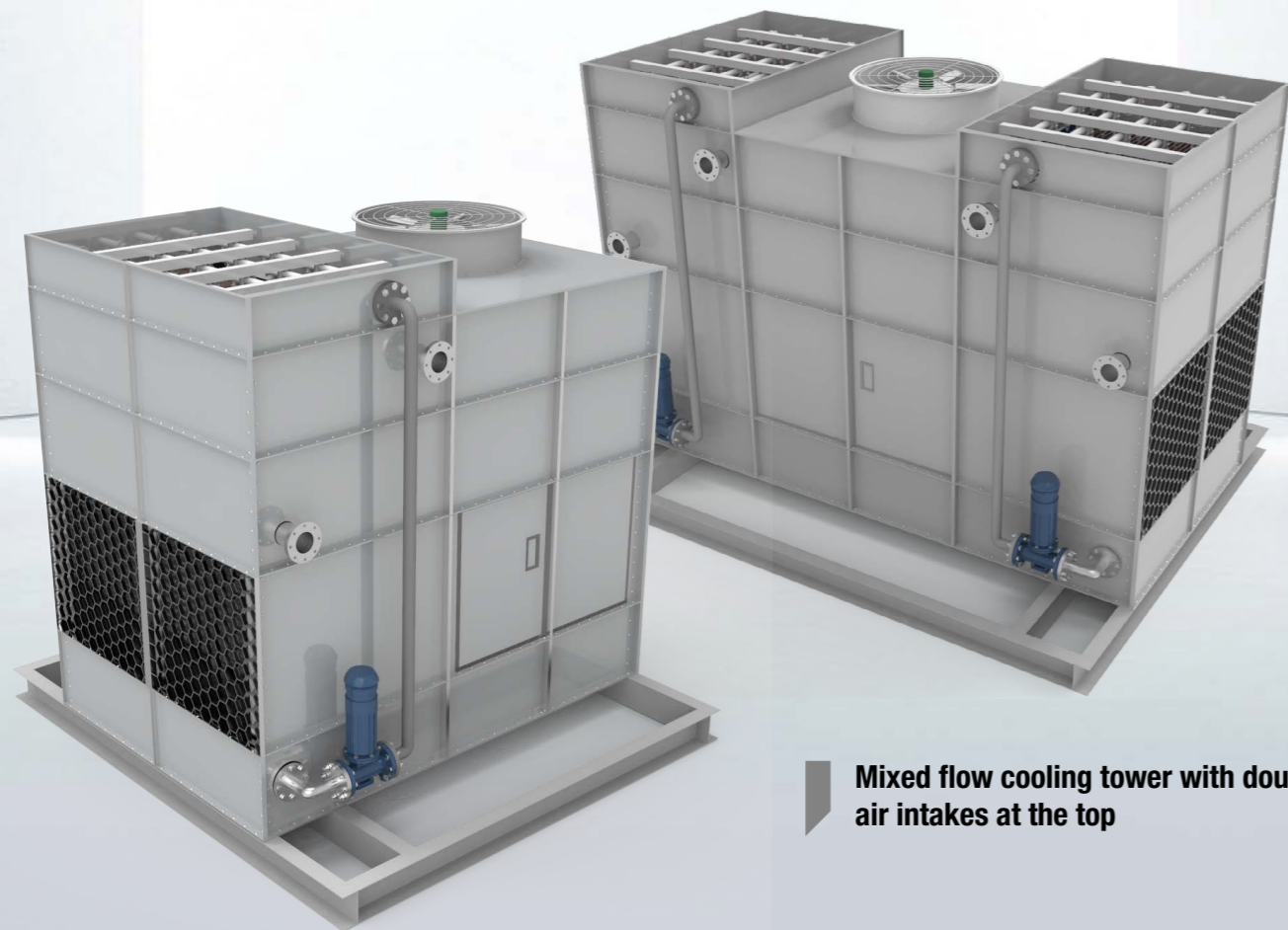
## Spray water return pipe

## Closed Circuit Cooling Towers

### Mixed Flow

Mixed flow cooling tower is a cooling device that is designed to remove the heat of the process fluid, thereby cooling the process fluid. With a combination of packing module and tube bundle module serving as the heat transfer, the whole cooling process is achieved through heat transfer among the air, spray water & circulating water in the tube bundle.

Mixed flow cooling tower has two air inlet directions. In one direction, the air enters from the top of the cooling tower and flows from top to bottom, in the same direction as the spray water. In the other direction, the air enters from one side of the tower at the bottom and flows horizontally, making a right angle to the direction of spray water. Of which, air inlet at the top of the unit is divided into single air inlet and double air intakes.



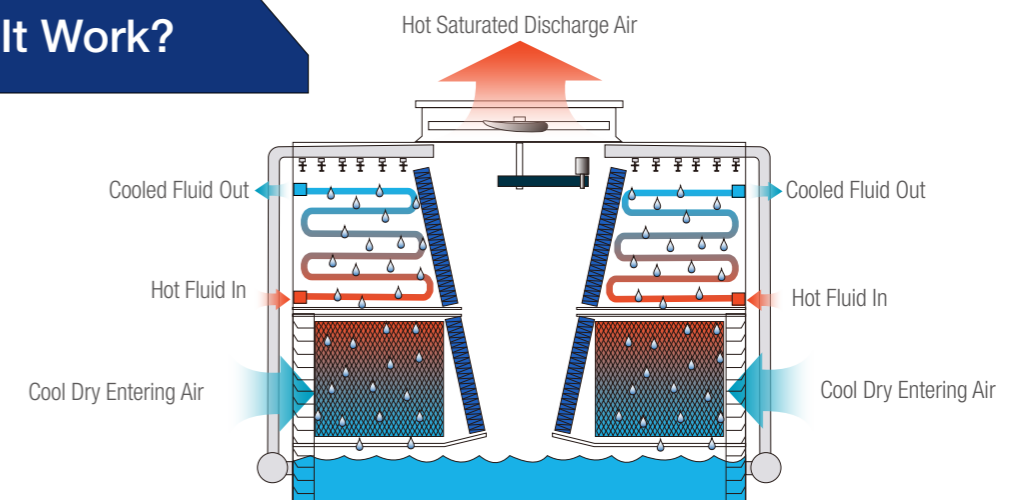
Mixed flow cooling tower with single air intake

Mixed flow cooling tower with double air intakes at the top

## Mixed Flow Closed Circuit Cooling Tower

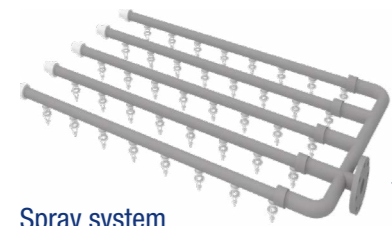
- ✓ Fully optimized structure design, double air inlets can effectively prevent the surface of the tube bundle from fouling
- ✓ Softened cooling water circulates in the closed circuit, thereby eliminating the efficiency reduction and system failures caused by floaters, dirt and other matters entering the cooling water system.
- ✓ High fan cylinder exhaust system ensures ventilation, fast heat dissipation and great cooling effect.
- ✓ It allows both fan frequency conversion operation and fan stop operation, thereby achieving high efficiency and energy saving.
- ✓ The packing and coil combination design greatly improves the spray & heat transfer efficiency.
- ✓ Top air inlet system is available in both single and double air lets. Of which, packing and tube bundle in the cooling tower with double air inlets are bilaterally arranged and the fan cylinder are maximized. In this way, a large air ventilation space is created to achieve better cooling effect.
- ✓ Large access space, access door and channel are available for easy maintenance.

### How Does It Work?



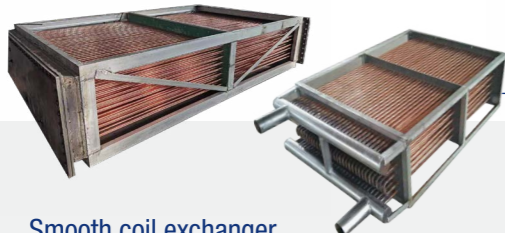
Hot process fluid enters the tube bundle from the inlet, and the spray system and fan system are started at the same time. Spray water is evenly sprayed on the surface of the tube bundle and a large amount of the air enters from the air inlet louver at the top of the tower and flows downward, in the same direction as the spray water. The air is in direct contact with the spray water and undertakes heat transfer with the hot process fluid in the tube bundle via the outer surface of the tube bundle. The process fluid cools and flows out from the outlet of the tube bundle for recycling. A small amount of water evaporates, and flows through the drift eliminator, collecting the excess moisture into the water tank. Meanwhile, the hot and humid air is dispatched into the atmosphere from the top of the tower. The hot spray water continues to spray on the packing and becomes cool through the heat transfer between cold air from the side of the tower at the bottom and the packing. And then it falls into the water tank and recycles to the spray system via the water pump.

# Structure & Components



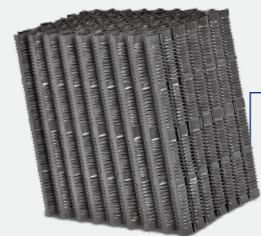
## Spray system

Nozzles are designed to be clog-free while providing uniform, constant water distribution, thereby offering the industry's best-performing non-corrosive, maintenance-free water distribution system.



## Smooth coil exchanger

Copper or stainless steel coil or tubular bundle, pipe diameter: 16, 19, 22 and 25 mm



## PVC packing

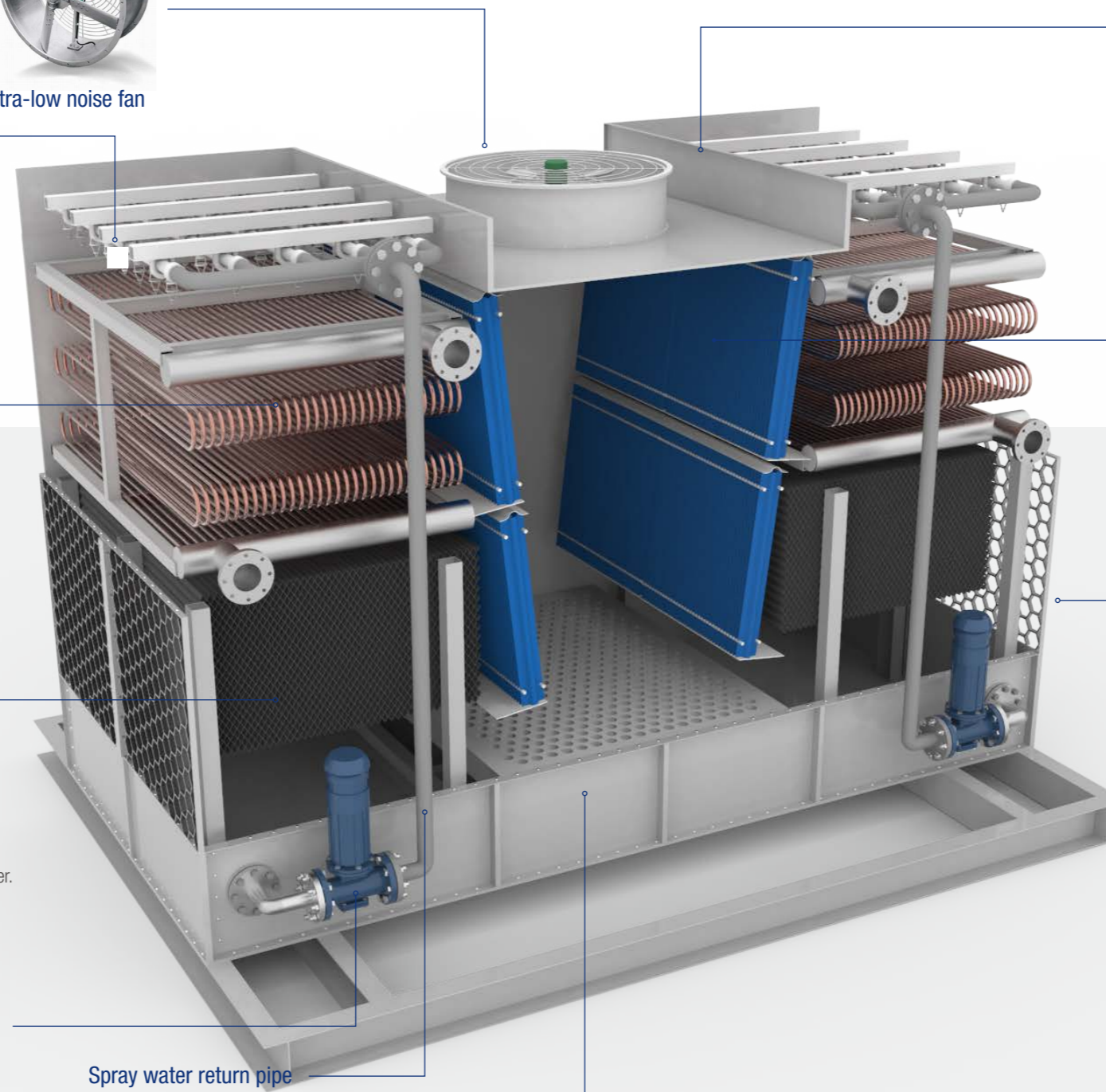
- It allows the air and water to be fully mixed for efficient heat transfer.
- Special inclined tank design can withstand high water load without causing excessive pressure drop.
- Operating temperature up to 65 °C.



Spray pump



Ultra-low noise fan



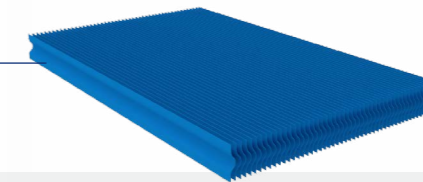
Spray water return pipe

Water tank



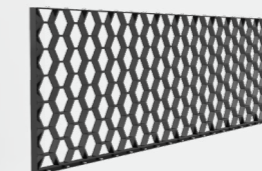
## Tower body plate

Stainless steel 304 or DX51D+AZ120 aluminized zinc plate tower body. It provides excellent corrosion resistance in harsh environments.



## Drift eliminator

Made of selected high quality PVC material, the drift rate is limited to 0.001% lower than the circulating water rate, reducing water loss during wet operation.



## Air inlet louver

It can be made of the same material as the tower body or made into PVC louver.

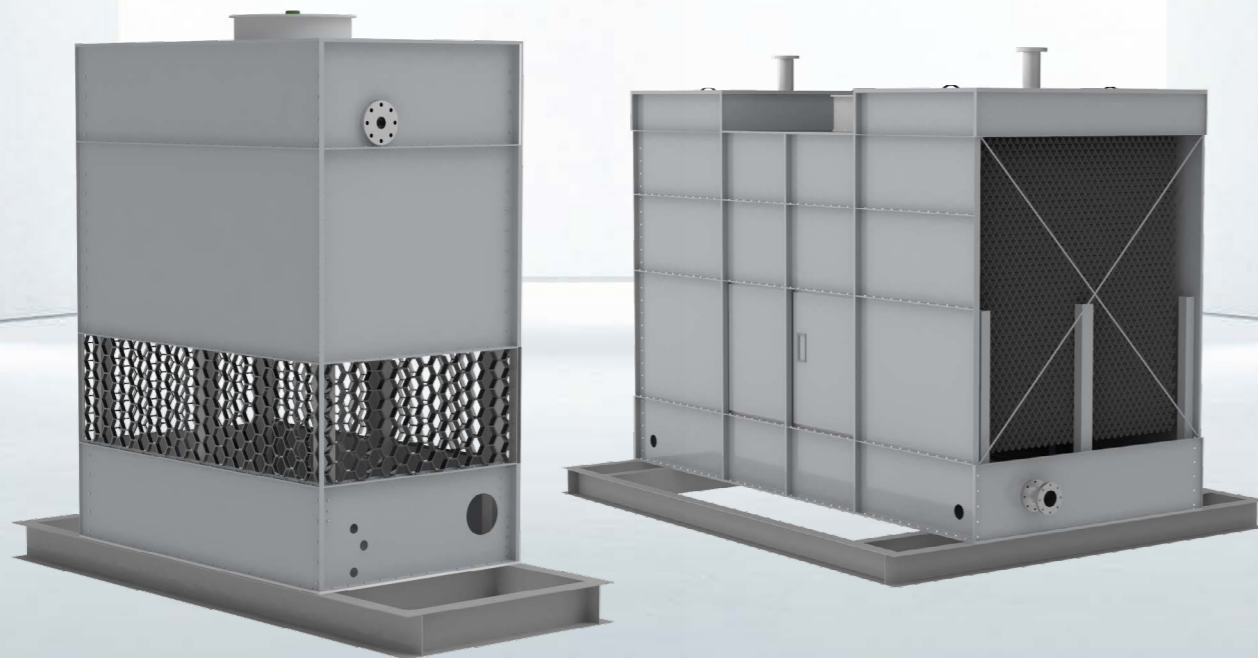
1. PVC honeycomb air inlet louvers improve the flow of the air into the cooling tower.
  - No fasteners required, easy to disassemble.
  - Prevent debris from entering and water from splashing.
  - This design prevents direct sunlight and algae breeding.
  - Reduce the tower noise and improve the tower appearance.
2. Air inlet louvers made of stainless steel or galvanized steel plate provide excellent corrosion protection.

## Open Circuit Cooling Towers

Open circuit cooling tower is a cooling device that achieves process circulating water cooling by spraying hot process circulating water on the packing and undertaking heat transfer by contacting with the air flowing through the packing.

Compared with closed circuit cooling towers, open circuit cooling towers require less initial investment but higher water consumption. Closed circuit cooling tower is an upgrade of open circuit cooling towers suitable for cooling industries with higher requirements for the cleanness of process fluid.

According to the water flow direction and air inlet direction, open circuit cooling towers are divided into counter flow open circuit coolers and cross flow open circuit coolers. In the counter flow open circuit cooler, as the direction of spray water is opposite to the direction of air inlet, therefore, it is named as counter flow open circuit cooling tower. In the cross flow open circuit cooler, as the direction of spray water is perpendicular to the direction of air inlet, therefore, it is called as cross flow open circuit cooling tower.



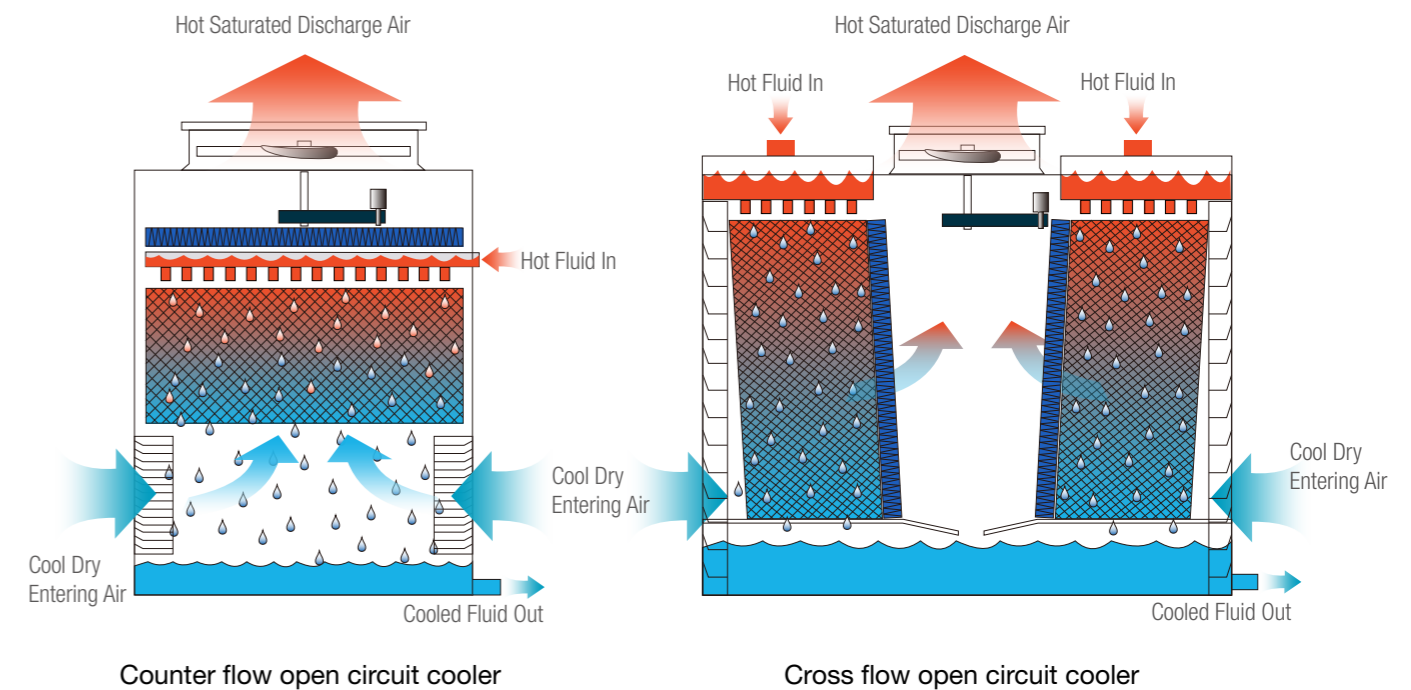
**Counter flow open circuit cooler**

**Cross flow open circuit cooler**

## Open Circuit Cooling Towers

- ✓ Compact structure, space saving design
- ✓ Simple system, easy installation
- ✓ Low noise
- ✓ Lightweight
- ✓ Low electricity consumption
- ✓ Low investment cost

### How Does It Work?



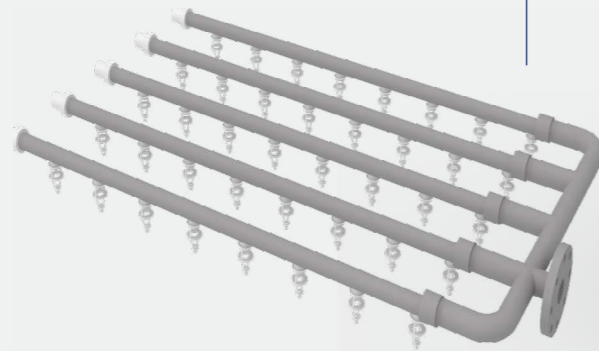
Process circulating water from the heat source is evenly sprayed on the packing. The packing shall be designed to enlarge the contact area between the air and water flow as much as possible. The packing allows the water to form thin flow films, so that the water surface area can be exposed to the interacting flow as much as possible. At the same time, the air is drawn in through the side air inlet, moving upward and undertaking heat transfer with spray water via the packing. Spray water becomes cool, falls into the water tank and then returns to the process circulating water for recycling. The cold air turns into hot and humid air, flows through the drift eliminator and collects the excess moisture to the water tank. It is then induced to the top of the cooling tower by the fan and is discharged into the atmosphere.

# Structure & Components



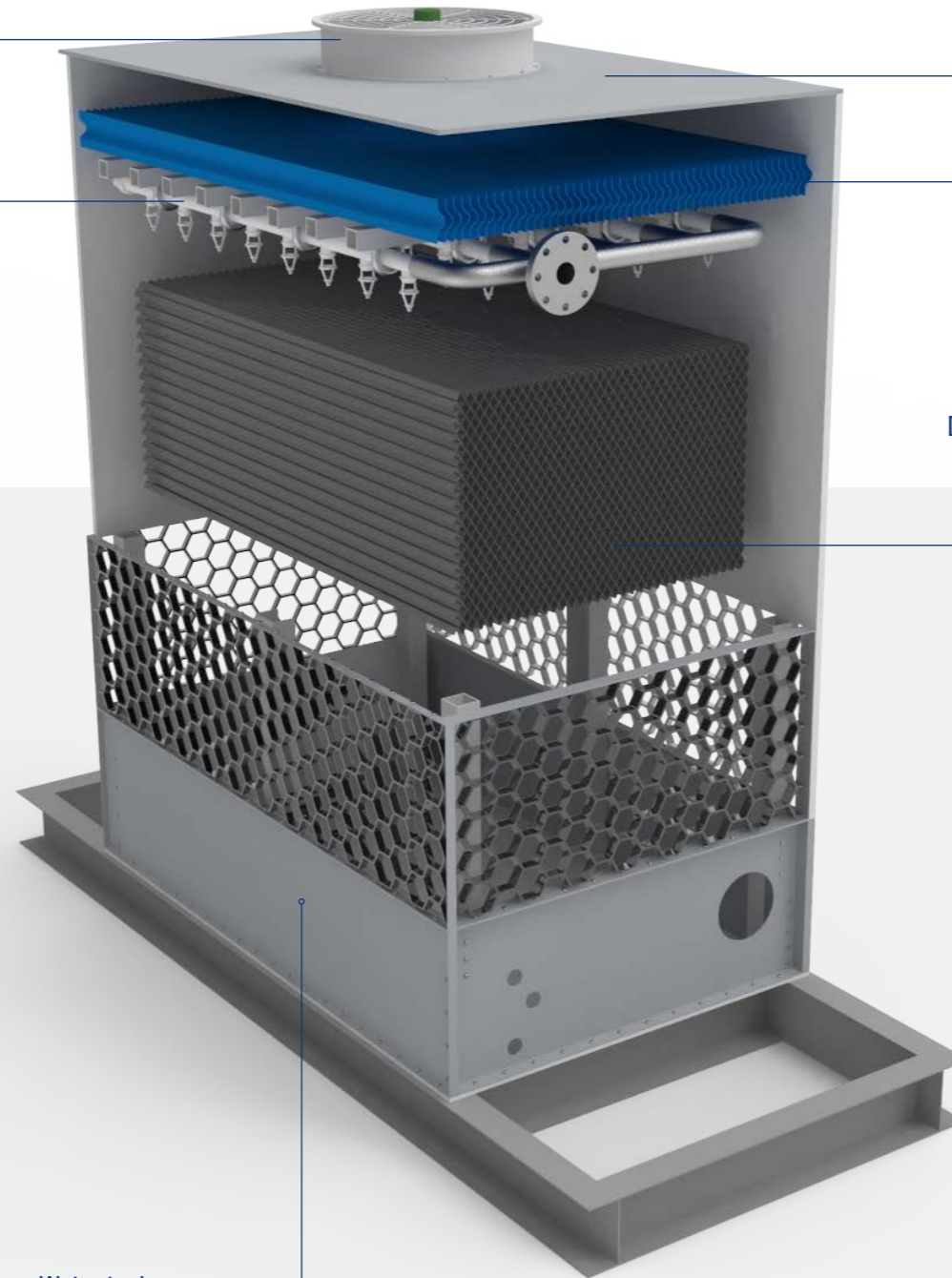
## Axial fan

Blades are made of aluminum plate. The fan features reasonable aerodynamic force, large air volume, high efficiency, low noise and corrosion resistance.



## Spray system

A key component in the cooling tower. It is designed to spray water evenly on the packing, enlarge the moisture contact area, thereby vaporizing some part of water, taking the heat away and lowering the water temperature.



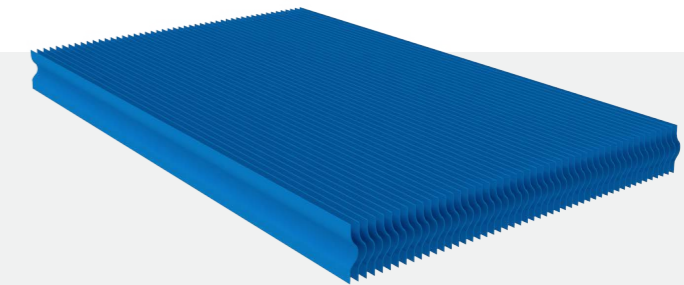
## Water tank



## Tower body plate

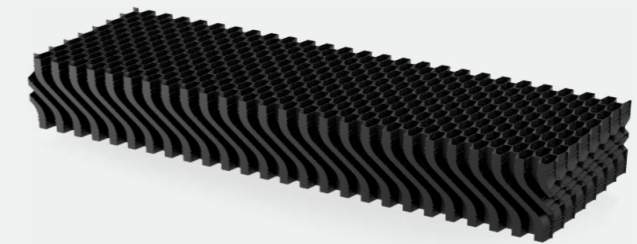
It can be constructed of galvanized steel, stainless steel 304 or FRP materials.

## Drift eliminator



## PVC packing

Heat dissipation, heat resistance, cold resistance, flame retardant.



## Hybrid Wet Dry Cooling Tower

Hybrid wet dry cooling tower is a cooling device that takes finned tubes and smooth coils as the heat transfer to cool the process fluid. It has 2 running modes: dry mode and wet-dry mode. It adopts induced-draft axial fan to discharge the hot and humid air in the tower. It is suitable for a wide range of outdoor applications. You may choose a running mode based on your actual application environments to achieve maximum water saving.

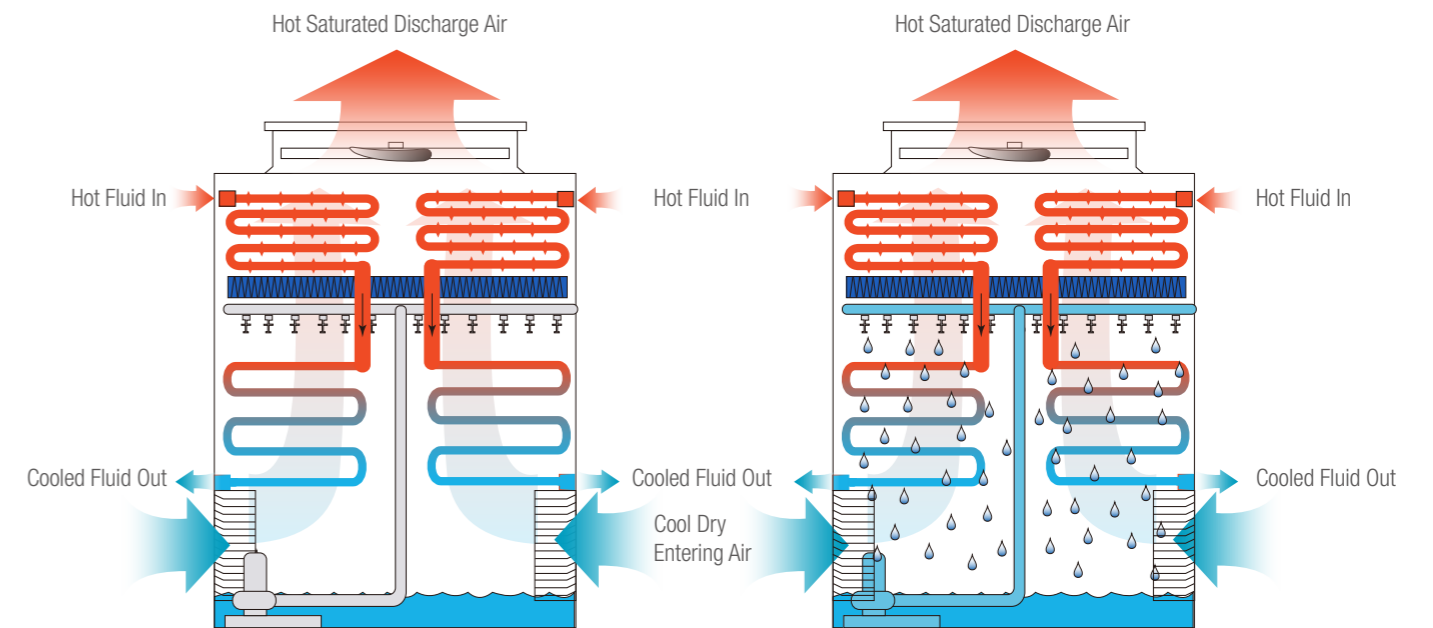
Hybrid wet dry cooling tower can be equipped with sophisticated intelligent control systems and factory-installed water treatment devices to provide final solutions for HVAC and large-scale process processing fields.



- ✓ There are 2 operating modes: dry mode and wet-dry mode.
- ✓ Dry finned tube improves the heat transfer capacity and has a significantly increased dry bulb switchover temperature.
- ✓ Dry coils are connected in series with smooth coils. As a result, water consumption is significantly reduced even in wet-dry mode.
- ✓ In wet-dry mode, plume is significantly reduced. While, in dry mode, plume is totally eliminated.
- ✓ In wet-dry mode, the cooling capacity of the tower is significantly improved.

## How Does It Work?

First, set the cooling temperature point required by the hybrid wet dry cooling tower. When the temperature set point is met, the unit starts to run in dry mode. While in dry mode, no water is used, thus plume is eliminated. When the temperature set point cannot be met, the unit starts to operate in wet-dry mode. This mode of operation minimizes the amount of water used while still maintaining the cooling capacity required.



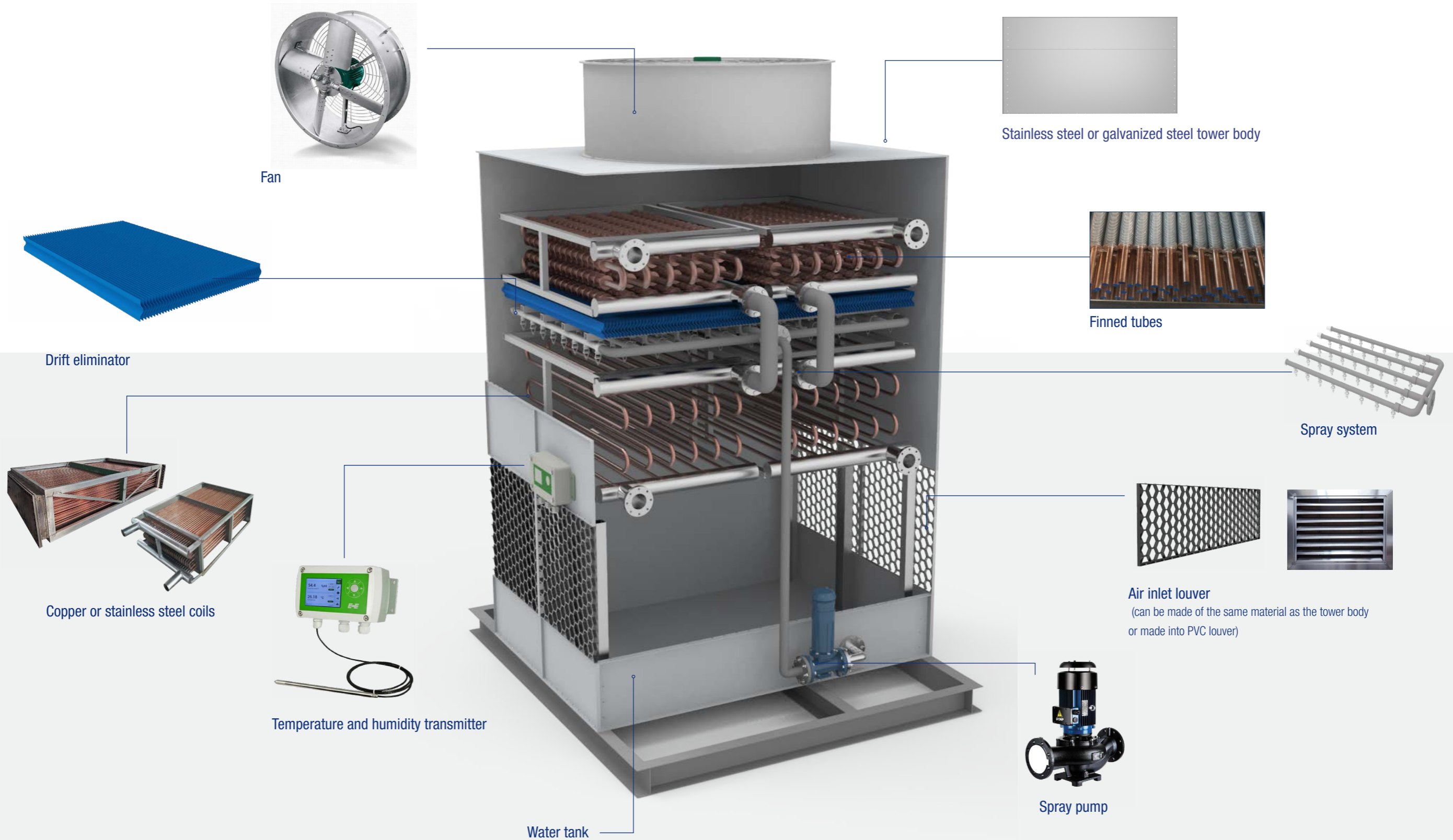
### Dry Mode

In dry mode, the hot process fluid enters the dry finned tubes from the inlet of dry finned tubes, flows out from the outlet of the finned tubes, and then flows into the smooth coils from the inlet of smooth coils. At the same time, the fan is turned on, and the spray pump is turned off. The axial fan draws the air upward through the air inlet louver. When the air flows through the coil and undertakes heat transfer, a portion of the heat is taken away and is dissipated to the atmosphere. The cooled process fluid flows out of the smooth coil outlet and returns to the internal circuit.

### Wet-Dry Mode

In this mode, the hot process fluid enters the dry finned tubes from the inlet of dry finned tubes, flows out from the outlet of the finned tubes, and then flows into the smooth coils from the inlet of smooth coils. At the same time, the spray system is on and the fan is turned on as well. The heat of the process fluid undertakes heat transfer through via tube walls and the heat is transferred to the spray water flowing through the outside of the tube. The process water becomes cold and is then discharged from the smooth coil outlet for internal circulation. Driven by the fan, the air outside the unit enters from the air inlet and flows upward through the coil, in the opposite direction to the water. A small portion of the water evaporates and flows through the drift eliminator, excess moisture is collected into the water tank and hot, humid air is dispatched into the atmosphere from the top of the closed circuit cooling tower. The rest of the water falls into the water tank at the bottom and is recycled by the pump into the spray system, and then is sprayed onto the coil.

# Structure & Components

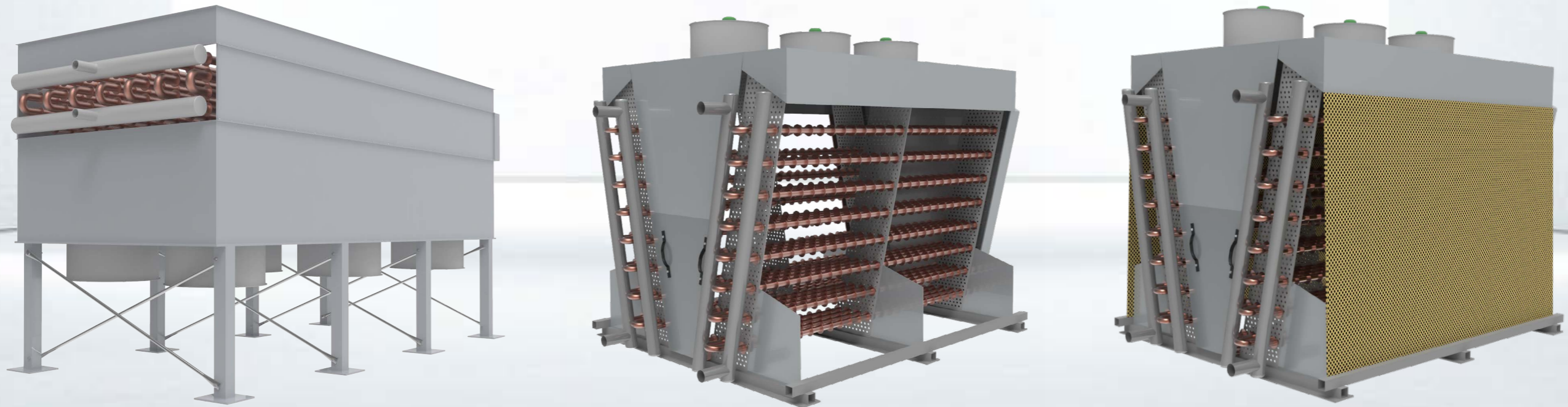




## Air Cooled Heat Exchangers

Air cooled heat exchanger is a cooling device that takes ambient air as the cooling medium and uses a fan to induce or force the air to flow across the finned tubes for cooling, thereby cooling or condensing the high temperature process fluid in the tubes.

According to with or without a humidification system, air cooled heat exchangers are divided into dry type air cooler and adiabatic air cooler. Of which, dry type air cooled heat exchangers can be made into V-shaped air coolers and flat air coolers by shape.

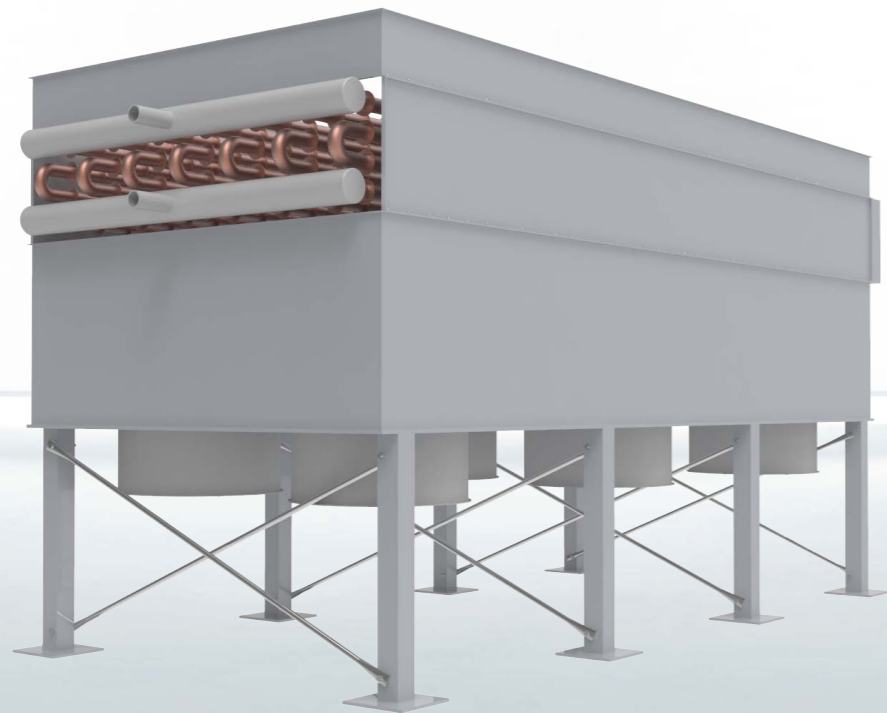


- ✓ Dry type air cooled heat exchanger runs 100% dry.
- ✓ Adiabatic air cooled heat exchanger significantly reduces water consumption.
- ✓ No spray water is required, suitable for water scarce areas.
- ✓ 100% dry running, free from fouling & scaling.

- ✓ Finned tubes serve as the heat exchanger and creates a large heat transfer area
- ✓ Integrated transportation, easy installation.
- ✓ Low maintenance.
- ✓ Low tower height, compact structure and small floor area.

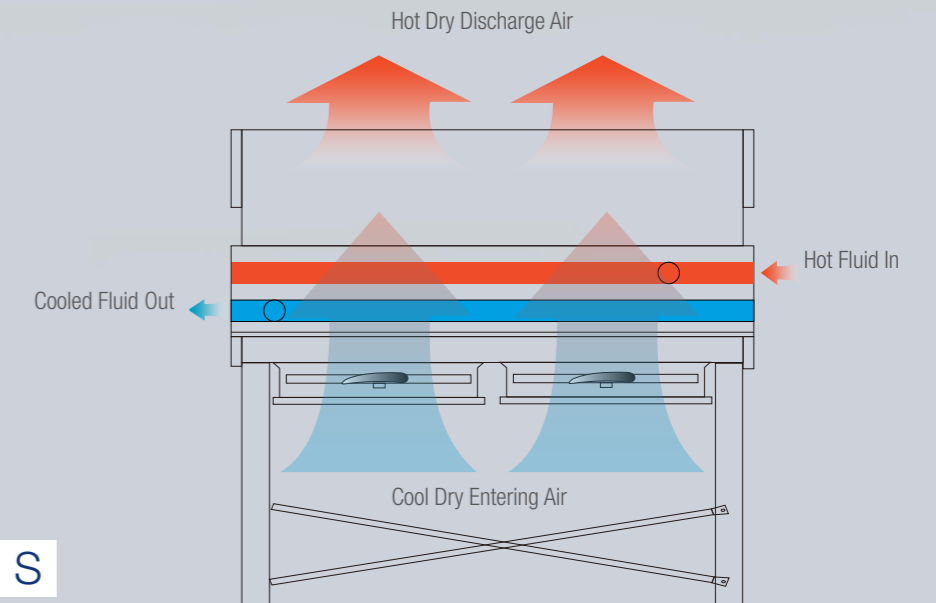
## Flat Dry Type Air Cooler

Flat dry type air cooler is a kind of flat heat exchanger that takes ambient air as the cooling medium and uses an axial fan to draw the air to flow across the finned tubes to undertake heat transfer with process fluid in the finned tubes, thereby cooling the hot process fluid in the finned tubes. The axial fan can be installed at the top or the bottom of the air cooled heat exchanger.



## How Does It Work?

AIR  
COOLED  
HEAT  
EXCHANGERS



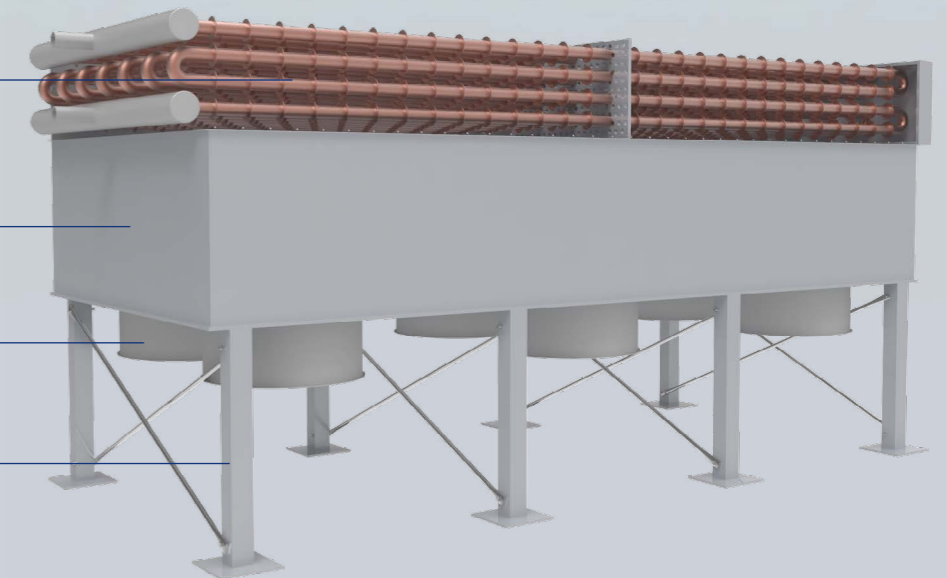
Hot process fluid enters the inlet of the finned tubes. At the same time, fan system is turned on, and the cold air flows across the finned tubes and conducts heat transfer with the process fluid in the finned tubes. The hot process fluid becomes cool and flow out of the outlet of the finned tubes. The cold air becomes hot and humid air and is dispatched to the atmosphere outside the unit.

Finned tubes, fins can be constructed of aluminum, stainless steel or copper; tubes can be made of copper, stainless steel or carbon steel.

Stainless steel 304 or DX51D+AZ120  
aluminized zinc plate tower body

Induced-shaft axial fan

Structural steel legs



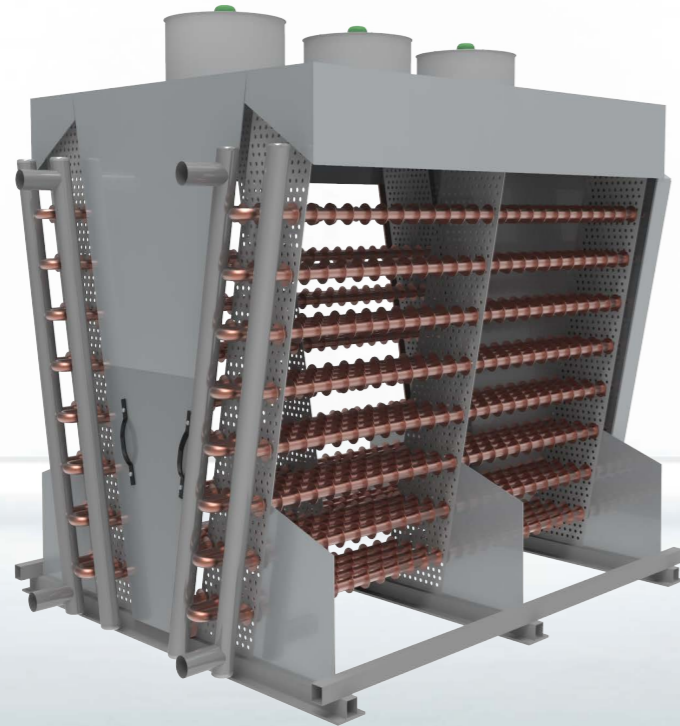
- ✓ Dry type air cooled heat exchanger runs 100% dry.
- ✓ Suitable for cooling projects with server water shortage or inaccessible water source.
- ✓ Save high water bills and waste water treatment costs.
- ✓ Low power consumption and power saving.
- ✓ Reduce electrolytic corrosion.
- ✓ Finned tubes serve as the heat exchanger and create a large heat dissipation area.
- ✓ Integrated transportation, easy installation.
- ✓ Low maintenance.
- ✓ Low tower height, compact structure and small floor area.

### Flat dry type air coolers are widely used in the following industries:

- Steel – electrical arc furnace/induction furnace cooling
- Refinery & petrochemicals – reactor column cooling
- Rubber – roller cooling
- Polyfilm – chill roll cooling
- Plastic – injection molding machine cooling
- Textiles – process vapour condensation
- Refrigeration / air conditioning – condensers for air cooled chillers
- Power industry – turbine lube oil cooler / turbine intercooler

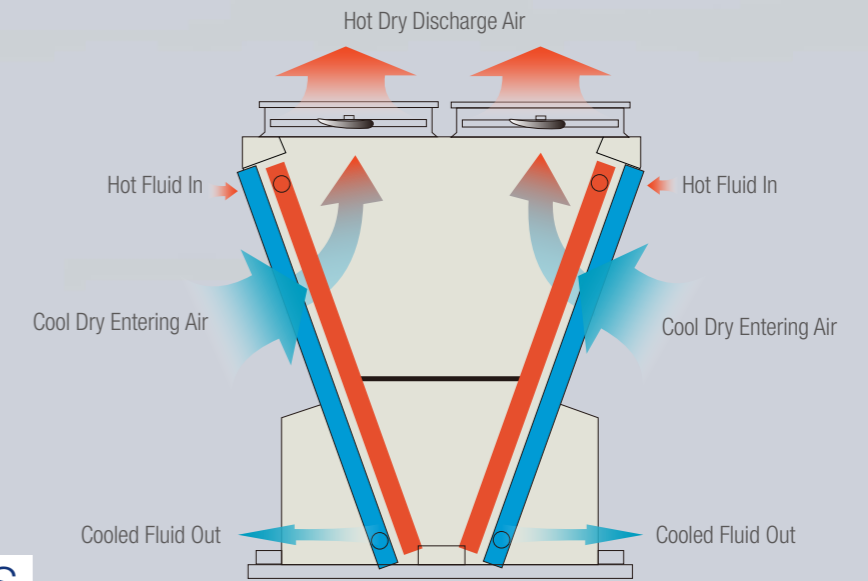
## V-Shaped Dry Type Air Cooler

V-shaped dry type air cooler is a V-shaped heat exchanger that takes ambient air as the cooling medium and uses an induced-shaft axial fan to draw the air flow across the finned tubes to cool or condense the hot process fluid in the finned tubes.



## How Does It Work?

A I R  
C O O L E D  
H E A T  
E X C H A N G E R S



Hot process fluid enters the inlet of the finned tubes. At the same time, fan system is turned on. The cold air drawn into the unit flows across the finned tubes and conducts heat transfer with the process fluid in the finned tubes. The hot process fluid becomes cool and flow out of the outlet of the finned tubes. The cold air becomes hot and humid air and is dispatched to the atmosphere outside the unit.

- ✓ Dry type air cooled heat exchanger runs 100% dry.
- ✓ Suitable for cooling projects with server water shortage or unaccessible water source.
- ✓ Save high water bills and waste water treatment costs.
- ✓ Low power consumption and power saving.
- ✓ Reduce electrolytic corrosion.
- ✓ Finned tubes serve as the heat exchanger and create a large heat dissipation area.
- ✓ Integrated transportation, easy installation.
- ✓ Reduced maintenance.
- ✓ Low tower height, compact structure and small floor area.

### V-shaped dry type air coolers are widely used in the following industries:

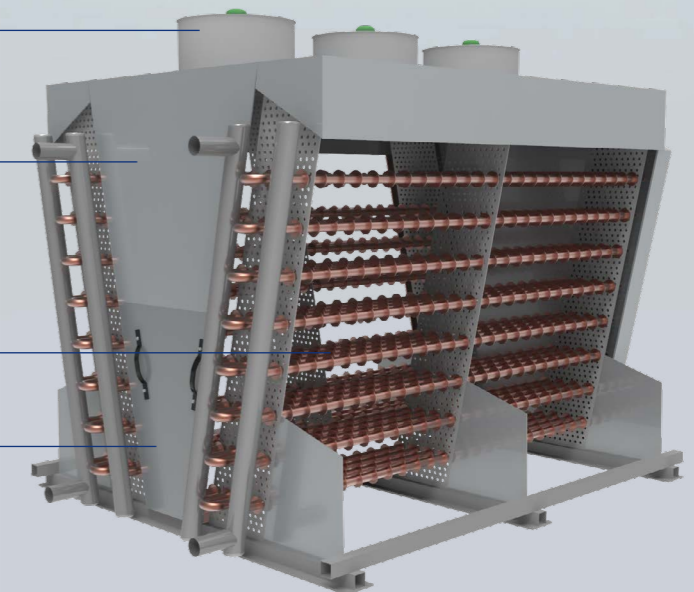
- Steel – electrical arc furnace/induction furnace cooling
- Refinery & petrochemicals – reactor column cooling
- Rubber – roller cooling
- Polyfilm – chill roll cooling
- Plastic – injection molding machine cooling
- Textiles – process vapour condensation
- Refrigeration / air conditioning – condensers for air cooled chillers
- Power industry – turbine lube oil cooler / turbine intercooler

### Induced-shaft axial fan

Stainless steel 304 or DX51D+AZ120  
aluminized zinc plate tower body

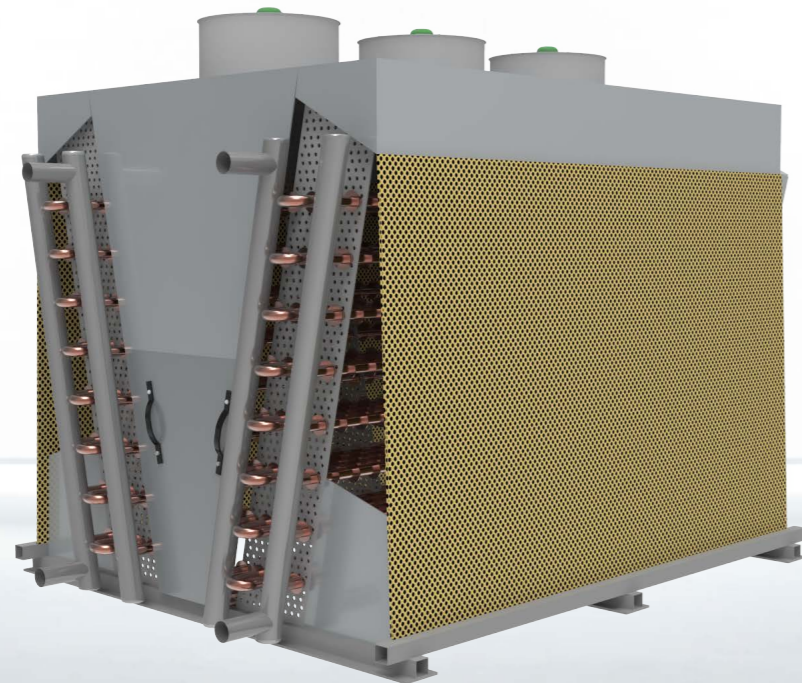
Finned tubes, fins can be constructed of aluminum, stainless steel or copper; tubes can be made of copper, stainless steel or carbon steel.

### Easy-to-remove access door



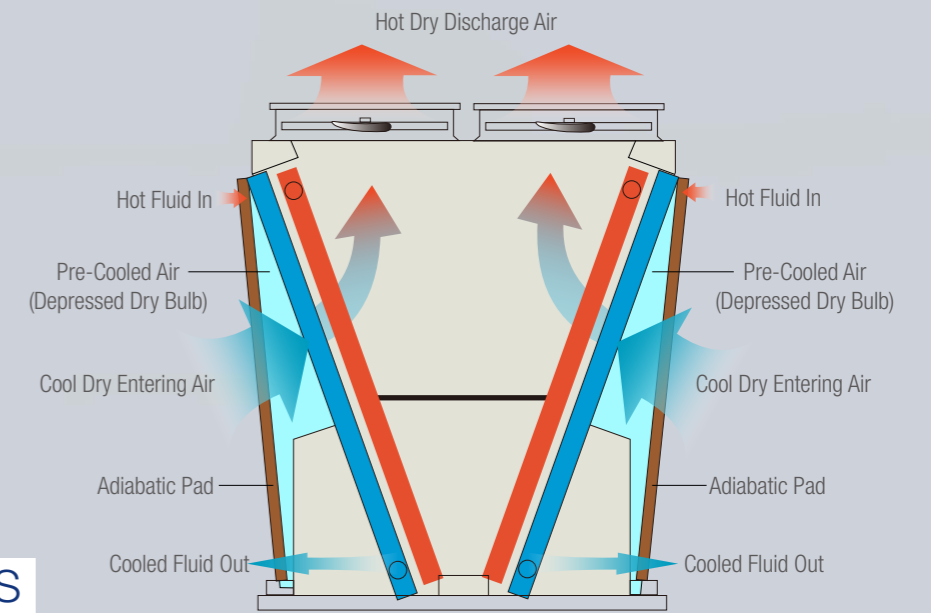
## V-Shaped Adiabatic Type Air Cooler

V-shaped adiabatic type air cooler is a V-shaped heat exchanger that takes ambient air as the cooling medium and uses an induced-shaft axial fan to draw the air flow across the adiabatic humidification system and then finned tubes to cool or condense the hot process fluid in the finned tubes.



## How Does It Work?

AIR  
COOLED  
HEAT  
EXCHANGERS



Hot process fluid enters the inlet of the finned tubes. The heat of the process fluid dissipates through the surface of finned tubes and transfers to the fins. The adiabatic system contains a fully wetting fibrous pad located in front of the finned tubes. Ambient air is drawn into the unit through the adiabatic pad by the fan on top of the unit. The air is humidified as it passes through the adiabatic pad, decreasing the dry bulb temperature within a few degrees of the wet bulb temperature. This new air temperature is referred to as the depressed dry bulb. The pre-cooled air is then drawn through the tube and fin surface, offering a significantly increased heat rejection capacity. The heat of the process fluid transfers to the air and is dispatched to the atmosphere. The cooled process fluid flows out of the unit through the outlet of the finned tubes.

- ✓ Adiabatic air cooled heat exchanger significantly reduces water consumption.
- ✓ Finned tubes serve as the heat exchanger and create a large heat dissipation area.
- ✓ Integrated transportation, easy installation.
- ✓ Reduced maintenance.
- ✓ Low tower height, compact structure and small floor area.

**V-shaped adiabatic type air coolers are widely used in the following industries:**

- Steel – electrical arc furnace/induction furnace cooling
- Refinery & petrochemicals – reactor column cooling
- Rubber – roller cooling
- Polyfilm – chill roll cooling
- Plastic – injection molding machine cooling
- Textiles – process vapour condensation
- Refrigeration / air conditioning – condensers for air cooled chillers
- Power industry – turbine lube oil cooler / turbine intercooler

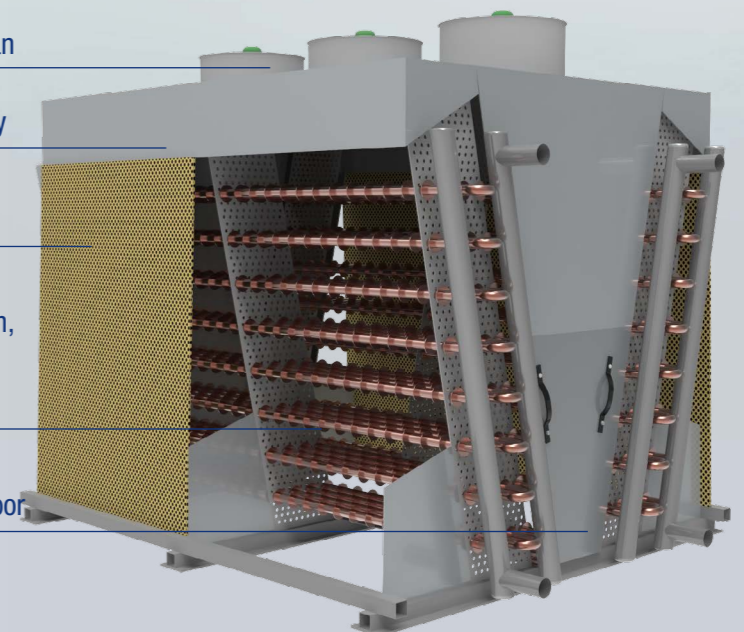
Forced-shaft or induced-shaft axial fan

Stainless steel or hot dip galvanized tower body

Adiabatic humidification system

Finned tubes, fins can be constructed of aluminum, stainless steel or copper; tubes can be made of copper, stainless steel or carbon steel.

Easy-to-remove access door



# Our Projects



**2019**  
**Pakistan**  
Counter flow closed circuit cooling tower  
Oil Processing Plant Cooling Project  
Quantity: 2 units



**2019**  
**Malaysia**  
Counter flow closed circuit cooling tower  
Pharmaceutical Plant Cooling Project  
Quantity: 8 units



**2020**  
**New Zealand**  
Flat dry type air cooled heat exchanger  
Spinning Mill Cooling Project  
Quantity: 10 units



**2020**  
**India**  
Counter flow cooling tower  
Daily Use Chemical Plant Cooling Project  
Quantity: 2 units



**2020**  
**Nigeria**  
Closed circuit cooling tower  
Chemical Plant Large Cooling Project  
Quantity: 200 units



**2021**  
**Australia**  
Cross flow closed circuit cooling tower  
Water Treatment Plant Cooling Project  
Quantity: 6 units



**2019**  
**Singapore**  
Closed circuit cooling tower  
Chemical Plant Cooling Project  
Quantity: 5 units



**2019**  
**South Africa**  
Flat dry type air cooler  
Power Plant Cooling Project  
Quantity: 120 units



**2020**  
**Thailand**  
Open circuit cooling tower  
Food Processing Plant Cooling Project  
Quantity: 3 units



**2020**  
**Australia**  
Hybrid closed circuit cooling tower  
Chemical Plant Cooling Project  
Quantity: 30 units





**FEIYU Cooling**

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