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工业冷却塔

FIELD ERECTED COOLING TOWER

TAI、TCI SERIES

公司介绍

廷亚致力于冷却设备的开发、设计、生产、销售、咨询与服务。作为冷却设备的优秀制造服务商，我们拥有一批优秀的科研开发、制造人才，并与上海理工大学合作成立了冷却塔研发中心。在开发高性能、高质量产品的同时，与顾客分享我们的经验。

Tyacht, a specialist in refrigeration and air conditioning, is engaged professionally in the research and development, design, manufacturing, sales, and service. Tyacht established the cooling tower R&D Center with Shanghai University for Science and Technology. While developing high-quality, high-performance products, we like to share our experience with our customers.

廷亚工业型冷却塔适用于所有工业场合的循环水冷却，广泛应用于电厂、化工、钢铁、食品、医药、机场、造纸、污水处理、机械制造等行业。

Industrial cooling tower can be used widely in all process of industrial cooling circulating water system including power plant, chemical, steel, food, pharmacy, airport, paper manufacturing, sewage treatment and machinery industries.

廷亚公司参照CTI及GB设计标准，开发研制TAI逆流及TCI横流两大工业冷却塔，其中单台冷却塔最大可处理5000吨/小时水流量。

Tyacht have developed Field Erected Cooling Tower of type TAI counter-flow and TCI cross-flow, with the maximum capacity of 5000 m³/h water flow rate for single cell design, according to CTI and GB as standard.

廷亚致力于冷却设备的开发、设计、生产、销售、咨询与服务。作为冷却设备的优秀制造服务商，我们拥有一批优秀的廷亚工业型廷亚工业冷却塔各部件加工工艺精良，经久耐用，可靠性高。其优良的设计在细节上得以体现，如多样化的可选部件可满足客户需求；可采用变频、双速电动机使得冷却塔更加节能；在填料上添加导流板以有效地减低飞溅水的损失；在进风侧采用导风板使外部空气均匀进入塔内与散热材料充分接触，确保冷却塔的高效换热。

Field erected cooling tower, with excellent processing technology, is durable and reliable. Advanced design has embodied in the details, such as a variety of optional components so as to meet different customers' needs; Two Speed Fan Motors & Inverter Duty Fan Motors makes cooling tower more energy-efficient; Air deflector furnished in fills reduce water drift loss greatly; Air deflector in

廷亚产品系列

闭式冷却塔——TCC、TAC、TMC系列
 开式冷却塔——TCT、TAT系列
 蒸发冷凝器——TAE、TME系列（氟利昂、氨系统用）
 工业冷却塔——TCI、TAI系列

Products

Closed Circuit Cooler——TCC、TAC、TMC series
 Cooling Tower——TCT、TAT series
 Evaporative Condenser——TAE、TME series
 Field Erected Cooling Tower——TCI、TAI series

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TCI Engineering Data

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性能特点 Feature and Speciality

个性化设计，满足不同客户需求 Personalized Design for Different Customers' Demands

- 根据客户不同的设计工况及水质要求，我们的工程师将进行优化设计，可处理高温、中温及常温工况循环水。
- TCI工业塔的独特横流加高设计，还可处理大温差，高温水制程，如60 - 35 °C（25°C温差）。
- TCI横流工业塔可采用格栅填料，应用于污水制程，如含油、含纸浆、含悬浮絮等，特别适用于食品、炼钢、造纸及污水处理制程。
- TAI逆流工业塔采用高品质PVC薄膜填料，特殊的波形设计，保证高效率换热，更低静压风阻。大比表面积设计，提供最大的热交换空间。片状成型，模块安装，结构坚固，设计承载强度500KG/M²。
- 可根据客户不同需求，如场地限制、超低功率、超低噪声等，提供多种可选项服务，设计特性产品。
- We optimize the design of cooling tower as per various working conditions and water quality, with function of handling high temperature, middle temperature as well as general working circulating water.
- Unique design of heightening and crossflow for TCI, can be suitable for High temp., middle temp. and normal temp. range process from 60 Degrees C to 35 Degrees C.
- Splash filling design can be suitable for some special water like oil water, paper pulp and floc water which used in food, steel, mill pulp and waste water treatment process.
- TAI counterflow field erected cooling tower with design of high-quality PVC film-fill, unique wave-form design, can guarantee high-efficient heat transfer and lower static pressure wind loss. Large surface design provides largest heat transfer space. Lamellate filling, knockdown assemble, firm structure, with loading strength of 500KG/M².
- Multiple design and features services for customers' option, such as site restriction, ultra low power, ultra lowsound, etc.

高效换热 High-efficiency Heat Exchange

- 采用原生优质PVC塑料和先进的加工工艺，经真空吸塑成型，生产所需的填料及挡水器，同时在进风侧采用导风板使外部空气均匀进入塔内与散热材料充分接触，保证热交换的高效率和持久性。
- Fills and eliminator, shaped by vacuum forming, shall be constructed of corrosion-free polyvinyl chloride (PVC) and advanced crafts process. Meanwhile, Air deflector in air-inlet sides enable the external air flow to the tower evenly and get full access to heat transfer materials to ensure the high-efficiency heat exchange of the cooling tower.

使用寿命长 Long Service Life

- 塔体骨架可采用钢结构、钢筋混凝土、玻璃钢拉挤型材、防腐木材等四种不同材质，经久耐用不易腐蚀。
- Four typical frame work material for tower body include: Steel, R.C Concrete, Pultrusion FRP, Treated Wood, which are durable and anti-corrosive.

可靠性高 High Reliability

- 精良的传动部配置，确保冷却塔机械传动部运行的高效率和可靠性。电机采用TEFC全封闭户外型，防护等级高；风机效率高、能耗低；传动轴耐腐蚀、高强度，在出厂前通过动平衡测试，具有弹性可防止运行所产生的震动问题。
- 根据设备实际运行环境需要，可提供多种硬件选项，如仪表、变频控制柜、化冰系统、旁滤装置、消防喷淋系统等以确保冷却塔的安全运行。
- The sophisticated drive configuration, ensure a highly efficient operation and reliability of the cooling tower mechanical transmission. TEFC Totally Enclosed motors used in outdoor-type, high-level protection; fans have high efficiency, low energy consumption feature; transmission shaft with corrosion-resist, high strength, pass dynamic balance test before ex-factory, flexible enough to prevent vibration generated by the issue of operation.
- According to actual working environment, we provide various optionals, like instruments, frequency control cabinet, ice removing system, filter device, fire spray system etc.

部件及材质 Components and Material

风洞及玻璃钢部件 Fan Stack and FRP components

采用优良原材料生产玻璃钢部件，优质无碱玻璃纤维毡，抗紫外线胶衣。风洞曲线采用动能回收型设计，保证最大的动能回收效率。结构坚固，不变形。外侧板及入风导板采用拉挤成型，表面光滑，强度高。

Adopt the best raw material for FRP components producing, include: Glassfibre mat, anti-UV gel-coated. The shape design of the fan stack can fulfill the velocity recovery function to get the best velocity recovery efficiency. Side panels and inlet louver plat are produced with pultrusion process to get smooth surface and highest strength.

填料 Filling

廷亚TAI逆流型工业塔填料由高品质PVC薄膜经真空吸塑成型，添加抗紫外线成分，表面光洁度高，可有效防止细菌、粘泥、污垢堆积。特殊的波形设计，保证高效率换热，更低静压风阻。大比表面积设计，提供最大的热交换空间。片状成型，模块安装，结构坚固，设计承载强度500KG/M2。

廷亚TCI横流型工业塔采用特有格栅填料，大间距，不易堵塞，可应用于污水处理场合。在一般水质要求条件下可采用高温型PVC或FRP玻璃钢材质的填料，可将填料耐温提高到90度。

TAI counter-flow industrial cooling tower use high density PVC film is produced by vacuum pressing forming process, adding anti-ultraviolet addition material. With excellent surface which can prevent the accumulation of bacterium and dirt. Special wave-shape design can ensure high efficiency of heat exchanging, lower static pressure, and big heat transfer area which can provide the largest heat exchanging space area. Lamellate filling formed can be easily moved and installation with high loading strength of 500kg/m2.

TCI cross-flow use special grid filling design with big space difference to avoid jamming of dirty. This filling can be used in waste water treatment. Under the general water demand, high-temperature PVC or FRP filling can be used which can help filling material up to 90 degrees temperature-resistant.

挡水器 Eliminator

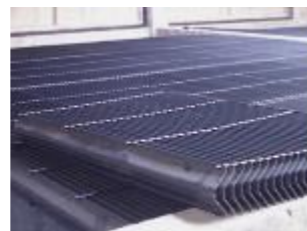
高品质PVC薄膜经真空吸塑成型，添加抗紫外线成分。片状蜂窝型3折设计，斜面排水波形设计，高强度结构，支撑跨度大，确保最低通风阻力。有效阻止水滴，标准设计飘水损失不超过0.001%。在处理水温度高于55度情况时，为防止PVC挡水器变形，TCI横流型工业塔还可考虑才用防腐木材挡水器。

High-quality PVC film by vacuum molding, add anti-ultraviolet component. Cellular 3-sheet folding design, slope drainage waveform design, high-intensity structure, large span support, and to ensure that the minimum ventilation resistance. Effectively prevent the water droplets, the standard design of floating water loss does not exceed 0.001%. When the water temperature exceed 55 degree, in order to prevent PVC eliminator deformation, TCI cross-flow industrial cooling tower also take into wood corrosion-resistant eliminator consideration.

散水系统 Water Distribution System

采用主管/支管，下喷式，管状设计，主管及支管材料可选用玻璃钢、PVC及钢材质。根据需求，可设计为悬挂式配管系统。管网设计确保稳定，均匀的水流分配。特殊的喷头形式，确保喷淋均匀。喷头采用ABS工程塑料，坚固耐用。配管采用标准法兰连接，拆卸及清洗方便。

Adopt main / branch pipe, down spray, pipe design. The material of main and branch pipe can adopt FRP, PVC and steel design. Hanging type piping design are used for special requirements. Pipe networks design to ensure stability and homogeneous distribution of water. Special nozzle form ensures spray evenly. ABS engineering plastic nozzle head is durable. Standard piping flange connection is convenient to demolition and cleaning.



部件及材质 Components and Material

桁架 Framework

根据不同客户需求，塔体骨架可采用包括钢结构、混凝土、玻璃钢拉挤型材、防腐木材等四种不同材质结构。

According to customers' different demands, four typical frame work material are adopted include: Steel, R.C Concrete, Pultrusion FRP, Treated Wood.

- 钢结构 - 骨架采用钢构标准型材，热浸镀锌防腐处理，螺栓连接。
- 混凝土 - 骨架采用钢筋混凝土结构。
- 木结构 - 骨架采用上等红松木，经真空加压防腐，寿命可达20年。结构轻巧，坚固，可适用于各种水质，气候场合。
- 玻璃钢拉挤型材 - 骨架采用拉挤玻璃钢型材，结构轻巧、坚固、永不腐蚀，可适用于各种水质、气候场合。
- Standard steel material with hot dip galvanized treatment and bolts connection for framework.
- RC concrete for framework.
- Best quality red pipe by vacuum pressing treatment for framework can be suitable for all kinds of water quality and weather condition with the life time 20 years. Light and firm structured.
- Pultruded FRP for framework can be suitable for all kinds of water quality and weather condition and will be never corrosion. Light and firm structured, never corrosive.

传动部件 Drive Components

● 风机 Fan Assembly

采用轴流式风机，风机直径由14FT(4200MM) ~ 34FT(1000 MM)，风机叶片可选用玻璃钢及铝合金材质。可采用以下知名厂商的专业风机系统：
The use of axial flow fans, fans with diameters ranging from 14FT (4200MM) ~ 34FT (1000 MM), fan blades can use FRP and reinforced aluminum alloy material. Alloy aluminum fan blade and provide by below professional suppliers:

上海尔华杰 Shanghai Erhuajie	拉挤玻璃钢 FRP 风叶 Pultruded FRP fan blades
荷兰豪顿 HOWDEN	拉挤玻璃钢 FRP 风叶 / 铝合金风叶 Pultruded FRP / Alloy Aluminum fan blades
意大利可风可 COFIMCO	拉挤玻璃钢 FRP 风叶 / 铝合金风叶 Pultruded FRP / Alloy Aluminum fan blades

● 减速机 Speed Reducer

采用齿轮式减速机，轴承配用瑞典SKF。透气栓、注油和排油孔、检油棒和油标等都可以外接延伸管，在外部进行维修，为日常的维护的完全进行提供了可靠保障。Gear reducer with SKF bearing. Suppository air, oil and oil drain hole, oil-lever stick and oil scale can get external maintenance through the external pipe, provide a reliable guarantee for routine maintenance.

选用以下知名厂商的专业冷却塔减速机系统：Below are professional supplier

美国AMARILLO,USA CTI / AGMA认证 (CTI / AGMA certificated)
日本住友SUMITOMO, JAPAN PARAMAX 9000 SFC系列(PARAMAX 9000 SFC Series)
上海尔华杰Shanghai Erhuajie

● 传动轴 Drive Shaft

标准设计美国进口碳纤维材质冷却塔专用传动轴，耐腐蚀、质量轻、高强度。Adopt USA imported carbon fiber material drive shaft which providing excellent corrosion resistance, low weight, high strength.

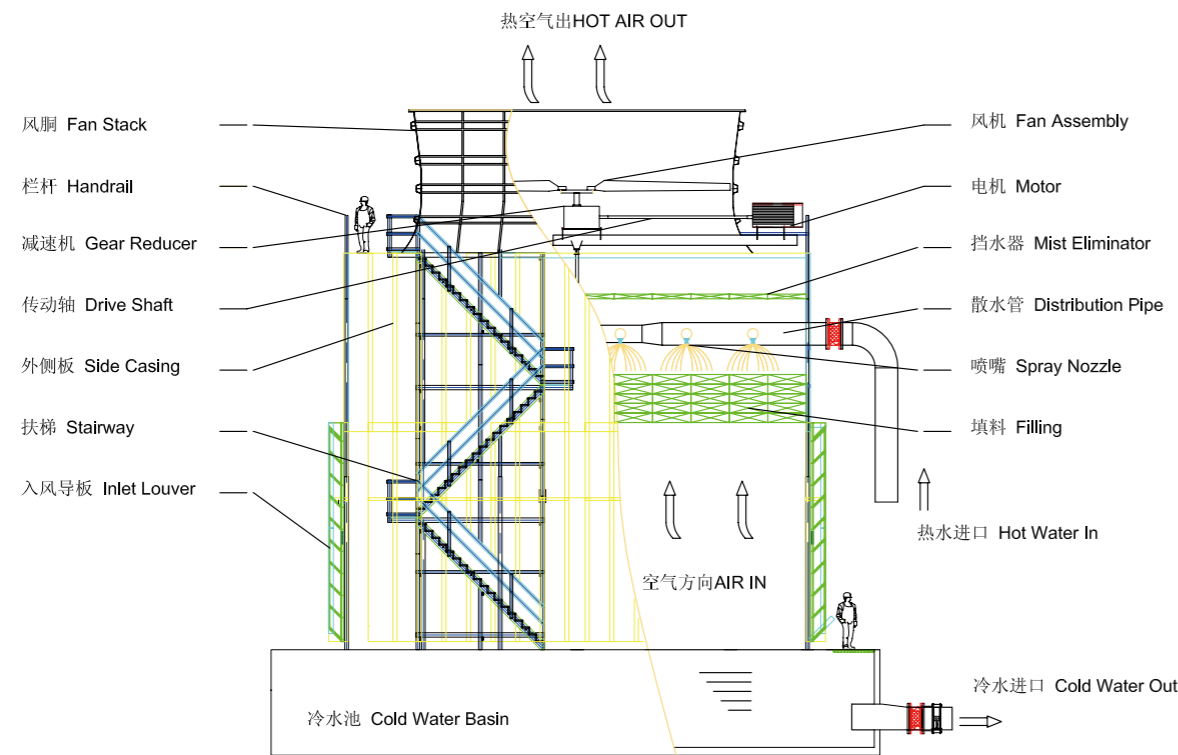
● 风机电动机 Electric Motor

标准设计采用TEFC全封闭户外型，中高压电机，防护等级IP55\54，绝缘等级F，亦可根据客户需求配备相应品牌。针对不同需求，可选用防爆、变频电机。

Standard TEFC total enclosed outdoor type, protection IP55/54, insulation F high voltage electric motor. Also can select motor brands according to customer's requirement. Select explosion protection and variable frequency motor for different demands.



TAI 逆流式工业塔
TAI Counterflow Field Erected Cooling Tower



TAI- 逆流工业塔结构
TAI-Counterflow Field Erected Cooling Tower_Section View

设计特点 Features

工业型冷却塔能具有优良的冷却能力，低廉的保养费用，高经济效益的运转成本，适用范围很广泛。TAI型广泛运用于大流量（单台最大处理水量可达5000吨/小时），占地面积受限的场所。塔体骨架种类可采用钢结构、钢筋混凝土、玻璃钢拉挤型材、防腐木材等四种不同材质结构。

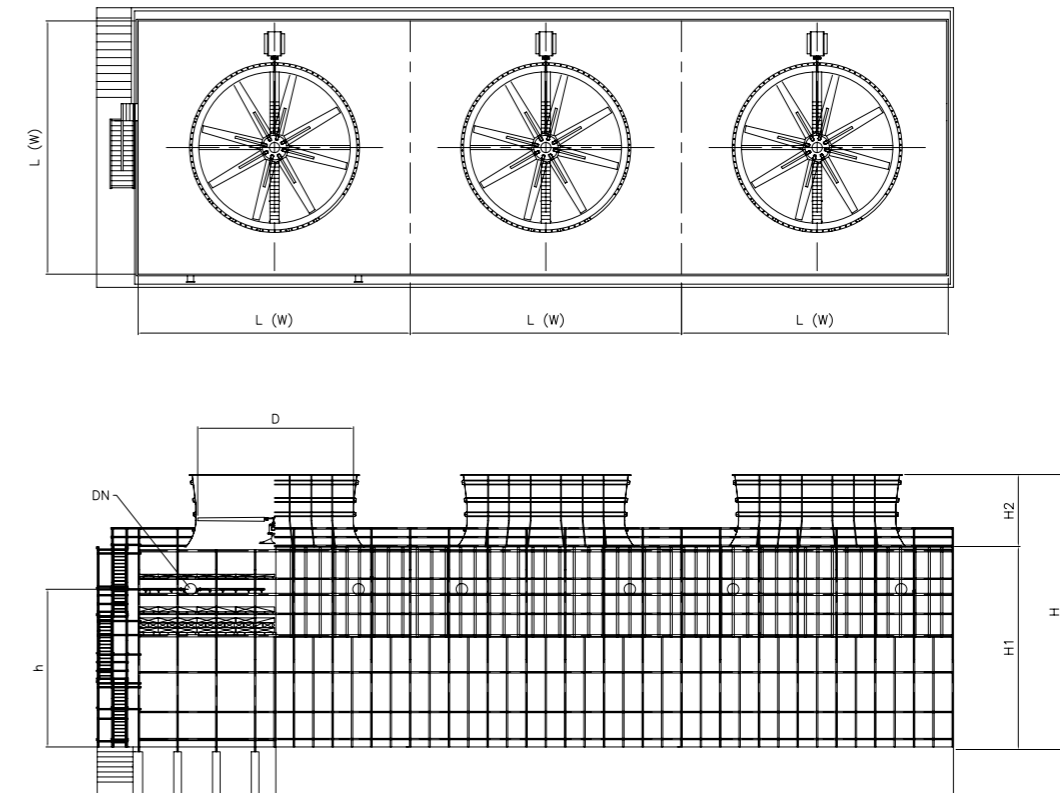
Type TAI is widely used in large water flow (maximin water flow of 5000 ton/h each unit), and site with limited space. Tower body frame has four typical frame work material: Steel, R.C Concrete, Pultrusion FRP, Treated Wood, which are durable and anti-corrosive.

工作原理 Principle

从热源中出来的热水流入塔上部喷淋水管中，受压力作用通过喷嘴均匀的喷洒在填料上，同时冷空气通过冷却塔下部的进风格栅进入塔内与水逆流掠过填料，小部分水被蒸发带走热量，降低水温，吸收汽化潜热的热湿空气，由顶部通风机排到周围大气中，被冷却的水则落到水盘后送回到热源。

The hot water from the heat source flows to spray pipes in the upper tower, spray to the fill material evenly through spray nozzle under the pressure, while the cold air passing across the fill material in counter form with the water through the inlet louver, a small part of the water evaporated take away the heat, reduce the temperature, the hot humid air absorbed latent heat back to surrounding atmosphere through the ventilator , the cooling water dropped to the water basin and return to the heat source.

TAI 工程数据
Engineering Data of TAI

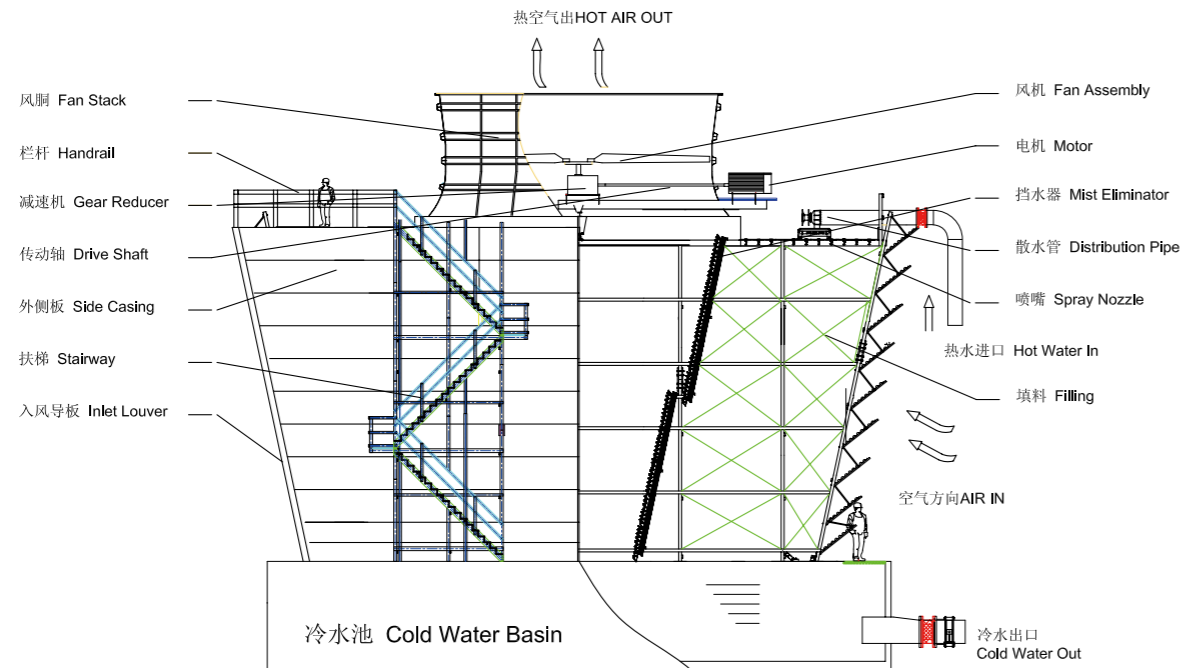


TAI-ID逆流工业塔 Counterflow Field Erected Cooling Tower											
型号 TAI-ID Model No.	设计处理水量 Water Flow Rate	单风室Single Cell		塔体总高 Totally Height	风室顶板高度 Height from basin curb to fan deck	风筒高度 Height of Fan Stack	中心配管 Main Inlet Pipe		风机直径 Fan Diameter	电机功率 Motor Power	水泵扬程 Pump Head
		平面长度 Length	平面宽度 Width				高度 Heighth	尺寸 Dimensions			
	m3/h	L(mm)	W (mm)	H (mm)	H1 (mm)	H2(mm)	h (mm)	DN (mm)	D (mm)	MP (mm)	PH (m)
TAI-750	750	7400	7400	9000	6500	2500	4600	400x 1 pcs	4300	30	7.6
TAI-1000	1000	8600	8600	9900	7400	2500	5200	450x 1 pcs	5500	45	8.2
TAI-1250	1250	9400	9400	10700	8200	2500	5600	550x 1 pcs	5500	55	8.6
TAI-1500	1500	10400	10400	11000	8500	2500	5900	600x 1 pcs	6700	60	8.9
TAI-2000	2000	12000	12000	13800	9300	4500	6500	450x 2 pcs	7700	90	9.5
TAI-2500	2500	13400	13400	14400	9900	4500	7200	550x 2 pcs	8530	110	10.2
TAI-3000	3000	14600	14600	15000	10500	4500	7700	600x 2 pcs	8530	132	10.7
TAI-3500	3500	16000	16000	15500	11000	4500	8200	700x 2 pcs	8530	160	11.2
TAI-4000	4000	17000	17000	15800	11300	4500	8500	450x 4 pcs	9140	185	11.5
TAI-4500	4500	18000	18000	16300	11800	4500	9000	550x 4 pcs	9140	185	12
TAI-5000	5000	19000	19000	16700	12200	4500	9400	550x 4 pcs	9700	200	12.4

- 标准设计条件基于：42℃进水温度，32℃出水温度，28℃湿球温度，32℃干球温度；
- 如有特殊条件，可计算选型或做特殊设计。
- 冷却塔噪声符合GB7190.2 低噪声标准要求。
- 可根据不同需求选择：钢结构、 混凝土结构、拉挤玻璃钢结构及木结构等。

- Based on stadard design condition:42℃ inlet water temp., 32℃ outlet water temp., 28℃ wet bulb temp., 32℃ dry bulb temp.;
- For other condition or special requirements, we can select suitable model or sepcial model.
- Fullfill low sound standard regulation according to GB 7190.2 Standard (Cooling Tower National Standard).
- Framework can be selected by: Steel, RC Concrete, Pultruded FRP or Wooden structure.

TCI横流式工业塔 Crossflow Field Erected Cooling Tower



TCI- 横流工业塔结构
TCI- Crossflow Field Erected Cooling Tower Section View

设计特点 Features

廷亚TCI-横流工业型冷却塔可采用独特的木质格栅填料散热材，间距大，不易堵塞，在冷却水质不良的情况下运用尤其广泛，可以满足大流量工况；独特的横流加高设计，可处理大温差，高温水制程，如60 - 35℃ (25℃温差)。塔体骨架种类可采用钢结构、钢筋混凝土、玻璃钢拉挤型材，防腐木材等四种不同材质结构。

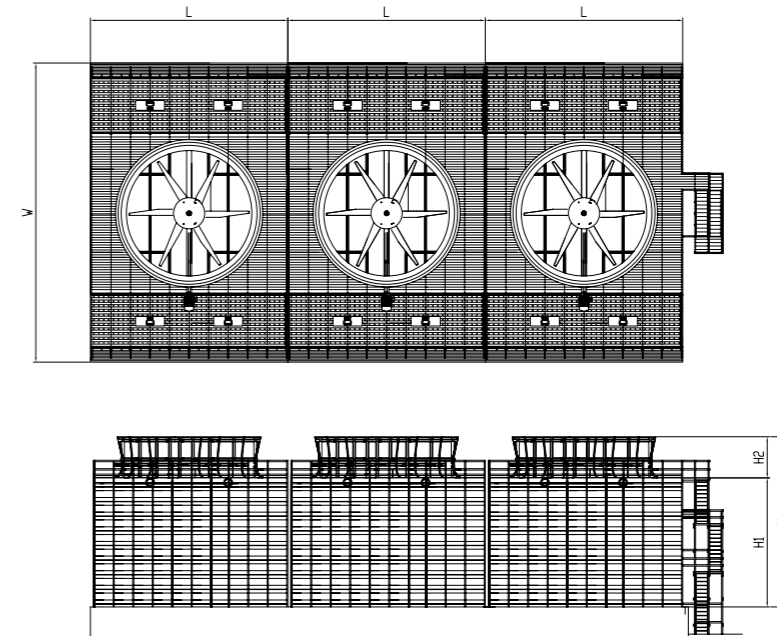
TCI crossflow use special wood grid filling design with big space difference to avoid jamming of dirty. Widely used with not good water quality. Satisfy the large water flow working condition. Specially higher design for TCT crossflow industrial cooling tower, can be suitable for big temperature difference and hot water cooling process like 60-35 (25 degree temperature difference). Four typical frame work material for tower body include: Steel, R.C Concrete, Pultrusion FRP, Treated Wood, which are durable and anti-corrosive.

工作原理 Principle

从热源中出来的热水通过进水管流入顶部散水槽中，淋水受重力作用从上到下均匀落入填料区，同时空气从两侧进入塔内，水流经过填料飞溅成小水滴，增强冷却水与空气之间的热交换。吸收汽化潜热的热湿空气，由顶部通风机排到周围大气中，被冷却的水则落到水盘后送回到热源。

The hot water from the heat source flow into the upper basin through inlet pipe, the water fall into the fill area from top to bottom due to gravity, meanwhile the air get into the tower from both side, the water flow flying into small droplets through fill, enhance heat exchange between water and air. The humid water absorb latent heat vent to surrounding atmosphere by ventilation, the cooling water drop to the water basin and return to the heat resource.

TCI工程数据 Engineering Data of TCI



标准型THC-S 横流工业型冷却塔 Standard THC-S Crossflow Field Erected Cooling Tower										
型号 Model No.TCI-S	设计处理水量 Design Water Flowrate	单风室Single Cell 平面长度 Layout Length	平面宽度 Layout Width	塔体总高度 Tower Height	风室顶板高度 Height from basin curb to fan deck	风筒高度 Height of Fan Stack	中心管尺寸 Main Inlet Pipe Size	风车直径 Fan Diameter	电机功率 Motor Power	水泵扬程 Pump Head
	m ³ /h	L (mm)	W (mm)	H (mm)	H1 (mm)	H2 (mm)	DN (mm)	D (mm)	MP	PH (m)
TCI-S100	100	2650	6325	3600	2100	1500	125x 1 pcs	1800	11	4
TCI-S150	150	3800	6325	3750	2250	1500	150x 1 pcs	2400	15	4
TCI-S200	200	3800	6950	4360	2860	1500	200x 1 pcs	2400	22	5
TCI-S250	250	5020	7550	4360	2860	1500	200x 1 pcs	2400	22	5
TCI-S300	300	6240	7550	4320	2820	1500	200x 1 pcs	3000	30	5
TCI-S350	350	6240	8150	4320	2820	1500	250x 1 pcs	3000	30	5
TCI-S400	400	5020	9630	6090	4590	1500	250x 1 pcs	3600	30	6.5
TCI-S450	450	5020	10100	7010	5600	1500	250x 1 pcs	3600	30	7.5
TCI-S500	500	7460	9020	6590	4590	2000	300x 1 pcs	4300	37	6
TCI-S600	600	7460	10100	6590	4590	2000	300x 1 pcs	4300	37	6

高温型TCI-H横流工业型冷却塔 High-temperature TCH-H Crossflow Field Erected Cooling Tower										
型号 Model No.TCI-H	设计处理水量 Design Water Flowrate	单风室Single Cell 平面长度 Layout Length	平面宽度 Layout Width	塔体总高度 Tower Height	风室顶板高度 Height from basin curb to fan deck	风筒高度 Height of Fan Stack	中心管尺寸 Main Inlet Pipe Size	风车直径 Fan Diameter	电机功率 Motor Power	水泵扬程 Pump Head
	m ³ /h	L (mm)	W (mm)	H (mm)	H1 (mm)	H2 (mm)	DN (mm)	D (mm)	MP	PH (m)
TCI-H100	100	3800	6330	3740	2240	1500	125x 1 pcs	2400	15	4.2
TCI-H150	150	3800	7550	4320	2820	1500	150x 1 pcs	2400	15	5
TCI-H200	200	3800	7800	6090	4590	1500	200x 1 pcs	3000	22	6.5
TCI-H250	250	5020	7550	4360	2860	1500	200x 1 pcs	2400	22	5
TCI-H300	300	3800	9025	6090	4590	1500	200x 1 pcs	3000	30	5
TCI-H350	350	5020	9630	6090	4590	1500	250x 1 pcs	3600	30	6.5
TCI-H400	400	5020	10100	7010	5510	1500	250x 1 pcs	3600	30	7.5
TCI-H450	450	6300	10250	6590	5090	2000	250x 1 pcs	4300	37	7.5
TCI-H500	500	6300	10600	7510	6010	2000	300x 1 pcs	4300	37	8
TCI-H600	600	7460	10600	7510	6010	2000	300x 1 pcs	4300	37	8

- 标准设计条件基于: 42 C进水温度, 32 C出水温度, 28 C湿球温度, 32 C干球温度;
- 高温型设计条件基于: 60 C进水温度, 35 C出水温度, 28 C湿球温度, 32 C干球温度;
- 冷却塔噪声符合GB7190.2 低噪声标准要求。
- 可根据不同需求选择: 钢结构、混凝土结构、拉挤玻璃钢结构及木结构等。
- 如有特殊条件, 可计算选型或做特殊设计。

- Based on standard design condition: 42 C inlet water temp., 32 C outlet water temp., 28 C wet bulb temp., 32 C dry bulb temp.;
- Based on high temperature design condition: 60 C inlet water temp., 35 C outlet water temp., 28 C wet bulb temp., 32 C dry bulb temp.;
- Fulfill low noise standard regulation according to GB 7190.2 Standard (Cooling Tower National Standard).
- Framework can be selected by: Steel, RC Concrete, Pultruded FRP or Wooden structural.
- For other condition or special requirements, we can select suitable model or special model.

可选部件及其功能 Accessories

过滤系统 Side Filtration

过滤系统主要用于工业领域循环水和废水的过滤。利用深层介质，能有效地去除颗粒物和降低浊度。过滤装置为整体系统，安装方便。出厂前所有的内部管道，控制连锁线都以完备，安装系统只需要连接外围的管道和供电即可。

We can provide PEP (ARKAL Series) filter system, mainly used in filtration of industrial water. The deep filter media can effectively get rid of particulate matter and reduce the turbidity of water. Unit assembly design of PEP filter system with all internal pipe and connection function together can be easily installed on site. The client only need to provide the outer pipe connection and power supply.

化冰装置 Icing Removing System

主要针对北方地区，冷却塔在冬季运行时极易结冰，严重时挂冰封堵进风口，影响冷却塔正常运行，破坏塔内淋水填料，影响冷却效果。根据当地气候条件，可设计，安装化冰装置，以消除各部分结冰情况。

When installed in northern area during cold winter weather, ice problem will be easily occurred which will influence the normal operation of cooling tower or damage the internal filling and reduce the cooling efficiency. Design and install the icing removing system can effectively solve the above problem.

消防喷淋系统 Fire Sprinkler System

在特殊场合，可配备喷淋灭火装置，以使冷却塔具备防火消防功能。可有效保护塔体，达到消防功能，并能替代FM认证水塔，以节省大量冷却塔设备购置成本。

Under special cases or plants, the cooling tower need to be equipped with fire sprinkler system to make sure that the cooling tower has the ability of fire proof function to protect the tower components from fire, and can be used as FM Approved tower which can save a plenty of cost.

变频控制系统 Variable Frequency Driving System

采用变频控制技术，可根据出塔水温，调节冷却塔风机运转速度，从而达到能源节省及精确控温。配备标准的变频控制柜，可实现包括变频控温在内的各种功能。

VFD (Variable Frequency Driving) System design, can help the tower to control the fan running speed to save the energy and control the outlet temp. precisely. The standard unit VFD control cabinet can perform all kinds of function including the VFD temperature control.

震动跳脱开关 Shock Skip Switch

可配备机械式或电子震动的跳脱开关，以便有效防止设备由于驱动系统震动过大而出现故障。

Two kinds of skip switch, with mechanical or electronic vibration fuctions, can effectively prevent the equipment from breakdown due to excessive vibration of drive system.

油位跳脱开关 Oil Level Skip Switch

油位开关即低油位报警切断开关。感应减速机油液位值，当超过临界点时，自动切断电机开关，进行有效保护。

Oil level switch, a alarm cut-off switch with low oil level, will cut off the switch of electrical motor automatically while the oil level of sensor reducer is over the critical point.



三位一体监控开关 Trinity Monitor Switch

应用于冷却塔风机安全运行监测的组合探头，在其内部分别集成了测量减速机油温、油位和风机机械振动信号的传感、转换和变送电路，探头直接输出与这些安全参量对应的4~20mA标准电流信号。

With internal sensing, switching and transmission circuits for respective use of measurement reduction gearbox oil temperature, oil level, and the fan mechanical vibration signal, it is applied in composite probe of safe fan operation of cooling tower. This probe outputs 4 ~ 20mA standard current signal matched with security parameters.

注意事项 Engineering Consideration

选型 Model Selection

客户需提供处理水的流量、进出水温度及当地湿球温度，以利于技术工程师对塔型大小进行合理设计；若不能提供这些参数，请将工程项目情况说明，我们的技术工程师也可凭借经验为您提供合理的冷却方案。

Clients need to provide circulating water flow, inlet temperature and wet bulb temperature, which is beneficial for the technical engineer to select tower. If the parameters can't be given, please make a description of the projects. Our engineers can select with experience.

防冻 Fozen Resist

主要北方地区，冷却塔在冬季运行时极易结冰，严重时挂冰封堵进风口，影响冷却塔正常运行，破坏塔内淋水填料，影响冷却效果。

根据当地气候条件，可设计，安装化冰装置，以消除各部分结冰情况，以确保冷却塔的安全运行。

Freezing condition happened in cooling towers running in winter mainly in north areas, ice block inlet louver, affect normal operation of cooling towers, damage the spray fill material, impact cooling effect. According to the local climatic conditions, ice-moving devices can be designed to eliminate ice to ensure the safe operation of cooling towers.

水质 Water Quality

工业冷却塔对水质无特殊要求，一般地洁净工业用水即可，若循环水质较差，含油或有较大悬浮颗粒时可考虑采用特有的格栅填料，大间距，不易堵塞。

Generally, clean water for industrial use in general can be applied in field erected cooling towers. If the circulating water quality is poor, with oil or larger suspended particles, grid fill material can be considered, large spacing, not easy to block.

安装 Installation

1. 请在通风良好、清洁的场所安装。
 2. 请避开灰尘、酸性气体排放多的场所。
 3. 请先制作安装基础，廷亚公司将提供具体基础尺寸及要求给客户。
 4. 因为空气从进风窗吸入，如果空气的吸入量不足将导致排热能力无法达到设计要求。故塔体之间以及塔体和围墙之间的距离一般控制在3m以上可避免此问题。
 5. 请注意不要使从冷却塔内排出的空气再次被吸入塔内，发生回流现象。在围墙的高度比塔体高的场合，以及多台塔不同高度的场合，推荐安装排风筒或增加基础高度。具体请与廷亚公司联系。
1. Select well-ventilated and clean area for the erection.
 2. Avoid a dusty or acidic location.
 3. Produce erect base first, We shall provide specific basis dimension and demand to clients.
 4. Keep distance between towers as well as between tower and wall for not less than 3m. Air volume to the cooling tower may be insufficient if the distance is not secured.
 5. Prevent discharged air from being re-circulated and sucked into the tower(Short-circuit). Installing uptake ventilator or increasing the basis height are recommended where wall is higher than tower or towers erected together with different heights. Please contact us for details.