



冰轮环境
MOON-TECH

智慧 / 绿能 / 生态
INTELLIGENT GREEN ENERGY ECOLOGY

INDUSTRIAL AIR COOLER



冰轮环境技术股份有限公司
MOON ENVIRONMENT TECHNOLOGY CO.,LTD.

With continuous technological and manage has promoted the continuous optimization of resource allocation and reconstruction of core competencies, Moon-TECH accelerated international expansion transformation. We have transformed from a traditional manufacturing enterprise to a modern service-oriented enterprise with strong competitiveness, large scale, wide coverage, complete business chain, and strong comprehensive research and development capabilities



Industrial Park in the US



Malaysian Industrial Park



Industrial Park in the UK



Vietnam Industrial Park



Baoding Industrial Park



Guxian Industrial Park



Laishan Industrial Park



Jinan Center

MOON-TECH

(Stock Code of 000811)



Low-temperature refrigeration



Central air-conditioning



Environmentally friendly heating



Energy and chemical equipment



Precision Casting



Hydrogen Energy Development



Smart Services



Intelligent Packing Machinery and Warehouse Storage System

With devoting to improving the quality of human life as the enterprise mission, MOON-TECH continuously build and enhance competitive advantages in the field of comprehensive energy utilization and accelerate the process of globalization, taking the revitalization of national industry and achievement of customer value as its responsibility, continuously creates and improves its competitive advantage, striving to become an evergreen enterprise with core competitiveness, loved by employees and respected by industrial partners.

Founded in 1956, Moon Environment Technology Co., Ltd (Stock Code: 000811). is a diversified and international comprehensive equipment industrial enterprise. The main business covers low-temperature refrigeration, central air conditioning, environmental protection heating, energy and chemical equipment, precision castings, smart services, hydrogen energy development, etc. In recent years, MOON-TECH has successively won the titles of Top 30 Enterprises with Core Competitiveness in China's Machinery Industry, Top 100 Enterprises of National Machinery Industry, Meritorious Enterprise of Equipment in China, and Demonstration Enterprise for Ozone Layer Protection.

For a longtime, with continuous technological and manage has promoted the continuous optimization of resource allocation and reconstruction of core competencies, accelerated international expansion transformation. We have transformed from a traditional manufacturing enterprise to a modern service-oriented enterprise with strong competitiveness, large scale, wide coverage, complete business chain, and strong comprehensive research and development capabilities

With the synchronous development of refrigeration and heat treatment, and actively expanding energy-saving and environmental protection industry as developing strategy, MOON-TECH is engaged in the technical research and development of low-temperature environment, waste heat recovery, gas compression, industrial heat exchange, urban clean emission and other fields, as well as the production and sales of related complete sets of equipment, and specializes in food refrigeration, chemical process cooling, comfortable environment air conditioning, research temperature control, process gas compression, building aggregated cooling, comprehensive application of heat energy, permafrost drilling, waste treatment, tec. MOON-TECH has production bases, scientific research centers and marketing& service organizations in more than 40 countries around the world. With safe, environmentally friendly, energy-saving, intelligent and Butler-style system integration capabilities, MOON-TECH is providing products with entire product life cycle to users in more than 120 countries and regions around the world.

MOON-TECH has 6 national scientific and technological innovation platforms including the National-Recognized Enterprise Technology Center and 16 provincial scientific and technological innovation platforms including the Shandong Provincial Key Laboratory of Energy Saving and Environmental Protection of Refrigeration Equipment. MOON-TECH has been recognized as a key high-tech enterprise of the China Torch Program, with 326 national patented technologies, and has hosted and participated in the formulation of 25 national standards and 37 industry standards. MOON-TECH has won two national awards, the National Science & Technology Progress Award and the National Technology Invention Award, and has successively won 213 provincial and ministerial scientific and technological achievements awards such as the Special Prize for Scientific and Technological Progress of the Chinese Association of Refrigeration and the First Prize for Scientific and Technological Progress of Shandong Province.

Following the requirements of the environmental policy of harmonious coexistence between human and nature, MOON-TECH is committed to the innovation of artificial environment control technology and comprehensive energy utilization technology to promote a simple, moderate, green and low-carbon mode of social production and operating system, actively building an interconnected and complementary system, including refrigeration, heating, water, gas, electricity, sewage, waste within the -271°C -200°C temperature and 0-90Mpa pressure range, aiming to achieve an energy ecological link between industrial parks and living spaces, and become an intelligent green energy system solution service provider. MOON-TECH also dedicates to develop the utilizations of NH₃、CO₂、HC、He、H₂O and other environmentally friendly substances application technologies, striving to provide professional, high value-added intelligent energy comprehensive utilization solutions.

In recent years, MOON-TECH actively actualized the green and low-carbon developing concept, accelerating the transformation of traditional industries around the dual-carbon goal and energy revolution, promoting the upgrading of the industrial structure to a low-carbon and high-quality level, and set six goals of "low-carbon industry, low-carbon technology, low-carbon manufacturing, low-carbon chain, low-carbon services, low-carbon culture", so as to ultimately realize the industrial structure of high-end, low-carbon consumption of energy, utilization of resources recycling, cleanliness of the production process, and to contribute to the realization of dual-carbon target.



Authoritative Certification



Production and Manufacturing Capacity



Product Introduction

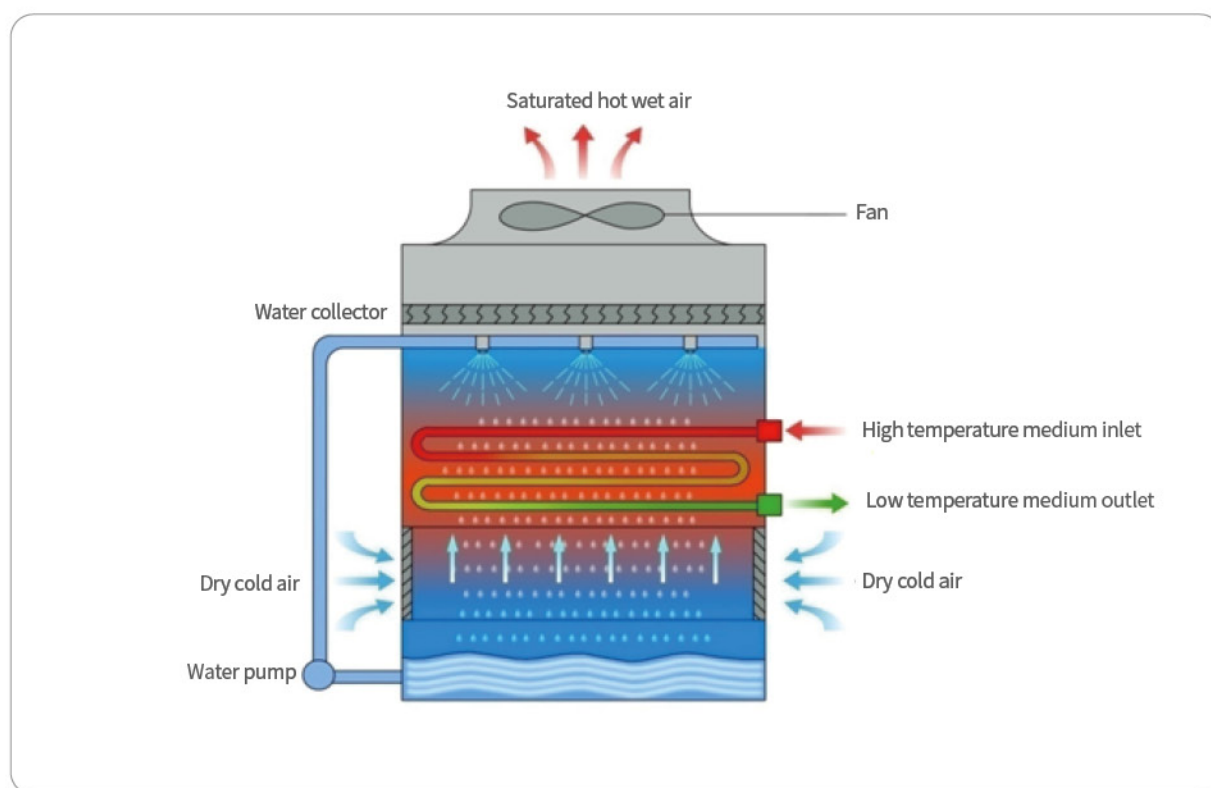
Surface Evaporative Cooler

Operating Principle

The surface evaporative cooler is actually a heat exchanger combining the performance of water-cooled cooler with that of conventional packed cooling tower and also a heat exchanger between water cooler and air cooler. The surface evaporative cooler is characterized in that water is sprayed and forced ventilation is performed outside the dividing wall type heat exchanger, and the heat is transmitted from the cooled fluid in the dividing wall type heat exchanger to the spray water outside the wall, and then to air through forced convection between spray water and air. The heat transmission from spray water to air is achieved mainly by exchange of the latent heat from spray water evaporation with the sensible heat between spray water and air.

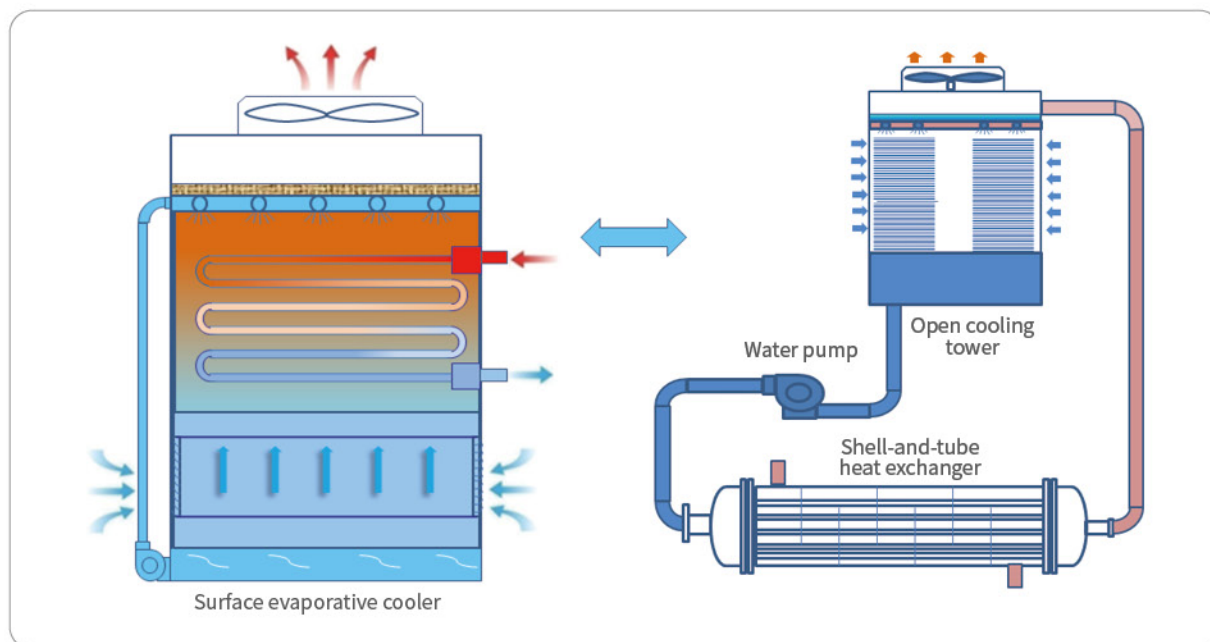
Working Process

The HT medium steam enters the coil set heat exchanger from the upper part of the surface evaporative cooler for condensation and cooling, and the condensed and cooled low temperature medium is discharged from the lower part of the surface evaporative cooler. Cooling water is ejected by the nozzle towards the coil set heat exchanger from its upper part under the action of the water pump; part water is evaporated and discharged together with the air flow from the fan, and most water falls back into the water tank at the evaporative condenser and enters the next cycle. Driven by the fan, air flows through the coil set heat exchanger from bottom to top, where air is of full heat-mass exchange with water to take away the heat released by HT medium and thus to achieve the purpose of condensation and cooling.



Product Introduction

Surface Evaporative Cooler VS Shell-and-tube Water-cooled Condenser



The surface evaporative cooler is a condensation system that replaces traditional shell-and-tube water-cooled condensers, open-type cooling towers, and circulating water pumps. It is a new energy-saving and water-saving high-efficiency condensing cooling equipment that integrates water cooling with air cooling, heat and mass transfer processes, and combines the advantages of both; it has the advantages of high heat transfer efficiency, low investment, low operating costs, compact structure, small floor space, convenient installation and maintenance, low maintenance costs, stable and reliable operation, etc.



Comparison of Heat Exchange Principle

Comparison Item	Water Cooler	Air Cooler	Surface Evaporative Cooler
Principal heat exchange type	Sensible heat	Sensible heat	Latent heat
Heat exchange mechanism	Take away heat quantity by means of the temperature rise of water, and thus cool (condense) the high temperature refrigerants in tubes.	Take away heat quantity by means of the temperature rise of air, and thus cool (condense) the high temperature refrigerants in tubes.	Drive heat transfer via mass transfer by means of water film evaporation on the outer surface of tubes, and thus cool (condense) the refrigerants in tubes.
Heat exchange amount	4.2kJ heat quantity is taken away every 1°C increase in the temperature of 1kg water.	1.23kJ heat quantity is taken away every 1°C increase in the temperature of 1m ³ air.	Theoretical absorption of 2345kJ of heat by 1kg water evaporation
Main targets and measures	Maximize the contact area with water, and increase the flow velocity and flow rate of water.	Increase the area and wind speed to form turbulent flow; take care to reduce resistance.	Create the forming conditions of easily evaporative water films and ensure that the vapor after evaporation is easily exhausted.

Operating Performance Comparison

Comparison Item	Water Cooler + Water Cooling Tower	Air Cooler (Dry Type)	Surface Evaporative Cooler
Water consumption	Large (easy drift)	None (small)	Common (used only in evaporation generally)
Pump energy consumption	Large (large flow rate, high lift)	None (small)	Small (small flow rate, low lift)
Fan energy consumption	Relatively small	Large (high installed power)	Small
Structure	Huge; large floor area	Huge	Compact and reasonable; placed on roof
Process	Reasonable; large installation workload	Many influential factors	Reasonable, simple and convenient installation
Heat transfer efficiency	Relatively high	Low	High
Scope of application	Medium-low temperature	High temperature	Medium-low temperature
Initial investment under the same heat exchange rate	Common	Maximum	Common



Product Introduction

Scope of Application

Surface Evaporative Cooler

Coal chemical industry



Shift gas cooling, booster after-cooling, synthetic gas cooling

Petrochemical industry



Atmospheric distillation, vacuum distillation, catalytic cracking, etc.

Electric power



Thermal power plant exhaust steam condenser and converter cooling

Metallurgy



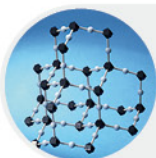
Thermal power plant exhaust steam condenser and converter cooling

Fine chemical industry



Pesticides, dyes, coatings, pigments, reagents, foods and additives

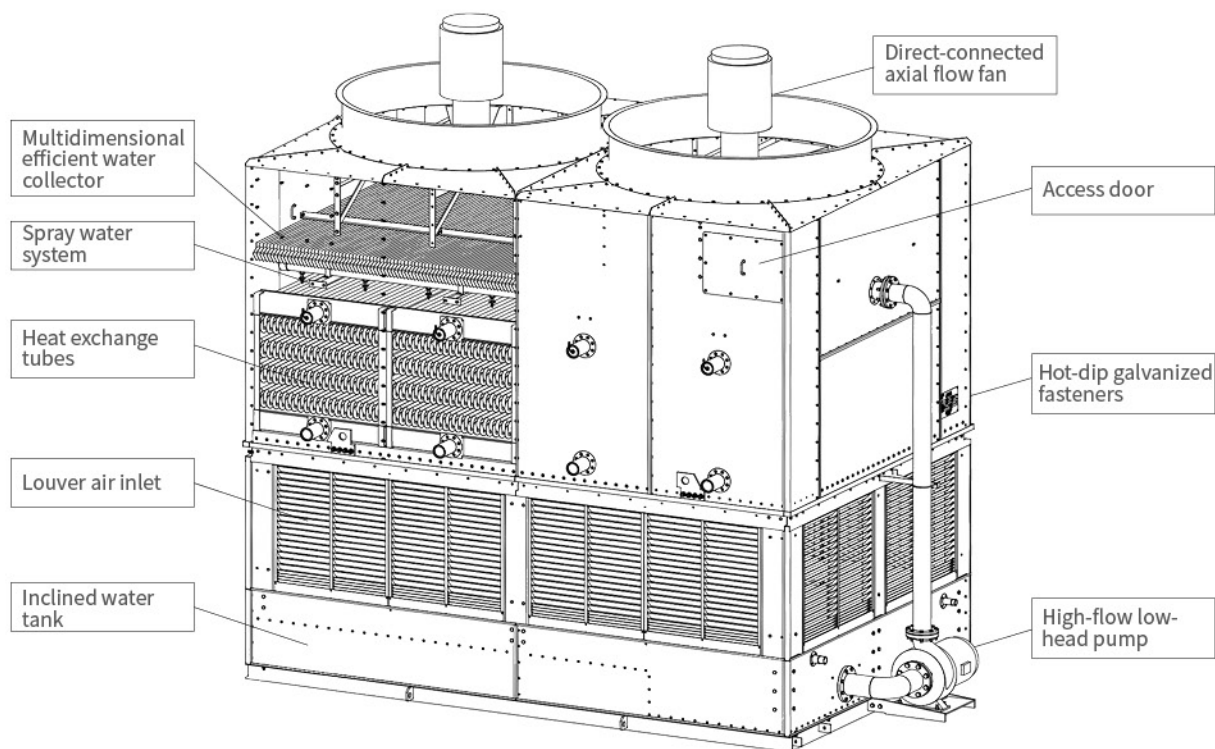
Other heat exchange equipment



Big data, plastic molding, tires, polysilicon fractionation, gas boosters and multi-stage compression interstage coolers

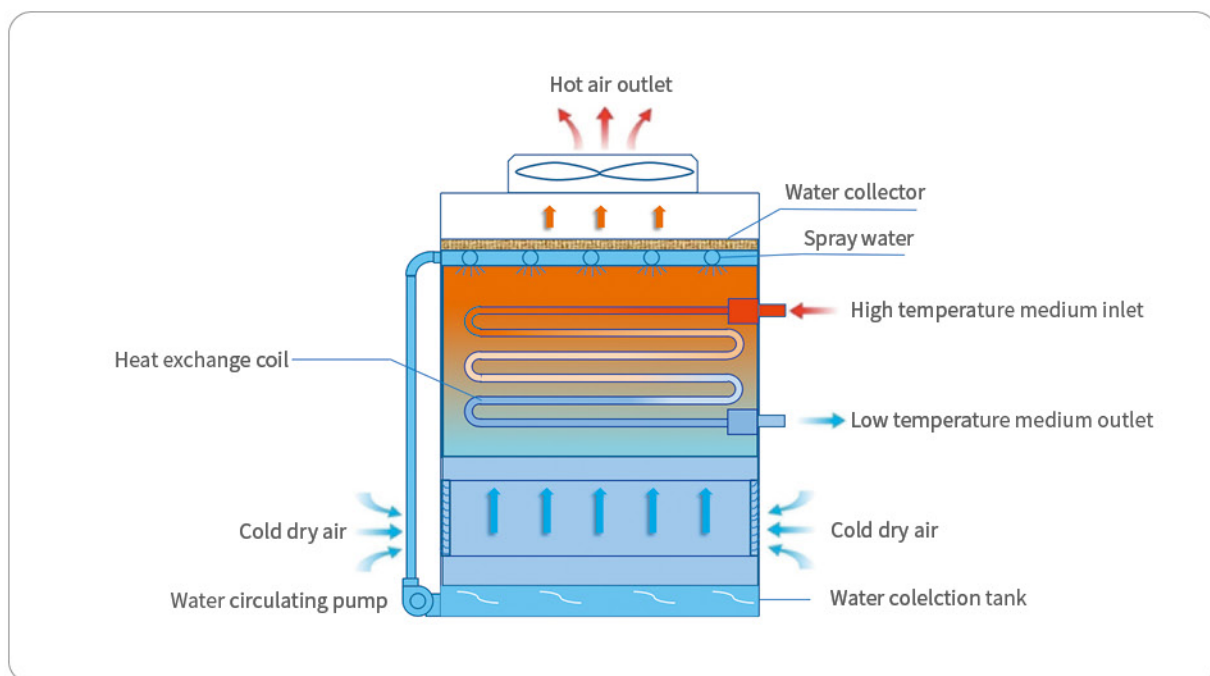
Product Introduction

Product Design

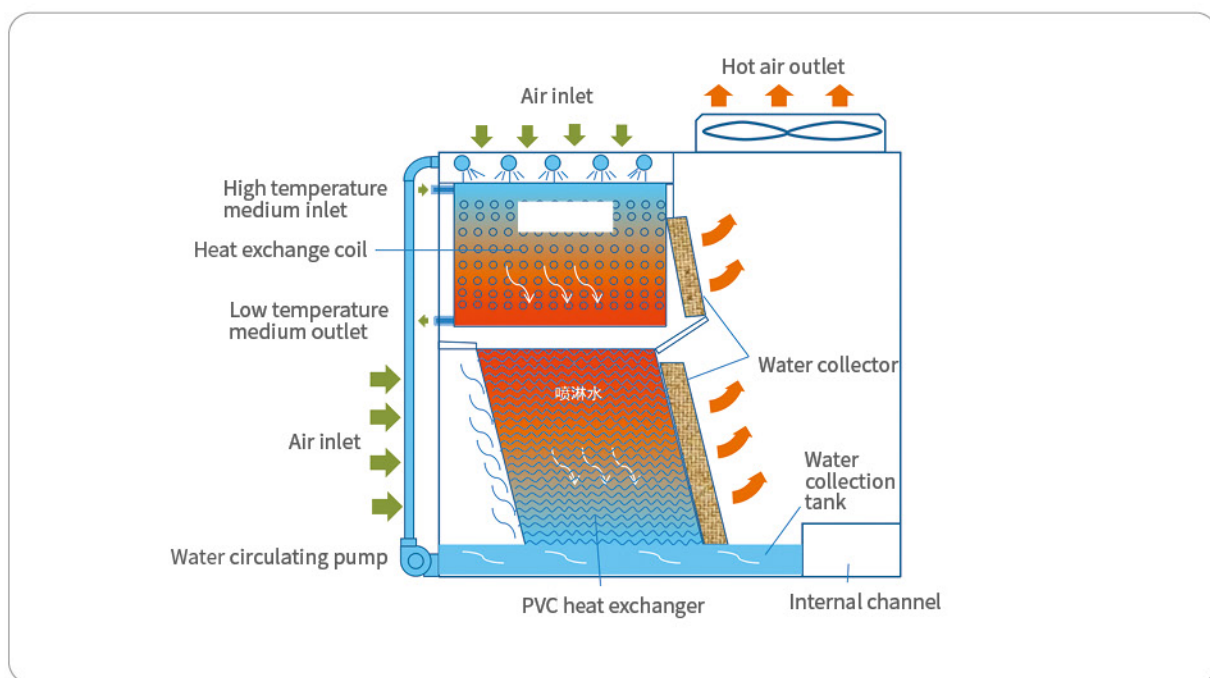


Design Parameter		Scope
Bar Applicable pressure Bar		-1~320
Applicable temperature °C		200~30
Single module thermal load kW		200~8000
Standard configuration	Fan	30~50Hz axial flow fan
	Material	Hot-dip galvanized tube assembly, aluminum zinc-plated housing
	Structure	Detachable upper and lower box body
Common non-standard configuration	Fan	5~50Hz frequency conversion, explosion-proof, H-class insulation, belt drive, shaft drive...
	Material	Stainless steel tube assembly, stainless steel shell, hot-dip galvanized+electrostatic spraying shell...
	Structure	With water treatment device, maintenance platform, electric heating, remote circulating water pump...
	Other	Multi unit assembly, export white fog removal, winter dry operation ...

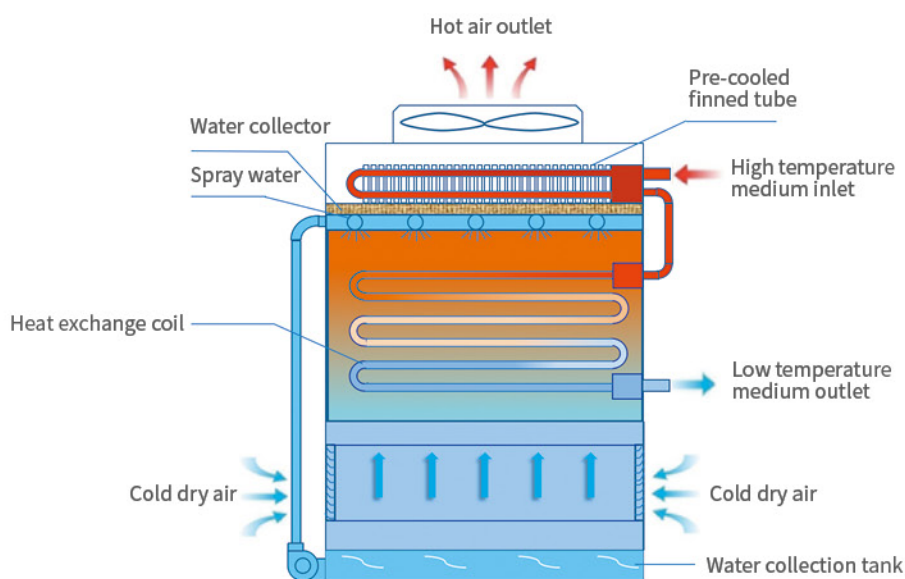
Counterflow type



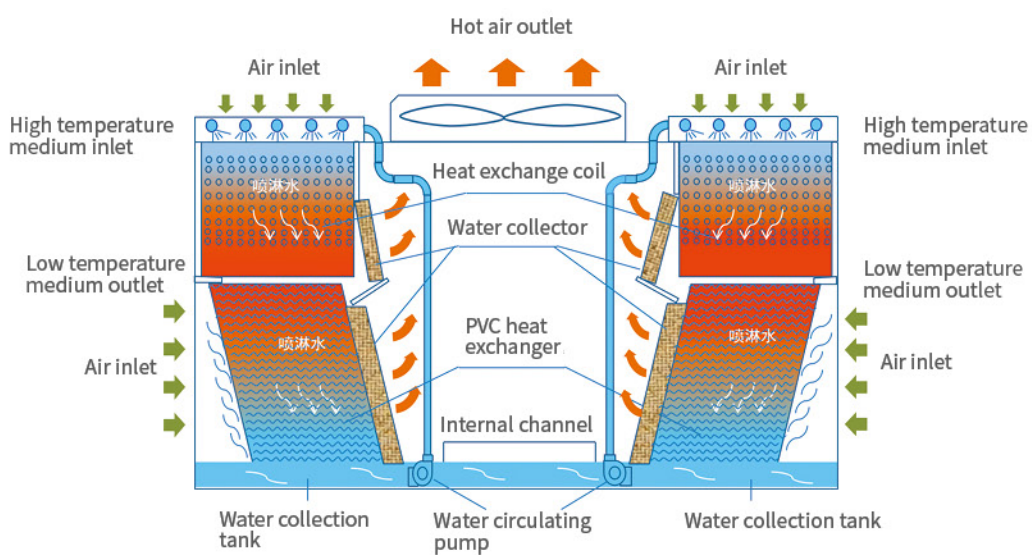
Uniflow type

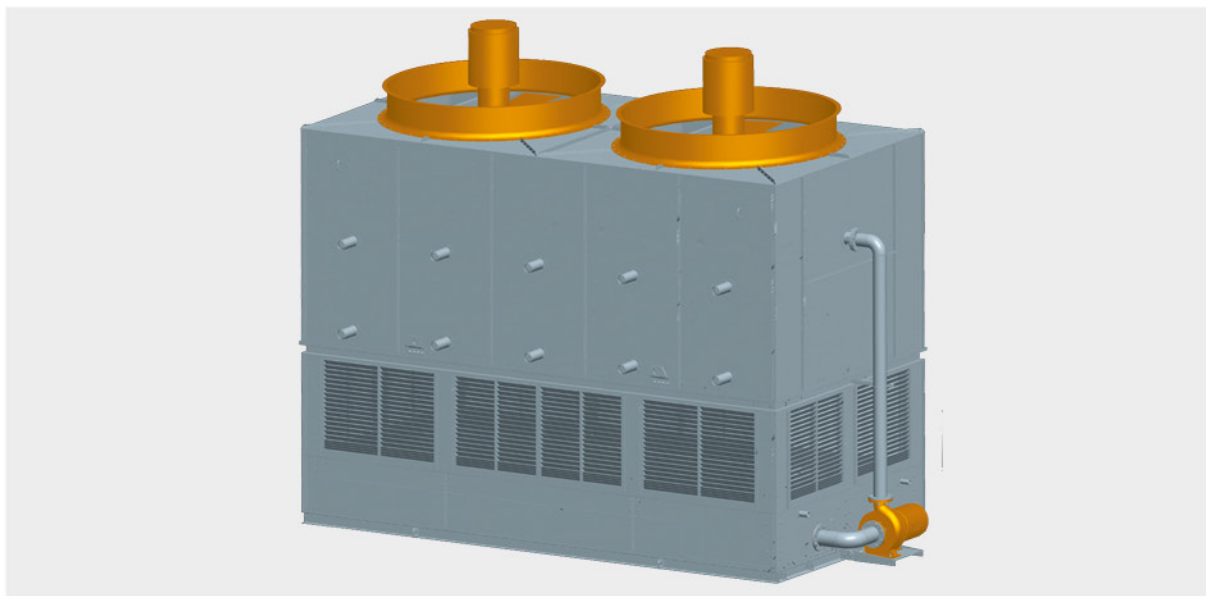


Compound type



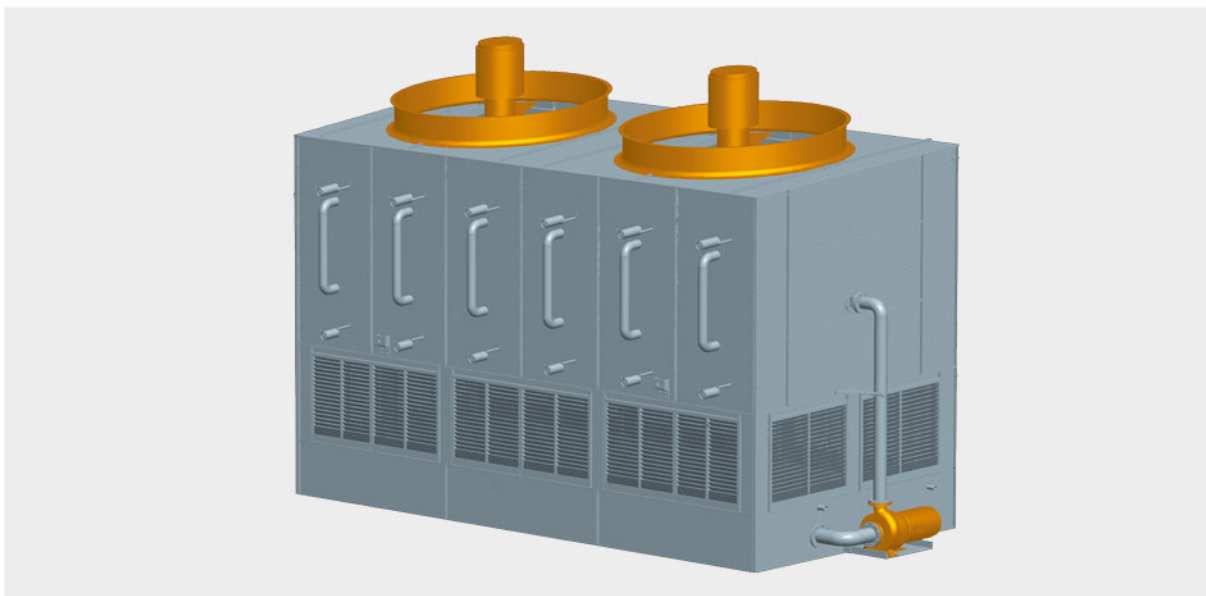
Integrated flow



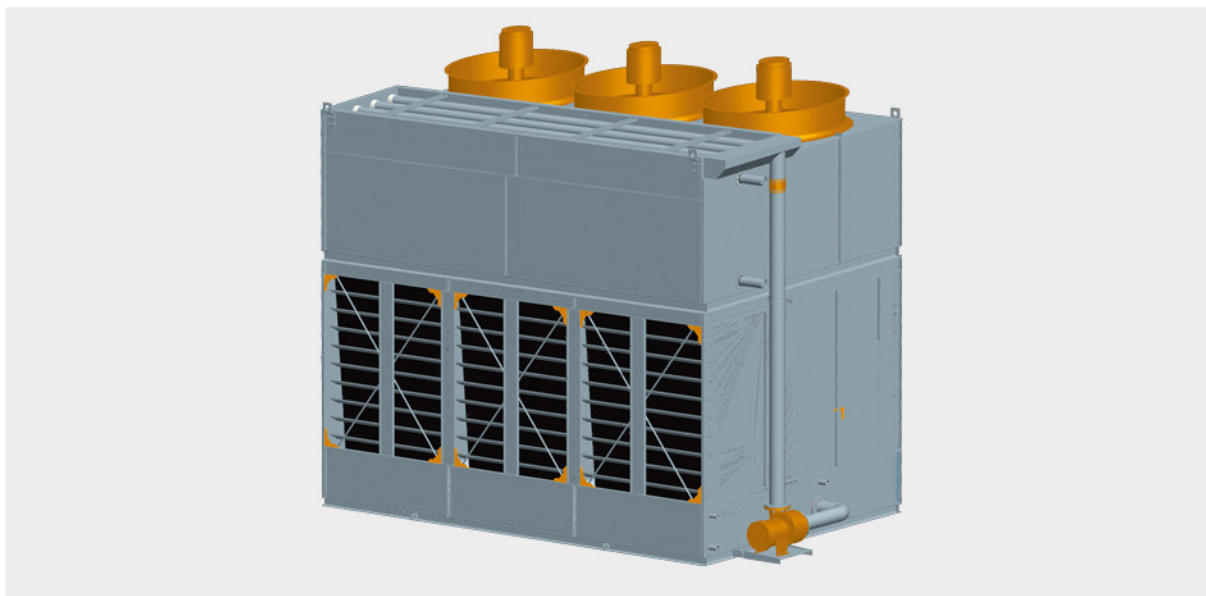


Heat exchange method	energy-saving cooling equipment that uses water as the cooling medium and air as the carrier and integrates water cooling, air cooling, heat and mass transfer processes, with the advantages of both.
Features	•Series of product models and box sizes to meet various needs; •The design of differential drop heat exchange tubes to reduce air pressure drop and increase heat transfer capacity; •Coil material can be either 304 or 316L; •Large-diameter three-layer nozzle, evenly distributed water, not easy to block, low resistance, and saving water pump power •An access door is available for easy maintenance; •Tilted water tray design to reduce operating weight and facilitate cleaning and sewage discharge; •Side-by-side, symmetric and back-to-back arrangement of multiple units.
Advantages	•High heat transfer efficiency, good cooling effect, small heat transfer area, and compact structure; •Low energy and water consumption, low operating costs; •Low investment cost and small floor space; •High operational flexibility and good operability.
Applications	It is widely used in gas cooling, condensation, and liquid cooling industries in refrigeration, chemical engineering, pharmaceuticals, steel, air conditioning, coal mines, nitrogen fertilizers, ammonia synthesis, methanol synthesis, gas compression, distillation, and waste heat recovery.

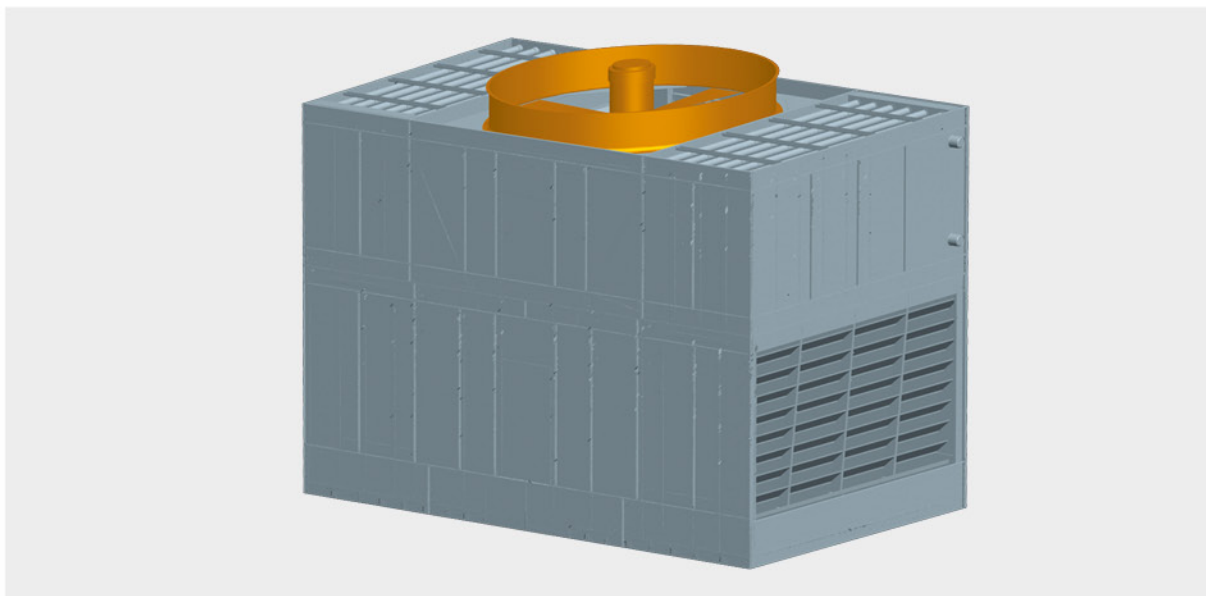
Compound Air Cooler



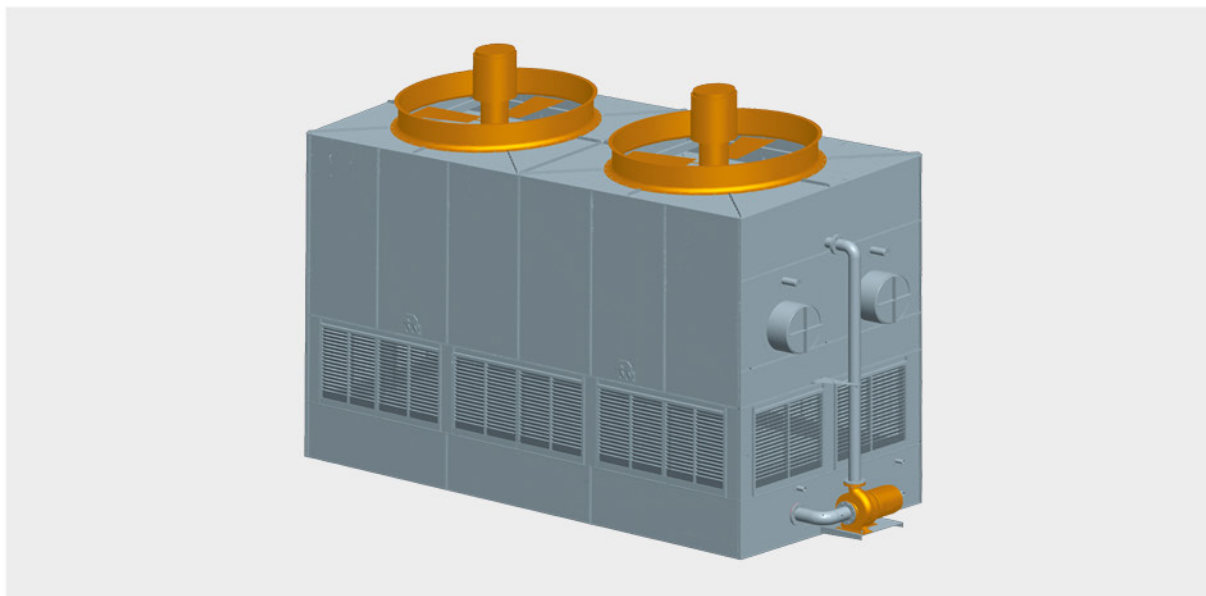
Heat exchange method	combination of dry cooler and wet cooler, which is a new type of heat exchanger that integrates the principles of sensible and latent heat exchange. The entire equipment includes pre-cooled air-cooled finned tubes and water-cooled coils.
Features	Realizing the reuse of residual energy from wet air, improving the unit area heat load and condensation cooling effect of evaporative coolers, and reducing water consumption; ● Eliminating white fog during equipment operation; ● Avoiding high-temperature scaling, and significantly slowing down the scaling of heat exchanger; ● In winter, dry operation can be carried with and natural air cooling in case of water cut-down. Saving energy, reducing equipment water consumption, and avoiding water freezing.
Advantages	In terms of efficiency, it can replace the three-stage series system of "air cooler+water cooler+cooling tower". Compact structure, safe and reliable, low operating power, low operating costs, saving water and electricity, low noise, no environmental pollution, strong anti-corrosion capability, long service life, convenient and fast installation, and simple operation and maintenance.
Applications	It is widely used in the condensation and cooling of medium behind various tower tops or compressors in petrochemical and chemical industries, especially in northern cold areas, with good effect of dry operation without water in winter.



Heat exchange method	The uniflow evaporative cooler is a heat exchanger that combines the performance of a water-cooled cooler and a conventional packing cooling tower by using water as the cooling medium and air as the carrier. The circulating water that has not evaporated in the heat exchange zone is cooled again in the packing layer, achieving a lower circulating water temperature.
Features	• Series of product models and box sizes to meet various needs; • The design of differential drop heat exchange tubes to reduce air pressure drop and increase heat transfer capacity; • Coil material can be either 304 or 316L; • Large-diameter three-layer nozzle, evenly distributed water, not easy to block, low resistance, and saving water pump power; • Optional electric heating of water distribution tray, electronic water treatment instrument, etc.; • Hinged access doors and standard internal walkways for easy maintenance.
Advantages	• The downflow product structure design facilitates the maintenance of cold water trays, sprinklers, coils, and drive systems; • The wind-water co-directional design avoids “dry points” at the bottom of the heat exchange coil and reduces scaling; • Circulating water exchanges heat in the packing heat exchange layer to ensure that the spray water temperature operates at a low level; • Reduced refrigerant filling amount, lightweight equipment, efficient and energy-saving, costs reduction, and reliable operation, and it can be repaired without shutdown.
Applications	It is widely used in gas cooling, condensation, and liquid cooling industries including refrigeration, large-scale chemicals, pharmaceuticals, steel, air conditioning, coal mines, nitrogen fertilizers, ammonia synthesis, methanol synthesis, gas compression, distillation, and waste heat recovery.

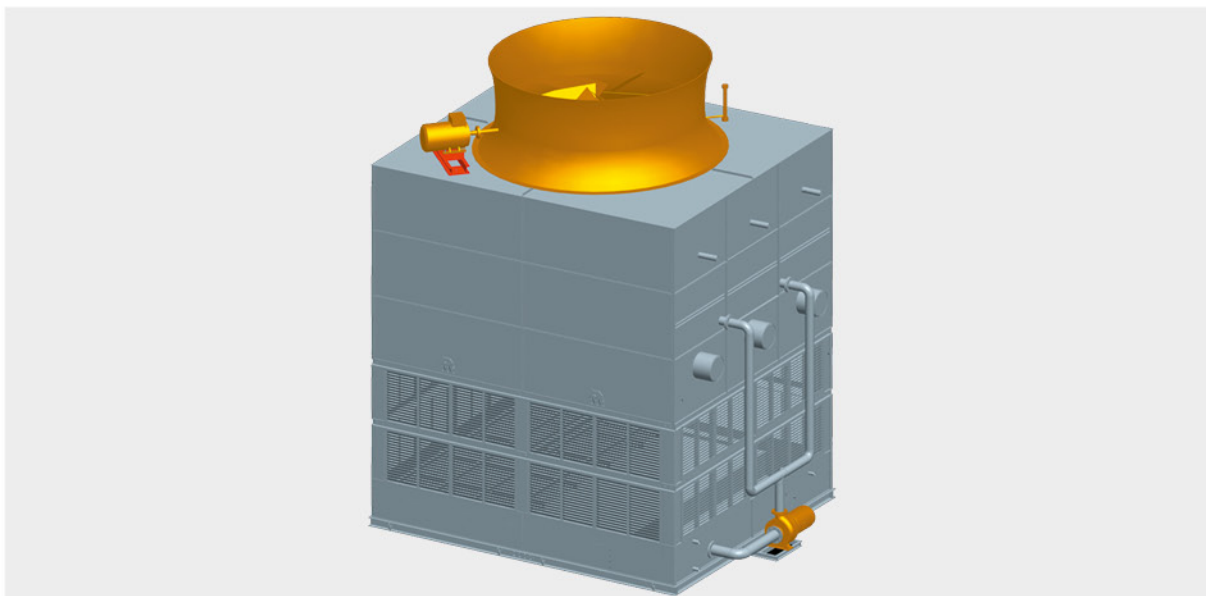


Heat exchange method	The compound flow evaporative cooler is compound heat exchanger that further cools the external circulating water through a secondary heat exchange layer to make it flow through the surface of the heat exchange coils.
Features	• Coil material can be either 304 or 316L; • Large-diameter three-layer nozzle, evenly distributed water, not easy to block, low resistance, and saving water pump power • Optional electric heating of water distribution tray, electronic water treatment instrument, etc.; • Hinged access doors and standard internal walkways for easy maintenance. • Side-by-side arrangement of multiple units, with flexible layout and small floor space.
Advantages	• Two uniflow evaporative coolers are integrated together to share a single fan for stronger cooling capacity for each unit; • The dual air inlet and air inlet end coil interfaces increase the flexibility of large projects in limited areas; • Reduced refrigerant filling amount, lightweight equipment, efficient and energy-saving, costs reduction, and reliable operation, and it can be repaired without shutdown.
Applications	It is widely used in gas cooling, condensation, and liquid cooling industries in refrigeration, chemical engineering, pharmaceuticals, steel, air conditioning, coal mines, nitrogen fertilizers, ammonia synthesis, methanol synthesis, gas compression, distillation, and waste heat recovery.

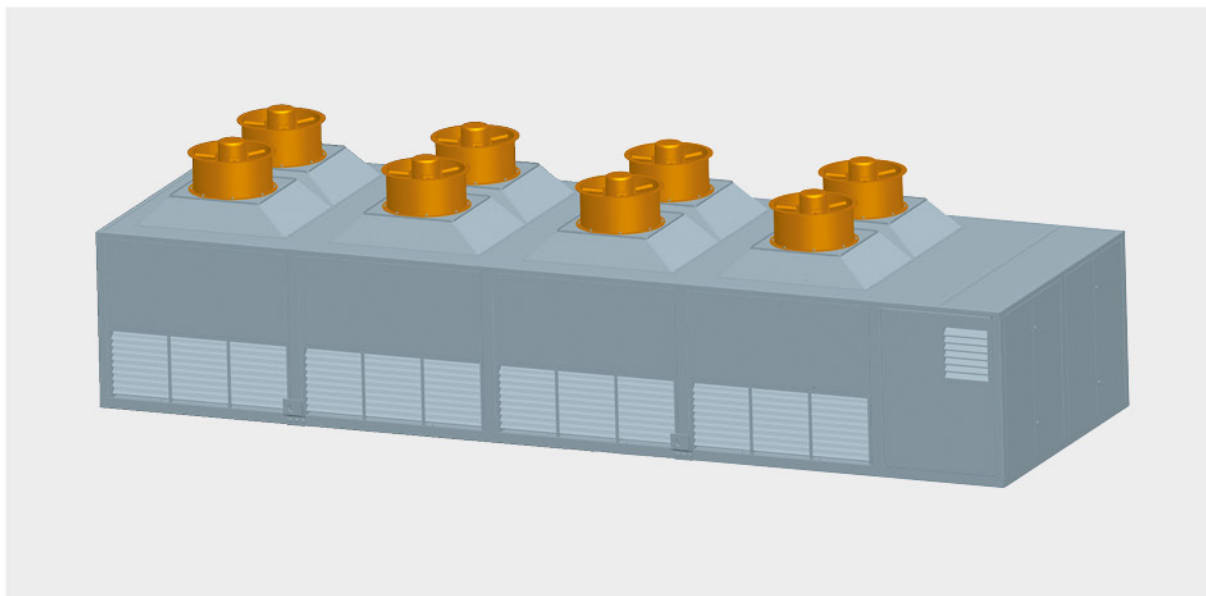


Heat exchange method	The evaporative condenser is a kind of condensing equipment taking evaporative condensation as the main heat exchange mode.
Features	• It can effectively resolve the contradiction between insufficient output of the air cooling unit in summer and different needs of anti-freezing for heat exchange area in winter; • The evaporative condenser can run separately and also be combined with the direct air cooler to complement their advantages. • Integrated with the shell-and-tube condensers, cooling towers, circulating water pumps, and pump rooms, it has a compact structure and is an efficient, energy-saving, water-saving, and environmentally friendly condensing equipment.
Advantages	• Saving water, electricity, land and environmental protection; • Low operating back pressure and high power generation efficiency; • Stable and reliable system back pressure, low operating costs; • Low investment cost, 60% ~ 70% of air cooling investment.
Applications	It is widely used in steam condensation in the biopharmaceutical industry, exhaust steam cooling for thermal power generation, waste heat power generation, and the modification of direct air cooling systems.

Compound Condenser

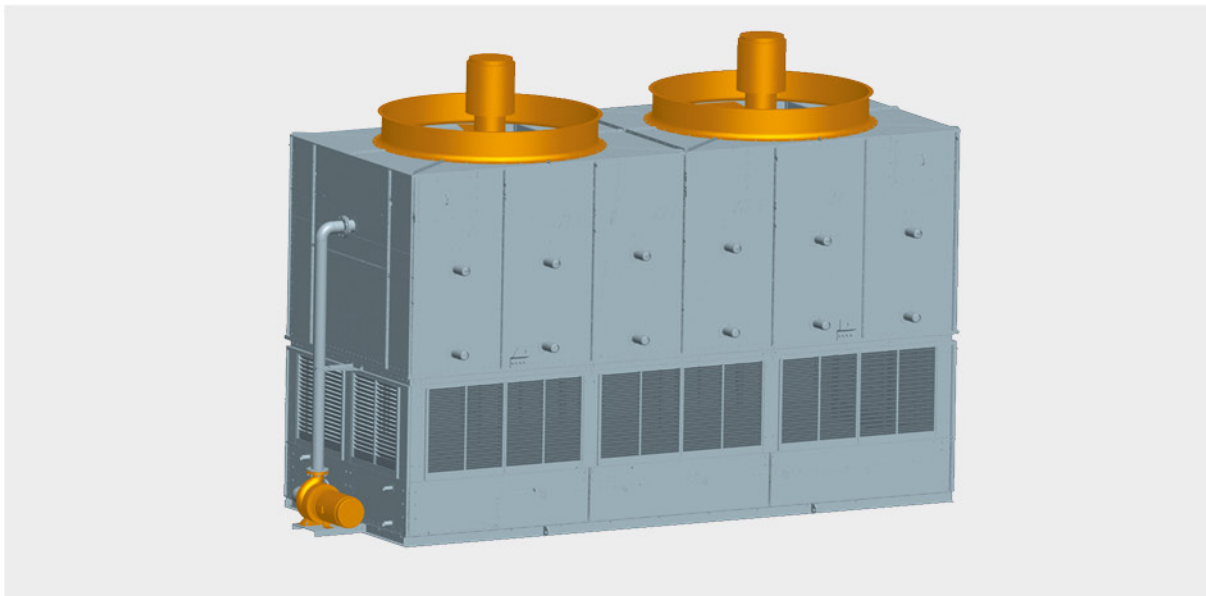


Heat exchange method	The compound condenser is a combination of dry cooler and evaporative condenser, and is a new type of heat exchanger that integrates the principles of sensible heat and latent heat transfer. The whole equipment includes pre-cooled air-cooled finned tubes and water-cooled cooling tubes.
Features	• It can effectively resolve the contradiction between insufficient output of the air cooling unit in summer and different needs of anti-freezing for heat exchange area in winter; eliminate white fog during equipment operation; • In winter, dry operation can be carried with and natural air cooling in case of water cut-down. Saving energy, reducing equipment water consumption, and avoiding water freezing.
Advantages	• Efficient, energy-saving, water-saving, and environmentally friendly; • Low operating back pressure and high power generation efficiency; • Combined with the advantages of direct air cooling and evaporative condensation, it can effectively solve the respective shortcomings of direct air cooling and water cooling in exhaust steam condensation.
Applications	It is widely used in the biopharmaceutical industry for steam condensation, exhaust steam cooling for thermal power generation, waste heat power generation, and modification of direct air cooling systems, especially suitable for use in areas with water scarcity and dry climates.



Heat exchange method	The falling-film evaporative condenser integrates the falling-film high efficiency heat exchange technology and can achieve full uniform covering of continuous liquid films on the heat exchange surface and improve heat transfer efficiency.
Features	• It can increase the heat transfer efficiency by over 20% , small resistance loss, etc. • The use efficiency of circulating water is high, scaling is not easy, and the operational energy consumption of the water pump can be reduced; • Compact structure, small volume, convenient for overall transportation with the units.
Advantages	• The products can be designed and manufactured in a standard and modular manner; • The entire unit factory is manufactured in a modular manner with high integration; • Diversified configuration of unit products can be achieved while maintaining high versatility of the product; • Save space, reduce on-site construction, and reduce production costs.
Applications	Integrated refrigeration and air conditioning unit

Closed Cooling Tower



Heat exchange method	The closed cooling tower is a heat exchanger combining the performance of water-cooled cooler with that of conventional cooling tower and also a heat exchanger between water cooler and air cooler.
Features	• The cooling tower doesn't contact outside during operation and can thus ensure that the cooling water is always clean; • Energy saving and environmental protection, in comparison with the system using the traditional cooling tower, the lift of the cooling water pump can be reduced greatly, and the operating costs can be significantly reduced; • Compact structure, convenient installation, and maintenance.
Advantages	• Numerous sizes of the unit box to meet various layout requirements; • Axial flow fans are used to provide solutions for a wide range of cooling applications.
Applications	• It is widely used for cooling of circulating water in various medium frequency furnaces and electric furnaces; • It is used for cooling of systemic circulation water in production areas of chemical and petrochemical industries; • It is used for cooling of various machine tools, machining equipment, robots, welding equipment with cooling water or oil.

Application Field

Coal Chemical Industry

The surface evaporative cooler can be used in the coal chemical industry for the following devices: coal gasification, compression, purification, synthesis, conversion, methanation, rectification and other stations of methanol, methylal, ethanol, ethylene glycol, dimethyl ether, butyl octanol, synthetic ammonia, coal to liquids, coal to gas, coal to olefins, coal aromatics and other units.

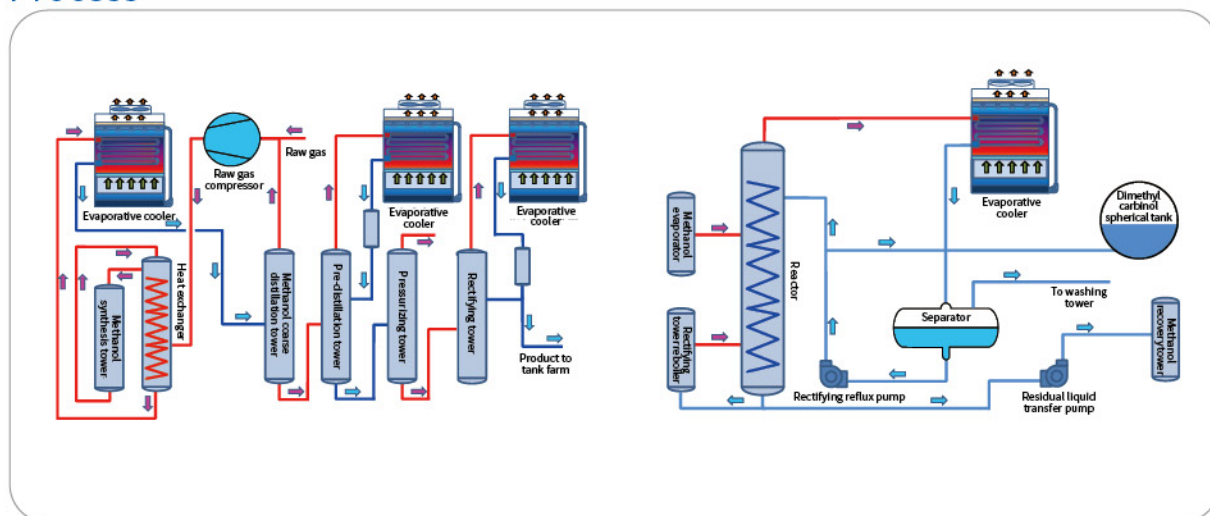


Typical Case

A certain chemical project, 5 desalinated water evaporative coolers are used by the methanol distillation unit, including the first and second stage condensers of the pre-distillation tower, methanol cooler, atmospheric tower condenser, and stripping tower condenser; the dimethyl ether distillation unit uses two sets of distillation tower evaporation condensers.

Project for Joint Production of 300,000 tons/year of Methanol and 200000 tons/year of Dimethyl Ether						
Equipment	Methanol cooling and distillation equipment					Dimethyl ether distillation unit
Medium composition	CO ₂ /CH ₃ OCH ₃ /HCOOCH ₃ /CH ₃ COCH ₃ /METHANOL/H ₂ O/Isobutanol/n-propanol/isoamyl alcohol/CO/n-hexane/n-pentane/n-heptane					Dimethyl ether
Operating pressure	0.9MPa					
Section	First stage pre-distillation tower	Second stage pre-distillation tower	Methanol cooler	Atmospheric tower condenser	Stripper condenser	Dimethyl ether distillation
Equipment Model	LNZ2400	LNZ600	LNZ1600	LNZ2000	LNZ350	LNZ2800
Equipment Number	2	1	1	4	1	4

Process



Application Field

Petrochemical Industry

The surface evaporative cooler is commonly used in the petrochemical industry for the following devices: atmospheric and vacuum distillation, catalytic cracking, catalytic reforming, aromatics, hydrocracking, hydrofining, gas separation, olefins, PX, PTA, MTBE, MTO, MTP, MTA, EO/EG sulfur recovery, C4/C5/C9 deep processing, natural gas cooling, etc.

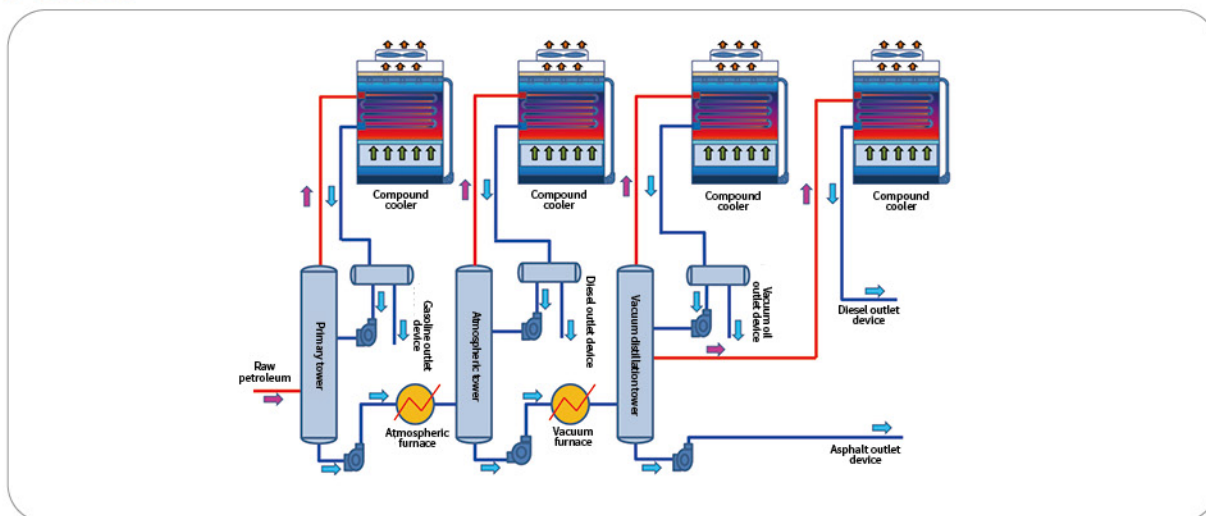


Typical Case

A petrochemical company's reforming unit project plans to renovate and expand the tower top cooler required for the dry cooler. Due to the increased heat exchange load, a compound cooler is considered to be used to save land area.

Tower Top Air Cooler Project of a Certain Petrochemical Company			
Equipment	Compound air cooler for 550,000 tons/year aromatic hydrocarbon extraction and separation unit		
Medium composition	EDC, SRC, DWC tower top gas (hydrocarbon)		
Operating pressure	0.65Mpa		
Operating temperature	Inlet 88 °C /outlet 50 °C	Inlet 82°C /outlet 55°C	Inlet 93°C /Outlet 60°C
Section	Second stage pre-distillation tower	SRC tower top air cooler	DWC tower top air cooler
Equipment model	LNZ3*6B	LNZ3*6B	LNZ3*6B
Equipment number	1	5	4

Process



Application Field

Power Industry

The surface evaporative cooler is commonly used in the power industry for the following devices: as exhaust condensers for steam turbines; matched with cooling devices or equipment such as turbine claws, main steam valves, intermediate valves, water pump seats, water pump bearings, fan bearings, generators, motors, etc; oil coolers for transformers, etc.

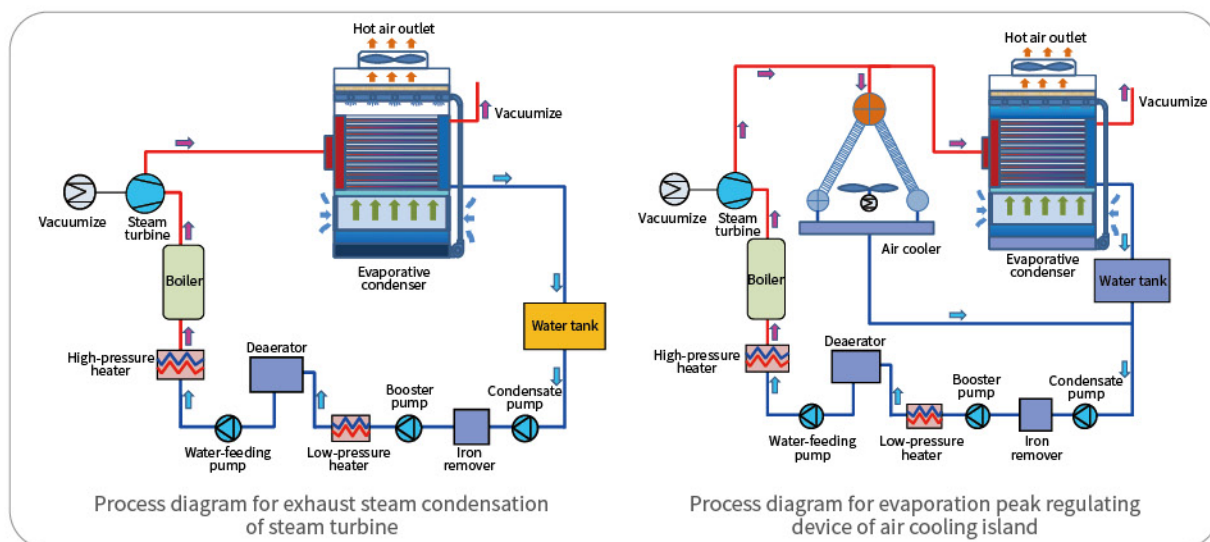


Typical Case

A certain nuclear power company is provided with the supporting steam turbine unit of a 6000KW power generation device to replace the water-cooled tube and tube heat exchanger used for exhaust steam recovery with an evaporative condenser to save operating costs.

Steam Turbine Exhaust Steam Condensation Recovery Project	
Equipment	Evaporative condenser
Medium composition	Water vapor
Medium flow	35t/h
Operating pressure	0.1Mpa
Operating temperature	Inlet temperature 50 °C , outlet temperature 45 °C
Section	Supporting steam turbine for power generation equipment
Equipment model	LNZ5500H
Equipment number	4

Process



Application Field

Metallurgical Industry

The surface evaporative cooler is mainly used in the metallurgical industry for soft water closed loop cooling of blast furnaces and hot blast furnaces in ironmaking plants; continuous casting crystallizer and oxygen lance soft water cooling in steelmaking plants; steel rolling mills, self-owned blast furnace power plants, casting electric furnaces, magnetic material melting, etc.

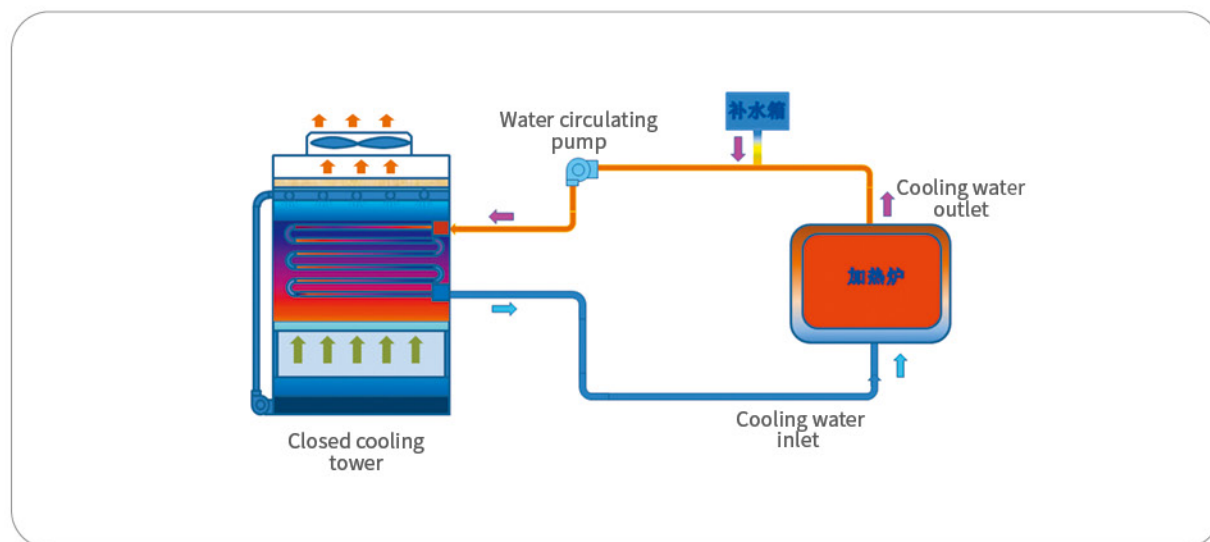


Typical Case

A company's soft water closed cooling tower (all steel structure)

Closed Tower for Jacket Water Cooling of Sintering Furnace	
Equipment	Closed cooling tower
Medium composition	Pure water
Operating pressure	1.0Mpa
Cooling water volume	3X120m ³ /h
Operating temperature	45°C -33°C
Equipment model	LNZ1800
Equipment number	3

Process



Application Field

Fine Chemical Industry

The surface evaporative cooler can be used in the fine chemical industry for such processes as fermentation, extraction, concentration, distillation, and cooling in industries such as pesticides, fuels, coatings, pigments, reagents, and food additives.



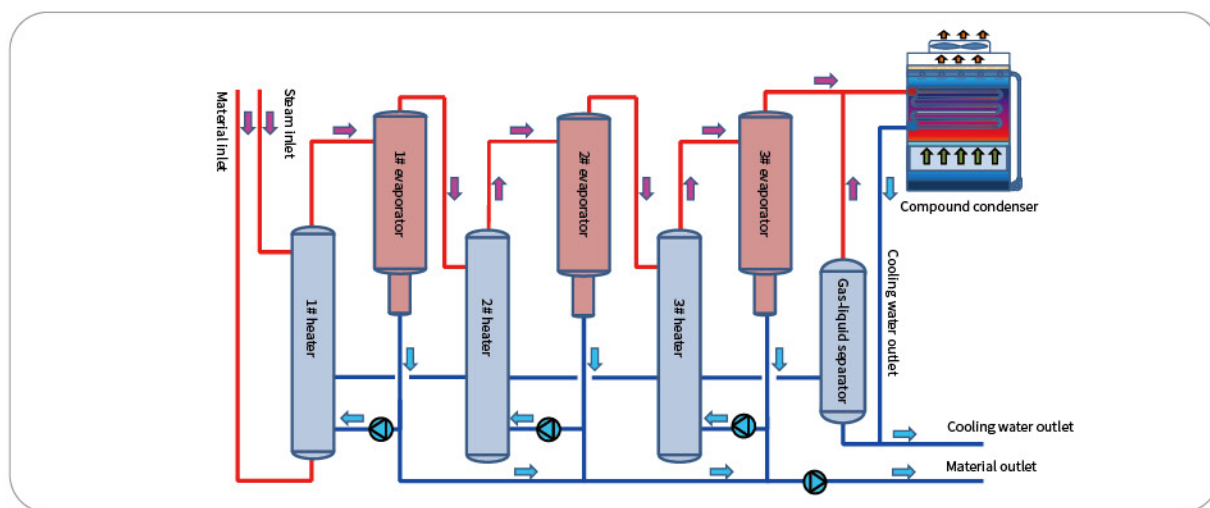
Typical Case

A compound condenser is designed for a biotechnology company based on the fermentation tank (evaporator) parameters provided by the customer:

1. The purpose is to condense the secondary water vapor from the fermentation tank into water under negative pressure through a compound condenser for heat exchange. The temperature of the condensate should be less than 40 °C before being pumped out of the system through a water pump;
2. Since the secondary steam is corrosive, the contact part needs to be made of 304 stainless steel.

Material Drying Section of the 80,000 ton/year Threonine Project		
Equipment	Compound Condenser	
Medium composition	Water vapor	
Operating pressure	-0.090Mpa	
Section	Used for the production process of amino acids in the fermentation and extraction industry. fermentation tank secondary water vapor recovery	
Equipment model	LNZ5000	LNZ4000
Equipment number	14	2

Process



Natural Gas Industry

The surface evaporative cooler is generally used in the natural gas industry for lubricating oil cooling and multi-stage compression interstage cooling for gas turbochargers.

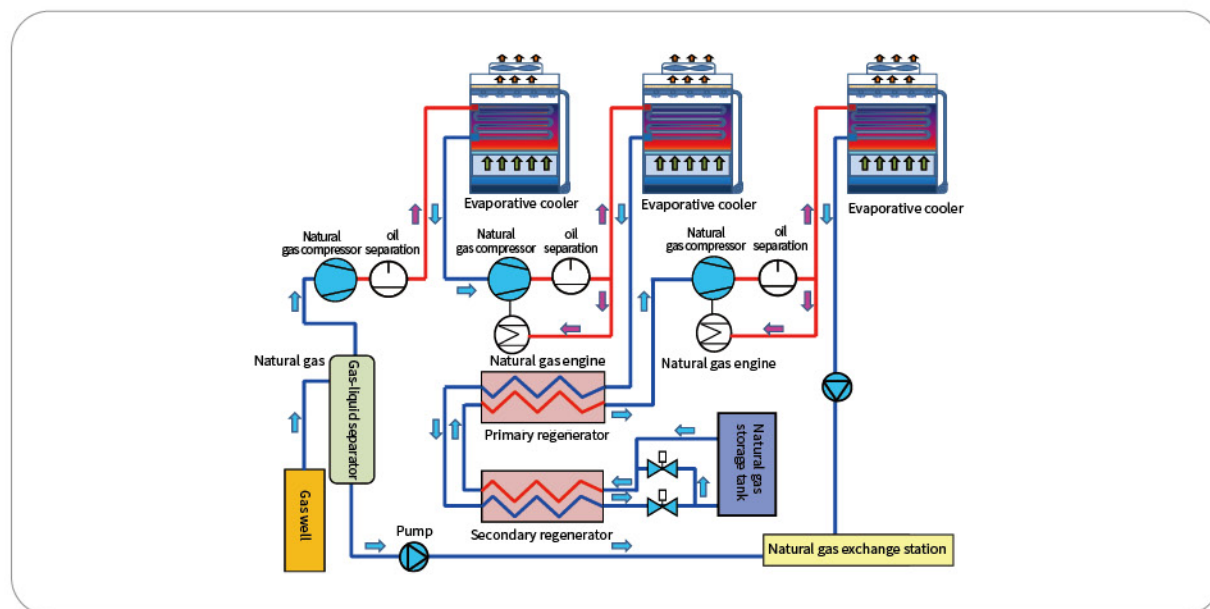


Typical Case

An evaporative cooler is used for interstage cooling of compressor in the 25000m² oilfield associated gas to LNG natural gas liquefaction project of a certain natural gas company.

Evaporative Cooler for MRC Compressor			
Medium composition	Nitrogen, methane, ethylene, propane, butane	Water	Ethylene glycol aqueous solution
Air inlet temperature	90℃	70℃	40℃
Air outlet temperature	40℃	40℃	30℃
Operating pressure	2.0MPa	1.0MPa	1.0MPa
Thermal load	130kW	390kW	380kW
Equipment model	LNZ1200		

Process



Application Field

Waste Heat Power Generation Industry

The surface evaporative cooler can be used for exhaust steam condensation of expanders.

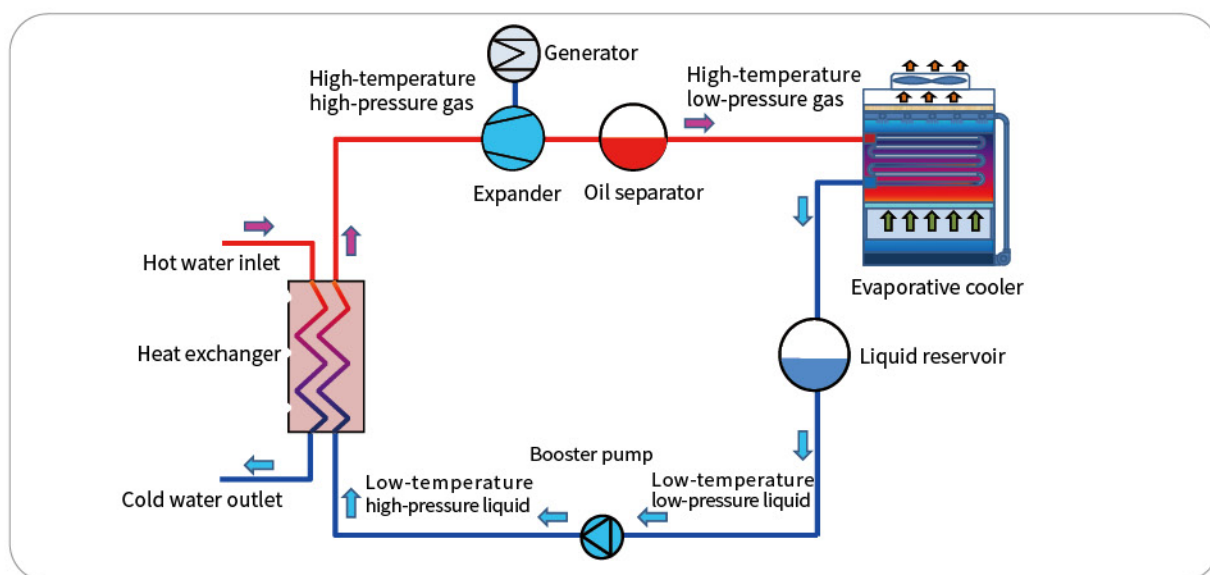


Typical Case

A petrochemical company's hot water power generation EMC project is equipped with two SRE40M screw expanders of MOON-TECH, which uses R600a as the circulating medium for power generation on the basis of 105 °C hot water 420t/h. The evaporator side is heated with hot water, and the condenser side is condensed with two LNZ16000 surface evaporative coolers. The annual power generation is 12.16 million kW.

Evaporative Cooler for Hot Water Power Generation EMC Project						
Air inlet temperature/°C	31.1	34.4	37.7	40.9	44.2	48.1
Condensation temperature/°C	10	15	20	25	25	36
Density/kg/m ³	5.654	6.574	7.617	8.797	10.13	11.94
Air inlet amount/m ³ /h	17280	14860	12820	11100	9646	8178
Working pressure/kPa · A	174	270	314	362	416	489

Process



Application Field

Project Case

Coal chemical industry



Petrochemical industry



Metallurgical industry



Power industry



Application Field

Project Case

Fine chemical industry



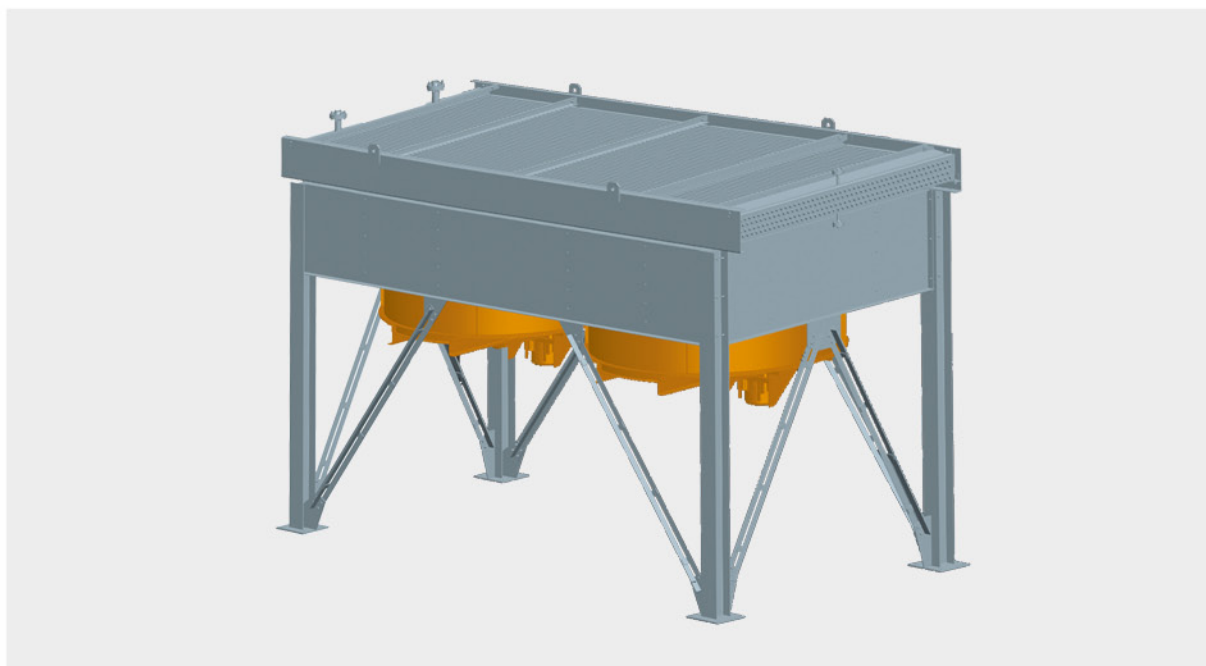
Natural gas industry



Waste heat power generation industry

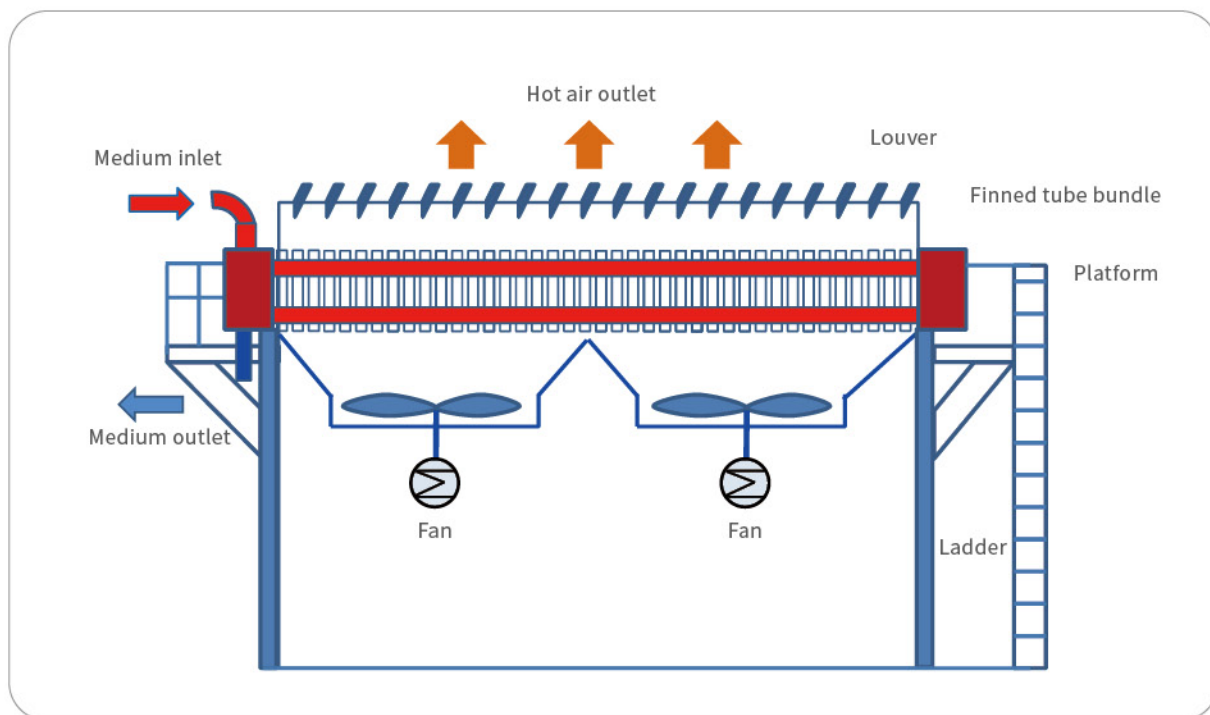


Air-cooled Heat Exchanger



Heat exchange method	The air-cooled heat exchanger uses ambient air as the cooling medium and sweeps the outside of finned tubes to cool or condense the high-temperature process fluid inside the tubes.
Features	The air cooler uses natural air as the cooling medium, which saves valuable water resources, reduces the discharge of industrial wastewater, and protects the natural environment.
Advantages	• No thermal pollution and chemical pollution to the environment; • Air can be freely obtained without any auxiliary equipment or costs; • Unlimited site selection; • Low air corrosion, no need for descaling and cleaning, long service life; • Low comprehensive operating costs; • The maintenance cost of the air cooling system is generally only 20-30% of that of the water cooling system; • There is still 30-40% free cooling capacity once the fan power is cut off.
Applications	It is widely used in many industries such as chemical, petroleum, electricity, metallurgy, building materials, polycrystalline silicon, polyvinyl chloride, cement plants, waste incineration power generation, etc; especially suitable for water scarce areas.

Structural Form



User On-site Witness





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