

Industrial Heat **Transfer Equipment** 工业换热装备

Providing cooling(condensation)equipment and a complete set of solutions for the field of industrial heat transfer 为工业换热领域提供冷却(凝)设备及整套解决方案

Longhua Technology Group (Luoyang) Co., Ltd 隆华科技集团(洛阳)股份有限公司



























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Longhua Technology Group (Luoyang) Co., Ltd 隆华科技集团(洛阳)股份有限公司





- ▶ Longhua Technology Group (Luoyang) Co., Ltd. was founded in 1995 隆华科技集团成立于1995年
- Registered capital of 904 million yuan 注册资本9.04亿元
- Listed on the Shenzhen Stock Exchange in 2011, stock code 300263.SZ. 于2011年在深交所上市,股票代码300263.SZ
- Through the combination of internal development and industrial investment, Longhua has constructed a multilateral, collaborative and sustainable development industrial pattern consisting of three major industrial sectors, namely new electronic materials, polymer composite materials, energy conservation and environmental protection 通过内部孵化和产业投资结合模式,隆华科技集团已构建起由电子新材料、高分子

复合材料和节能环保三大产业板块构成的多元协同、可持续发展的产业格局

▶ Leading the development of the industry in industrial heat exchangers, extraction and separation, sputtering targets, structural core materials, composite materials and wastewater disposal fields

在工业换热、萃取分离、溅射靶材、结构芯材、复合材料、废水处置等技术领域引 领行业发展

► A number of subsidiaries have been awarded the national or provincial "Specialization, Refinement, Distinctiveness and Innovation" small giant enterprise honorary title

多家子公司已分别获得国家级或省级"专精特新"小巨人企业荣誉称号

- Subsidiaries have grown into industry leaders and hidden champions 各子公司已成长为细分行业龙头和隐形冠军
- ▶ Has been approved as a national enterprise technology center, a national green factory, and a post-doctoral innovation and practice base

Development Milestone 企业沿革



Transformation And Upgrading Stage(2015-2020)转型升级阶段



High Quality Development Stage(2021-future) 高质量发展阶段





In July 1995, Luoyang Longhua refrigeration equipment Co., Ltd was founded.

In september 2011, Longhua was successfully listed on the ChiNext of Shenzhen Stock Exchange with the stock code 300263.

In August 2013, Longhua successfully merged Beijing CM Environmental Engineering Co., Ltd.

In January 2015, Longhua wholly owned acquisition Luoyang Sifon Electronic Materials Co., Ltd.

In August 2016, Longhua acquired Guangxi Crystal Union Photoelectric Materials Co., Ltd.

In October 2016, Longhua acquired Hunan Zhaoheng Material Technology Co., LTD.

In May 2017, Longhua acquired Xianning Haiwei Composite Products Co., LTD.

In August 2018, Longhua successfully merged Luoyang Kobos new materials Co., LTD.

Provide high-efficiency, energy-saving, water-saving, clean and environmentally friendly cooling(condensation) 02 equipment and a complete set of solutions for the field of industrial heat transfer.



Certificates 荣誉资质

National green factory, Henan industrial heat transfer energy saving equipment engineering technology research center, National enterprise technology center, Henan high efficiency heat exchange and thermal system energy saving technology Henan Engineering Laboratory, Henan Modern Industrial cold end system engineering research center

国家级绿色工厂、 河南省工业传热节能设备工程技术研究中心、 国家级企业技术中心、 河南省高效换热与热工系统节能技术河南省工程实验室、 河南省现代工业冷端系统工程研究中心

Longhua has 109 national inventions, 329 practical applications, 24 scientific research achievements, 12 software copyrights, etc 获得国家发明109项、实用329项、科研成果24项、软件著作权12项等

ISO 9001 2015

ISO 14001 2015

ISO 45001 2018

ISO 50001 2018

Special Equipment Design License (Pressure Vessel) I, II 特种设备设计许可证(压力容器) I, II

Safety registration of air-cooled heat exchanger products 空冷式热交换器产品安全注册











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Industry 产业

Energy conservation and environmental protection industry 节能环保产业

Focusing on the field of large industrial heat transfer, combining technical design, product supply and system services, longhua has become the industry's technology leader and standard setter. It's the birthplace of china's first high-efficiency and energy-saving hybrid evaporative cooling (condensing) equipment, and has developed into a domestic r&d and manufacturing base for air cooler, hybrid cooler, circulating water-cooled condensing (tubular, plate-type) and other heat exchange equipment. Longhua has the largest testing and experimental center for industrial heat exchange equipment in asia. Products are widely used in petrochemical, coal chemical, power generation, metallurgy and other fields. Business in japan, south korea, russia, the middle east, central asia, europe, and other regions. Beijing cm environmental engineering co., ltd. Cooperates with heat exchange equipment in treating wastewater from industry and nuclear power, and has the ability to integrate program design, automation control, equipment integration, and engineering and technical services.

聚焦大工业传热领域,集技术设计、产品提供和系统服务为一体,已成为行业的技术引领者和标准制定者。是中国 第一台高效节能复合型蒸发式冷却(冷凝)装备的诞生地,现已发展成为国内大型空冷、复合冷、循环水冷却冷凝(管 式、板式)等换热设备的研发和制造基地,拥有亚洲最大的工业换热装备检测实验中心。产品和系统广泛应用于石油化 工、煤化工、电力冶金及其他能源制造领域,业务辐射日韩、中东、中亚、欧洲及俄罗斯等国家地区;中电加美协同处理 大工业、核电等领域废污水,拥有方案设计、自动化控制、设备集成、工程技术服务一体化能力。

Extraction and separation Industry 萃取分离产业

With high-performance organophosphorus series, amine series, hydroxamic acid and other extractants as its core products, Sannuo New Material Technology (Luoyang) Co., Ltd. has the ability of equipment design, system integration, extraction technology and solvent products in the whole process, and can provide users with integrated services of process, technology, products and engineering. The extraction and separation industrial zone under construction will help lithium recovery, lithium extraction from salt lake, rare precious metals and rare earth metals wet metallurgy, electronic grade wet phosphoric acid industries to be developed at a high speed.

三诺新材料科技(洛阳)有限公司以高性能有机磷系、胺系、羟基肟类等萃取剂为核心产品,具备装备设计、系统 集成、萃取技术、溶剂产品全过程能力,可为用户提供工艺、技术、产品及工程一体化服务。正在建设的萃取分离产业 园将助力锂电回收、盐湖提锂、稀贵金属、稀土金属湿法冶金、电子级湿法磷酸行业高速发展。

Industry 产业

New electronic materials industry 电子新材料产业

The high-purity molybdenum target, silver target, alloy target and ITO target of Fonlink Photoelectric (Luoyang) Co., Ltd. are the first to realize import substitution and mass supply, are widely used in high-end semiconductor display field. Heterogeneous junction, chalcogenide new generation of photovoltaic technology with ceramic target technology of Guangxi Crystal Union Photoelectric Materials Co., Ltd. has achieved breakthroughs and production line testing, performance industry-leading.

丰联科光电(洛阳)股份有限公司高纯钼靶材、银靶材、合金靶材、ITO靶材率先实现进口替代且批量供应,广泛应 用于高端半导体显示领域。广西晶联光电材料有限责任公司异质结、钙钛矿新一代光伏技术用陶瓷靶材技术实现突破和 产线测试,性能行业领先。

Polymer composite materials industry 高分子复合材料产业

Hunan Zhaoheng Material Technology Co., Ltd. and Luoyang Kebos New Material Technology Co., Ltd. independently owns the core technology of PMI and PVC structural core material, and has the ability to customize the development and design of full-density, full-aperture, full-size structural core material and products. Specialize in the fiberreinforced resin-based composites, functional rubber-plastic materials, structural foam materials and modified resin materials, and achieved breakthroughs in the core technology of functional flame-retardant, wave-absorbing, electromagnetic shielding materials. Widely used in national defense and military industry, rail transportation, wind power, new energy vehicles and other fields.

湖南兆恒材料科技有限公司、洛阳科博思新材料科技有限公司自主拥有PMI、PVC结构芯材核心技术,具备定制化 开发设计全密度全孔径全尺寸结构芯材及制品能力,专业同时覆盖纤维增强树脂基复合材料、功能橡塑材料、结构泡沫 材料及改性树脂材料,功能型阻燃、吸波、电磁屏蔽材料技术取得核心突破。广泛应用于国防军工、轨道交通、风电新 能源、新能源汽车等领域。





Energy Conservation And Environmental Protection Industry 节能环保板块

Air Cooler

空冷器

Air Cooled Heat Exchanger (also known as Air Cooler, Fin Fan Cooler) Using ambient air as the cooling medium, and the fan forcing the air to cross the outside of the fin-tube, cooling the high-temperature process medium inside the tube. Consists of three basic parts: tube bundle, fan, and steel structure, as well as auxiliary parts such as louvers and platform ladders. Suitable for cooling (condensation) of high-temperature media, with a final cooling temperature ≤ 50 °C.

是以环境空气作为冷却介质,风机强制空气横掠翅片管外,使管内高温工艺介质进行冷却的工业热交换装置。空冷器由管 束、风机、构架三个基本部分和百叶窗、平台爬梯等辅助部分组成。适用高温介质的冷却(冷凝),终冷温度≤50℃。

Using natural air as a cooling medium to save valuable water resources and reduce the discharge of industrial wastewater to protect the environment. Especially in areas with good air resources and scarce water resources, Air Cooled Heat Exchangers have more obvious advantages compared to other heat exchange methods and are widely used in industries such as petrochemical, coal chemical, chemical, power, metallurgy, silicon materials, natural gas, compressors, refrigeration, etc.

以自然空气作为冷却介质,节约宝贵的水资源,减少工业污水的排放保护自然环境。特别是在空气资源良好水资源短缺的 地区, 空冷器与其它换热方式相比, 优势更明显, 广泛应用于石化、煤化、化工、电力、冶金、硅材料、天然气、压缩机、制 冷等行业。



The tube bundle is located on the exhaust side of the fan, which is easy to maintain and repair. The fan motor is always in the ambient air, suitable for situations with high process medium temperatures, and can effectively extend the service life of the motor.

管束位于风机的排风侧,这种结构易于维护和检修,并且风机电机始终处于环境空气中,适用于工艺介质温度较高的场 合,能有效延长电机的使用寿命。









Forced Draft Horizontal Air Cooler 鼓风式水平空冷器



Induced Draft Horizontal Air Cooler 引风式水平空冷器

The tube bundle is located on the suction side of the fan. Due to the well protective effect of the fin-tube, it can reduce the influence of sunlight, wind, rain, and snow, making the induced draft air cooler have relatively stable performance. At the same time, it has the characteristics of uniform air flow distribution, less thermal circulation, and low noise.

管束位于风机的吸风侧,由于风简对换热翅片管有着很好的保护作用可减少阳光、风、雨、雪的影响,使得引风式空冷器 具有较稳定的换热性能。同时它具有风量分配均匀、热循环少、低噪音的特性。







Force draft A frame Air Cooler

The tube bundle is inclined in an "A" shape, with a compact structure and small footprint. Smaller internal resistance of the tube than that of the horizontal type; and well anti freezing effect. It is particularly suitable for exhaust steam condensation in steam turbines.

管束倾斜呈"A"字形放置,结构紧凑,占地面积小,管内阻力比水平式小,防冻效果好,特别适合于汽轮机的乏汽冷凝。







斜顶式空冷器



DIRECT AIR COOLED CONDENSER SYSTEM 直接空冷凝汽系统

DIRECTAIR COOLED CONDENSER SYSTEM: 直接空冷凝汽系统

A type of cooling system that employs ambient air as cooling medium to dliectly condense the turbine exhaust steam into water by air cooled condenser.

以空气作为冷却介质,通过空冷凝汽器将汽轮机的排汽直接冷凝成水的一种冷凝系统



COMPONENTS: 系统组成

- Air cooled condenser
 空冷凝汽器
- Air supgly system 风机系统
- Exhaust duct system 排汽管道系统
- Condensate collection system 凝结水收集系统
- Vacum.pumping system Clean system 抽真空系统 Electrical system
- 电气系统
- Instrument and control system 仪表和控制系统
- Supporting structure 支撑结构



Process Flow Diagram of Direct Air Cooled Condenser System

■ Single Row Tube 单排管

The single row tubes are made of aluminum-clad flat tubes and alum num wary finned rubes by brazing. The aluminum-clad flat tubes and wavy finned tubes are compactly brazing together with a bigger welding angle on the botom. Features of the single row tubes areas folows: 单排管由单面覆铝板卷制的大扁管和铝制蛇形翅片进行钎焊,两者紧密结合,根部具有较大的焊角,单排管凝汽器具有 如下特点:

· Dimensions of wavy finned tube 翅片管规格 220mmx58mm

• Great Heat Transfer Performance 传热效率高

Bigger flow area on steam side, less pressure loss. higher heat transfer efficiency.

蒸汽侧流通面积大,压力损失小,具有较高的传热效率 Raised aluminum rolled fins reinforce heat transfer performance by increasing heat transfer area and enhancing air turbulence.

铝翅片轧制凸起,增加传热面积,增强空气流通湍流 程度,强化换热效果

Great Anti-corrosion Performance 抗腐蚀能力强

Tubes and fins are completely covered by aluminum and compacly brazed together ensuring great anti-corrosion performance. 基管与翅片完全被铝覆盖,钎焊后具有良好抗腐蚀能力

· High Strength 强度高

High strength tubes not only facilitate transport and installation. but also endure high pressure cleaning.

强度高,便于运输和安装,且能承受高压清洗。

Great Anti-freezing Performance 防冻性能好

Tube section is wih bigeer length-width ratio, which reduces possibility of condensateovercooling and tube freezing in winter. 基管截面具有较大的长宽比,减少了凝结水的过冷度 和发生冬季冻管的危险。







DESIGN, MANUFACTURE AND CONSTRUCTION OF AIR COOLED CONDENSER SYSTEM 空冷凝汽系统设计 制造 施工

PACKAGED DESIGN 成套设计

With an elite designing and engineering team, Longhua is capable of packaged design and engineering of direct aircooled condenser system up to 660MW and above.

拥有一支高素质的设计团队,具备660MW及以上机组直接空冷系统成套设计优化能力















ADVANCED MANUFACTURING FACILITY 先进的制造设备

Longhua has the most advanced production line for single row tubes in China, which consists of production equipment for tubes and fins, NC lathes. NC brazing furnace, auto-cleaning device, nitrogen generator, finned tube conveying equipment, automatic welding machine, visualized inspection equipment, etc. 隆华拥有国内最先进的单排管生产线,由管翅片生产设备、数控车床、数控钎焊炉、自动清洗装置、氮气供应站、翅片 管输送设备、自动焊机、可视化检测设备等组成。

Longhua is capable of manufacturing air cooled bundles up to 4x660MW annually. 隆华具有年产4×660MW空冷管束生产能力。





PROFESSIONAL CONSTRUCTION 专业施工

With a professional construction team, Longhua ensures quality and service of every onsite construction and installation. Professional technicians participate in onsite commissioning and testing to ensure every problem is solved in a timely manner.

隆华拥有一支专业的施工队伍,确保每一次现场施工安装的质量和服务。专业技术人员参与现场调试和测试, 确保每一个问题都能及时得到解决。





APPLICATION I: Substituting for Water Cooled Condenser System 应用一: 替代水冷凝汽器系统



Process Flow Diagram of Substituting Wet Surface ACC System for Water Cooled Condenser System 蒸发式凝汽器取代水冷系统工艺流程简图



Integrating with condenser, cooling tower, circulating water pump and pump house, a wet surface ACC is able to systematize huge water cooled condenser equipment with its compact structure. As the energy-efficient, water-saving and environment-friendly condensing equipment, wet surface ACC can save 30%- 50% of water comparing with traditional water cooled condenser, and 10% - 20% of electric power, It also facilitates operation and maintenance withless foor area.

蒸发式凝汽器集凝汽器、冷却塔、循环水泵及泵房于一体,结构紧凑,可讲将庞大的水冷凝汽系统设备化。是一种高效、 节能、节水、环保型凝汽设备。相对传统水冷凝汽器克节水30%-50%,节电10%-20%。占地面积小,操作维护简便。

APPLICATION II: Performance Improving Device Used for Direct Air Cooled Condenser System 应用二:用于直接空冷的性能改善装置(尖峰冷凝装置



Process Flow Diagram of Direct Air Cooled Condenser System + Performance Improving Device 直接空冷系统+性能改善装置装置工艺流程简图



Based on regional environmental conditions and operational status of direct air cooled condenser system, applicable wet surface ACC shall be equipped as performance improving device.

根据区域环境条件和直接风冷冷凝器系统的运行状况,配置适用的蒸发式冷凝器作为性能改善装置。

ADVANTAGES: 优势

- Reusing waste water and reducing emission 吃废水,减排放
- Anti-crosswind, preventing abnormal shutdown
 抗横风,防非停



Conserving water and coal 降煤耗, 节水 Reducing back pressure and ensuring full-load operation 降背压, 保满发



WET SURFACE ACC SYSTEM

蒸发式凝气系统



WET SURFACE ACC 蒸发式凝汽器

A type of energy-efficient, water-saving and environment-friendly condensing equipment that employs the heat transfer mode of condensing inside tubes and evaporating outside tubes.

蒸发式凝汽器是采用管内冷凝。管外蒸发技术为主体换热方式的高效、节能、节水、环保的凝汽设备。

COMPONENTS OF WET SURFACE ACC: 蒸发式凝汽系统组成

Wet surface ACC. exhaust duct system, circulating water system, air supply system, vacuum-pumping system, condensate system, etc.

蒸发式凝汽系统主要由蒸发式凝汽器、排气管道系统、循环水系统、供风系统、抽真空系统和凝结水系统等组成。



WORKING PRINCIPLE 工作原理

Steam turbine exhaust enters into wet surface ACC to be condensed and heat is released. Spray water outside tubes is evaporated by absorbing latent heat of steam inside tubes and emitted to atmosphere by air flow of motor fans Unevanorated spray water drops to water tank for recirculation, Condensate is collected in condensation tank via pipes and non-condensable vapor is exhausted by vacuum-pumping device. 汽轮机排汽通过排汽管道进入蒸发式凝汽器内冷凝放热。管外喷淋水吸收管内蒸汽冷凝器潜热汽化后,由空气挟带, 在风机的作用下排到大气中。未蒸发的的喷淋水下落到水箱中循环使用。凝结水经管道汇集于凝结水水箱,不凝性气 体由抽真空装置排出。











Evaporative Cooler/ Condenser

蒸发式冷却(冷凝)器

Evaporative Cooler/Condenser is an efficient and energy-saving heat exchanger which absorbs the heat of the fluid in the tube by water film evaporation (forced convection air produced by induced draft fan) sprayed on the outer surface of the heat exchange coil, so that the fluid in the tube can be condensed/cooled.

Latent heat transfer is more efficient than sensible heat transfer

1 Kg of water will take away 1 Kcal of heat by rising 1°C, while 1 kg of water will take away 580 Kcal of heat by evaporation. If considering an 8°C of temperature rising (referring to ACC), wet surface (evaporative) cooling system is approximately 70 times more efficient than air cooling system.



Main structural characteristics 主要结构特点

- **1**. Flexible structural design, to eliminate thermal stress, safe and reliable operation. 柔性结构设计,消除热应力,运行安全可靠。
- 2. Modular design, convenient for manufacturing, installation, maintenance, and repair. 模块化设计,制造、安装、检修、维护方便。
- **3**.By utilizing advanced heat exchange mechanisms, final cooling temperature is low and the heat exchange efficiency is high. 运用先进换热机理,冷却终温低,换热效率高。
- applications and good performance in defogging and anti-scaling. 空冷、蒸发冷多元组合,适应范围广,除雾防垢性能好。
- 5. Energy conservation, water conservation, environmental protection, high costeffectiveness of investment, and low operating costs. 节能节水环保,投资性价比高,运行费用低。
- 6.Optimize the ratio of tube type, number of tubes, tube length, and tube passes to achieve efficient heat transfer. 管型、管数、管长、管程等优化配比,实现高效传热。
- 7. The overall hot-dip galvanizing anti-corrosion treatment ensures a long service life of the equipment. 换热部件整体热浸锌防腐处理,设备使用寿命长。
- 8.Small footprint, strong layout adaptability. 占地面积少,布局适应性强。
- 9. Using automatic control technologies such as frequency conversion to achieve precise control of process indicators. 运用变频等自动控制技术,工艺指标控制精确。
- 10. Frame is made of magnesium aluminum zinc plate, which has a beautiful and generous appearance.

外护板采用镀镁铝锌板,外形美观大方。





4. The combination of air cooling and evaporative cooling has a wide range of





Syl Series High Efficiency Hybrid Cooler/condenser

SYL系列高效复合型冷却(冷凝)器

Developed from Evaporative Cooler/ Condenser, the SYL series high-efficiency hybrid cooler/condenser is a high-efficiency composite cooling equipment developed by Longhua Technology Group (Luoyang) Co., Ltd. It is based on the basic theories of latent heat exchange and sensible heat exchange, and optimizes and maintains multiple cooling methods such as evaporative, air-cooling system, and water-cooling system, in order to achieve stable and reliable structure, wide applicability, good cooling effect, and significant advantages such as energy conservation, water conservation, and environmental protection.

SYL系列高效复合型冷却(冷凝)器是隆华科技集团(洛阳)股份有限公司研发的高效复合型冷却设备。它以潜热换热、 显热换热的基本理论为基础,将蒸发式、空冷式、水冷式等多种冷却方式优化维合,从而达到结构稳定可靠,适用范围广,冷却 效果好,具有节能、节水、环保等显著优势。





Design concept 设计理念

- operation and maintenance.
- 模块化柔性结构设计,性能稳定可靠、制造操作检修方便。
- difference pre-cooling, energy-saving and water-saving. 蒸发式冷却器和湿式空冷器优化组合,进行大温差预冷却,节能节水。
- **3.** The adoption of pre-cooling measures has greatly slowed down the scaling outside the evaporative cooling pipes.
- 采取预冷却的措施,大大减缓了蒸发冷的管外结垢。
- utilization of power.
- 蒸发冷的引风机和空冷的风机合二为一,实现动力充分利用。

5. The ratio of air cooling and evaporative cooling structure can be adjusted reasonably according to the system needs to achieve the best energy-saving and water-saving effect. 可根据系统需要合理调整空冷与蒸发冷结构比例,实现最佳节能节水效果。

6.Fan frequency conversion control, constant cooling temperature, lowest energy consumption, 10 ° C, etc.).

风机变频控制,冷却温度恒定,能耗最低,可实现不同环境温度下(0°C、5°C、10°C等)停水干运行。







1.Modular flexible structure design, stable and reliable performance, convenient manufacturing

2.Optimization combination of evaporative cooling and wet air cooling for large temperature

4. The evaporative cooling induced draft fan and the air cooling fan are combined to achieve full

can achieve dry operation without water at different environmental temperatures ($0 \circ C$, $5 \circ C$,



Applicable working conditions 适用工况

1. Suitable for various media condensation cooling within 34 MPa (including negative pressure), $150\ ^\circ$ C~32 $^\circ$ C.

适用于34 MPa内(包括负压)、150°C~32°C的各种介质冷凝冷却。

- **2.**It has outstanding advantages in condensation cooling of low-temperature media below 90°C. 对90°C以下的低温位介质的冷凝冷却具有突出优势。
- **3.**Suitable for condensing and cooling various oil and gas, as well as cooling oil products in the petroleum and chemical industries.

适用于石油和化工行业中各种塔顶油气的冷凝冷却、油品的冷却。

4.Suitable for condensing and cooling various process fluids in industries such as petroleum, chemical, metallurgical, refrigeration, light industry, power, food, compressors, refrigeration, and silicon materials.

适用于石油、化工、冶金、制冷、轻工、电力、食品、压缩机、制冷、硅材料等行业中各种工艺流体的冷凝冷却。



























Equipment selection tips 设备选用小知识

The cooling (condensation) equipment for process media in industries such as petrochemical, coal chemical, natural gas, fine chemical, silicon materials, compressors, refrigeration, etc. is divided into top, middle, and bottom cooling (condensation) based on the position of the process media outlet of the reaction tower. Air coolers, high-efficiency hybrid cooling (condensation) devices, evaporative cooling (condensation) devices, and heat exchangers can be used.

石化、煤化、天然气、精细化工、硅材料、压缩机、制冷等行业的工艺介质冷却(冷凝)设备根据反应塔的工艺介质出 料口位置将工艺介质的冷却(冷凝)分为塔顶、塔中、塔底冷却(冷凝),可采用空冷器、高效复合型冷却(冷凝)器、蒸发 式冷却(冷凝)器、换热器。







Closed Cooling Tower

Heat exchangers applied to circulating water cooling and refrigeration systems. It can also be paired with a compressor, mainly responsible for condensing high-temperature and highpressure refrigerants into low-temperature and low-pressure liquids.

应用于循环水冷却、制冷系统的热交换器。也可以与压缩机配套,主要负责将高温、高压的制冷剂冷凝为低温、低压的 液态。

The main suitable medias: water, steam, refrigerants such as R717, R22, R134a, R507a, etc. 主要适用介质为:水,蒸汽,R717、R22、R134a、R507a等制冷剂。





Parallel Flow Type



Spray Pump



Intelligent Composite Closed Cooling Tower 智能化复合型闭式空冷塔

An integrated device that combines the advantages of air heat exchange (water-saving) and evaporative heat exchange (high-efficiency) in different structural forms. Equipment form: wet dry separation (generally used under high temperature conditions), wet dry integration (currently the highest water-saving equipment in the market).

The advantage of this cooling device is that it uses intelligent regulation as a means to meet the autonomous water-saving and energy-saving comprehensive operation of the device under different environmental temperatures and operating modes.

结合空气式换热(节水)与蒸发式换热(保效)的优点,以不同的结构形式相互组合的一体化装置。设备形式:干湿分离(一般在高温工况下采用)、干湿一体(目前市场节水率最高的一种设备)。

此种冷却装置优点为在不同环境温度、不同运行模式下,以智能化调节为手段,满足装置自主节水、节电综合运行。







The application of this type of cooling tower has solved the prominent contradiction in the composite process of two cooling methods for the first time in China. After operation verification, it can provide a new water-saving, energy-saving, and efficient cooling for the circulating water cooling market. It meets the comprehensive needs of water-saving, energy-saving, land occupation, investment, maintenance, antifreeze, environmental protection, intelligence, and other aspects in water scarce areas.

在国内首次解决了两种冷却方式复合过程中的突出矛盾,经过运行验证,能够为循环水冷却市场提供全新的节水、节能、达效的冷却。满足了缺水地区的节水、节能、占地、投资、维护、防冻、环保、智能等多方面综合使用需求。









Comparison of operating parameters of different circulating water cooling systems

循环水冷却不同系统的运行参数对比

Proposal	Flow rate	Dry bulb temperature	Wet bulb temperature	Inlet water temperature	Outlet water temperature	Average annual water consumption	Average annual electricity consumption
	t/h	°C	°C	°C	°C	t/h	kW
Mechanical ventilation cooling tower	10000	33	22	42	32	175	370
Air Cooler		28	22	42	32	0	3515
Evaporative Cooler		33	22	42	32	160	1554
Intelligent composite closed cooling tower		33	22	42	32	40	1813

Notes:

1. Based on the environmental conditions of the Wuhai region as the design basis.

2. The design air inlet temperature of the air cooler is 28 °C, and the failure time throughout the year is about 10%.

3. The open cooling tower is not included in the secondary heat exchange.

4. The circulating water pump in a closed loop system saves 10-30% compared to an open system.

5. Compared to open systems and evaporative cooling, the water saving rate is greater than 70%, and compared to air coolers, it saves more than 50% of electricity.

注:

1. 以乌海地区环境条件为设计基础。

2. 空冷器的设计空气进口温度为28℃, 全年不达效时间约10%。

3. 开式冷却塔未计入二次换热。

4. 闭式循环系统的循环水泵比开式系统节约10~30%。

5. 相对于开式系统和蒸发冷节水率>70%,相对于空冷器节电50%以上。



Pressure Vessel 压力容器

Having an A2 level special equipment production license for pressure vessels, capable of designing and manufacturing Class I, II, and III pressure vessels; The products include multiple categories such as heat exchangers, towers, storage tanks, reactors, mixing equipment, etc;

Widely used in multiple industries such as petrochemicals, coal chemicals, fine chemicals, metallurgy, and polycrystalline silicon.

具有A2级压力容器特种设备生产许可证,可设计制造I、II、III类压力容器,产品包括换热器、塔器、储罐、反应器、搅拌设 备等多个品类,广泛应用于石油化工、煤化工、精细化工、冶金、多晶硅等多个行业。

Heat Exchanger 换热器类

Fixed tube plate heat exchanger 固定管板式换热器

Floating head heat exchanger 浮头式换热器

U-tube heat exchanger U型管式换热器

Kettle heat exchanger 釜式换热器

Bellows heat exchanger 波纹管换热器









Liquefied gas separation tower 液化气分离塔

Storage Tank Device 储罐类设备

Horizontal storage tank 卧式储罐 Vertical storage tank 立式储罐

Reactor Device 反应器类设备

Large scale petrochemical reactor 大型石化反应器

Catalytic cracking riser reactor 催化裂化提升管反应器



Mixing equipment for the polycrystalline silicon industry 多晶硅行业搅拌设备

Mixing equipment in the fine chemical industry 精细化工行业搅拌设备









Business distribution 业务分布





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