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楚天华通医药设备有限公司

TRUKING WATERTOWN PHARMACEUTICAL EQUIPMENT CO.,LTD.

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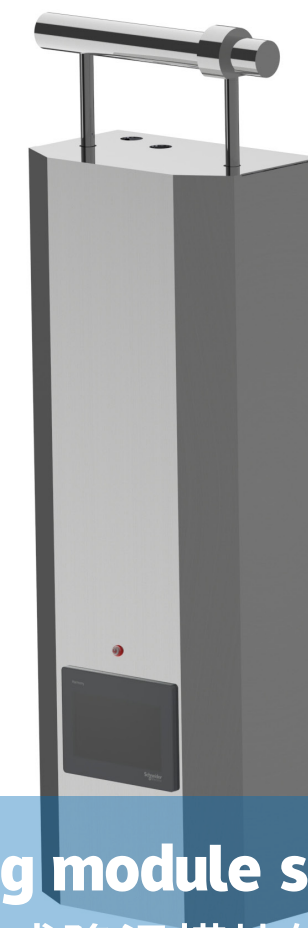
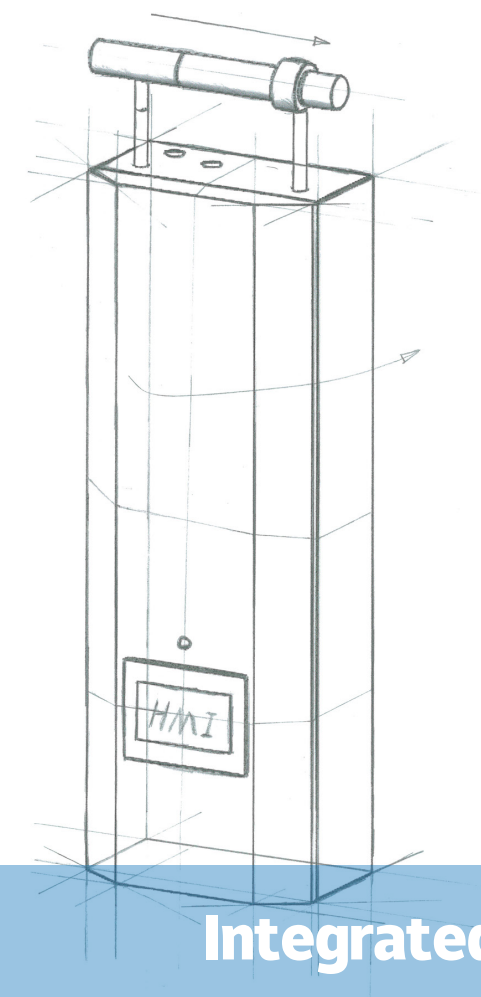
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May 2023 Edition



Integrated cooling module solution

集成降温模块解决方案

楚天华通医药设备有限公司

TRUKING WATERTOWN PHARMACEUTICAL EQUIPMENT CO.,LTD.

让世界制药工业插上智慧的翅膀
Equip global pharmaceutical manufacturing industry with intelligent wings.



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楚天华通医药设备有限公司系楚天科技股份有限公司全资子公司，始建于1993年，是目前亚洲领军制药用水系统（制备、储存和分配）、配液系统、不锈钢压力容器、污水处理、蒸发浓缩结晶、换热器研发制造基地，装备及制造工艺处于行业优级水平，员工总数1300余人，资产总额20亿元，服务于全球1000余家制药企业。

公司位于长春九台经济开发区，是中国制药装备行业协会理事单位，中国医药设备工程协会、中国膜工业协会会员单位，获评定为国家级高新技术企业、吉林省专精特新企业、吉林省级企业技术中心，获得省级创新型科技企业、长春市百强民营企业、长春市科技型小巨人企业等荣誉。公司拥有中国特种设备压力容器D级（10MPa以下的一类、二类、三类压力容器）设计与制造资质、压力管道（GC2）安装许可证、建筑机电安装工程专业承包贰级资质、环保工程专业承包贰级、环境工程设计专项（水污染防治工程）乙级、美国ASME（U）钢印设计与制造资质、欧盟CE（PED、MD）认证资质。截至2023年4月，公司共提出中国专利申请320项，有效专利180项，另提出1件PCT国际专利申请。产品已出口美国、意大利、比利时、希腊、土耳其、俄罗斯、韩国、泰国、越南、印尼、印度、埃及、沙特、摩洛哥、秘鲁等30多个国家和地区，国际市场占有率正逐年快速提升。

公司拥有经验丰富的研发技术团队，覆盖工程设计、项目管理、测试调试、验证与咨询服务，联合楚天科技、德国ROMACO集团、四川省医药设计院共同承接制药企业EPCM总包服务，为制药企业提供工程工艺优化、产品的全生命周期管理与服务。

2021年公司确认新建楚天华通医药装备智能制造产业园项目，位于长春市九台经济技术开发区中古医药产业园。项目新购地36.1117万平方米，计划在5年内分三期完成项目整体建设任务，项目建成后，将崛起楚天华通研发中心大楼、智能车间、员工公寓以及商务接待中心等现代化智能配套公用工程。一期工程建筑面积6万平米，预计2023年7月投产。作为楚天华通年产5000台套医药装备的智能制造基地，楚天华通医药装备智能制造产业园项目完成后将大幅提升企业产能，将进一步推动企业战略目标的实现。

公司坚持“做受尊敬的人、造受尊敬的产品、办受尊敬的企业”的核心价值观，秉承“要么唯一，要么第一”的理念，弘扬“因为执着，所以卓越”的精神，将楚天华通打造成全球制药用水系统领军企业之一。

Truking Watertown Pharmaceutical Equipment Co., LTD., a wholly-owned subsidiary of Truking Technology Limited, was founded in 1993. It is the leading R&D and manufacturing base of pharmaceutical water system (preparation, storage and distribution), liquid preparation system, stainless steel pressure vessel, sewage treatment, evaporation, crystallization and heat exchanger in Asia. With more than 1300 employees and 2 billion yuan of assets, the company serves more than 1000 pharmaceutical enterprises around the world.

Truking Watertown is located in Jiutai Economic Development Zone, Changchun. It is a member of China Pharmaceutical Equipment Industry Association, China Pharmaceutical Equipment Engineering Association and China Membrane Industry Association. It has been rated as a national high-tech enterprise, Provincial Specialized and Sophisticated Enterprise, Provincial Enterprise Technology Center. It has been honored as provincial innovative technology Enterprise, Changchun Top 100 Private Enterprise, and Changchun Small Giant Technology Enterprise. Truking Watertown has Chinese special equipment Class D (Class I, Class II and Class III below 10MPa) pressure vessel design and manufacturing license, Pressure pipeline (GC2) installation license, construction mechanical and electrical installation engineering contracting Class II, environmental engineering contracting Class II, environmental engineering design special (water pollution control engineering) Class B, ASME(U) steel seal design and design manufacturing qualification, EU CE(PED, MD) certification qualification. Truking Watertown has applied for 320 patents, 180 patents of which have been authorized until April 2023, and one PCT international patent application. Products have been exported to the United States, Italy, Belgium, Greece, Turkey, Russia, South Korea, Thailand, Vietnam, Indonesia, India, Egypt, Saudi Arabia, Morocco, Peru and other 30 countries and regions, the international market share is rapidly increasing year by year.

Truking Watertown has an experienced R&D technical team, covering engineering design, project management, testing and commissioning, validation and consulting services. Together with Truking Technology, Germany ROMACO Group and Sichuan Pharmaceutical Design Institute, the company jointly undertakes EPCM general contract services for pharmaceutical enterprises, providing engineering process optimization and product lifecycle management and services for pharmaceutical enterprises.

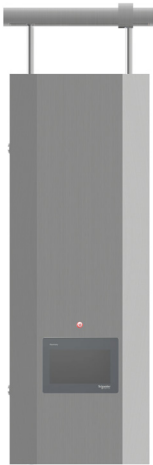
In 2021, Truking Watertown pharmaceutical equipment Intelligent Manufacturing Industrial Park project started, located in Jiutai Economic and Technological Development Zone of Changchun Medicine Industrial Park. The new plant occupies 361,117 square meters. It is planned to complete the overall construction in three phases within 5 years. After the completion of the construction, Truking Watertown R&D Center building, intelligent workshop, employee apartment and business reception center and other modern intelligent supporting utilities will be used. The first phase of the project covers a construction area of 60,000 square meters and is expected to be put into operation in July 2023. As base of Truking Watertown with an annual output of 5,000 sets, pharmaceutical equipment intelligent manufacturing Industrial Park will greatly improve the enterprise's production capacity after the completion of the project, which will further promote the realization of the strategic objectives of the enterprise.

We insist on the core value of being respected person, making respected product and running respected enterprise and adhere to the philosophy to be the unique or to be the first and promote the spirit of Because of persistence, we are superexcellent to make Truking Watertown be one of the leading pharmaceutical water system enterprises all over the world.

集成降温模块 Integrated Cooling Module

性能特点 / Performance Characteristics

- ◎ 模块化设计，结构组合形式装配，节约安装空间和成本
- ◎ 能够快速降温，在线灭菌消毒，无交叉污染风险及免维护
- ◎ 在线实时监测流速（选配）和出水温度
- ◎ 自主研发、机加一体、专利的横向限流装置实现最佳流量
- ◎ 根据客户个性化需求，可选择附件，进行定制
- ◎ 连续流动，真无死角设计
- ◎ 完整可追溯性验证文件
- ◎ PLC+HMI 全自动控制
- ◎ 人机工程学设计，机电分离，友好界面，轻松点控

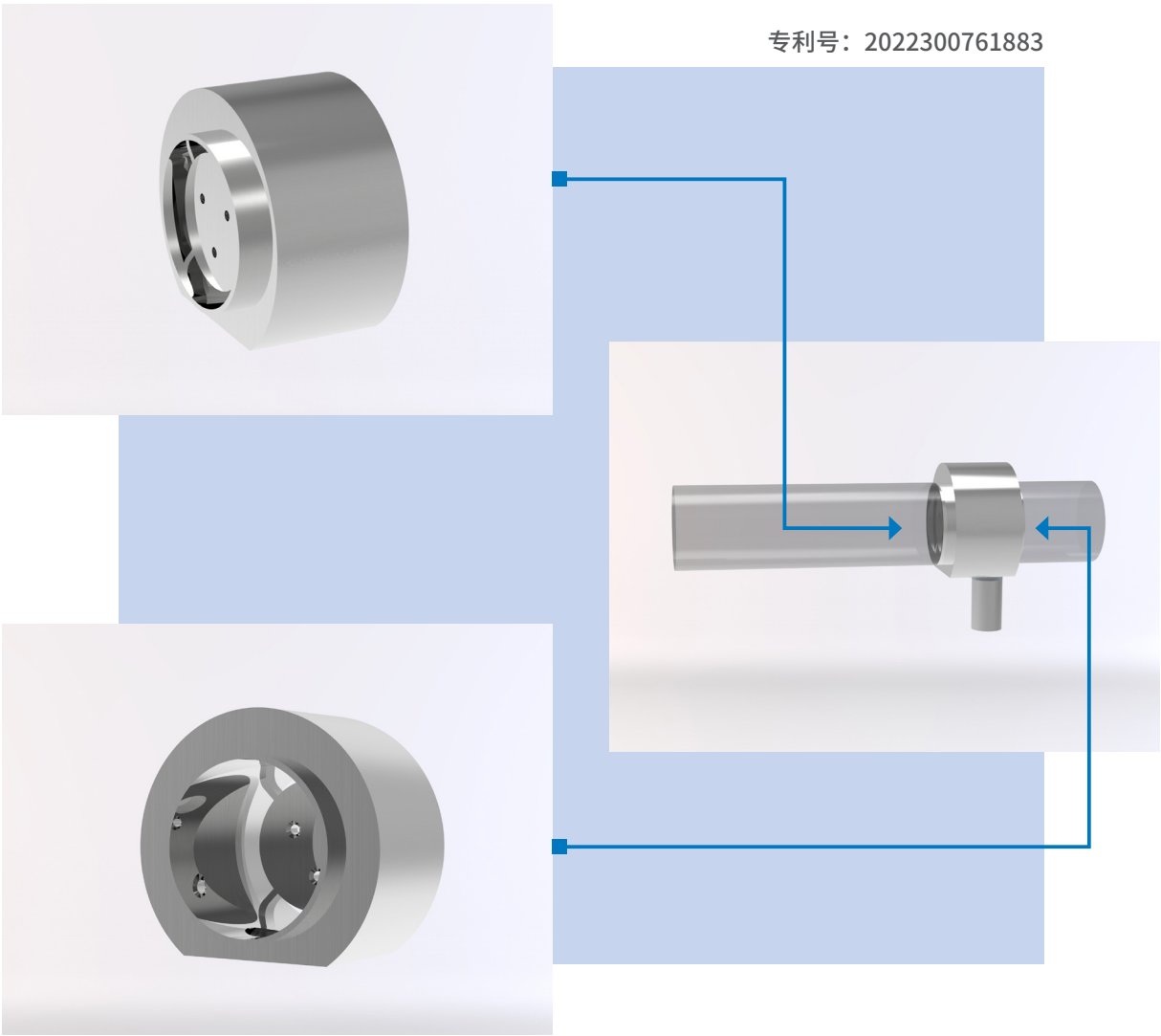


- Modular design, structure combination form assembly, save installation space and cost
- Rapid cooling, online sterilization and sanitization, no cross contamination risk and maintenance free
- On-line real-time monitoring of flow velocity (optional) and outlet temperature
- Self-developed, machining, patented horizontal flow limiting device achieves the best flow rate
- According to the individual needs of customer, accessories are optional and customized
- Continuous flow, no dead leg design
- Complete traceability verification document
- PLC+HMI automatic control
- Ergonomic design, electromechanical separation, friendly interface, easy control

技术参数 / Technical Parameters

出水温度 Output temperature	20~45℃	工作环境 Work environment	4~40℃
出水流量 Output flow	200~2000L/h	重量 Weight	~70kg

关键部件 - 分流阀
/ Critical Component - Diverter Valve



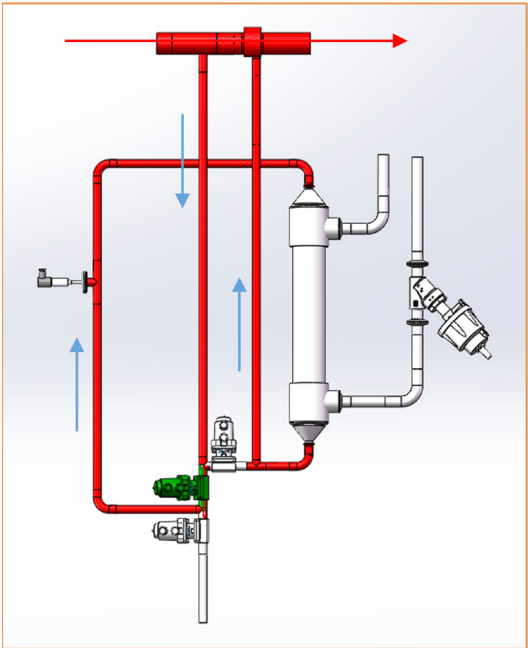
优选材质：

- ◎ 自主研发，实验数据验证流量最佳，压损最小。
- ◎ 机加一体成型，内表面电抛光 $Ra \leq 0.4\mu m$
- ◎ 任意角度安装可排尽，出口散射流设计
- ◎ 轻量化设计，连接方式可选

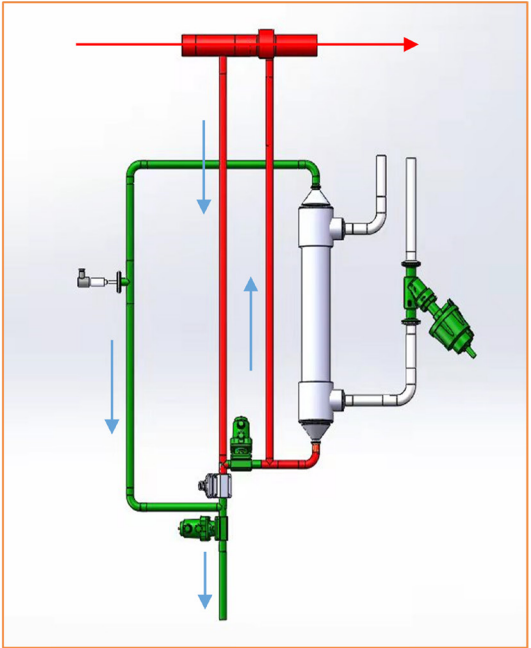
Preferred Material:

- Independently developed, the experimental data verified that the flow rate is the best and the pressure loss is the least.
- Machining integrated, internal surface electric polishing $Ra \leq 0.4\mu m$
- Arbitrary Angle installation can drain, outlet scattering flow design
- Lightweight design, optional connection mode

运行原理 / Operation Principle



图①



图②

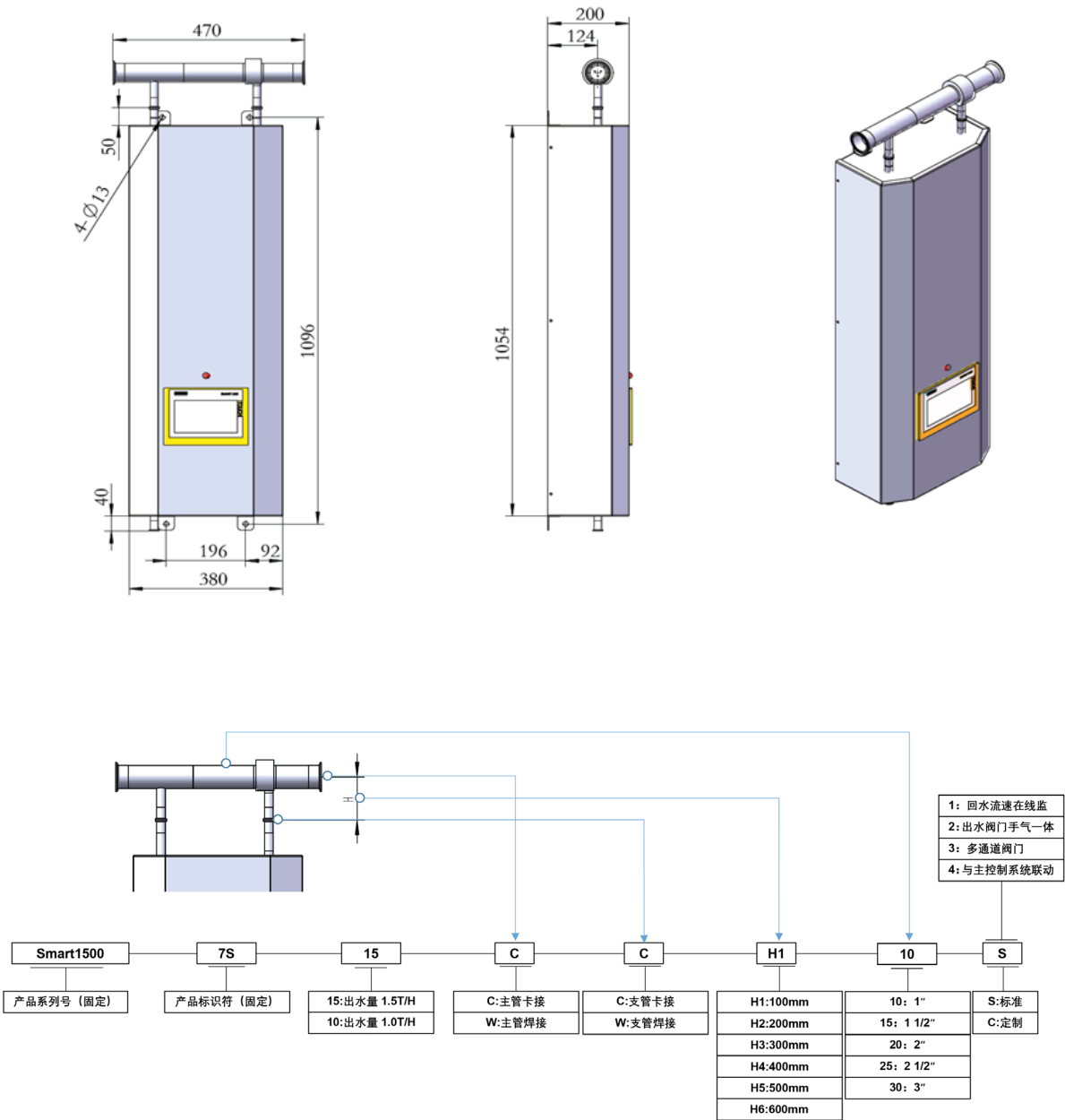
说明：

- ◎ 图①为待机模式，注射水流动路径如图箭头所示，保证支路回水流速 $\geq 1.0m/s$
- ◎ 图②为冷却模式，红色管道是未冷却注射水路径，绿色管道是经换热器冷却后介质
- ◎ 阀门：灰色是关闭状态，绿色是打开状态；管道：红色是热介质，绿色是冷却后介质

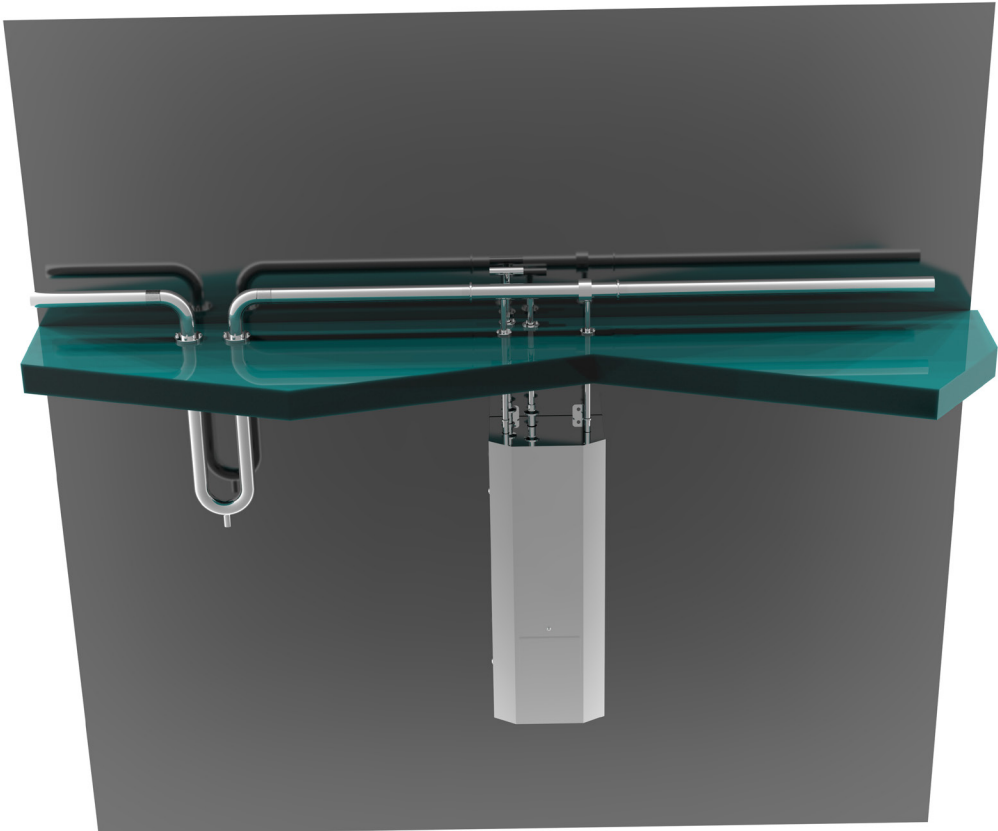
Instructions:

- Figure ① shows the standby mode. The injection water flow path is shown as the arrow in the figure. Ensure that the return water flow rate of the branch is $\geq 1.0m/s$
- Figure ② shows the cooling mode. The red pipeline is the uncooled injection water path, and the green pipeline is the cooled medium after the heat exchanger
- Valve: gray is closed, green is open; Piping: Red is the hot medium, green is the cooled medium

设备型号 / Device model



应用领域 / Application Field



◎ 应用于洁净区内配液、器具清洗、洗瓶、胶塞铝盖清洗等非高温工况

- It is applied in non-high temperature conditions such as liquid preparation, instrument cleaning, bottle washing, rubber plug and aluminum cap cleaning in clean area.

质量控制 Quality Control

·表面处理 Surface Finish

表面粗糙度属于微观几何形状误差，表面粗糙度越小，则表面越光滑，楚天华通拥有国内行业最大的厂内不锈钢电解车间，电解抛光可有效去除不锈钢表面加工毛刺及游离铁离子，降低表面粗糙度，降低结垢及红锈滋生风险，延长设备使用寿命。

- Micro geometric surface roughness shape error, the smaller the roughness, the surface is smooth, Truking Watertown has domestic industry's largest factory of stainless steel electrolytic workshop, electrolytic polishing can effectively remove the stainless steel surface machining burrs and free iron ions, reduce the surface roughness, reduce the risk of scaling and red rust breeding, prolong the service life of device.



·加工制造 Processing and Manufacturing

设备齐全的机加工车间，换热器所有机加件均为华通自行加工制造，过程质量及过程文件可控、可追溯。

- The well-equipped machining workshop and the organic parts of heat exchanger are all manufactured by Watertown. The process quality and process documents are controllable and traceable.



质量文件 Quality Documents

提供标准符合 GMP 要求的过程文件、验证文件，有效保证产品验证文件真实、可追溯、合规性。

- Provide process documents and verification documents in accordance with GMP requirements to effectively ensure the authenticity, traceability and compliance of product verification documents.

- | | |
|--------------------|--|
| ◎ 提供换热器部件图； | • Provide the heat exchanger component diagram; |
| ◎ 换热器强度计算书； | • Heat exchanger strength calculation book; |
| ◎ 换热器安装操作维护手册 | • Heat exchanger installation, operation and maintenance manual |
| ◎ 使用材料的材质证明； | • Material proof of materials used; |
| ◎ 过程质量体系文件； | • Process quality system documents; |
| ◎ 酸洗钝化报告及粗糙度证明； | • Pickling passivation report and roughness proof; |
| ◎ 过流部件及密封材质合规性证明； | • Certificate of compliance of overcurrent components and sealing materials; |
| ◎ 焊工资质、焊接工艺流程、焊缝图； | • Welder qualification, welding process specification, weld drawing; |

售后服务 After-sales Service

选择了楚天华通就等于选择了以下优先权：

- Choosing Truking Watertown means choosing the following priorities:

- | |
|--------------------------------|
| ◎ 高效的交货周期，相同产品储备充足； |
| ◎ 高质量的产品及符合法规要求的验证体系文件； |
| ◎ 源于对产品的自信及口碑，提供两年质量保障； |
| ◎ 免费提供两年的易损备件，保证产品生命周期稳定运行； |
| ◎ 拥有全国七大区域服务中心，全天候 24 小时的尊享服务； |
- Efficient delivery cycle, sufficient stock of the same products;
 - High quality products and validation system documents compliance with regulatory requirements;
 - From the confidence and reputation of the product, to provide two years' warranty;
 - Free provision of two years of vulnerable spare parts, to ensure stable operation of product life cycle;
 - With seven national regional service centers, 24 hours a day service;