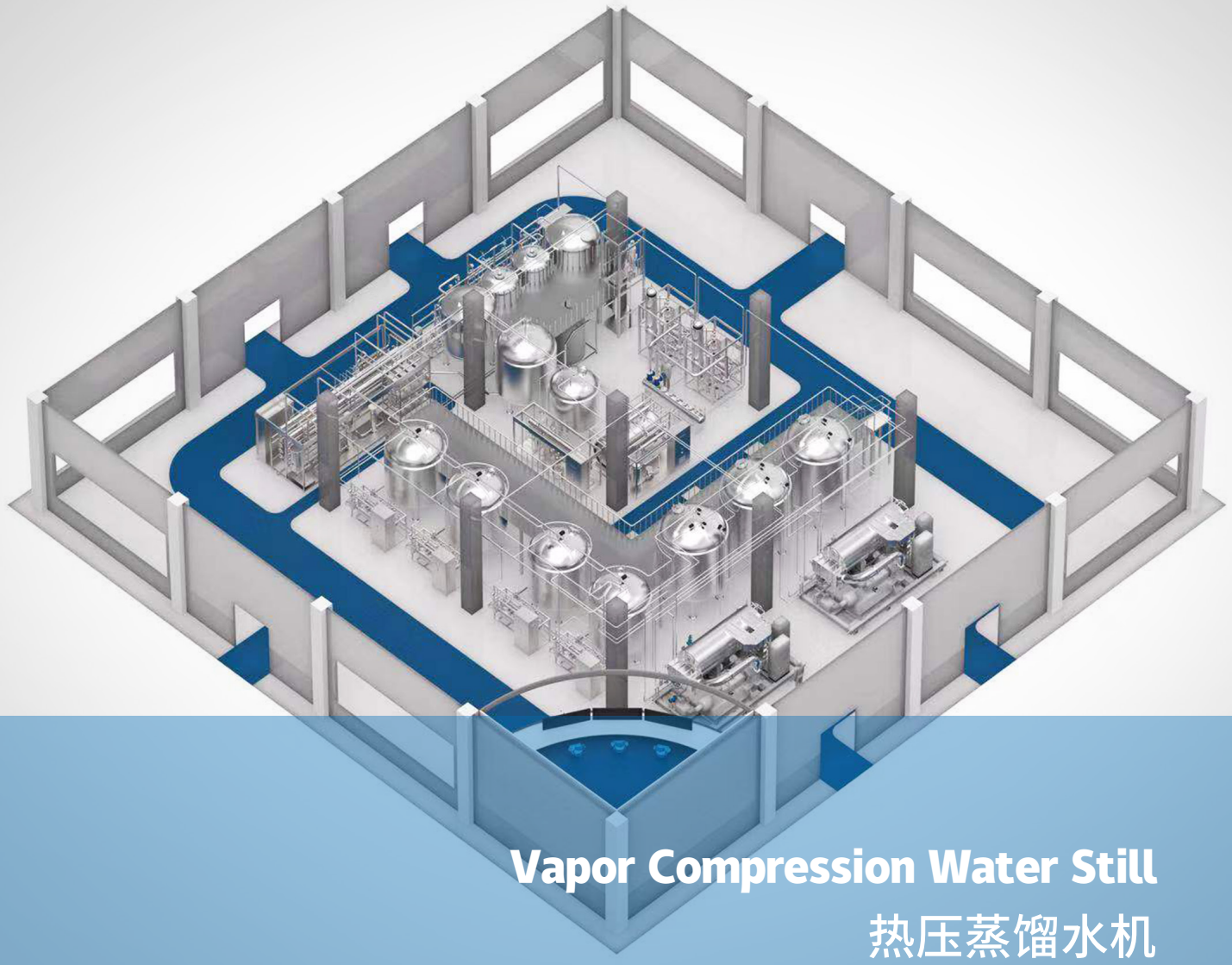
楚天华通
TRUKING WATERTOWN



Vapor Compression Water Still
热压蒸馏水机

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.

TRUKING

contents 目录

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。

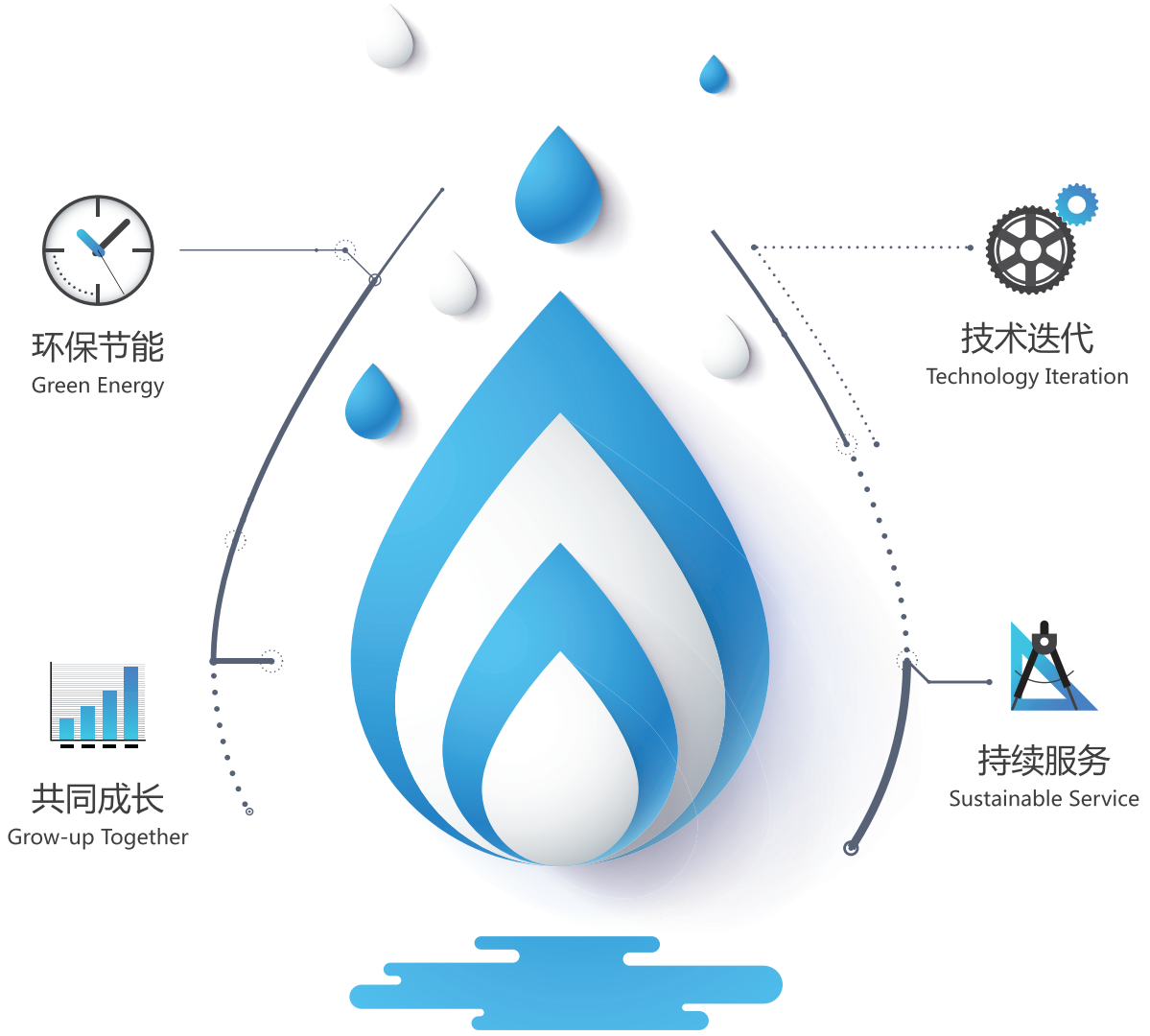
Truking Watertown Pharmaceutical Equipment Co., LTD., a wholly-owned subsidiary of Truking Technology Limited, was founded in 1993. It is the leading R&D and manufacturing base of pharmaceutical water system (preparation, storage and distribution), liquid preparation system, stainless steel pressure 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.



楚天华通热压式蒸馏水机目前服务于国内各大药厂几十余家，为用户提供可靠且高品质的注射用水，受到客户一致好评。与国外同类设备对比，楚天华通热压式蒸馏水机设备运行稳定、应用培训指导全面、售后服务及时，设备操作界面更加符合国人操作习惯，同时系统可实时进行能耗分析，节能状况一目了然。

Our vapor compression stills serve in dozens of pharmacies in China now, providing reliable high quality of WFI and win high praises from the customer. And comparing to the VCS abroad Our VCS run much more stably with our full training instruction and timely after-sale service and the system can realize the energy consumption analysis in real time.

MVR 技术起源　MVR Technology Origin

◎ MVR 技术起源于欧洲十九世纪三十年代，二十世纪初瑞士苏尔寿公司开发出工业应用的 MVR 设备。MVR 技术于二十世纪八十年代引进我国，起初应用于制盐行业。目前 MVR 技术已经广泛应用于化工、轻工、食品、制药、海水淡化、污水处理等工业生产领域， 对于推动我国节能环保产业的进步具有重要意义。

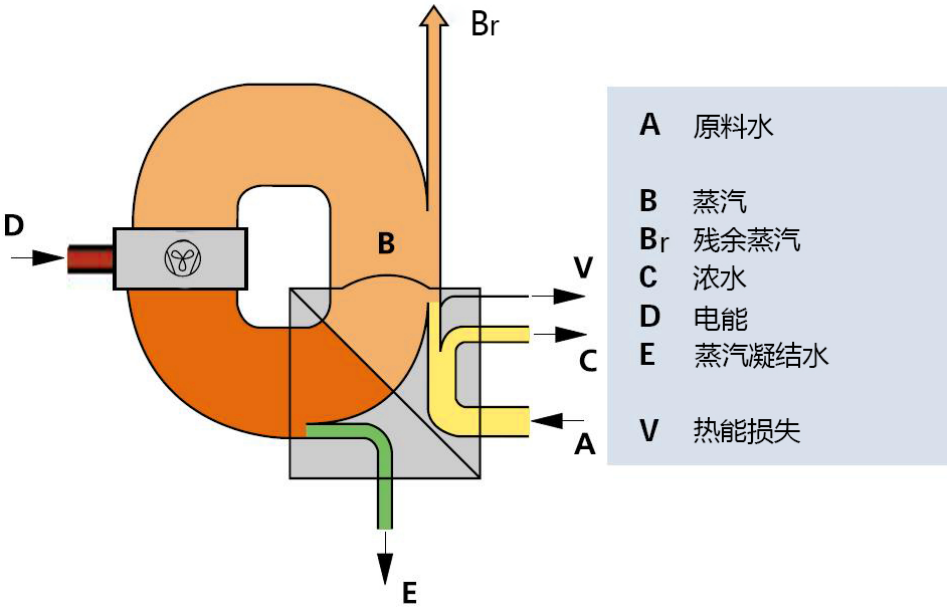
◎ MVR（mechanical vapor recompression）即机械式蒸汽再压缩技术，依据波义尔定律，当稀薄的二次蒸汽在经过压缩机体积压缩后，其温度随之上升，低品位的蒸汽经压缩机的机械做功提升为高品位的蒸汽热源。如此循环向蒸发系统提供热能，从而减少对外界能源的需求的一项节能技术。

+ MVR technology derives from European in 1830s and The Sulzer of Switzerland developed industrial MVR machine in 20 Century. MVR technology was brought in China in 1980s and the first was applied to salt production line. And now the MVR is widely applied to chemical, light industry, food, pharmaceuticals, sea water desalination, sewage treatment and such industry fields. It has important sense to promote our green energy industry.

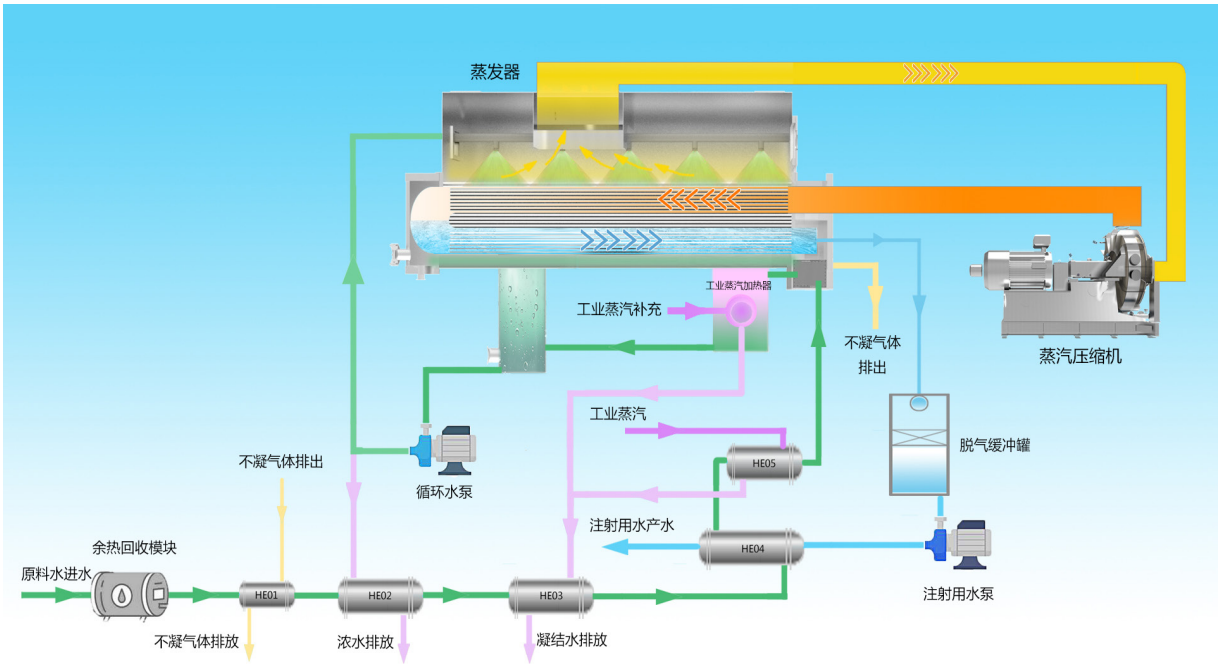
+ MVR is i.e. mechanical vapor recompression technology. When rare second steam is volume compressed through the compressor as its temperature rise up and the inferior quality steam is promoted to the superior quality steam source by the mechanical working of vapor compressor, such circulation works supplying the evaporator heat energy moreover to reduce outside energy requirements as an energy conservation technology.

注射用水制备方法 WFI Generation Method

原理与流程 Theory & Process



- 热压式蒸馏水机是一种以输入压缩机的电能为主要能源，通过高效能蒸汽压缩机对原料水蒸发产生的二次蒸汽进行压缩，从而提高二次蒸汽热焓值，使其升温后返回蒸发器内循环换热的注射用水制备设备。设备所需的少量工业蒸汽用于初始预热和调节传热过程中的热平衡使用。通过电能、机械能、热能的相互转化，最大限度降低外部工业蒸汽的消耗，实现低成本制备注射用水。
- 设备主体由预热单元、蒸发单元、压缩单元、自控单元组成。
- 可选配余热回收模块，进一步回收利用厂内低品位热源为原料水预热，降低能源消耗。
- 原料水（3-3.5bar）经过通过余热回收模块预热后进入 HE02 浓水换热器管程、HE03 凝结水换热器管程、HE04 注射用水换热器壳程、HE01 不凝气体换热器管程、HE05 工业蒸汽换热器管程五级预热进入蒸发器工业蒸汽加热器下筒内。
- 通过工业蒸汽加热器对原料水加热至沸点，过热原料水通过循环水泵加压后通过蒸发器壳程内喷嘴均匀雾化喷洒在管束表面形成液膜蒸发，少量未蒸发原料水进入蒸发器下筒内继续加热参与循环，同时按比例对蒸发器下筒体内原料水排放，以保证蒸发原料水浓度。
- 蒸汽经由折返和丝网分离去除内毒素后进入蒸汽压缩机，通过蒸汽压缩机对二次蒸汽进行压缩，从而提高二次蒸汽热焓值，二次蒸汽升温后返回蒸发器管程内与壳程雾化喷淋的过热原料水循环换热。
- 通过蒸汽压缩机压缩后的未凝结二次蒸汽与 HE01 不凝气体换热器中原料水换热，从而在适宜温度下排出二次蒸汽中不凝气体。蒸发器管程内的二次蒸汽换热后凝结水即为产品注射用水，注射用水进入脱气缓冲罐内，通过注射用水泵输送至储存单元。



+ The main energy source for the VCS is the electric energy input compressor and the second steam produced by the feed water vaporizing is recompressed through the highly effective steam compressor so as to improve the enthalpy of second steam when heated up and return to inside the evaporator heat exchanging cyclically. The less plant steam consumption necessary for the equipment is used as initial preheating and adjusting the heat balancing during heat transferring. And by means of electric energy, mechanic energy and heat energy conversion mutually to reduce external plant steam consumption at maximum accomplishing to generate WFI in low cost.

+ The equipment body consists of pre-heating unit, evaporating unit, compressing unit and automation unit.

+ The waste heat recovery module is alternative to further recycle the inferior quality heat source in factory to preheat the feed water reducing the energy consumption.

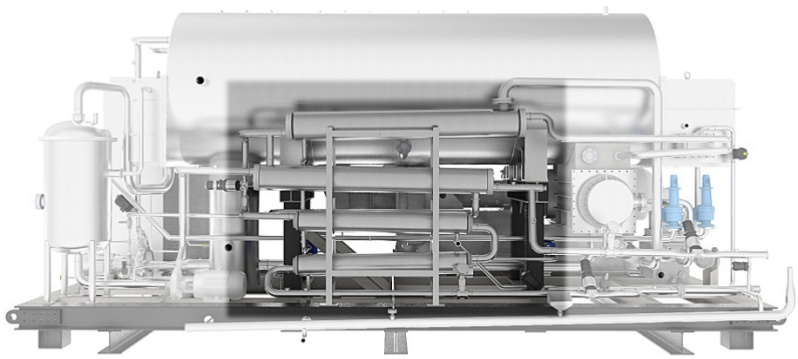
+ The feed water(3-3.5bar) is preheated by the waste heat recovery module and then come into the tube side of concentrate heat exchanger HE02 and the tube side of condensable water heat exchanger HE03 and the shell side of WFI heat exchanger HE04 and the tube side of incondensable gas heat exchanger HE01 and the tube side of plant steam heat exchanger HE05 for five step preheating and then come into the lower column of plant steam heater of evaporator.

+ The feed water is heated up to boiling point by the plant steam heater and the super heat feed water is pressurized by the circulation pump and sprayed in the way of atomizing evenly on the surface of tube bundles through the nozzles in the shell side of evaporator forming a liquid film evaporating, little un-evaporated feed water come in the lower part of evaporator to continue be heated and circulated and meanwhile the feed water in the lower part of evaporator will be drained by some ratio to ensure the evaporated feed water concentration.

+ The steam is turned back and separated by strainer to remove the endotoxin and then come into the vapor compressor, by which the second steam is recompressed again to improve the enthalpy value of second steam. And when the second steam is heated up it will return to the tube side of evaporator to heat exchange and circulate with the super heat feed water sprayed by the way of atomizing in the shell side.

+ The incondensable second steam compressed by the vapor compressor heat exchange with the feed water in incondensable gas HE01 to discharge the incondensable gas in the second steam at proper temperature. After the second steam in the tube side of evaporator is heat exchanged into condensate i.e. WFI. And the WFI come into the degassing buffer tank and is delivered to storage unit by the WFI pump.

设备特点 Equipment Characteristics



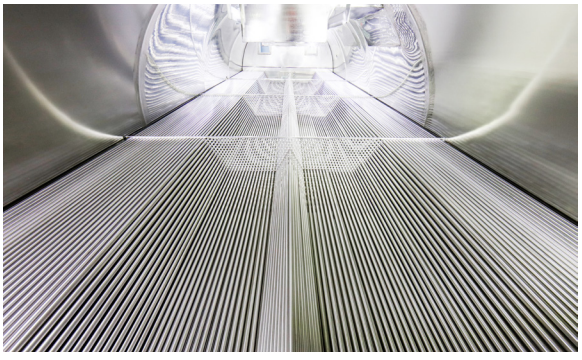
主体 / Main Body

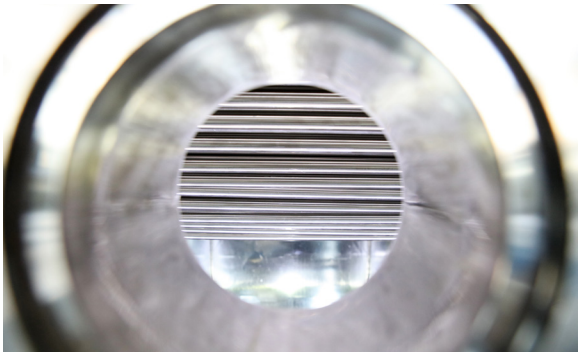
- 多级预热，充分提高系统能源利用效率。
- 预热单元均采用双管板胀接洁净换热器，降低污染风险。
- 5 路 PID 调节预热，提高系统响应效率，减少能源浪费。

+ Multi-stage preheating to efficiently improve system energy utilization ratio
+ The preheating unit is adopted with double tube sheet hygienic HE with expansion joint reducing the contamination risk.
+ 5- way PID adjusting and preheating to improve system response ratio and reduce energy waste.

蒸发单元 / Evaporator

- 水平管喷淋式降膜蒸发，系统传热系数高 , 有效温差损失小，待蒸发原料水温度分布均匀。
- 管外蒸发，较比管内蒸发方式，外表面结垢易于清洗。
- 管内冷凝，注射用水产生于蒸发器管内洁净侧。
- 常压容器管束胀接，避免焊接带来的金属晶间腐蚀以及管孔与管束间死角。壳程与管程均符合“无死角”设计理念。
- 强制循环喷淋，合理喷淋密度利于换热管表面长度方向与周保持均匀液膜，保证蒸发效果，降低结构风险。
- 合理布置换热管阵列，降低二次蒸汽对于管束表面料水布膜影响。





◎ 低压大空间蒸发，分离空间大，二次蒸汽结合挡板分离，能够有效减少纯蒸汽中大液滴夹带内毒素。

+ The system is adopted with horizontal tube spray falling film evaporating and have the high heat transferring coefficient to effectively reduce temperature difference and the feed water temperature ready for evaporating is evenly distributed.
+ It is much easier to clean the outside scaling for the evaporation outside the tube than that inside the tube.
+ Condensation inside the tube and the WFI is generated in the hygienic tube side of evaporator.
+ Atmospheric vessel tube bundle expansion avoiding the metal intergranular corrosion and dead legs between tube hole and tube bundle brought about by welding. And both shell side and tube side comply with the design theory of no dead leg.
+ Compulsive circulation spraying and proper spray density convenient for evenly falling film from the heat exchanging tube surface length direction to circumference so as to guarantee the evaporating efficiency and reduce the structure risk.
+ Proper arrangement of heat exchanging tube array to reduce the second steam impact on the feed water film distribution of tube bundle surface.
+ Low pressure evaporating in large space and large separation space and second steam combined with the baffle separation can efficiently reduce the endotoxin carried in the big drop in pure steam.

蒸汽压缩机 / Vapor Compressor

在热压蒸馏水机其所有构成组中，蒸汽压缩机为热压式蒸馏水机核心部件，这是由其工艺原理决定，蒸汽压缩机的性能将会直接影响整个系统的稳定与高效。

◎ 欧洲品质，原装进口，行业品质稳定可靠。

◎ 直驱式压缩机：无齿轮箱增速结构，降低运行故障与维护成本。

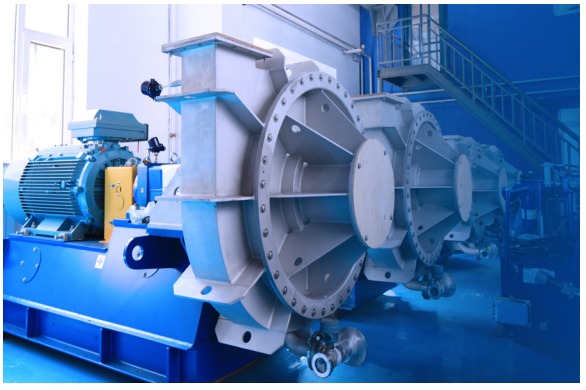
◎ 较低旋转速度：低速压缩机使用国际标准轴承，具有较强互换性，同时低速轴承日常维护成本较低。

◎ 制药行业符合性：蜗壳及叶轮等过流零件均使用 S31603 及以上材质，表面粗糙度十点范围平均 RA0.4。表面均经钝化处理。其他过流部件，如密封圈、碳环密封材质均符合 FDA 认证要求。

◎ 完善的状态监测：压缩机配备实施状态监测系统，可实时监测压缩机系统运行状态，便于维护保养和问题预警判断。

◎ 压缩机优选：可选装新型压缩机，主机使用特殊轴承，无需定期更换润滑油及滤芯耗材，进一步降低设备成本及运行维护费用。

+ The vapor compressor is the core part in the components of VCS, which is determined by its process theory. And the vapor compressor performance has direct effect on the system operation stability and efficiency.
+ Imported originally from Europe with reliable and stable quality.
+ Direct drive compressor: speed-up structure without gear box to reduce running faults and maintenance cost.
+ Lower spinning speed: lower speed compressor with international standard bearing, exchangeable and low maintenance cost.



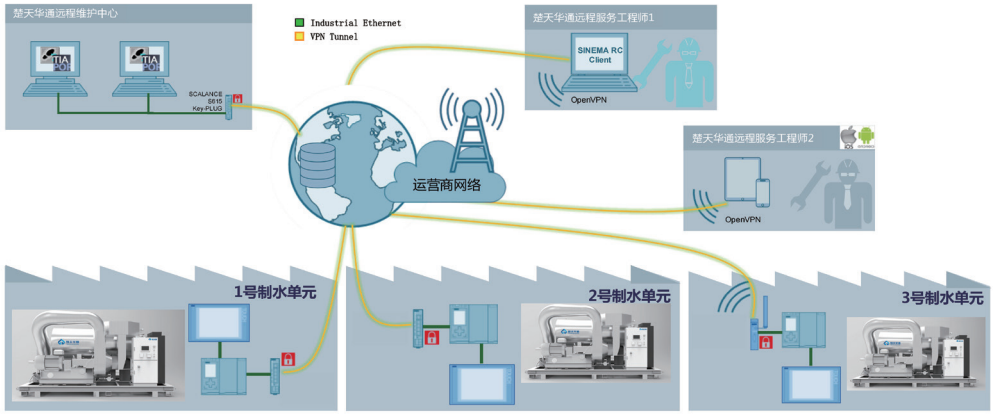
+ Pharmaceutical industry compliance: the material of turbine housing and impeller and such wet components have direct contact with media should be SS31603 or above and the inside surface roughness should be RA0.4 in the ten- point range and passivated. Other nonmetal parts such as seal ring, carbon seal material should comply with the FDA requirements.
+ Complete status monitoring: the compressor is equipped with real time status monitoring system, which can monitor the compressor running status in real time convenient for maintenance and judgment of problem pre-warning.
+ Compressor selection priority: new model compressor, the specific bearing no need for changing lubricant and cartridge periodically further to reduce the equipment cost and running maintenance cost.

自控系统 / Automation System

当前新一轮的工业革命正在深化，数字化、智能化技术深刻的改变着制药行业生产模式和产业形态，设备无人值守运行模式将会成为趋势。

- 整机可实现全自动化控制，设备产能可根据后端用水量进行智能调节。
- 五路 PID 调节，充分保证系统稳定运行。
- 智能人员身份识别系统，使用人员权限卡可实现系统三级权限管理。
- 系统设置“热待机模式”，可在该模式下快速响应产水。
- 数据可上传云端，可实时监控及查询设备运行状态，同时具有远程诊断功能，可进行远程维护。
- 系统拥有电子签名和审计追踪功能，自动生成分阶段的批生产记录，智能打印，确保注射用水制备系统数据完整性。
- 系统硬件、软件采用模块化设计，可无缝接入 MES 和远程管理系统。
- 本地化操作系统，降低国人系统学习成本。

+ The digitalization and intellectualization technology will deeply change the pharmaceutical industry production mode and industry form in the new round of industry reform. And the running mode without worker on duty is going to be the tendency.
+ The overall machine is automatically controlled and the capacity is adjusted intelligently on request of water consumption volume behind.
+ 5-way PID adjusting to ensure that the system stably runs on.
+ Intelligent person identification system and three level password access management
+ Hot standby mode under which the system will generate water quickly.
+ It is available for data transmit on cloud and monitoring and view the equipment running status in real time with remote diagnosis for remote maintenance.
+ The system has electronic signature and audit trace function, automatically come into be interim batch production record, intelligently printing assurance for the WFI generation system data integrity.
+ The system hardware, software is adopted with modularization design and seamless connection to MES and remote management system.
+ Operation system localization reduces system learning cost.



与多效蒸馏水机（MED）对比 Comparison with MED

设备总投入 = 设备成本 + 生命周期内运行成本

Total invest for equipment= equipment cost+ running cost in the life time

参数对比 / Parameter Comparison

	多效蒸馏水机 MED	热压蒸馏水机 VCS
原料水电导率要求 Feed water	<5uS/cm	<300uS/cm
原料水硬度要求 Feed water hardness	<0.001mg/l	<2mg/l
原料水二氧化硅要求 SO2 in feed water	<1.2mg/l	<26mg/l
结垢原因 scaling reason	硬度 hardness	离子 ion
结垢成分 Scale compositions	二氧化硅、氧化铁 SIO ,FeO	碳酸钙 CaCO
清洗方法 Cleaning methods	机械 + 化学 很难去除 Mechanical+ chemical difficult to remove	容易去除 化学 Easy to remove chemical
清洗剂 Cleaning agent	专用配方 Special recipe	柠檬酸 Citric acid
工业蒸汽压力 Plant steam pressure	6-9bar	2-4bar
原料水压力 Feed water pressure	6-9bar 需单独配置增压泵 with individually booster pump	2-4bar
冷却水压力 Cooling water pressure	2-3bar	不需要 No need
仪表空气压力 Compressed air for instruments	5.5-8bar	5.5-8bar
压力容器 Pressure vessel	属于压力容器，受容规监管 belong to pressure vessel and subjected to pressure vessel rules	不受容规监管 not subjected to pressure vessel rules

关键水质指标对比 / Critical Water Quality Indexes Comparison

药典指标 Pharmacopeia indexes	《中国药典 2015 版》《CP》2015 Edition	《欧洲药典》7 版《EP》7 Edition	《美国药典》36 版《USP》36 Edition	多效蒸馏水机 MED	热压蒸馏水机 VCS
电导率 Conductivity us/cm 25°C	⩽ 1.3@25°C	⩽ 1.3@25°C	⩽ 1.3@25°C	⩽ 0.5@25°C	⩽ 0.1@25°C
总有机 TOC mg/L	⩽ 0.5	⩽ 0.5	⩽ 0.5	⩽ 0.05	⩽ 0.05
内毒素 Endotoxin EU/ml	＜ 0.25	＜ 0.25	＜ 0.25	⩽ 0.06	⩽ 0.01
微生物 Microbe CFU/100ml	⩽ 10	⩽ 10	⩽ 10	⩽ 1	未检出

节能优势 Energy Conservation Advantage

- 能耗指标（按相同产量对应传统多效蒸馏水机）
- 综合节能 45% 以上，如配备余热回收模块 , 可达 70%。
- 原水（纯化水）利用率 92% 以上。
- 产水阶段实现低于 40°C冷排放，无需降温冷却水消耗。
- 替代同等产水量的传统产品，每年每台热压式蒸馏水机（VCS12000/H）可减少 CO_2 排放 1766 吨，减少 SO_2 排放 898 吨，完全满足国家节能减排要求。

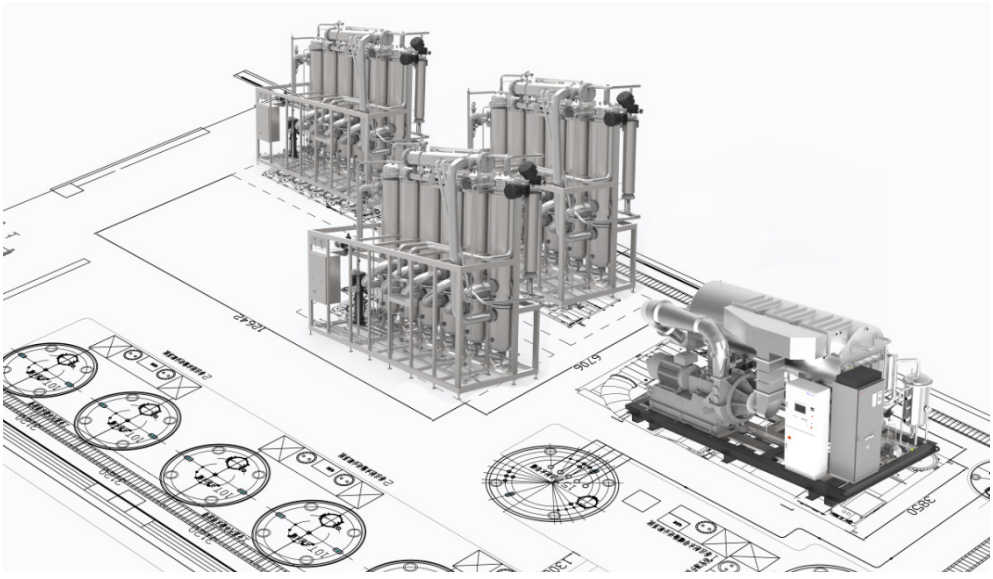
+ Energy consumption index (comparison with the same capacity of MED)
+ Comprehensive energy saving is up to 45% above, such as waste heat recycle module reach up to 70%.
+ Feed water use ratio is 92% above.
+ Achievement of lower than 40 °C cooling drain during water generation and no need for cooling water consumption.
+ Substitute of equivalent capacity of traditional machine and a VCS（VCS12000/H）can reduce1766 ton of CO2 and 898 ton of SO2 emission fully meeting our nation energy saving and emission reduction requirements every year.

产能越大、运行时间越长，设备节能效果越明显！

The bigger the capacity is the longer the system run and the much more obvious the energy saving effect is.

空间布局 Space Layout

相同产能设备布局图对比 The equivalent capacity machine layout comparison



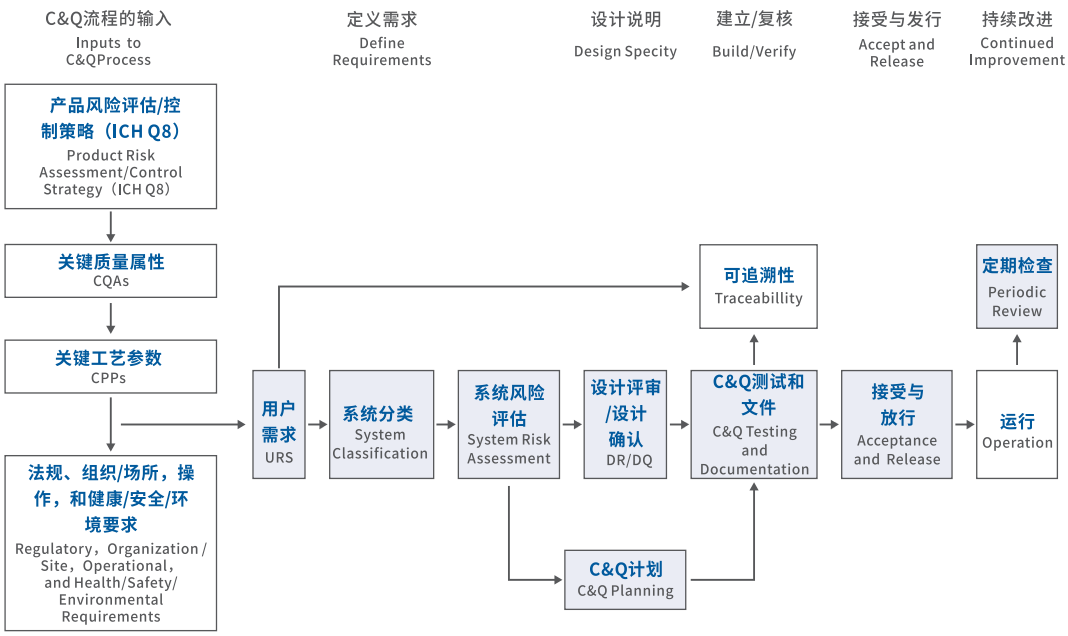
服务体系 Service System

- 技术支持、设计制造、出厂测试、安装调试、验证服务于一体。提供产品全生命周期内的技术服务与配件服务。
- 完善的现场设备操作培训服务。
- 全球远程诊断维护操作服务。
- 制药用水系统专业操作维护与应用培训服务。

+ Integration of technology support, design construction, ex-factory test, installation commissioning and validation service.
+ Provide technology and spare parts service all around the equipment life time
+ Complete equipment operation training service in site.
+ Remote diagnosis maintenance operation service
+ Operation maintenance& Application Training Service for Pharmaceutical Water System.

验证服务 Validation Service

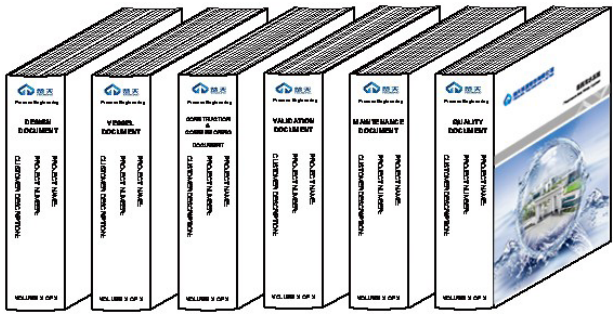
基于科学和风险的 C&Q 的流程图 / C&Q Process Flow based on Science and Risk



制药用水系统作为制药厂关键公用工程，从设备设计生产到调试基于风险控制，提供完整合规的验证文件，自动化控制系统遵循 ISPE GAMP5 和 FDA 21CFR Part 11 要求。

- 完整合规文件体系。
- 出厂 FAT 性能测试。
- 现场 SAT 测试及验证服务。
- 完善售后服务体系。

+ The pharmaceutical equipment system is the critical Utility for the pharmacies and It is based on risk control from equipment design fabrication to commission operation with providing complete validation documents and automation control system comply with ISPE GAMP5 and FDA 21 CFR part11.
+ Complete documentation System
+ Ex-factory FAT Performance Test
+ SAT& Validation Service in customer site
+ Complete After-sale Service System



设备选型 Equipment Model Selection

规格型号 Model	产能 Capacity (kg/h)	电消耗 Electricity consumption (kw)	蒸汽消耗 Steam consumption (kg/h)	重量 Weight (kg)	外形尺寸 Overall size L*W*H (mm)
VCS1000/V	600-1000	4.6-10.3	62-97.7	5600	2800x2000x2200
VCS3000/H	2000-3000	11.7-26.4	204.2-293.2	8000	4000x2250x2435
VCS5000/H	3300-5000	17.5-42.4	337.3-488.6	9600	4500x2500x2435
VCS8000/H	5000-8000	31.8-85.5	503.5-766	10860	5400x3000x3000
VCS12000/H	7000-12000	50.1-136.7	700.7-1136.1	12550	5700x3300x3200
VCS15000/H	10000-15000	60-139	1004.6-1442.9	16780	6400x3600x3400
VCS20000/H	17000-20000	96-137.2	1712.4-1979.9	19880	7950x3850x4000
VCS25000/H	19000-25000	122.6-222.9	1891.2-2416.1	19880	7950x3850x4000
VCS30000/H	23000-30000	186.1-329.6	2243.1-2840.1	19880	7950x3850x4000

服务理念

0431-81989135

秉承“一切为客户着想，为一切客户着想，为客户着想一切”的理念，以“为客户创造价值”为己任，楚天专注于打造一流的研发、设计、销售、制造、服务团队及服务管理体系，为客户提供高效、优质的产品与服务。

◎ 项目规划支持

楚天拥有系列专业医药设计院、产品研究院，一批行业资深科研技术人员，无菌制药工艺的验证专家、教授等，为客户的项目提供科学、有效的技术规划支持。

◎ 过程保障服务

楚天推出的医药装备整体解决方案，实现药品生产过程的全自动化、无菌化，智能检测、分选，以及计算机验证保障，生产出让市场“放心”的产品。

◎ 走进园区服务

楚天作为设备供应商，不仅仅将行业法规标准融入到产品设计、制造中，还让法规标准以讲座、交流的形式走进园区，与药企的工艺、生产形成互动与融合。

◎ 设备管理咨询服务

楚天致力于满足客户效益最大化需求，提供一揽子的设备管理模式，协同药厂实现投入最小化，产出最大化。

◎ 坚持“以客户为中心”， 以匠人之心打造极致服务体验，为客户创造更多价值

34 全国 34 个省（市）

365 全年 365 天

7x24 7X24 小时服务时间

◎ 我们随时待命为客户单位设备正常运行保驾护航

+ 现场安装、调试、验收
+ 设备工艺、操作、维护等相关培训
+ 周期性的定期上门维护与回访
+ 设备各部件性能的检测与保养
+ 备品备件的及时供应
+ 产品技术升级与技术二次开发
+ 设备大修

Service Concept

0431-81989135

Adhering to concept of “all for customers, for all customers”, and with the mission of “creating value for customers”, TRUKING focuses on building first-class R&D, design, sales, manufacturing, service teams and service management system to offer high-efficient and high-quality products and services for the customers.

◎ Project Planning Support

TRUKING has a series of professional medical and pharmaceutical design institutes, product research institutes, a group of senior scientific research and technical personnel, aseptic pharmaceutical process verification experts, professors, etc., to provide scientific and effective technical planning support for customers' projects.

◎ Process Assurance Service

TRUKING launched the overall solution for medical & pharmaceutical equipment realizing the full automation and aseptic production process, intelligent detection and sorting of the drug, as well as computer verification assurance so as to produce assured products for market.

◎ Service In The Park

As an equipment supplier, TRUKING not only integrates industrial regulations and standards into product design and manufacturing, but also introduces the industrial regulations and standards into Truking industrial park in the form of lectures and exchanges to interact and integrate with the technology and production of pharmaceutical enterprises.

◎ Equipment Management Consultation Service

TRUKING aims to satisfy the maximum benefited demands of the customer and to provide a package of equipment management services to realize minimization investment and maximization production output together with pharmaceutical factories.

◎ Adhere to the philosophy of "customer-centric", TRUKING creates the extraordinary service experience with the spirit of the craftsman, to create more value for customers.

◎ We are always ready to escort the normal operation of the customer's equipment.

+ Onsite equipment installation, commissioning, acceptance
+ Training for equipment process, operation and maintenance
+ Periodic door-to-door maintenance and return visit
+ Performance test and maintenance for machinery parts
+ Timely supply of spare parts
+ Product technology upgrading and secondary development
+ Equipment overhaul

www.truking.com

楚天华通
TRUKING WATERTOWN

楚天华通医药设备有限公司

TRUKING WATERTOWN PHARMACEUTICAL EQUIPMENT CO.,LTD.

地址 Add：吉林省长春九台经济开发区华通大街 888 号

No.888 Watertown Avenue, Jiutai Economic Development Area, Changchun, Jilin Province.

销售服务 Sales Service：0431-81989116　　客户服务 Customer Service：0431-81989135

传真 Fax No：0431-81989076　　邮编 Post Code：130500