



**Truking Intelligent
sterilization/cleaning technology**

楚天智能灭菌 / 清洗技术

让世界制药工业插上智慧的翅膀

Equip global pharmaceutical manufacturing industry with intelligent wings.





脉动真空蒸汽灭菌柜 - 01 -
Pulsating Vacuum Steam Sterilizer

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楚天科技股份有限公司成立于2000年，是中国医药装备行业的领军企业，也是世界医药装备行业的知名企业之一。主营业务系医药装备及其整体技术解决方案，并率先推动智慧医药工厂的研究与开发。公司系中国A股上市公司。旗下拥有德国ROMACO集团、楚天华通、四川省医药设计院、楚天飞云、楚天源创、楚天微球、楚天思优特、楚天思为康、楚天华兴、楚天长兴、楚天科仪、楚天净邦、楚天派特、楚天博源、楚天新材料、楚天智能机器人等十多家全资或控股子公司，全球员工总数9000余人，总资产110亿元。

公司已有长沙和德国两大运营总部，建有长沙中央技术研究院、欧洲技术研究院和四川省医药设计院等研发机构。设有国家级企业技术中心，国家级创新基地，博士后科研工作站，院士专家工作站等多个技术与创新平台。截至2023年12月31日，共提出5466项中国专利申请，授权专利4313项，有效专利3090项。另提出54件PCT国际专利申请，在美国、俄罗斯、印度、韩国、德国、印尼、日本、欧洲等多国获得26项专利授权。牵头制订了本系统国家行业产品技术标准20多项。集团产品与服务已累计覆盖180多个国家和地区，国际市场占有率正逐年快速提升。

Founded in 2000, Truking Technology Limited has become a leading pharmaceutical equipment company in China and renowned worldwide. The company specializes in pharmaceutical equipment and integrated solutions and takes the initiative to push forward the R&D of smart pharmaceutical factories. It is a listed A-share company with multiple wholly-owned or holding subsidiaries, such as Germany-based Romaco Group, Truking Watertown, Sichuan Pharmaceuticals Design Institute, Truking Feiyun, Truking Ingenuity, Truking Micro-Sphere, Truking SUT, Truking Gene, Wachine, Truking Changxing, Truking Scientific Instrument, Truking Jingbang Engineering Technology, Truking Pitide Biotechnology, Truking Boyuan Intelligent Technology, Truking New Material, Truking Intelligent Robot etc. Truking has over 9000 employees around the globe, with a total asset of over 11 billion RMB.

Truking has two operational headquarters in Changsha, China, and Germany, with research and development institutions including Changsha Central Technology Research Institute, Europe Technology Research Institute, and Sichuan Pharmaceuticals Design Institute. It has established many platforms for technology innovation, such as the National Enterprise Technology Center, National Innovation Center, Post-Doctoral Scientific Research Station, and Academician Expert Workstation. By December 31, 2023, a total of 5,466 patent applications from China have been submitted, with 4,313 patents granted and 3,090 patents currently in force. Additionally, 54 PCT international patent applications were filed, resulting in 26 patents granted in multiple countries including the United States, Russia, India, South Korea, Germany, Indonesia, Japan, and Europe. The company has led the development of over 20 national industry product technical standards for this system. The products and services of the group have now reached over 180 countries and regions, with its international market share steadily increasing year by year.



脉动真空蒸汽灭菌柜 Pulsating Vacuum Steam Sterilizer



主要用途 / Main Application

该系列设备采用饱和纯蒸汽作为灭菌介质，对衣物、敷料、器械、培养基及玻璃器皿等物品进行灭菌干燥处理。设备严格遵循 GMP 要求进行设计、制造、测试和验收，对灭菌全过程进行温度和压力的在线监测和实时打印，整个过程均可被追溯。广泛应用于医院供应室和手术室、制药厂、实验室、科研单位等对物品进行消毒灭菌之用。

This series of equipment adopts saturated pure steam as the sterilization medium, to do sterilization and drying treatment on clothing, dressings, instruments, culture medium, glass, etc. The equipment strictly follows the GMP requirements during the process of design, manufacture, test and acceptance, and also online detection and real-time printing of temperature and pressure in the whole process of sterilization, the whole process can be traced. It is widely used in hospitals, pharmaceutical factory, laboratory, scientific research units and so on for disinfectant and sterilization.



优势特点 / Performance advantages

◎ 设备独特的密封设计

门密封：燕尾槽双向密封设计结构，确保在脉动真空和蒸汽灭菌两个阶段互相切换时的无缝对接，避免设备灭菌腔室的泄露风险；

密封系统：充气密封系统压力保护，带压力检测报警功能；

◎ 门密封断气保压系统：搭载密封缓存及自控系统，可实现设备断电及密封用压缩空气断气后良好自密封保压，确保人员、设备、产品的安全性；

◎ 排口汽水分离器：采用空气隔断结构，同时带有蒸汽泄压排口，防止地漏管路反冲带来的污染风险；

◎ 腔内纯蒸汽扩散板设计，控制冷凝水的分流并提高灭菌蒸汽的质量，同时加上通过广泛测试并验证过的疏水节流孔板接头设计，使灭菌效率更高，效果更好；

◎ 腔体和管路均采用TIG焊接，镜面抛光至 $Ra \leq 0.51\mu m$ ；

◎ 腔体法兰采用整体加工工艺，无焊接应力残留，密封面和密封槽尺寸在制造的过程中控制优良，保证设备运行时密封的安全可靠，密封圈使用寿命大大加长；

◎ 腔内压力、温度自动检测控制，密封门及整个内腔外带保温结构，改善温度分布；

◎ 设备高密度陶瓷隔热材料，无颗粒脱落，外覆不锈钢拉丝板；

◎ 除菌过滤器可在线灭菌和在位完整性测试，设备使用更安全可靠；

◎ 空气探测系统-ADS：基于运行的灭菌程序，自动捕捉灭菌用设备内混合气体，通过智能化系统判定捕捉气体内不凝性气体含量是否影响灭菌效果，并生成电子批记录；

◎ 温度、压力是实时监测，曲线在线实时打印并记录；

◎ Portal 自控系统完全符合 GAMP5 和 21CFRPart11 的要求。

+ Unique sealing design:

Door sealing: structure of dovetail groove bi-directional sealing design, to ensure seamless connection during switch between pulse vacuum and steam sterilization, avoiding leakage risk of sterilization chamber.

Sealing system: pressure protection of inflatable sealing system, with pressure detection alarm function.

+ Seal-off Air-Pressure Maintenance System: Equipped with sealing buffers and automatic control systems, it achieves a secure self-sealing pressure maintenance even after equipment shutdown and air pressure cutoff, ensuring the safety of personnel, equipment, and products.

+ Outlet steam separator: adopt air partition structure and with steam pressure relief outlet to prevent pollution risks brought by recoil of the floor drain pipeline.

+ Pure vapor diffusion panel design of the chamber, can control condensed water distributary and steam sterilizing quality. And coupled with extensive testing and validation of hydrophobic throttle orifice plate joint design, with higher sterilization efficiency and better effect.

+ TIG welding is applied for the chamber and pipeline, mirror polishing to $Ra \leq 0.5\mu m$.

+ Flange inside the chamber adopts overall processing technology, without welding residual stress. Advanced control of the sealing surface and sealing groove size during the manufacturing process, assures greater safety and reliability of the sealing during operation, and thus service life of the sealing ring is lengthened.

+ Automatic detection control of pressure and temperature inside chamber, Sealing door and the whole inner cavity with insulation structure, to improve temperature distribution.

+ High density ceramic insulation material is used, no particle dropping. And covering Stainless steel wire drawing board outside.

+ It can realize SIP and integrity test for sterilizing filter, providing greater safety and reliability during usage.

+ Air Detection System -ADS: Based on the sterilization program in operation, it automatically captures the mixed gas inside the sterilization equipment, determines through an intelligent system whether the content of non-condensable gas in the captured gas affects the sterilization effect, and generates electronic batch records.

+ Real-time monitoring of temperature and pressure, and the curve is real-time printed and recorded.

+ Portal automatic control system completely meets the requirements of GAMP5 and 21CFRPart11.





产品参数 / Product Parameters

主要技术参数 Main Parameters			
设计压力 Design Pressure	0.3/-0.1MPa	纯蒸汽源压力 Pure steam source pressure	0.2-0.4MPa
工作压力 Working Pressure	0.25/-0.097MPa	工业蒸汽源压力 Industrial steam source pressure	0.4-0.6MPa
设计温度 Design Temperature	144°C	水源压力 Water Source Pressure	0.2-0.4MPa
工作温度 Working	139/20°C	压缩空气压力 Compressed	0.6-0.8MPa



规格型号 / Specification model

参数 Parameters	容积 Volume	净重 Net weight	内室尺寸 Room size	外形尺寸 Dimensions	纯蒸汽耗量 Pure steam consumption	工业蒸汽耗量 Industrial steam consumption	水耗量 Water consumption	压缩空气耗量 Compressed air consumption	总电源 Power
型号 Model	m ³	Kg	WxHxD (mm)	WxHxD (mm)	Kg/cycle	Kg/cycle	Kg/cycle	m ³ /h	Kw
SS02406	0.24	1200	600x600x670	1600x1920x970	6	18	300	12	3
SS03606	0.36	1400	600x600x1000	1600x1920x1300	8	20	300	12	3
SS0606	0.6	1750	680x950x1000	1735x1970x1300	12	22	325	12	3
SS0806	0.8	2000	680x950x1250	1735x1970x1550	14	24	350	12	3
SS1008	1	2200	800x1200x1050	1855x2350x1350	16	28	500	12	3
SS1208	1.2	2400	800x1200x1250	1855x2350x1550	18	30	525	12	3
SS1510	1.5	2600	1000x1200x1250	2055x2350x1550	22	32	580	12	4.5
SS2010	2	2750	1000x1200x1700	2055x2350x2000	26	36	650	25	4.5
SS2510	2.5	2900	1000x1200x2100	2055x2350x2400	30	40	700	25	6
SS3010	3	3200	1000x1200x2500	2055x2350x2800	38	48	750	25	6
SS3710	3.7	3700	1000x1200x3100	2055x2350x3400	45	55	800	25	6
SS5010	5	4500	1000x1200x4100	2055x2350x4400	65	75	900	25	7.5
SS6010	6	5500	1000x1200x5100	2055x2350x5400	75	90	1000	25	7.5

蒸汽空气混合灭菌柜 Steam Air Mixture Sterilizer



主要用途 / Main Application

该类型设备的加热媒介是蒸汽和空气的混合物，特别适合于对易变形包装产品进行灭菌。设备严格遵循 GMP 要求进行设计、制造、测试和验收，可实现对灭菌全过程进行温度和压力的在线监测和实时打印，整个过程可被追溯。主要应用于对吹灌封和预灌装注射器产品的终端灭菌。

This type of equipment adopts mixture of air and steam as heating media, and is particularly suitable for sterilization of products with easy-deformed packing. It strictly follows the GMP requirements for design, manufacture, testing and acceptance, which can realize on-line monitoring and real-time print of temperature and pressure in sterilization process, the whole process can be traced. Typically used for terminal sterilization of BFS and prefilled syringes products.



优势特点 / Performance advantages

设备独特的密封设计

门密封：燕尾槽双向密封设计结构，确保在整个灭菌过程中各阶段切换实现无缝对接，避免了设备灭菌腔室的泄漏风险；

密封系统：充气密封系统压力保护，带压力检测报警功能；

排口汽水分离器：采用空气隔断结构，同时带有蒸汽泄压排口，防止地漏管路反冲所带来的污染风险；

主循环风扇系统采用磁力驱动结构的设计方案，保证灭菌腔室的绝对隔断和完全密封，保养和维护非常方便，使用、维修的成本较低，且运转平稳，噪音低，性能稳定，使用寿命长；

腔内设计有独立的水冷却系统，冷却速度快。冷却能力可通过程序 PID 调节，并带有压力保护功能。冷却水也可进行回收再利用，节省设备能耗和水资源的消耗，冷却系统管路、阀门拆卸安装便捷，便于设备内腔的定期清洁和冷却水管路的除垢和清洗；

腔内纯蒸汽扩散板设计，控制了冷凝水的分流并提高灭菌蒸汽的质量，同时加上通过广泛测试并验证过的疏水节流孔板接头设计，使灭菌效率更高，效果更好；

腔体和管路均采用 TIG 焊接，镜面抛光至 $Ra \leq 0.51\mu m$ ；

腔体法兰采用整体加工工艺，无焊接应力残留，密封面和密封槽尺寸在制造过程中控制优良，保证了设备运行时密封的安全可靠，密封圈使用寿命大大加长；

腔内压力、温度自动检测控制，密封门及整个内腔外带保温结构，改善温度分布；设备高密度陶瓷隔热材料，无颗粒脱落，外覆不锈钢拉丝板；

除菌过滤器可在线灭菌和在位完整性测试，设备使用更安全可靠；

温度、压力实时监测，曲线在线实时打印并记录；

Portal 自控系统完全符合 GAMP5 和 21CFRPart 11 要求。

Unique sealing design:

Door sealing: structure of dovetail groove bi-directional sealing design to ensure seamless docking at all stages of sterilization, avoiding leakage risk of sterilization chamber.

Sealing system: pressure protection of inflatable sealing system, with pressure detection alarm function.

Outlet steam separator: adopt air partition structure and with steam pressure relief outlet to prevent pollution risks brought by recoil of the floor drain pipeline.

Main circulation fan system is driven by magnetic structure, can ensure the sterilization chamber is absolute separated and completely sealed, with easy maintenance, low working and maintenance costs, and smooth operation, and it has low noise, stable performance and long service life.

Chamber design has separate water cooling system, with fast cooling. Cooling capacity can be adjusted through the PID Program, and with a pressure protection function. Cooling water can be recycled for saving energy and water. Pipe and valves in cooling system are easily installed and dismantled, is convenient for regular cleaning for the inner chamber of equipment and pipe cleaning for the cooling water pipeline.

Pure vapor diffusion panel design of the chamber, can control condensed water tributary and steam sterilizing quality. And coupled with extensive testing and validation of hydrophobic throttle orifice plate joint design, with higher sterilization efficiency the better effect.

TIG welding is applied for the chamber and pipeline, mirror polishing to $Ra \leq 0.5\mu m$.

Chamber flange adopts overall processing technology, without Welding residual stress. Advanced control of the sealing surface and sealing groove size during the manufacturing process, assures greater safety and reliability of the sealing during operation, and thus service life of the sealing ring is lengthened.

Automatic detection and control of the pressure and temperature inside the chamber, Sealing door and the whole inner cavity with insulation structure, to improve temperature distribution. High density ceramic insulation material is used, no particle dropping. And Stainless steel wire drawing board outside.

It can realize SIP and integrity test for sterilizing filter, providing greater safety and reliability during usage.

Real-time monitoring of temperature and pressure, and the curve is real-time printed and recorded.

Portal automatic control system completely meets the requirements of GAMP5 and 21CFRPart11.



产品参数 / Product Parameters

主要技术参数 Main Parameters			
设计压力 Design Pressure	0.3/-0.1MPa	纯蒸汽源压力 Pure steam source pressure	0.2-0.4MPa
工作压力 Working Pressure	0.25/-0.097MPa	工业蒸汽源压力 Industrial steam source pressure	0.4-0.6MPa
设计温度 Design Temperature	144°C	水源压力 Water pressure	0.2-0.4MPa
工作温度 Working Temperature	139/20°C	压缩空气压力 Compressed Air Pressure	0.6-0.8MPa



规格型号 / Specification model

参数 Parameters	容积 Volume	净重 Net weight	内室尺寸 Room size	外形尺寸 Dimensions	纯蒸汽耗量 Pure steam consumption	工业蒸汽耗量 Industrial steam consumption	水耗量 Water consumption	压缩空气耗量 Compressed air consumption	总电源 Power
型号 Model	m³	Kg	WxHxD (mm)	WxHxD (mm)	Kg/cycle	Kg/cycle	Kg/cycle	m³/h	Kw
SAS0405	0.4	1950	520x760x1000	1735x1970x1300	15	20	500	12	6
SAS0505	0.5	2200	520x760x1250	1735x1970x1550	16	22	560	12	6
SAS0706	0.7	2400	640x1010x1050	1855x2350x1350	18	25	640	12	6
SAS0806	0.8	2600	640x1010x1250	1855x2350x1550	20	28	700	15	6
SAS1008	1	2800	840x1010x1250	2055x2350x1550	25	30	780	15	6
SAS1408	1.4	2950	840x1010x1700	2055x2350x2000	28	35	860	25	6
SAS1808	1.8	3100	840x1010x2100	2055x2350x2400	32	38	1150	25	10
SAS2108	2.1	3500	840x1010x2500	2055x2350x2800	40	45	1280	28	10
SAS2608	2.6	4000	840x1010x3100	2055x2350x3400	48	52	1850	28	12
SAS3108	3.1	4500	840x1010x3700	2055x2350x4000	60	65	2200	35	13

水浴灭菌柜 Super-heated Water Sterilizer



主要用途 / Main Application

该系列设备采用过热循环水作为灭菌介质，对灌装好的产品（如安瓿瓶装、口服液瓶装、玻璃瓶装、塑瓶瓶装、软袋袋装等）进行喷淋式或淋浴式灭菌处理。设备严格遵循 GMP 要求进行设计、制造、测试和验收，对灭菌全过程进行温度和压力的在线监测和实时打印，整个过程均可被追溯。广泛应用制药厂、实验室、科研单位等对产品进行消毒灭菌。

This series of equipment adopts super-heated circulating water as the sterilization medium, to do spray or shower sterilization on filled product. (Such as ampoules, oral liquid bottles, glass bottles, plastic bottles, soft bags etc.) The equipment strictly follows the GMP requirements during the process of design, manufacture, test and acceptance, and also realizes online monitoring and real-time printing of temperature and pressure in the whole process of sterilization, the whole process can be traced. It is widely used in pharmaceutical factory, laboratory, scientific research units and so on to realize disinfectant and sterilization.



优势特点 / Performance advantages

◎ 设备独特的密封设计

门密封：燕尾槽双向密封设计结构，确保在整个灭菌过程中各阶段切换实现无缝对接，避免了设备灭菌腔室的泄漏风险；

密封系统：充气密封系统压力保护，带压力检测报警功能；

◎ 排口汽水分离器：采用空气隔断结构，同时带有泄压排口，防止地漏管路反冲所带来的污染风险；

◎ 主体经过有限元分析，结构强度达到最优腔内压缩空气扩散板设计，控制了压缩空气的分流，减小腔内温度和压力的波动，使灭菌效率更高，效果更好；

◎ 腔体和管路均采用 TIG 焊接，内表面抛光至 $Ra \leq 0.6\mu m$ ；

◎ 腔体法兰采用整体加工工艺，无焊接应力残留，密封面和密封槽尺寸在制造过程中控制优良，保证了设备运行时密封的安全可靠，密封圈使用寿命大大加长；

◎ 腔内压力、温度自动检测控制，密封门及整个内腔外带保温结构，改善温度分布；设备高密度陶瓷隔热材料，无颗粒脱落，外覆不锈钢拉丝板；

◎ 依照高效热水喷淋方式设计的灭菌程序是最有效和最经济的程序；

◎ 灭菌器腔室、双扉门、热循环管道均按压力容器标准设计制造，灭菌腔室由安全阀进行过压保护；

◎ 设备可选配手动转运和自动转运两套系统，自动进出料转运系统具备运行稳定，生产效率高，操作人员少等优点；

◎ 控制柜有显示系统，实时提供运作情况，设有验证的专用接口；

◎ 用于脂肪乳输液成品或混悬输液的灭菌时，腔室内配置回转装置，轴孔密封可靠；

◎ 采用工业计算机精密控制，专业程序式设计。应用

+ Unique sealing design:

Door sealing: structure of dovetail groove bi-directional sealing design to ensure seamless connection during switch between pulse vacuum and steam sterilization, avoiding leakage risk of sterilization chamber.

Sealing system: pressure protection of inflatable sealing system, with pressure detection alarm function

+ Outlet steam separator: adopt air partition structure and with steam pressure relief outlet to prevent pollution risks brought by recoil of the floor drain pipeline.

+ The main body is analyzed by finite element, achieving the optimal structural strength. The compressed air diffusion panel design of the chamber, can control distributaries of compressed air, reduce the chamber temperature and pressure fluctuation, with higher sterilization efficiency and better effect.

+ TIG welding is applied for the chamber and pipeline, mirror polishing to $Ra \leq 0.6\mu m$

+ Chamber flange adopts overall processing technology, without welding residual stress. Advanced control of the sealing surface and sealing groove size during the manufacturing process, assures greater safety and reliability of the sealing during operation, and thus service life of the sealing ring is lengthened.

+ Automatic detection and control of the pressure and temperature inside the chamber, Sealing door and the whole inner cavity with insulation structure, to improve the temperature distribution. High density ceramic insulation material is used, no particle dropping. And Stainless steel wire drawing board outside.

+ Hot water spray sterilization process is the most effective and economic process.

+ Sterilizer chamber, double door, heat circulation pipe are designed and manufactured according to the standard of pressure vessel.

+ It has two systems: manual transfer and automatic transfer, with stable running, high efficiency and less operators.

+ The control cabinet has display system, provides real-time operation status, with special port for verification.

+ When the equipment is used for sterilization of lipid emulsion infusion or suspension infusion, it is equipped with interior rotary device in the chamber, with reliable sealing for shaft hole.

+ Controlled by industrial computer, with professionally designed program. It can provide different sterilization program as per user's request, it has F0 value processing system, and temperature

户不同要求，提供不同的灭菌程序，有 F0 值处理系统，且灭菌过程中不断地监控和记录温度、压力、F0 值和他们的曲线图形，并实时显示；

- ◉ 加热和降温过程中跟踪控制，高于饱和蒸汽压的预置和固定压差，通过压缩空气来维持，防止玻璃破碎和软包装变形；
- ◉ 对于乳浊液产品灭菌，配置回转式灭菌器控制滚动体的原位停车，保证柜内外灭菌车运送轨道连接平滑，灭菌车进出柜顺利；
- ◉ 温度、压力实时监测，曲线在线实时打印并记录；
- ◉ Portal 自控系统完全符合 GMP MP5 和 21CFRPart1 要求；

pressure, F0 value and their curve graph are constantly monitored and recorded in sterilization, and displayed in real-time.

- + Tracking control in the process of heating and cooling, higher than the preset and the fixed pressure difference of saturated vapor pressure, maintain via compressed air, to prevent breakage of glass bottle and deformation of soft packing.
- + For the sterilization of emulsion products, a rotary sterilizer is configured to control the parking of the rolling body in situ to ensure that the transportation track of the sterilization vehicle inside and outside the cabinet is smooth and the sterilization vehicle enters and exits the cabinet smoothly;
- + Real-time monitoring of temperature and pressure, and real-time printing and recording of curve.
- + Portal automatic control system completely meets the requirements of GAMP5 and 21CFRPart11.



安全特点 / Safety characteristic

- ◉ 门上安装有安全装置，遇阻自动停止。门装有密封压力平衡装置，即使出现电路故障，双扉门仍保持密封压力；
- ◉ 门上设有安全互锁，防止下列情况门被打开：①腔室内有压力；②灭菌物品温度高于 60℃；③循环水位高于腔室集水槽；
- ◉ 蒸汽、循环水、冷却水、压缩空气的管路进口均有过滤器，确保执行元件安全无损。

- + Safety devices are installed on the door, automatically stop when encountering obstacles. Door is equipped with sealed pressure balance device, can remain sealing pressure in case of circuit fault;
- + Door is equipped with safety interlock, to prevent the door open in the following circumstances: (1) pressure in chamber; (2) sterilization temperature higher than 60 °C ; (3) level of circulation water is higher than the water collecting sump.
- + Inlets of steam, circulation water, cooling water, compressed air pipeline are equipped with filters, ensure safety condition for executing components.



产品参数 / Product Parameters

主要技术参数 Main technical parameters

设计压力 Design Pressure	0.3/-0.1MPa	纯化水源压力 Purified Water Source Pressure	0.2-0.4MPa
工作压力 Working Pressure	0.25/-0.097MPa	工业蒸汽源压力 Industrial steam source pressure	0.4-0.6MPa
设计温度 Design Temperature	144℃	冷却水源压力 Cooling water source pressure	0.2-0.4MPa
工作温度 Working Temperature	139/20℃	压缩空气压力 Compressed air pressure	0.6-0.8MPa



规格型号 / Specification model

参数 Parameters	容积 Volume	净重 Net weight	内室尺寸 Room size	外形尺寸 Dimensions	纯化水耗量 Purified water consumption	工业蒸汽耗量 Industrial steam consumption	冷却水耗量 Cooling water consumption	压缩空气耗量 Compressed air consumption	总电源 Power
型号 Model	m ³	Kg	WxHxD (mm)	WxHxD (mm)	Kg/cycle	Kg/cycle	Kg/cycle	m ³ /h	Kw
HWS1008	1	2200	800x1200x1050	1855x2350x1350	240	85	1200	15	6
HWS1208	1.2	2400	800x1200x1250	1855x2350x1550	260	95	1400	15	6
HWS1608	1.6	3000	800x1200x1700	2850x2200x2150	350	115	1700	15	7.5
HWS2008	2	3500	800x1200x2100	2850x2200x2550	400	150	2200	28	7.5
HWS2510	2.5	4200	1000x1200x2100	3200x2200x2550	450	195	2900	28	8
HWS3010	3	4500	1000x1200x2500	3200x2200x2950	500	220	3400	28	8
HWS3710	3.7	4800	1000x1200x3100	3200x2200x3550	550	270	4200	28	10
HWS5010	5	5500	1000x1200x4100	3200x2200x4550	700	375	5500	28	12
HWS6010	6	6000	1000x1200x5100	3200x2200x4550	800	465	7000	28	15
HWSM5010	5	6700	φ1650x2100	3250x2700x2950	600	210	5500	28	8
HWSM7510	7.5	7400	φ1650x3100	3250x2700x3950	700	270	7500	28	12
HWSM10010	10	8100	φ1650x4100	3250x2700x4950	800	340	9500	35	12
HWSM12510	12.5	8800	φ1650x5100	3250x2700x5950	900	420	11500	35	15
HWSM15010	15	9500	φ1650x6100	3250x2700x6950	1050	500	13500	35	15
HWSM13513	13.5	9700	φ2050x4000	3900x2900x4850	1000	520	10000	35	15
HWSM18013	18	10500	φ2050x5300	3900x2900x6150	1250	650	13000	50	20
HWSM22513	22.5	11300	φ2050x6600	3900x2900x7450	1500	780	16000	50	25
HWSM27013	27	12100	φ2050x7900	3900x2900x8750	1700	980	20000	60	28
HWSM39019	39	17000	φ2550x7400	5700x3900x8390	2400	1350	27500	140	32
HWSM48019	48	19000	φ2550x9200	5700x3900x10190	3000	1650	33500	140	39
HWSM57019	57	20500	φ2550x11000	5700x3900x11990	3600	1950	38500	140	42
HWSM66019	66	22500	φ2550x12800	5700x3900x13790	4200	2250	41500	140	45

器具清洗机 Parts Washer



主要用途 / Main Application

PW 系列器具清洗机是严格遵循 cGMP、GAMP、FDA 和 EU 标准要求进行设计、制造、测试和验收的稳定、高效的清洗设备；适用于：玻璃器皿、塑料及不锈钢容器、产线工器具如软管、胶塞料斗等各类物料的清洗和干燥。广泛应用于生物工程、动物试验、制药行业等领域。

自动器具清洗机对清洗过程参数进行完整的监控，具备详细的批次记录，可实现整个清洗步段数据的可记录、可追溯及可重复性。

PW series Parts cleaner is a stable and efficient cleaning equipment designed, manufactured, tested and accepted in strict compliance with cGMP, GAMP, FDA and EU standards; it is suitable for: glassware, plastic and stainless steel containers, production line tools such as Cleaning and drying of various materials such as pipes and rubber plug hoppers. Widely used in bioengineering, animal testing, pharmaceutical industry and other fields;

The automatic cleaning machine for cleaning process parameters complete monitoring, with detailed batch records, can achieve the entire cleaning step data recording, traceability and repeatability.



优势特点 / Performance advantages

- ◎ 清洗舱内表面镜面抛光至 $Ra \leq 0.4\mu m$ ，水槽及清洗舱顶采用十字筋结构设计，清洗舱底部残留水可自排尽，顶部水减少附着量，确保设备良好的自清洁效果；
- ◎ 清洗舱采用无颗粒脱落环保的保温隔热层，腔室外表面不超过环境温度 $20^{\circ}C$ ，节能减耗，保温层外覆优质 S30408 不锈钢拉丝保温板，美观且便于清洁；
- ◎ 根据需求匹配相应的卫生级循环水泵，循环泵出口带压力监测；变频控制循环水泵，根据不同的清洗需求可设定不同的喷淋水压，实现器具的高效清洁；
- ◎ 热风排放设计有除湿冷却系统，可实现汽水分离及热风排放冷却功能，降低排至夹层风管的气体中水分含量，降低夹层风管内产生积水，同时避免热风对风管内元器件腐蚀；
- ◎ 多路清洗剂注入系统，清洗剂输送管路单向截断功能，配置流量监测，通过时间监测注入液量；并配置高电导率监测，保证清洗剂注入量精确稳定。清洗剂注入数据的可追溯以及重复；
- ◎ 低电导率日常监测清洗终洗水电导率值，并进行终洗步段进行控制，确保清洗效果满足要求；
- ◎ 独立的双通道热风干燥系统，均配置高压鼓风机、加热系统、HEPA 过滤器，一路将高温洁净热风送入清洗舱内部干燥，一路送入管道并通过对接接头从清洗架喷淋球喷出，实现管路、清洗舱、清洗架及清洗物品快速干燥；
- ◎ 密封门为双层中空钢化玻璃门板，周边采用不锈钢板包边保护，且具备隔热降噪功能；
- ◎ 定制化清洗架，一对一清洗工位设计，实现对需清洁器具 100% 清洗覆盖，插销式喷嘴便于拆卸维护及清洁；
- ◎ 采用工业计算机精密控制，专业程序式设计。根据不同的清洗器具，建立不同的清洗机制，并可自由搭配不同的清洗工艺；
- + The mirror surface of the cleaning cabin is polished to $Ra \leq 0.4\mu m$. The tank and the roof of the washing cabin are designed with a cross-rib structure. The residual water at the bottom of the washing cabin can be drained away automatically, and the amount of water on the top of the cabin can be reduced to ensure a good self-cleaning effect of the equipment
- + The cleaning cabin adopts an environmentally friendly thermal insulation layer with no particles falling off. The outer surface of the chamber does not exceed the ambient temperature of $20^{\circ}C$. Energy saving and consumption reduction. The thermal insulation layer is covered with high-quality S30408 stainless steel wire drawing insulation board, which is beautiful and easy to clean;
- + Match the corresponding sanitary-grade circulating water pump according to the demand, with pressure monitoring at the outlet of the circulating pump; variable frequency control circulating water pump, according to different cleaning requirements, different spray water pressure can be set to achieve efficient cleaning of the appliance;
- + The hot air discharge is designed with a dehumidification cooling system, which can realize the functions of steam-water separation and hot air discharge cooling, reduce the moisture content of the gas discharged into the interlayer air duct, reduce the water accumulation in the interlayer air duct, and avoid the hot air corroding the components in the air duct
- + Multi-channel cleaning agent injection system, one-way shut-off function of cleaning agent delivery line, configuration of flow monitoring, monitoring of injection volume through time; and configuration of high conductivity monitoring to ensure accurate and stable injection of cleaning agent. Traceability and duplication of cleaning agent injection data;
- + Daily monitoring of the conductivity value of the final washing water with low conductivity, and control the final washing step to ensure that the cleaning effect meets the requirements.
- + The independent two-channel hot air drying system, all equipped with high pressure blower, heating system, HEPA filter, all the way to the high temperature clean hot air into the cleaning tank internal drying, all the way into the pipe and through the butt joint from the cleaning rack spray ball, to achieve the pipeline, cleaning tank, cleaning rack and cleaning items quickly drying;
- + The sealed door is a double-layer hollow tempered glass door panel, the periphery is protected by a stainless steel plate, and it has the function of heat insulation and noise reduction;
- + Customized cleaning rack, one-to-one cleaning station design, to achieve 100% cleaning coverage of cleaning parts, plug-type nozzles are convenient for disassembly maintenance and cleaning;

- 强大的数据存储能力，工业计算机至少可存储 1000 批生产批次数据，运行微软 SQL 数据库管理软件，数据安全、可靠，存储效率高；
 - 实时生成美观、数据信息丰富完善的电子数据报表和曲线报表，可以实现数据的在线打印和离线报表打印；
 - 自控系统完全符合 GAMP5 和 21CFRPart11 要求。
- + Adopt industrial computer precision control, professional program design. According to different cleaning appliances, establish different cleaning mechanisms, and can freely match different cleaning
 - + Powerful data storage capabilities, industrial computers can store at least 1,000 batches of production data, run Microsoft SQL database management software, data security, reliability, and high storage efficiency;
 - + Real-time generation of beautiful electronic data reports and curve reports with rich and complete data information can realize online printing of data and offline report printing;
 - + Portal automatic control system completely meets the requirements of GAMP5 and 21CFRPart11.



主要技术参数 / Main technical parameters

设计压力 Design Pressure	常压 ordinary pressure	纯化水源压力 Purified Water Source Pressure	0.2-0.4MPa
工作压力 Working Pressure	常压 ordinary pressure	注射水源压力 Injection water source pressure	0.3-0.4MPa
设计温度 Design Temperature	120°C	工业蒸汽源压力 Industrial steam source pressure	0.4-0.6MPa
工作温度 Working Temperature	100°C	压缩空气压力 Compressed air pressure	0.6-0.8MPa



规格型号 / Specification model

参数 Parameters 型号 Model	容积 Volume	净重 Net weight	内室尺寸 Room size	外形尺寸 Dimensions	纯化水用量 Amount of purified water	注射水用量 Injection water dosage	工业蒸汽用量 Industrial steam consumption	压缩空气用量 Compressed air volume	电功率 Electrical power
	m ³	Kg	WxHxD (mm)	WxHxD (mm)	Kg/cycle	Kg/cycle	Kg/cycle	m ³ /h	Kw
PWA0607	0.6	1900	750x850x950	2250x2150x1250	50	50	30	5	22
PWA0808	0.8	2100	850x1000x950	2350x2300x1250	65	65	35	5	22
PWA1009	1	2200	950x1050x1050	2450x2350x1350	75	75	40	5	25
PWA1511	1.5	2500	1100x1150x1200	2600x2450x1500	90	90	50	5	30

外壁清洗机 Outer wall washer



主要用途 / Main Application

主要用于西林瓶、安瓿瓶和口服液瓶外壁残留物的清洗。可有效清洗高活性 / 高致敏性 (冻干) 粉体产品或以及对外观质量要求高的产品外壁残留物, 提高灯检和贴标的性能和效率。

It is mainly used for the washing of outer wall residue of vial, ampoule and oral liquid bottles. It can effectively wash outer wall residues of high-activity/highly sensitizing material (freeze-drying) powder product and products with high requirement for appearance quality to improve the performance and efficiency of light inspection and labeling.



优势特点 / Performance advantages

- ◎ 采用铝盖主动保护, 防止清洗水污染铝盖与瓶身的缝隙。
- ◎ 环形喷嘴实现 360°连续跟踪清洗和干燥, 通过清洗

- + It adopts active protection of aluminum cap, preventing washing water from contaminating the gap of aluminum cap and vial body.
- + Ring nozzle achieves 360° continuously tracking washing and drying; the washing ring goes up and down around the vial body to rinse

环从瓶身四周升降冲洗和吹扫，底瓶单独清洗和吹扫，清洗和吹干区域均匀效果好。

- 更换规格简便，不同规格清洗高度整体可调节，采用大转盘悬空夹持结构清洗吹干，全方位清洗干燥。
- 采用压缩空气吹干瓶身与瓶底，无热风干燥，保证药瓶零温升，避免对药品产生影响。
- 可选择配置毛刷清洗功能，瓶子在皮带的带动下旋转，硅胶软毛刷洗瓶身和瓶底，彻底清洗瓶身表面。
- 在产品底部采用多底轨形式，减少产品与底轨的接触面积。
- 管路设计有压缩空气排空和低点排水功能。
- 采用伺服加同步带结构，降低能耗，传动噪音小。

and blow; the bottom is separately washed and blown. The washing and blow-drying area receive good even effects.

- + It remains simple to change the specification, and different specifications enable adjustment of overall height for washing. The device adopts big turntable suspending in the air clamp structure to wash and dry for comprehensive washing and drying.
- + It employs compressed air to blow the vial body and bottom to be dry, there is no hot air drying; this ensures that the temperature of the vial does not rise so that the drug will not be affected as well.
- + It is optional that brush washing function can be configured, the bottle rotates due to the belt, silicone soft hair brushes and washes the vial body and bottom, thoroughly washing the surface of the vial body.
- + Multi bottom rail is adopted in the bottom of the product to reduce the contact area of the product and bottom rail.
- + The pipe is designed with functions of emptying compressed air and water discharge at low point.
- + The device adopts servo plus timing belt structure to reduce energy consumption with low conveyance noise.



产品参数 / Product Parameters

主要技术参数 Main technical parameters				
型号 Model	YWXC550	KWXB550	EW50	EW400
适用包材 Applicable packaging materials	口服液瓶、安瓿瓶 Oral liquid bottle, ampoule	西林瓶 Vial	西林瓶 Vial	西林瓶 Vial
外形尺寸 (mm) External dimensions (mm)	2660×1600×2780	2814×1540×2227	1340×1140×2200	3211×1380×2130
净重 (kg) Net weight(kg)	3500	3000	1500	3000
适应规格 Adaptation specifications	2-30ml	2-100ml	2-100ml	2-100ml
最高产能 Maximum production capacity	33000pcs/h	9000-33000pcs/h	1200-3000pcs/h	3000-24000pcs/h
电容量 Capacitance	5kW	5kW	4kW	5kW
纯化水耗量 Pure water consumption	≤ 1m ³ /h	≤ 1m ³ /h	≤ 0.5m ³ /h	≤ 1m ³ /h
压缩空气耗量 Compressed air consumption	140Nm ³ /h (0.6MPa-0.8MPa)	110Nm ³ /h (0.6MPa-0.8MPa)	15m ³ /h (0.6MPa-0.8MPa)	90m ³ /h (0.6MPa-0.8MPa)



服务理念

400-9988-900



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



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



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