



## 结晶过滤洗涤干燥机一站式解决方案

深耕医药、原料药、化工、食品、锂电池材料、冶金粉末、新材料等行业

ONE STOP SERVICE FOR CRYSTALLIZING  
FILTERING WASHING AND DRYING EQUIPMENT

Widely used in Medicine, Bio-pharmaceutical, API raw material, Chemical & Fine Chemical, Food & Health Care, Lithium Battery Material, Metallurgical Powder, New Material and other industries.

无锡市双瑞机械有限公司  
WUXI SHUANGRUI MACHINERY CO., LTD.

# 锥形过滤洗涤干燥机 典型用户



## 公司简介 Company Profile

无锡市双瑞机械有限公司坐落于“太湖明珠，百年工商”名城——江苏省无锡市，占地面积20000余平方米，生产员工50人，20名技术团队人员。“诚信务实、高效创新”的企业宗旨，历经30年的不断发展，凭着先进的生产工艺设备，雄厚的技术力量，完善的检测手段，严格的管理体系，良好的企业信誉，与国内外众多知名企业达成战略合作伙伴关系。公司所生产的锥型过滤洗涤干燥二合一/三合一，平板式过滤洗涤三合一，球形多功能一体机，干燥机、结晶机、印染设备和化工反应容器等产品始终保持着高品质，低能耗和更环保。产品广泛应用于食品、制药、化工、环保等领域，保持较高的市场占有率。

我公司以精湛的工艺，先进的设备，雄厚的技术力量，优质一流的产品，热诚为用户服务，为国内外用户创造良好的经济效益。

董事长王岳东携公司全体员工向新老客户致意，竭诚欢迎光临指导，洽谈合作！

Founded in 2004, Wuxi Shuangrui Machinery Co., Ltd. is a high-tech enterprise specializing in the research and development, production and sales of chemical equipment, fine equipment and pharmaceutical equipment. The company covers an area of more than 20,000 square meters, with 50 production staff and 20 technical team members. Enterprise tenet of "honesty, pragmatism, high efficiency and innovation"

The company's main product lines include:Cylinder-cone filter washing and drying equipment (two-in-one/three-in-one), Agitated Nutsche Filter Dryer (ANFD), Spherical multi-function vacuum dryer, Multi-function reaction filtration washing and drying equipment, printing and dyeing equipment, drying equipment and crystallization equipment.Products are widely used in food, pharmaceutical, chemical, environmental protection and other fields.

The company fully absorbs the advanced technology of similar products at home and abroad, adheres to scientific and technological innovation, and customizes high-quality mechanical equipment for customers.Strengthen close cooperation with customers to provide sufficient information and technical support during and after using our products.The rigorous and scientific quality management system makes every step of the company's development very practical and guaranteed, improves corporate efficiency, enhances customer confidence, and expands market share.

Our company has a professional design team, a well-served engineering maintenance service team, a skilled production and installation technical team. Customer satisfaction is our constant pursuit. Therefore, we will keep on trying to respond customers' request at the first time with propose a complete and perfect solution. We have got a good reputation and credibility in the industry. We will continue to repay users and serve the society with innovative and high-quality products.We look forward to cooperating with customers in more industries for a win-win cooperation and mutual benefit.

优质的产品为客户的品牌创造更多价值  
创新的专利技术推动化工和制药装备的不断发展

High quality product creates more value for customers' brands  
Innovative patent technology promotes the development of chemical and pharmaceutical equipment



## 锥形过滤洗涤干燥机

Cylinder-cone Filtering Washing Dryer

过滤、洗涤、干燥是化工、医药、食品等行业三个十分重要的单元操作，一般要有过滤设备、洗涤设备、干燥设备三个单元设备来完成。这三个单元设备分别都有各自的配套装置，因占地面积大，造价贵，单元与单元间物料的搬运或输送较麻烦，不但劳动强度大，还易造成物料的流失和浪费，而对易燃易爆、有毒或剧毒的物料或不允许有污染的生物制品、药品、食品等，要求密闭操作，这时过滤、洗涤、干燥这三个装置间密闭和物料的输送难度就更高，有时常常会由此而使整套装置处于不能完全正常操作或劳动强度大，生产周期长、能耗大、效率低影响产品质量。

基于上述原因，无锡市双瑞机械有限公司进行了大量的设计研发工作，终于成功研制了锥形过滤洗涤干燥机，实现了化工装备、精细化工装备和制药装备技术的重大突破。

Filtration, washing, and drying are three very important unit operations in the chemical, pharmaceutical, and food industries. Generally, there are three units of equipment: filtration equipment, washing equipment, and drying equipment to complete. Each of the three unit equipment has its own supporting equipment. Because of the large area and high cost, the handling or conveying of materials between the units is more troublesome. It is not only labor-intensive, but also easy to cause material loss and waste. Inflammable, explosive, toxic or highly toxic materials or biological products, medicines, food, etc. that are not allowed to be contaminated, airtight operation is required. At this time, the transportation of materials between the three devices of filtration, washing and drying is more difficult. Sometimes As a result, the whole set of equipment is often unable to operate normally or has high labor intensity, long production cycle, high energy consumption, and low efficiency, which affect product quality.

Based on the above reasons, our company has carried out a lot of design and research and development work, and finally successfully developed the Cylinder-cone filtration washing dryer. A major breakthrough in chemical equipment, fine chemical equipment and pharmaceutical equipment technology has been achieved.



## 结构及工作原理

本机为锥式结构，在圆筒体和下部锥体上设置有加热夹套，可对物料进行加热或冷却，在多功能机内部设置有空心轴和变角度变导程空心螺旋搅拌装置搅拌，对物料进行搅拌和提升，在出料时推出物料。在下部锥体内设置有结构较为复杂的圆锥形过滤装置，在设备底部有特殊设计的无死角快开出料装置或无死角气动出料球阀。

在反应阶段，反应物料从顶部加入，独特的搅拌结构可使物料在机内得到十分均匀的搅拌，并通过筒体夹套、锥体夹套及空心轴、空心螺旋叶的同时加热或冷却，使物料在机内充分反应。在过滤阶段，本机可使物料在机内通过加压或抽真空过滤滤干，并加入洗涤液，使物料在机内进行多次自动再浆洗涤，达到洗涤要求后再压干。

在干燥阶段，筒体夹套、锥体夹套、空心轴、空心螺带同时对物料进行加热并在顶部抽真空，对物料进行真空密闭低温干燥，干燥后自动密闭出料。

## Structure and working principle

This machine has a barrel-cone structure, and a heating jacket is set on the cylinder and the lower cone to heat or cool the material. A hollow shaft and a variable angle variable lead hollow spiral stirring device are installed inside the multifunctional machine. Stirring, mixing and lifting the materials, and pushing out the materials when they are discharged. A conical filter device with a more complicated structure is arranged in the lower cone, and a specially designed quick-opening discharge device without dead angle or a pneumatic discharge ball valve without dead angle is arranged at the bottom of the equipment.

In the reaction stage, the reaction materials are added from the top. The unique stirring structure can make the materials very uniformly stirred in the machine, and they are heated or cooled through the barrel jacket, cone jacket, hollow shaft, and hollow spiral blade at the same time. Make the material fully react in the machine. In the filtering stage, the machine can make the material in the machine filter dry by pressurizing or vacuuming, and add washing liquid, so that the material can be automatically re-slurry washing in the machine for many times, and then press dry after reaching the washing requirements. In the drying stage, the barrel jacket, cone jacket, hollow shaft, and hollow spiral belt heat the materials at the same time and draw a vacuum on the top, vacuum-sealing the materials for low-temperature drying, and automatically airtight discharge after drying.

## 主要特点

- 1.一机多用，可在一台机内完成反应、萃取、过滤、反复多次过滤洗涤、干燥等多种操作，并直接得到成品。
- 2.密闭操作，特别适合处理易燃易爆、有毒或剧毒的危险产品及不允许有污染的鲜美食、生物制品和药品等。
- 3.筒体夹套、锥体夹套及空心轴、空心螺带同时对物料进行加热或冷却，热效率高，能耗低。
- 4.特殊的搅拌螺旋设计，可使物料在反应、过滤、洗涤干燥各个阶段都对物料进行十分均匀的搅拌，从而使整机的工作效率很高。
- 5.在过滤阶段，由于螺带与过滤介质的良好贴合作用，可使物料在薄层滤饼条件下进行过滤，过滤效率高。
- 6.简化和缩短工艺流程，占地面积小，厂房和设备投资大大节省。
- 7.操作方便，劳动强度低，加工出的产品质量好。

## Main Feature

1. One machine with multiple functions, can complete various operations such as reaction, extraction, filtration, repeated filtration, washing, and drying in one machine, and directly obtain the finished product.
2. Airtight operation, especially suitable for handling flammable, explosive, toxic or highly toxic dangerous products and fresh food, biological products and medicines that are not allowed to be contaminated.
3. The body jacket, cone jacket, hollow shaft and hollow ribbon can heat or cool the material at the same time, with high thermal efficiency and low energy consumption.
4. The special agitating screw design can make the materials very uniformly agitated in the various stages of reaction, filtration, washing and drying, so that the working efficiency of the whole machine is very high.
5. In the filtering stage, due to the good adhesion and scraping effect of the spiral belt and the filter medium, the material can be filtered under the condition of a thin layer of filter cake, and the filtering efficiency is high.
6. Simplify and shorten the process flow, occupy a small area, and greatly save plant and equipment investment.
7. Convenient operation, low labor intensity, and good quality of processed products.

## 技术参数 Technical Parameters

型号 (Model)	SR-0.3	SR-0.5	SR-1.0	SR-1.5	SR-2.0	SR-3.0	SR-4.0	SR-5.0
容积 volume(m <sup>3</sup> )	0.3	0.5	1.0	1.5	2.0	3.0	4.0	5.0
过滤面积 Filter Area (m <sup>2</sup> )	0.91~5.16							
加热面积 Heating Area (m <sup>2</sup> )	3.2~18.6							
过滤方式 Filter Method	真空或加压过滤 Vacuum or pressure filtration							
干燥方式 Drying Method	真空密闭干燥 Vacuum airtight drying							
电机功率Power (kw)	根据物料性质不同，在3~55kw范围内可选 Depending on the nature of the material, it can be selected within the range of 3~55kw							
外形尺寸 Dimensions (mm)	Φ850 x 3460	Φ1000 x 3602	Φ1200 x 3970	Φ1400 x 4119	Φ1500 x 4238	Φ1650 x 4670	Φ1750 x 5276	Φ1850 x 5698
材料Material								
重量 Weight(T)	1.8	2.2	2.8	3.6	4.5	5.6	6.8	7.9
其它 Remark	根据要求，用户可订购0.2~10m <sup>3</sup> 间各种规格设备 According to requirements, users can order equipment of various specifications between 0.2~10m <sup>3</sup>							

## 平板式过滤洗涤干燥机

Agitated Nutsche Filter Dryer (ANFD)

平板过滤洗涤干燥机是在一个反应容器内可先后完成搅拌、反应、过滤、洗涤、脱液、干燥等多种工艺的多功能设备，具有简化流程、提高生产效率、防止物料污染、蒸汽灭菌、物料更换方便、机电一体化等优点。同时可使整个产品生产过程的洁净厂房面积大幅度减少，大大降低客户的基础投资费用，广泛用于化工、精细化工、生物化工、制药、食品、矿山、冶金、轻纺、印染等行业，特别适用于洁净度要求高，小批量多品种的生产场合。



complete a variety of processes such as stirring, reaction, filtering, washing, deliquoring, and drying in a reaction vessel. It has simplified processes, improved production efficiency, prevented material pollution, and steam sterilization. , Convenient material replacement, electromechanical integration and other advantages. At the same time, the area of clean workshops in the entire production process can be greatly reduced, and the basic investment costs of customers can be greatly reduced. It is widely used in chemical, fine chemical, biochemical, pharmaceutical, food, mining, metallurgy, textile, printing and dyeing industries, especially It is suitable for production occasions with high cleanliness requirements, small batches and multiple varieties.



## 结构及工作原理

本机的特点是除底部设置快开液压升降平板式过滤装置.设备内部有特殊结构的搅拌装置进行搅拌,该搅拌装置通过顶部电动机及减速机驱动装置驱动,并通过液压装置驱动,可使搅拌装置上下运动,以实现反应、过滤、洗涤不同搅拌和出料需要。

中部圆筒体外有夹套进行加热,底部过滤面下方也可设置加热装置进行加热,以满足干燥时对物料的加热要求.必要时还能设置空心轴和空心搅拌装置同时对物料进行内加热,大大提高本机对物料的干燥效率。

本设备在中部筒体的侧向下方设置有特殊结构的液压自动排料装置,以便过滤滤饼或干燥好的物料被密闭自动排出。

被过滤物料从设备顶部加入,通过抽真空或加压的方式把物料压干.对于要洗涤的物料;可在滤干后加入洗涤液通过搅拌再浆后再滤干,洗涤可进行多次.洗涤滤干后的物料再在夹套、空心轴空心搅拌桨及滤板下通入热载体对物料进行加热搅拌干燥,最终干燥好的物料从筒体侧面排出。

## 主要特点

- 1.可在一台机内完成过滤、洗涤等多种操作,一机多用。
- 2.密闭操作,特别适合处理易燃易爆、有毒或剧毒的危险产品及不允许有污染的鲜美食、生物制品和药品等。

## Structure and working principle

This machine is characterized by a quick-open hydraulic lifting flat-plate filter device at the bottom. There is a special-structured stirring device inside the device for stirring. The stirring device is driven by a driving device such as a top motor and a reducer, and is driven by a hydraulic device. The stirring device moves up and down to achieve different stirring and discharging needs for reaction, filtration and washing.

There is a jacket outside the middle circle for heating, and a heating device can also be installed under the filter surface at the bottom for heating to meet the heating requirements of the material during drying. If necessary, a hollow shaft and a hollow stirring device can be set to heat the material simultaneously, which greatly improves the drying efficiency of this machine for materials.

This equipment is equipped with a hydraulic automatic discharging device with a special structure in the lower side of the middle section, so that the transition filter cake or the dried material is sealed and automatically discharged.

The filtered material is added from the top of the equipment, and the material is pressed dry by vacuum or pressure. For the material to be washed, the washing liquid can be added after the filter is dried, and the slurry can be stirred and then filtered and dried. The washing can be performed many times. The washed and filtered material is then passed through a heat carrier under the jacket, hollow shaft and hollow stirring paddle and filter plate to heat, stir and dry the material, and finally the dried material is discharged from the side of the cylinder.

## Main Feature

- 1.Various operations such as filtering and washing can be completed in one machine, and one machine is multi-purpose.
- 2.The airtight operation is especially suitable for handling flammable, explosive, toxic or highly toxic dangerous products and fresh food, biological products and medicines that are not allowed to be contaminated.

3.从进料到产品排出，全部过程在一台机内完成，使工艺流程大大缩短，设备数量大大减少，从而使厂房和设备及工艺管道、阀门等的投资大大节省。

4.特殊的搅拌结构，加上液压升降装置，既可使搅拌装置对物料进行充分高效搅拌，同时又可节省搅拌功率。

5.由于本机设置了底部平板式过滤和圆筒过滤，过滤面积是常规设备的2-3倍，大大缩短过滤时间和提高过滤效率。

6.在洗涤阶段，由于本机能反复多次进行自动搅拌再浆洗涤，洗涤方便，洗涤效果好。

7.由于是全密闭操作，对物料无任何污染，因而加工出的产品质量高，操作环境极佳。

3.From feeding to product discharge, the entire process is completed in one machine, greatly shortening the process flow and greatly reducing the number of equipment, thereby greatly saving investment in plant and equipment, process pipelines, valves, etc.

4.The special mixing structure, coupled with the hydraulic lifting device, can not only make the mixing device fully and efficiently mix the material, but also save the mixing power.

5.Because this machine is equipped with bottom flat filter and circular filter, the filter area is 2-3 times that of conventional equipment, which greatly shortens the filter time and lift-off filter efficiency.

6.In the washing stage, since the machine can repeatedly perform automatic stirring and re-pulping washing, it is convenient to wash and the washing effect is good.

7.Because it is a fully enclosed operation, there is no pollution to the materials, so the processed products are of high quality and the operating environment is excellent.

## 技术参数 Technical Parameters

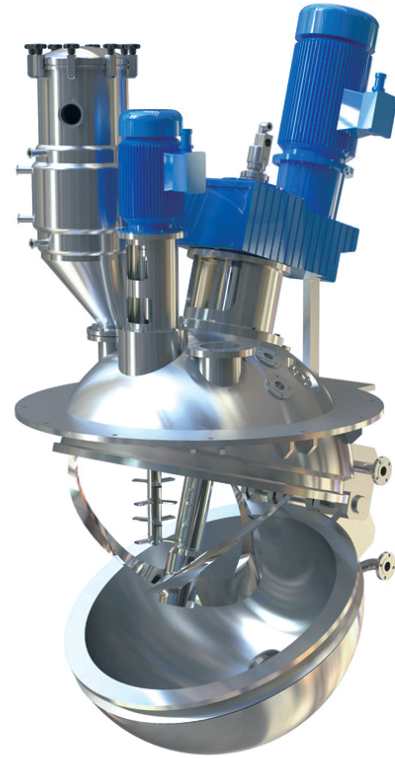
型号 (Model)	过滤面积 Filter Area (m <sup>2</sup> )	内径 Inside Diameter (mm)	容积 Nominal Volume (m <sup>3</sup> )	滤饼高度 Filter Cake Height (mm)	桨叶提升高度 Blade Lifting Height (mm)	电机功率 Motor Power (kw)	净重 Net Weight (kg)	总高 Total Height (mm)
SR-0.04	0.08	325	0.04	100	120	0.37	600	2050
SR-0.07	0.125	400	0.07	120	150	0.55	860	2550
SR-0.15	0.19	500	0.15	140	160	2.2	1500	3000
SR-0.22	0.28	600	0.22	180	200	2.2	1700	3300
SR-0.28	0.3	650	0.28	180	200	2.2	1850	3400
SR-0.46	0.5	800	0.46	200	220	3	2250	3500
SR-0.95	0.8	1000	0.95	220	250	5.5	3500	3800
SR-1.2	1	1200	1.2	250	300	7.5	4900	4000
SR-1.9	1.5	1400	1.9	300	350	11	6500	4500
SR-2.59	2	1600	2.59	300	350	15	7500	4500
SR-3.2	2.5	1800	3.2	350	400	15	10000	4700
SR-4.5	3	2000	4.5	400	450	18.5	11700	5100
SR-6.4	4	2300	6.4	400	450	22	12800	5200
SR-9	5.3	2600	9	400	450	22	17000	5600
SR-10.5	6	2800	10.5	450	500	30	21000	5800
SR-12	7	3000	12	500	550	37	24000	6000

## 球形多功能干燥一体机

Spherical Multifunctional Drying Machine

球形多功能干燥一体机集:反应、结晶、干燥,破碎,制粒为一体。腔内置料。夹套加热或冷却,外层保温。外壳、内腔为正球形,沿斜中轴线可开合,齿形法兰固定上下两个半球体,独特的气密封保证两个半球的密封可靠,上球体上部设有搅拌和破碎的传动系统,周围设有满足系统所需的工艺孔。搅拌桨设计为三叶锚式,内设循环加热冷却通道,破碎刀片的形式可根据实际需要做更改或互换,插入腔内的搅拌和破碎系统轴由机封与内腔隔开,机械密封保证无泄漏无污染,下半球体设有气动出料阀、设备设有温变送器 and 真空在线取样器。

Spherical Multifunctional Drying Machine integrates: reaction, crystallization, drying, crushing, and granulation. Inside the cavity. The jacket is heated or cooled, and the outer layer is insulated. The outer shell and inner cavity are of true spherical shape, which can be opened and closed along the oblique central axis. The gear flange fixes the upper and lower hemispheres. The unique air seal ensures reliable sealing of the two hemispheres. The upper part of the upper sphere is equipped with a stirring and crushing transmission system. There are process holes to meet the requirements of the system. The stirring blade is designed as a three-leaf anchor type, with a circulating heating and cooling channel inside. The form of the crushing blade can be changed or exchanged according to actual needs. The shaft of the stirring and crushing system inserted into the cavity is separated from the inner cavity by a mechanical seal. The seal ensures no leakage and no pollution. The lower hemisphere is equipped with a pneumatic discharge valve, and the equipment is equipped with a temperature transmitter and a vacuum online sampler.



## 适用性

热敏性物料  
 浆状糊状物料  
 易结球成团块物料  
 无菌原料药  
 中药浸膏  
 混合和制粒

## Applicability

Thermal sensitive materials  
 Glue and paste type material  
 Easy to agglomerate into ball and lump materials  
 Sterilized APIs  
 Chinese herbal extract  
 Mixing and granulating

## 主要特点

- 1.干燥速度:加热搅拌浆+在线破碎刀极大的缩短了物料的干燥时间,经测试对比;干燥效率比单锥真空干燥器提高2~4倍,比双锥真空干燥器提高8~12倍。
- 2.装载量:每批次装载量, ≤80%
- 3.设备清洁:系统在线“CIP/SIP”
- 4.下半球可打开,清洁操作检测更直观
- 5.物料保护:干燥过程中实时氮气注入,避免破坏物料氧化和破坏晶形
- 6.物料回收:更高的回收率,相比单锥干燥器能打开下球体现场清理收集
- 7.均匀性:破碎器确保物料不起球和成团块,可将物料破碎至均匀颗粒,物料受热均匀
- 8.工艺优点:进出物料口静态固定位置对接转运,物料与空气无接触,无菌级机封,无污染,可实时氮气注入无菌干燥。
- 9.适用项目:反应,结晶,混合、破碎、干燥
- 10.可靠性:系统无死角,无污染,易清洁,更能满足易起球成团块物料和无菌药品的干燥处理。
- 11.经济性:高效率,省工序,低能耗,省人工

## Main Feature

1. The drying efficiency is 24 times higher than the single cone vacuum dryer, and 8-12 times higher than the double cone vacuum dryer.
2. Loading capacity per batch, ≤80%
3. Equipment cleaning: system online "CIP/SIP"
4. The lower hemisphere can be opened, the cleaning operation detection is more direct
5. Material protection: real-time nitrogen injection during the drying process to avoid damage to the oxidation of the material and damage to the crystal form.
6. Material recovery: higher recovery rate, compared with single cone dryer, the lower sphere can be opened for on-site cleaning and collection
7. Uniformity: The crusher ensures that the material does not ball and form agglomerates, can crush the material to uniform particles, and the material is heated evenly
8. Process advantages: static fixed position docking and transfer of the material inlet and outlet, no contact between the material and the air, aseptic mechanical seal, no pollution, real-time nitrogen injection aseptic and dry.
9. Applicable items: reaction, crystallization, mixing, crushing, drying
10. Reliability: The system has no dead ends, no pollution, and is easy to clean, which can better meet the requirements of the "API" industry and the drying treatment of materials that are easy to pilling and agglomerate and sterile drugs
11. Economy: high efficiency, saving process, low energy consumption, saving labor cost

## 翻转式反应结晶过滤洗涤干燥四合一

New Type Turn-over Reaction Crystallization filtering Washing and Drying Machine (Four in one)

传统过滤洗涤干燥设备有残留物料、泄漏、干燥效率低、不能结晶及需要人工干预等局限性.新型翻转式反应结晶过滤洗涤干燥四合一,通过技术的创新,不仅简化了操作,还在原来的三合一设备上增加了反应结晶功能,可以取代原来结晶反应釜,真正做到了反应结晶过滤洗涤干燥一体机。

同时解决了传统过滤洗涤干燥设备的残留量大、干燥效率低、泄漏等一系列的问题,从而提高了生产药品的质量,提高了效率,增加了物料的收率,减少了浪费,在技术上是一个很大的突破。

Traditional filtering, washing and drying equipment has limitations such as residual materials, leakage, low drying efficiency and the need for manual intervention. The new flip-type filtering, washing and drying equipment, through technological innovation, not only simplifies the design, but also solves the residuals of traditional filtering, washing and drying equipment A series of problems such as large quantity, low drying efficiency, leakage, etc., have improved the quality of the produced drugs, and are more in line with the requirements of laws and regulations, which is a great technological breakthrough.



### 主要特点

#### 1. 多功能性

反应结晶、过滤、洗涤、干燥是化工、医药、食品等行业四个十分重要的单元操作一般要有反应结晶设备、过滤设备、洗涤设备、干燥设备四个单元设备来完成。这四个单元设备分别都有各自的配套装置,因占地面积大,造价贵,单元与单元间物料的搬运或输送较麻烦,不但劳动强度大,还易造成物料的流失和浪费。新型翻转式反应结晶过滤洗涤干燥四合一取代了原来的反应结晶设备、过滤设备、洗涤设备、干燥设备,是一台真正意义上的多功能反应结晶过滤洗涤干燥设备。

### Main Feature

#### 1. Multifunctional equipment

Reaction crystallization, filtration, washing, and drying are four very important unit operations in the chemical, pharmaceutical, and food industries. Generally, there are four units of equipment including reaction crystallization equipment, filtration equipment, washing equipment and drying equipment. Each of the four unit equipment has its own supporting device. Because of the large area and high cost, the handling or transportation of materials between the units is more troublesome, not only labor intensive, but also easy to cause material loss and waste. The new flip-type reaction crystallization filter washing and drying four-in-one replaces the original reaction crystallization equipment, filtration equipment, washing equipment, and drying equipment. It is a multifunctional reaction crystallization filter washing and drying equipment.

## 2.干燥效率高

新型翻转式反应结晶过滤洗涤干燥四合一干燥物料时，通过PLC自动控制，翻转到近似水平位置，进行干燥功能，搅拌桨上下及正反运动，让物料和筒壁进行充分接触，迅速干燥。

## 3.出料彻底，无残留

新型翻转式反应结晶过滤洗涤干燥四合一在出料时，通过 PLC自动控制，翻转到近似倒立工位，搅拌桨上下及正反运动，物料在重力作用以及搅拌桨的带动下，迅速出料。

## 4.能够保证药品一致性

新型翻转式过滤洗涤干燥设备通过技术创新，改变了原来的生产模式，提高了产品质量，更符合法规以及行业发展趋势；其设备生产的残留少，重复生产时，不会影响批次间产品质量的一致性。

## 2. High drying efficiency

When the New Type Turnover Filtering and Drying Machine (four-in-one) drying material is automatically controlled by PLC, it is turned to an approximate horizontal position to perform the drying function. The stirring paddle moves up and down and forwards and backwards, so that the material and the cylinder wall are fully contacted and dry quickly

## 3. Discharge thoroughly without residue

The New Type Turnover Filtering and Drying Machine (four-in-one) is automatically controlled by PLC when discharging, and it is turned to an approximate inverted position. The stirring paddle moves up and down and forwards and backwards. The material is quickly discharged under the action of gravity and the stirring paddle.

## 4. Able to ensure the consistency of drug quality

Through technological innovation, the new inverted filter, washing and drying equipment has changed the original production mode, improved product quality, and is more in line with laws and regulations and industry development trends; its equipment has fewer residues and will not affect product quality between batches when repeated production Consistency

## 技术参数 Technical Parameters

翻转式三合一 New Type Turnover Filtering and Drying Machine				罐体设计压力及设计温度 Design pressure and temperature of tank body	过滤面积 filter area (m <sup>2</sup> )	滤饼厚度 Cake thicknes (mm)	最大干粉量 Maximum dry powder quantity (kg)	搅拌器 Agitator		外形尺寸 Dimensions			重量 Weight (kg)
型号 Model	有效容积 Effective volume (L)	最大滤饼体积 Maximum cake volume (L)	内直径 Internal diameter (mm)					转速 Speed of revolution (RPM)	提升高度 Lifting Height (mm)	长 Length (mm)	宽 Width (mm)	高 Height (mm)	
SR-350	47	6.25	350	0.1-0.3 MPa -10-143 °C	0.09	65	2.5	1.5/14.6	65	1900	1600	2200	1500
SR-450	80	15	450		0.12	100	6	1.5/14.6	100	3100	2420	2780	1750
SR-650	160	66	650		0.28	200	25	1.5/14.6	200	3150	2750	3000	2300
SR-950	500	250	950		0.65	350	90	1.5/14.6	350	3600	3300	3500	2900
SR-1250	1100	500	1250		1.15	400	180	1.5/14.6	400	3880	3600	4200	3700
SR-1600	2500	800	1600		1.88	400	300	1.5/14.6	400	4730	4750	5080	8000
SR-2100	4300	1550	2100		3.29	450	540	1.5/14.6	450	5320	4990	5550	11500

## 单锥真空干燥机

Single cone vacuum dryer

单锥真空干燥机是一种集减压蒸馏、粉碎、混粉、干燥为一体的高效多功能全密闭立式真空干燥设备,干燥效率是同等规格双锥回转真空干燥机、真空箱式烘3~5倍。同时单锥真空干燥机彻底改变了体积大,能耗高,工作时间长,效率低,噪音大,难包装,不易清洗,不便维护等缺点。目前是国内外同类设备中具有功率损耗低,效率高,效果好的多用途干燥机。

The single cone vacuum dryer is a high-efficiency, multi-functional, fully enclosed vertical vacuum drying equipment that integrates reduced pressure distillation, crushing, powder mixing and drying. The drying efficiency is the same specification double cone rotary vacuum dryer and vacuum box drying. ~ 5 times. At the same time, the single cone vacuum dryer has completely changed the disadvantages of large volume, high energy consumption, long working time, low efficiency, high noise, difficult to pack, difficult to clean, and inconvenient to maintain. At present, it is a multi-purpose dryer with low power loss, high efficiency and good effect among similar equipment at home and abroad.



### 选择合适的搅拌器

在真空干燥机的结构中,最重要的一个组件是它的搅拌器。要选择具有合适的搅拌器,必须了解进料的属性以及期望得到的真空干燥流程结果。

#### 1. 螺杆搅拌器

螺杆搅拌器在设计上经过充分验证,适用于在大气或真空条件下干燥粉末、滤饼、糊状物和浆状物。它几乎适用于加工包括粘性产品在内的所有产品。由于沿容器壁传送产品的性能出色,因而它的干燥循环效率很高,且可以干燥容量达20,000升以上的干燥器。

#### 2. 带式搅拌器

带式搅拌器适用于处理初始水分含量低、流动性好的产品,它是替代螺杆搅拌器的备选设备。它可以一次性搅拌更多产品,因此热传递效果更好,干燥时间更短。

#### 3. 桨式搅拌器

桨式搅拌器适用于处理粘性较低的产品,它可以很好的输送转子叶尖和容器壁之间的产品并控制温度,如有需要,周期之后对产品进行充分混合。



### Choosing the right agitator

In the structure of the vacuum dryer, the most important component is its agitator. To choose a suitable agitator, you must understand the properties of the feed and the desired result of the vacuum drying process

#### 1.Screw agitator

The screw agitator has been fully verified in design and is suitable for drying powder, filter cake, paste and slurry under atmospheric or vacuum conditions. It is suitable for processing almost all products including viscous products. Due to its excellent performance in conveying products along the container wall, its dry preservation cycle efficiency is high, and it can dry dryers with a capacity of more than 20,000 liters.

#### 2.Belt stirrer

The belt agitator is suitable for processing products with low initial moisture content and good fluidity. It is an alternative equipment to replace screw agitators.

#### 3.Paddle agitator

The paddle agitator is suitable for handling products with low viscosity. It can well transport the product well between the rotor blade tip and the vessel wall, control the temperature, and mix the product fully after the cycle if necessary.

## 圆形反应结晶过滤洗涤干燥四合一

Spherical Reaction Crystallization filtering Washing and Drying Machine ( Four in one)



### 用途

广泛应用在易燃易爆、有毒有害、易挥发、工艺难转换的制药、化工行业，一台设备可以替代结晶釜、离心机、过滤机、洗涤机、干燥机等多台设备。

### Application

It is widely used in the pharmaceutical and chemical industries that are flammable, explosive, toxic and harmful, volatile, and difficult to convert. One device can replace multiple devices such as crystallizers, centrifuges, filters, washing machines, dryers, etc.

### 结构与工作原理

圆形四合一由圆球形内腔体和带刮削的倾斜空心搅拌组成,腔体与搅拌轴可分别做独立的转动并能共同加热,内腔光滑无死角,同等体积下可获得的更大加热面积和足够抽滤面积,耐压性能好,不污染物料,高效、洁净、节能、配有PLC自动控制柜,能实现正反转、结晶过滤、无极调速、自动出料。

### Structure and working principle

The spherical four-in-one consists of a spherical inner cavity and an inclined hollow stirring with scraping. The cavity and the stirring shaft can be rotated independently and can be heated together. The inner cavity is smooth and has no dead corners, and greater heating can be obtained under the same volume Area and sufficient suction filter area, good pressure resistance, no pollutants, high efficiency, clean, energy saving, equipped with PLC automatic control cabinet. It can realize forward and reverse rotation, crystallization filtration, stepless speed regulation, and automatic discharge.

### 主要特点

1. 一台设备可代替结晶釜、离心机、过滤机、洗涤机、干燥机等多台设备。
2. 高效、低耗、安全、环保。具有高混合性能和初粉碎功能。
3. 动态真空搅拌干燥。内腔全面积搅拌和粉碎。不结块、不起球、出料净、全过程绝不污染物料,整机内光滑无死角。
4. 能自动出料,在线清洗、在线灭菌、满足CGMP与FDA要求。

### Main features

1. One device can replace multiple devices such as crystallizers, centrifuges, filters, washing machines, dryers, etc.
2. High efficiency, low consumption, safety and environmental protection. It has high mixing performance and initial crushing function.
3. Dynamic vacuum stirring and drying. The whole area of the inner cavity is stirred and crushed. No agglomeration, no ball, clean discharge, no pollutants in the whole process, smooth and no dead corners in the whole machine.
4. It can automatically discharge materials, online cleaning, online sterilization, and meet CGMP and FDA requirements.

## 双锥回转反应结晶过滤洗涤干燥一体机（四合一）

Double cone rotary reaction crystallization filtration washing and drying machine (four in one)

双锥回转反应结晶过滤洗涤干燥一体机（四合一）是我厂在结合国内同类产品技术所开发的新一代干燥装置，它集合反应结晶、洗涤、过滤、干燥四项功能于一体。他比双锥真空干燥设备多了反应结晶、过滤、洗涤的功能。

Double cone rotary reaction crystallization filtration washing and drying machine (four in one) is a new generation of drying device developed by our factory in combination with the technology of similar domestic products. It integrates four functions of washing, filtering, drying and crushing. It has more reaction crystallization, filtration and washing functions than double cone vacuum drying equipment.

### 主要特点

- 1) 结合反应结晶、洗涤、过滤、干燥、粉碎和混合功能。
- 2) 卸料更充分。
- 3) 间接加热,物料不会被污染,符合“GMP”要求。设备维修操作简便,易清洗。
- 4) 热效率高,比一般烘箱提高2倍以上。

### Main Feature

- 1) Combining reaction crystallization, washing, filtering, drying, crushing and mixing functions.
- 2) Discharge more clearly.
- 3) Indirect heating. The materials will not be contaminated and meet the requirements of "GMP". The equipment is easy to maintain and operate and easy to clean.
- 4) The thermal efficiency is more than 2 times higher than the general oven.



## SR转鼓式内冷却制片机

Rotary drum type internal cooling tablet machine

- 1.全密闭自动操作,特别适合处理易燃易爆和不允许接触空气的物料。
- 2.本机设有侧刮刀、料层刮刀和成品刮刀共四把刮刀,可任意控制料层厚度,从而获得理想的制片或干燥效果。
- 3.自动控制料槽液位,获得稳定的制片或干燥效果。
- 4.可任意调节转鼓转速、转鼓在料槽中的浸没深度、料层在转鼓上的厚度和冷热媒体的温度,从而达到所需的产量和合格的制片干燥成品。
- 5.本机特别适合对粘稠性、浆糊状等难处理物料的制片和干燥。
- 6.本所的产品使用内外双转鼓、辐射筋板、螺旋片导流、高效弹性刮刀及侧向供料槽等多项高新技术,其制片效率一般是普通转鼓制片机的2-3倍。
- 7.可在同一个料槽上设置双转鼓冷却或加热,大大提高制片或干燥能力。
- 8.既可制片,又可干燥,一机多用。

1. Fully enclosed automatic operation, especially suitable for handling flammable, explosive and materials that are not allowed to contact air.

2. This machine is equipped with four scrapers, side scraper, material layer scraper and finished scraper, which can control the thickness of the material layer arbitrarily, so as to obtain the ideal sheeting or drying effect.

3. Automatically control the liquid level of the material tank to obtain stable film making or drying effect.

4. The rotating speed of the drum, the immersion depth of the drum in the trough, the thickness of the material layer on the drum and the temperature of the cold and hot media can be adjusted arbitrarily, so as to achieve the required output and qualified dry finished products.

5. This machine is especially suitable for the production and drying of difficult-to-handle materials such as viscous and paste-like materials.

6. The products of our institute use a number of high and new technologies such as internal and external double drums, radiating ribs, spiral sheet guides, high-efficiency elastic scrapers, and lateral feeding troughs. The film production efficiency is generally 2 of that of ordinary drum film machines. -3 times.

7. Two drums can be installed on the same trough for cooling or heating, which greatly improves the ability of making tablets or drying.

8. It can be used for Cooling crystallization and drying. One machine for multiple purposes

## SR结晶机

SR Crystallizer

### 概述



#### Keywords

scraper wall air plate cooling continuous crystallization machine;  
scraper wall air plate cooling batch crystallization machine;  
hollow plate cooling sweating purification crystallization machine

1. 由于在一个U形的卧式长槽形容器内组合排列了大量的空心冷却板片，其冷却面积一般是同样容积的釜式结晶机的5~20倍，冷却面积非常大。
2. 结晶机内所有的空间间隔不远处都有冷却表面，无冷却死角，物料的结晶很均匀。
3. 所有的表面都有清壁搅拌推进式刮板，使物料在结晶过程中的冷却效率大大提高，实现真正的快速冷却结晶，使一台本结晶机可替代十几台甚至更多的釜式结晶机。
4. 实现真正的连续结晶，由于在结晶的任何过程中始终有刮壁清壁作用，结晶机的传热系数和冷却效率可始终维持不变，这是其它结晶机所不能做到的。
5. 也可用于快速分批结晶，用于分批结晶时，一台机可替代5~10台甚至更多的釜式结晶机，可通过控制搅拌转速和冷却速度控制结晶颗粒大小。
6. 当用于发汗提纯结晶时，可通过大量空心板片的快速冷却在所有的空心冷却板片之间结成晶体，然后加热发汗，去除杂质后最终溶解排出获得纯度很高的产品，可解决列管式结晶等无法解决的难题。

1. Since a large number of hollow cooling plates are arranged in a U-shaped horizontal long groove container, the cooling area is generally 5 to 20 times that of the kettle crystallizer of the same volume, and the cooling area is very large.
2. All the spaces in the crystallizer are not far apart with cooling surfaces, no cooling dead corners, and the crystallization of materials is very uniform.
3. All surfaces have wall cleaning and stirring push scrapers, which greatly improves the cooling efficiency of the material during the crystallization process, and realizes real rapid cooling and crystallization, so that one crystallizer can replace a dozen or more kettle-types Crystallization machine.
4. Realize true continuous crystallization. Because of the scraping and cleaning effect during any process of crystallization, the heat transfer coefficient and cooling efficiency of the crystallizer can always remain unchanged, which other crystallizers cannot do.
5. It can also be used for rapid batch crystallization. When used for batch crystallization, one machine can replace 5-10 or more kettle-type crystallizers, and the crystal particle size can be controlled by controlling the stirring speed and cooling speed.
6. When used to purify crystals by sweating, crystals can be formed between all the hollow cooling plates by rapid cooling of a large number of hollow plates, and then heated to sweat, and the impurities are finally dissolved and discharged to obtain high-purity products. Solve unsolvable problems such as tubular crystallization.

## 喷雾干燥机

Spray Dryer

无菌喷雾干燥系统；  
高速离心喷雾干燥机；  
闭式循环喷雾干燥机

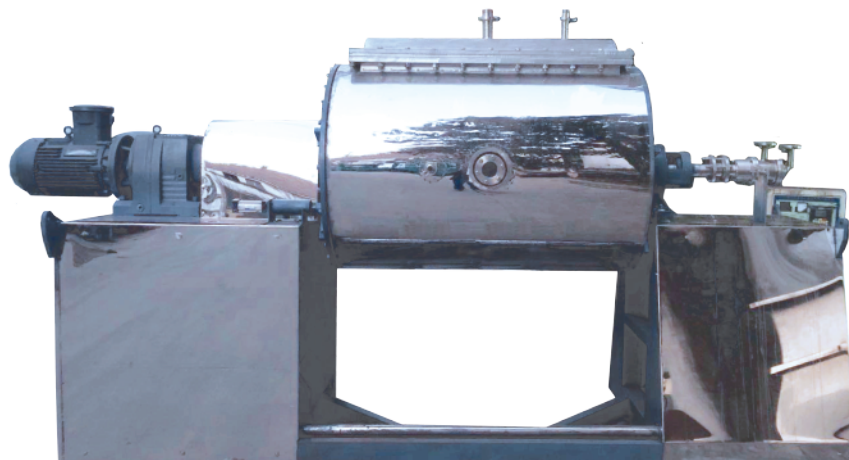
### Keywords

aseptic spray drying system;  
high-speed centrifugal spray dryer;  
closed cycle spray dryer



## 卧式结晶过滤洗涤干燥四合一设备

Horizontal crystal filter washing and drying four-in-one equipment



可以在设备中完成反应结晶、过滤、洗涤、干燥工艺，防止物料在不同工艺设备中转移可能造成的污染。设备搅拌机构和筒体夹套均可通入控温媒介，结合螺带式搅拌，结晶均匀和过滤洗涤干燥效率很高。

The reaction crystallization, filtration, washing, and drying process can be completed in the equipment to prevent possible pollution caused by the transfer of materials in different process equipment. Both the stirring mechanism and the barrel jacket of the equipment can pass through the temperature control medium, combined with the spiral belt stirring. The crystallization is uniform and the efficiency of filtration, washing and drying is high.

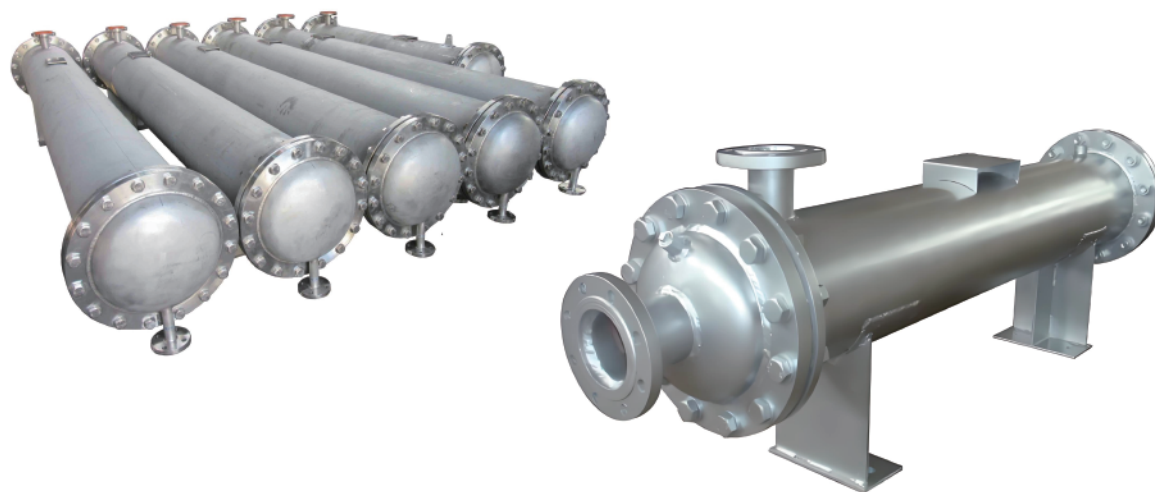
## 不锈钢反应釜

Stainless steel reaction kettle



## 列管式换热器

Shell and tube heat exchanger



我公司生产的列管冷凝器，按材质分为碳钢列管冷凝、不锈钢列管式冷凝器和碳钢与不锈钢混合列管式冷凝三种，按形式分为固定管板式、浮头式、U形管式换热器，按结构分为单管程、双管程和多管程，传热面积0.5-500m<sup>2</sup>，可根据用户需要定制。

Our company produces tube and tube condensers, which are divided into three types by material: carbon steel tube and tube condenser, stainless steel tube and tube condenser, and carbon steel and stainless steel mixed tube and tube condenser. They are divided into fixed tube and plate, floating head, and U-shaped tube heat exchangers by form. They are divided into single tube, double tube, and multiple tube passes according to structure, with a heat transfer area of 0.5-500 square meters, and can be customized according to user needs.

# 无锡市双瑞机械有限公司

Wuxi Shuangrui Machinery Co., Ltd

创新赢市场

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