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江苏省知名企业(商标)  
AAA 级资信企业  
ISO9001:2000认证企业  
信用(合同)AAA级企业  
江苏省优秀民营企业  
高新技术企业

宇通  
YU TONG

JIANGSU YUTONG DRYING ENGINEERING CO.,LTD  
江苏宇通干燥工程有限公司

江苏宇通干燥工程有限公司  
JIANGSU YUTONG DRYING ENGINEERING CO.,LTD

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**YLITONG**  
宇通干燥

New vision and new future  
新视野·新未来 ▶

高度决定视野，  
角度改变观念，  
尺度把握未来。

New vision and new future  
Altitude determination  
Angle change idea  
Scale grasp the future.

**YLITONG**  
宇通干燥  
诚信 守信 自信

志在 高远 超越自我  
With High Ambition Excel Self



Behind the success  
成功的背后

一种鼓励默默无声，	An incentive for silence,
一种精神持之以恒，	A spirit of perseverance,
一种信念坚强不息，	A belief in a strong and persistent,
一股力量豪气冲天，	A force in heroic spirit,
一生相随，携手奋进，	Be together for whole life, making progress hand in hand,
强强联手，合作共赢。	Combining the strengths and win-win cooperation.





## About Yutong 关于宇通

江苏宇通干燥工程有限公司成立于2000年，是在原常州市宇通干燥设备有限公司的基础上，重新整合、增资扩建、规范管理、规模扩产、全面升级而更名的企业。经过17年的发展，公司无论是企业规模、生产装备、设计水平、职工素质、管理能力、资金储备、营销策略、年度业绩等都有较大幅度的增长和提高，企业的发展空间和潜力都很大。是江苏省制药、食品、化工机械的重点骨干企业。

宇通公司是一家专业从事干燥、混合、粉碎、制粒，提取浓缩等设备制造的著名厂家，是国家级高新技术企业，公司先后通过了ISO9001：2008质量管理体系的认证，ISO14001:2004环境管理体系的认证，并获得了国家安监总局颁发的“生产安全标准化企业三级证书”，公司所生产的设备获得了美国国际品质认证委员会颁发的“高品质推荐证书”及江苏省科技协会颁发的“华东优秀科技产品证书”。公司重形象、创品牌，连续多年被评为“江苏省知名企业（品牌）”、“江苏质量诚信AAA级品牌企业”、“江苏省优秀民营企业”、“江苏省信用等级AAA企业”等，是中国化工干燥十强企业，中国制药装备行业协会会员单位，中国通用机械工业协会干燥设备分会的会员单位，中国石油和化学工业联合会技术装备干燥专业组副组长单位，主导和参与多项干燥设备的国家与行业标准的制订工作，企业的产品核心技术获得国家专利70项，其中发明专利30余项，填补了国内空白。

公司坐落在江南名镇——焦溪镇，占地50多亩，建筑面积16000多平方米，拥有员工150人，其中大专以上学历的50人，具有中、高级职称的工程技术人员20余人，随时为客户提供技术服务。公司还成立了由研究生、留学生、客座教授等组成的科研团队——江苏省植物提取干燥技术及装备工程技术研究中心，专门负责公司新品开发和完成国家对行业技术创新、重大项目改造的设计研究任务，强大的研发力量确保了每年开发至少5个新品。公司一直致力于干燥、混合、制粒、粉碎、浓缩、氮气闭路循环回收溶媒、节能降耗、高效环保、智能控制、一机多功能等多方面的开发与研究，业务遍及全国许多行业如制药、化工、食品、环保、新材料、新能源、石化、医疗、农业、农药、电子、矿山等多种行业，品种达上百个，年产各类干燥设备600余台（套），承接交钥匙工程、总包工程、分包工程项目等等。公司还拥有一支专业的现场施工、安装调试工程队，建立了完善的售后服务体系，确保每一台宇通设备能正确、及时、顺利地投入运行。

公司除了不断引入各种优秀技术人才，增强开发能力外，还不断引进国外新技术和新装备，提升了公司的制造工艺水平和产品档次。管理上同样通过引入高级管理人才所带来的先进的管理理念，对各层次的管理人员进行系统全面的培训，逐步完善了公司的管理体系，提升了公司的管理水平，从而提高了公司的效益。营销上通过成立外贸部，加快进入国际市场的步伐，近年来，产品分别出口美国、英国、塞浦路斯、澳大利亚、俄罗斯、乌克兰、墨西哥、日本、新加坡、马来西亚、土耳其、伊朗、坦桑尼亚、越南、台湾、香港等多个国家和地区，扩大了公司的知名度，提升了公司的实力和规模，也奠定了公司在行业中的地位。

公司注重企业文化的建立，厂区内设立了职工之家，添置了文化娱乐、体育锻炼设施，丰富了职工业余文体生活，提高了职工对企业有家一样的认同感。公司一贯致力于职工队伍的建设，定期分批进行培训，提高专业技能水平和文化素质。公司建立了党组织和工会组织，定期组织活动，让职工了解党和国家的重大政策，了解我们国家的发展变化，树立爱党、爱国、爱厂、爱家的四爱信念，提高职工的政治素养和道德水平。倡导员工树立“做事必须先做人，做好事必须先做好人”的公司理念，弘扬了企业文化。

公司奉行“科技是第一生产力，创新才能促发展”，“公平竞争、以诚取胜、以质取胜、以新取胜”为宗旨，力争做到“人无我有、人有我优、人优我新”。以科学严谨的态度，精益求精的理念，认真做好每一台设备，努力实现“求实创新、合作共赢”的奋斗目标。

Jiangsu Yutong Drying Engineering Co.,Ltd., was established at 2000, updated from previous Changzhou Yutong Drying Equipment Co.,Ltd by increasing capital, production expansion and re-integration. After 17 years development, our company has large increase and improvement in enterprise scale, production facility, design level, staff quality, management ability, capital reserves, marketing strategy, annual performance etc. Yutong company is also the key enterprise for Pharmaceutical, foodstuff and chemical industry in Jiangsu Province.

Jiangsu Yutong Drying Engineering Co.Ltd is National high and new technology enterprise and famous enterprise specialized in drying,mixing grinding, granulating, extracting machine etc. Our company has passed authentication of ISO9001：2008 international quality management system and ISO14001:2004 environment management system. We have been awarded the level 3 production safety standard enterprise by national safety bureau. Moreover, our products have acquired “high quality recommendation certificate” issued by American international quality authentication committee. “East china excellent technical product certificate” issued by Jiangsu science and technology association. We pay attention to the corporate image and build “Yuzhou” brand, we have been awarded “well-known enterprises (brand) in Jiangsu province”, “Jiangsu quality credit AAA brand enterprise”, “excellent private enterprises in Jiangsu province”, “AAA credit grade enterprise” for many years. Yutong company is also top 10 drying enterprise of China chemical industry, China pharmaceutical equipment industry association member, drying equipment branch member of China general machinery industry association, deputy group leader of Drying technology & Equipment of China petroleum and chemical industry federation. Yutong company has led and participated in a number of industrial and national standards for China dryer, won more than 70 national patents on core technology, of which more than 30 are invention patents which fill the domestic blank in China.

Our company is located in a famous town called ‘Jiaoxi town’ occupying over 50 Chinese acres field with 16000 square meter building area. Among our 150 staffs, 50 people are above junior college and 20 people are with medium and senior of professional engineering title, who can provide customers with technical services in any time. Our company also establishes technology team called Jiangsu plant extract drying technology & equipment engineering technology research center by postgraduates, international students, visiting professors specialized in developing new products and fulfilling national mission on industrial technology innovation and important project improvement etc. By our powerful technical ability, it ensures at least five new products developed a year. Yutong company is working on research and development with drying mixing granulating ,grinding, concentrating ,nitrogen closed circulating and solvent recovering, saving energy and reducing consumption, high efficiency and environmental protection, intelligent control, a machine with multi-function etc, our products are widely applied in pharmaceutical, chemical ,foodstuff, environment project, new material and new energy, petrochemical, medicine, agrochemical, electricity, mine industry etc. There are hundreds of different type and annual production with more than 600 sets of different machines. We also undertake turnkey project, contractor project and subcontract works etc. Our company owns a professional team specialized in producing, installing, debugging at site. We establish a sound after-sale service system to ensure each Yutong machine can be operated in correctly, timely and successfully.

In addition to introduction of a variety of excellent technical personnel and increasing our development capacity, we also introduce foreign new technology and equipment to improve our manufacturing process level and product grade. In management, we also bring in senior management personnel with advanced management concepts, offer comprehensive trainings to all levels of management personnel, our company gradually improves management system, enhances company's management level, thus improve company's benefit. In marketing, by establishment of foreign trade department to accelerate entering international market, we have exported our products to United States, England, Australia, Cyprus, Russia, Japan, Singapore, Turkey, Iran, Uzbekistan, Vietnam, Thailand, Taiwan, Hongkong and other countries and regions, expanding our fame and increasing company's strength and scale, also laying the position in whole drying industry.

Our company pays attention to the establishment of corporate culture, sets up a employees' homes in factory, bought entertainment and sports facilities to enrich employee amateur life and improve staff 's sense of identity for the enterprise. Our company has always been committed to the construction of staff team, offered regular training in batches to improve professional skills and cultural quality. Our company established party organizations and labor union, regularly organize activities to let staff understand the major policies of the party and country, to understand the development and change of our country, to set up a love party, patriotism, love family and love factory faith, improve their political quality and moral level. Advocating the establishment of “be a man before doing thing, Be a good man before doing good thing” concept of the company, we promote the corporate culture.

Our company adheres to “science and technology is the first productivity, innovation promotes development”, “fair competition, honesty, quality and innovation to win” for the purpose, and strive to achieve “I have when others lack, I am excellent when others have, I innovate when others excellent”. With scientific and rigorous attitude, the concept of excellence, we will do our best for each machine to strive to achieve realistic innovation, cooperation and win-win goal.





## About Yutong 关于宇通

### 【企业精神】

依托设备的质量为最根本。  
以不断完善对客户的服务，创造企业品牌。

### 【员工精神】

努力开拓、发展自我，坚持事事从我做起。  
和蔼、虔诚对问题不回避，不推托。  
坚持合作、稳定为基础，改善不足，锐意革新。  
你发现了问题而不努力去解决，这就使公司走向衰亡。

### 【经理人精神】

经理心中应对顾客和员工负责。  
员工发生的错误就是经理的问题。  
管理不仅是要管、还要理。  
做好一件大事=做好许多小事X管理统筹能力。

### 【Enterprise Spirit】

To regards product quality as the foundation of company.  
With no-stop improved service to create enterprise brand.

### 【Staff Spirit】

Pioneering efforts, self-development, insisting on doing things from myself.  
Kind, modest and not evade problems.  
Regarding cooperation and stability as basis, improving weakness and committing to innovation.  
When you found problem but not try to solve it, the company will go to die by this action.

### 【Manager' Spirit】

Manager should be responsible for his men and customers in heart.  
Employee's fault is manager's fault.  
Management is not just governing, but also combing.  
To do a big thing= to do many small things X coordinating and managing ability.

### 【我们的价值观】

为社会服务，劳动者最光荣。  
客户就是我们的上帝。  
损害公司利益，就是损害每一个在职员工的利益，因此每个员工都应与此行为作斗争。  
一个人的价值=他自己的价值（正）+他带给团队中他人的价值（正或负）区别可就大了。

### 【我们的团队观】

把困难视为：是在考验自己的一种方式。  
合作大于对抗，是我们成功的基础。  
个人的缺点并不可怕，关键是要看到别人的优点，对照自己。  
不要狂妄不羁，成功是因为一群人都伟大。  
自己往往是因为自己的表现超出了自己的预期，应该看得更远。

### 【我们的工作观】

社会并不需要我们，如果我们不提供有竞争力的服务。  
公司并不需要我们，如果我们不提供有价值的贡献。  
没有把工作做好，等于没有工作。  
一个对工作不负责的人不值得他人的信赖。  
你的小失误可能带给他人麻烦。

### 【我们的共同理想】

做时代楷模，创企业品牌。

### 【Our value】

Labors are the most glorious to serve for society.  
Customer is our god.  
To damage company's profit is damage the interest of every staff, so each person should struggle with this action.  
One's value=his own value (positive) + the value he brings to team (positive or negative),it will make big difference.

### 【Our team value】

To regard difficulty as: a way to test ourselves.  
Cooperation is bigger than confrontation, this is the foundation of our success.  
Personal shortcoming is not terrible, the key is to find other people's advantage and to improve themselves.  
Do not be arrogant, success is because of a group of great people.  
To have foresight and do better job than expect.

### 【Our Work View】

Society does not need us if we don't offer competitive service.  
Company does not need us if we don't provide valuable contribution.  
Do the work bad equals do no work.  
One who is not responsible of his job doesn't deserve others' trust.  
Your tiny mistake may bring huge trouble to other people.

### 【Our Common Dream】

To be model of time and to create our own brand.







Large-scale,  
high standards

大规模，高标准

YUTONG DRYING  
YUTON



完美的品质，取决于制造手段的先进

Perfect quality depends on the advanced manufacturing means

“质量是企业的生命” 公司对内弘扬企业文化，贯彻质保体系，对外传达企业精神，树立品牌概念。为确保产品质量，公司配备了世界先进的一流生产装备，运用崭新的工业概念及强大的技术力量，生产出符合国际标准的高品质终极产品。

“Quality is the life of enterprise”. Inside company we carry forward enterprise culture and implement quality guarantee system; outside company we convey enterprise spirit and build brand concept. In order to ensure product quality, our company equipment the advanced production facility and use new industrial concept and strong technical power to produce the final products which comfort to international high quality standard.

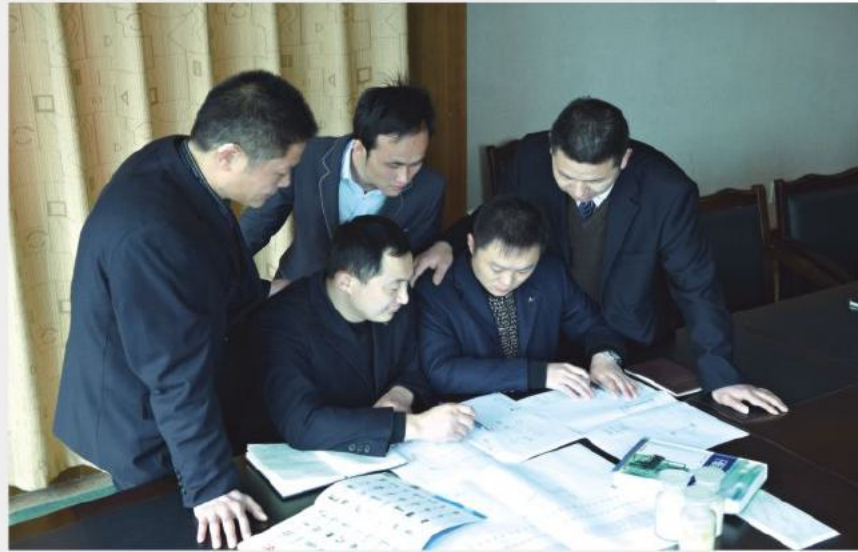


更专注于科技的深度，历练专业上的修为，做实之后，方可为强。设备精良，标准化生产，精细完美，严谨务实。

Pay more attention to the depth of technology, engage in the accumulation of profession, it turn to be stronger after being stability. Our equipments are of standard production and elaborate with Yutong people's rigorous and pragmatic attitude.







## Technology first, quality guarantee

科技先行，品质保障

以“绝不生产低技术含量、低性能、低质量的产品”为技术原则，始终把技术领先放在企业活动的首位，引进专业的技术人才，组成业内具有领先水平的技术力量，不仅有一套完整的、严密的质量管理制度，更将其切实付诸实施，无论是元件的优化选择，还是产品出厂检验，均一丝不苟、按照国家标准严格把关，真正确保产品的品牌品质。

Regarding “never make low-technology, low-performance, and low-quality product” as our technical principle, we all the time put technology advantage into first position of all enterprise activities. Yutong own the advanced technology power by introducing professional technical talents and build a complete and strict quality management system. More important, all these systems have been into practice, no matter selecting components or doing the factory test, we practice scrupulously and strictly according to National standards to ensure brand quality of our products.



YUTONG DRYING

YUTON

## Conquer the market, achieve the dream

征服市场，成就梦想

宇通实施积极有限的营销战略，构筑起全国性的营销网络，在全国大中城市设立了多家办事处，公司十分重视一体化服务体系的建设，从生产销售、物流配送、工程设计、施工敷设、工程维护以及培训支持等各个环节，提供准确快捷的一站式全程服务，为客户实现卓越价值。

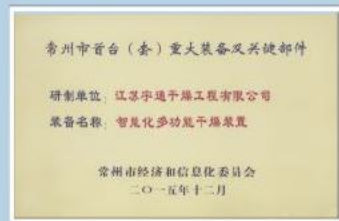
By implementing proactive marketing strategy, Yutong have set lots of offices in main cities of China and built a nationwide market network.. Our company attaches great importance to the structure of all-in-one service system, we provide quick and precise one-station full service from production, delivery, project design, installation, maintenance and training for customers to achieve splendid value from them.







**Yutong**  
**Aptitude**  
宇通资质







Yutong  
Aptitude  
宇通资质





# 干燥简述

在当代，经过工业生产实践证明，干燥被认为是一个非常重 要的工业操作，其工艺技术的不断提升及配套装备水平的相应改进，应用范围越来越广泛，几乎涉及国民经济的每一个部门。我们“宇通”人站在前辈们原有技术积淀的基础上，始终密切关注国内外干燥先进技术的研究与发展，通过十多年来自身的开发、创新和总结，在干燥这个专业领域深入、深入，再深入……

## 一、干燥过程的基本常识

干燥通常是指将热量加于湿物料并排除挥发性湿分（大多数情况下是水），而获得一定湿含量固体产品的过程。湿分以松散的化学结合形式或以液态溶液存在于固体中，或积聚在固体的毛细微结构中。这种液体的蒸汽压低于纯液体的蒸汽压，称之为结合水分。而游离在表面的湿分则称为非结合水分。

当对湿物料进行热力干燥时，是传热传质同时伴随发生的除湿过程。以下两种过程相继发生，并先后控制干燥速率。

过程1. 能量（大多数情况是热量）从周围环境传递至物料表面，使表面湿分蒸发，液体以蒸汽形式从物料表面排除，此过程的速率取决于温度、空气温度、湿度和空气流速、暴露的面积和压力等外部条件。此过程称外部条件控制过程，也称恒速干燥过程。

过程2. 内部湿分传递到物料表面，随之再发生表面蒸发。物料内部湿分的迁移是物料性质、温度和湿含量的函数，此过程称内部条件控制过程，也称降速干燥过程。

干燥速度由上述两个过程中较慢的一个速率控制。从周围环境将热能传递到湿物料的方式有对流、传导或辐射。在某些情况下可能是这些传热方式联合作用，工业干燥器在形式和设计上的差别与采用的主要传热方法有关。在大多数情况下，热量先传到湿物料的表面然后传入物料内部。但是介电，射频或微波干燥时供应的能量在物料内部（有湿分处）产生热量，然后传至外表面，而后变成蒸汽从其中分离出来，最后得到湿含量较低的且达到某一规定要求的干燥产品。

在干燥过程中，涉及到湿物料性质、干燥介质的性质、干燥速率以及基本干燥流程等概念，还应该掌握学习这些基本知识，对于深入理解各种干燥过程的特点是必不可少的。特别值得提及的是，在对流干燥过程中，最常用的最廉价的干燥介质是空气，只有当除去的挥发分是有机溶剂时，才用氮气或其他惰性气体作为干燥介质，并采用密闭循环方式操作，而且，不管所用哪一种干燥介质，在干燥过程中的变化机理都是相同的。它既是热量的载体，同时又是能将物料中挥发出来的湿分带出干燥器外。

对于干燥技术有三项目标是学者们公认的：一是干燥操作要保证产品质量，二是干燥作业对环境不造成污染，三是要节能。

## 二、干燥器选择的原则

对于干燥操作来说，干燥器的选择是非常困难而又复杂的问题。因被干燥物料的特性、供热的方法和物料干燥介质系统的流体动力学等必须全部考虑。由于被干燥物料种类繁多，要求各异，决定了不可能有一个万能的干燥器，只能选用最佳的干燥方法和干燥器形式。

(1)选择干燥器要考虑的因素在选择干燥器形式时，要考虑下列因素：

①被干燥物料的性质

- |             |             |         |        |
|-------------|-------------|---------|--------|
| a.湿物料的物理特性； | b.干物料的物理特性； | c.腐蚀性；  |        |
| d.毒性；       | e.可燃性；      | f.粒子大小； | g.磨损性。 |

②物料干燥特性

- |                         |               |
|-------------------------|---------------|
| a.湿分的类型（结合水，非结合水或二者兼有）； |               |
| b.初始和最终湿含量；             | c.允许的最高干燥温度；  |
| d.产品的粒度分布；              | e.产品的色，光泽、味等。 |

③回收问题

a. 粉尘回收；b.溶剂回收。

④用户安装地点的可行性问题

- |                |                    |              |
|----------------|--------------------|--------------|
| a.空间是否能布置此干燥系统 | b.可用的加热空气的能源类型及电能； |              |
| c.排放的粉尘条件；     | d.噪声；              | e.干燥前后的衔接工序。 |

干燥器最后的选择，通常提出一个优化的方案，即包括操作的总成本、产品的性质、安全的考虑和安装检修的方便等。除上述之外，还要进行实验室实验，证明选择的形式是适用的（即可行性认证）。

(2)干燥器选择的步骤

干燥器选择的起始点是确定或测定被干燥物料的特性，进行干燥实验，确定干燥动力学和传递特性，确定干燥设备的工艺尺寸，进行干燥成本核算，最后确定干燥器形式。若几种干燥器同时适用时，要同时进行干燥实验，核算成本及方案比较，最后选择其中最佳者。

# BRIEF OF DRYING

In nowadays, drying has been a very important industrial operation. Along with its development of technology and improvement of mating devices, it has been used more and more widely in our lift.

“YUTONG” always pay intimate attention on the development and research of drying technology both at home and abroad. On the basis of more than ten years' experience and learning new technology, we are trying our best to improve ourselves.

## Basic knowledge of drying process

Drying is a process that using heat to contact with wet raw material and remove humidity (usually is water), then get solid products which own a certain humidity content. The humidity usually exists in raw material in the form of bulky chemically bond or liquid state, or be in the fine structure of solid. When the steam pressure of liquid in raw material is lower than pure liquid, then this kind of humidity is called bound moisture; while the humidity that free on the surface called non bound moisture.

Drying is a dehumidifying process accompanied with heat and mass transferring. It includes the following two stages:

Stage one: heat energy will be transferred from surrounding environment to material surface to evaporate moisture. The velocity of this stage is decided by external factors, such as air temperature, humidity and flow rate, exposed surface area, pressure and so on. This process is totally controlled by external factors, so it also named constant rate drying process.

Stage two: humidity moves from internal to surface and be evaporated. This stage is controlled by internal factors, e.g. material features, temperature, and moisture content. It is a falling rate of drying process.

The whole drying speed depends on the slower one of above two stages. Heat will be transferred to raw materials through drying mediums by way of counter-flow, conduction, heat radiation and dielectric. In some situation, it maybe combined action of these heat transfer way. The differences in shape and design of industrial dryers is relative to the main heat transfer way. Most time, heat will be transferred to the surface of material first, then go inside. But for dielectric, radio frequency, and micro wave drying, the energy produces heat inside of material, and then be transferred to outer surface to be evaporated.

In the drying process, there are several conceptions we should know, such as features of wet materials, characters of drying mediums, drying rate and basic drying flow. Usually, the most typical and cheap medium is air in the counter-flow drying process. Only when the volatile matter is organic solvent, Nitrogen or other inert gases will be used. No matter which drying medium be used, the mechanism is the same. Medium is the heat carrier, as well as the carrier taking out of the moisture.

For drying technology, three goals must be achieved: 1, good product quality; 2, no pollution; 3, save energy.

## The principle of choosing drying equipments

It is a difficult and complex thing to choose right drying equipments. The characters of raw materials, heat source and fluid dynamics of raw material-drying medium system must be considered completely.

1. Factors for choosing a dryer

① characters of raw material

- |                                      |                                      |                 |
|--------------------------------------|--------------------------------------|-----------------|
| a. Physical property of wet material | b. Physical property of dry material |                 |
| c. Corrosivity                       | d. Toxicity                          | e. Flammability |
| f. Size of material                  | g. Wearability                       |                 |

② drying features of material

- |  |
|--|
| a. Type of moisture (bound water, unbound water or both of them) |
| b. Initial and final water contents                              |
| c. Max. temperature can bear                                     |
| d. Particle size distribution of material                        |
| e. Color, luster, savory of product, etc.                        |

③ recovery

a. Dust b. Solvent |

④ feasibility of set-up place

- |                                   |                                 |                 |          |
|-----------------------------------|---------------------------------|-----------------|----------|
| a. Space                          | b. Heat source and power supply | c. Dust exhaust | d. Noise |
| e. Engagement fore-and-aft drying |                                 |                 |          |

On the basic of above information, a project can be designed including total cost, characters of products, safety, installation and repairing. Further more, a test should be carried out to check the project (Feasibility certification).

2. Procedures of selecting a dryer

(1). Make sure or measure the characters of raw material

(2). Do a test to make sure drying dynamics, transfer characteristics and size of dryer

(3). Calculate the cost and choose proper dryer. If there are several type of dryers are suitable for, then should compare them and choose the best one.



# 喷雾干燥系列

## 喷雾干燥工艺描述

简单的说就是一种在干燥室内把需要干燥的液体通过雾化器雾化成微小液滴，并借助干燥介质热风与其直接接触、混合来完成传热与传质的过程，并通过气固分离而后获得产品的方法。

原料液可以是溶液、乳浊液、或悬浮液，也可以是熔融液或膏糊状物。但具体要根据液体特性来确定是否适合用喷雾干燥工艺来获得产品。

## 喷雾干燥的特征

料液雾化为雾滴及雾滴与热空气的接触、混合是喷雾干燥独有的特征。

## 喷雾干燥系统的组成

输液泵、雾化器、空气加热器、热空气分配器、干燥室、产品收集器、介质循环机构等。

## 喷雾干燥可以分为三个基本过程阶段

第一阶段——料液的雾化。目的在于将料液分散为微细的雾滴，具有很大的表面积，当其与热空气接触时，雾滴中水分迅速气化而后干燥成粉体或颗粒状产品。

第二阶段：雾滴和空气的接触。此二者接触的同时伴随着混合及流动的过程，实际上这一阶段是一个进行着传热与传质的干燥过程，经历着恒速和降速的阶段。

第三阶段：气固分离。即干燥产品与空气分离的过程。分离的方法有多种，要结合产品的物理化学特性及满足工艺要求来研究确定。

## 喷雾干燥的工艺流程

从喷雾干燥的工艺分析，其介质循环的方式有如下四种：

开放式循环喷雾干燥系统：本系统的特征是需要干燥的料液全部是水溶液（或湿份没有需要回收，并且无毒、无害的溶液），干燥介质是环境中的空气，而且单次使用并经过除尘后被排放到环境中。

半封闭（部分废气再循环的）喷雾干燥系统：本系统的特征1、为了回收部分废气余热，以节省能源。再循环量一般为排放总量的20%—30%，最高可以达到50%，视排气温度和对产品的最终水分要求而定。2、也可能有其它特定要求的半封闭循环系统。

闭路循环喷雾干燥系统：本系统的特征是基于干燥介质为惰性气体的再循环和再利用。

无菌的喷雾干燥系统：为满足特定的工艺要求而采用的一种高标准、严要求的循环系统。特征是原料液及循环介质的完全过滤和杀毒灭菌为必要条件，而系统也确保是密闭的，以及配套件的设计都要按照就地灭菌(SIP)设计。

这一系统的雾化形式一般采用压力式的，常规情况下的离心式被认为是不适宜的。上述其工艺流程，无论是什么原因和目的，采取的介质循环方式无外乎上述四种。

## 喷雾干燥机组的关键与难点

雾化器：雾化效果的好坏，直接影响产品的均匀性与品质，选择并设计好这一系统至关重要。传统雾化器的形式有：气流式雾化器、压力式雾化器、旋转式雾化器。但我们先锋公司在结构上进行了专业化的研究与创新，努力使之达到理想效果。事实上技术也在不但提升。但这项研究工作我们一直在持续进行着。

热风分配器：风向的控制与风量的分配，将直接影响气流在干燥室内的运动，就影响干燥效果，设计好这一环节至关重要；我们先锋公司在研究，如何控制流量均匀、气流方向与进入方式，适量调节等方面付出了很大努力，目前掌握的技术比较理想，还在深入研究中。

干燥室：被雾化后的微细液滴，在与热气流的混合过程中，其运动的方向和轨迹与在适合尺寸的干燥室内完成干燥，能保证有足够的雾距和停留时间是至关重要的；

锥形底出料和排气方式的组合：这是相当重要的，它涉及到产品收率、锥体积料、气流平衡、清洗便捷等问题，在这一方面，我公司研究较深，组合的形式根据物料的特性和工艺要求，已有多种形式可以选择。

喷雾干燥操作中的粘壁问题：在实际操作中，被干燥物料（有些特殊物料）粘附在塔内壁上，这一现象是设计者和操作者必须考虑和研究的问题。因为它会影响产品质量、影响连续生产、甚至无法正常工作。我公司在这方面进行了长期的研究，将物料粘壁分为三种类型：半湿物料粘壁、热熔性粘壁、干粉表面吸附。

就上述四个关键设计点都有可能造成这一粘壁现象，我们会分清楚形成粘壁的原因，有针对性的采取技术措施，具体用夹套冷却空气吹扫、间隙震动、转动刮刀、高压风膜等来解决好这一问题。

# ATOMIZING DRY

## Description

Generally speaking, It is a way of drying liquid to powder. By the connecting and mixing the hot air and material the process finishes. And then separate the air and powder.

## Feature of spray drying

the liquid and hot air connecting and mixing is the unique feature of the spray drying.

## The composition of spray drying

transfer pump, atomizer, air heater, hot air distributor, drying chamber, products collector, and medium circle system.

## The basic phase

The spray drying can be separated to 3 phases

A. The first phase: the atomizing of the liquid .in order to separated into micro drops and be very big surface. And when connected with hot air, the moisture of the drop evaporate and dried to powder of granulate.

B. The second phase: the contact of drops and dir. They contact and with mixing and flowing, In fact this phase is a drying process of heat transferring and mass transferring, including constant speed period and speed droop period.

C. The third phase: separation of the air and powder, There are many kinds of methods to separate. Proper method must be chosen on basis of product chemical and physical demands.

## The technical process of spray drying

According to the technical analyzing of the spray drying, the medium circulation has four methods as follows:

A. Open circulation spray drying system: The feature of this system need the material liquid to be aqueous solution (or moisture no need to be recalled and innocuity and harmless). Drying medium is the air and will be exhausted after single use.

B. Half closed (recycle of the waste air) spray drying system: the feature of the system  
1. for reclaim the heat of the waste air to save energy .the volume of the recycle is 20%—30% of the total exhaust volume 50% max. It must be according to the final moisture content requirements

2. and also have other half closed system with special requirements

C. Closed spray drying system: the feature of this system is based on the recycle and reclaim of the inert gas as drying medium

D. The combination of conical bottom and air outlet method: it is very important. It relative to product yield, conical material stock, balances of air flow, clean. YUTONG is keep searching about it, and now there are many methods to be chosen.

The above technical process is the only 4kinds for any reason and purpose.

## The key to the spray drying equipment and its difficulty.

A.Atomizer: the quality of the atomizer effect the evenness and quality of the products, choosing and design of this system is very important.

Types of traditional atomizer: air flow atomizer, pressure atomizer,revolving atomizer. YUTONG has professional research on it and become better. And we continue doing so.

B. Hot air distributor: the wind direction controlling and air volume distributing will effect the air flow action in the drying chamber and the drying efficiency .so this is very important.

YUTONG is keep searching about how to control the evenness, air direction and the method of entering. Now we have big success and still searching.

C. Drying chamber: the atomized micro drops is mixed with hot air flow and the direction and track in the suitable size chamber. So ensure the enough distance of drops and stay time is very important The combination of conical bottom and air outlet method: it is very important.

D. It relative to product yield, conical material stock, balances of air flow, clean. YUTONG is keep searching about it, and now there are many methods to be chosen.

E. The problem of stick to the chamber:

In process, material sticking to the chamber, this is very necessary for us to concern and research because it will effect the production quality .and the continues producing, even can't work

YUTONG is keep searching about it for a long time .we separated it into 3kinds:half wet material,hot meltable material,dry power surface.

We are keeping research about it. And now we use jacket cooling, air blow, vibration, and revolving knife , high pressure screen to solve these problems .



## ZPG Series Spray Dryer for Chinese Traditional Medicine Extract

ZPG系列中药浸膏专用喷雾干燥机



### 概述 Descriptions

◆ 该机采用全封闭式,配有初、中、高效空气过滤器三级净化装置,过滤后的空气达十万级要求。筒体装有冷风夹套装置,使壁温 < 80℃,物料在壁上停留不会有遇热软化现象,大大增加了收粉率(达95%以上),而且不会产生混药现象和粘壁现象。

◆ 基本原理:中药浸膏高速离心喷雾装置是离心式喷雾干燥技术在特定物料干燥中的应用,也是利用高速离心式雾化器使物料分散成雾状,与热空气充分接触,完成瞬间干燥,形成粉状成品的干燥装置。

◆ 中药浸膏专用喷雾干燥机是专门用来解决中药浸膏和植物提取液的喷雾干燥机,它解决了物料在原LPG高速喷雾干燥机在中药浸膏干燥中出现的以下情况:

- 1、物料粘壁,收粉率低;
- 2、物料在壁上停留时间长,产生物料的焦化变质现象;
- 3、难以清洗,不符合GMP要求;
- 4、产量低: LPG-150型喷雾干燥机: 只能处理50-60kg/h料液。

◆ 鉴于以上状况,我公司根据中药浸膏的物料性质与工艺要求解决了中药浸膏干燥难题,干燥后的物料颜色好、不变质、大大地提高了工厂的经济效益。本机与高速离心喷雾干燥机相比有以下特点:

- 1、采用了三级空气净化,使进风达到10万级要求;
- 2、采用了冷风夹套装置,使内壁温度 ≤ 80℃,物料在壁上停留也不软化;
- 3、整个体积是原LPG标准离心喷雾的3.5倍;
- 4、采用快开冲洗装置,适用于多品种生产要求,也可配CIP自动清洗装置;
- 5、除尘采用了湿式除尘,使粉尘无外出,符合环保要求;
- 6、采用气扫装置,其效果更令人满意;
- 7、采用了PLC控制,程控系统屏幕显示;
- 8、可以配除湿风送集中收料系统,消除回潮及软化现象。

◆ The machine adopts full close structure with primary middle and high effect air filter to fit one hundred thousand grade requirement, the tower body is provided cool air jacket to make wall temperature less than 80℃, when the material stops on wall it will not be preheated and softened, it increases the powder collection rate(95%)and will not appear mixing and sticking wall phenomenon.

◆ Basic Principle: high-speed centrifuge atomizing for the extract of traditional Chinese medicine is an application of centrifuge atomizing technique. It also uses high-speed atomizer to make liquid material into foggy droplet to contact with hot air fully to finish instant drying and get final powder product.

◆ The ZPG Chinese herb extract spray dryer is specially designed to solved the problems which previous LPG spray dryer meets during drying herb extract and plant extract product as followings:

1. Raw material sticks to wall and powder collection rate is low.
2. Raw material stays on wall for a long time, resulting in coking and deterioration phenomenon.
3. It is difficult to clean and can not meet GMP requirements.
4. Low in output: LPG-150 type dryer can only process 50-60kg/h of raw material liquid.

◆ In view of above situation, according to properties and process requirements of traditional Chinese herb extract, our factory has researched and designed the special spray dryer for the extract liquid and got patents. It solves the historical difficult problems in drying the extract and product color after drying is good. The dried raw material does not degenerate too. It raises the economic benefit for user greatly. There are special features as below compared to ordinary LPG type spray dryer:

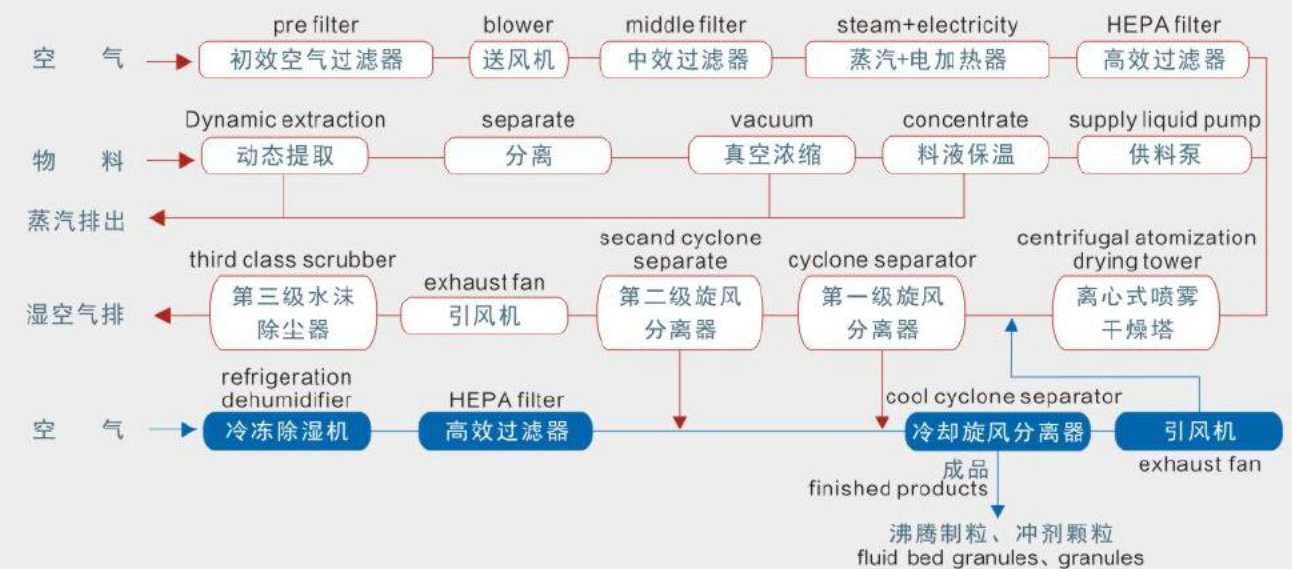
1. Adopt three-grade air filter, the inlet air reaches one hundred thousand grade.
2. Adopt wall cooling device, the temperature of inner wall will be less than 80℃. Even if raw material stays on inner wall surface, it will not be burnt and softened.
3. Its whole volume is 3.5 times of standard LPG high-speed spray dryer.
4. Adopt quick-open washing device, it can meet requirements for varieties production, the CIP auto cleaning device can also equip if needed.
5. Adopt wet duster and no powder dust leak out. It is in conformity with the requirements of environment protection.
6. Air sweeping device is optional, the clean effect is satisfied for some product.
7. Adopt PLC control and touch screen system to display system processing.
8. Dehumidifier and centralized collect system can be used to avoid product re-wetting and softening.

### 特点 Features

- 1、塔体具有冷风夹套,降低内塔体温度,消除成品遇热软化现象;
- 2、塔体顶上装有雾化器风冷装置,降低雾化器温度,同时有效消除物料回流返顶,遇热焦化现象。
- 3、塔体、管路配有手动快开清洗孔及排污孔,也可配CIP自动清洗装置;
- 4、可以配自动控制恒温加料罐;
- 5、可以配手工高压洗塔随机附件;
- 6、与物料接触的部分采用不锈钢材料制作(或全不锈钢制造);
- 7、物料收集采用两极旋风除尘装置和湿式除尘器除尘;
- 8、进风温度实现自动控制及连续装置;
- 9、可以配气扫装置;
- 10、配有初、中、高效空气过滤器,空气过滤达到10万级净化等级;

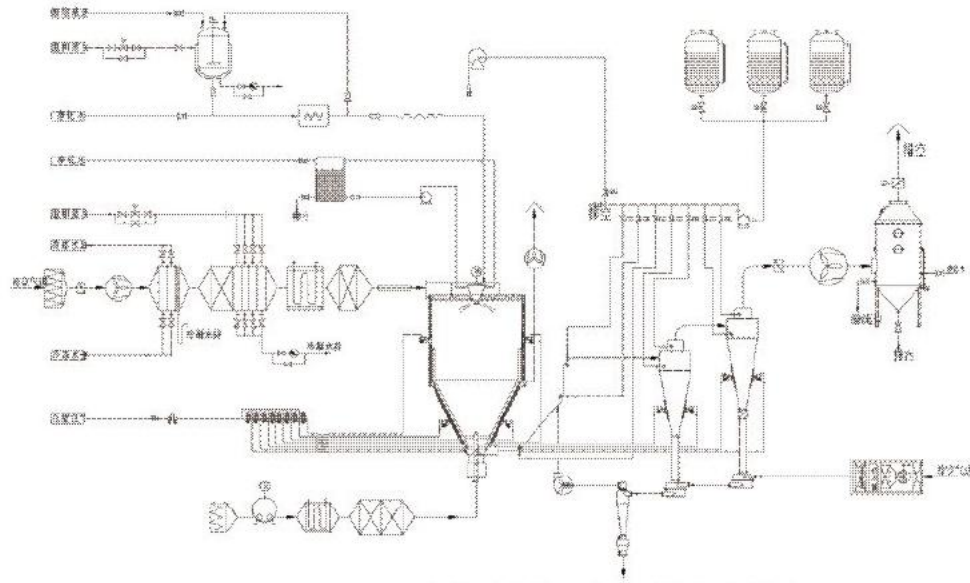
1. The tower body is equipped with cool air jacket to reduce inside tower temperature and eliminate product preheating and softening phenomenon.
2. The atomizer on top of tower is equipped with cooling device to reduce atomizer temperature, at the same time effectively eliminate material return to the top in eddy current and avoid preheat coking phenomenon.
3. Tower body and pipeline is equipped with manual quick-open cleaning hole and drain hole, CIP automatic cleaning device can also equipped if needed.
4. A automatic control constant temperature feeding tank can be equipped.
5. Manual high pressure washing tools can be offered as accessories together with spray dryer.
6. All product contact parts are made with stainless steel (or whole parts with stainless steel)
7. Product collect way adopts two grade cyclones and water film duster.
8. Air inlet temperature is automatic and continuous control which is interlocked with feeding.
9. An air sweeping device can be optional for some product.
10. It can equip primary, middle and high efficient air filter to get one hundred thousand grade clean air.

### 流程图 Flow chart

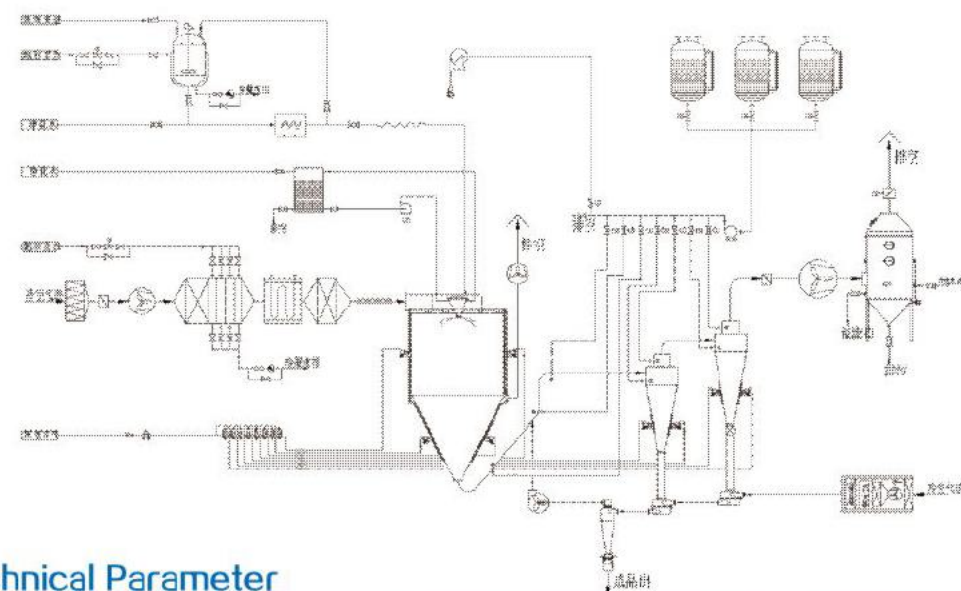




ZPG 中药浸膏离心喷雾干燥机流程图- I  
ZPG Spray Dryer Flow Drawing I



ZPG 中药浸膏离心喷雾干燥机流程图- II  
ZPG Spray Dryer Flow Drawing II



技术参数 Technical Parameter

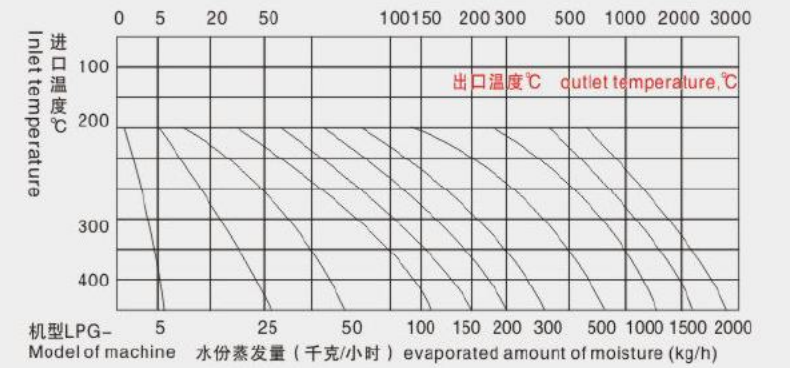
型号 spec	ZPG-25	ZPG-50	ZPG-80	ZPG-100	ZPG-150	ZPG-200	ZPG-300	
水份蒸发量 evaporation capacity(kg/h)	25	50	80	100	150	200	300	
料液处理量 process amount of material liquid(kg/h)	25-34	50-68	80-108	100-135	150-203	200-270	300-406	
成品含量 output of finished product(kg/h)	4.8-7.2	9.2-14	14.8-22.4	18.4-28	24-42	36.8-56.4	55-85	
湿物料含固量 solid content of material liquid(%)	18-30							
成品含水率 moisture content of finished product(%)	3-5							
电功率 electric power(kw)	63	99	132	153	204	246	330	
加热源 heat source	蒸汽加热 Steam plus electricity							
产品捕集方式及效率 collecting method of product and its efficiency	一、二级旋风除尘器或三级湿式除尘器 ≥ 95%							
自控仪表 automatic control meters and instruments	热风温度及排风温度指标, 自动调节温控仪 indicator of hot air and exhaust air temperature							
进风温度 temperature of air inlet(°C)	160-220							
出风温度 temperature of air outlet(°C)	80-100							
外形尺寸 overall dimensions(mm)	长L	7000	8000	9800	11000	12200	14100	15000
	宽W	4000	5000	5700	6200	7000	7800	9000
	高H	6200	6900	8000	8900	10750	11900	13000

LPG Series  
High speed Centrifugal  
Spray Dryer

LPG系列高速离心喷雾干燥机

水分蒸发曲线

Curve of Moisture Evaporation



概述 Descriptions

离心喷雾干燥是液体成形工艺和干燥工业中最广泛应用的工艺。最适用于粉末从溶液、乳液、悬浮液和糊状液体原料中生成粉状、颗粒状固体产品。因此，当成品的颗粒大小分布、残留水份含量、堆积密度和颗粒形状必须符合精确的标准时，离心喷雾干燥是一道十分理想的工艺。

The centrifugal spray dryer is the widely used technology in the liquid shaping technology and drying industry. It is most suitable for producing powder, particle solid products from materials of solution, emulsion, solidus and culpable paste states. Therefore, when the particle size of the distribution final products, the residual water contents, the stocking density and the particle shape meet the precision standards, the centrifugal spray dryer is one of the most desired technologies.

工作原理 Principle of work

空气经过过滤和加热，进入干燥器顶部空气分配器，热空气呈螺旋状均匀地进入干燥室。料液经塔体顶部的高速离心雾化器，（旋转）喷雾成极细微的雾状液珠。与热空气并流接触，在极短的时间内可干燥为成品。成品连续地由干燥塔底部和旋风分离器中输出，废气由风机排空。

After filtering and heating, the air enters air distributor at the top of the dryer. The hot air enters the drying chamber in the spiral form uniformly. By passing through the high-speed centrifugal atomizer at the top of the tower, the material liquid will be rotated and sprayed into extremely fine mist liquid beads. Through the very short time of contacting with hot air, the materials can be dried into the finished products. The finished products will be discharged continuously from the bottom of the drying tower and from the cyclone separator. The waste gas will be discharged by blower.





LPG Series  
High speed Centrifugal  
Spray Dryer

LPG系列高速离心喷雾干燥机



机组特点与要点 Features and Outlines

一、特点

1. 干燥速度快，料液经雾化后，表面积大大增加，在热风气流中，瞬间就可蒸发95%~98%的水份，完成干燥时间仅需数秒钟，特别适用于热敏性物料的干燥。
2. 产品具有良好的均匀度、流动性和溶解性，产品纯度高，质量好。
3. 生产过程简化，操作控制方便。对于湿含量40~60%（特殊物料可达90%）的液体能一次干燥成粉粒产品，干燥后不需粉碎和筛选，减少生产工序，提高产品纯度。对产品粒径，松密度、水份，在一定范围内可通过改变操作条件进行调整，控制和管理都很方便。

二、要点

1. 雾化：机组的雾化系统必须确保雾滴大小分布均匀，这是至关重要的。因为这样才能确保产品质量的合格率。
2. 热气流与雾滴的接触：有足够量的热气流进入干燥室时，必须考虑热气流的方向及角度，无论是并流、逆流还是混流确保与雾滴的充分接触才能进行充分的热交换，这是至关重要的。
3. 管道角度及锥体角度的设计：选择好适合的角度，这是至关重要的，我们从生产的近千台机组中，获取了一些经验数据，可以和大家共享。

Features

1. High speed of drying. After the spraying of the material liquid, the surface area of the material will be increased greatly. In the hot-air flow, 95%~98% of water can be evaporated at the moment. The time of completing the drying needs only several seconds. It is especially suitable for drying the heat sensitive materials.
2. The final products own the good uniformity, mobility, and dissolving capacity. And the final products are high in purity and good in quality.
3. The production procedure is simple and the operational control easy. The liquid with the moisture contents 40~60% (for special materials, The contents may reach 90%) can be dried into powder or particle products at a time. After the drying, there is no need for smashing and sorting, so as to reduce the operation procedures in the production and Chance the product purity. The product particle diam enters, looseness and water contents can be adjusted through changing the operation condition in a certain scope, It is very convenient to carry out the control and management.

Outlines

1. Atomization: Atomizing system must ensure a uniform distribution of the fog drops, which is crucial to ensure a good qualified rate of products.
2. Contact of hot airflow and fog drops: When enough hot air enters into drying tower, the direction and angle of hot air flow have to be considered, no matter co-current flow, adverse current or mixed flow, must ensure the sufficient heat exchange, it is crucial.
3. The angle design of pipelines and cone: It is very important to select the suitable angle, here we would like to share our experience and data from production of thousands of this equipment.

技术参数 Technical Parameter

型号 Model	5	25	50	100	150	200-10000
入口温度℃ Inlet temperature	140-350 自控 140-350 automatic control					
出口温度℃ outlet temperature	~ 80-90					
水份最大蒸发量 kg/h Maximum moisture evaporation	5	25	50	100	150	200-10000
离心喷雾头传动形式 Centrifugal spray head drive	压缩空气传动 Compressed air drive		机械传动 mechanical drive			
转速 (r.p.m) speed	25000	18000	18000	18000	15000	8000-15000
喷雾盘直径 (mm) Spray disc diameter	50	100	120	140	150	180-340
热源 heat source	电 electric	电 + 蒸汽 Electricity + steam		电 + 蒸汽、燃油、煤气 Electricity + steam, fuel, gas		
电加热最大功率 kW Maximum power of electric heating	9	36	63	81	99	
外形尺寸 L x W x H (m) Outline dimension	1.8 x 0.93 x 2.2	3 x 2.7 x 4.26	3.7 x 3.2 x 5.1	4.6 x 4.2 x 6	5.5 x 4.5 x 7	根据具体情况确定 Determined according to specific circumstances
干粉回收率 % Dry powder recovery	≥ 95	≥ 95	≥ 95	≥ 95	≥ 95	≥ 95

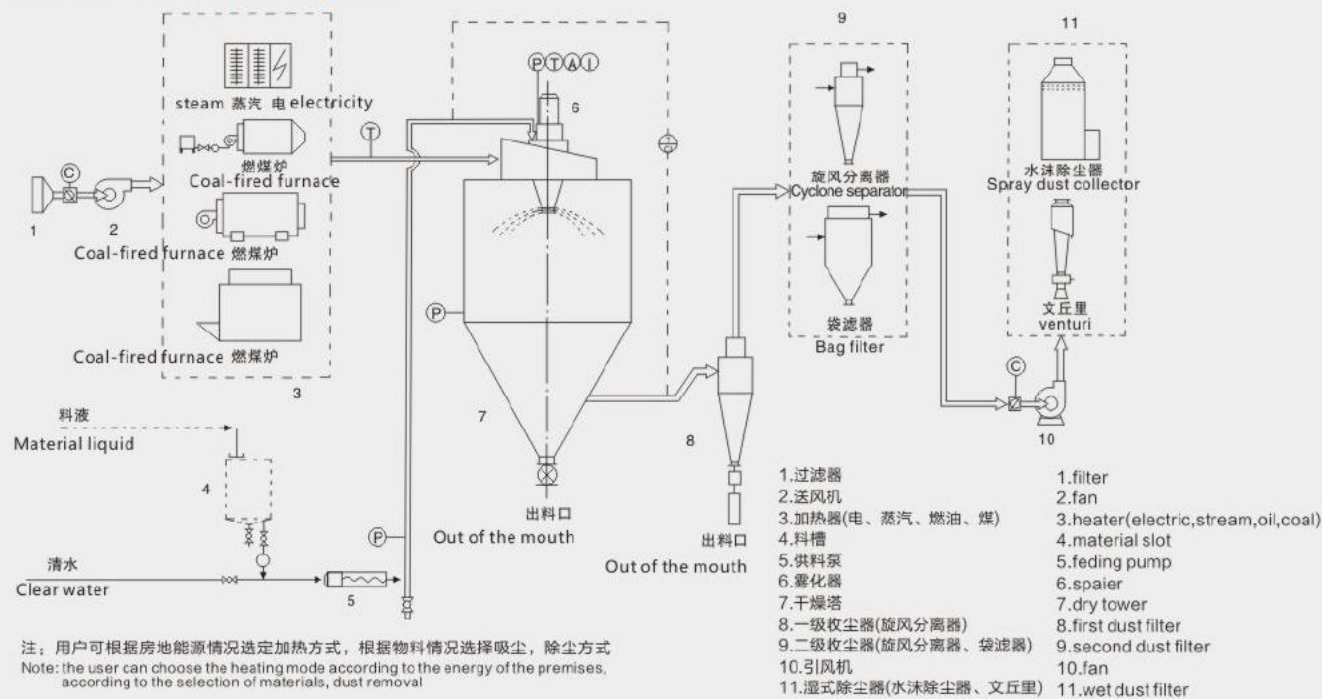
\* 注：水份蒸发量与物料的特性及热进、出口温度有关，可参阅上图  
Note: evaporation of water is related to the characteristics of the material and the temperature of the inlet and outlet

干燥实例 Dried samples

- 食品** 氨基酸、维生素、鸡蛋粉、骨粉，调味品，蛋白质、奶粉、猪血粉、酱油粉、咖啡、茶粉、葡萄糖、山梨酸钾、果胶、香精香料、蔬菜汁、酵母、淀粉类等
- 陶瓷** 氧化铝、氧化锆、氧化镁，氧化钛，钛酸镁、陶土、瓷土、各种铁氧体及金属氧化物等
- 化学制品** 聚合氧化铝、分散染料、活性染料、有机催化剂、白炭黑、洗衣粉、硫酸锌，二氧化硅，偏硅酸钠、氟化钾、碳酸钙、磷酸钾、无机催化剂、各种废液等。

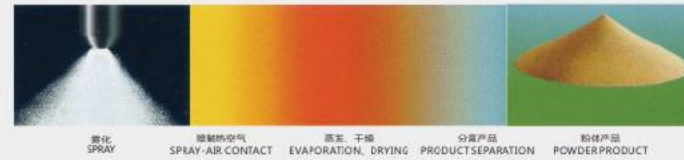
- Foodstuff** Amino acid, Vitamin, flavoring, protein, dried milk, pig blood powder, soy powder, coffee, tea powder, Glucose, potassium, sorbet, pectin, essence, vegetable juice, yeast, starch etc.
- Ceramics** Alumina, Marconi, magnesium oxide, titanium oxide, magnesium titanate, pottery clay, china clay, all kinds of magnetic porcelain and metal-oxides etc.
- Chemical products** Dispersed dyestuff, active dyestuff, organic catalyst white carbon black, detergent powder, zinc sulfate, sodium metasilicat, potassium fluoride, calcium carbonate, tribasic potassium phosphate, inorganic catalyst and all kinds of waste liquid etc.

流程示意图 Flow diagram





YPG Series of High Pressure Spray Dryer  
YPG系列压力喷雾干燥机



操作方式 Operation method

◆ 本机组是一种可以同时完成干燥和造粒的装置。按工艺要求可以调节料液泵的压力、流量、喷孔的大小，得到所需的按一定大小比例的球形颗粒。

◆ 本机组工作过程为：料液通过隔膜泵高压输入，喷出雾状液滴，然后同热空气并流下降，大部份粉粒由塔底排料口收集，废气及其微小粉末经旋风分离器分离，废气由抽风机排出，粉末由设在旋风分离器下端的收粉筒收集，风机出口处还可装备二级除尘装置，回收率在96-98%。

◆ 本机组与物料接触部分的塔体、管道、分离器的材料，均采用SUS304制作。在塔体内部与外壳之间有足够的保温层，填充材料为超细玻璃棉，塔体设有观察门、视镜、光源及控制仪表，由电器控制操作台控制和显示。

◆ 本机组的热源装置采用蒸汽加热或电加热器，具有操作方便、启动快、结构紧凑、热风干净清洁等优点。另外在电气控制柜内装有电加热器的控制调节装置，使进口温度无级调节。对于缺电地区可采用蒸汽加热或燃煤、燃油热风炉等方式，局部或全部代替电加热装置。本厂可以根据用户的实际需要提供不同的加热方式。

◆ This set is an apparatus that can finish drying and granulating at the same time. The needed ball granule with certain size and ratio can be got in accordance with requirements of process to adjust pressure, flow, and size of atomizing hole.

◆ The working process of this set is as follows: the liquid of raw material is pumped in through diaphragm pump. The liquid of raw material is atomized into tiny droplets. Then it falls down with hot air in co-current form. Most parts of powder material is collected through the discharge port at the bottom. The exhaust and fine powder are separated by going through the cyclone, and the exhaust is discharged by draft fan. The outlet of fan can also be equipped with two grades of duster. And its recovery ratio will be 96-98%.

◆ The tower body, pipes and separator of this set contacting with raw material are made of SUS304. There is enough layer of heat preservation between inner and outer case of tower body. The filled material is fine glass cotton. The tower body is also equipped with observation door, sight glass, lamp-house and control meters and instruments that are controlled and displayed through electric control panel.

◆ The heat source of this set may be steam or electric heater, with the features of convenient operation, quick start, compact structure clean hot air etc. Moreover, installed control and regulation device of the electric heater inside electric control cabinet, the inlet temperature can be controlled through stepless regulation. The steam, coal fuel or oil fuel can be applied to the place where has not electricity. It can replace electric heating partially or fully. The factory can provide different heating ways in accordance with the practical conditions of customer.

特点 Features

◆ 干燥速度快。料液经雾化后表面积大大增加，在热风气流中，瞬间就可蒸发95-98%的水份，完成干燥的时间仅需十几秒到数十秒钟，特别适用于热敏性物料的干燥。

◆ 所得产品为球状颗粒，粒度均匀，流动性好，溶解性好，产品纯度高，质量好。

◆ 使用范围广，根据物料的特性，可以用热风干燥，也可以用冷风造粒，对物料适应性性强。

◆ 操作简单稳定，控制方便，容易实现自动化作业。

◆ The drying speed is fast. The surface area of liquid raw material after being atomized will be increased greatly. 95-98% of moisture can be vaporated at the moment. The time of drying needs about ten seconds to several tens of seconds. It is suitable for drying heat sensitive material particularly.

◆ The finished product is ball granule with uniform size. Its fluidity and solubility are good. The purity of product is high and its quality is good.

◆ Its scope of application is wide. According to the characteristics of raw material, it can use hot air to dry and can also use cool air to granulate. It has strong adaptability to raw materials.

◆ Its operation is simple and stable and its control is simple and convenient and is easy to realize automatic operation.

适用范围 Scope of Application

喷雾干燥造粒：

化工：有机催化剂、树脂、合成洗衣粉、油脂类、硫酸、染料、染料中间体、白炭黑、石墨、磷铵等。

食品：氨基酸及类似物、调味料、蛋白质、淀粉、乳制品、咖啡提取物、鱼粉、肉精等。

制药：中成药、农药、抗生素、医药冲剂等。

陶瓷：氧化镁、瓷土、各种金属氧化物、白云石等。

喷雾造粒：各种肥料、氧化铝、陶瓷粉、制药、重金属超硬钢、化肥、粒状洗衣粉、中成药等。

Granulating through atomizing dry:

Chemical industry: organic catalyst, resin, synthetic washing powder, oils, thiamin, dyestuff, intermediate of dyestuff, white carbon black, graphite, ammonium phosphate and so on.

Foodstuff: amino acids and similar substances, flavoring, protein, starch, dairy products, extractive substance from coffee, fish powder, extractive substance from meat and so on.

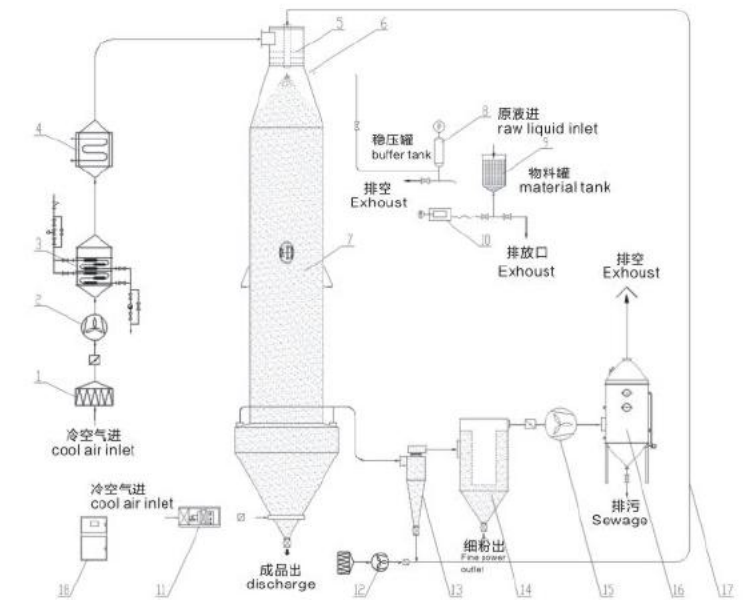
Pharmaceutical: Chinese patent medicines, agrochemicals, antibiotics, medical drinking agent and so on.

Ceramics: magnesium oxide, kaoline, all kind of metallic oxide, dolomite and so on.

Granulating through atomizing: all kinds of fertilizer, aluminum oxide, ceramics powder, pharmaceutical, heavy metallic super hardness steel, chemical fertilizer, washing powder, Chinese patent medicines and so on.

工艺流程图 Process flow chart

1. 空气过滤器 Air filter
2. 空气过滤器 Air filter
3. 蒸汽加热器 Steam heater
4. 电加热器 Electract heater
5. 热风整流板 Hot air rectifier board
6. 压力雾化器 Pressured atomizer
7. 干燥主塔 Rain drying tower
8. 稳压罐 Buffer tank
9. 料液桶 Liquid tank
10. 高压泵 High-pressure pump
11. 冷冻除湿机 Refrigeration dehumidifier
12. 返粉鼓风机 Power return blower
13. 旋风分离器 Cyclone separator
14. 布袋除尘器 Cloth bag deduster
15. 引风机 Induced fan
16. 水沫除尘器 Water film duster
17. 返粉管道 Power return pipe
18. PLC控制柜 PLC control cabinet



技术参数 Technical Parameter

项目 item	型号 spec	YPG-25	YPG-50	YPG-100	YPG-150	YPG-200	YPG-300	YPG-500	YPG-1000-2000
水份蒸发量 water evaporation capacity		25	50	100	150	200	300	500	
隔膜泵 diaphragm pump	功率 power (kw)	0.35	4	7.5	11	15	22	30	该指标按实际情况确定 The index can be affirmed in accordance with practical conditions.
	压力 pressure(Mpa)	根据物料实验效果在0.6-5之间调节，一般操作在1-3之间。 It can be regulated from 0.6 to 5, in general, it will be from 1 to 3.							
加热方式 heating way		电 electricity	电+蒸汽 electricity+steam	电+燃煤(油)热风炉 electricity+cocal fuel oil hot air furnace					
塔身直径 diameter of tower body(mm)		1300	1800	2400	2600	2800	3200	3800	
设备总高 total height (mm)		7800	9200	11600	14000	15300	17100	19000	

备注：1. 蒸发量与物料特性相关，本表蒸发量与温度相关，数据仅供参考。  
2. 雾化压力和泵的型号参照物料处理量，产品粒径要求配备。  
3. 风机功率在配套布袋除尘器后有所增加。

1. The evaporated amount is related to characteristics of raw material. The evaporated amount listed in the table is related to temperature. The data can be used for reference only.  
2. The atomizing pressure and Model of pump will be equipped in accordance with the amount of raw material to be treated and the size require of product.  
3. The power of fan should be increased suitably after equipped with cloth bag duster.



PYG Series Top Outlet Pressure Spray Dryer  
PYG系类顶出风压力喷雾干燥机

特点 Features

- ◆ 成品颗粒大小，水分含量调节范围大；
- ◆ 设备总高度比原来的并流塔低；
- ◆ 节约能源，由于顶出风的回风室在塔体上部的高负压区蒸发，降低了蒸发温度，既节约了热源，也节约了能量；
- ◆ 产品品质好，颗粒均匀，颗粒度调整范围广，颗粒色泽、冲调性能较好。
- ◆ Large adjustment range of product particle size, water content;
- ◆ The total height of equipment is lower than original parallel tower;
- ◆ Energy saving, due to high negative pressure evaporation on top of wind return chamber of tower, it reduces the evaporation temperature and saves both heat and energy;
- ◆ Product quality is good, uniform particles, wide particle size adjustment range, particle color, flush performance is better.

操作方式 Operation method

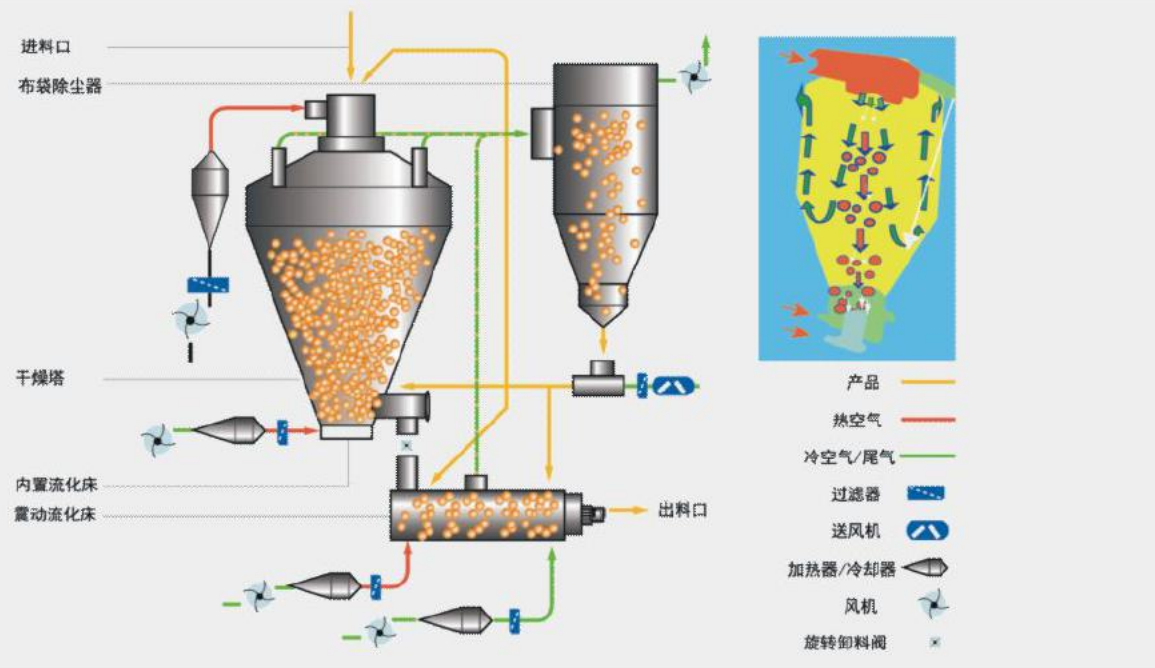
- ◆ 液体的进料可以是溶剂，悬浮液或乳蚀液，进料通过高压泵输送到位于塔体顶部XX分配器内的雾化器（喷枪）中。
- ◆ 压力喷枪液体雾化进入高速的干燥空气流，产生雾化液滴由气流带动向下朝内置流化床运行，同时被干燥成颗粒。
- ◆ 在颗粒进去流化床的同时，气流反向向上运行，从干燥塔顶部被排出。
- ◆ 从排出空气中分离出来的超细颗粒重新循环回到干燥塔塔体内。流化床内颗粒的流化，细粉循环和干燥气流内颗粒移动发生在一个比传统干燥系统的粉尘密度更高的空气环境中。克服颗粒表面的粘附问题，含水量高的颗粒可以被加工处理。
- ◆ 进入流化床的颗粒水分含量可以被控制在一定要求程度内，从而获得较大颗粒和结构改变（附聚或制粒）。
- ◆ 在有需要的时候，产品的最终干燥和冷却可以在与内置流化床出口相连接的另一个外置流化床内进行。

- ◆ Feeding liquid can be solvent, suspension or emulsion, which is conveyed through a high pressure pump to a atomizer (spray gun) on the top of the tower.
- ◆ The liquid from pressure gun atomizes to enter high speed airflow in tower, the atomized droplets are driven from downward air stream to the fluidized bed and are dried into particles.
- ◆ While the particles go into the fluidized bed, the airflow runs in reverse flow and is discharged from the top of drying tower.
- ◆ The ultrafine particles separated from discharged air are re-circulated back into drying tower. Fluidization within the fluidized bed, fine powder circulation and particle movement within the dry gas stream occurs in an air environment that is higher dust density of conventional drying systems. To overcome the problem of particle surface bonding, high water content of particles can be dealt with.
- ◆ The moisture content of particles entering fluidized bed can be controlled to a certain extent, resulting in larger particles and structural changes (agglomeration or granulation).
- ◆ When it necessary, the final drying and cooling of the product can be carried out in another external fluidized bed connected to the outlet of the built-in fluidized bed.

应用 Applications

食品：咖啡，乳制品，蛋制品，调味品，麦芽糊精，汤料，植物蛋白，酵母等。  
化工：清洗剂，染料，化肥，无机盐，杀虫剂等。

Food: coffee, dairy products, egg products, condiments, malt dextrin, soup, plant protein, yeast and so on.  
Chemical: cleaning agents, dyes, fertilizers. Inorganic salts, insecticides and so on.



QPG Series Air Stream Spray Dryer  
QPG系列气流喷雾干燥机



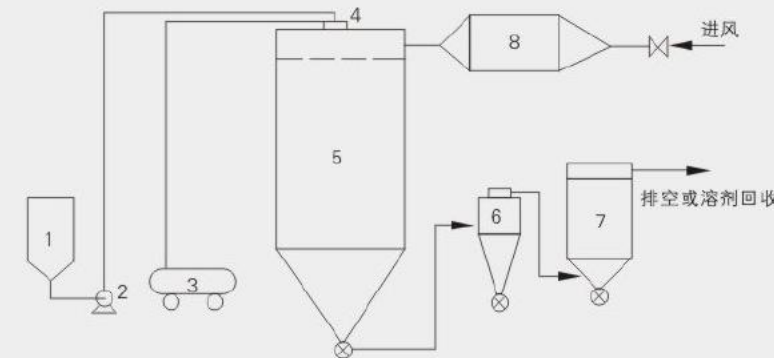
工作原理 Principle of work

洁净空气加热后进入干燥塔，在塔内热风中用二流体(或三流体)喷嘴将各种料液物化成微小液滴，与热风进行快速热交换，蒸发掉液料中的水份(或溶剂)，并随热风排出，得到粉状产品。  
The clean air is heated and entered into the drying tower, the raw material inside the tower is atomization and becomes mini liquid drops through nozzles of two or three liquids. The raw materials carry out heat exchange with the hot air rapidly to evaporate the moisture (solvent) in the raw materials. The moisture or solvent is discharged accompany with hot air, then got the powder product is.

特点 Features

- ◆ 尤其对粘性大、膏状、浆糊状物料效果佳，其它设备无法替代。
- ◆ 实验型多品种、低温干燥应用广。
- ◆ 喷嘴结构简单，维修方便，运行费用低。
- ◆ It is better for raw materials that are large in viscosity and grease and paste. The other equipment can not replace it.
- ◆ More varieties and wide application in drying with lower temperature.
- ◆ The nozzle is simple in structure, convenient in maintenance and lower cost in operation.

结构示意图 Sketch of structure



- 1.液料槽 1.material liquid groove
- 2.液料泵 2.material liquid pump
- 3.压缩空气 3.compressed air
- 4.气流喷嘴 4.spray nozzle
- 5.干燥塔 5.drying tower
- 6.旋风分离器 6.cyclone
- 7.布袋除尘器 7.bag cloth dust collector
- 8.加热器 8.heater

技术参数 Technical Parameter

参数 parameters	型号 Model	5	25	50	100	150	200
蒸发量 amount of evaporation Kg/h	$\Delta t=150^{\circ}\text{C} \sim 90^{\circ}\text{C}$	1.5	7.5	15	30	45	60
	$\Delta t=200^{\circ}\text{C} \sim 100^{\circ}\text{C}$	2.5	12.5	25	50	75	100
	$\Delta t=250^{\circ}\text{C} \sim 100^{\circ}\text{C}$	3.75	18.75	37.5	75	112.5	150
	$\Delta t=300^{\circ}\text{C} \sim 100^{\circ}\text{C}$	5	25	50	100	150	200
	$\Delta t=350^{\circ}\text{C} \sim 110^{\circ}\text{C}$	6	30	60	120	200	240
压缩空气 compressed air $\text{m}^3/\text{min}$		0.9	0.9	1.1	1.5	2.7	3.4
压缩气压 pressure of air Mpa		0.4	0.6		0.7		
热源方式 heat resource		电、电+蒸汽、燃煤(油)热风炉					
供热量 consumption of heating $10^4 \text{ KCal/h}$		1	5	10	20	30	40
风机功率 power Kw		0.75	4	7.5	11	15	18.5

注：1.本设备大于200型可按实际需要代为设计制造；  
2.风机功率为标准流程，如加布袋除尘和回收溶剂则要增加。  
Notes: 1. If the power of equipment should be more than 200 type, it can be designed and manufactured in accordance with the requirements of customers.  
2. The power of fan is suitable for standard flow chart. If add the cloth to remove dust or recover solvent, it should be increased.







# 沸腾/流化床干燥系列

◆ 流化床干燥器的特点是在装备的中下部设有一块筛板，称为气体分布板，在此板上堆积固体颗粒，然后由板的下部通气体上来，与物料接触进行热交换。

◆ 本类型设备对干燥物料有一定的要求，有其特定的适宜范围。

形式有很多种，按操作情况可分为间歇式流化床干燥器和连续式流化干燥器；按结构形式可分为单层流化床干燥器，多层流化床干燥器、卧式多室流化床干燥器、振动流化床干燥器、离心流化床干燥器、喷动床干燥器、惰性粒子流化床干燥器等。

◆ 我们公司主要研究和生产的设备有XF系列卧式沸腾干燥机 and ZDG系列振动流化床干燥器；并研究开发了非标连续式的沸腾干燥机。

## XF系列卧式沸腾干燥机（即单层流化床干燥器）

◆ 单层（连续）流化床干燥器的流程。湿物料由加料器加入到流化床干燥器内，环境空气经鼓风机和加热器加热到一定温度后，由干燥器底部经筛板分布，再进入流化床层中与物料进行接触干燥，合格的干燥产品由出料口排出，含有细粉的废气通过旋风分离器后由引风机排空。

◆ 这种干燥器壳体的形状有圆形、矩形或圆锥形。圆锥形干燥器物别适用于粒度分布较宽的物料，它使大小颗粒都能处于流化状态。

◆ 可以间歇操作，也可以连续操作。连续操作时，一般要设置隔板，以防出现短路问题。

## ZDG系列振动流化床干燥器

◆ 工作原理和特点

振动流化床干燥器是在普通流化床干燥器上施加振动而成的，即是普通流化床干燥器的一种改进形式，在普通流化床干燥器中，物料的流态化完全是靠气流来实现的；而在振动流化床干燥器中，物料的流态化和输送主要是靠振动来完成的。由于振动的加入，降低了物料的最小流化速度，使流态化现象提早出现，特别是靠近气体分布板的底层颗粒物料首先开始流化，有利于消除壁效应，改善了流态化质量。进入干燥器的热风主要用于干燥过程的传热传质，因此，风量大为降低，一般为普通流化床干燥器气量的20%\_30%。而且细粉夹带现象减轻，细粉回收系统负荷降低。

与普通流化床干燥器相比，由于机械振动的加入，使振动流化床干燥器具有以下特点。

①强化了干燥过程。振动使边界层湍动程度增加，因而使传递系数增大。振动也改善了床层结构，使相界面积增加。这些都有利于干燥，使过程得到强化。

②可以干燥颗粒粒度较宽的物料，停留时间比较均匀。

③可以干燥机械强度低的颗粒物料。

④可以干燥具有黏性或热塑性的物料。

⑤振动可以减少流态化的起始沟流问题，增加流态化操作的稳定性。

⑥操作气速和床层压降都较普通流化床低。振动流化床干燥器在化工、医药、食品、冶金及盐业等部门得到广泛的应用，在中国已有数百套装置在运行中。这种干燥器通常也与喷雾干燥、气流干燥等组合、成为第二级干燥（或冷却）器。

◆ 类型

按振动方式可将振动流化床干燥器分为两大类，一类是振动电机直接装在流化床上，即振动电机直接驱动的振动流化床干燥器；另一类是其振动部分与电机分离的，即箱式激振器固定在流化床一端的板簧式振动流化床干燥器。

此外，还有一种新型的分体式振动流化床干燥器。

# FLUIDIZED BED DRYING

The main feature of this dryer is there is a screen plate in the bottom part, named air distributor. Raw material will be laid on this plate, while hot air will go up from the bottom and contact with material to take out the moisture.

This type of dryer is only suitable for some certain raw materials.

There are many types of fluidized dryer. According to working way, it can be divided into two kinds: batch type and continuous type; according to its structure, there are single layer type, multi-layers type, horizontal multi-chambers type, vibration fluidized type, centrifugal fluidized type, spray type and inert particle type, etc.

Our company mainly produces XF model fluid bed dryer and ZLG model vibrating fluid bed dryer. We also research and developed non-standard & continues type fluid bed dryer.

## XF model fluid bed dryer (also named Single layer type fluid bed dryer)

Working process: wet materials will be fed into fluidized bed dryer by feeder, at the same time the air, passing through the heater and the screen plate at the bottom of dryer, but air enters into the fluidized bed and contact with raw material. Dry products will be discharged from outlet port, and waste air including fine powders will go through cyclone and will be exhausted by fan.

The outer shape of this kind machine could be circular, rectangle, or cone. And the cone one is especially suitable for materials which have a wide grain size distribution, it makes both of large and small grains being fluidized state.

The working way can be batch type or continuously. And in the continuous way, baffle plate is needed, used to prevent short circuit problems.

## ZDG series vibration fluidized bed dryer

### Working principle and characteristics

Vibration fluidized bed dryer is a kind of improved type on the basis of ordinary fluidized dryer. In the ordinary type, the fluidized state is created by air stream, but while in the vibration type, the fluidized state and convey will be finished by vibration. The vibration reduces the minimum fluidization velocity of material and advances the fluidized state. This is benefit for clearing wall stichy effect, improving the fluidization quality. For this machine, the entered hot air mainly used to transfer heat during the drying process, so the air flow is not as large as the ordinary one. The former is only 20%-30% of the latter, and less fine powder be carried out by air.

Compared with ordinary type, vibration fluidized bed dryer owns following advantages:

- ① Strengthened the drying effect. Vibration intensifies the turbulent degree of the boundary layer and enlarges the transfer coefficient. It's helpful for drying.
- ② It's suitable for wide grain size distribution materials and the staying time is uniform.
- ③ It's suitable for low mechanical strength materials.
- ④ It's suitable for viscous or thermoplastic materials.
- ⑤ Vibration can reduce the fluidized initialize channeling problems, and enhance the stability of fluidized operating.
- ⑥ Both of the operation speed and the pressure drop of bed plate are lower than ordinary type.

Nowadays, the fluidized bed dryer has been widely used in chemical, pharmaceutical, foodstuff, metallurgy and salt industries, etc. it also could be used combined with spray dryer, air stream dryer and so on, becomes the secondary dryer (or cooling device)

## (2)Type

According to the vibration way, fluidized bed dryer can be divided into two types. One is to install the vibration motor on the dryer, while the other type is different, the vibrating part is separated from the motor, and the box shape vibration exciter is installed on one end of the dryer. The second one is also called spring type vibration bed dryer. Besides, there is a new split type vibration bed dryer now.



ZDG Series Vibrating Fluid Bed Dryer  
ZDG系列振动流化床干燥机



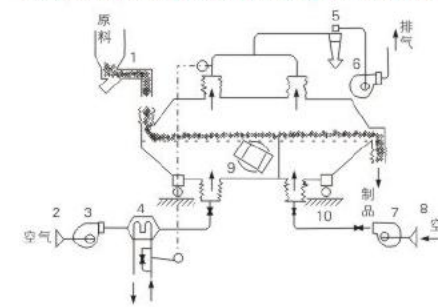
工作原理 Principle of work

物料自进料口进入机内,在振动力作用下,物料沿水平方向抛掷向前连续运动,热风向上穿过流化床同湿料换热后,湿空气经旋风分离器除尘后由排风口排出,干燥物料由排料口排出。

Raw material is fed into the machine and moves forward continuously along with the level of fluidized-bed under the action of vibration. The hot air passes through fluidized-bed and carries out heat exchange with damp raw material. Then the damp air is exhausted out through cyclone separator and dust collector and the dry product is discharged through discharge outlet.

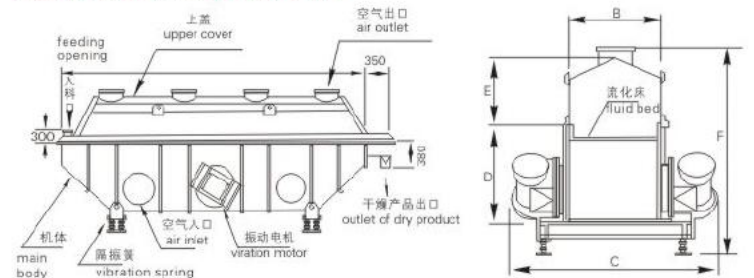


振动流化床配套系统图  
Complete System Chart of Vibrating Fluidized Bed



- 1. 振动给料器 vibrating feeder
- 2. 过滤器 filter
- 3. 给风机 fan
- 4. 换热器 heat exchanger

振动流化床干燥机简图  
Sketch Chart of Vibrating Fluidized Bed



- 5. 旋风除尘器 cyclone separator
- 6. 排风机 fan
- 7. 给风机 fan
- 8. 过滤器 filter
- 9. 振动电机 vibrating motor
- 10. 隔振簧 vibration separating spring

技术参数 Technical parameters

型号 Model	尺寸 Size	A	B	C	D	E	F	重量 weight(Kg)
3 × 0.30		3000	300	1350	900	430	1650	1250
4.5 × 0.30		4500	300	1350	900	430	1650	1560
4.5 × 0.45		4500	450	1550	950	430	1700	1670
4.5 × 0.60		4500	600	1650	950	430	1700	1910
6 × 0.45		6000	450	1650	950	430	1700	2100
6 × 0.60		6000	600	1700	1000	500	1700	2410
6 × 0.75		6000	750	1850	1000	600	1850	2340
6 × 0.9		6000	900	2000	1000	600	1850	3160
7.5 × 0.6		7500	600	1850	1000	600	1850	3200
7.5 × 0.75		7500	750	2000	1000	600	1850	3600
7.5 × 0.9		7500	900	2100	1000	600	1850	4140
7.5 × 1.2		7500	1200	2500	1150	800	2050	5190
7.5 × 1.5		7500	1500	2850	1570	800	2370	6426
8 × 1.8		8000	1800	3250	1800	900	2700	8600

机型 Model	流化床面积 Area of fluidized-bed (M <sup>2</sup> )	进风温度 Temperature of inlet air (°C)	出风温度 Temperature of outlet (°C)	蒸发水份能力 Capacity to vapor moisture(kg/h)	振动电机 Vibration motor	
					型号 Model	功率 Power kw
3 × 0.30	0.9	70 ~ 140	40 ~ 70	20 ~ 35	YZS8-6	0.75 × 2
4.5 × 0.30	1.35			35 ~ 50	YZS10-6	0.75 × 2
4.5 × 0.45	2.025			50 ~ 70	YZS15-6	1.1 × 2
4.5 × 0.60	2.7			70 ~ 90	YZS15-6	1.1 × 2
6 × 0.45	2.7			80 ~ 100	YZS15-6	1.5 × 2
6 × 0.60	3.6			100 ~ 130	YZS20-6	1.5 × 2
6 × 0.75	4.5			120 ~ 170	YZS20-6	2.2 × 2
6 × 0.9	5.4			140 ~ 170	YZS30-6	2.2 × 2
7.5 × 0.6	4.5			130 ~ 150	YZS30-6	2.2 × 2
7.5 × 0.75	5.625			150 ~ 180	YZS40-6	3.0 × 2
7.5 × 0.9	6.75			160 ~ 210	YZS40-6	3.0 × 2
7.5 × 1.2	9.0			200 ~ 280	YZS50-6	3.7 × 2
7.5 × 1.5	11.25			230 ~ 330	YZS50-6	3.7 × 2
8 × 1.8	14.4	290 ~ 420	YZS75-6	5.5 × 2		

概述 Descriptions

ZDG振动流化床干燥机广泛适用于化工、轻工、医药、食品、塑料、粮油、矿渣、制盐、糖等行业的粉料颗粒状物料的干燥、冷却、增湿等作业。

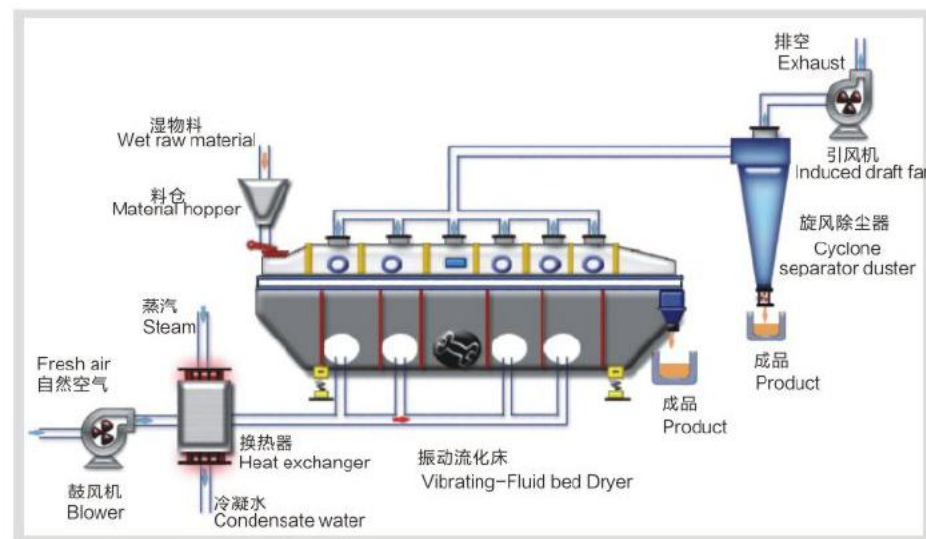
特点 Features

- ◆ 物料受热均匀,热交换充分,干燥强度高,比普通干燥节能30%左右。
- ◆ 振动源采用振动电机驱动,运转平稳、维修方便、噪音低、寿命长。
- ◆ 流态化稳定,无死角和吹穿现象。床层开孔形式,及开孔率至关重要。终水份、产量可通过振幅及加料量来控制。
- ◆ 可调性好,适应面宽。
- ◆ 对物料表面损伤小,可用于易碎物料的干燥,物料颗粒不规则时亦不影响工作效果。明显优于沸腾床。
- ◆ 采用全封闭式结构,有效地防止了物料与空气间的交叉污染,作业环境清洁。

The drier is suitably in chemical industry, light industry, pharmaceutical, food, plastic, oil, slang, salt, sugar and so on, for drying, cooling and wetting

- ◆ Raw material is heated evenly and heat exchange is fully used and dry capacity is high. Compared with ordinary drier, the energy can be saved about 30%.
- ◆ The vibration is created by motor. It is stable in operation and convenient in maintenance, low noise and long life span;
- ◆ The fluidized state is stable and no dead angle and phenomenon of broken out;
- ◆ It is good in regulation and wide in suitability.
- ◆ It is small for damaging to the surface of raw material. The equipment can be used for drying raw materials that are easy broken. The drying effect can not be affected even if raw materials gave anomalous shape;
- ◆ It is effective to prevent from cross pollution between raw material and air because the equipment adopts fully closed structure. The environment of operation is clean.

流程图 Flow chart





GFG Series High-Efficient Fluidizing Dryer  
GFG系列高效沸腾干燥机



应用 Applications

- ◆ 机制螺杆挤压颗粒、摇摆颗粒、湿法高速混合制粒颗粒。
- ◆ 医药、食品、饲料、化工等领域湿颗粒和粉状物料干燥。
- ◆ 大颗粒，小块状，粘性块状物料。
- ◆ 魔芋、聚丙烯酰胺等干燥时体积变化的物料。
- ◆ Extruded granule, swayed granule, and granulate granule using the methods of humidity, high speed and mixing;
- ◆ Suitable for drying humidity block or powder raw material in the fields such as pharmaceutical, foodstuff, feedstuff, the chemical industries and so on;
- ◆ The raw material is large in granule and small in block and having adhesive lump materials;
- ◆ Suitable for raw materials, its volume will be changed when dry, such as konjac, polyacrylamide, etc.

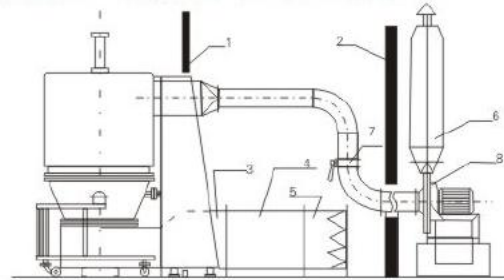
特点 Features

- ◆ 流化床为圆形结构，避免死角。
- ◆ 料斗设置搅拌，避免潮湿物料团聚及干燥时形成沟流。
- ◆ 采用翻倾卸料，方便迅速彻底，亦可按要求设计自动进出料系统。
- ◆ 密闭负压操作，气体经过过滤。操作简便，清洗方便，是符合“GMP”要求的理想设备。
- ◆ 干燥速度快，温度均匀，每批干燥时间一般在20-60分钟。
- ◆ The structure of fluidized bed is round so as to avoid dead corner;
- ◆ Inside the hopper there is a stirrer in order to avoid agglomeration of raw material and forming canal of flow;
- ◆ The granule is discharged through the method of turning over. In this way it is very convenient and full. The discharging system can be designed as requested;
- ◆ It is operated at the conditions of negative pressure and seal. The air is filtered. Therefore it is simple in operation and convenient in clean. It is an ideal equipment that is in conformity with the requirements of GMP;
- ◆ The drying speed is fast and the temperature is uniform. In general the drying time is 15-45 minutes for each batch.

技术参数 Technical parameters

项目 Item	单位 Unit	型号 Type							
		60	100	120	150	200	300	500	
投料 raw material	Kg	60	100	120	150	200	300	500	
风机 Fan	风量 Air volume	m <sup>3</sup> /h	2361	3488	3400	4901	6032	7800	10800
	风压 Air pressure	mmH <sub>2</sub> O	594	533	533	679	787	950	950
	功率 Power	kw	7.5	11	15	15	22	30	45
	搅拌功率 Stirring power	kw	0.55	0.55	0.55	0.55	0.55	0.75	1.1
搅拌转速 Stirring speed	r.p.m	11							
蒸汽耗量 Consumption of steam	Kg/h	141	170	170	240	282	366	451	
操作时间 Time of operation	min	15~30(视物料情况而定)							
主机高度 Height of main machine	方形 Square	mm	2750	2850	2850	2900	3100	3300	3650
	圆形 Round	mm	2700	2900	2900	2900	3100	3600	3850

结构示意图 Sketch of structure



- 1、隔墙 Wall
- 2、隔墙 Wall
- 3、加热器 Heater
- 4、过滤器 Filter
- 5、过滤器 Filter
- 6、消音器 Silencer
- 7、调风器 Distributor
- 8、风机 Fan

工作原理 Principle of work

空气经加热净化后，由引风机从下部导入，穿过料斗的孔网板。在工作室内，经搅拌和负压作用形成流态化，水份快速蒸发后随着排气带走，物料快速干燥。

When air is purified and heated, it is introduced from the bottom and passed through the screen plate of trolley. In working chamber, the state of fluidization is formed through stirring and negative effect. The moisture is evaporated and removed rapidly and then the raw material is dried quickly.

FG Series Vertical Fluidizing Dryer  
FG立式沸腾干燥机

应用 Applications

- ◆ 本机主要适用于医药、食品、化工等行业进行粉末或颗粒物料的干燥。
- ◆ The machine is mainly used for drying powder or granule in pharmaceutical, foodstuff and chemical industries and so on.

特点 Features

- ◆ 流态化干燥，热质传递快；
- ◆ 在封闭负压下操作，无粉尘飞扬；
- ◆ 采用抗静电过滤材料，操作安全；
- ◆ 设备无死角，清洗彻底，无交叉污染；
- ◆ 满足GMP规范要求。
- ◆ Fluidized drying, heat mass transfer is fast;
- ◆ Operate under closed and negative pressure, nodust flying;
- ◆ Adopt antistatic filter material, operate safety;
- ◆ The equipment has no dead angle, clean thoroughly, no cross contamination;
- ◆ Meet the GMP specification requirement.

技术参数 Technical parameters

机型 type										
项目 item	单位 unit	3	5	30	60	120	200	300	500	
原料容器 container of raw material	直径 dim.	mm	300	400	700	1000	1200	1400	1600	1800
	容积 volume	L	12	22	100	220	420	670	1000	1500
生产能力 production capacity	最小 min	kg/batch	1.6	4	15	30	80	100	150	250
	最大 max	kg/batch	4	6	36	72	140	240	360	600
蒸汽耗量 consume of steam	kg/batch	12	23	70	140	211	282	366	465	
压缩空气量 amount of compressed air	m <sup>3</sup> /min	0.3	0.3	0.3	0.6	0.6	0.9	1.1	1.6	
风机功率 Power of fan	kw	2.2	4	5.5	11	18.5	22	30	45	
温度 Temperature	°c	常温~120℃自动调节								
物料收率 Yield	%	> 99								
操作时间 Option time	min	15-30(视具体物料而定)								
终湿含量 Content at final term.	%	~0.2(视具体物料而定)								
噪音 Noise	dB	≤75								
主机高度 Height of main machine	mm	2100	2300	2500	3000	3300	3800	4000	4400	





XF Series Horizontal Fluidizing Dryer  
XF系列卧式沸腾干燥机



概述 Descriptions

沸腾床干燥机是由空气过滤器、加热器、沸腾床主机，星形加料器、旋风分离器、布袋除尘器、高压离心风机，操作台等组成，由于干燥物料的性质不同，沸腾床干燥机配套除尘设备时，可按需要考虑，可同时选择旋风分离器，布袋除尘器，也可选择其中一种，一般来说比重较大的如冲剂及颗粒物料干燥只需选择旋风分离器，比重较轻的小颗粒状和粉状物料需配套布袋除尘器，并备有气流送料装置供选择。星型加料器由用户选配。

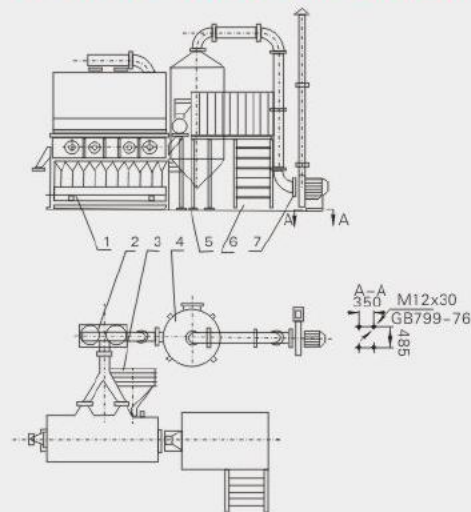
The fluidized bed dryer consists of air filter, heater, fluidized bed, rotating segment feeder, cyclone separator, bag dust remover, high press. centrifugal fan and stage for operation. According to different characters of different materials to be dried, the dryer can be equipped with both cyclone separator and bag dust remover or with either of them. Generally speaking, for those pellet materials with a large specific gravity, only a cyclone separator is needed. And for those granule or powder materials with a small specific gravity, a bag dust remover is needed and so is a pneumatic conveying device if possible. The dryer can also be equipped with a rotating segment feeder if required.

特点 Features

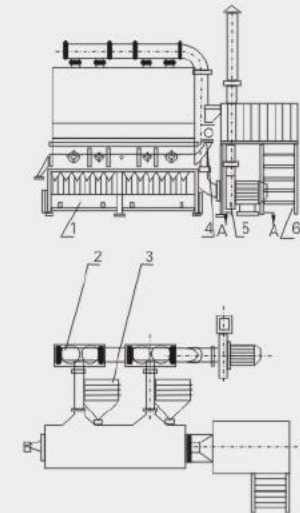
沸腾床干燥机可实行自动化生产，是连续式干燥设备。干燥速度快，温度低，能保证产品质量，符合药品生产GMP要求。蒸汽、电、热风炉均可配用。

This fluidized bed dryer can achieve automation and continuous drying process. It has a high drying speed and a low temperature and the product quality can be ensured, meeting GMP requirements. The heating resource can be steam, electricity or furnace.

结构示意图 Sketch of structure



30型 旋风式 Model 30 cyclone separator



30型 内袋式 Model 30 dust remover of inner bag

- 1、主机
  - 2、风机
  - 3、加热器
  - 4、旋风分离器
  - 5、加料器
  - 6、操作台
  - 7、引风机
- 1.main machine  
2.air blower  
3.heater  
4.separator  
5.feeder  
6.controller  
7.exhaust fan

- 1、主机
  - 2、除尘器
  - 3、加热器
  - 4、加料器
  - 5、引风机
  - 6、操作台
- 1.main machine  
2.dust collector  
3.heater  
4.feeder  
5.exhaust fan  
6.operating platform

应用 Applications

沸腾床干燥机适用于散粒状物料的干燥。如：医药药品中的原料药，压片颗粒料，中药冲剂，化工原料中的塑料树脂、柠檬酸和其它粉状、颗粒状物料的干燥除湿。食品、粮食加工，饲料干燥中的食品饮料冲剂，玉米胚芽、饲料等的干燥。物料的粒径一般最佳粒径为0.5~3mm。

This fluidized bed dryer is suitable for drying pellet or granule materials such as raw materials for medicine, tablet granules, traditional Chinese medicine drink granules in pharmaceutical industry; plastic resin, citric acid and other powder or granule materials in chemical industry. It also can dry grain, corn embryo, feed etc. The most suitable diameter of the materials is 0.5~3mm.

工作原理 Principle of work

散粒状固体物料由加料器加入沸腾干燥机中，过滤后的洁净空气加热后由鼓风机送入流化床底部经分布板与固体物料接触，形成流态化达到气固相的热质交换。物料干燥后由排料口排出，废气由沸腾床顶部排出经旋风除尘器组和布袋除尘器回收固体粉料后排空。

Granule or pellet solid materials are fed into the fluidized bed dryer through the feeder. Filtrated clean air is heated and charged onto the bottom of the fluidized bed to contact with the solid materials on the distributing plate, where fluidization can be reached and the heat exchange between solid and air can be achieved. After being dried, the products are discharged from the outlet. Waste gas is discharged from the top of the fluidized bed, and powder materials are recovered by the cyclone separator or bag dust remover.

安装说明 Instructions for installation

- ◆ 沸腾床、旋风分离器及布袋除尘器安放在平整的水泥地面上即可，不需脚螺丝。风机可安装在室内或室外，需有底座及地脚螺丝。平面布置可根据厂房情况酌情调整。
- ◆ 风道系统应不漏气，以免影响干燥效果。

- ◆ Fluidized bed, cyclone separator and cloth bag dust collector should be placed on flat concrete ground without any screws on foundation. The air blower may be installed indoors or outdoors with foundation and screws. The plane design can be partly adjusted in accordance with the building conditions.
- ◆ No air should leak from the air pipe system so as not to influence the drying efficiency.



嘉兴中华化工香兰素沸腾干燥



盐城捷康三氯蔗糖沸腾干燥



技术参数 Technical parameters

参数 Parameter 型号 Type	床层面积 m <sup>2</sup>	干燥能力 (水kg/h) Drying capacity (water Kg/h)	风机 Air blower			进风温度 (°C) Air intake temp	出料温度 (°C) Material discharge temp	**加热耗能 Heating energy consumption	
			功率 (kw) Power	风压 (Pa) Air pressure	风量 (m <sup>3</sup> /H) Air volume			蒸汽 (Kg/h) Steam	电 (kw) Elec power
XF-10A	0.25	10-15	5.5	4900	2300	60-140	40-80	50	30
XF-10B	0.25		4	3800	2300				
XF-20A	0.5	20-25	7.5	5000	3100	60-140	40-80	100	60
XF-20B	0.5		5.5	3500	3100				
XF-30A	1.0	30-45	15	6000	4200	60-140	40-80	150	90
XF-30B	1.0		11	4700	4200				
XF-50A	2.0	50-80	22	7400	6000	60-140	40-80	250	150
XF-50B	2.0		18.5	5900	6000				

“干燥能力”：酸梅晶以、初含水份20%、终含水份5%、进风温度130°C而测定，其它物料干燥能力将根据不同情况而定。  
“加热能耗”：蒸汽或电可单独使用。

\*Drying capacity: when drying sweet-sour plum crystals, it should be measured on the basis the primary moisture contents of 20% and final moisture contents of 5% and the air intake temperature at 130°C. The dry capacity of other materials should be based on different drying conditions.  
\*Heating energy consumption: Steam or electric power may be used separately.



## GBF Series Close Circular Fluidizing Dryer (Cooler) GBF系列闭路沸腾干燥(冷却)机

### 工作原理 Principle of work

- ◆ 以氮气为传导传热介质，实现对制药、生化、化工、生物等技术领域含有机溶媒、溶剂物料的干燥生产与溶媒、溶剂的回收，具备安全生产、高效、低耗节能减排的实用性。
- ◆ 干燥机内的气体在风机的循环下，经换热器加热，进入沸腾式干燥机，物料与热空气充分接触换热。待物料内的溶媒（酒精、丙酮、甲醇等）蒸发出来，在循环气体的带动下，夹带于气体中的细粉物料，经氮气反吹除尘器，实现对夹带于气体中的粉尘物料进行捕集，余热气体经过滤器过滤后进入冷凝器，经冷凝器冷却介质，冷凝至露点和气体分离，实现对有机溶媒的回收。分离后的气体再由风机送入加热器，这样周而复始的循环工作。直至将所有的溶媒从物料中蒸发、分离、冷凝出来。

- ◆ With nitrogen as heat conduction medium, the equipment can dry materials in pharmaceutical, chemical, biochemical, biological and other technical fields' materials containing organic solvents, as well as recover solvents, with safety, high efficiency and low energy consumption.

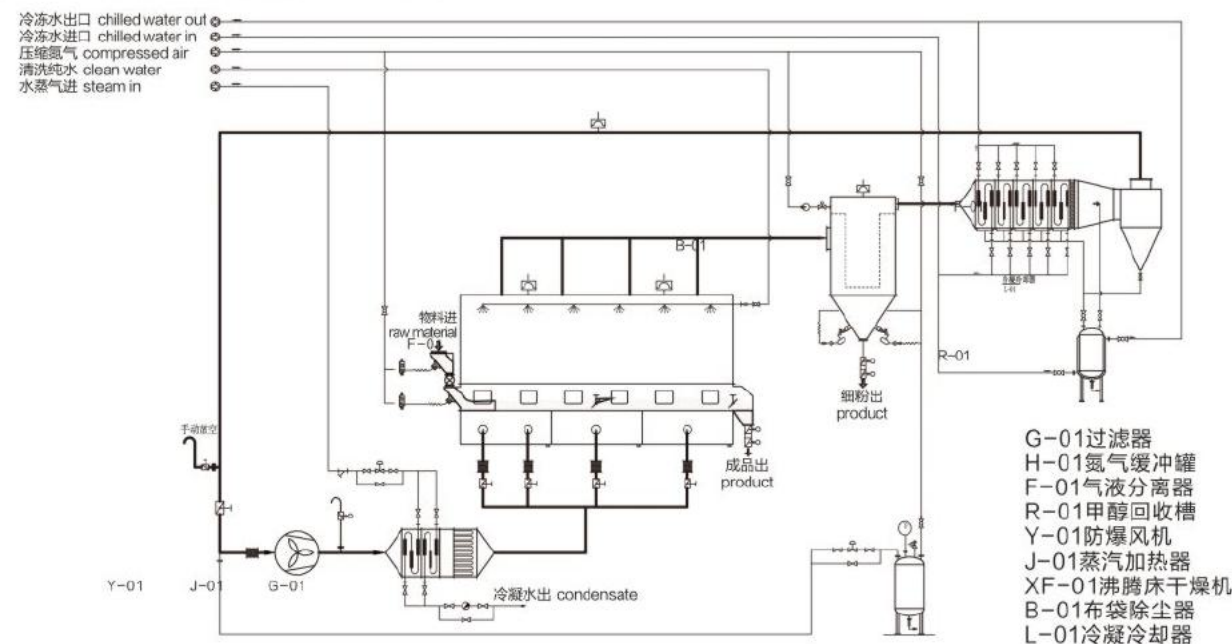
- ◆ The air in dryer is heated by heat exchanger under the circulation of blower, and enters the fluidizing bed. Raw materials and hot air have full contact and heat exchange. After the solvent (methanol, acetone, the alcohol etc.) in materials is evaporated, under circulating gas driving, fine powder will be collected by nitrogen back blowing bag dust collector, the evaporated vapour enters condenser and cool down by cold medium to recover solvent and separate gas. The separated gas is sent to heater again by fan, it works full cycle like this until all solvent is evaporated, separated and condensed from material.

### 应用 Applications

- ◆ 主要用于含有溶剂、溶媒的物料的干燥和溶媒的回收；
- ◆ 摇摆颗粒、湿法高速混合制粒含有溶剂的颗粒物料干燥；
- ◆ 医药、食品、化工等领域含有溶剂的湿颗粒和粉状颗粒的干燥；
- ◆ 大颗粒或小块状以及较小粘性物料的干燥。

- ◆ Mainly used for solvent, solvent-containing materials' drying and solvent recovering.
- ◆ Wet particles and material drying from swinging particles and wet high speed mixing granulation
- ◆ Drying for medicine, food, chemical and other fields containing solvent wet granules and powdery particles.
- ◆ Drying for such materials with large particles, small pieces as well as smaller sticky materials

### 结构示意图 Sketch of structure



### 特点 Features

- ◆ **高效:** 设备为全封闭式结构，无死角，出风、进风均采用高温高效过滤，除尘效率更高，且易拆装、清洗。

在物料干燥完成后，使用反吹技术，除尘更彻底，减少清洗频率，操作简单，有效降低劳动强度并可避免产品受污染的情况，符合GMP要求。

设备能够长期稳定的连续运行，自动化程度高。既可干燥、冷却溶媒，又可冷却物料，干燥效率比回转、耙式的高，可提高4—5倍的干燥速度。同时干燥后的产品品质稳定，为用户创造更大的产品价值。

- ◆ **安全:** 基于有机溶剂具备易爆易燃的安全危险性，本机组系统内同时采用在线测氧、超压泄放和防爆、泄爆等安全技术手段，通过智能化控制技术，实现对系统内氧气残留量的监测，气压平衡监测和自动调节控制。

当系统内的空气（氧气）含量超过0.5%(v/v)时，测氧装置即会通过控制系统指令氮气补充阀打开，向系统内补充新鲜氮气，使系统内的氧气残留量恢复到安全设定值的范围内（闭路循环系统设计为正压，氧气的进入则是通过加料过程进入循环系统）。

当系统内的气压值超过设定值时（循环系统气压平衡值设定为0.02mPa），泄压装置则会通过智能控制中心指令，自动打开泄压气动阀，排除超压气体，而防爆泄爆装置，则是本机组采用的另一项安全技术措施，即系统内电气或关键部位发生故障，系统正常工作失灵，气压升高至安全极限值(系统设计耐压值小于等于0.05Mpa)，防爆泄爆装置即会自动打开定向泄爆并自动切断电源，关闭进出管道阀门，保证溶媒没有与氧气反应的可能性，有效的避免设备在生产过程中发生火灾或爆炸事故，最大限度的规避人员伤亡和财产损失，确保生产安全。

- ◆ **节能:** 设备是全封闭式系统，热介质经过网板向上吹起物料，与物料的接触更充分，使传热和传质过程得以强化，在较小的风量下能够达到较高的气体含湿量，因此工作时只需要微正压，风量较小，设备的风机功率降低，噪音变小，同时干燥之后含有溶媒的热湿气，经过冷凝器分离后，回收的溶媒可以再次利用，同时，低露点的氮气经循环风机后进入加热器重新加热循环利用，与常规烘干设备相比，热效率提高了，动力消耗明显下降，因此节约了设备的能源损耗及生产成本。

- ◆ **环保:** 本机组实现对含有溶媒物料在干燥生产工艺过程中的回收利用，在解决相关行业在干燥难与废气排放污染重的基础上，实现溶剂回收利用，同时做到零排放，避免了尾气对环境的污染，获得节能减排的实用性效果。

- ◆ **High efficiency:** equipment is fully closed structure, no dead corner, air inlet and outlet are with high temperature and high efficiency filtration, dust removal efficiency is higher, disassembly and cleaning is easy.

It uses backflush technology after drying, dust removal is more thoroughly, cleaning frequency is lower, operation is simple, which effectively reduces labor intensity and to avoid contamination of product, production meets GMP requirements.

Equipment can run stably for a long time with a high degree of automation. It can not only dry, cool solvents, but also cool materials, drying efficiency is higher than rotary or harrow dryer, drying speed of 4-5 times quicker. At the same time after drying product quality is good and stable to create greater product value to users.

- ◆ **Safety:** organic solvent has high risk of flammable and explosion, this unit system uses on-line oxygen measurement, explosive-release and explosion-proof venting and other safety techniques, through intelligent control technology to achieve system oxygen residue monitoring, barometric pressure balance monitoring and automatic adjustment control.

When the air (oxygen) content in the system exceeds 0.5% (v/v), the oxygen measuring device will open nitrogen replenishment valve through the control system, add fresh nitrogen to the system, and restore the amount of system oxygen remaining to safe set value range (closed circuit system designed with positive pressure, oxygen into the process is through feeding process into the circular system).

When the system pressure value exceeds the set value (the circular system pressure balance is set to 0.02mPa), the pressure relief device will automatically open pressure valve, remove the overpressure gas through the intelligent control center; Explosion-proof and explosion release device, is another security technical measures, that is, once electrical or critical parts of system has failure, the system can't work normally, air pressure increased to the safety limit (system design pressure value is less than or equal to 0.05Mpa) Explosion-proof and explosion release device will automatically open directional vent and automatically cut off the power, close inlet and outlet valves to ensure that solvent does not have react possibility with oxygen, it effectively avoids the occurrence of fire or explosion accidents in production process, avoids casualties and property losses in maximum and ensures production safety.

- ◆ **Energy saving:** The equipment is fully closed system, heat medium through screen blows material and has more fully contact with material, the heat and mass transfer process is strengthened, the gas can reach higher moisture content with smaller air volume, so it just needs micro positive work pressure, because of smaller air volume, fan power reduces and noise gets small, wet hot vapour goes through condenser and gets recovered solvent which can be used again, at the same time, low dew point nitrogen by circulating fan enters heater for re-heating recycling, compared to conventional drying equipment, it improves the thermal efficiency, reduces power consumption significantly and saves the energy loss as well as production cost.

- ◆ **Environmental protection:** the unit has achieved recycling of organic solvent during drying process, on the base in solving difficult drying and heavy pollution emission, it recover and re-use the solvent, at the same time, it gets zero emission to avoid exhaust pollution to environment and achieves practical effect for energy saving with emission reduction.



# VACUUM DRYER

## 真空、传导干燥系列

真空干燥器是一种特殊的干燥设备，主要适用于热敏性和易氧化的物料。是将物料在非正常（减压）状态下进行加热，在较低的温度下对物料进行脱除湿分，达到干燥的目的。按照物料在被干燥时的状态，我们可以将设备分为静态和动态两种类型。

我们公司生产的真空干燥设备有：

- 1、静态的：FZG方型、YZG圆型、BZG板式真空干燥机；
- 2、动态的：PLG系列盘式连续干燥机，ZPLG系列真空盘式干燥机，SZG系列双锥回转真空干燥机，ZKG系列真空耙式干燥机，GLZ系列真空螺旋带干燥机，DZG系列无菌单臂双锥回转真空干燥机，KJG系列空心桨叶干燥机；

Vacuum dryer is one kind of special drying equipment which is suitable for heat sensitive materials and easy oxidation materials. This machine heats materials in non-normal (decompression) state, and material moisture is removed at a lower temperature to achieve drying purpose. According to the material state being dried, we can divide the equipment into two types: Static and Dynamic:

Our company provide the vacuum dryer as below:

1. Static type: FZG square vacuum dryer, YZG round vacuum dryer, BZG plate vacuum dryer;
2. Dynamic type: PLG series disc plate continuous dryer, ZPLG series vacuum disc plate dryer, SZG series double cone rotary vacuum dryer, ZKG series vacuum harrow dryer, GLZ series vacuum ribbon dryer, DZG series aseptic single arm rotary vacuum dryer, KJG series hollow paddle dryer etc.;

YUITONG  
宇通干燥

PLG Series Disc  
Continuous Dryer /  
ZPLG Series  
Vacuum Disc Dryer  
PLG系列盘式连续干燥机/  
ZPLG系列真空盘式干燥机



### 概述 Descriptions

盘式连续干燥器是一种高效的传导型连续干燥设备。其独特的结构和工作原理决定了它具有热效率高、能耗低、占地面积小、配置简单、操作控制方便、操作环境好等特点，广泛应用于化工、医药、农药、食品、饲料、农副产品加工等行业的干燥作业。

现生产制造常压、密闭、真空三大类型， $\phi 1200$ 、 $\phi 1500$ 、 $\phi 2200$ 、 $\phi 2500$ 、 $\phi 3000$ 五种规格，A（碳钢）、B（接触物料部分均为304不锈钢）、C（在B的基础上，增加蒸汽管路、主轴及支架为304不锈钢，筒体和顶盖内衬304不锈钢）、T（特殊材质）四种材质，干燥面积4~180m<sup>2</sup>，共三百余种型号的系列产品，并能提供与之相配套的各种辅助设备，可满足用户对各种物料进行干燥的需要。

### 技术特性 Technical Feature

#### （一）干燥盘

- 1.设计压力：一般为0.4MPa，最大可达1.6MPa。
- 2.最高使用压力：一般 $\leq 0.4$ MPa，最高可达1.6MPa。
- 3.加热介质：蒸汽、热水、导热油、干燥盘温度 $\leq 100^{\circ}\text{C}$ 时使用热水加热， $100^{\circ}\text{C} \sim 150^{\circ}\text{C}$ 时用 $\leq 0.4$ MPa饱和水蒸汽或过热蒸汽加热， $150^{\circ}\text{C} \sim 320^{\circ}\text{C}$ 时用导热油加热， $> 320^{\circ}\text{C}$ 时可采用电、熔盐等方式加热。

#### （二）物料传送系统

- 1.主轴转速：1~10转分，电磁或变频无极调速。
- 2.耙臂：每层干燥盘上有2~8支固定在主轴上的耙臂。
- 3.耙叶：铰接在耙臂上，能随盘面上下浮动保持接触，有多种形式。
- 4.碾滚：对易结块和需要破碎的物料，在适当位置配加碾滚，可以强化传热和干燥过程。

#### （三）壳体

有常压、密闭、真空三种型式

- 1.常压型：圆筒或八棱柱型，有整体和对开两种结构。加热介质进出口主管道可以在壳体内，也可以在壳体外。
- 2.密闭型：圆筒型壳体，能承受5Kpa内压，加热介质进出口主管道可以在壳体内，也可以在壳体外。
- 3.真空型：圆筒型壳体，设计压力为外压-0.1Mpa，加热介质进出口主管道在壳体内。

PLG Series Continual Plate Dryer Descriptions Plate dryer is a kind of high effective conducting and continuous drying equipment. Its unique structure and operating principle determine that it has advantages of high heat efficiency, low energy consumption, small occupying area, simple configuration, easy operate and control as well as good operating environment etc. It can be widely used in drying process in the fields of chemical industry. Pharmaceuticals, agricultural chemicals, foodstuff, fodder, process of agricultural and sideline products etc, and is well received by various sectors in their practical usage. Now there are three big categories, named normal pressure, closed and vacuum styles; four types of specification 1200, 1500, 2200 and 3000; and three kinds of materials, namely A(carbon steel), B(stainless steel used for those contact materials part) and C(on the basis of B to add stainless steel materials for vapor pipes, main shaft and support, and stainless steel linings for cylinder body and top cover). With a drying area being from 4 to 180 square metres, now we have hundreds of models of series products and various kinds of auxiliary devices available to meet requirements of drying materials for customers.

#### 1. Drying disc

- (1). Designing pressure: general is 0.4MPa, Max. can reach 1.6 Mpa.
- (2). Work pressure: general is less then 0.4Mpa, and Max. can reach 1.6 Mpa.
- (3). Heating medium: steam, hot water, oil. When the drying plates' temperature is  $100^{\circ}\text{C}$ , hot water can be used; when  $100^{\circ}\text{C} \sim 150^{\circ}\text{C}$ , it will be saturated water steam  $\leq 0.4$ MPa or steam-gas, and when  $150^{\circ}\text{C} \sim 320^{\circ}\text{C}$ , it will be oil heating; when  $> 320^{\circ}\text{C}$  it will be heated by electric, oil of fused salt.

#### 2. Material transmission system

- (1). main shaft: 1~10 rpm, electromagnetism of transducer timing.
- (2). harrow arm: There are 2 to 8 pieces arm that be fixed on the headstock on the every layers.
- (3). Harrow's blade: Surrounding the harrow's blade, float together with the surface of the plate to keep contact. There're various of types.
- (4). Roller: for the products easily agglomerate, or with the requirements of grinding, the heat transfer and drying process might be reinforced by placing roller(s) at the appropriate place(s).

#### 3. Shell There're three types for option: normal pressure, sealed and vacuum

- (1). Normal pressure: The cylinder has the whole and the dual structure the heating medium inlet and out let main pipeline can be inside the shell. also can be outside the shell body.
- (2). Sealed: Cylindrical shell, could bear the interior pressure of 5KPa, the main ducts of the inlet and outlet of heating media might be inside of the shell or outside.
- (3). Vacuum: Cylindrical shell, could bear the exterior pressure of 0.1MPa. The main ducts of inlet and outlet is inside of the shell.

#### 4. Air heater:

Normal for the application of big evaporation capacity to increase drying efficiency.



## 使用特点 Use characteristics

### (一) 调控容易、适用性强

1. 调整料层厚度、主轴转速、耙臂数量、耙叶型式和尺寸可使干燥过程达到最佳。
2. 每层干燥盘皆可单独通入热介质或冷介质、对物料进行加热或冷却，物料温度控制准确、容易。
3. 物料的停留时间可以精确调整。
4. 物料流向单一、无返混现象、干燥均匀、质量稳定、不需在混合。

### (二) 操作简单、容易

1. 干燥机的开车、停车操作非常简单。
2. 停止进料后，传送物料的耙叶能很快地排空干燥器内的物料。
3. 通过特殊的大规格检视门和视镜，可以对设备内进行很仔细的清洗和观察。

### (三) 能耗低

1. 料层很薄，主轴转速低，物料传送系统需要的功率小、电耗少。
2. 以传导热进行干燥，热效率高，能量消耗低。

### (四) 操作环境好，可回收溶剂，粉尘排放符合要求

1. 常压型：由于设备内气流速度低，而且设备内湿度分布上高下低，粉尘很难浮到设备顶部，所以顶部排湿口排出的尾气中几乎不含有粉尘。
2. 密闭型：配备溶剂回收装置，可方便地回收载湿气体中的有机溶剂。溶剂回收装置简单，回收率高，对于易燃、易爆、有毒和易氧化的物料，可用氮气作为载湿气体进行闭路循环，使之安全操作。特别适用于易燃、易爆、有毒物料的干燥。
3. 真空型：在真空状态下操作的盘式干燥器，特别适用于热敏性物料的干燥。

### (五) 安装方便，占地面积小

1. 干燥机整体出厂，整体运输，只需吊装就位，安装定位非常容易。
2. 由于干燥盘层式布置、立式安装，即使干燥面积很大，占地面积也很小。

## 应用 Applications

### 干燥 热解 煅烧 冷却 反应 升华

(一) 有机化工产品聚氯乙烯树脂、聚四氟乙烯树脂、反丁烯二酸、蒽醌、硝基蒽醌、对氨基苯酚、三聚氰胺、氰尿酸、对氨基苯磺酸、抗氧化剂168、色酚As、硬脂酸盐、苯胺、硝基苯胺、双季戊四醇、氯化石蜡、甲酸钙、三乙二胺、苯亚磺酸钠、间苯二甲酸、二甲酯五磺酸钠、硫脲、油性苯胺黑染料、酸性黑染料等有机化工原料和中间体。

(二) 无机化工产品轻质碳酸钙、活性碳酸钙、纳米级超细碳酸钙、碳酸镁、氢氧化铝、白灰黑、碳酸锂、碳酸钡、碳酸钾、立德粉、保险粉、硫酸钡、硫酸钾、微球催化剂、氢氧化镁、硫酸铜、硫酸镍、镍酸胺、钼酸钠、氯化钠、冰晶石、氧化铁红、氧化亚铁、氧化镍、氧化钴、磷酸钙、硫磺等。

(三) 医药、农药、食品氨基青霉素、邓盐、左旋苯甘氨酸及中间体、头孢氨噻、头孢三嗪、安乃近、西咪替丁、维生素B12、维生素C、药用盐、药用氢氧化铝、药用偏硅酸镁、咖啡因、茶、花提取物、银杏叶、巧克力粉、淀粉、玉米胚芽等原料及医药中间体。碳酸钾、生物钾肥、蛋白饲料、饲料用金霉素、菌丝体、麸皮、酒糟、粮食、种子、除草剂、纤维素、饲料磷酸氢钙等。

### (1) Easy control, wide application

1. Regulate thickness of materials, rotating speed of main shaft, number of harrow's arm, style of and sizes harrows achieve best drying process.
2. Each layer of drying plate disc can be fed with hot or cold media individually to heat or cold materials and make temperature control accurate and easy.
3. Dwell time of materials can be accurately adjusted.
4. Single flowing direction of materials without return flowing and mixing, uniform drying and stable quality, no re-mixing is required.

### (2) Easy and simple operation

1. Start stop of dryer is quite simple
2. After material feeding is stopped, they can be easily discharged out of the dryer by harrows.
3. Careful cleaning and observation can be carried inside the equipment through large-scale viewing window.

### (3) Low energy consumption

1. Thin layer of materials, low speed of main shaft, small power and energy required for conveying system of materials.
2. Dry by conducting heat so it has high heating efficiency and low energy consumption.

### (4) Good operation environment, solvent can be recovered and powder discharge meet the requirements of exhaust.

1. Normal pressure type: as low speed of air flow inside the equipment and moisture being high in upper part and low in lower part, dust powder couldn't float to the equipment, so there is almost no dust powder in tail gas discharged from the moist discharge port on the top.
2. Closed type: equipped with solvent recovery device that can recover organic solvent easily from moist-carrier gas. The solvent recovery device has simple structure and high recovery rate, and nitrogen can be used as moist-carrier gas in closed circulation for those subject to burning, explosion and oxidation, and poisonous materials in order for safe operation. Especially suitable for drying of flammable, explosive and poisonous materials.
3. Vacuum type: if the plate dryer is operating under vacuum state, it is particularly suitable for drying heat sensitive materials.

### (5) Easy installation and small occupying area.

1. As the dryer is in a whole for delivery, it is quite easy to install and fix at site only by hoisting.
2. As drying plates being arranged by layers and installed vertically, it takes a small occupying area though drying area is large.

PLG continuous plate dryer is appropriate for drying, calcining, pyrolysis, cooling, reaction and sublimation in the chemical, pharmaceutical, pesticide, food and agricultural industries. This drying machine is mainly used in the following fields:

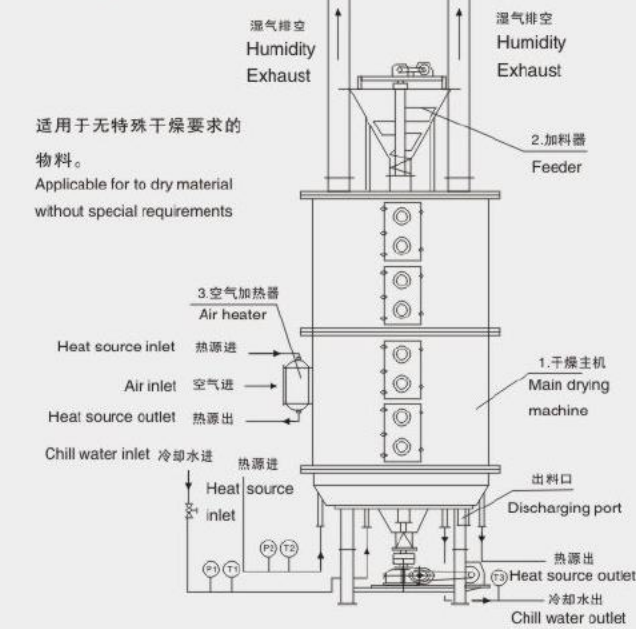
1. Organic chemical products of PVC resin, polytetrafluoroethylene resin, fumaric acid, anthraquinone, nitroanthraquinone, p-aminophenol, melamine, cyanuric acid, sulfanilic acid, antioxidant 168, naphthol, stearic acid, aniline, p-nitroaniline, Double pentaerythritol, paraffin chloride, calcium formate, triethylene diamine, sodium benzene sulphinate, acide isophthalique, thiourea, oil soluble aniline black dyes, acid black dyes and other organic chemical raw materials and intermediates.

2. Inorganic chemical products, light calcium carbonate, active calcium carbonate, nano ultrafine calcium carbonate, magnesium carbonate, aluminum hydroxide, lime black, strontium carbonate, barium carbonate, potassium carbonate, lithopone, insurance powder, barium sulfate, potassium sulfate, magnesium hydroxide, microsphere catalyst, copper sulfate, nickel sulfate, nickel molybdate, amine acid sodium, sodium chloride, cryolite, iron oxide red, lithium hydroxide, nickel hydroxide, zirconium hydroxide, calcium phosphate, sulfur etc..

3. Medicine, pesticide, food principen, Deng salt, phenylglycine and intermediates, cefotaxime, ceftriaxone sodium, alnagin, cimetidine, vitamin B12, vitamin C, medicinal salt, medicinal aluminum hydroxide, magnesium silicate, partial caffeine, tea, flower extract, Ginkgo biloba, chocolate powder, starch corn germ, raw materials and pharmaceutical intermediates. Potassium carbonate, potassium fertilizer, protein feed, feed aureomycin, mycelium, bran, grains, seeds, herbicides, cellulose, calcium hydrophosphate, etc.

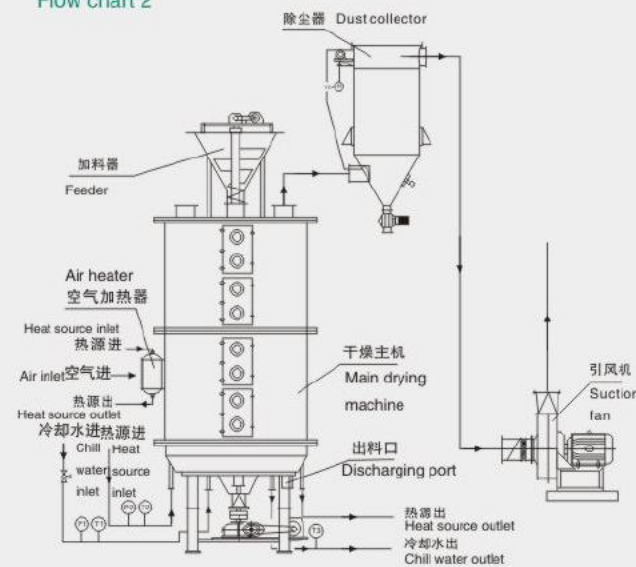
## 工作原理 Principle of work

工艺流程图1  
Flow chart 1



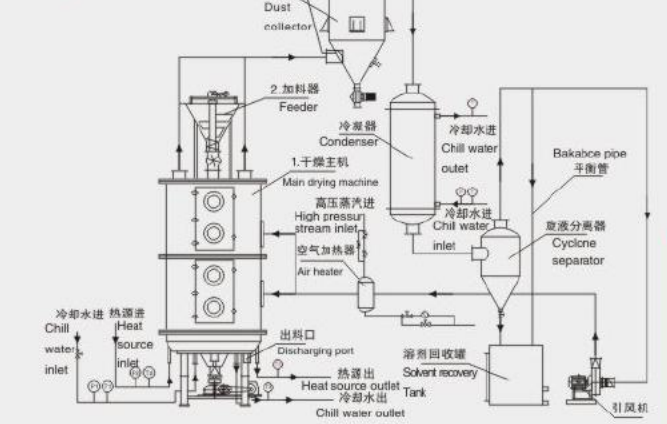
备注：一般在蒸发量较大的情况下才配备空气加热器，以增大干燥效率。  
Remarks: to enhance drying efficiency, air heater is normally applied for high evaporation capacity

工艺流程图2  
Flow chart 2



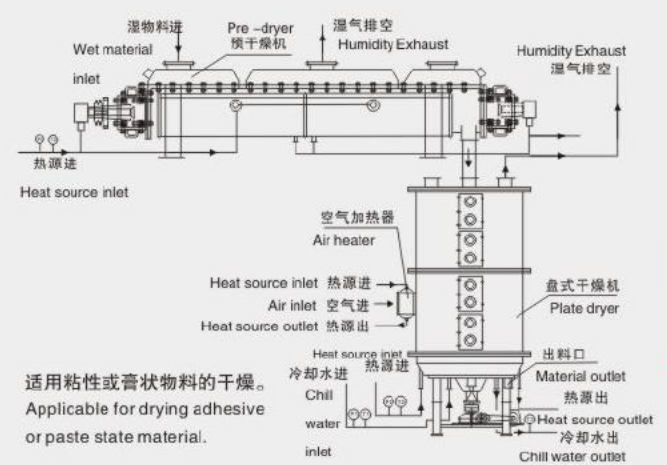
适用于干燥物料的粉末需要回收或具有一定的有害粉末。  
Applicable for drying material with requirement of power recovery or the powder is toxic

工艺流程图3  
Flow chart 3



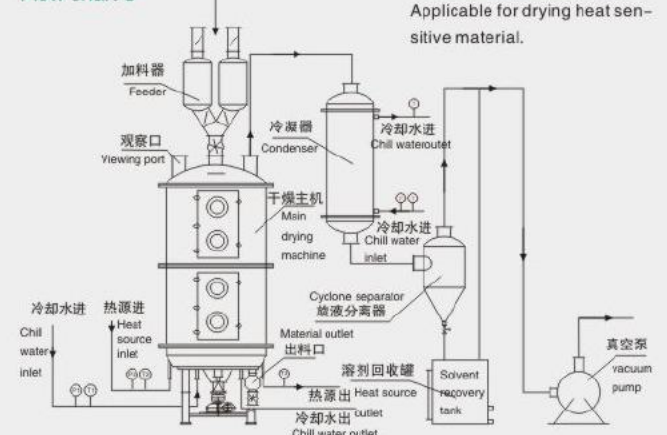
适用于对干燥过程中所蒸发出来的溶剂进行回收或是对干燥所用气体要求不能外泄的场合。  
Applicable for the drying process with solvent recovery or without leakage of evaporated gas.

工艺流程图4  
Flow chart 4



适用粘性或膏状物料的干燥。  
Applicable for drying adhesive or paste state material.

工艺流程图5  
Flow chart 5



适用于热敏性物料的干燥。  
Applicable for drying heat sensitive material.



## 工作原理 Principle of work

◆ 湿物料自加料器连续地加到干燥器上部第一层干燥盘上，带有耙叶的耙臂作回转运动，使耙叶连续地翻抄物料。物料沿指数螺旋线流过干燥盘表面，在小干燥盘上的物料被移送到外缘，并在外缘落到下方的大干燥盘外缘，在大干燥盘上的物料向里移动并从中间落料口落入下一层小燥盘中。大小干燥盘上下交替排列，物料得以连续地流过整个干燥器。中空干燥盘内通入加热介质，加热介质形式有饱和蒸汽、热水和导热油，加热介质由干燥盘的一端进入，从另一端导出。

◆ 已干物料从最后一层干燥盘落到壳体的底层，最后被耙叶移送到出料口排出。湿汽从物料逸出，由设在顶盖上的排湿口排出，真空型盘式干燥器的湿汽由设在顶盖上的真空泵口抽出。从底层排出的干物料可直接包装。

◆ 通过配加翅片加热器、溶剂回收冷凝器、袋式除尘器、干料返混机构、引风机等辅机，可提高其干燥的生产能力，干燥膏糊状和热敏性物料，可方便地回收溶剂，并能进行热解和反应操作。

## 技术参数 Technical parameters

规格 Type	外径 Diameter (mm)	高度 High (mm)	干燥面积 Area of dry (m <sup>2</sup> )	功率 Power (Kw)
1200/4	1865	2877	3.3	1.1
1200/6		3297	4.9	
1200/8		3717	6.6	
1200/10		4137	8.2	
1200/12	2166	4557	9.9	1.5
1500/6		3327	8.0	
1500/8		3747	10.7	
1500/10		4167	13.4	
1500/12	2166	4587	16.1	2.2
1500/14		5007	18.8	
1500/16		5427	21.5	
2200/6		3781	18.5	
2200/8	2820	4201	24.6	3.0
2200/10		4621	30.8	
2200/12		5041	36.9	
2200/14		5461	43.1	
2200/16	2820	5881	49.3	4.0
2200/18		6301	55.4	
2200/20		6721	61.6	
2200/22		7141	67.7	
2200/24	2820	7561	73.9	5.5
2200/26		7981	80.0	
2200/28		8401	87.1	
3000/8		3768	5143	
3000/10	5643		60	
3000/12	6143		72	
3000/14	6643		84	
3000/16	3768	7143	96	11
3000/18		7643	108	
3000/20		8293	120	
3000/22		8793	132	
3000/24	3768	9293	144	15
3000/26		9793	156	
3000/28		10293	168	
3000/30		10793	180	

◆ Wet materials are fed continuously to the first drying layer on the top of the dryer. They will be turned and stirred by rakes when the rake arm rotates and drop down to the outer edge of the large drying plate along the exponential helical line. On the small drying plate they will be moved to its outer edge and drop down to the outer edge of the large drying plate underneath, and will be moved inward and drop down from its central hole to the small drying plate on the next layer. Both small and large drying plates are arranged alternately so as materials can go through the whole dryer continuously. The heating media, Which could be informs of saturated steam, hot water or heat conducting oil will be led into hollow drying plates from one end to the other end of the dryer.

◆ The dried materials will drop from the last layer of the drying plate to the bottom layer of the shell body, and will be moved by rakes to the dischargeport. The moisture escapes from materials and will be removed from the moist discharge port on the top cover, or sucked out by the vacuum pump on the top cover for vacuum-type plate dryer. The dried materials discharged from the bottom layer can be packed directly.

◆ The drying capability can be raised up if equipped with supplementary devices such as finned heater, condenser for solvent retrieval, bag dust remover, return and mix mechanism for dried materials and drawing fan etc. Solvent in those dried paste and heat sensitive materials can be easily retrieved, and thermal decomposition and reaction can be also carried out.

规格 Type	外径 Diameter (mm)	高度 High (mm)	干燥面积 Area of dry (m <sup>2</sup> )	功率 Power (Kw)
2500/6	3115	3981	26.3	4
2500/8		4401	35	
2500/10		4821	43.8	
2500/12		5241	52.5	
2500/14	3115	5661	61.3	5.5
2500/16		6081	70.0	
2500/18		6501	78.8	
2500/20		6921	87.5	
2500/22	3115	7341	96.3	7.5
2500/24		7761	105	
2500/26		8181	113.8	
3000/8		3768	5143	
3000/10	5643		60	
3000/12	6143		72	
3000/14	6643		84	
3000/16	3768	7143	96	15
3000/18		7643	108	
3000/20		8293	120	
3000/22		8793	132	
3000/24	3768	9293	144	18.5
3000/26		9793	156	
3000/28		10293	168	
3000/30		10793	180	

## YLITONG 宇通干燥

### KJG Series Hollow Blade Dryer KJG系列空心桨叶干燥机



#### 概述 Descriptions

桨叶干燥机是一种使物料（有机、无机的颗粒或粉状物料）直接与旋转的空心楔型加热件接触进行热传递的干燥机。它不需要空气作为加热介质，所用的空气仅仅是一种载体，目的是把蒸发出的蒸汽带走。

#### 工作原理 Principle of work

◆ 桨叶式干燥机是一种以热传导为主的卧式搅拌型干燥机，其主体结构为，带有夹套的W型壳内装有成对的空心低速回转中空轴，轴上焊接若干搅拌中空叶片，夹套和空心搅拌片内均通以热载体，两种加热面同时物料加热，因此，该机型比一般传导式干燥机具有突出的传热速率，按需要，本形式干燥机可设计成双轴或多轴式。

◆ 热风通常由干燥机中部送入，通过呈搅拌状态的物料层表面，从另一侧排出。双轴桨叶干燥机内部。加热介质可以用蒸汽、热水，或高温导热油。

#### 特点 Features

◆ 典型的传导干燥方式，热效率高，比通常的对流干燥节能30%~60%以上。

◆ 搅拌桨叶内部也通入蒸汽，故干燥机的单位体积传热面积较一般间接传热干燥机大。

◆ 空心楔形桨叶相向旋转，叶片的两个斜面反复搅拌、压缩、松弛并推进物料，这种相向运动使叶片具有独特的自洁作用，加热面不断获得更新，从而使该机型的传热系数高于其他任何传导干燥方式。

◆ 由于加热面具有独特的自洁作用，不必返料，就可以顺利处理大多数高含水或粘性膏状物料，应用范围比一般传导式干燥设备广泛。

◆ 由于所需热量全部由空心叶片和夹套供给，为了降低排气湿度，只补充少量热空气即可，粉尘夹带极少，尾气处理较容易。

◆ 物料滞留时间调整方便，可处理高含水物料，也可获得极低含水率的物料。

◆ 干燥机内存料量很高，约为筒体容积的70~80%，单位容积的有效加热面积，远高于一般传导式干燥设备，设备紧凑，体积小，占地面积小。

◆ 可以方便的与其他干燥方式组合成高效的干燥机组，发挥各自优势，获取最好的经济技术指标。如桨叶-盘干燥机组合，提高综合干燥速率，桨叶-蒸汽回转筒组合，大批量连续处理高水分或粘性物料。

◆ 可在真空状态下操作，可回收溶剂，也可完成高沸点粘稠物料的挥发物蒸发脱出作业。

Paddle dryer is a dryer that allows materials (organic, inorganic particles or powder material) to be directly contacted with a rotating hollow wedge-type heating part for heat transfer. It does not require air as a heating medium, the air used is only a carrier to take vapor out.

◆ Paddle type dryer is a kind of heat conduction-based horizontal mixing dryer, the main structure is a jacketed W-shaped shell with a pair inside low-speed rotating hollow shaft, the shaft is welding a number of hollow mixing blade, jacket and hollow stirrer are passed through heat medium, and the two heating surfaces dry materials at same time. Therefore, the machine has a prominent heat transfer rate than general conduction dryer. Biaxial or multi-axis type can be designed according to actual needs.

◆ The hot air is usually fed from the middle of dryer and discharged from the other side through the surface of material layer in the agitated state. Heating medium can be steam, hot water, or high temperature heat transfer oil.

◆ Typical conduction drying method and high thermal efficiency, it saves 30% to 60% or more than the usual convection drying energy.

◆ As there is steam into stirring paddles too, the dryer has bigger unit volume heat transfer area than normal indirect heat transfer dryer.

◆ The hollow wedge paddles rotate in opposite directions, and the two slopes of the blades are repeatedly agitated, compressed, relaxed and pushed forward materials. This opposite movement gives the foliage a unique self-cleaning effect, and the heating surface is constantly updated to keep heating coefficient higher than any other conduction drying methods.

◆ As the heating surface has a unique self-cleaning effect, it can successfully deal with most of high water or viscous paste materials, the scope of application is wider than general conduction drying equipment.

◆ As all required heat is offered by the hollow paddle and jacket, in order to reduce exhaust humidity, only a small amount of hot air will be added, dust entrainment is very little and exhaust treatment is easier.

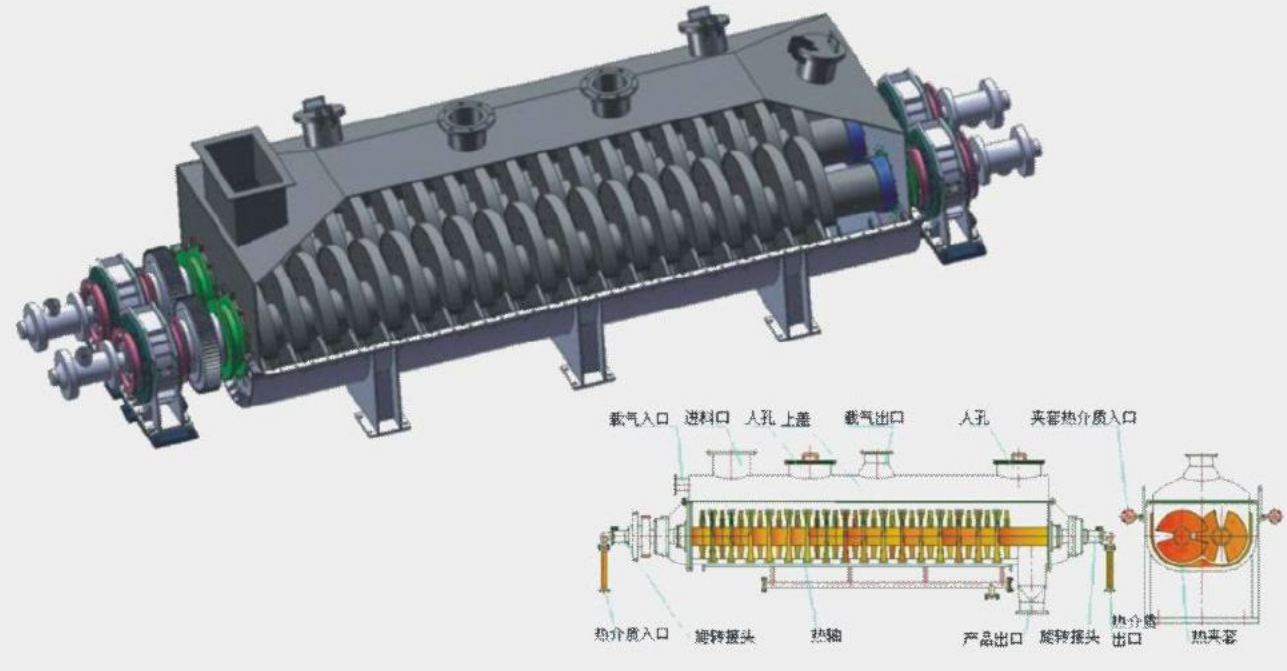
◆ Material retention time is easy to adjust, it can handle high water content, and get final product with very low water content.

◆ Dryer stock material volume is very high which is about 70 - 80% of cylinder volume, the effective heating area of unit is much higher than general conductive drying equipment, the machine is compact with small size and small occupation.

◆ It can be easily combined with other drying methods to make efficient drying units, to play their respective advantages, achieve best economic and technical indicators. Such as paddle-plate dryers combination to improve the integrated drying efficient, paddle-steam rotary drum dryers combination to deal with largely of high moisture or sticky material continuously.

◆ It can be operated under vacuum state, to recover solvent and to complete evaporation of the volatile material with high boiling point.





适应物料 Adaptive material

- ◆ 无机化工行业: 纳米级超细碳酸钙、油墨钙、造纸钙、牙膏钙、含镁碳酸钙、轻质碳酸钙、湿法活性碳酸钙、碳酸镁、氧化镁、氢氧化镁、磷石膏、硝酸钙、硫酸钙、高岭土、碳酸钡、碳酸钾、铁黑、铁黄、铁绿、铁红、纯碱、氮磷钾复合肥、膨润土、白炭黑、炭黑、氧化氟化钠、氟化钠、氢氧化铝、拟薄水铝、分子筛、皂素、碳酸钴、硫酸钴、草酸钴等。
- ◆ 有机化工行业: 靛蓝、染料有机红、染料有机黄、染料有机绿、染料有机黑、聚烯烃粉体、聚碳酸酯树脂、高(低)密度聚乙烯、线型低密度聚乙烯、聚缩醛颗粒、尼龙6、尼龙66、尼龙12、醋酸纤维、聚苯硫醚、丙烯酸树脂、工程塑料、聚氯乙烯、聚乙烯醇、聚苯乙烯、聚丙烯、聚脂、聚甲醛、苯乙烯-丙烯腈共聚、乙烯-丙烯共聚等。
- ◆ 冶炼行业: 镍精矿粉、硫精矿粉、铜精矿粉、锌精矿粉、金阳极泥、银阳极泥、DM促进剂、焦油脱酚等。
- ◆ 环保行业: 城市生活污水泥、工业污泥、PTA污泥、电镀下水污泥、锅炉烟灰、制药厂废渣、糖厂废渣、味精厂废渣、煤灰等。
- ◆ 饲料行业: 酱油渣、骨基饲料、酒糟、食品下角料、苹果渣、桔子皮、豆粕、鸡骨饲料、鱼粉、饲料添加剂、生物渣泥等。
- ◆ 食品、医疗行业: 淀粉、可可豆、玉米粒、食盐、变性淀粉、药品、杀菌剂、蛋白、阿维菌素、药用氢氧化铝、青霉素中间体、邓盐、咖啡因。

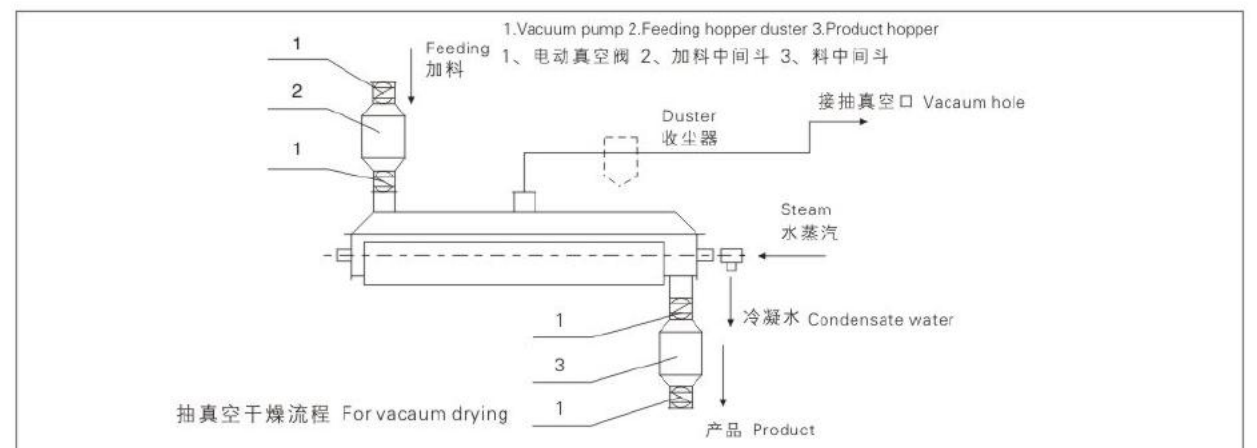
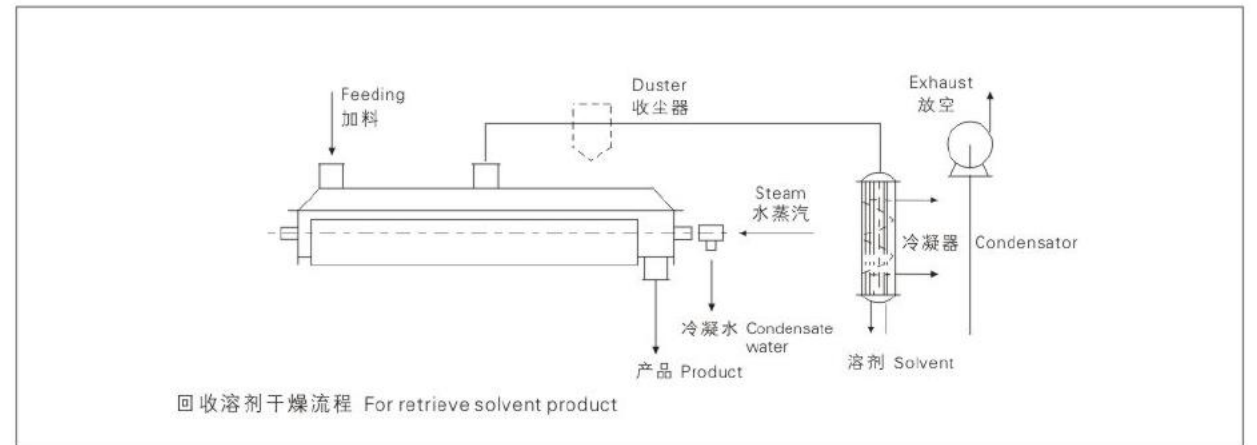
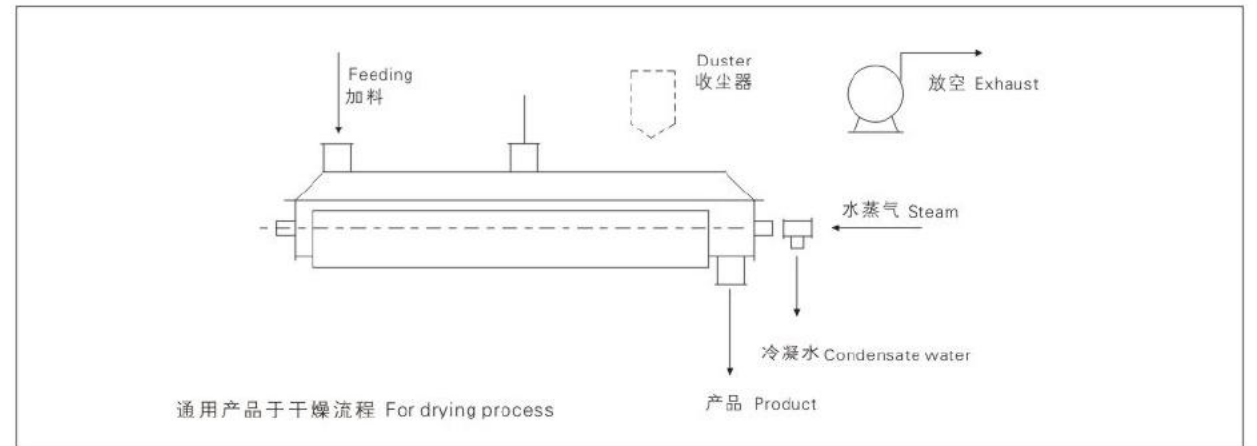
- ◆ Inorganic chemical industry: nano-superfine calcium carbonate, calcium ink, paper calcium, toothpaste calcium, magnesium carbonate containing calcium carbonate, light calcium carbonate, wet active calcium carbonate, magnesium carbonate, magnesium oxide, magnesium hydroxide, phosphogypsum Calcium, calcium sulfate, kaolin, barium carbonate, potassium carbonate, iron black, iron yellow, iron green, iron red, soda ash, NPK compound fertilizer, bentonite, white carbon black, carbon black, sodium fluoride, sodium cyanide, Aluminum hydroxide, pseudo-water aluminum, molecular sieves, saponin, cobalt carbonate, cobalt sulfate, cobalt oxalate and so on.
- ◆ Organic Chemical Industry: Indigo, Dye Organic Red, Dye Organic Yellow, Dye Organic Green, Dye Organic Black, Polyolefin Powder, Polycarbonate Resin, High (Low) Density Polyethylene, Linear Low Density Polyethylene, Polyacetal Granules, nylon 6, nylon 66, nylon 12, acetate fiber, polyphenylene sulfide, propylene-based resin, engineering plastics, polyvinyl chloride, polyvinyl alcohol, polystyrene, polypropylene, polyester, Acrylonitrile copolymerization, ethylene-propylene copolymerization, and the like.
- ◆ Smelting industry: nickel concentrate powder, sulfur concentrate powder, copper concentrate powder, zinc concentrate powder, gold anode mud, silver anode mud, DM accelerator, tar off the phenol and so on.
- ◆ Environmental protection industry: urban sewage sludge, industrial sludge, PTA sludge, electroplating sewage sludge, boiler soot, pharmaceutical waste, sugar residue, monosodium glutamate plant waste, coal ash and so on.
- ◆ Feed industry: soy sauce residue, bone feed, lees, food under the material, apple pomace, orange peel, soybean meal, chicken bone feed, fish meal, feed additives, biological slag and so on.
- ◆ Food, medical industry: starch, cocoa beans, corn kernels, salt, modified starch, drugs, fungicides, protein, avermectin, medicinal aluminum hydroxide, penicillin intermediates, Deng salt, caffeine.

YUTONG  
宇通干燥

KJG Series Hollow Blade Dryer  
KJG系列空心桨叶干燥机

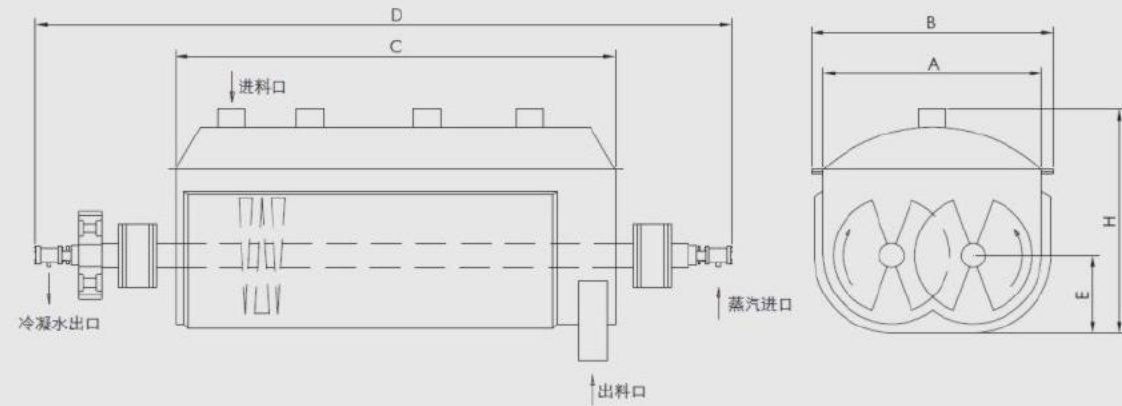


流程图 Flow chart





结构示意图 Schematic of structure



技术参数 Technical parameters

型号 Model	KJG-3	KJG-9	KJG-13	KJG-18	KJG-29	KJG-41	KJG-52	KJG-68	KJG-81	KJG-95	KJG-110	KJG-125	KJG-140
传热面积 (m <sup>2</sup> ) Heat transfer area	3	9	13	18	29	41	52	68	81	95	110	125	140
有效容积 (m <sup>3</sup> ) Effective volume	0.06	0.32	0.59	1.09	1.85	2.8	3.96	5.21	6.43	8.08	9.46	10.75	12.18
转速范围 (rpm) Speed range	5~20	5~20	5~20	5~20	5~20	5~10	5~10	5~10	5~10	1~8	1~8	1~8	1~8
传动功率 (kW) Transmission power	2.2	4	5.5	7.5	11	18.5	30	37	45	55	75	90	110
设备宽度 A (m) Device width	306	584	762	940	1118	1296	1474	1655	1828	2032	2210	2480	2610
总宽度 B (m) Overall width	736	841	1066	1320	1474	1676	1854	2134	2186	2438	2668	2732	2935
设备长度 C (m) Equipment length	1956	2820	3048	3328	4114	4724	5258	5842	6020	6124	6850	7500	7860
总长度 D (m) Total length	2972	4876	5486	5918	6808	7570	8306	9296	9678	9704	10300	11800	12900
中心高度 E (m) Center height	380	450	534	610	762	915	1066	1220	1430	1560	1650	1760	1856
设备总高度 H (m) Total equipment height	762	838	1092	1270	1524	1778	2032	2362	2464	2566	2668	2769	2838



YUTONG 宇通干燥

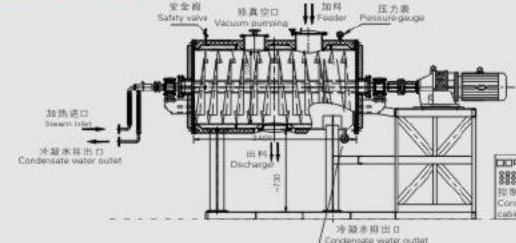
ZKG Series Vacuum Harrow Dryer ZKG系列真空耙式干燥机



应用 Applications

- ◆ 医药、食品、化工等行业进行以下物料干燥。
- ◆ 适用于浆状、膏糊状、粉状物料。
- ◆ 要求低温干燥的热敏性物料。
- ◆ 易氧化、易爆、强刺激、剧毒物料。
- ◆ 要求回收有机溶剂的物料。
- ◆ Drying for below materials in pharmaceutical, food and chemical industry etc.
- ◆ Suitable for thick liquid form, paste, powdery materials.
- ◆ Temperature sensing materials requiring low temperature drying.
- ◆ Explosive, strong stimulating, extremely poisonous substance, material that easy to oxidize.
- ◆ Demand to retrieve the materials of the organic solvent.

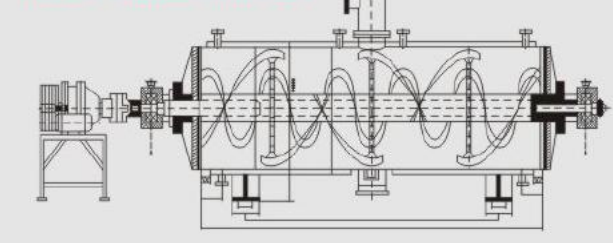
流程图 Flow chart



原理 Principle

- ◆ 本机是一种新型卧式间歇式真空干燥设备,湿物料经传导蒸发,带有刮板搅拌器不断清除热面上的物料,并在容器内推移形成循环流,水份蒸发后由真空泵抽出。
- ◆ This machine is a new type of intermittent vacuum drying equipment, wet material by conduction evaporation, with scraper agitator will remove material on hot surface, and move in the container to form a circulation flow of water evaporation by vacuum pump.

结构示意图 Schematic of structure



特点 Features

- ◆ 本机采用夹层与内搅拌同时加热方式,传热面大,热效率高。
- ◆ 本机设置搅拌,使物料在筒内形成连续循环状态,进一步提高了物料受热的均匀度。
- ◆ 本机设置搅拌,从而可顺利进行浆状、膏状、糊状物料干燥。
- ◆ The machine adopts the method internal and mixing to heat, the heat transfer area is big.
- ◆ the machine is stirred and the material is formed in a continuous circulation state, which further increases the uniformity of the heat of the material.
- ◆ This machine set up dry, which dry the slurry paste, paste materials.

技术参数 Technical Parameter

项目 Item	单位 unit	机型 type											
名称 Name		ZKG-500	ZKG-750	ZKG-1000	ZKG-1500	ZKG-2000	ZKG-3000	ZKG-5000	ZKG-8000	ZKG-10000			
工作容积 Working volume	L	300	450	600	900	1200	1800	3000	4800	6000			
内筒尺寸 size in the cylinder	mm	φ600x1500	φ800x1500	φ800x2000	φ1000x2000	φ1000x2600	φ1200x2600	φ1400x3400	φ1600x4500	φ1800x4500			
搅拌转速 Stirring revolution	rpm	10~15		10		8~10		5	5	5			
功率 Power	kw	3	4	5.5	5.5	7.5	11	15	22	30			
夹层设计压力 Design pressure of jacket	MPa	< 0.3											
筒内压力 Pressure in the cylinder	Mpa	-0.09 ~ -0.096											
换热面积 (筒体+耙尺)	m <sup>2</sup>	2.4+1	3.2+1.2	4.5+1.5	5.6+1.8	7.5+2.2	9+2.5	14+3.5	21.6+5.5	24.3+5.5			

注:水份蒸发量与物料的特性及干燥温度有关。随着产品不断更新,有关参数变更,恕不预先通知。  
Notes: the evaporated amount of water its related to the characteristics of raw materials and the temperature of air in and air out. With renew products unceasingly, the related parameters will be exchanged, it does not announce in advance, pardon!



DZG Series Sterile  
One-armed Rotary Vacuum  
DZG系列无菌单臂双锥回转真空干燥机



海南葫芦娃药业

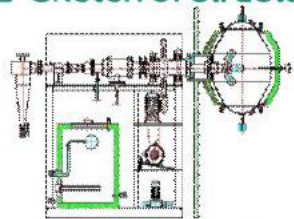
概述 Descriptions

适用于化工、制药、食品等行业的粉状、粒状及纤维状需低温干燥的物料(如生化制品等),更适用于易氧化、易挥发、热敏性、强烈刺激、有毒性物料和对结晶形状有特殊要求的物料干燥。

特点 Features

- ◆采用水蒸气或热水加热,应用旋转接头进行机械密封,确保运行无泄漏。
- ◆采用齿轮传动,保证运转平稳,采用二级变速,同时采用变频软启动,做到转速可调。
- ◆应用三头或多头金属烧结网,避免传统的滤袋脱落及密封套磨损掉落现象,确保产品的质量,烧结网易拆装与清洗。
- ◆采用双列角接触球轴承,这样形成的固定点有利于设备的平稳运转,避免了传统的调心晃动;采用单点固定有利于设备的自由热膨胀。
- ◆真空管采用单点双支撑,有利于真空管的固定,防止真空管变形。
- ◆设有旋风分离器,能防止因误操作而泄料,能确保真空系统的正常运行。
- ◆正常放空应在无菌室内,通过管道过滤器放空,但放空的位置不能在罐体上,应在真空管道上,不能采用室外空气。
- ◆在支架上安装热水箱、热水泵,一方面起到配重作用,另一方面可节省空间。
- ◆罐体上设有现场测温表,可随时观察与调控温度设有真空上料与卸料口,亦可兼做取样口,方便进料与取样。
- ◆采用二道机械密封,一道是真空密封,一道是凝水密封。真空管道上设有金属膨胀节,消除设备受热膨胀而引起的变形量。
- ◆人孔采用快开结构,方便操作、维修、清洗、消毒等。

结构示意图 Sketch of structure



技术参数 Technical Parameter

型号	DZG-100	DZG-200	DZG-300	DZG-500	DZG-800	DZG-1000
全容积 (L)	100	200	300	500	800	1000
工作容积 Working volume	≤50	≤100	≤150	≤250	≤400	≤500
加热面积 Heating area	1.1	1.5	2	2.6	3.8	4.6
转速 Speed	0~12					
功率 Power	0.75	1.1	1.5	1.5	2.2	3
罐内设计压力 Design pressure inside tank	-0.09~0.096					
夹层设计压力 Design pressure inside jacket	≤0.3					
整机重量 Total weight	600	750	900	1150	1400	1600

It is suitable for the raw materials that need to dry at low temperature (for example, biochemistry products in chemical, pharmaceutical and foodstuff industry.) Particularly it is suitable for the raw materials that are easy to oxidize, volatilize and have strong heat sensitive and toxic and not permitted to destroy its crystal drying.

- ◆ Filled by steam or hot water heating, the application of rotary joint for mechanical seal, ensure running without leakage.
  - ◆ Cardiac adopts gear drive, to ensure smooth operation, using the secondary variable speed, variable frequency soft start at the same time, achieve the speed is adjustable.
  - ◆ Has used three or more metal sintering nets, avoid the traditional filter bag off and sealing set of wear debris falling phenomenon, ensure the quality of the products, sintering net is easy for disassembling and cleaning.
  - ◆ Filled with double row angular contact ball bearing, thus formed the fixed point is conducive to the smooth operation, avoid the traditional heart shaking; Using a single point of fixed to the free thermal expansion of the equipment.
  - ◆ Cardiac valve adopts the single point of double support, is advantageous to the vacuum tube is fixed, prevent the tube deformation.
  - ◆ Filled with cyclone separator, can prevent the blowdown due to wrong operation, to ensure the normal operation of the vacuum system.
  - ◆ Should derive normal vent in the sterile room, through the pipeline filter vent, but the position of the vent can't on the tank, should be in the path of the vacuum tube, cannot use the outdoor air.
  - ◆ In brackets are installed on the hot water tank, heat pumps, play a role of balancing on one hand, on the other hand can save a space.
  - ◆ Tanks filled with the temperature meter, can observe and control temperature is equipped with a vacuum feeding and discharging mouth, can hold concurrently do sampling mouth, convenient feeding and sampling.
  - ◆ Filled with 2 mechanical seal, one seal is vacuum seal, another is a condensate water seal. Vacuum tube is equipped with metal expansion joint, eliminate thermal deformation which is caused by the expansion of equipment.
- Manhole adopts quick open structure, convenient operation, maintenance, cleaning and disinfection, etc.

SZG Series Double  
Conical Revolving  
Vacuum Dryer  
SZG系列双锥回转真空干燥机



工作原理 Principle of work

SZG双锥回转真空干燥机为双锥形的回转罐体,罐内在真空状态下,向夹套内通入导热油或热水进行加热,热量通过罐体内壁与湿物料接触。湿物料吸热后蒸发的水汽,通过真空泵经真空排气管被抽走。由于罐体内处于真空状态,且罐体的回转使物料不断的上下,内外翻动。故加快了物料的干燥速度,提高干燥效率,达到均匀干燥的目的。

双锥回转真空干燥机是集混合-干燥于一体的新型干燥机。将冷凝器,真空泵与干燥机配套,组成真空干燥装置。(如不需回收溶剂,冷凝器可不用)本机设计先进,内部结构简单,清扫容易,物料能全部排出,操作简便。能降低劳动强度,改善工作环境。同时因容器本身回转时物料亦转动,但器壁上不积料,故传热系数较高,干燥速率大,不仅节约能源,而且物料干燥均匀充分,质量好。可广泛应用于制药、化工、食品、染料等行业的干燥。

应用范围 Scope of application

本机适用于医药、食品、化工等行业的粉、粒状物料的真空干燥和混合,尤其适用有下列要求的物料:

- ◆不能接受高温的热敏性物料
- ◆容易氧化,有危险的物料
- ◆需回收溶剂和有毒气体的物料
- ◆对结晶形状有要求的物料
- ◆要求残留挥发物含量极低的物料

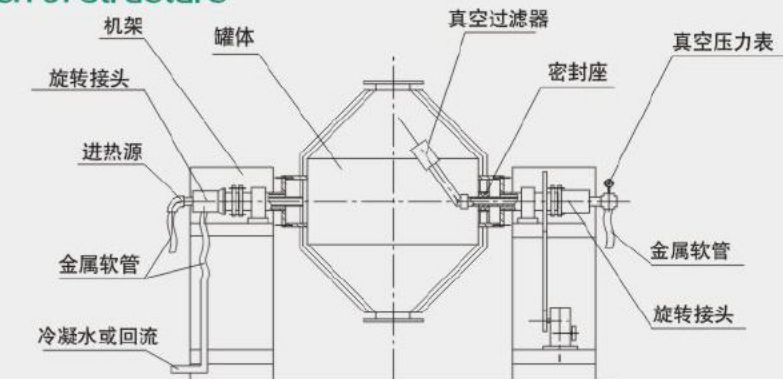
SZG Double Conical Revolving Vacuum Dryer is double conical rotating cylinder. Under the state of vacuum in the cylinder, pass conduction oil or hot water into the jacket to heat. The heat will be contacted with damp raw material through inner wall. The evaporated steam after the raw material absorbed heat will be exhausted through vacuum pump. Because the inner of cylinder is in vacuum state and the cylinder make raw material turn over from up to down and from inner to outer, the drying speed is fastened and the drying efficiency is improved, and the purpose of uniform drying can be reached.

The Double Conical Revolving Vacuum Dryer is a new style dryer integrated mixing and drying in one body. It is equipped with condenser and vacuum pump. (If the solvent does not recover, the condenser may not be used). The design of this machine is advanced and its inner structure is simple. So its clean is very convenient and the raw material can be discharged fully and its operation is very simple. It can reduce labour and improve working environment. At the sometime when the cylinder is rotating, the raw material is rotated too, the materials of cylinder can not be accumulated on the container. Its coefficient of thermal transmission is high and the drying speed is high. Not only it can save energy but also the raw material can be dried fully and uniformly and the quality of product is high. It can be used wide for pharmaceutical industry, chemical industry, foodstuff industry, dyestuff industry, etc.

The machine is suitable for vacuum mixing and drying of powder and granule raw materials of pharmaceutical industry, chemical industry, foodstuff industry etc. Particularly it is suitable for raw materials that have the follow requirements:

- ◆ Thermal sensitive raw materials that cannot be dried at high temperature.
- ◆ Raw materials that is easy to oxidize and dangerous.
- ◆ Raw materials that the solvent and toxic gases are needed to recover.
- ◆ Raw materials that have special requirement for crystal shape.
- ◆ Raw materials that have special requirement for the content of residual volatile.

结构示意图 Sketch of structure

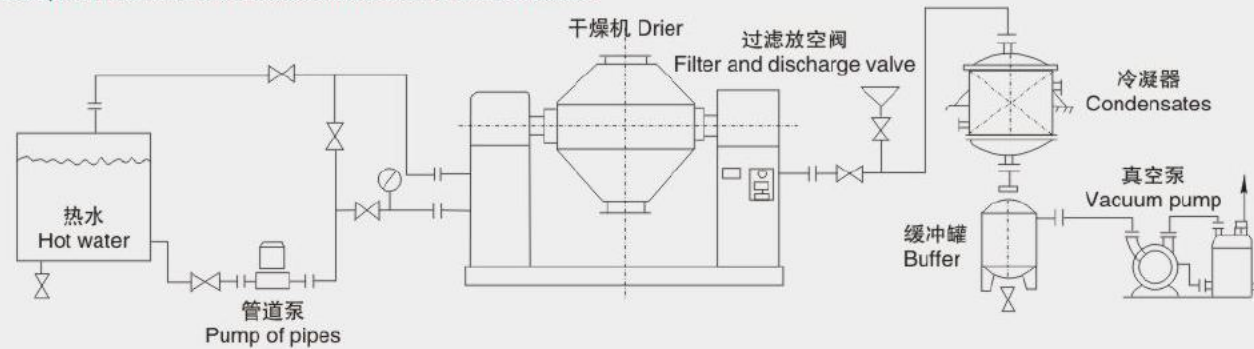






## 安装示意图 Schematic of installation

推荐的工艺安置示范：溶剂回收工艺安置  
example of recommended installation: installation of solvent recover.



## 技术参数 Technical Parameter

名称 name	项 目 item	单位	100	350	500	750	1000	1500	2000	3500	4500	5000
罐内容积	Volume inside of tank	L	100	350	500	750	1000	1500	2000	3500	4500	5000
最大装料容积	Max. loading capacity	L	40	140	200	300	400	600	800	1400	1800	2000
最大装料重量	Max. loading weight	Kg	20	70	100	150	200	300	400	700	900	1000
转速	Revolution	rpm	3~13					6	5	4	4	4
加热面积	Heating area	m <sup>2</sup>	1.1	2.3	2.8	3.9	5.1	6.5	8.2	12.2	16.5	18.2
电机功率	Power of motor	kW	0.75	1.1	1.5	2.2	3	4	5.5	7.5	11	15
占地面积 长x宽	Occupied area, LxW	mm	2160x800	2160x800	2350x800	2560x1000	2860x1300	3060x1300	3260x1400	3760x1800	3960x2000	4400x2500
回转高度	Rotating height	mm	1750	2100	2250	2490	2800	2940	2990	3490	4100	4200
罐内设计压力	Desigh pressure inside of tank	Mpa	-0.1~0.15									
夹套设计压力	Desigh pressure of jacket	Mpa	≤0.3									
重量	Weight	Kg	800	1100	1200	1500	2800	3300	3600	6400	7500	8600

注:对干燥前后容积变化很大的物料其装料系数可适当加大或缩小。最大装料体积不能接触到真空管底面。机组需在我方人员现场指导下进行调试工作  
Notes: for raw material, if its volume has great change before and after dry, then its filling coefficient may be increased or decreased suitably. The auxiliary parts of vacuum drying system can be supplied and installed by our factory. Please indicate them when order.

电机可根据用户要求选配调速电机。转速为0-6rpm;以上技术参数物料比重按0.6g/cm<sup>3</sup>计算,如超过,定货时需提出,用户如需压力容器证书,定货时需提出;如内胆材料采用搪玻璃,定货时需提出;物料如为易燃易爆性,定货时需明确提出,否则严禁使用。  
Speed adjusting motor of 0-6rpm might be chosen according to the user's requirements. The following aspects should be point out when to order:

- The above-mentioned parameters are calculated based on material density of 0.6g/cm<sup>3</sup>, if it's over, please point out.
- If certificate for pressure vessel is required, please point out.
- If glass lining for interior surface is required, please point out. If the material is explosive, or flammable, the calculation should be made according to trial result.

## 订货须知 Notes to order

加热分热水、导热油加热和蒸汽二种方式。  
订货时请注明物料所能承受的温度或干燥机的使用温度,以便奉厂为您选择或提供热源。  
干燥粘性物料时,本厂将在罐内特别设计“抄板”结构。  
真空干燥系统中涉及的附件,我厂均可为用户提供和安装;请在订货中说明。  
本厂可对用户提出的特殊要求提供设计,制造和安装。  
整体设备配套按需要加价。

Its heating has two ways: hot water, steam conduction oil.  
When order, please indicate the temperature of raw material to be undertaken or the operation temperature dryer in order to choose or provide suitable heat source for you.  
When dry viscous raw material, our factory will design special stirring device in the chamber.  
The auxiliary parts of vacuum drying system can be supplied and installed by our factory. Please indicate them when order.  
If having special requirements, our factory can also design, manufacture and install as request.  
The cost of complete equipment should be increased in accordance with the needs.

# YUTONG 宇通干燥

## YZG(round)/FZG(square) Vacuum Dryer YZG(圆型)、FZG(方型)真空干燥机



## 工作原理及特点 Working principle and features

◆ 纯水在沸腾状态时具有最大的汽化速度。常压下,约100℃时纯水开始沸腾。而在真空条件下,由于系统中水蒸汽分压,远低于物料表面的水蒸汽分压,水的沸点低于100℃。例如:表面降至-0.07MPa时,水在70℃即开始沸腾。一般规律,真空度越高水的沸点越低。在真空干燥器内,汽化后的水能随真空产生迅速排除,所以尽管在较低的操作温度下,本干燥器仍有较大的干燥能力。

◆ 设备运行时,物料处于静止状态。有利于保持物料的初始形态,间歇操作,能随时调整工艺条件,本设备均为人工装卸料。

◆ FZG方型系列干燥器,顶部布置为拱型结构,能有效克服凝结水返滴问题,进一步提高了干燥效率,并独家设计采用了四点合一抽真空结构,保证了各部位物料干燥的均匀性。本设备既可用于低温干燥,又能用于溶剂回收,所用热源可为热水,导热油。

◆ 特别适用于干燥过程中怕氧化的物料。

## 应用范围 Scope of application

适用于医药、化工、食品、电子、中药等行业的热敏性物料干燥。

## 特点 Features

- ◆ 能在较低温度下得到较高的干燥速率,热量利用充分。
- ◆ 适合低温干燥或热敏性物料的干燥。
- ◆ 能干燥含有溶剂及需回收溶剂的物料。
- ◆ 在干燥前可进行消毒处理,干燥过程中无任何不纯物混入。
- ◆ 本干燥器属于静态真空干燥器,故干燥物料的形体不会损坏。
- ◆ It can get higher drying speed at lower temperature and the heat energy can be used fully.
- ◆ It can dry at low temperature or can dry heat sensitive raw materials.
- ◆ It can dry raw materials that contain solvent and the solvent needs to recover.
- ◆ Before drying, it can carry out disinfectant treatment. during the period of drying, any impurity can not enter in it.
- ◆ The dryer belongs to static vacuum dryer, the shape and volume of raw materials can not be damaged.

◆ Pure water has the highest gasification speed under boiling condition. At normal pressure, pure water starts to boil at the temperature of 100℃, under vacuum condition, as vapor pressure in the system is lower than that of material surface, boiling point of water is under 100℃, e.g. when surface is at 0.07MPa, water will boil at the temperature of 70℃, the higher of vacuum pressure, the lower of boiling point. In the vacuum dryer, evaporated water can be removed quickly by the vacuum system, therefore, this dryer has larger drying capability all though it's under lower operation temperature.

◆ Material is under static condition during operation of the equipment, which is benefit for keeping initial status of material, intermittent operation can adjust process conditions at any time.

◆ On the top of FZG, dryer, heating system is arranged to tackle the problem of return of condensed water. To overcome the condensate return and drop problem effectively.

◆ This equipment can be used for low temperature drying and solvent recovery, heat sources can be steam, hot water or conduction oil.

◆ It is specially suitable for materials that is easily oxygenated during drying.

It is suitable for drying heat sensitive raw materials of pharmaceutical industry, chemical industry, foodstuff industry, electronic industry, Chinese herb medicine industry, etc.





YZG(round)/FZG(square)  
Vacuum Dryer  
YZG(圆型)、FZG(方型)真空干燥机



BZG (PLATE)  
VACUUM DRYER  
BZG(板式)真空干燥机



技术参数 Technical Parameter

名称 Name	规格 Model	YZG-600	YZG-800	YZG-1000	YZG-1400A	FZG-10	FZG-15	FZG-20
干燥箱内尺寸	Inner size of drying chamber, mm	φ600 × 976	φ800 × 1320	φ1000 × 1530	φ1400 × 2080	1500 × 1040 × 1200	1500 × 1400 × 1200	1500 × 1800 × 1200
干燥箱外尺寸	Outer size of drying chamber, mm	750 × 950 × 1050	950 × 1210 × 1350	1150 × 1410 × 1600	1550 × 1900 × 2150	1676 × 1700 × 1564	1676 × 2000 × 1564	1676 × 2500 × 1564
烘架层数	Layers of baking support	4	4	5	8	5	8	12
层间距离	Interval, mm	85	100	100	100	120	120	120
烘盘尺寸	Size of baking tray, mm	310 × 600 × 45	460 × 640 × 45	460 × 640 × 45	460 × 640 × 45	460 × 640 × 45	460 × 640 × 45	460 × 640 × 45
烘盘数	Quantity of baking tray	4	4	10	32	20	32	48
烘架管内使压	Working pressure inside the pipe of baking support, MPa	≤0.784	≤0.784	≤0.784	≤0.784	≤0.784	≤0.784	≤0.784
烘架使用温度	Operation temperature of baking support, °C	35 ~ 150	35 ~ 150	35 ~ 150	35 ~ 150	35 ~ 150	35 ~ 150	35 ~ 150
箱内真空度	Degree of vacuum inside the chamber when operation in die, Mpa	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1
在-0.1MPa, 加热温度110°C时, 水的汽化率	Under the condition of -0.1 Mpa and 110°C, evaporation rate of wate, kg/m <sup>2</sup> ·hr	7.2	7.2	7.2	7.2	7.2	7.2	7.2
用冷凝器时, 真空泵型号, 功率	When condensor is used, Model, and power of vacuum pump, kw	2X-15A 2KW	2X-30A 3KW	2X-30A 3KW	2X-70A 5.5KW	2X-70A 5.5KW	2X-70A 5.5KW	2X-90A 7.5KW
不用冷凝器时, 真空泵型号, 功率	When condensor is not used, Model, and power of vacuum pump, kw	SK-0.5 1.5KW	SK-1 2.2KW	SK-1 2.2KW	SK-1 5.5KW	SK-2 4KW	SK-2 5.5KW	SK-2 5.5KW
干燥箱重量	Weight of drying chamber, kg	250	600	800	1400	1400	2100	3200

订货须知 Notes to order

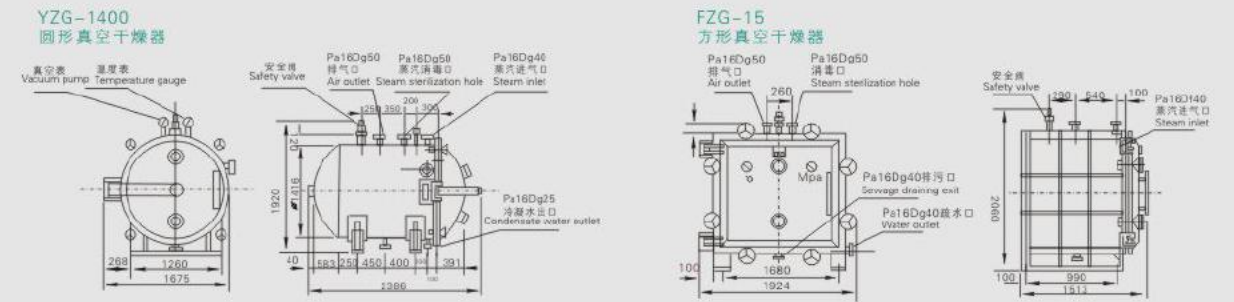
- ◆ 订货时请根据干燥物料的物性, 初含水率、温度、真空度、干燥量、干燥时间等因素选择合适的真空干燥器, 同一种型号的真空干燥器中分别有蒸汽型、热水型、导热油型三种形式的加热方式。例如: 为了增加干燥量, 可适当增加烘架层数, 请及时向我公司提出。
- ◆ 在使用说明书上涉及的真空干燥系统中的附件, 我公司均可为用户提供和支装, 请在订货时说明。
- ◆ 本公司可对用户提出的真空干燥系统中的特殊要求提供设计、制造与安装。
- ◆ 本公司设备对用户实行质量三保, 长期提供配件, 敬请用户放心。

- ◆ When order, please choose suitable vacuum dryer in accordance with the characteristics of raw materials to be dried such as, physical properties, primary moisture, temperature, vacuum degree, amount to be dried, drying time, etc. The vacuum dryer with same models three types i.e., steam type, hot water type, heat conduction oil type. For example, in order to increase dry quantity, the quantity of layer of baking frame can be increased. Please put forward it to our factory.
- ◆ The accessories used for vacuum drying system mentioned in Operation Instruments can be provided and installed by our factory. Please explain it when order.
- ◆ The factory can also provide design, manufacture and installation for special requirements of vacuum drier from customers.
- ◆ The equipment of our factory carries out "guarantee of repair, replacement and refund of substandard product" and supplies all fittings for a long time. please put your mind at rest.

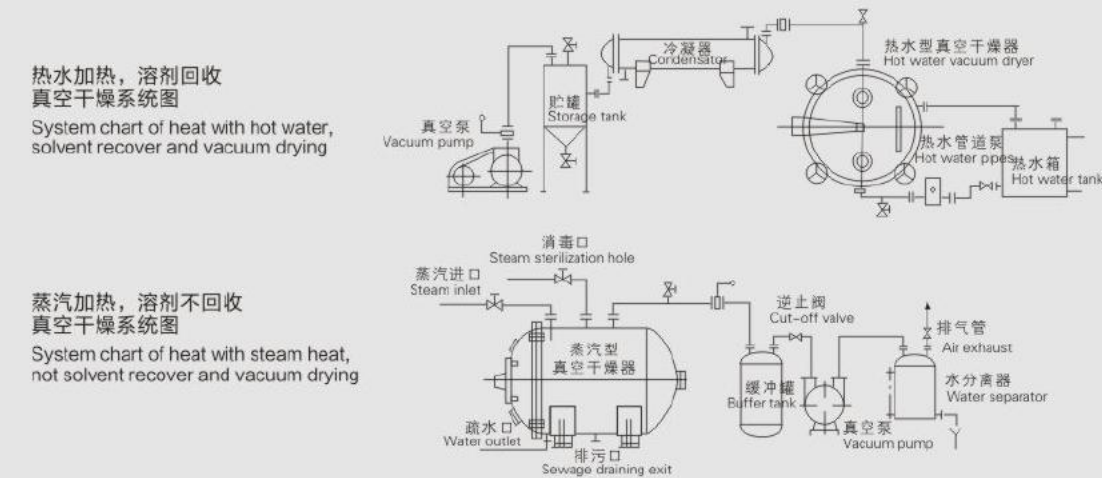
板式真空干燥机是我公司研发的改进型的真空干燥机, 热效率利用率高, 比传统的列管式加热方式效能利用率提高30%以上, 干燥物料更均匀。板式真空干燥机的加热方式为20mm平板加热, 面板厚4mm, 底板厚3mm压凹坑塞焊, 内置导流片。

Plate type vacuum dryer is our company research and development of advanced vacuum drying machine, with high thermal efficiency compared with traditional method of shell and tube type heat utilization efficiency increased by more than 30%, dry material is more uniform. The heating mode of board type vacuum dryer is 20 mm slab heating, panel thickness 4 mm, base plate thickness 3 mm with plug welding, and built-in deflector.

结构示意图 Sketch of structure



流程图 Flow chart





GLZ Series Vacuum Ribbon Dryer

GLZ系列真空螺带干燥机



概述 Descriptions

一种集干燥、粉碎、减压蒸馏、混粉为一体的高效多功能全密闭立式真空干燥设备。它的干燥效率是同等规格“双锥回转真空干燥机”1~2倍。

High efficiency multifunctional full closed vertical vacuum drying device integrating drying, crushing, vacuum distillation and powder mixing. Its drying efficiency is 1~2 times than the same size "double cone rotary vacuum dryer".

特点 Features

- ◆ 适用性强：结合本公司特殊干燥工艺，能适应粘度大、热穿透性差，易滚球、易抱团成块物料的干燥。
- ◆ 生产能力大：装料量大，最大可达到容器有效体积80%。
- ◆ 干燥效率高：有效传热面积大，是容器内面积1.4倍；物料在器内呈螺旋提升，再沿主轴呈涡流下降，在分散运动中均匀有效受热；机头高真空与机底同温高速气流同向结合，高效带走物料的溶剂；双通道真空管口，防止真空堵塞，降低阻力，提高抽气速率。
- ◆ 不破坏物料品形：对热敏性、品形要求高的物料不产生破坏。干燥过程全密封充氮气保护生产、无交叉污染、洁净度高，安全等级高。搅拌器与容器壁之间间隙小，可有效防止物料粘在器壁表面。
- ◆ 满足无菌原料药生产要求：可选配在线SIP和CIP及在线无菌取样。与上下工序密封连接，整个生产流程密封生产，满足新版GMP生产要求。

技术参数 Technical Parameter

项目Item	GLZ-500	GLZ-750	GLZ-1000	GLZ-1250	GLZ-1500	GLZ-2000	GLZ-3000	GLZ-4000
有效容积 Effective volume	500	750	1000	1250	1500	2000	3000	4000
全容积 Full volume	650	800	1220	1600	1900	2460	3680	4890
加热面积(m <sup>2</sup> )	4.1	5.2	7.2	9.1	10.6	13	19	22
电机功率(KW)	11	11	15	15	18.5	22	30	37
设备净重(Kg)	1350	1850	2300	2600	2900	3600	4100	4450
搅拌转速(rpm)	50	45	40	38	36	36	34	32
设备总高H(m)	3565	3720	4165	4360	4590	4920	5160	5520
容器高度H3	1455	1610	1965	2160	2300	2590	2380	3160
耳座高度H4	895	995	1315	1480	1630	1860	1900	2240
锅身内宽D2	1100	1200	1400	1500	1600	1750	2100	2100
安装耳座宽D3	1270	1350	1560	1720	1900	2050	2400	2450

- ◆ Strong applicability: combined with the company's special drying process, can adapt to the viscosity, poor thermal penetration, easy ball, easy to hold together into a block of dry material.
- ◆ Production capacity: large capacity, the largest container can reach the effective volume of 80%.
- ◆ The high drying efficiency: effective heat transfer area, the container is 1.4 times the area of the material in the container; a spiral ascending, and then along the main axis of vortex was decreased, in the decentralized movement in uniform and effective heating head; high vacuum and high speed airflow at the bottom of combined with the material, solvent, away; dual channel vacuum pipe vacuum, to prevent clogging, reduce resistance, increase the pumping rate.
- ◆ It does not damage the material and product form: high requirements for heat sensitive products, shaped materials are not damaged. The drying process is fully sealed with nitrogen protection, no cross contamination, high cleanliness and high safety level. The gap between the mixer and the container wall is small, which can effectively prevent the material from sticking on the surface of the wall of the device.
- ◆ It meets the production requirements of sterile APIs: optional SIP and CIP online cleaning and online aseptic sampling. Sealed with the upper and lower process, the entire production process sealed production, to meet the requirements of the new version of GMP production.

FLASH/AIR DRYER  
闪蒸、气流干燥系列

气流干燥也称瞬间干燥

是固体流态化中稀相输送在干燥方面的应用。该法是将加热介质（空气、惰性气体、燃气或其他热气体）和待干燥固体颗粒直接接触，并使待干燥固体颗粒悬浮于流体中，因而两相接触面积大，强化传热传质的过程，广泛应用于散状物料的干燥单元操作。

气流干燥的特点

- (1)气固两相之间传热传质的表面积大固体颗粒在气流中呈高度分散悬浮状态，这样使气一固两相之间的传热表面积大大增加。由于采用较高流速(20-40m/s)，不仅使气一固两相具有较大的传热面积，而且体积传热系数也相当的高。
- (2)热效率高、干燥时间短、处理量大，气流干燥采用气一固两相并流操作，这样可以使高温的热介质进行干燥，且物料的湿含量愈大，干燥介质的温度可以愈高。
- (3)结构简单、紧凑、体积小，生产能力大。
- (4)操作方便，在气充干燥系统中把干燥、粉碎、筛分、输送等单元过程联合起来操作，流程简化并易于自动控制。

我们公司主要研究和生产的设备有QG、FG、GFF型气流干燥和XSG型旋转闪蒸干燥机。

1. Air stream dryer also call "flash dryer"

It is the solid fluid dilute phase transport use in the drying area. The heating medium ( air, inert gases or other air) directness contact with the material, and made the granules suspend in the air-stream, so its contact area large, aggrandizement the heating transport. Widely used in the powder material.

2. Features of the air-stream dryer.

- (1) hot air and the solid contact area large, the granules suspend in the air-stream, so the heating transport area will increase. Due to the high speed of the air-stream (20-40m/s), make the solid and the air-stream relative speed high, so its heat transport coefficient ha also very high.
- (2) high thermal efficiency, short drying time, large capacity, the higher moisture of the material, the higher of the drying temperature.
- (3) configuration simple, close and cubage small, big capacity.
- (4) convenient operate, in the drying system join the drying, grinding, sifting, transporting together, the system can be automatic control.

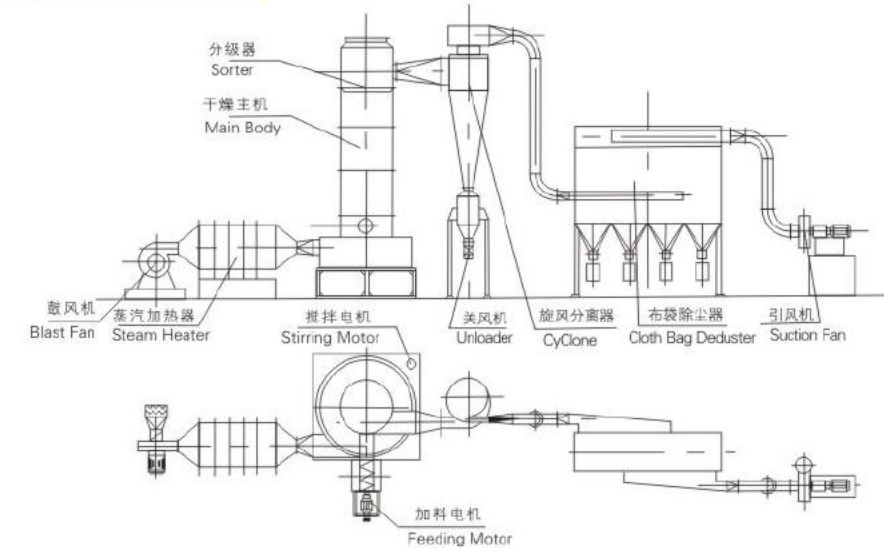
Our company provides the QG, FG, GFF model air-stream dryer and XSG revolving flash vaporization dryer.



SXG Series High-Speed Rotating Flash Dryer  
SXG系列快速旋转闪蒸干燥机



结构示意图 Sketch of structure



概述 Descriptions

SXG系列旋转闪蒸干燥机是我公司在引进吸收国外先进技术的基础上,自行开发成功的新型干燥设备。该机技术先进,设计合理,结构紧凑,适用范围广,生产能力大,产品质量好,效率高,节能,在一个设备内干燥、粉碎、筛分一次完成,消除环境污染,整机性能达到国际先进水平。闪蒸干燥机具有原来的轴承感应冷却(水冷却),设计用油泵联接送油润滑、冷却轴承,密封装置性能优异,在主轴设计上采用半环式,电机利用调速电机,传递平稳、噪声小,使用寿命是同类产品的10倍。

工作原理 Principle of work

热空气切线进入干燥器底部,在搅拌器带动下形成强有力的旋转风场。膏状物料由螺旋加料器进入干燥器内,在高速旋转搅拌桨的强烈作用下,物料受撞击、摩擦及剪切力的作用下得到分散,块状物料迅速粉碎,与热空气充分接触、受热、干燥。脱水后的干物料随热气流上升,分级环将大颗粒截留,小颗粒从环中心排出干燥器外,由旋风分离器和除尘器回收,未干透或大块物料受离心力作用用向器壁,重新落到底部被粉碎干燥。

特点 Features

- ◆ 旋流、流化、喷动及粉碎分级技术的有机结合。
- ◆ 设备紧凑,体积小,生产效率高,连续生产,实现了“小设备,大生产”。
- ◆ 干燥强度大,能耗低,热效率可达70%以上。
- ◆ 物料停留时间短,成品质量好,可用于热敏性物料干燥。
- ◆ 负压或微负压操作,密闭性好,效率高,消除环境污染。

破碎机结构 Crusher structure



SXG series roating flash dryer is developed by our company, and its technology is based on advanced technology adored. The machine includes many superiority, such as reasonable design, compact stuction, widely utilization, great productive capacity, good quality, high effect and save energy, Drying, grinding and sieve are completed in one equipment in once time. It eliminates pollution and the technology is reached international advance level. Flash drying machine has the original bearing induction cooling (water cooling), oil pump design with connection to send oil lubrication, cooling the bearing, seal performance, on the spindle design USES a half ring, motor using speed regulation, smooth transmission, low noise, the service life is ten times of similar products.

The hot air enters the bottom of the drier in tangent direction. Under the driving of the stirrer, a powerful rotating wind field is formed. The paste state materials enter into the drier through the screw charger. Under the powerful function of the stirring vanes at high-speed rotation, the materials are distributed under the function of strike, friction and shearing force. The block state materials will soon be smashed and contact the hot air fully and the materials are heated and dried. The dried materials after the dewatering will go up with the heat air flow. The step rings will stop and keep the big particles. Small particles will be discharged out of the drier from the ring center and will be restored by the whirl separator and dust remover. The not-fully-dried or big piece materials will be sent to the wall of the equipment by centrifugal force function and be smashed again after they fall down to the bottom.

- ◆ This machine combines the whirl technology with the fluidity, ejection and smashing step technologies.
- ◆ The equipment is compact and small in size, high in production efficiency and continuous in the production. It has realized that "a small equipment can perform the large production".
- ◆ The drying capacity for this machine is big but its energy consumption is low. Its heat efficiency can go up to more than 70%.
- ◆ The material stay time is very short. The quality of the final products is very good. The machine can be used for drying the heat sensitive materials.
- ◆ For the negative pressure or the micro-negative pressure operation, the machine is good for its tightness and high in the efficiency so as to eliminate the environmental pollution.



技术参数 Technical Parameter

型号 Type	筒体直径(mm) Barrel diameter	主机尺寸(mm) Main machine dimensions	主机功率(kw) Main machine power	处理风量(m <sup>3</sup> /h) Treatment wind capacity	蒸发水量(kg/h) Water evaporation quantity
SXG-2	200	250 × 2800	5-9	300-800	10-20
SXG-3	300	400 × 3300	8-15	600-1500	20-50
SXG-4	400	500 × 3500	10-17.5	1250-2500	25-70
SXG-5	500	600 × 4000	12-24	1500-4000	30-100
SXG-6	600	700 × 4200	20-29	2500-5000	40-200
SXG-8	800	900 × 4600	24-35	3000-8000	60-600
SXG-10	1000	1100 × 5000	40-62	5000-12500	100-1000
SXG-12	1200	1300 × 5200	50-89	10000-20000	150-1300
SXG-14	1400	1500 × 5400	60-105	14000-27000	200-1600
SXG-16	1600	1700 × 6000	70-135	18700-36000	250-2000



物料表 Material list

类别 Category	物料名称 Name of raw material	初水份 (%) Initial water content	终水份 (%) Final water content	
无机盐 Inorganic salt	硬盐 Harlsalz	硬脂酸钡 Barium stearate	40	0.5
		硬脂酸锌 Zinc stearate	40	0.5
		硬脂酸铝 Aluminum stearate	45	2.0
		硬脂酸钙 Calcium stearate	40	2.5
		硬脂酸镁 Magnesium stearate	45	5.0
	碳酸盐 Carbonate	碳酸锰 Manganese carbonate	20	1.0
		碳酸铈 Cerium carbonate	31	17 (含结晶水)
		碳酸锌 Zinc carbonate	80	0.5
	氧化物 Oxide	氧化锆 Zirconia	80	1.0
		氧化铁红 Iron oxide red	60	1.0
		氧化锌 Zinc oxide	60	1.0
	氯盐 Chlorate	氢氧化铝 Aluminum hydroxide	55	1.0
		氯化亚铜 Cuprous chloride	45	1.0
	硫酸盐 Sulfate	二氧异氰尿酸钠 Sodium isocyanurate sioxide	25	1.0
		硫酸钙 Calcium sulfate	35	3.0
		焦亚硫酸钠 Sodim pyrosulfite	20	0.2
	其它 Other	白炭黑 Silica	85	0.5
		三盐基硫酸铅 Lead sulfate	25	0.5
偏硅酸钠 Sodium metasilicate		47.5	42.4	
有机化工原料 Organic Chemical raw materials	三苯基醋酸锡 Fentin acetate	25	1.0	
	乙酰乙酰苯胺 Acetoacetyl aniline	15	0.2	
	漂粉精 High test bleaching powder	35-40	3	
农药 Agrochemicals	巴丹 Padan	20	1.0	
	杀虫单 Monosultap	20	1.0	
	阿维菌素 ABamectin	80	15	
	扫螨净 Pyridaben	25	0.5	
	多效唑 Paclobutrazol	26	1.0	
	灭多威 Methomyl	15	2.0	
	精喹禾灵 Quizalofop-p-ethyl	58	1.0	
	代森锰锌 Mancozeb	30	1.0	
	三环唑 Tricyclazole	28	1.0	
	阿特拉津 Atrazine	40	1.0	
染料、颜料 Dyestuff pigment	酞菁蓝 Fast blue	35	0.5	
	活性黄 Reactive yellow	60	3.0	
	硫化红棕 Sulphur bordeaux	60	3.0	
	碱性嫩黄 Basic yellow	40	0.3	
	油溶黑 Dilblack	45	1.0	
	硫化蓝 Sulphur blue	60	3.0	
催化剂 Catalyst	歧化催化剂 Disproportionated catalyst	50	1.0	
	4A分子筛 Molecular sieve type 4A	24	2.0	
	M,DM,CBS橡胶促进剂 Rubber accelerator	20-30	0.3	
医药 Pharmaceutical	鸟苷 Guanosine	40	1.0	
	核苷酸、酵母 Nucleotide, Vita yeast powder	40	6	
	莫能霉素 Mohensin	30	3.0	

YUTONG 宇通干燥

QG, FG, GFF Series Air Stream Dryer

QG、FG、GFF系列气流干燥机



概述 Descriptions

气流干燥机又称瞬间、闪急干燥机，我国从60年代开始在制药、化工等行业应用。我厂建厂伊始就引进国内外先进技术，为制药化工、食品等行业提供优质气流干燥设备。十多年来不断改进提高发展以下三大系列气流干燥机：QG系列、FG系列、GFF系列。

Air stream drying is also called instant drying. It is used in pharmaceutical industry, chemical industry from 1960 at home. Our factory follows up the advanced technology at abroad, produce series air for home customer. The main products are divided into three series: QG, FG and GFF.

特点 Features

- ◆干燥强度大，设备投资省，蒸发能力大，可从50kgH<sub>2</sub>O/h~2000kgH<sub>2</sub>O/h。
- ◆干燥时间短，适用于热敏性物料，成品不与外界接触，无污染，质量好。
- ◆设备成套提供，热源可选择蒸汽加热或配套使用燃煤、燃油、燃气热风炉等。
- ◆ Powerful drying. Little invest and the amount of evaporated moisture is high (from 50kgH<sub>2</sub>O/h2000kgH<sub>2</sub>O/h)
- ◆ The drying time is short. The series is suitable in stong heat sensitive materials. The finished product is separated from outside, and no pollution with high quality.
- ◆ The equipment is a total set, the heat source can be choose from steam, coal fuel, oil fuel and gas fuel hot air furnace.

技术参数 Technical Parameter

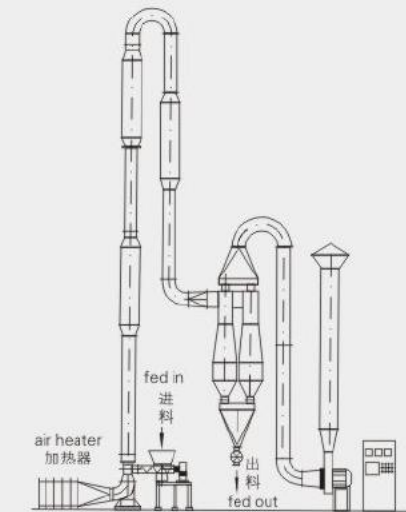
型号 model	蒸发水份 moisture(kg/h)	装机功率 equipped power(kw)	占地面积 occupied area(m <sup>2</sup> )	高度 height(m)
QG50	50	7	16	9
QG100	100	13	26	11
QG200	200	21	35	11
QG250	250	24	51	13
QG500	500	43	78	13
QG1000	1000	100	105	15
QG1500	1500	150	200	16

QG系列

基本型气流干燥设备，适用于松散状、粘性小、成品为颗粒及粉末的物料。此流程示意为负压气流干燥，用户可根据产品特性选择正压型式的干燥方法。

It is a kind of base type, suitable for drying granule and adhe-sive property powder, The sketch is negative stream drying, and you can choose positive stream drying.

结构示意图 Sketch of structure



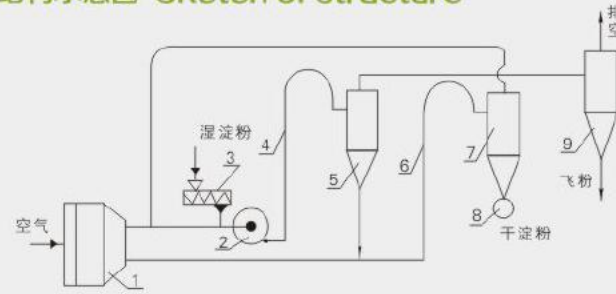


## FG系列

具有尾气循环使用，比一般气流干燥机节能30%的优点，适用于无粘性、松散状物料，成品为颗粒及粉末。

There is tail gas that is recycled, 30% of the advantages of desiccator energy-conservation than general air current, suitable for the inviscid, loose form supplies, the finished product is particle and powder.

## 结构示意图 Sketch of structure



1.热交换器	Heat exchanger	4.一级干燥管	1st grade drying pipe	7.二级旋风分离器	2nd cyclone
2.风机	Fan	5.一级旋风分离器	1st cyclone	8.锁风装置	Air interlock apparatus
3.加料器	Feeder	6.二级干燥管	2nd grade drying pipe	9.除尘装置	Duster

## 技术参数 Technical Parameter

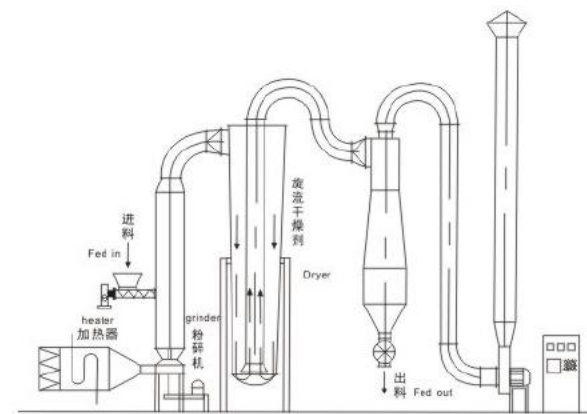
型号 Model	蒸发水份 evaporated moisture(kg/h)	功率配备 equipped power(kw)	占地面积 occupied area (m <sup>2</sup> )	热效率 heat efficiency (%)
FG0.25	113	11	3.5×2.5	>80
FG0.5	225	18.5	7×5	>80
FG0.9	450	30	7×6.5	>80
FG1.5	675	50	8×7	>80
FG2.0	900	75	11×7	>80
FG2.5	1125	90	12×8	>80
FG3.5	1500	110	14×10	>80

## GFF系列

设备带强化粉碎装置，具有产品终水份低、设备占地面积小、高度低等特点，适用于滤饼、膏状、带有一定粘性、要求成品为粉末状的产品。

The series include force grinding with less product moisture. The installing area and the height is small, it is suitable for pulpiness, paste-like mixture or adhesive property powder materials.

## 结构示意图 Sketch of structure



## 技术参数 Technical Parameter

型号 Model	蒸发能力 evaporated capacity(kg/h)	功率 power(kw)	收尘率	占地面积 occupied area (m <sup>2</sup> )	高度 high (m)
GFF-300	25	7.5	85-95	4×4	5.5
GFF-400	50	11	85-95	4×6.5	6.5
GFF-500	75	13	85-95	4×7	7.5
GFF-600	100	17	85-95	5×6	8.0
GFF-800	200	29	85-95	5×9	9.0

Box/mesh belt dryer series  
箱式/网带式干燥系列

箱式干燥器是有悠久历史的干燥设备，适用于有爆炸性和易生碎末的物料，胶粘性、可塑性物料、粒状物料、膏浆状物料、陶瓷制品、棉纱纤维及其他纺织物等，以及无须用盘架的物料。

箱式干燥器中，一般用盘架盛放物料。优点是容易装卸、物料损失小、盘易清洗。因此，对于需要经常更换产品、价高的成品或大批量物料，厢式干燥器的优点十分显著。随着新型干燥设备的不断出现，厢式和隧道干燥器在干燥工业生产中，仍是不可缺少的类型之一。

箱式干燥器的主要缺点是：物料得不到分散，干燥时间长；若物料量大，所需的设备容积也大；工人劳动强度大；如需定时将物料装卸或翻动时，粉尘飞扬，环境污染严重；热效率低，一般在40%左右，每干燥1kg水份约需消耗加热蒸汽2.5kg以上。此外，产品质量不够稳定。因此随着干燥技术的发展将逐渐完善此型干燥器。

Special dryer is a long history drying equipment, suitable for the volatile and breakable material, such as tackiness material, plasticity material, granule material, paste material, ceramic material, cotton yarn and other weave product, other non-plate material.

Normally we use the plate to deposit the drying material. Its excellence is easy to load and discharge, less damage of material, the plate easy to clean. So, it is suitable for that often change the material or the cost of the material is high. Along with the new type dryer appear, the loft dryer also play a very important role in the modern industry.

The disadvantages of the loft dryer are: material can not be dispersed, and long time for drying work; if the big capacity, so the equipment need very big space to install; and also large working intension; also when loading and discharging, the dust will fly upwards, environment pollution; and also low efficiency, about 40%, drying 1kg water need 2.5kg steam. Again, the quality is not steady. So along with the development of drying technology, we will gradually consummate this dryer.

网带式干燥器是由厢式干燥器发展而来的连续操作的干燥器。

带式干燥器的分类可按排气方式分为逆流排气式、并流排气式、单向排气式。按照输送带的层数可分为单层带式干燥器、多层带式干燥器、将几个单层带式干燥器串连在一起，而成为多级带式干燥器。按通风方向可分为下通风型带式干燥器、向上通风型带式干燥器、混合通风型带式干燥器。按侧面密封形式可分为低通风阻力型带式干燥器、高通风阻力型带式干燥器。按加热形式分为热风循环加热型带式干燥器（热源为蒸汽、燃煤、燃油、燃气）、远红外加热型带式干燥器、微波加热型带式干燥器。

与转筒式、流化床和气流干燥器相比较，带式干燥器中的被干燥物料随同输送带移动时，物料颗粒间的相对位置比较固定，具有基本相同的干燥时间。对于干燥物料色泽变化或含水量均匀至关重要的某些干燥过程来说，带式干燥器是非常适用的。此外，物料在带式干燥器上受到的振动或冲击轻微（冲击式带式干燥器除外）。物料颗粒不易粉化破碎，因此也适用于干燥某些不允许碎裂的物料（如食品）。

网带式干燥器不仅供物料干燥，有时还可对物料进行焙烤、烧成或熟化处理。

我们公司研究和生产的设备主要有单层和多层网带式干燥器，同时均研究了顺流、逆流和交叉流的介质循环形式。更具备非标设计和制造的能力，我们还以网带式干燥器为原型，开发了组合式的TWG型调味料制粒干燥生产线。

Mesh belt is developed from loft dryer.

According to the exhaust air mode, the mesh belt dryer can sort: countercurrent exhaust model, paratactic exhaust model.

Signal exhaust model. According to the layers of the mesh belt dryer, it sorts to signal layer model and multilayer model, series connection several signal layer mesh belt dryer to be the multilevel mesh belt dryer. According to the air direction it can sort to bottom airiness model, top airiness model and mix airiness model mesh belt dryer. According to the side airproof mode it can sort to low resistance mesh belt dryer, high resistance mesh belt dryer. According to the heating form it can sort to hot air circle mesh belt dryer (heat source: steam, coal, oil, gas), infrared ray mesh belt dryer and microwave mesh belt dryer.

Compare with rotary dryer, fluid bed dryer and airstream dryer, all the material get the coordinative drying time while moving with belt and the granules have stable relative place. This mesh belt dryer is a special suitable for the material that have requirement in color change and uniform humidity. Again, material on the belt get very litter impact (except impact type mesh belt dryer), the material can not be damaged or break up. So it is also suitable for some material that is not permitted to break up (like food).

The mesh belt not only for drying, sometime it can bake the material to the cooked food.

Our company provides the signal layer and multilayer mesh belt dryer, and also we research the co-current flow type, counter flow type and mix flow type and have the ability of design non-standard equipment, more, on basis of belt dryer, we research and developed combined TWG flavoring & granulating drying line.



CT、CT-C Series Hot Air Circulating Drying Oven  
CT、CT-C系列热风循环烘箱



概述 Descriptions

CT-C型系列热风循环烘箱配用低噪音耐高温轴流风机和自动控温系统，整个循环系统全封闭，使烘箱的热效率从传统的烘房3~7%提高到目前的35~45%，最高热效率可达50%。CT-C型热风循环烘箱的设计成功，使我国的热风循环烘箱达到了国内外先进水平。为我国节约了大量能源，提高了企业的经济效益。1990年由国家医药管理局发布了行业标准，统一型号为RXH。

CT-C series hot air circulation drying oven uses a low noise and high temperature proof axial flow blower and an automatic temperature control system. The whole circulation system is the fully enclosed to make that the heat efficiency of the drying oven increases from 3~7% of the traditional drying oven to 35~45% of the present one. The highest heat efficiency can reach 50%. The successful design of CT-C hot air circulation drying oven makes that the hot air circulation drying oven in our country catch the advanced level both at home and abroad. In order to save a large quantity of the energy in out country, in order to enhance the economic results of the enterprises, in 1990, the medicine management bureau of the State issued the industry standard and the uniform type is RXH.

应用 Applications

通用干燥设备,适应面较宽,广泛适用于制药、化工、食品、轻工、重工等行业物料及产品的加热固化、干燥脱水。如:原料药、生药、中药饮片、粉剂、颗粒、冲剂、大小蜜丸包装瓶、颜料、染料、脱水蔬菜、瓜果干、香肠、塑料树脂、电器原件、烘漆等。

It is suitable for heating and solidification, drying and dehydration of raw materials in pharmaceutical industry, chemical industry, foodstuff industry, agricultural and sideline products, aquatic products, light industry, heavy industry and so on. The raw materials can be medicine raw materials, Chinese traditional medicine, tablet of drink, immersed electuary, powder, granule, packing bottle, pigment, dyestuff, dehydration vegetable, dried fruit and melons, banger, plastic resin, electric elements, drying varnish and so on.

主要技术参数及有关说明

Main technical parameters and relevant explanation  
原型号 Origina Model



- 一、加热热源有蒸气、电、远红外、电蒸气两用，供用户选择。
- 二、使用温度：蒸气加热50~140℃，最高150℃。
- 三、用电、远红外温度50~500℃。
- 四、备有自控系统和电脑控制系统供用户选择。
- 五、常用蒸汽压力0.02~0.8Mpa(0.2~8kg/cm<sup>2</sup>)。
- 六、配用电加热，按I型计算15KW，实用5~8kw/h。
- 七、特殊要求在定货时说明。
- 八、非标烘箱价格面议。
- 九、使用温度大于140℃或小于60℃，要在订货时注明。
- 十、本厂出厂烘车，烘盘尺寸统一，可以互换。
- 十一、烘盘尺寸：460×640×45(mm)。

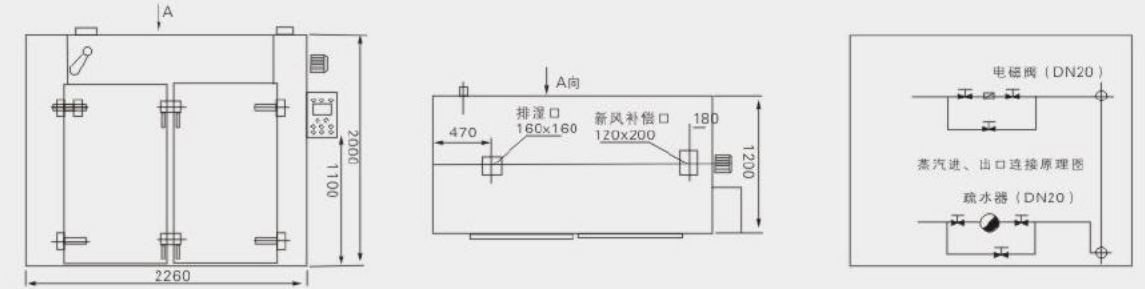
- 1.The heat source can be steam, electricity, far infrared, or steam+electricity. Customer can select one of the heating ways in accordance with practical conditions.
- 2.Temperature of operation:50~140℃ for steam, Maximum temperature will be 150℃.
- 3.50~500℃for electricity or far infrared.
- 4.There are automatic and computer control systems for customer selection.
- 5.The normal pressure of steam will be 0.02~0.8Mpa(0.2~8kg/cm<sup>2</sup>)
- 6.The equipped power of electric heater will be 15kw Calculated with Model I and the operational power to be used will be 5~8kw/hr.
- 7.For special requirement, please indicate it in order.
- 8.The price of non-standard oven shall be discussed additionally.
- 9.If the operation temperature is more than 140℃ or less than 60℃, please indicate it in order.
- 10.The size of drying trolley and tray is standardized. They can be exchanged each other.
- 11.The size of drying tray: 460×640×45(mm)

特点 Features

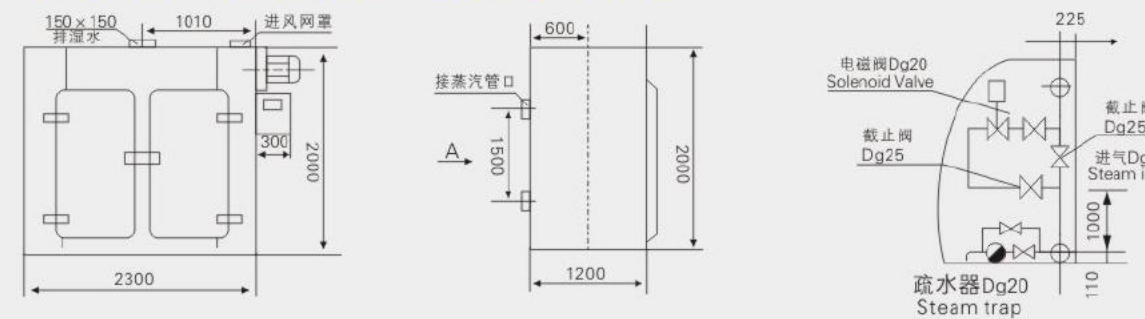
- 适用范围广，可干燥各种物料，是通用干燥设备。
- 大部分热风在箱内循环，热效率高，节约能源。
- 利用强制通风作用，箱内设有可调式分风板，物料干燥均匀。热源可采用蒸汽，导热油、热水、电、远红外等，选择广泛。
- 适用范围广，可干燥各种物料，是通用干燥设备。
- 温度适用范围大，根据用户要求,可达常温至350℃
- 整机噪音小，运转平衡，温度自控，安装维修方便。

- ◇Wide application and can be suitable for a variety of materials, is a versatile drying equipment.
- ◇Most of hot air is circled inside the oven. The hot efficiency is high The energy source can be saved.
- ◇ It uses enhanced ventilation and equips with adjustable air distributing plate inside the oven , Raw material can be dried evenly, The heat source can be steam ,hot water, electricity of far infrared.
- ◇ The applied fields are wide and can be suitable for all kinds of raw materials. It is a comprehensive drier.
- ◇ Temperature application range, according to user requirements, up to room temperature to 350 °C
- ◇ The machine has low noise and stable operation.The temperature can be controlled automatically. The installation and maintenance are very convenient.

CT型烘箱示意图 Sketch Of Model CT Oven



CT-C型烘箱示意图 Sketch Of Model CT-C Oven



技术参数 Technical Parameter

序号 Number	型号 Model	行业标准 Field standard model	技术参数 Technical data										配件Accessories			总重量 Total weight (kg)
			蒸发面积 Evaporation area (m <sup>2</sup> )	有效容积 Efficient volume (m <sup>3</sup> )	每次干燥量 kg/批 drying capacity (kg/batch)	散热器 Radiator area (m <sup>2</sup> )	耗用蒸汽 Steam consumption (kg/h)	电加热 功率 Electric heating power (kw)	风机风量 Fan volume (m <sup>3</sup> /h)	风机 电功率 Fan power (kW)	箱内温差 Temperature difference inside the oven (°C)	外形尺寸 或深×高 Overall dimensions W×D×H (mm)	已配A3烘车 Equipped drying cart (set)	应配烘盘 (只) Drying pallet size equipped (pc)	温度自控箱 Temperature automatic control box	
1	CT-C-O	RXH-7-C	7.1	1.3	60	10	10	6	3450	0.45	±1	1380×1200×2000	1	24	有 Available	820
2	CT-C-I	RXH-14-C	14.1	2.6	120	20	18	15	3450	0.45	±2	2260×1200×2000	2	48	有 Available	1580
3	CT-C-II	RXH-27-C	28.3	4.9	240	40	36	30	6900	0.45×2	±2	2260×2200×2000	4	96	有 Available	1800
4	CT-C-III	RXH-27-C	28.3	4.9	240	40	36	30	6900	0.45×2	±2	4280×1200×2270	4	96	有 Available	1880
5	CT-C-III	RXH-41-C	42.4	7.4	360	80	60	45	10350	0.45×3	±2	2200×3200×2000	6	144	有 Available	2100
6	CT-C-III	RXH-41-C	42.4	7.4	360	80	60	45	10350	0.45×3	±2	3240×2200×2000	6	144	有 Available	2210
7	CT-C-IV	RXH-54-C	56.5	10.3	480	120	80	60	13800	0.45×4	±2	4280×2200×2270	8	192	有 Available	2800
8	CT-I	RXH-14-B	14.1	2.6	120	23	20	15	3450	1.1	±2	2480×1200×2375	2	48	无None	1220
9	CT-II	RXH-27-B	28.3	4.9	240	48	40	30	5230	1.5	±2	2480×2200×2438	4	96	无None	1530
10	CT-III	RXH-41-B	42.4	7.4	360	72	60	45	9800	2.2	±2	3430×2200×2620	6	144	无None	2110
11	CT-IV	RXH-54-B	56.5	10.3	480	96	80	60	11800	3	±2	4460×2200×2620	8	192	无None	2300

箱体外壁材质有：A3钢、不锈钢；内壁材质有：铝合金、不锈钢；烘车材质有：A3钢、不锈钢；烘盘材质有：铝、不锈钢、镀锌板。  
Outer wall materials of the oven:A3 steel, inner wall materials:aluminum alloy, stainless steel; drying cart materials:A3 steel, stainless; drying pallet materials:aluminum stainless steel, galvanized sheet.  
备注：所有设备都在不断改进之中，选购设备以最新资料为准。



SMH on the Door  
Drying Sterilizing Oven  
SMH系列对开门灭菌烘箱



本烘箱适用于制药医药，卫生化工，轻工，食品，电子等行业干燥或无菌生产。  
The oven is suitable for drying or sterilizing materials in medical, pharmaceutical health industry, light industry, food, electronics and other industries.

技术参数 Technical Parameter

名称型号 name model	加热功率 Heating power(kw)	温度控制范围(°C) Constant temp. Scope	外型尺寸(mm) Overall dimensions L×W×H	鼓风机功率 power(kw)	工作室尺寸 Overall dimension (W×H×L)(mm)
SMH-1	6	室温Room temp-300	840×1110×1250	0.55	600×500×750
SMH-2	9	室温Room temp-300	1040×1220×1800	0.75	800×800×1000
SMH-3	12	室温Room temp-300	1240×1620×2000	1.1	1000×1000×1200
SMH-4	18	室温Room temp-300	1440×1620×2300	1.5	1000×1200×1500

SG Series Channel  
Sterilizing Oven  
SG系列隧道式热风烘箱

概述 Descriptions

SG系列隧道式烘箱具有装料大，操作简单的特点，主要适用于脱水蔬菜、果品等农副产品的干燥，及需要较长干燥时间的木件物料、陶瓷制品和各种散粒状物料的干燥和煅烧。

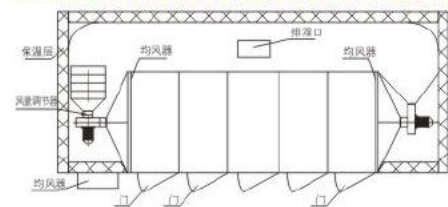
SG series of tunnel oven with loading large, simple features, mainly for dehydrated vegetables, dry fruits and other agricultural products, and require a longer drying time of wood pieces of materials, ceramic products and a variety of dry bulk granular materials Calcined.

特点 Features

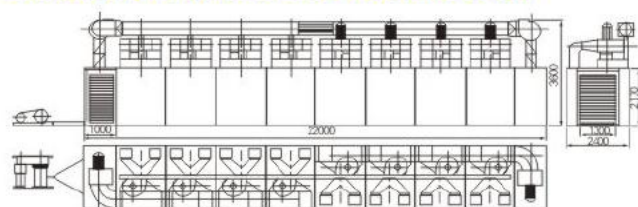
- ◆用户可根据物料特点选择纵向循环或横向循环的干燥方式，来提高效率及产品质量；
- ◆可采用集中供热的方式，这样更利于燃煤燃油燃气热风炉、导热油炉等热源连接，方便用户生产使用。
- ◆根据用户需要，可采用人工或机械方式进料和出料。

- ◆ User can select the vertical or horizontal loop drying cycle according to material characteristics, to improve efficiency and product quality;
- ◆ Central heating can be a way, which is more conducive to the fuel gas fired hot air furnace, heat conducting oil furnace connections, user production use.
- ◆ According to user needs, can be manual or mechanical methods and the material feed.

SG纵向循环干燥箱 Model SG vertical Oven



SG横向循环干燥箱 Model SG Horizontal Oven



技术参数 Technical Parameter

型号 model	项目 item	每次装料量(kg) feeding capacity	配用功率(kw) equipped power	烘车数量(辆) quantity of drying trolley	配用烘盘数(个) quantity of drying tray	散热面积(m <sup>2</sup> ) area of radiation
SG-11		1000	20.2	22	528	200
SG-16		1500	26.2	30	720	300
SG-22		2000	32.2	40	960	400
SG-30		2500	38.2	50	1200	500
SG-36		3000	38.2	60	1440	600

DW Series  
Mesh-Belt Dryer  
DW系列带式干燥机



标准型 standard

安徽亳州致和堂药业

应用 Applications

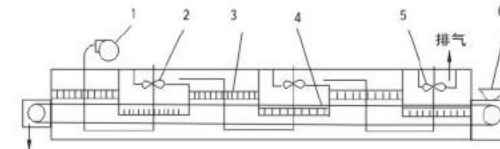
DW系列带式干燥机是成批生产用的连续式干燥设备，用于透气性较好的片状、条状、颗粒状物料的干燥。对于脱水蔬菜、中药饮片等含水率高，而物料温度不允许高的物料尤为适合，该系列干燥机具有干燥速度快，蒸发强度高，产品质量好的优点。对脱水滤饼类的膏状物料，需经造粒制成棒状后亦可干燥。

DW Belt dryer is continuous dryer for large production. It is used for drying sheet materials, bar materials granules materials that have good air permeability. As to dehydrated vegetable Chinese herb pieces which have high moisture and need low drying temperature, DWT belt dryer is specially suitable.

工作原理 Principle of work

原理如图所示，料斗中的物料由加料器(6)均匀的铺在不锈钢网(4)上，由传动电机带动网带在干燥箱内匀速运动。干燥段由若干单元组成，热风在两个(或几个)单元内横向循环，新鲜空气由风机(1)进入，通过换热器(3)加热，加热空气穿过物料层与物料热交换，进入下腔，然后流向下一单元，降温后的热空气再经过换热器(3)进行二次加热，热空气穿透网带与物料再次热交换，湿热空气由排湿风机(2)(5)排出，完成干燥，每台干燥机单元数可根据物料的特性、工艺要求选取。

The materials are uniformly put on the mesh-belt by the material charger. The mesh-belt used generally 12-60 mesh stainless steel wire net and it is drawn and moved inside the dryer by a transmission device. The drier is composed of several units. For each unit, the hot air is circulated separately. In the first unit, air out from circulation air blower(5) pass through beside into low unit, after air is up and heated by steam heater(4), be shared by separator(3), the air is sprayed through mesh-belt in to top of machine. The drying process is hot air passes through the mesh-belt covered with asprical moisture from the top to the bottom of from the bottom to the top, and this will complete the heat and mass transfer process. The air pipe of the top is connected with fan, one part of air is circulated, some exhausted gas is discharged with a special moisture elimination blower, and other waste gas is controlled through an adjustment elimination blower, and other waste gas is controlled through an adjustment valve. The top and low circulation units can be freely equipped according to the users demand. The unit number can be selected according to the demand.



- 1、送气风机 1.air blower
- 2、循环风机 2.circulating air blower
- 3、蒸汽加热器 3.steam heater
- 4、输送带 4.transmitting belt
- 5、排气风机 5.exhaust blower
- 6、加料斗 6.material hopper

技术参数 Technical Parameter

型号 Type	DW-1.2-8	DW-1.2-10	DW-1.6-8	DW-1.6-10	DW-2-8	DW-2-10
单元数 unit number	4	5	5	5	4	5
带宽 belt width (m)	1.2	1.2	1.6	1.6	2	2
干燥段长 length of drying section (m)	8	10	8	10	8	10
铺料厚度 thickness of the material to be covered (mm)	10~80					
使用温度 temperature (°C)	60~150					
蒸汽压力 steam pressure (Mpa)	0.2~0.8					
蒸汽耗量 steam consumption (Kg/h)	120~300	150~375	150~375	170~470	180~500	225~600
干燥时间 drying time (h)	0.2~1.2	0.25~1.5	0.2~1.2	0.25~1.5	0.2~1.2	0.25~1.5
干燥强度 drying efficiency (Kg H <sub>2</sub> O/h)	60~160	80~220	75~220	95~250	100~260	120~300
风机总功率 total power of the blower (kw)	6.6	8.8	9	12	12	16
设备总功率 total power of the equipment (kw)	7.15	9.55	9.55	12.75	12.55	16.75



## DWT Series Dryer for Vegetable Dehydration

### DWT系列脱水蔬菜干燥机



#### 概述 Descriptions

DWT脱水干燥机是在传统网带式干燥机基础上研究开发的专用型设备，具有较强的针对性，实用性，能源效率高，广泛用于各类地区性和季节性蔬菜、果品的脱水干燥，如：蒜片、南瓜、魔芋、白萝卜、山药、竹笋等，已拥有用户50多家，在线设备80多台套，是国内最富经验的蔬菜干燥设备生产企业，工厂科技人员长期跟踪服务于这些用户，深入用户进行调试研究，得到第一手实践资料并结合国外先进技术，不断改进完善设备，到目前为止，已开发了对第三代DWT系列蔬菜脱水干燥机，我们在为用户生产制作设备时，根据所需干燥产品的特性，用户工艺要求，结合十几年来积累的经验，为用户设计制作出最适用，品质最佳的蔬菜干燥设备。

#### 特点 Features

- ◆干燥面积、风压、风量、干燥温度、网带速度均可调节，以适应蔬菜的特性及品质要求。
- ◆可根据蔬菜的不同特点，采用不同的工艺流程及添加配套必要的辅助设备。



#### 应用 Applications

- ◆能满足根、茎、叶类条状、块状、片状、大颗粒等蔬菜物料的干燥和大批量连续生产，同时能最大限度的保留产品的营养成分及颜色等。
- ◆干燥的典型物料有：蒜片、南瓜、胡萝卜、魔芋、山药、竹笋、辣根、洋葱、苹果等。

DWT Series Dryer for Vegetable Dehydration is special equipment researched and developed on the basis of traditional net belt dryer, it has stronger pertinency, practicability and high efficiency of energy. It is wide used for all kinds of vegetables dehydration such as garlic, cushaw, giantarum, white turnip, yam, bamboo shoot, etc at different region and season, our factory has more 50 of customers and more 80 of production line in operation. Our factory is an enterprise with the richest experience to manufacture dryer for vegetables dehydration. The technicians of our factory carry out after sales service for customers all the year round and help customers to debug and produce. Therefore they have got first-hand practical data and combined domestic and abroad advanced technology and improved and perfected the equipment. Till the third generation, DWT series dryer for vegetables dehydration has been developed. We are making advanced productive equipment for customers according to the characteristics of raw materials to be dried and the process requirements of customers and combined the accumulated experience for more ten years, we have made the most suitable and the dryer for vegetables dehydration to supply customers.

- ◆Its dry area, air pressure, air amount, dry temperature and speed of net belt can be adjusted in order to suitable for different characteristics of vegetable and the requirement of quality.
- ◆It can adopt different process and equip necessary auxiliary equipment in accordance with different characteristics of vegetable.



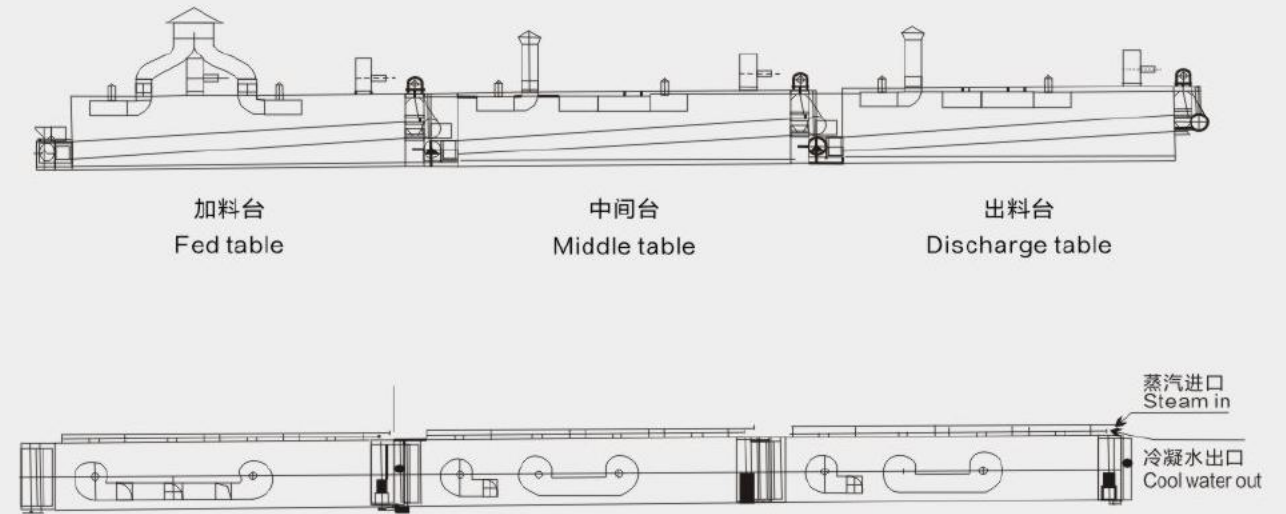
- ◆It can meet to dry different vegetables such as, root, halm, leaf, tuberos root, big granule and produce in batch. Meanwhile it can maintain content of nutrition, color, etc of vegetable in most extent.
- ◆The type raw materials are garlic, cushaw, giantarum, white turnip, yam, bamboo shoot, capsicum, onion, apple, etc.

#### 工作原理 Principle of work

- ◆蔬菜脱水干燥机分别有加料器、干燥床、热交换器及排湿风机等主要部件组成。
- ◆干燥机工作时，冷空气通过热交换器进行加热，采用科学合理循环方式，使热空气穿流通过床面上的被干燥物料进行均匀的热质交换，机体各单元内热气流在循环风机的作用下进行热风循环，最后排出低温高湿度的空气，平稳高效地完成整个干燥过程。

- ◆ The dryer for vegetable dehydration consists of feeder, drying bed, heat exchanger, damp exhaust fan, etc.
- ◆ When operation, air will be entered into dryer and heated through heat exchanger. Being adopted scientific and reasonable cycle method, the hot air will pass through raw materials to be dried on the bed and carry out uniform heat exchange. Under the action of cycle fan, the hot air stream inside each unit of the dryer will carry out hot air cycle. Final air with low temperature and high damp will be out. The whole drying process with stably and high effect will be finished.

#### 工艺流程 Technological process



#### 技术参数 Technical Parameter

型号Type	DWT1.6-I (加料台) fed table	DWT1.6-II (中间台) middle table	DWT1.6-III (出料台) discharge table	DWT2-I (加料台) fed table	DWT2-II (中间台) middle table	DWT2-III (出料台) discharge table
网带宽度belt width (mm)	1.6	1.6	1.6	2	2	2
干燥段长drying section length (m)	10	10	8	10	10	8
铺料厚度 thickness of the material to be covered(mm)	100	100	100	100	100	100
使用温度temperature(°C)	50-150°C	50-150°C	50-150°C	50-150°C	50-150°C	50-150°C
换热面积Area of heat conduction(m <sup>2</sup> )	525	398	262.5	656	497	327.5
蒸汽压力steam pressure(MPa)	0.2-0.8	0.2-0.8	0.2-0.8	0.2-0.8	0.2-0.8	0.2-0.8
干燥时间drying time(h)	0.2-1.2	0.2-1.2	0.2-1.2	0.2-1.2	0.2-1.2	0.2-1.2
装机功率power(kw)	15.75	12.75	9.55	20.75	16.75	12.55
外形尺寸Overall Dim.(m)	12×1.81×1.9	12×1.81×1.9	10×1.81×1.9	12×2.4×1.92	12×2.4×1.92	10×2.4×1.92

注：1、将上表中同一规格的网带干燥机加料台、中间台、出料台三台串联使用，保证蔬菜脱水干燥生产工艺要求工艺要求，显著提高产量，有效保证产品质量。  
2、设备高度不包括风机、风管高度。

Note: 1) When make fed table, middle table and discharge table with same specification mentioned above in series for use, it can form the process requirements of production line for vegetables dehydration and raise the output obviously and guarantee the quality of products effectively.  
2) The height of equipment does not include the height of fan and air duct.



DWF Series  
Mesh-Belt Dryer

DWF系列气流喷射式带式干燥机



DWC Series Mult-layer  
Penetrating Mesh-Belt Dryer

DWC系列多层带式穿孔气流干燥机



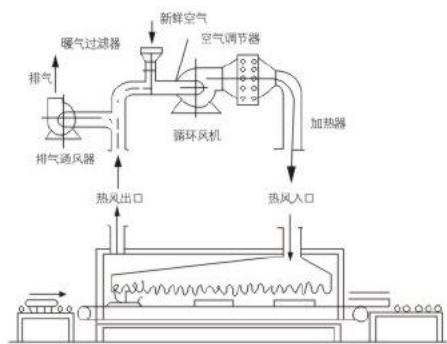
工作原理 Principle of work

DWF型属喷射气流带式干燥类型，热风以孔束流由上下同时喷向输送带上的物流，由于喷射气流高达15m/s以上，故对流传热的膜极薄，传热系数大，干燥速度快，该设备用与不透气类物料时，上面喷射气流仍返回上面，下面喷出的气流仍返回下面，在参与循环。对透气性物料气流束具有强穿透性及在物料内部的扩散性。使用热源可以是蒸汽，电，热风炉及燃油烟道气等。

应用 Applications

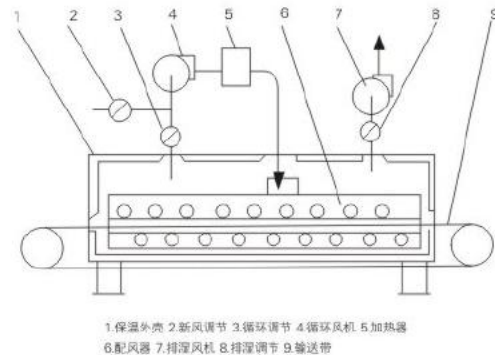
DWF型喷射气流带式干燥机主要用于纤维板，石膏板，纸箱板，纸浆膜，涂布干燥等，也适用于片状物料及一些特殊物料的干燥。

DWF型示意图 DWF Scheme



DWF is a jet stream-type belt drying type, hot air up and down the hole while playing in the beam by a conveyor belt on the logistics, the jet gas velocity up to 15m / s or more, so the thin film heat convection, heat transfer coefficient, Fast-drying, the equipment and airtight class materials, is still above the jet stream to return above, below, returns the following exhaust air is still, in participating in recycling. Beam on the air permeability of materials with strong penetration and diffusion within the material. When using the heat source can be steam, electricity, stove and fuel flue gas.

DWF jet air belt drying machine is mainly used for fiberboard, gypsum board, carton board, pulp film, coating and drying, and also some special materials, sheet materials.



技术参数 Technical Parameter

型号 Type	DWF-1.2-8	DWF-1.2-10	DWF-1.6-8	DWF-1.6-10	DWF-2-8	DWF-2-10
带宽 Belt width(m)	1.2	1.2	1.6	1.6	2	2
干燥段长 Length of drying section(m)	8	10	8	10	8	10
热源 heat resource	热风炉					
使用温度 Applied temperature(°C)	50-150					
铺料厚度 Spreading thickness(mm)	10-80					
干燥强度 drying strength kgH <sub>2</sub> O/h	120-300	150-375	150-375	170-470	180-500	225-600
干燥时间 Drying time(h)	0.2-1.2	0.25-1.5	0.2-1.2	0.25-1.5	0.2-1.2	0.25-1.5
传动电机功率 Driving motor power(kw)	0.55	0.75	0.55	0.75	0.55	0.75
风机数量 Number of fans	2	2	2	2	2	2
风机功率 Overall dimensions	7.5+2.2	11+2.2	11+2.2	15+3	15+3	22+4

概述 Descriptions

- ◆DWC系列多层带式穿孔气流干燥机广泛应用于食品、农副产品、脱水蔬菜、中药材、水产品、土特产品、饲料及化工原料等行业之片状、条状、块状和颗粒状物料的脱水干燥作业。
- ◆该系列干燥机具有高效节能的特点，在穿流加热、分层进风、分段变温干燥、余热回收等方面具有国内领先水平，主要性能指标达到九十年代国际先进水平。
- ◆该系列干燥机摊放到被加工物料采用多层移动式不锈钢网带或振动板，热气流自下而上穿过网带及上的物料层，热交换均匀、充分，生产效率高，产品质量好，设有冷动层和旋转输料装置，出料温度低，利于及时包装。
- ◆采用带匀料器的升运装置，厚度均匀，且料层厚度可无级调节。
- ◆摊料面积由25-80平方米，七种大小不等的机型，可满足多种物料和不同生产规模的需要。



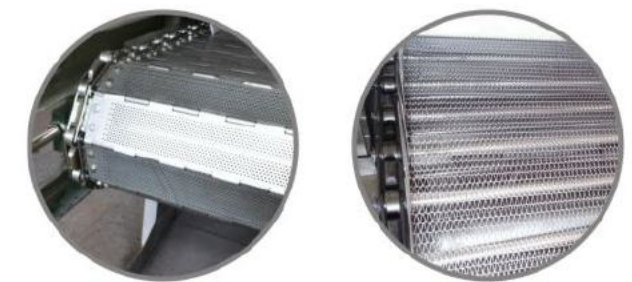
◆DWC Series band through flow dryer area widely used in fields of food, agriculture products, dehydrated vegetable, chinese herbal medicine, aquatic products, feed and chemical industry and are suitable for drying of flaked, striped, cube and granule materials.

◆The drier has the characteristics of high efficiency and low energy consumption and possess the domestic advanced level in through flow drying, leading wind layer by large, drying by changing temperature stage by stage and collecting remainder heating. Main specifications have reached 90 's advanced international level.

◆The belt conveyor of this drier that loads drying material is five layers stainless steel net belt, Because the hot flow bellow to abive bell layers, heating exvhnge completly and evenly, production efficiency is high and the product quality are very good, There are cooling layer and vibration device in outlet to decrease in outlet to decrease the final product temperature and make it convenient to package in time.

◆These driers are equipped with elevator with material even device to make the height of material identical, the height of material can be adjusted by no-step.

◆These driers have five styles, with belt area from 25-70m<sup>2</sup>, it can meet the requirement of drying many kinds of materials and different product scale. Our factory can provide technical serves for consultation, equipment selection, research & design and undertaking engineering.



技术参数 Technical Parameter

项目 Item	型号 Model	DWC-20	DWC-25	DWC-32	DWC-36	DWC-48	DWC-60	DWC-80
摊料面积 Loading area(m <sup>2</sup> )		20	25	32	36	48	60	80
蒸汽工作压力 Steam pressure(Mpa)		0.4~0.7						
耗汽量 Steam Consumption(Kg/h)		150-300	180-375	240-480	270-540	360-720	450-900	600-1200
干燥周期 Drying Period(Min)		20-200	60-600	100-1000(无级)(Stepless)				
蒸发能力 Evaporating Capacity(Kg · H <sub>2</sub> O/h)		100-200	125-250	160-320	180-360	300-480	300-600	400-800
装机功率 Power(kw)		5.5	5.5	5.5	5.5	14.2	15.2	15.2
总重量(约) Weight(t)		8	8	8.5	10	11	13	15
外形尺寸 Overall Dimensions L × W × H(mm)		8875 × 2408 × 3385	9875 × 2408 × 3385	11475 × 2408 × 3385	11475 × 2408 × 3385	14675 × 2408 × 3385	14675 × 2408 × 3385	15675 × 2408 × 3385



Components For Hot Air Circle Oven

系列热风循环烘箱配件

SPECIAL DRYING  
专用干燥系列

在农药、化工、冶金、建材等领域使用的专用设备

Special equipment used in pesticide, chemical industry, metallurgy, building materials and other fields

可配套各种干燥设备使用,规格多种多样,使用材质有:铝合金、不锈钢、A3钢表面镀锌、钢铝复合、铜制、钢管铝翅烧片.另外,散热器可单独用于室内与库房的加热除湿,我厂可为用户设计制作。

The radiators can be used for various drying equipment,There are many specifications. The materials to be used are aluminium alloy stainless steel, A3 steel surface zinc covering,steel and aluminium compound, copper,steel pipe and aluminium winding sheet In addition,the radiators can be used for the heating and dehumidification indoors in the warehouses.Our factory can design and manufacture for our users.

空气换热器(radiator)



定型烘车  
Shaping Baking Cart

材质:不锈钢、A3钢  
Material:stainlessteel,A3 steel



手工井字网盘  
Manual, ulti-square mesh plate

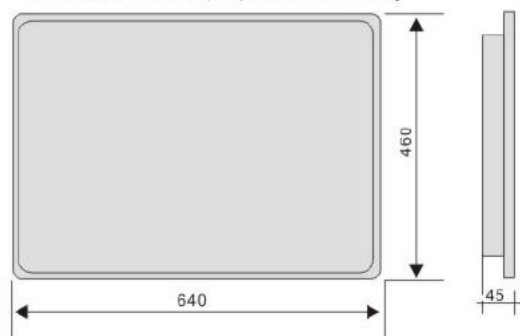


一次成型打孔盘  
Once shaping punched plate



定型压制烘盘  
Shaping Pressed Baking-Plate

材质:不锈钢、防锈铝合金  
Material:stainless steel,rustproof aluminium alloy



轴流风机  
Shaft fan



一次成型压制盘  
Once shaping pressed plate





LZG Series Helix  
Vibration Dryer  
LZG螺旋振动干燥机



概述 Descriptions

湿物料自顶部加料口进入螺旋床内，在周向激振力及重力的作用下，物料沿螺旋床自上而下作跳跃运动，直至最底层出料，同时洁净的热风由螺旋床底部进入，与分布在床上的物料进行充分的传热和传质后，由顶部排湿口排出，从而使湿物料达到了干燥的目的。

Clean air enter dry tower after heating, hot spray nozzle turn into the small drop various kinds of material liquid fog with two fluid (or three fluid ) in tower, exchange fast with the hot wind, the moisture content of evaporating in the liquid material (or the solvent), and discharge with the hot wind, get the powdery or particle form products.

应用 Applications

LZG螺旋振动干燥机主要适用于中药丸剂的干燥,也可适用于化工、制药、食品、塑料、建材、饲料等行业的颗粒状、短条状、球状物料的干燥。

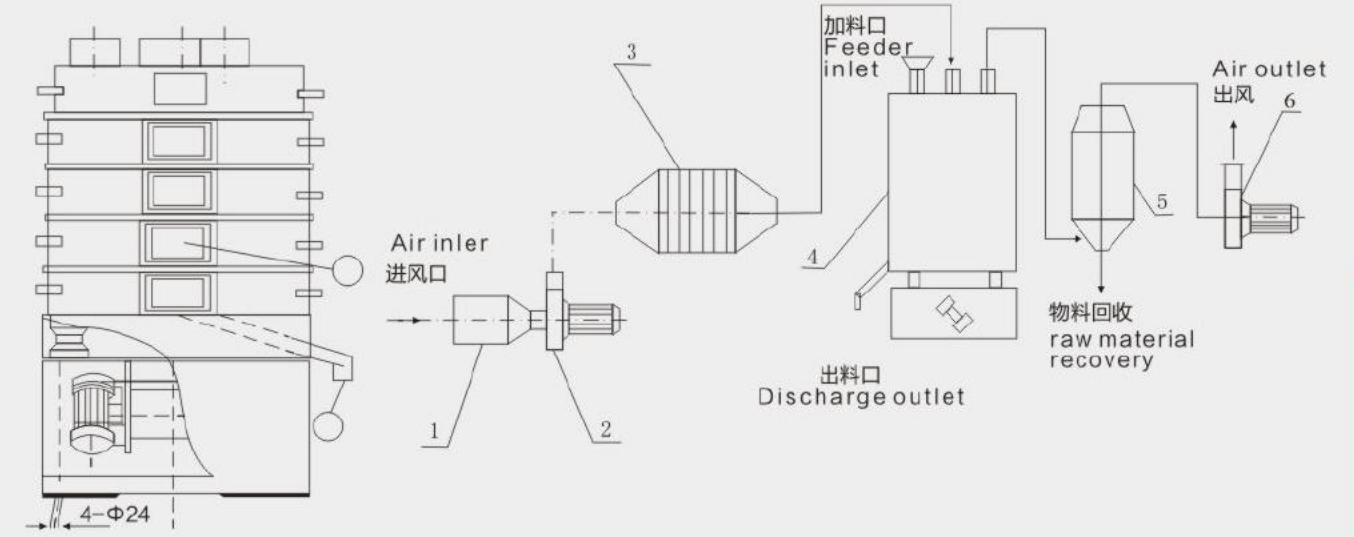
特点 Features

- ◆ 热风多次穿过物料层，与物料逆向流动，使热交换充分，热效率高。
- ◆ 结构紧凑、占地面积小。
- ◆ 物料在床内停留时间可以调节、操作方便。
- ◆ 物料沿螺旋床自上而下作圆周运动的同时，自身也产生跳跃，从而增加了物料与热风的接触，增强了干燥效果。
- ◆ 连续的进出料适合于流水线生产，并且易于达到“GMP”规范，可代替传统的箱式干燥。
- ◆ 对物料的表面及形状基本没有损伤，不仅保证了丸剂的圆度，而且大大降低了丸剂的破碎率。

LZG helix vibration drier is mainly used for drying pill of Chinese traditional medicine. It can also be suitable for drying granule, short strip and ball raw material of chemical industry, pharmaceutical industry, foodstuff industry, construction material industry, feed industry and so on.

- ◆ The hot wind passes through the material layer several time, the reverse flow with the material, the heat exchange is full, the thermal efficiency is high.
- ◆ Compact structure and small footprint.
- ◆ The material can be adjusted in the chamber, easy to operate.
- ◆ The material along the spiral bed is the circular motion of the circular motion, and it also produces the jump, which increases contact material and hot air, improved drying effect.
- ◆ continuous feeding materials and dis changing, it is suitable for assembly line production, and easy to achieve GMP specification, which can replace the traditional box drying method.
- ◆ There is no damage to the surface and shape of the material, not only the roundness of the pill, but also the crushing rate of the pill.

结构示意图 Sketch of structure



- |                   |  |
|-------------------|--|
| 1. 初效过滤器          | 1.primary filter                         |
| 2. 鼓风机            | 2.blower                                 |
| 3. 加料器            | 3.feeding material device                |
| 4. 主机             | 4.main machine                           |
| 5. 手动式布袋除尘器或旋风分离器 | 5.bag duster manual or cyclone separator |
| 6. 引风机            | 6.exhaust fan                            |

技术参数 Technical Parameter

项目 Item	型号 Model	LZG-1.0	LZG-1.2	LZG-1.4	LZG-1.6	LZG-1.8
直径 Diameter(mm)		1000	1200	1400	1600	1800
振动电机功率 Power(kw)		2×0.8	2×0.8	2×1.5	2×1.5	2×2.2
外形尺寸 Over all dimensions(L×W×H)(kw)		1.2×1.2×2.7	1.4×1.4×2.7	1.6×1.26×3	1.8×1.8×3.3	2.0×2.0×3.3
重量 Weight(kg)		1400	1680	2800	3100	3800
生产能力 Production capacity(kg/h)		80-120	120-200	200-280	280-350	350-450
进风温度 Temperature of air intel(°C)		60-200	60-200	60-200	60-200	60-200
风量 Air volume(m³/h)		1487	2380	3721	4462	5930
风机功率 (kw)		4.1	7	7.7	14	24

生产能力与物料含水量及终水分有关,表中数据为中药丸的生产能力(中药丸的初水分一般为<35%,终水分一般为<3%)  
Note:the production capacity is concerned with the moisture of raw material and the final moisture of finished product. The data listed in the table indicates the production capacity of pill of Chinese traditional medicine(the primary moisture of pill Chinese traditional medicine is less than35% and the moisture of finished product is less than 3%)



# HG Series Rotary Drum Dryer

HG系列回转滚筒干燥机



## 概述 Descriptions

◆HZG型回转圆筒干燥机是一种处理物料量大，能连续干燥的干燥机。它主要由热源，加料装置、转筒、传动装置、出料部分以及尾气除尘装置等组成。

◆该机生产能力大，适用范围广，流体阻力小，操作上允许波动范围较大，操作方便。干燥后物料含水量可低于1%。

## 工作原理 Principle of work

湿物料从干燥机一端投入后，在内筒均布的抄板器翻动下，物料在干燥器内均匀分布与分散，且与并流（逆流）的热空气充分接触，加快了干燥传流、传质推动力。在干燥过程中，物料在带有倾斜的抄板和热气流作用下，可调控地运动至干燥机另一端卸料阀排出成品。

## 应用范围 Application

适用于化工、冶金、建材、轻工等行业的粉状、颗粒状、块状以及掺入干料的膏状物料。在化工行业中，如硫酸铵、刘酸碱、硝酸铵、尿素、草酸、重铬酸钾、聚氯乙烯、二氧化锰、碳酸钙、磷酸钙、硝酸磷肥、钙镁磷肥、磷矿、普通磷酸钙、重过磷酸钙、碳酸三钠、三聚磷酸钠等的干燥。

## 特点 Features

- ◆需要大批量连续干燥的物料。
  - ◆转筒干燥器的机械化程度高，生产能力较大。
  - ◆流体通过筒体阻力小，功能消耗低。
  - ◆对物料特性的适应性比较强。
  - ◆操作稳定、操作费用较低，产品干燥的均匀性好。
  - ◆ need large quantity of material for drying.
  - ◆ Level of mechanization is high, and capacity is large.
  - ◆ The resistance for fluid to pass through drum is low, and energy consumption is low.
  - ◆ Good adaptability to the characters of materials.
  - ◆ Operation is stable, operating cost is low.
- Uniformity of dried product is good.

◆HZG type rotary dryer is a kind of drying equipment with large handle capacity and can for continuous production.It consists of heat system, feeding device, rotary drum, driving device, discharge part and dust catcher etc.

◆This dryer have a big capability with wide application, and With small flow resistance, permit wide scope in operation, and easy to operate, humidity of product can less than 1% after drying.

When the damp raw material is fed from one terminal, it is turned over through blades that are distributed inside the cylinder and will be distributed uniformly in the drier and contact fully with the countercurrent hot air. In this way, the process of heat conduction is increased. During the period of dry, under the effect of incine blades and hot air stream, raw material can be moved to drier and discharged from disharged form discharging valve.

Applicable to powder, particle, piece and paste material in chemical, metallurgy, architectural material and light industry.In chemical industry, it can used to dry harmonium sulfide, alkali sulfide , ammonium nitrate, urea, ethane diacid, potassium dichromate, PVC, manganese dioxide, calcium carbonate, nitric phosphate, calcium-magnesia phosphate , III sodium fertilizer, Phosphate rock, normal superphosphate, concentrated superphosphate, sodium sesquicarbonate, III sodium Polyphosphate etc.



## 技术参数 Technical Parameter

规格 Item(m)	生产能力 Productive capacity(t/h)	筒体速度 Revolution(r/min)	电机功率 Motor power(kw)	安装角度 Install angle(°)	出料湿度 Temp.of final
Φ1.0×5.0	0.5-1.2	0.6-6	4	3-5	≤1.5%
Φ1.2×6-10	1.5-3	0.6-6	5.5	3-5	≤1.5%
Φ1.5×12-18	3-5.5	0.6-6	15	3-5	≤1.5%
Φ1.8×12-18	5-6.5	0.6-6	18.5	3-5	≤1.5%
Φ2.2×12-22	7-12	0.6-6	22	3-5	≤1.5%
Φ2.4×15-20	9-15	0.6-6	30	3-5	≤1.5%
Φ3.0×25	16	0.6-6	55	3-5	≤1.5%

型号Model	直接加热顺流式 direct heating clockwise way	直接加热顺流式 direct heating clockwise way	直接加热逆流式 direct heating counterclockwise way	直接加热逆流式 direct heating counterclockwise way	复合加热 compound heating	复合加热 compound heating
物料种类 Kinds of raw material	矿石Ore	HP发泡剂 HPvesicant	高炉矿渣 Slag of blast furnace	硫酸 Ammonium sulphate	磷肥 Phosphorus fertilizer	煤 Coal
处理量 Amount to be treated(kg/h)	1000	466	15000	20000	12000	5000
初含水量 Primary moisture (%)	30	13	6	1.5	5	6.5
终含水量 Final moisture (%)	15	0.3	1	0.1	0.1	0.1
平均粒径 Average diameter(mm)	6.5	0.05	4.7	0.5-0.7	0.5	5
物料堆积比重 Thickness of raw material(kg/m³)	770	800	1890	1100	1500	750
热风量Amount of hot air (m³/kg)	39000	5400	10750	9800	6500	16000
入口气体温度Temperature of air at inlet (°C)	600	165	500	180	650	570
物料出口温度Temperature of raw material at outlet (°C)		42	100	70	80	75
加热方式Way of heating	煤气Gas	蒸汽式电加热 Steam,electric heating	重油Heavy oil	燃煤热风炉coal fuel hot air furnace	重油Heavy oil	重油Heavy oil
装料系数Filling coefficient		6.3	7	7.5	7.8	18
转速Revolution (r.p.m)	4	4	3.5	3	4	2
倾斜度Gradient (m/m)	0.04	0.005	0.03	0.05	0.05	0.043
抄板数目Quantity of stirring-up rake	12	24	12	22	内筒外圈8 Outer of inner cylinder8 外筒内圈16 Inner of outer cylinder16	内筒外圈6 Outer of inner cylinder6 外筒内圈12 Inner of outer cylinder12
干燥器直径diameter of dryer (m)	2.0	1.5	2	2.3	内筒外圈2.4 Outer of inner cylinder2.4 外筒内圈0.84 Inner of outer cylinder0.84	内筒外圈2.4 Outer of inner cylinder2.4 外筒内圈0.95 Inner of outer cylinder0.95
干燥器长度Length of dryer (m)	20	12	17	15	10	16
驱动功率Driving Power (kw)	22	7.5	15	11	11	15



TG Series Drum Scraper Dryer

TG系列滚筒刮板干燥机



GXG Series Filtering, Eluting and Drying All-in-one Machine

GXG系列过滤洗脱干燥一体机



多功能搅拌装置  
Multi-functional agitating device

取样装置  
Sampling device

概述 Descriptions

滚筒刮板干燥机是一种内加热传导型转动连续干燥设备。旋转的滚筒通过其下部料槽，粘附着一厚度的料膜，热量通过管道输送至滚筒内壁，传导到滚筒外壁，再传导给料膜，使料膜中的湿得到蒸发、脱湿、使含湿分的物料得到干燥。干燥好的物料被装置在滚筒表面的刮刀刮离滚筒，到置于刮刀下方的螺旋输送机，通过螺旋输送机将干物料集中、包装。本机适用于化工、染料、制药、食品、冶金等行业液体或较粘稠物料的干燥。

特点 Features

- ◆ 热效率高。因滚筒干燥机传热机理属热传导，传热方向在整个操作周期中保持一致，除盖散热和热辐射损失外，其余热量全部都用于筒料膜湿分的蒸发上，热效率可达70%~80%。
- ◆ 操作弹性大，适用性广。可调整滚筒刮板干燥机的诸多干燥因素。如进料的浓度、涂料料膜的厚度、加热介质的温度、滚筒的转动速度等，都可以改变滚筒干燥机的干燥效率，且诸多因素互无牵连。这给滚筒刮板干燥操作带来很大的方便，使之能适应多种物料的干燥和不同产量的要求。
- ◆ 干燥时间短。物料的干燥周期一般只有10~300秒，在适合于热敏性物料。若将滚筒干燥机设置在真空中，则可在减压条件下运行。
- ◆ 干燥速率大。由于涂抹于筒壁的料膜很薄，一般在0.3~1.5mm，且传热、传质方向一致，料膜表面可保持20~70kg·H<sub>2</sub>O/m<sup>2</sup>·h的蒸发强。

技术参数 Technical Parameter

规格 Model size	滚筒尺寸 Sizes of Cylinder Diameter×Length (mm)	有效加热面积 Effective Heating Area(m <sup>2</sup> )	干燥能力 Drying capacity (Kg/h)	蒸汽耗量 Steam Consumption(kg/h)	电机功率 Power of Motor (kw)	外形尺寸 Sizes L×W×H (mm)	重量 Weight (kg)
TG-600	Φ600×800	1.12	20~50	30~80	2.2	1700×800×1500	850
TG-700	Φ700×1000	1.65	30~70	50~100	3	2100×1000×1800	2000
TG-800	Φ800×1200	2.26	40~100	60~150	4	2500×1100×1980	3000
TG-1000	Φ1000×1400	3.30	60~150	90~230	5.5	2700×1300×2250	6200
TG-1200	Φ1200×1500	4.24	80~200	120~300	7.5	2800×1500×2450	8500
TG-1400	Φ1400×1600	5.28	100~250	150~400	11	3150×1700×2800	10000
TG-1600	Φ1600×1800	6.79	140~320	200~500	11	3350×1900×3150	12000
TG-1800	Φ1800×2000	8.48	170~400	250~600	15	3600×2050×3500	14000
TG-1800A	Φ1800×2500	10.60	200~500	300~750	18.5	4100×2050×3500	15200
TG-2000	Φ2000×3000	14.10	300~700	450~1000	22.5	5000×2500×3600	17500
TG-2500	Φ2500×3500	20.60	400~1000	600~1500	25.5	5500×2900×3800	20500

The drum scraper dryer is a kind of rotating continuous drying equipment with internal heating conducting-style. Certain thickness of materials film attach to the rotary drum from material liquid vessel under the drum. Heat is transferred to the internal wall of the cylinder through pipes and then to the external wall and to materials membrane, to evaporate the moisture in materials film so as to dry materials. Dried products are then scraped off by the blade fitted on the surface of the cylinder, fall down to the spiral conveyor under the blade, and are conveyed, collected and packed. It is suitable for the liquid and viscosity material in chemical pigment, pharmaceutical, foodstuff metallurgical industry etc.

- ◆ High heat efficiency. The principle of cylinder heat transfer is heat conduction and the conducting direction keeps identical in the whole operation circle. Except heat loss of end cover and radiation loss, all heat can be used for evaporation of wet materials membrane. The heat efficiency can reach 70~80%.
- ◆ Large operation elasticity and wide application. Various drying factors of the dryer can be adjusted, such as concentration of feeding liquid/thickness of material film, temperature of heating medium, rotating speed of the drum etc. which can change drying speed of the under dryer. As these factors have no interrelations to each other, it brings great convenience to drying operation and makes it applicable to dry various materials and to meet different requirements of production.
- ◆ Short drying period. The drying period of materials is normally 10 to 300 seconds, so it is suitable for heat-sensitive materials. It also can be pressure reducing operated if it is put in vacuum vessel.
- ◆ Fast drying rate. As materials film coated on cylinder wall is very thin, normal, thickness is 0.3 to 1.5mm, plus directions of heat and mass transmitting are identical, the evaporation strength on the surface of the film can be 20~70 kg H<sub>2</sub>O/m<sup>2</sup>·h.

概述 Descriptions

GXG-过滤洗脱干燥一体机，对各种物料均有良好的适应性，尤其适用于难以过滤的浆料以及易燃易爆、易挥发、易污染等物料的处理。本设备集过滤、打浆、洗涤和干燥等操作于一体，是医药、农药、食品、化工、染料等工业部门固液分离的理想设备。本机由我公司自主设计开发及生产，并投入实际应用，填补了该类产品的国内空白，在许多有害、有污染等物料的分选中得到广泛的应用。

GXG series filtering, eluting and drying all-in-one machine is well adapted to different materials, especially for pasty materials which are hard to filter and other materials with inflammable, easy explosive, easy to volatile and easy to pollute. This equipment has different functions of filtering, beating, washing and drying, it is the ideal option for separating liquid and solid materials in pharmaceutical industry, pesticide industry, foodstuff industry, chemical industry, dye industry and so on. This equipment is designed and developed by our company, now it is put into practical use and it fills the gaps of such products in China. The machine has been used widely in separating harmful material and polluted materials.

特点 Features

- ◆ 一机多用，过滤、洗脱、干燥功能集于一机
- ◆ 密闭操作，尤其适用于有害和避免污染的物料
- ◆ 可PLC自动控制，自动化程度高
- ◆ 滤网为双层网，保证物料无渗漏
- ◆ 结构紧凑，安装、操作、维护方便，占地面积小
- ◆ 无振动、噪声、运行平稳、可靠
- ◆ 设备可采用全不锈钢制作，符合GMP规范，可彻底清洗
- ◆ Multi operations, it includes filtering, eluting and drying function with one machine;
- ◆ Operation in sealed environment, especially suitable for harmful material and the materials which need to avoid pollution.
- ◆ It can be controlled by PLC, high degree of automation
- ◆ The filter net is double-layer net, which ensuring no leakage of material.
- ◆ Compact structure, easy to install, operate and maintain, small occupied place.
- ◆ No vibration and noise, stable and reliable running.
- ◆ The equipment can be produced with all stainless steel, easy to wash completely and confirm to GMP standard.

应用 Applications

- ◆ 制药工业；
- ◆ 精细化工；
- ◆ 染料和颜料工业；
- ◆ 食品工业；
- ◆ 农产品提炼的化学品；
- ◆ 聚合物和树脂产品；
- ◆ 电子新材料行业。



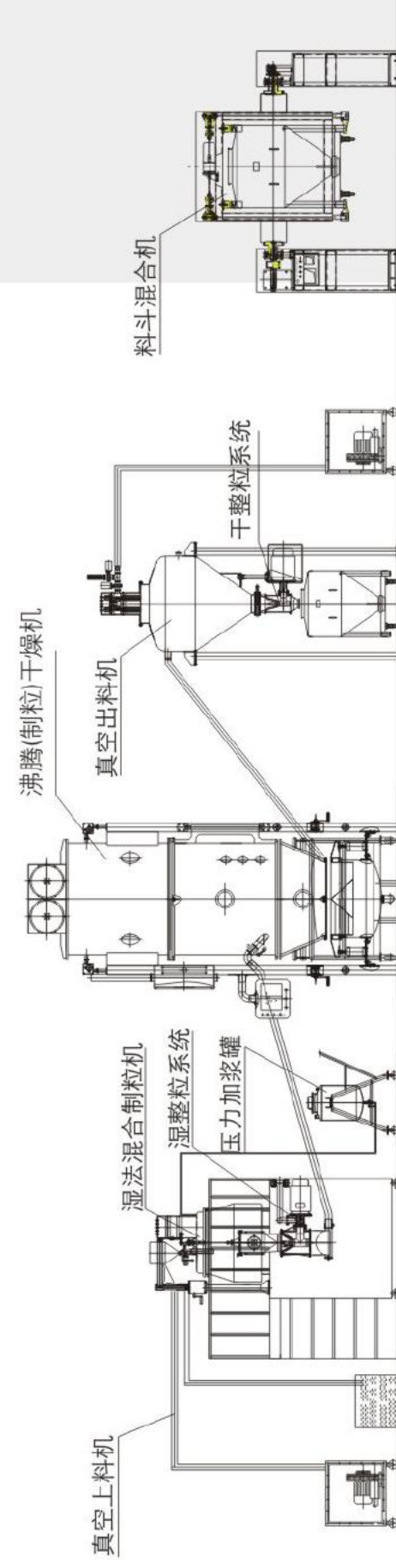


# Granulation/coating/ Pelleting series 制粒/包衣/整粒系列

YUTONG  
宇通干燥

## Production process flow of granulating and drying of new solid preparation

新型固体制剂制粒干燥联线生产工艺流程

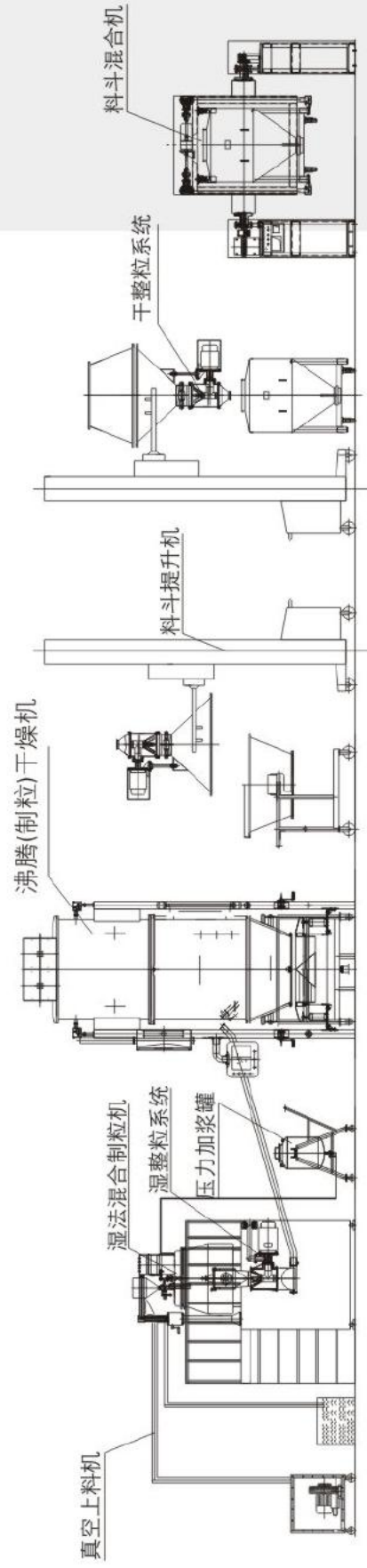


物料称量后通过真空上料机将物料负压吸入到湿法混合制粒机中，粘合剂液体通过压力加浆罐、喷枪雾化进入湿法混合制粒机中与细粉混合制成软材，同时经过制粒刀将软材制成湿颗粒，湿颗粒通过湿整粒机整粒均匀后，在沸腾干燥机的真空负压作用下，将整粒好的湿颗粒吸入沸腾干燥机内进行干燥，干燥好的物料通过真空出料机出料并进行干整粒后进入到料斗混合机内进行总混，然后再进入其它工序。



## Production process flow of granulating and drying of new solid preparation

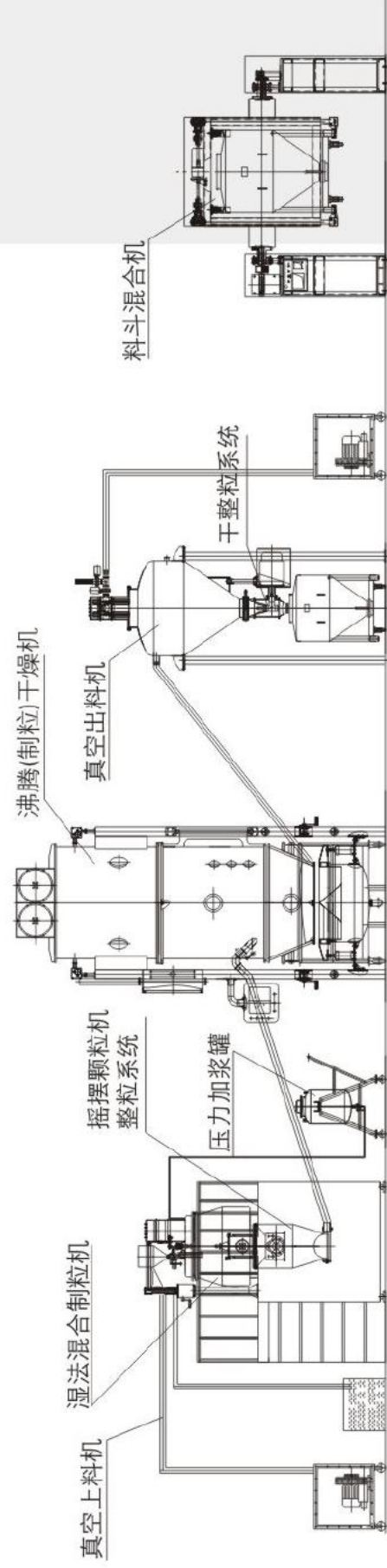
新型固体制剂制粒干燥联线生产工艺流程



物料称量后通过真空上料机将物料负压吸入到湿法混合制粒机中，粘合剂液体通过压力加浆罐、喷枪雾化进入湿法混合制粒机中与细粉混合制成软材，同时经过制粒刀将软材制成湿颗粒，湿颗粒通过湿整粒机整粒均匀后，在沸腾干燥机的真空负压作用下，将整粒好的湿颗粒吸入沸腾干燥机内进行干燥，干燥好的物料通过料斗提升机进行干整粒后进入到料斗混合机内进行总混，然后再进入其它工序。

## Production process flow of granulating and drying of new solid preparation

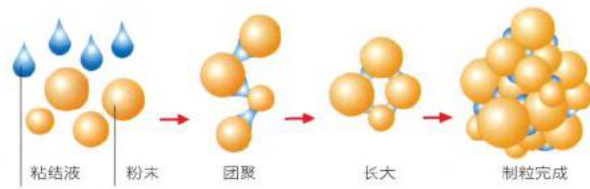
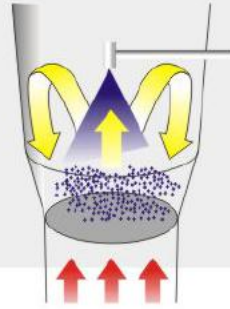
新型固体制剂制粒干燥联线生产工艺流程



粘性较大的物料称量后通过真空上料机将物料负压吸入到湿法混合制粒机中，粘合剂液体通过压力加浆罐、喷枪雾化进入湿法混合制粒机中与细粉混合制成软材，同时经过制粒刀将软材制成湿颗粒，湿颗粒通过摇摆颗粒机整粒均匀后，在沸腾干燥机的真空负压作用下，将整粒好的湿颗粒吸入沸腾干燥机内进行干燥，干燥好的物料通过真空出料机出料并进行干整粒后进入到料斗混合机内进行总混，然后再进入其它工序。



FL Series Fluidized Granulator And Dryer  
FL系列沸腾制粒干燥机



工作原理 Principle of work

物料粉末粒子，在原料容器（流化床）中呈环形流化状态，受到经过净化后的加热空气预热和混合，将粘合剂溶液雾化喷入，使若干粒子聚集成含有粘合剂的团粒，由于热空气对物料的不断干燥，使团粒中水分蒸发，粘合剂凝固，此过程不断重复进行，形成理想的、均匀的多微孔球状颗粒。

The powder granule in the container (fluidization) appear in the state of fluidization. It is preheated and mixed with chen and heated air. At the same time the solution of adhesive solvent is fogged and sprayed into the container. It makes the some particles become granulating that contains adhesive. Being of unceasing dry through hot air, the moisture in the granulation is evaporated and the adhesive is solidification. The process is carried out continuously. Finally it forms ideal, uniform and Porous granules.

应用 Applications

- ◆ 制药工业中的造粒：片剂颗粒、冲剂颗粒、胶囊剂颗粒。
- ◆ 食品工业的造粒：可可、咖啡、奶粉、颗粒果汁、调味品等。
- ◆ 其他行业的造粒：农药、饲料、化肥、颜料、染料化工等。
- ◆ 粉状或颗粒状湿物料的干燥。
- ◆ 包衣：颗粒、丸剂保护层、备色、缓释、薄膜、肠溶包衣等。

- ◆ Phamaceutical industry: tablet, capsule, low sugar or no sugar granule of chinese medicine.
- ◆ Foodstuff: cocoa, coffee, milkpowder, juice of granulate, flavoring and so on.
- ◆ Other industries: pesticide, feed chemical fertilizer, pigment, dyestuff and so on.
- ◆ Drying of powder or granule wet material.
- ◆ Coating: granule, pill protection layer, color preparedness, sustained-release, firm, enteric coating.

特点 Features

- ◆ 通过粉体造粒，改善流动性，减少粉尘飞扬；
- ◆ 通过粉体造粒改善其溶解性能；
- ◆ 混合、制粒、干燥在一机内完成一步法法制粒；
- ◆ 采用防静电滤布，设备操作安全；
- ◆ 设置压力泄放孔，一旦发生爆炸，设备人员不受伤害；
- ◆ 设备无死角，装卸料轻便快速，冲洗干净，满足GMP规范。

- ◆ Because of powder Granulation, the fluidity is improved and the dust is reduced;
- ◆ Because of powder Granulation, its solving property is improved;
- ◆ The mixing, Granulation and drying can be completed in one step inside the machine;
- ◆ The operation of equipment is safe because the anti static filtering cloth is adapted;
- ◆ The operating personnel can not be damaged if explosion take place because there is explosive releasing hole;
- ◆ The equipment has no dead corner. Therefore the loading and unloading are quick and light and clean. It can meet the requirements of GMP.



充气式双室捕集袋 单筒多组布袋过滤 不锈钢烧网滤芯

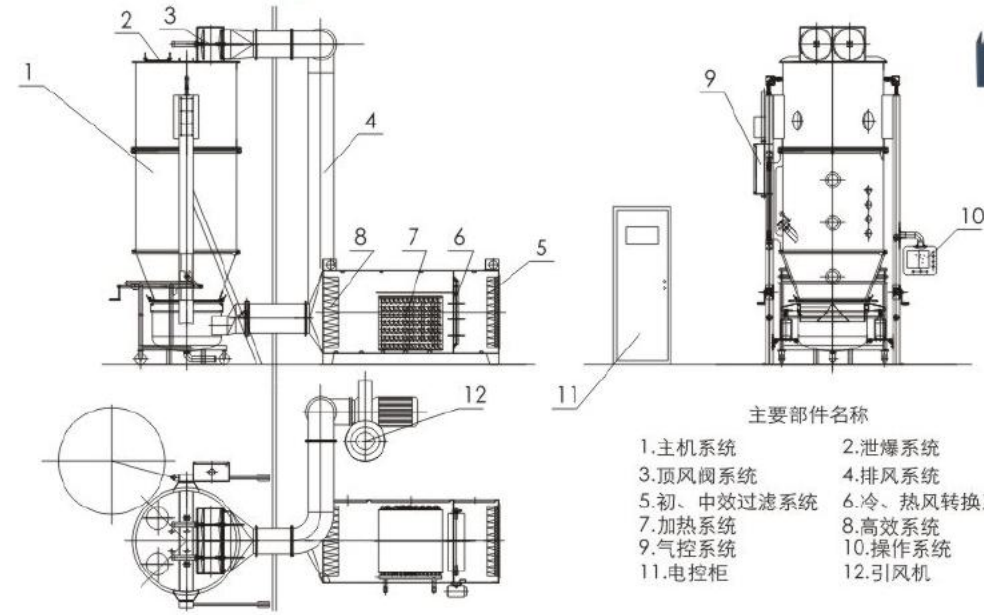


送风系统 螺旋气流分布板

FL Series Fluidized Granulator And Dryer  
FL系列沸腾制粒干燥机



工艺流程 Technological process



主要部件名称

- 1. 主机系统
- 2. 泄爆系统
- 3. 顶风阀系统
- 4. 排风系统
- 5. 初、中效过滤系统
- 6. 冷、热风转换系统 (选配项)
- 7. 加热系统
- 8. 高效系统
- 9. 气控系统
- 10. 操作系统
- 11. 电控柜
- 12. 引风机

技术参数 Technical Parameter

项目 Item	单位 Unit	机 型 type										
		3	5	15	30	60	120	200	300	500		
原料容器 Container	容量 Volume	L	12	22	45	100	220	420	670	1000	1500	
	直径 Diameter	mm	300	400	550	700	1000	1200	1400	1600	1800	
生产能力 Capability	最小 Min	Kg	1.5	4	10	15	30	80	100	150	250	
	最大 Max	Kg	4.5	6	20	45	90	160	300	450	750	
风机 Fan	风量 Capacity	m <sup>3</sup> /h	1000	1200	1400	1800	3000	4500	6000	7000	8000	
	风压 Pressure	mmH <sub>2</sub> O	375	375	480	480	950	950	950	950	950	
	功率 Power	kw	3	4	5.5	7.5	11	18.5	22	30	45	
蒸汽消耗量 Steam expenditure		Kg/h	15	23	42	70	141	211	282	366	451	
压缩空气耗量 Compressed air expenditure		m <sup>3</sup> /min	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.5	1.5	
主机重量 Weight of the main body		Kg	500	700	900	1000	1100	1300	1500	1800	2000	
蒸汽压力 Steam pressure		Mpa	0.3~0.6									
温度 Temperature		°C	室温-120°C范围内可调节 (adjustable at the range from room temperature to 120°C)									
作业时间 Working time		min	随物料特性而定 45~90 (decided in accordance with the proplerties of raw materials)									
物料收得率 Field		%	≥99									
噪声 Noise		dB(A)	风机与主机隔离安装, 噪声 ≤75dB(A) (When installation, main machine is separated from fan)									
主机外型尺寸 Size (L × W × H)		m	1.0 × 0.6 × 2.1	1.2 × 0.7 × 2.1	1.25 × 0.9 × 2.5	1.6 × 1.1 × 2.5	1.85 × 1.4 × 3	2.2 × 1.65 × 3.3	2.34 × 1.7 × 3.8	2.8 × 2.0 × 4.0	3 × 2.25 × 4.4	



PGL-B Spray  
Drying Granulator  
PGL-B系列喷雾干燥制粒机



PGL-B Series Spray  
Drying Granulator  
PGL-B系列喷雾干燥制粒机



特点 Features

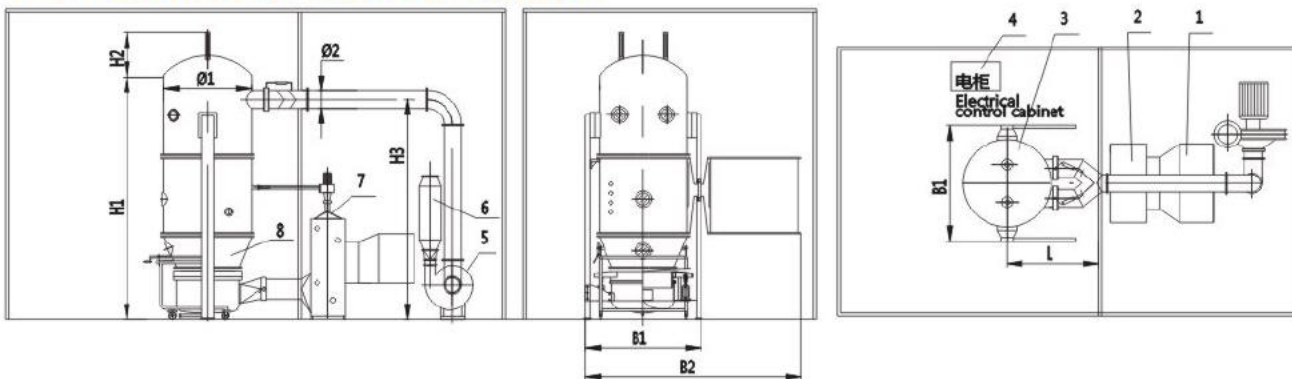
- ◇ 集喷雾干燥/流化制粒于一体，实现液态物料一步法制粒。
  - ◇ 采用喷雾工艺，特别适用微辅料，热敏性物料，功效比FL沸腾制粒机高1-2倍。
  - ◇ 产品终水份可达0.1%，配备返粉装置，成粒率≥95%，可制0.2-2mm颗粒。
  - ◇ 改进设计的内混式多流体雾化器，可处理浸膏比重达1.3g/cm<sup>3</sup>。
- ◇ Integrate spraying, drying/fluid granulating in a body and realize granulating in one step.
  - ◇ Using the process of spraying, it is particularly suitable for micro auxiliary raw materials and thermal sensitive raw materials. Its power is 1-2 times that FL boiling granulating machine.
  - ◇ The final moisture of products can reach 0.1%. It is equipped with powder returning device. The rate of granule forming is more than 95%. 0.2-2 mm of granule.
  - ◇ The improved inner roller multi-flow atomizer in design can treat the liquid extract with 1.3g/cm<sup>3</sup> of gravity.

应用 Applications

- ◇ 制药工业：片剂、冲剂、胶囊剂颗粒；低糖、无糖的中成药颗粒。
  - ◇ 食品：可可、咖啡、奶粉、颗粒果汁、调味品等。
  - ◇ 其他行业：农药、饲料、化肥、颜料、染料等。
- ◇ Pharmaceutical industry: tablet, capsule, granule, granule of Chinese medicine with on or low sugar.
  - ◇ Foodstuff: cocoa, coffee, milk powder, juice of granule, flavoring and so on.
  - ◇ Other industries: pesticides, feed, chemical fertilizer, pigment, dyestuff and so on.

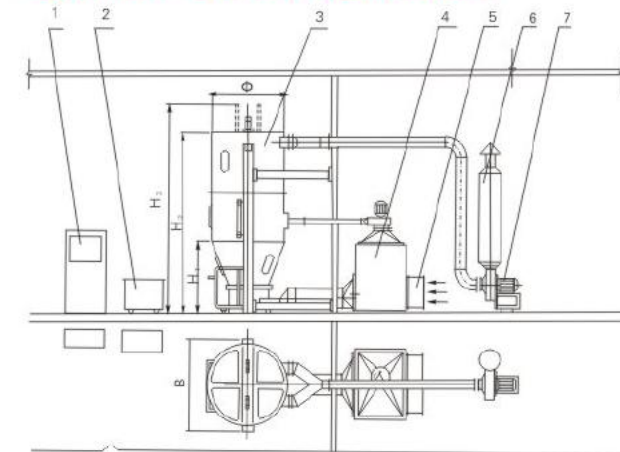


外形尺寸图 Chart of overall dimensions



- 1. 空气过滤系统 Air filtering system
- 2. 主加热系统 Main heating system
- 3. 主机 Main machine
- 4. 控制系统 Control system
- 5. 引风机 Fan
- 6. 消声器 Silencer
- 7. 二次进风系统 Second inlet air system
- 8. 制粒床 Granulating bed

结构示意图 Sketch of structure



- 1. 控制柜 Control cabinet
- 2. 输液小车 Liquid feeding carriage
- 3. 主机 Main machine
- 4. 换热柜 Heat exchange cabinet
- 5. 亚高效过滤器 Postfilter
- 6. 消声器 Silencer
- 7. 引风机 Vacuum pump

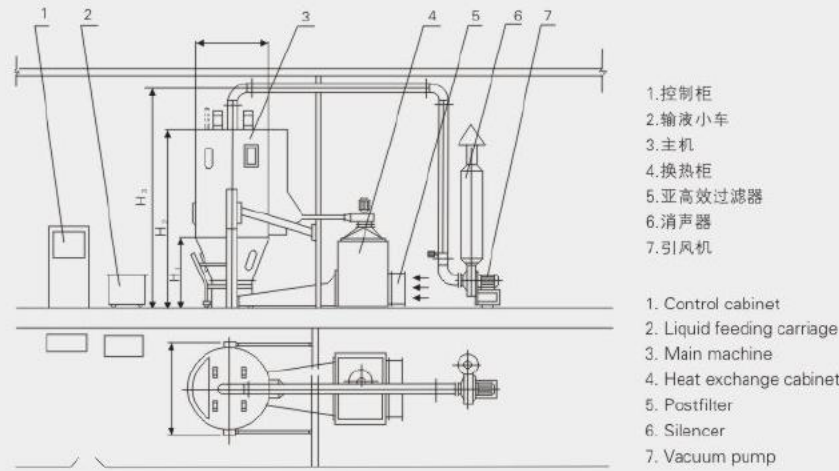
技术参数 Technical Parameter

项目Item		单位	机型	PGL-3B	PGL-5B	PGL-10B	PGL-20B	PGL-30B	PGL-80B	PGL-120B	
流浸膏 Liquid extract	最小 Min.	kg/h		2	4	5	10	20	40	55	
	最大 Max.	kg/h		4	6	15	30	40	100	140	
沸腾能力 Fluidization capacity	最小 Min.	kg/批		2	6	10	30	60	100	150	
	最大 Max.	kg/批		6	15	30	80	160	250	450	
液体比重 Specific gravity of the liquid		kg/L		≤1.30							
原料容器量 Volume of material container		L		26	50	100	220	300	670	1000	
容器直径 Diameter of container		mm		400	550	770	1000	1200	1400	1600	
引风机功率 Power of suction fan		kw		4.0	5.5	7.5	15	18.5	22	30	
辅风机功率 Power of auxiliary fan		kw		0.35	0.75	0.75	1.10	2.20	2.20	3	
蒸汽 steam	耗量 Consumption	kg/h		40	70	99	210	300	366	465	
	压力 Pressure	Mpa		0.40~0.60							
电热型功率 Power of electric heating	耗量 Consumption	kw		9	15	21	25.5	51.5	60	75	
	压力 Pressure	Mpa		0.20~0.60							
作业温度 Operating temperature		°C		室温-130°C自动调节							
产品水份 Water content of product		%		≤0.5%(视具体物料而定)							
物料收得率 Rate of product collection		%		≥99%							
设备噪音 Noise level of machine		dB		≤70							
主机尺寸 Dim. of main machine	Φ	mm		400	550	770	1000	1200	1400	1600	
	H <sub>1</sub>	mm		940	1050	1070	1180	1620	1620	1690	
	H <sub>2</sub>	mm		2100	2400	2680	3150	3630	4120	5050	
	H <sub>3</sub>	mm		2450	2750	3020	3700	4100	4770	5800	
	B	mm		740	890	1110	1420	1600	1820	2100	

选型例：要求每批次处理流浸透膏量 I=120kg(含固量为30%)、种子量 II=60kg，可由 I、II 得出理论成品量 M=m I + m II=120kg×30%+60kg=96kg，工作时间 T=120/30kg/h=4h，技术参数栏中可查出沸腾量为标准载荷范围，故以每班完成两个批次，选用 PGL-10C 型较为适宜。  
Example of choosing model: Suppose that are 120kg liquid condensate I (include 30% solid) and 60kg seed II in one batch, from I and II, we can get theoretical product amount M=m I + m II=120k×30%+60kg=96kg, working time T=120kg/30kg/h=4h, from the parameter table we can find that the fluidization amount is inside the standard loading range. If we require two batches in one duty time, model PGL-30C is OK.



PGL-C Spray  
Drying Granulator  
PGL-C系列喷雾干燥制粒机



DLB Fluid-Bed Granulator/  
Pelletizer/Coater For R&D  
DLB系列多功能制粒包衣机



特点 Features

集混合、喷雾干燥、制粒、颗粒包衣多功能于一体，可进行微辅料、小剂量、低糖或无糖制剂的造粒，制出的颗粒速溶、冲剂易于溶化，片剂易于崩解，利用液态物料作为润湿粘合剂，可节约大量酒精。设备于密闭负压下工作，内表面光洁、无死角、符合GMP要求。整个干燥实质问题温度均匀，配套多流体雾化器，可有效提高生产效率并保障产品质量，自动化程度得到逐步提高，操作简便，可有效保障产品质量的稳定性。

It integrates mixing, spraying, drying, granulating and coating multi-function in its one body. It is suitable for manufacturing small granules, low dosage, sugar free preparation. The granulated granule can soluble quickly and the tablet is easy to collapse. Using the liquid raw material as wetting and adhesive agent, a lot of alcohol can be saved. The equipment is operated at negative pressure, its inner surface is smooth and no dead corner and is in conformity with the requirements of GMP. The temperature in whole drying space is uniform. If equipped with flow atomizer, the efficiency production and the quality of products can be raised. Its automatic content is high and its operation is very simple. The quality and stable of products can be guaranteed effectively.

应用 Applications

- ◆ 片剂、冲剂、胶囊颗粒制备
- ◆ 缓释颗粒制备
- ◆ 低糖、无糖、小剂量颗粒制备
- ◆ 化工颗粒制备

- ◆ Preparation of tablet, capsule
- ◆ Preparation of releasing granule slowly
- ◆ Preparation of quick sloving foodstuff and drinking granule
- ◆ Preparation of chemical granule

技术参数 Technical Parameter

项目Item		单位	机型	PGL-3C	PGL-5C	PGL-10C	PGL-20C	PGL-30C
流浸膏 Liquid extract	最小 Min.	kg/h		5	10	20	40	55
	最大 Max.	kg/h		15	30	60	100	140
沸腾能力 Fluidization capacity	最小 Min.	kg/批		10	25	60	100	150
	最大 Max.	kg/批		16	50	180	250	450
液体比重 Specific gravity of the liquid		kg/L		≤1.30				
原料容器重 Volume of material container		L		180	250	650	1200	2200
容器直径 Diameter of container		mm		700	900	1200	1400	1600
引风机功率 Power of suction fan		kw		7.5	11	18.5	22	30
辅风机功率 Power of auxiliary fan		kw		0.75	1.1	2.2	4	4
蒸汽 steam	耗量 Consumption	kg/h		100	175	230	400	550
	压力 Pressure	Mpa		0.40~0.60				
电热型功率 Power of electric heating		kw		31.5	40.5	58.5	81	90
压缩空气 Compressed air	耗量 Consumption	M <sup>3</sup> /min		1.1	1.3	1.4	1.8	2
	压力 Pressure	Mpa		0.40~0.60				
作业温度 Operating temperature		℃		室温 - 160℃ 自动调节 Automatically regulated from indoor temperature to 160℃				
产品水份 Water content of product		%		≥0.2				
物料收得率 Rate of product collection		%		≥99%				
设备噪音 Noise level of machine		dB		≤70				
主机尺寸 Dim. of main machine	Φ	mm		700	900	1200	1400	1600
	H <sub>1</sub>	mm		1070	1100	1180	1260	1510
	H <sub>2</sub>	mm		2620	2800	3200	3620	4510
	H <sub>3</sub>	mm		3120	3300	3700	4200	5010
	B	mm		1040	1240	1620	1820	2300

选型例：要求每批次处理流浸膏量 I = 120kg (含固量为30%)、种子量 II = 60kg，可由 I、II 得出理论成品量 M = m I + m II = 120kg × 30% + 60kg = 96kg，工作时间 T = 120 / 30kg / h = 4h，技术参数栏中可查出沸腾量为标准载荷范围，故以每班完成两个批次，选用 PGL-10C 型较为适宜。

Example of choosing model: Suppose that are 120kg liquid condensate I (include 30% solid) and 60kg seed II in one batch, from I and II, we can get theoretical product amount M = m I + m II = 120k × 30% + 60kg = 96kg, working time T = 120k / 30kg / h = 4h, from the parameter table we can find that the fluidization amount is inside the standard loading range. If we require two batches in one duty time, model PGL-30C is OK.



底喷包衣床  
Bottom spray coating



侧喷制丸包衣床  
Centrifugal spray pelleting/coating



进风柜  
Inlet air cabinet



布袋气密封  
Cloth bag air sealing



进风调风门  
Inlet air adjust air flap



真空上料口  
Vacuum feeding port

应用 Applications

DLP多功能制粒包衣机是集喷雾干燥—制粒—离心制丸—流化包衣干燥于一体的多功能设备。该机兼容多种工艺操作。特别适用于医药、食品、化工等行业多品种、多剂型制粒、制丸及包衣。

DLP Granulator/Coater/Pelletizer is multi-function equipment integrated spray drying—granulating pelleting centrifugal spray coating—fluid coating—drying in one body. The machine combines various process operations. Particularly it is suitable for granulating, pelleting and coating of various varieties in pharmaceutical industry, foodstuff industry and chemical industry.etc.

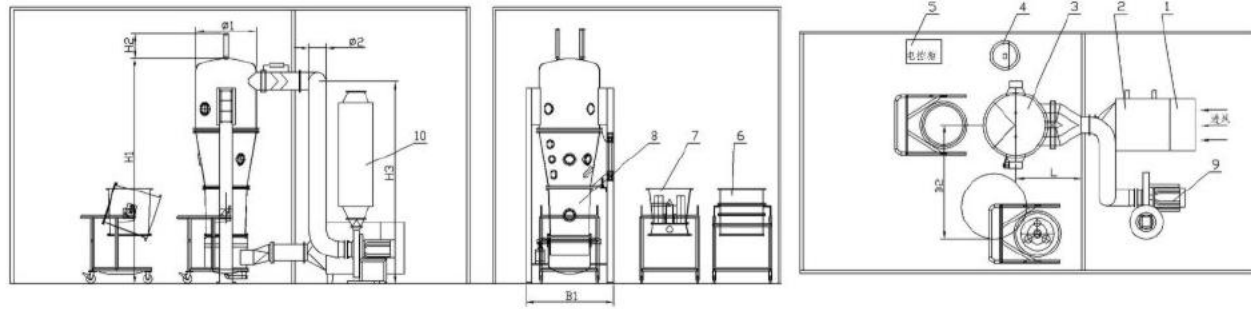
特点 Features

- ◆ 集制粒、制丸、包衣多种功能于一体。
- ◆ 粉体物料制粒。
- ◆ 粉体物料包衣。
- ◆ 粉体物料制丸。
- ◆ 中药喷雾制粒及包衣。
- ◆ 制备10-30目大颗粒冲剂。
- ◆ 粉体、颗粒、丸的薄、肠溶、缓控释包衣。
- ◆ 掩味、防潮、防氧化、防水、隔热、着色、隔离包衣。
- ◆ 粉状、粒状、团状物料干燥。

- ◆ Multi-function such as granulating, pelleting, coating in one machine.
- ◆ Powder material granulating.
- ◆ Powder material coating.
- ◆ Powder material pelleting.
- ◆ Chinese medicine spray drying, granulating and coating.
- ◆ Make 10-30 meshes big granule.
- ◆ Film coating of Powder, granules and pellets, enteric release, slow and control release coating.
- ◆ Taste masking, odor, moisture-proof, anti-oxidation, prevent water, heat insulation, coloration, and separation coating.
- ◆ Powder, granule, agglomerate material drying.



外形尺寸图 Chart of overall dimensions



- 1、过滤器  
Filter
- 2、加热器  
Heater
- 3、主机  
Main machine
- 4、配液罐  
Liquid tank
- 5、电控柜  
Electrical control cabinet
- 6、旋转床  
Turbojet bed
- 7、包衣床  
Coating bed
- 8、制粒床  
Granulating bed
- 9、引风机  
Induced draft fan
- 10、消音器  
Silencer

技术参数 Technical Parameter

项目 item		机型 (DLB) Model/specifications								
名称 name	单位 unit	10	15	20	30	45	60	90	120	
容器直径 dia of container	mm	700	800	900	1000	1100	1200	1400	1500	
生产能力 productive capacity	kg/批 kg/batch	2.5-10	3-15	5.20	7.5-30	10-45	15-60	20-90	30-120	
风机功率 power of fan	kw	5.5	7.5	7.5	7.5	11	11	15	18.5	
蒸汽 steam	压强 pressure	Mpa 0.4-0.6								
	耗量 consumption	Kg/h	35	42	47	60	140	160	180	240
压缩空气 compressed air	压强 pressure	Mpa 0.6								
	耗量 consumption	m <sup>3</sup> /min	0.6	0.6	0.6	0.9	0.9	1.1	1.3	1.5
噪音 noise	dB	风机处理不大于75分贝 No more than 75db separated of fan								
主机尺寸 installation size for reference	H <sub>1</sub> (mm)	2790	3350	3650	3720	3720	3850	3950	4190	
	H <sub>2</sub> (mm)	340	490	540	590	640	690	740	790	
	H <sub>3</sub> (mm)	2570	3130	3430	3500	3500	3630	3720	3975	
	Φ <sub>1</sub> (mm)	700	1000	1000	1200	1300	1400	1500	1600	
	Φ <sub>2</sub> (mm)	250	250	250	280	280	280	280	315	
	L(mm)	1250	1400	1450	1500	1550	1600	1650	1700	
	B <sub>1</sub> (mm)	1160	1460	1560	1600	1760	1860	1960	2060	
B <sub>2</sub> (mm)	1860	2460	2660	2860	3060	3260	3460	3660		

所有数据仅供参考，视物料情况，本公司有变更权利，并不另行通知。

All dates are used for reference only. According to the condition of material our factory has the right to change but not notice. pardon.

YUTONG  
宇通干燥

GHL Series High Speed Mixer Granulator  
GH L系列高速混合制粒机



概述 Descriptions

GH L型高速混合制粒机是一种在一道工序内将不同的粉状物料混合并制成颗粒的高效率设备,广泛应用于制药、食品、化工等行业。

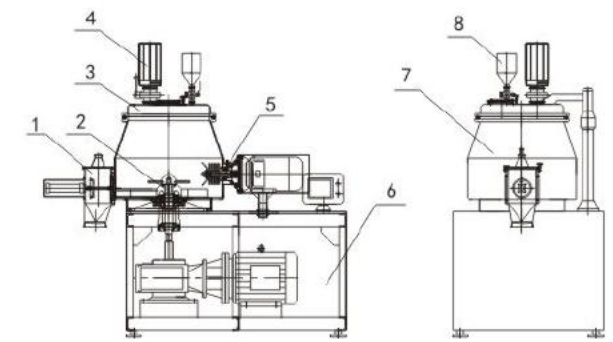
GH L high speed mixer granulator is a high efficiency equipment that can mix different powder materials and granulate granule in one procedure. It is widely used for pharmaceutical industry, foodstuff industry and chemical industry, etc.

特点 Features

- ◆ 本机采用卧式圆筒或圆锥形结构, 用户可自由选择。
- ◆ 设备内表无死角, 密闭状态下工作, 符合“GMP”要求。
- ◆ 制粒时间短, 高效节能。
- ◆ 制成的颗粒质地均匀, 流动性好, 为压片工序提供最理想的颗粒状原料。
- ◆ 较传统工艺减少25%粘合剂, 干燥时间缩短。
- ◆ 每批仅干混2分钟, 造粒1-4分钟, 功效比传统工艺提高4-5倍。
- ◆ 整个操作具有严格的安全保护措施。
- ◆ 主药与辅料差异大时, 仍能达到均匀结合, 无分层现象。

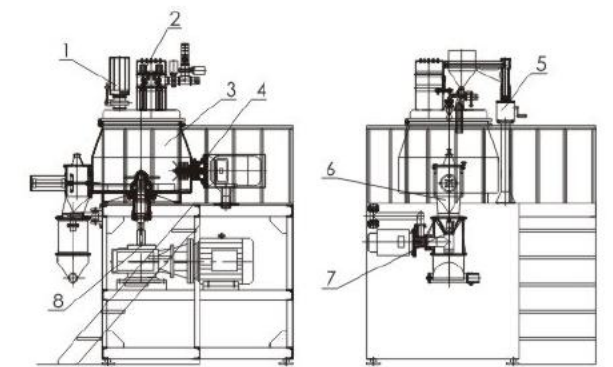
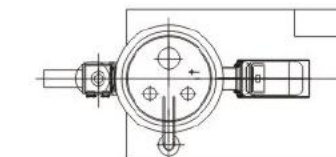
- ◆ The machine adopts horizontal barrel(cone) structure. Its structure is reasonable.
- ◆ The inner surface of equipment has no dead corner. It works at sealed state and conforms to the requirements of GMP.
- ◆ Short granulating time, high efficiency and energy saving
- ◆ The character of granule is uniform and the fluidization of granule is good. It provides ideal granule material to tablet pressing procedure.
- ◆ Compared with traditional process, it can reduce 25% of binder and shorten drying time too.
- ◆ Each batch needs 2 minutes to dry mixing and 1-4 minutes to granulating. Compared with traditional process, its efficiency can raise 4-5 times.
- ◆ Whole operation has strict safe protective measures.
- ◆ It can mix uniformly even when the gravity difference between main material and excipient is very big, without the phenomenon of delamination.

安装示意图 installation diagram



低台型 (单机)

- 主要部件名称
1. 出料机构
  2. 搅拌机构
  3. 锅盖机构
  4. 呼吸器
  5. 切刀机构
  6. 主机架
  7. 锅体
  8. 加浆机构

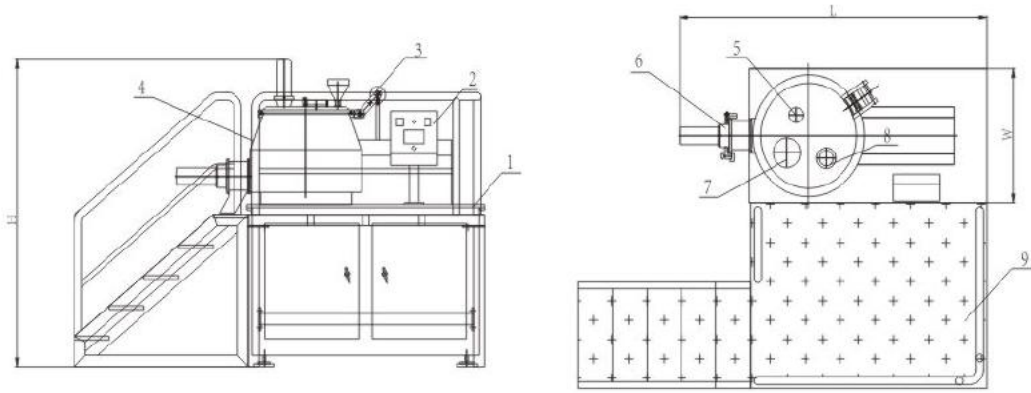


高台型 (联线用)

- 主要部件名称
1. 呼吸器
  2. 真空上料系统
  3. 锅体
  4. 切割系统
  5. 搅拌架升降系统
  6. 出料机构
  7. 湿整粒系统
  8. 搅拌混合系统



外形尺寸图 Chart of overall dimensions



- |                             |                            |                               |                               |                               |
|-----------------------------|----------------------------|-------------------------------|-------------------------------|-------------------------------|
| 1. 机箱<br>Box                | 2. 控制柜<br>Control cabinet  | 3. 开盖装置<br>Open lid device    | 4. 锅体<br>Container/Bowl       | 5. 排气装置<br>Air exhaust device |
| 6. 出料装置<br>Discharge device | 7. 加浆口<br>Add syrup device | 8. 观察装置<br>Observation device | 9. 操作平台<br>Operation platform |                               |



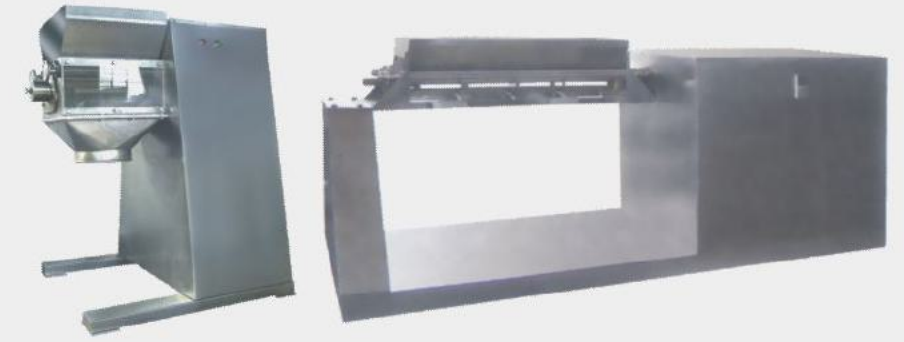
技术参数 Technical Parameter

项目 item	规格 specifications	7/2.5	10	50	100	150	200	250	300	400	600	800-1500	
生产能力Capacity (Kg /批 batch)		0.3-1	3	15	35	50	60	80	100	135	200	按用户 要求设计 By client	
颗粒粒度(目)Granules size (Mesh)		20-80											
作业时间 Working time (min)		5-7											
容器容积 Container volume (L)		7/2.5	10	50	100	150	200	250	300	400	600		
搅拌电机功率Mixing power (Kw)		0.75	2.2	4/5.5	6.5/8	6.5/8	11/14	11/14	13/16	18.5/22	22/28		
切刀电机功率Cutting power (Kw)		0.75	1.1	1.3/1.8	2.4/3	2.4/3	4.5/5.5	4.5/5.5	4.5/5.5	6.5/8	9/11		
搅拌转速 Mixing speed (r/min)		30-1000	30-600	200/400	200/400	180/270	180/270	180/270	140/220	106/155	80/120		
切刀转速 Cutting speed (r/min)		300-3000											
压缩空气压力 Pressure of compressed air (Mpa)		0.3-0.6											
压缩空气耗量 Consumption of compressed air (m³/min)		无	0.1	0.11	0.13	0.2	0.25	0.25	0.3	0.4	0.4		
机器重量 Weight (Kg)		150	300	400	800	900	1200	1500	1550	1650	1800		
产品主要尺寸(长×宽×高)mm Overall dimension of machine (L×W×H)		800×450×900	1250×550×1160	1730×750×1610	1950×750×1810	1950×750×1810	2210×880×2000	2210×880×2000	2310×1050×2000	2485×1050×2050	2585×1400×2100		

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YUTONG  
宇通干燥

YK Model  
Granulator  
YK型摇摆颗粒机



概述 Descriptions

YK160型系列颗粒机是我公司根据客户需要，针对现有摇摆式颗粒机存在之弊端，参照带式干燥设备的特点，消化吸收其先进技术，进行创新设计，试制成功的新型带式干燥机制粒及布粒的专用设备。该机具有结构简洁、合理、能量利用充分，制粒方式先进、高效节能等特点。一机具备制粒、粉碎、布料三种功能，可达到一机多用的目的。它适用于医药、化工、食品等工业中制造各种规格的颗粒。它的最大优点是可以在一定范围内任意调整粒的能力快慢，布料均匀化，能使湿式颗粒与干式颗粒保持一致。经用户使用一致反应，该机制粒均匀，含粉粒率少，操作方便，使用寿命长，符合GMP规范要求。

特点 Features

- ◆ 粒度均匀，控制简单：本机是一种将潮湿粉末混合物，在旋转滚筒的正、反旋转作用下，强制性通过筛网而制成颗粒。调节筛网的紧松与滚筒的转速，即可在一定程度上控制颗粒的粒度与密度。
- ◆ 轴转动密封良好，不会污染物料：该机的轴在变速箱上方，并设计有严密的轴头密封结构，确保机轴不渗油，不穿料，避免物料受润滑油污染，达到GMP要求。
- ◆ 电磁调速，兼具减速与提速功能：该机采用电磁调速装置使主轴转速变换，转速越快，颗粒松散；转速越慢，颗粒紧密，通过转速变换可达到粒度的要求。同时主轴变速箱根据齿轮变换可使主轴提速或减速。
- ◆ 造型美观，清洗方便：该机外壳全部采用不锈钢拉丝板包装，清洁无毒，防腐性好，该机需清洁的部件仅有制粒腔部分，主要是筛网和六角滚筒，滚筒不需拆卸，筛网容易拆卸，且很轻，清洗十分方便。

技术参数 Technical Parameter

型号 Model	B型 Model B	C型 (加重型) Model C (heavy type)	YK160-F-120 (非标型)
生产能力 (kg/h) Productive capacity	100-200	150-300	600-1000
电机功率 (kw) Power of motor	3	4	7.5
滚筒转速 (r/min) Revolution of roller	65	65	10-44
摇摆角度 (度) Swing angle	360	360	360
滚筒直径 (mm) Diameter of roller	160	160	160
外形尺寸 (mm) Overall dimensions	100×680×1250	1260×750×1250	3100×930×1250
重量 (kg) Weight	300	450	2200

Model YK160 series swing type granulator is a new special equipment for the granulating and material-spreading of belt type drier, which is designed on the basis of customers requirements and is in accordance with the currently malpractices. We also referred to the characteristics of belt type drier, digested and absorbed its advanced technologies, and we also brought forth new ideas to the designs. This equipment has the features of a reasonable and simple structure, sufficient utility of energy, an advanced granulating method, high efficiency and energy-saving and etc, thus it has multi-utilities of granulating, grinding and material distributing are suitable for granulating in pharmaceutical industry, chemical industry, foodstuff industry and etc. The most remarkable advantage of the equipment is that the granulating speed can be changed in a certain range and the material can be distributed uniformly. Thus it can keep the damp granule or dry granule in an identical size. The granules from this machine is uniformly and little in dust, convenience in operation, longlife in use, it can meet GMP requirements.

- ◆ Well-distributed size, simple control: This machine is used to granulate the mixture of damp powder by forcing it through the screen mesh under the action of straight and reverse rotation of the by regulating. To regulate the tightness and looseness of the revolution of the rotary drum, the size and density of the material can be controlled in a certain degree.
- ◆ Good sealability of the shaft rotation, no contamination to material: The main shaft is above the reducer and a tight shaft head seal structure is designed ensuring no oil penetrating out of the shaft, no material penetrating, avoiding the material being contaminated by the grease, and meeting the requirements of AMP.
- ◆ Electromagnetic speed-regulation, with speed-reducing and raising function: The machine changes the revolution of main shaft by adopting electromagnetic speed-regulation device, the faster the revolution is, the looser the granule will be; the slower the revolution is, the more solid the granule will be. By changing the revolution, the requirements for size can be met. Meanwhile through replacing the gears, the revolution of main shaft.
- ◆ Beautiful in appearance, convenient in cleaning: The machine's enclosure adopts stainless steel strung plates, and it is clean and nonpoisonous. It is anti-corrosion. The part which needs to be cleaned is only the granulating chamber, that is mainly the screen mesh and hexagonal rotary drum. The rotary drum needn't be disassembled. And the screen mesh is easy to be disassembled, it is very light and very convenient in cleaning.



## XL Series Revolving Granulator

### XL系列旋转式制粒机



# Mixing/Grinding/Sieve Series

## 混合/粉碎/筛分系列

### 概述 Descriptions

◆ 本机用于制药、食品、冲剂、化工、固体饮料等行业，将搅拌好的物料制成所需颗粒，特别适用对粘性较高的物料。  
◆ 本机凡与物料接触部份均采用不锈钢制造，外型美观，结构合理，制粒成型率高，颗粒美观，自动出料，避免人工出料造成的颗粒破损，并适合流水作业。

◆ The machine is mainly suitable for pharmaceutical industry, foodstuff industry, chemical industry, solid drink industry and so on. It can make the stirred raw material granulate the needed granule. Especially, it is suitable for raw materials that have sticky adhesive.

◆ All parts contacted with raw material in this machine are made of stainless steel. Its appearance is beauty and taste and its structure is reasonable. Its efficiency is high and the granule is beauty. Its discharge is automatic. Therefore it can avoid the damaged conditions caused manual. It is suitable for in line production too.

### 技术参数 Technical Parameter

碾刀尺寸 Size of milling knife (mm)	250	300B	30D
粒子直径 Diameter of graule (mm)	φ2-2.2 (可根据用户需要It may be in accordance with the requirements of customers)	φ1.2-3 (可根据用户需要It may be in accordance with the requirements of customers)	φ0.5-6 (可根据用户需要It may be in accordance with the requirements of customers)
外型尺寸 Overall dimensions (mm)	700 × 540 × 1300	800 × 640 × 1300	1300 × 800 × 1200
电机功率 Power of motor (kw)	3	4	7.5-6
重量 Weight (kg)	350	400	780
生产能力 Production capacity (kgh)	100-200	140-400	300-600

## KZL Series Revolving Granulator

### KZL系列快速整粒机



### 应用 Applications

◆ 本机适用于中西药、食品、化工颜料及饲料等行业中颗粒的破碎及整理。  
◆ 经各种造粒工艺及设备所得到的颗粒形状及规格各异。将造粒后的颗粒经本机高速旋转的刀片组合切割后，经网板排出，便可得到形状及规格基本一致的颗粒。  
◆ 本机全部零件均采用不锈钢制造，表面抛光，装拆与清洗十分方便。

◆ This machine is suitable for crushing and processing granule of Chinese traditional medicine, Western medicine, foodstuff, chemicals, pigments, feedstuff and so on.

◆ The specifications and shapes of granule made by all kinds of granulating process and different granulator are different. Then granulate with basic similar shape and specification can be got when the granulated granule is cut by knives with high speed in this machine.

◆ All parts in this machine are made of stainless steel. Its assembling and disassembling and cleaning are very convenient.

### 特点 Features

- ◆ 工作时发热小，粉尘少。
- ◆ 定子筛网由不锈钢板加工而成，不易损坏。
- ◆ 粉碎刀与筛网间隙可调。
- ◆ 可处理粘性，树胶状、热敏性和湿润物料。
- ◆ There is less heat and dust in work.
- ◆ The fixed screen is made from stainless steel and it can not damage easy.
- ◆ The gap between crush knives and screen can be adjusted.
- ◆ It can treat adhesive, glue, hot and wet raw materials.

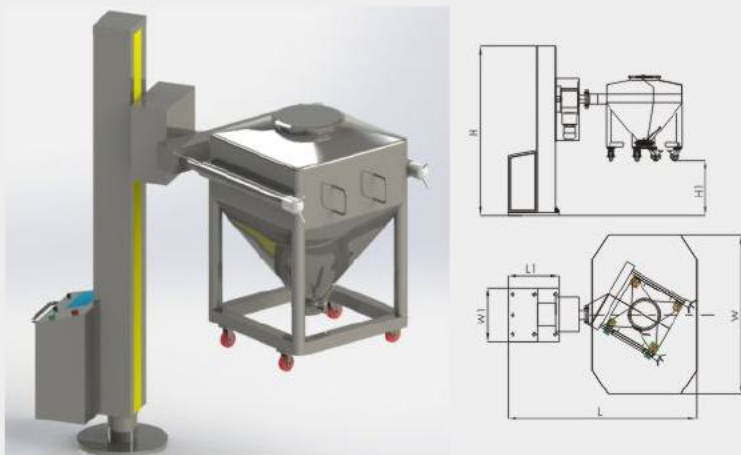
### 技术参数 Technical Parameter

型号 Type	定子直径(mm) State diameter	定子长度(mm) State length	生产能力(kw) Productive capacity	功率(kw) Power	转速(rpm) Speed
100	100	96	20-150	0.75	0-1400
200	200	179	100-1500	1.5	0-1400
300	300	305	200-2500	5.5	0-1400



## HDT single arm lifting hopper mixer

### HDT单臂提升料斗混合机



### 应用 Applications

该机具有提升混合、提升出料等功能。一台设备可配多个不同规格的混合料斗来满足多品种不同批量的混合要求。广泛应用于制药、化工、食品等行业中。

### 工作原理 Principle of work

该机主要由立柱、底盘、回转叉架、回转机构、液压系统和控制系统组成。工作时将装满物料的料斗推入回转叉架上，用螺母锁紧，启动混合程序自动完成混合作业后将料斗下降至地面，松开螺母，将料斗推出。

### 特点 Features

该是我公司广泛吸收、消化国外先进技术，结合我国国情研发的新机型。其结构合理，占地面积小，使用灵活，适应性强，不仅可以实现混合功能，还能实现提升高位出料，减少设备投入和转移工序。混合料斗和回转轴线成30°角，达到很高的混合效果。

This machine has the functions of lifting and mixing, raising the discharge and so on. A device can be equipped with a number of different specifications of the mixture hopper to meet the needs of different varieties of different batches of mixing. Widely used in pharmaceutical, chemical, food and other industries.

The machine is composed of a column, a chassis, a rotary fork frame, a rotary mechanism, a hydraulic system and a control system. When the utility model is used, the hopper which is filled with material is pushed into the fork frame, and the nut is locked tightly, and the mixing process is started automatically to complete the mixed operation, and the hopper is dropped to the ground.

This machine is a new type of machine which is widely absorbed and digested by our company. The utility model has the advantages of reasonable structure, small occupation area, flexible use and strong adaptability. The utility model not only can realize the mixing function, but also can realize the improvement of the high discharging and the reduction of the equipment input and transfer process. The mixing hopper and the rotation axis are 30 degrees, and the mixing effect is high.

### 技术参数 Technical Parameter

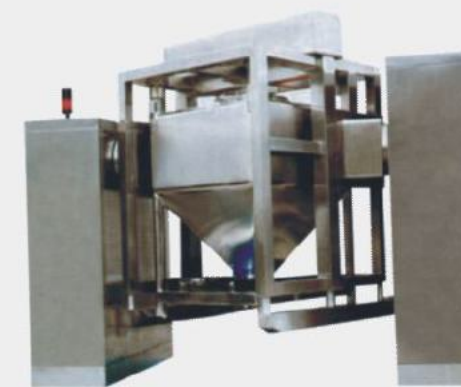
型号 Model	主要结构尺寸 Main structural dimensions									机器重量 weight T	净载货 Net load KG	总功率 Power KW
	A	B	L	L1	L2	H	H1	H2	H3			
HDT-200	600	700	1900	600	850	2200	3020	3050	3200	0.5	200	1.5
HDT-400	600	800	1950	600	950	2200	3400	3340	3600	0.6	400	2.2
HDT-600	600	1000	2050	600	950	2200	3400	3370	3600	0.65	600	2.2
HDT-800	600	1000	2200	600	1000	2200	3500	3570	3700	0.8	800	2.2
HDT-1000	600	1100	2250	600	1100	2200	3500	3540	3700	0.9	1000	2.2
HDT-1200	600	1200	2380	600	1200	2200	3500	3560	3700	1	1200	2.2
HDT-1500	600	1200	2380	600	1200	2200	3800	3830	4000	1.2	1500	3
HDT-1800	600	1200	2480	600	1200	2200	4000	4035	4200	1.4	1800	3
HDT-2000	600	1200	2480	600	1200	2200	4200	4230	4400	1.5	2000	3

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## HLD Series Hopper Mixer

### HLD系列料斗混合机



### 概述 Descriptions

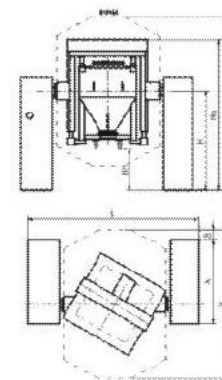
料斗混合机是国际制药界使用最普遍的固体粉粒状药物的混合设备。它混合均匀度高，料斗可移动，极大地方便装料、混合、出料及清洗；能与前后工艺设备有机地衔接成流水线，有效地克服了由于反复转料造成的交叉污染与粉尘；该机能配不同规格的料斗，以满足大批量、多品种的混合要求。该机是药厂总混、批混的理想设备，同时在化工、食品、轻工等行业亦有广泛的用途。

### 工作原理 Principle of work

◆公司在广泛吸收，深入研究国内外多种机型的基础上，经多年的吸收、消化、比较、研究，结合国情精心研制出HLD系列料斗混合机。  
◆料斗混合机的最大结构特点是：回转体（料斗）与回转轴线成30°夹角。随料斗回转上下翻动外，亦同时做沿斗壁方向切向运动，该二种运动的叠加，使每个质点运动轨迹复杂而各异，随时改变了所处位置，达到了很高的混合效果。

### 特点 Features

◆该机结构合理，采用双丝杆提升，电动回转，柔性轴联更适合我国国情。性能更稳定可靠；保养、维护更简单；杜绝了因泄漏造成的安全隐患，无后顾之忧。  
◆该机使用了完全符合药厂工艺要求的程序操作系统；工艺参数设定系统，安全保护停机系统；自动精确对位系统；操作及自动记录打印系统，实现了全自动生产，操作十分简便。  
◆该机采用质量优良的外购件，能有效保证整机的质量。  
◆该机配有精致的安全符合GMP要求料斗出料不残留，清洗方便。  
◆我厂生产物料输送的系列产品，与料斗混合机一起可组成先进的工艺流程。  
备注：用户如有特殊需要可以定制。



### 技术参数 Technical Parameter

型号	结构尺寸				净负载 Kg	总功率 KW
	LxWxH	L1	W1	H1		
HDT200	2300x1800x2500	600	700	800	150	3
HDT400	2500x2000x2600	600	700	800	300	3.7
HDT600	2700x2200x2500	600	700	800	450	4.5
HDT800	2850x24000x2500	800	900	900	500	7
HDT1000	3000x2600x2500	800	900	900	650	7

It's widely used as the mixing machine for solid medicine powder in pharmaceutical industry worldwide. The mixing uniformity is high, the mixing hopper is movable, it is very convenient for material loading, mixing, discharging and cleaning. It's easy to integrate with the upstream and downstream process, the problem of cross pollution and fly-dust caused by multi-material-transferring can be solved. Different material hoppers can be equipped with this machine, so to meet the mixing requirement of large batch capacity, and multi-varities. This machine is the ideal equipment for mixing and batch mixing, and has wide application in chemical industry, food industry, light industry and other industries.

◆Through years of studying, comparing and absorbing both domestic and foreign machines, we develop our own design of HLD series hopper mixer.  
◆The main structure feature of the mixer is: The mixing body (material hopper) and the rotating axis form a angle of 30°. When the material is rotating, the material also makes tangent movement along the wall of the vessel. The function of two movements makes all points of material moves in complicated ways, changes their positions all the time, so to have very high mixing efficiency.

◆The structure is reasonable, adopt double hoisting devices, motor rotation, flexible coupler. The performance is stable, the upkeep and maintenance are simpler, and there's no problem of leakage.  
◆It Adopts programmed control system, technical parameters setting system, machine stops system for safety, automatic accurate positioning system, operation and automatic record printing system. Fully automatic production is realized, and the operation is very simple.  
◆To ensure the quality of the machine, we adopt high quality outer purchased parts for this machine.  
◆Equipped with fine manufactured hopper that fully meets GMP the requirements, no residues of discharging, easy for cleaning and washing.  
◆We supply series of material conveying product. It forms advanced process together with the hopper mixer.  
Remarks: If customer has any special requirements, we can customize for you.



FZH Series Square  
Cone Mixer  
FZH系列方锥混合机



概述 Descriptions

将物料装入方锥形密闭混合桶内，料斗对称的轴线与回转轴轴线成一夹角，不同成份物料在密闭的料斗中进行三维空间运动，产生强烈翻转和扩散作用，达到最佳的混合效果。整机设计新颖、结构紧凑、外形美观、混合均匀度达99%，体积装料系数达0.8。

特点 Features

回转高度低、运转平稳；采用变频调速，控制方便，性能可靠；筒体内外壁均经表面抛光，无死角、易出料、易清洗。采用双机箱支撑结构，具有刹车定位机构及停机定位传感系统，能确保每次设定的混合周期结束前3转自动减速—停机—刹车锁紧，停机定位准确；采用变频调速、人机界面操作，画面清晰，操作便捷；内置自动、手动可切换控制模式。可根据用户要求，选配真空上料机以及筛分机，实现前后道工序的衔接。

It's widely used as the mixing machine for solid medicine powder in pharmaceutical industry worldwide. The mixing uniformity is high, the mixing hopper is movable, it is very convenient for material loading, mixing, discharging and cleaning. It's easy to integrate with the upstream and downstream process, the problem of cross pollution and fly-dust caused by multi-material-transferring can be solved. Different material hoppers can be equipped with this machine, so to meet the mixing requirement of large batch capacity, and multi-varities. This machine is the ideal equipment for mixing and batch mixing, and has wide application in chemical industry, food industry, light industry and other industries.

- ◆ Rotation height is low, operation is stable; with inverter frequency for speed adjustment, control is easy and performance is reliable.
- ◆ Inside and outside of cylinder are well polished, no dead corner, easy discharging and cleaning.
- ◆ It adopts double box sustaining device, owns braking and positioning device and stop positioning sensing system, which can ensure 3 turns before setting period end to get automatic control of deceleration—stop-braking and locking process, the stop positioning is accurate.
- ◆ It adopts frequency speed control, man-machine interface operation in clear picture, easy to operate; built-in automatic and manual switching control mode is provided.
- ◆ According to users' requirements, vacuum feeder and screening machine can be equipped to connect the front and rear procedure.

技术参数 Technical Parameter

型号	300	500	1000	1500	2000	3000	4000	5000	6000	8000	10000
参数											
全容积(L)	300	500	1000	1500	2000	3000	4000	5000	6000	8000	10000
最大装料容积(L)	210	350	700	1050	1400	2100	2800	3500	4200	5600	7000
最大装料重量(Kg)	150	250	500	750	1000	1500	1960	2450	2950	3950	4900
主轴转速(rpm)	15			12		9	9	8	8	7	7
电机功率(Kw)	1.5	2.2	4	5.5	7.5	11	15	15	15	18.5	22
加料口直径(mm)	380	380			400		450	450	480	480	
出料口直径(mm)	200	200	200	200	200	200	200	250	250	250	250
外形尺寸(mm)	(L)	1850	2200	2800	2915	3160	3800	3770	4360	4520	4890
	(W)	1280	1550	2000	2300	2500	3200	3190	5310	3570	3790
	(H)	1970	2260	2850	2950	3200	3850	4030	4415	4850	4880
整机重量(Kg)	500	700	1000	1500	2000	3000	4000	5000	6000	7000	7800

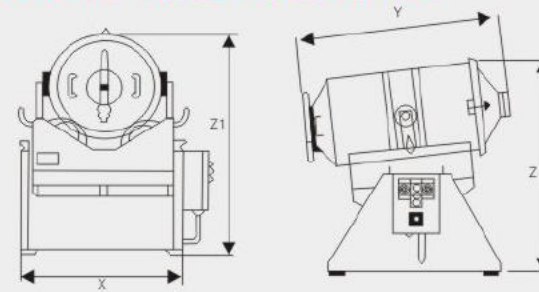
EYH Series  
Two Dimensions Mixer  
EYH系列二维运动混合机



概述 Descriptions

- ◆ 本机广泛用于医药、化工、食品、染料、饲料、化肥、农药等行业。尤其适用于大吨位(1000L~10000L)各种固体物料的混合。
- ◆ 本机混合筒在转动的同时又参与摆动，使筒中物料得以充分混合，混合筒的出料口偏离混合筒圆筒部分的中心线，使该机具有混合迅速、混合量大、出料便捷等特点。
- ◆ The mixers are widely used in pharmaceutical, chemical, food, dye, feed, chemical fertilizer and pesticide industries and especially suitable for mixing various solid materials with large volume(1000L-10000L).
- ◆ The mixing barrel swings while rotates so that the materials in the barrel can be fully mixed. Because the discharge port of the barrel is out of the barrel centreline, the mixer features quick mixing and discharging, as well as high volume mixing capacity.

结构示意图 Sketch of structure



技术参数 Technical Parameter

型号 Type	料筒容积 Barrel volume (L)	装料容积 Loading capacity (L)	最大装料量 Max Loading weight (kg/批)	摆动、转动 次数 No. of swing & rotation (r/min)	电机总功率 Total motor power(kw)	外型尺寸 Overall dimensions X×Y×Z×Z <sub>1</sub> (mm)	总重量 Total weight (kg)	料筒重量 Barrel weight (kg)
EYH-60	60	30	15	50	0.4	700×730×1100×990	115	15
EYH-150	150	75	37.5	37	1.15	800×1050×1450×1340	190	50
EYH-300	300	150	75	30	1.15	900×1350×1550×1400	340	60
EYH-600	600	300	150	23.6	3	1170×1640×2050×1910	1150	140
EYH-800	800	400	200	19.8	3	1320×1950×2150×2000	1600	200
EYH-1000	1000	500	250	19.8	3	1300×2980×1894×1766	1700	240
EYH-1500	1500	750	375	16.2	4.4	1500×3195×2250×2008	2000	320
EYH-2000	2000	1000	500	16.2	7.4	1660×3305×2255×2120	2600	430
EYH-3000	3000	1500	750	13.8	11	1860×3860×2570×2420	3500	620
EYH-4000	4000	2000	1000	12.8	13	2010×4100×2755×2550	4100	700
EYH-6000	6000	3000	1500	11.2	18.5	2280×4965×3172×2935	6100	1100
EYH-8000	8000	4000	2000	10.4	22	2500×5200×3655×3200	7900	1450
EYH-10000	10000	5000	2500	9	30	2600×5500×3750×3400	9500	1650



出料口

二维制作现场



## SYH Series Multidirectional (3D) Motion Mixer

### SYH系列多向(三维)运动混合机



#### 工作原理 Principle of work

◆该机在运行中,由于混合桶体具有多方向转动动作,使各种物料在混合过程中加速了流动和扩散作用,同时避免了一般混合机因离心力作用所产生的物料比重偏析和积聚现象,混合无死角,能有效确保混合物料的最佳品质。

◆结构:该机由机座、传动系统、电器控制系统、多向运动机构、混合筒等部件组成。与物料直接接触的混合筒采用优质不锈钢材料制造,桶体内外壁均经镜面抛光。

◆During the period of operation, because the mixing drum has multi-directional actions of motion, it speeds up the fluid and diffused effect of raw material. Meanwhile it avoids the phenomenon of segregation and accumulation caused by centrifugal effect in ordinary mixer and no dead corner. It can guarantee the best quality of mixed raw material.

◆ Structure: this machine consists of stand, transmission system, electric control system, multi-directional motion mechanism, mixing drum and so on. The mixing drum contacted with raw material is made of stainless steel. The inner and outer wall of drum is polished.

#### 应用 Applications

该机广泛应用于制药、化工、食品、冶金、轻工及科研单位,能非常均匀地混合流动性较好的粉状或颗粒状的物料,使混合后的物料能达到最佳混合状态。

This machine is suitable for many industries such as pharmaceutical industry, chemical industry, metallurgy industry, foodstuff industry, architecture industry and institutes. It can mix powder and granule raw materials having good fluidity and make the mixed raw materials reach the best mixing state.

#### 技术参数 Technical Parameter

型号 type	SYH-5	SYH-100	SYH-200	SYH-400	SYH-600	SYH-800	SYH-1000
混合桶容积 Material barrel volume (L)	5	100	200	400	600	800	1000
最大装载容积 Max loading volume (L)	4.25	85	170	340	510	680	850
最大装载重量 Max loading weight (kg)	5	80	150	200	300	400	500
主轴转速 Spindle rotation speed (r/min)	24	15	12	10	10	10	10
电机功率 Motor power (kw)	0.37	2.2	3	4	5.5	7.5	11
外型尺寸 Overall dimensions (mm)	600×1000×1000	1200×1800×1500	1300×1600×1500	1500×2200×1500	1850×2500×1650	1900×2400×2100	1950×2500×2400
重量 Weight (kg)	150	500	750	1200	1500	1650	1800

#### 特点 Features

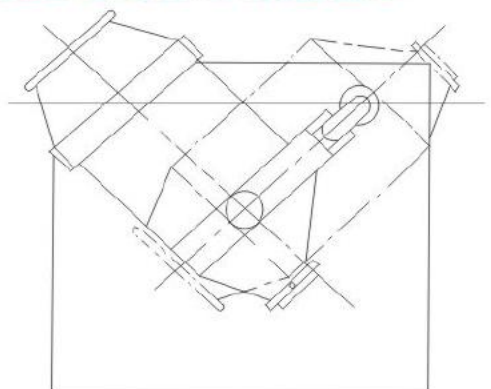
◆由于混合桶体具有多方向的运动,使桶体内的物料交叉混合点多,混合效果好,均匀度可达99.9%以上,最大装载系数可达0.9(普通混合机为0.4~0.6),混合时间短,效率高。

◆该机混合桶体设计独特,桶体内壁经过精细抛光,无死角,不污染物料,出料方便,清洗容易操作简单等优点。

◆ Because the mixing drum has multi directional motion, it makes raw material inside the drum has many cross-mixing points, therefore the mixing effect is good. Its degree of uniformity may be over 99.9%. Its Max loading efficiency may be 0.9 (The loading efficiency of ordinary mixer is 0.4~0.6). Its mixing time is short and its efficiency is high.

◆ The design of mixing drum is unique. Its inner wall is polished finely. Its advantages are no dead corner, no pollution to raw material, convenient in discharge, easy in clean and so on.

#### 结构示意图 Sketch of structure



## VHJ Series Mixer

### VHJ 型系列混合机



#### 概述 Descriptions

本机适用于制药、化工、食品等行业两种以上干粉状、颗粒状物料的混和。

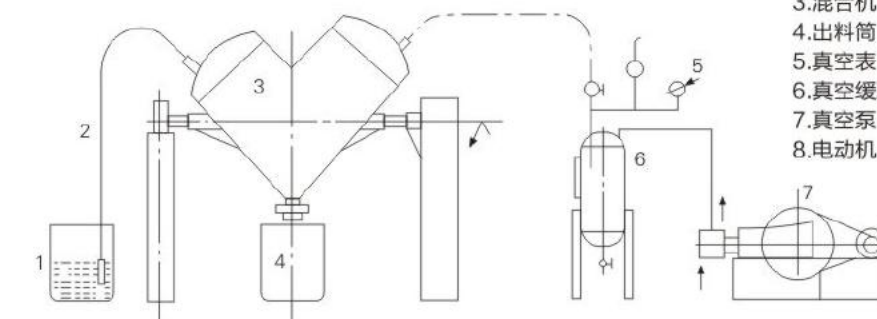
该机混和筒结构独特,混和效率高、无死角,采用不锈钢材料制作,内外壁抛光处理,外形美观,混和均匀,适用面较宽,并能根据用户的要求配套强制搅拌器,以适合较细的粉粒、块状、含有一定水份的物料混合之用。

This machine is suitable for mixing two or more dry and powder or granule raw materials from pharmaceutical industry, chemical industry, foodstuff industry and so on.

The structure of this machine is unique. Its mixing efficiency is high and no dead corner. It is made of stainless steel. Its inner and outer wall is processed through polishing. Its appearance is beauty.

mixing effect is uniform. Its scope of application is wide. The forced stirrer can also be equipped in order to meet the requirements of raw materials that contain fine powder, cake and certain moisture as request.

#### 结构示意图 Sketch of structure



- 1.物料筒 Cylinder of raw material
- 2.吸料管 Cylinder of sucked raw material
- 3.混合机 Mixer
- 4.出料筒 Cylinder of discharged raw material
- 5.真空表 Vacuum meter
- 6.真空缓冲罐 Tank of air purification
- 7.真空泵 Vacuum pump
- 8.电动机 Motor

#### 技术参数 Technical Parameter

型号规格 Model and specification	0.18	0.3	0.5	1.0	1.5	2.0	2.5	3.0	4.0	5.0	6
生产能力 Productive capacity (kg/time)	72	120	200	400	1600	800	1000	1200	1600	2000	2400
配用真空泵型号 Model of vacuum pump	W2	W2	W2	W3	W3	W3	W3	W4	W4	W4	W4
进料时间 Time of raw material fed in (min)	3-5	3-5	4-6	6-9	6-10	8-13	8-15	8-12	10-15	15-20	18-25
混合时间 Mixing time (min)	4-8	6-10	6-10	6-10	6-10	6-10	6-10	8-12	8-12	8-12	8-12
全容积 Total volume (m³)	0.18	0.3	0.5	1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0
回转速度 Stirring speed (r/min)	12	12	12	12	12	12	12	10	10	10	10
电机功率 Power of motor (kw)	1.1	1.1	2.2	4	4	5	7.5	7.5	11	15	18.5
回转高度 Rotating height (mm)	1580	1760	2400	2840	3010	3240	3680	3700	4350	4800	5300
重量 Weight (kg)	280	320	550	950	1020	1600	2040	2300	2800	3250	3850



### CH Series Guttered Mixer

#### CH系列槽形混合机



#### 概述 Descriptions

用于混合粉状或湿性物料，使不同比例主辅料混合均匀。本机与物料接触处均采用不锈钢制造，浆叶与桶身间隙小，混合无死角，搅拌轴两端设有密封装置，能防止物料外泻，料斗采用按钮点动控制，出料方便。广泛适用于制药、化工、食品等行业。

CH series guttered mixer is widely used for mixing powder or wet materials, and can make the materials in different proportions mixed uniform. The parts of the machine which contact with materials are made of stainless steel. The gap between blades and the inner wall of the cylinder is very small, so there's no "dead corner" in mixing. Seal devices are fixed on both ends of the stirring shaft to prevent the materials from rushing out. Feed hopper is controlled through buttons. So it's very convenient to feed or discharge materials. This type of mixer is widely used in pharmaceutical, chemical, foodstuff industry and so on.

#### 技术参数 Technical Parameter

型号 Type	全容积 Total volume (m <sup>3</sup> )	投料量 Feed amount (kg/批)	外形尺寸 Overall dimension (mm)	搅拌转速 stirring speed (rpm)	混合电机功率 power formixing (kw)	卸料电机功率 Power for discharge (kw)
150	0.15	30	1480 × 1190 × 600	24	3	0.55
200	0.2	40	1480 × 1200 × 600	24	4	0.55
300	0.3	60	1820 × 1240 × 680	24	4	1.5
500	0.5	120	2000 × 1240 × 720	20	5.5	2.2
750	0.75	150	2300 × 1260 × 800	19	7.5	2.2
1000	1.0	270	2500 × 1300 × 860	19	7.5	3
1500	1.5	400	2600 × 1400 × 940	14	11	3
2000	2	550	3000 × 1500 × 1160	12	11	4
2500	2.5	630	3500 × 1620 × 1250	12	15	5.5
3000	3	750	3800 × 1780 × 1500	10	18.5	5.5

### HJ Series Double Tapered Mixer

#### HJ系列双锥混合机

#### 工作原理 Principle of work

◆ 本机将粉末或粒状物料通过真空输送或人工加料到双锥容器中，随着容量的不断旋转，物料在容器中进行复杂的撞击运动，达到均匀的混合。  
◆ 本机节约能源、操作方便、劳动强度低、工作效率较高。

◆ Through the vacuum conveyor for the machine, send the powder or grain state materials into the double-taper container, or send the materials into the container manually. As the container rotates continuously, the materials moves complexly in the container so as to get the uniform mixing.  
◆ Energy saving, convenient operation, low labor intensity, high work efficiency.



#### 应用 Applications

本机适用于医药、化工、食品、建材等行业的粉状、粒状物料的混合。

It is suitable for mixing the powder and grain state materials in the pharmacy, chemical food, building material and other industries.

#### 技术参数 Technical Parameter

型号 Model	180	300	500	1000	1500	2000	2500	3000	4000
全容积 Total volume(m <sup>3</sup> )	0.18	0.3	0.5	1.0	1.5	2.0	2.5	3.0	4.0
生产能力 Productive capacity (kg/批)	40	60	100	200	300	400	500	600	800
混合时间 Mixing time (min)	4-8	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10
筒体转速 Revolution of cylinder (rpm)	12	12	12	12	12	12	12	7.8	7.8
功率 Power (kw)	1.1	1.1	2.2	4	4	7.5	7.5	7.5	11
外形尺寸 Overall dimension (mm)	1400 × 800 × 1850	1685 × 800 × 1940	1910 × 800 × 1940	2765 × 1500 × 2370	2960 × 1500 × 2480	3160 × 1900 × 3500	3385 × 1900 × 3560	4450 × 2200 × 3680	4750 × 2500 × 3680
回转总高度 Rotation height (mm)	1850	1850	1950	2460	2540	3590	3650	3700	3730
重量 Weight(kg)	280	310	550	810	980	1500	2150	2500	3200

### DSH Series Double Screw Cone Mixer

#### DSH系列双螺旋锥形混合机



#### 应用 Applications

该机是一种新型、高效、高精度的混合设备，广泛适用于制药、化工、饲料等行业的各种粉状物料的混合，特别适用于比重悬殊，混配比悬殊的物料混合。

This mixer is a kind of high-efficient and high-precise mixing equipment that is widely applied by the industries of pharmacy, chemical, and fodder for the mixing of all kinds of powder material, specially for the mixing of the powder materials with great disparity in its specific gravity or in its mixing proportion.

#### 技术参数 Technical Parameter

型号 Model	生产能力(kg/次) Productive capacity	全容积(m <sup>3</sup> ) Total volume	装载系数 Feeding rate	疏松密度 Power bulk density	物料粒度(目) Material size	电机功率(kw) Motor power	混合时间(min) Mixing time	外形尺寸(mm) Overall dimensions	重量(kg) weight
DSH200	95	0.2	0.6	~0.8	20-250	2.2	6-10	890 × 1850	600
DSH500	190	0.5	0.6	~0.8	20-250	2.2	6-10	1160 × 2250	800
DSH1000	380	1	0.6	~0.8	20-250	4	8-10	1450 × 2700	1200
DSH2000	720	2	0.6	~0.8	20-250	5.5	8-10	1850 × 3450	1800
DSH4000	1400	4	0.6	~0.8	20-250	11	8-10	2260 × 4210	3000

### 30B Series High Effect Grinding Machine(set) WF-30B China Herb High Speed Grinding Machine(set) 30B系列高效粉碎机(组)/WF-30B中草药粉碎机组

#### 概述 Descriptions

本机(组)适用于医药、化工、食品、农药等行业脆性物料的粉碎，用途极为广泛。

This machine(set) is extensively used in pharmaceutical, chemical food and pesticide industries for pulverizing dry brittle materials.



#### 技术参数 Technical Parameter

型号 Model	20B/20B机组(set)	30B/30B机组(set)	40B/40B机组(set)	60B/60B机组(set)	WF30B/WF30B机组(set)
生产能力 Productive capacity (kg/h)	60-150	100-300	160-800	500-1500	50-250
主轴转速 Revolution of main shaft (r/min)	4500	3800	3400	2800	5300
进料粒度 Size of fed material (mm)	6	10	12	15	10-40
粉碎细度(目) Grinding size (mesh)	2-120	2-120	2-120	2-120	60-220
电机功率 Power of Motor (kw)	4	5.5	7.5	15	7.5
吸尘风机功率 Fan power	0.75	0.75	1.1	2.2	1.1
重量 Weight (kg)	250	320	550	680	

注：因物料差异及要求目数不同，表中产量仅供参考。  
Notes: the outputs in list are only for reference, due to the difference of material and the wanted sizes.



WF Series  
Roughness Grinder  
WF 最新高效粗粉碎机



Model FS Series  
Square Sieve  
FS系列方形筛



应用 Applications

本机适用于制药、化工、冶金、食品、建筑等行业。对坚硬难粉碎的物料进行加工，包括对塑料、铜丝、中草药橡胶等进行粉碎，也能作为微粉碎机、超微粉碎机加工前道工序的配套设备。

This machine is suitable for many industries such as pharmaceutical industry, chemical industry, metallurgy industry, foodstuff industry, architecture industry and so on to crush hard raw materials including plastics, steel wire, Chinese herbal medicine, rubber and so on. It can also be as complete equipment of ring grinder and super fine grinder as the first procedure.

特点 Features

该机是采用立式粉碎机构，不受物料粘度、硬度、软度等的限制，对任何物料都能起到粉碎作用。

This machine adapts vertical crushing mechanism. It can not be limited by viscosity, hardness and softness of raw materials. It has good crushing effect to all kinds of raw materials.

工作原理 Principle of work

物料由进料斗送进粉碎室，经刀刃和刀座的冲击，旋转刀和固定刀同时剪切粉碎，由于受到旋转离心力的作用，物料自动从口处流出。

The material is fed into the crushing chamber through the feed hopper, and the rotary knife and the fixed knife are simultaneously cut and crushed by the impact of the blade and the knife seat.

技术参数 Technical Parameter

型号 type	进料粒度 (mm) inlet material diameter	出料颗粒 (mm) output diameter	产量 (kg/h) output	功率 (kw) power	主轴转速 (rpm) speed of shaft	外型尺寸 (mm) overall dimension
WF-250	≤100	0.5~20	50~300	4	940	860 × 650 × 1020
WF-500	≤100	0.5~20	80~800	11	1000	1120 × 1060 × 1050

WFJ Series Fine Grinder

WFJ 系列微粉碎机

概述 Descriptions

该系列微粉碎机由主机、辅机、电控三个部分组成，设计紧凑，结构合理，具有风选式，无筛无网。机内装有分级机构，能使粉碎，分级一次完成。负压输送使粉碎作业时腔内产生的热量源源不断地排出，故也适用于热敏性物料的粉碎。本机适用范围广，生产过程连续进行，出料粒度可调；能处理如：化学制品、食品、药品、化妆品、染料、树脂、壳物等多种物料的粉碎及分级。

WFJ series fine grinder consists of three parts i.e. main machine, auxiliary machine and electric control. Its features are compact in design, reasonable in structure. Its principle is using air to chose and no sieve or screen. Being installed grading mechanism inside the machine, the crushing and grading can be finished at the same time. When use negative pressure to transport in the operation of crushing, the heat produced from the chamber will be remo-ved continuously. Therefore it can also be suitable for crushing thermal sensitive raw materials. The scope of application of machine is wide. Its productive process is continuous and its size of granule can be adjusted. It can crush and grade many raw materials such as chemicals, foodstuff, medicines, cosmetic, dyestuff, resin, shell materials and so on.



技术参数 Technical Parameter

规格型号 Specification and model	WFJ-15	WFJ-18	WFJ-36
生产能力 Productive capacity(kg/h)	10~200	20~450	60~1000
进料粒径 Size of raw material to be fed(mm)	<10	<12	<15
出料粒度(目) Size of raw material to be discharged (mesh)	80~320	80~450	80~450
总功率 Total power (kw)	13.5	17.5	38
主转速 Main revolution(r/min)	4500	4480	4000
外型尺寸 Overall dimensions (L×W×H)(mm)	4200×1200×2800	4700×1250×2900	9000×1500×3800

注：1. 以上表中参数因物料差异较大，故产量和出料细度差异亦较大。2. 脉冲除尘器用空压机由用户自备。  
Notes: 1. The parameters listed in above table have more difference with difference with different raw materials, therefore the output and size of raw material to be discharged have difference too.  
2. The air compressor used for pulse bag duster should be prepared by customer.

概述 Descriptions

本机上部采用快拆式手柄，把整机连成一个整体，上盖全密封、有效防止物料在过筛时由于振动而产生粉尘飞扬。筛体下部安装振动电机，有效保证了设备的结构紧凑，下部采用弹簧减振，使整机在平稳状态下工作。下面底座采用可调式，可调节正在过筛时的筛面倾斜角度，根据物料特性以取得最佳过筛效果。

It adopts quick disassembling handle at the adopts upper part of this machine. The handle connects the machine as the all and the one. Its upper cover is seal fully. Therefore it prevent from the dust flying caused by vibration during the period of sieving. The vibration motor is installed under the sieve. Mean while it spring to reduce vibration. So the machine will operate at stable state. The base is adjustable, so the inclined angel of sieve that is sieving can be adjusted. The best sieving effect can be got.

技术参数 Technical Parameter

型号规格 Model and specifications	功率 Power (kw)	筛面倾斜 Inclined angle of sieve surface	电压 Voltage (v)	筛面层数 Layers of sieve surface	过筛目数(目) (Mesh)	外形尺寸 Overall dimension (mm)	重量 Weight (kg)	产量 Output (kg/h)
FS0.6×1.5	0.4×2	0°~45° 可调 0°~45° adjustable	380	1~4	6~120	1500×700×700	550	150~1500
FS0.65×2.0	0.4×2	0°~45° 可调 0°~45° adjustable	380	1~4	6~120	2100×750×780	650	160~2000

注：表中产量因物料比重目数差异其产量仅供参考。  
Notes: The output listed in the table is for reference only because of the difference of the specific gravity and mesh.

ZS Series  
Vibrating Sieve

ZS系列振动筛

应用 Applications

- ◆ZS系列分层筛适用于流水作业，是大小颗粒比例不等过筛连续出料的理想设备。
- ◆本机由料斗、振荡室、联轴器、电机组成。振荡室内有偏心轮、橡胶软垫、主轴、轴承等组成。可调节的偏心重锤经马达驱动传达到主轴中心线，在不平衡状态下，产生离心力，使物料强度改变在筛内形成轨道旋涡。重锤调节器的振幅大小可根据不同物料和筛网进行调整。
- ◆整机结构紧密、体积小、不扬尘、噪音低、质量高、能耗低、移动、维修方便。

- ◆ZS series vibration sieve is suitable for in line production. It is an ideal device for granule that has uneven size to sieve continuously.
- ◆The machine consists of hopper, vibration chamber and coupling and motor. There are eccentric wheel, rubber soft parts, main shaft bearing and so on. The adjustable eccentric weight can drive to the central line of main shaft through motor. Under the unstable state, it produces centrifugal force that makes raw material form vortex in the sieve. The size of amplitude of eccentric weight can be regulated in accordance with the different raw materials.
- ◆The whole structure of machine is compact, small in volume, no dust, low in noise, low in energy consume, convenient in moving and maintenance.

技术参数 Technical Parameter

型号 Model	生产能力 Production capacity (kg/h)	过筛目数(目) (Mesh)	电动机功率 Power of motor (kw)	主轴转速 Revolution of main shaft (r/min)	外形尺寸(毫米) Overall dimensions (mm)	净重 Net weight (kg)
ZS-365	60~500	12~200	0.55	1380	540×540×1060	100
ZS-515	100~1300	12~200	0.75	1370	710×710×1290	180
ZS-650	180~2000	12~200	1.50	1370	880×880×1350	250
ZS-800	250~3500	5~325	1.50	1500	900×900×1200	300
ZS-1000	300~4000	5~325	1.50	1500	1100×1100×1200	350
ZS-1500	350~4500	5~325	2.0	1500	1600×1600×1200	400





# AUXILIARY MATCHING

## 辅助、配套系列

YUTONG  
宇通干燥

### JRF Series Coal Combustion Hot Air Furnace

#### JRF 系列燃煤热风炉



#### 应用 Applications

该炉为通用性热风加热装置，与各种物料的干燥设备配套使用。广泛用于粮食、种子、饲料、果品、脱水蔬菜、香菇、木耳、银耳、茶叶、烟叶等农产品、食品、医药药品、化工原料、轻重工业产品的加热除湿。还可用于各种设施的加热以及库房除湿等。

#### 工作原理 Principle of work

该炉集燃烧与换热为一体以炉体高温部位进行换热的最新间接加热技术，烟和空气各行其道，加热绝对无污染，热效率高达(60-75%)，升温快，体积小，安装方便，使用可靠，且价格低(与一吨锅炉相比，该加热系统只相当于锅炉加热系统价格的一半)。

#### 特点 Features

采取了耐高温措施，从而使其寿命比列管式热风炉大大延长，并采用烟气纵向冲刷散热片和负压式排烟方式，换热部位不积灰尘，无须清理，热性能稳定。可用各种煤或柴作燃料，并配有二次进风装置燃烧完全，该炉的各项技术均达到了国内领先水平。

The furnace is a universal hot air heating device. It can be equipped with all kinds of drying equipment. It is widely used for damp removing of agricultural products such as grain, seeds, foodstuff, fruits, dehydrated vegetables, pasania fungus, agaric, white fungus, tea, tobacco leaf; foodstuff, medicines, chemical raw materials, products of light and heavy industry. It can also used for all kinds of facilities to heat and warehouse to remove damp.

The furnace combines the combustion with the heat exchange, using the latest indirect heating technology that the heat exchange is taken place at the position of the high temperature in the furnace. The smoke and the air go into the different channels, without any pollution for the heating. The heat efficiency rate is high (up to 60-75%). The temperature increase is fast. The furnace is small in size, easy in the installation, reliable in the operation and low in the price (making a comparison with one ton boiler, the price of this System is only half price of the heating system for the boiler.)

The furnace uses the high temperature resistant method so that its life is much longer than the life of the pipe arrangement hot air furnace. The furnace uses the smoke and air longitudinal splashing heat radiation sheets and the negative pressure smoke elimination mode. There is no dust collected on the heat exchange position. There is no need to carry out the cleaning. The heat feature is stable. Various coal and wood can be used as the fuel. The furnace is equipped with the air leading device and the combustion is complete. All the technical and economic indexes of the furnace have reached the advanced level in domestic.

#### 技术参数 Technical Parameter

型号规格 type	技术参数 technical parameter heat output	输出热量 air output × 10 <sup>4</sup> Kcal/h	输出风量 hot air temperature (m <sup>3</sup> /h)	热风温度 coal consumption smoke and air (°C)	耗煤量 leading blower for (kg/h)	烟气引风机型号 cocking blower for cocking	筒体直径(mm) Diameter of cylinder
JRF4-2.5	2.5-3	560-1500	60-200	10-12	炊事用鼓风机 80-100w	500	
JRF4-4	4-5	930-3500	60-200	14-17	炊事用鼓风机 200-300	674	
JRF5-8	6-8	1480-5600	60-200	18-24	Y5-47 2.8C	730	
JRF5-15	10-15	2160-12000	60-300	30-45	Y5-47 4C 2000r.p.m 1.5kw	1460	
JRF5-30	25-30	4330-25000	60-300	70-85	Y5-47 4C 2520r.p.m 2.2kw	1950	
JRF5-60	55-60	8660-45000	60-300	150-175	Y5-47 4C 2900r.p.m 3kw	2210	
JRF5-100	80-100	14000-84000	60-300	220-290	Y9-26 9D 左 (left) 45° 1450r.p.m 18.5kw	2330	
JRF5-160	150-160	23000-134400	60-300	410-460	Y9-26 9D 左 (left) 45° 1450r.p.m 18.5kw	2412	



REY Series Fuel Stove /  
REQ Series Gas Stove

REY 系列燃油热风炉/REQ 系列燃气热风炉



工作原理 Principle of work

燃料通过燃烧器燃烧，产生高温燃气。并借助具有强化换热措施的热风炉将高温燃气的热量传导给被加热的空气，高温燃气经热量散发后温度降低至250℃后排到大气中。需加热的空气通过选配的鼓风机强制送入热风炉，吸热后，温度升温至额定值从热风出口送出。当热风温度达到额定的上限温度时，燃烧器会自动停止燃烧或自动转为小火燃烧，当热风温度降低到额定的下限温度时，燃烧器又会重新点燃运行或转为大火燃烧，升温的速度可调节进风阀来实现。

The fuel is burnt at first box and the high temperature is produced. The quantity of heat will conduct to air to be heated through heat exchange device. Through heat exchange, the temperature of air is dropped to less than 250 and in the air exhausted. The air to be heated is sent to hot air furnace through distribution blow fan. After absorbed heat to the rate value, the air will be sent from the vent of hot air. When the temperature of hot air reaches the rated upper limit, the burner can stop or turn to small fire automatically. When the temperature of hot air drops to the rated low limit, the burner can burn or turn to big fire automatically.

应用 Applications

广泛应用于制药、化工、食品、纺织印染、粮食加工、木材加工、汽车等工业领域各种产品的干燥、固化、热定型等作用。

It is widely used for heating, damp removing of pharmaceutical industry, foodstuff, textile, printing and dyeing, food, grain processing, automobile and so on.

技术参数 Technical Parameter

型号 Type	燃烧器型号 Combustion device type	燃油量 Oil combustion (kg/h)	供热量 Heat supply capacity (10 <sup>4</sup> kcal/h)	外形尺寸 Overall dimension L×W×H (mm)	热风口 Hot air hole L×W (mm)	总重 Total weight (kg)
REY1	QYC5	1.3~1.6	1	1000×1000×1000	φ200	150
REY4	QYC5	5~6.5	4	1700×1000×1600	140×160	1100
REY10	Y1	13~16	10	2100×1300×1000	180×200	1970
REY20	YL3	26~32	20	2800×1400×1700	200×250	2260
REY30	YL3	39~48	30	3400×1500×1800	250×300	3160
REY40	YL3	52~46	40	4020×1700×1900	300×400	4750
REY60	YL7	78~96	60	4800×1900×2100	400×500	5650
REY100	YL8	130~160	100	5400×2100×2300	550×650	6550
REY200	YB10	260~320	200	6000×2500×2400	750×900	7980
REY360	YB11	468~720	360	7200×2900×2600	900×1200	9860

BLM-F II Series Plus  
Dust Filter With Cloth Bag

BLM-F II 系列脉冲布筒滤尘器



工作原理 Principle of work

含尘气流从进气口进入下箱体后，部分沉降，轻微粉尘浮动时被滤袋阻留，净化空气透过滤袋，经文氏管进入上箱体，从出口排出。积附在滤袋外壁的粉尘不断增加，当阻力在规定的范围(一般为80~120毫米水柱)，就要清除积附在滤袋外壁的粉尘，清灰是由控制器顺序触发各控制阀，气包内的压缩空气通过喷吹管孔使布袋在一瞬间急剧膨胀，伴随着气流的反作用，抖落的粉尘落入灰门经排灰阀排出机体。

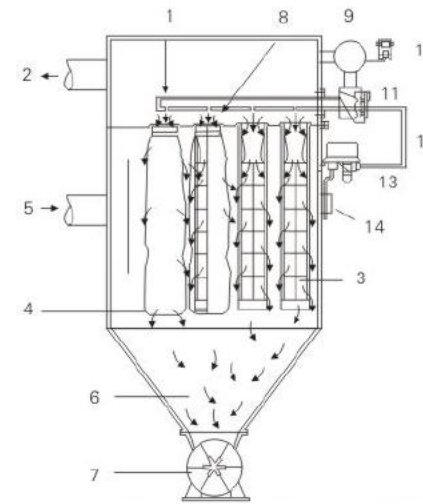
The air stream containing dust passes through low box from air inlet. Parts of it deposit. When light particle dust is floated. It is retarded in the bag. The purified air penetrates the filtering bag and passes into the up box through venturi and exhausts from outlet. The accumulated powder dust on the outer wall of filtering bag.

应用 Applications

广泛应用于冶金、铸造、矿山、化工医药、饲料、建材、粮食加工等行业的通风除尘和粉尘回收。

The equipment is widely used for ventilation and degusting and recovering powder dust of metallurgy industry, casting industry, mine, chemical industry, and pharmaceutical industry, construction material industry, fed industry and grain processing industry and so on.

结构示意图 Sketch of structure



1. 压缩气口
2. 清洁气体出口
3. 滤网架
4. 滤布袋
5. inlet air port
6. 粉尘收集桶
7. 旋转下料阀
8. 文氏管
9. 供气口
10. 压力开关
11. 膜片阀
12. (辅助) 气管管
13. 电磁阀
14. 顺序控制器



龙骨图

技术参数 Technical Parameter

参数 Parameter	型号 Model	MC24	MC36	MC48	MC60	MC72	MC84	MC96	MC120
过滤面积 Area to be filtered (m <sup>2</sup> )		18	27	36	45	54	63	72	90
滤袋数量 (只) Quantity of Filtering bag (piece)		24	36	48	60	72	84	96	120
过滤风速 speed of filtering air (m/min)		2~4	2~4	2~4	2~4	2~4	2~4	2~4	2~4
过滤风量 Filtering air volume (m <sup>3</sup> /h)		2160~4300	3250~6480	4320~8630	5400~10800	6450~12900	7550~15100	8650~17300	10800~20800
最大外形尺寸 (mm) Max overall dimension	长 L	1025	1425	1820	2225	2625	3025	3582	4385
	宽 × 高 W × H	1678 × 3660							
清灰装置 Dust remove	脉冲阀数量 Pulse valve number (只)	4	6	8	10	12	14	16	20
	耗用压缩空气量 compressed air consumption (m <sup>3</sup> /min)	0.047~0.30	0.11~0.40	0.15~0.50	0.18~0.60	0.22~0.60	0.25~0.90	0.29~0.90	0.37~0.90
	压缩空气压力 compressed air pressure (MPa)	0.5~0.8							



ZSL-III Serial  
Vacuum Feeder  
ZSL-III 系列真空上料机



概述 Descriptions

ZSL系列真空上料机是我公司最新开发研制的第三代新型真空上料机,它具有上料速度快、使用周期长、操作方便、清洁卫生,符合GMP要求。

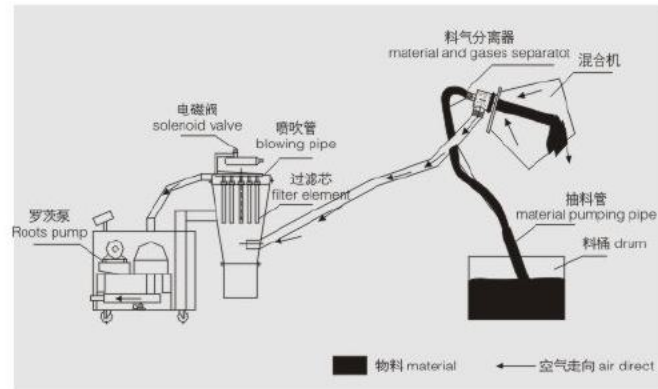
Model ZSL serial vacuum feeder is a third-generation new-type vacuum feeder recently developed by our company, it has advantages of fast feeding, long service period, simple operation, clean and in conformity with GMP requirement.

特点 Features

- ◆ 上料速度快。
- ◆ 连续工作时间长。
- ◆ 无泄漏现象,清洁卫生,适合于洁净厂房。
- ◆ 结构紧凑、移动方便、操作简单。
- ◆ 装有快装卡箍,便于拆装和清洗,符合要求。
- ◆ Fast feeding of materials.
- ◆ Long time for continuous working.
- ◆ No leakage, clean and healthy, suitable for clean workshop.
- ◆ Compact size, easy moving and simple operation.
- ◆ Equipped with fast-feeding clamping and facilitating assembling, disassembling and cleaning and in conformity with the requirement.

应用 Applications

- ◆ 用于粉状,小颗粒状( $\phi < 5\text{mm}$ )及球状物料。
- ◆ 用于二维、三维、双锥、V型等各种密闭容器和设备的上料。
- ◆ Used for powder, small grain and ball materials with diameter less than 5mm.
- ◆ Used for materials feeding for various kinds of sealed containers and equipments such as two-dimension, three-dimension, double-cone, V-shaped etc.



技术参数 Technical Parameter

参数 Data	型号 Model	ZSL-3.0	ZSL-5.5	ZSL-7.5	ZSL-11
工作压力 Working Pressure(kpa)		<20	<28	<31	<40
风量 Air Volume(m <sup>3</sup> /min)		2	4.5	5	9
功率 Power(kw)		3.0	5.5	7.5	11
输送能力 Transporting Capacity(kg/h)		800-1500	1000-2000	1500-2500	2500-3500

LDT Series  
Pharma Lifter, For Bin  
LDT系列料斗提升加料机

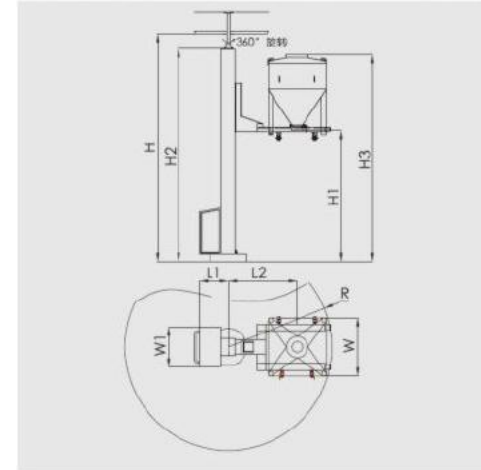


应用 Applications

该机主要应用于方形不锈钢周转材料斗的提升和加料。可与压片机、混合机、制粒机等设备配套使用。广泛应用于制药、化工、食品等行业中。

This equipment is mainly used in the solid dosage production procedure for transferring and discharging materials, consequently it is operated with corollary equipment such as granulator, blender, press, capsules filling machine, etc... pharmaceutical Lifters, for bin are widely used in pharmaceutical, chemical, foodstuff industries, etc...

安装示意图 Sketch of structure



技术参数 Technical Parameter

型号 Model	主要结构尺寸 Main structural dimensions									净载货 Net load KG	提升功率 Power KW
	H	H1	H2	H3	W	W1	R	L1	L2		
LDT-200	> 3500	2500	3500	3350	600	700	1600	550	800	160	1.5
LDT-400	> 3800	2500	3800	3630	800	700	1800	550	1000	320	1.5
LDT-600	> 3800	2500	3800	3690	1000	700	2000	550	1100	480	2.2
LDT-800	> 4000	2500	4000	3890	1000	750	2000	600	1100	640	2.2
LDT-1000	> 4200	2500	4000	3990	1200	750	2100	600	1300	800	3
LDT-1200	> 4200	2500	4200	4130	1200	750	2100	600	1300	960	3
LDT-1500	> 4600	2500	4400	4340	1200	750	2100	650	1300	1200	3
LDT-2000	> 4800	2500	4600	4620	1200	750	2100	650	1300	1600	3
LDT-2500	> 4500	2000	4200	4400	1400	750	2200	700	1350	2000	3
LDT-3000	> 4800	2000	4200	4650	1400	750	2200	700	1350	2400	3

工作原理 Principle of work

该机主要由立柱、转动底盘、提升叉架、液压系统相控制系统组成。工作时将装满物料的料斗推入提升叉架上,操作提升操作杆,将料斗提升到加料高度后转动立柱与加料设备对接,打开出料蝶阀,使物料转移到下一工序设备。

The machine is composed of an upright post, a rotary chassis, a lifting fork frame and a hydraulic control system. The work will be filled with the material hopper into the lifting fork frame, lifting operation lever, the hopper to feed height rotating butt joint column and feeding equipment, open the discharge valve, so that the material transfer to the next process equipment.

特点 Features

该机是我公司广泛吸收、消化国外先进技术,结合我国国情研发的新机型。其结构合理,运行稳定,安全性能高,设有多重安全防护,设有旋转刹车,下料位设有安全锁。

This machine is a new type of machine which is widely absorbed and digested by our company. Reasonable structure, stable operation, high safety performance, with multiple security protection, a rotary brake material is provided with a safety lock.

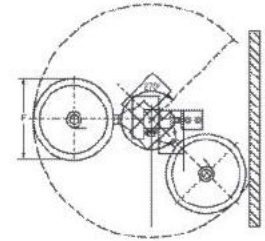
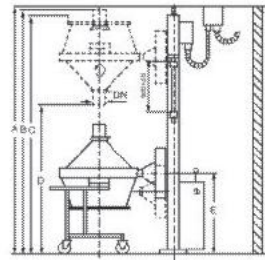


YS Series Ascend To Flip The Whole Machine

YS系列流化床料斗提升卸料机



安装示意图 Sketch of structure



应用 Applications

- ◆本机是为满足GMP技术规范而设计的提升卸料装置。
- ◆应用于与FL、PGL等制粒机、FG沸腾干燥机配套，从而实现无尘装、卸料操作。
- ◆The machine is designed to meet the technical specifications of GMP lifting unloading device.
- ◆It is applied to FL, PGL and FG boiling granulating machine, dryer, and dust-free loading and unloading operation.

特点 Features

- ◆采用液压控制,安全可靠
- ◆可与流化床料斗紧密配合,达到封闭操作
- ◆GMP规范设计、制作
- ◆Hydraulic control, safe and reliable
- ◆Can be closely matched with the fluidized bed hopper to achieve closed operation
- ◆GMP specification design, production.

技术参数 Technical Parameter

机型	单位	YS60	YS120	YS200	YS300	YS500
标准负荷	kg	150	250	350	500	750
容积重量	kg	85	120	160	220	250
电机功率	kw	1.1	1.1	2.2	3.0	3.0
提升速度	m/min	0~4	0~4	0~4	0~3.5	0~3
A	mm	4000	4000	4000	4000	4000
B	mm	3900	3900	3900	3900	3900
C	mm	3700	3700	3700	3700	3700
D	mm	2200	2200	2200	2200	220
E	mm	1400	1400	1600	1700	1800
F	mm	1095	1290	1495	1690	1890

客户选型反馈表

Feedback Form of Customers for Model Selection

请您按表格详细填写，以便本公司提供慎重的选型推荐  
Please fill the form in detail so that our company can provide discreet recommended model:

单位 Unit: \_\_\_\_\_ 客户姓名 Name of customer: \_\_\_\_\_ 职务 post: \_\_\_\_\_

地址 Add: \_\_\_\_\_ 联系电话 Tel: \_\_\_\_\_ 传真 Fax: \_\_\_\_\_

E-MAIL: \_\_\_\_\_ 联系时间 Date: \_\_\_\_\_

1. 物料名称: \_\_\_\_\_  
Material name: \_\_\_\_\_

2. 干燥物料的形态:  微粉  粉料  颗粒  块状  片状  纤维状  
Shape of raw material to be dried: Micro powder Powder Granule Block Flake Fabric form  
 滤饼  糊状  膏状  液体  
Filter cake Mushy Paste Liquid

3. 干燥物料的初含水 \_\_\_\_\_ %; 产品终含水 \_\_\_\_\_ %; Ph值 \_\_\_\_\_,  
Primary moisture of raw material to be dried Final moisture of finished product PH value

熔点 \_\_\_\_\_ °C, 物料最高承受温度 \_\_\_\_\_ °C, 物料松散程度 \_\_\_\_\_  
MP Max withstood T of raw material Bulk density of raw material

4. 湿份主要成份: \_\_\_\_\_  
Main ingredient of damp powder:

5. 水份存在的形式:  表面水  结晶水  
Existed form of moisture: Surface water Crystal water

6. 成品细度 \_\_\_\_\_ mm (目) 湿品堆比重 \_\_\_\_\_ Kg/m<sup>3</sup> 产品堆比重 \_\_\_\_\_ Kg/m<sup>3</sup>  
Fineness of finished product Mesh Bulk specific gravity of damp product Bulk specific gravity of finished product

7. 物料有关其他特性:  
Relative other characteristics of raw materials:

粘性  热敏性  软化点  相变点  腐蚀性 (PH值)  异味  可燃性  
Viscosity Thermal sensitive Softening point Transition point Causticity(PHVALUE) Peculiar smell Inflammability  
 易爆性  静电性  透气性  团聚性  晶体或颗粒折医粉碎性  
Explosion hazard Electric static Gas permeability Constipate Comminuted of crystal or granule

8. 干燥产量要求: 湿品 \_\_\_\_\_ Kg/h或干品 \_\_\_\_\_ Kg/h  
Requirement of output: Damp product or dried finished product:

9. 颗粒产品能否破坏: 能  不能   
Whether the granule can ben damaged: Yes No

10. 物料过去的干燥方法或类似产品的干燥方法: \_\_\_\_\_  
The original dry method of raw material or dry method of similar products:

11. 干燥方式要求: 连续干燥  间隙干燥   
Requirements of drying method: Continuous drying Drying in batch

12. 可供的热源:  电、  蒸汽、  热水、  导热油、  燃气炉、  燃煤炉、  燃油炉;  
Heat source to de wupplied Electricity Steam Hot water Heat conduction Gas fuel furnace Coal fuel fuenace Oil fuel fernenace

13. 选购设备要求制作材质: \_\_\_\_\_  
Required material for manufacturing equipment when selection:

14. 环保要求及对物材料回收率的要求: \_\_\_\_\_  
Requirements of environmental protection and requirements of yield:

15. 可供安装场地: \_\_\_\_\_  
Field to be installed:

16. 其他要求: \_\_\_\_\_  
Other requirements: