

国家高新技术企业  
I II类压力容器资质  
行业标准起草单位  
省科技型中小企业  
自营进出口生产企业  
常州市知名商标



# 江苏金陵干燥科技有限公司

JIANGSU JINLING DRYING TECHNOLOGY CO., LTD.

2016 版



思想有多远，  
我们就能走多远.....



## 企业简介

- ◆ 欢迎步入金陵热能工程机械领域，国内热能工程机械顶级制造商！
- ◆ 致力于机械制造二十多年基础上，于 2000 年成立的江苏金陵干燥科技有限公司（原常州市金陵干燥设备厂）是一家专业以先进技术为导向的科技型企业。公司通过多年吸收引进国内外先进技术，并以东南大学、江南大学、常州大学、河海大学、同济大学等多家科研院校为依托，设计开发、优化改造了一批专业热能工程机械设备，获得了五十多项国家专利，九项省高新技术产品认定，其中有十多项产品为国内首创，并于 2008 年被评为行业首批国家级高新技术企业。公司现有员工 120 多人，拥有一批专业从事热能工程机械领域二十多年经验的核心团队，以及行业领先的制造加工装备。公司现下辖四个事业部：干燥设备事业部、环保工程事业部、提取浓缩事业部、干法辊压造粒事业部，致力于打造先进的“智”型企业。并以专业、实用、创新、价值为宗旨，努力学习先进技术和管理经验，进一步完善制造工艺，提高产品质量，提升企业品牌。
- ◆ 公司专业生产三十多个系列的干燥机械、环保设备、提取浓缩设备、干法造粒设备等产品，广泛应用于医药、化工、食品、环保、矿产、建材、军工国防科技等领域。产品已覆盖全国并出口欧美等二十多个国家和地区，企业已和几十家上市公司合作并成为多家大型跨国集团供应商。企业多次获得了国家高新技术企业、行业标准起草单位、航天科技集团优秀供应商、江苏省科技型中小企业、江苏省民营科技企业、常州专用设备工程技术研究中心、常州市知名商标、常州市名牌产品、自营进出口企业、AAA 级信用企业，AAA 级资信企业等证书；企业通过了 D1、2D 类压力容器制造资质、ISO9001 质量管理体系、ISO14001 环境管理体系、OHSAS18001 职业健康安全管理体系、部分产品 CE 等认证。从而跨入国内热能工程机械领域顶级技术、信誉、规模和竞争力的企业。
- ◆ “金陵科技”借此向支持和关心本企业发展的各界朋友致以真挚的问候，并愿携手并进，共赢发展！



## Brief Introduction

- ◆ Welcome to Jiangsu Jinling Drying Technology Co., Ltd--The most authoritative company in Chinese thermal engineering machinery production field.
- ◆ Based on over 20 years equipment manufacturing experiences, Jiangsu Jinling Drying Technology Co., Ltd was founded on 2000. Jinling is a technology oriented enterprise which designed, developed and optimized series of thermal engineering machinery through introduced advanced overseas technology and through the cooperation with Southeast University, Jiangnan University, Changzhou University, Hehai University, Tongji University.
- ◆ Jinling owns over 50 patents, 9 authorized high and new technological equipments and 10 domestic initiative equipments, the company was granted the honor of "National High And New Technology Enterprise" since 2008.
- ◆ Jinling has core engineering and manufacturing team over 20 years professional experience, and has advanced manufacturing instruments in the field, now the company is consisted of four subsidiary departments: drying equipment department, environmental protection equipment department, evaporation & concentration equipment department and dry granulation department.
- ◆ Jinling will keep adopting the management philosophy of "Professional, practical, innovative, valuable" , and moving forward with our friends.
- ◆ Jinling is professionally engaged in designing, manufacturing over 30 series of drying equipment, environmental protection equipment, evaporation & concentration equipment and dry granulation equipment which are widely used for environmental protection field, chemical field, food field, pharmaceutical field, national military defense field etc.
- ◆ The company's equipment has been spread all over China and has been exported to over 40 countries, Jinling is collaborated closely with dozens of listed companies and become authorized supplier of many world top 500 transnational corporations.
- ◆ The company has been granted many honors such as "National High And New Technology Enterprise" , "Industry Standard Drafting Company" , "Excellent Supplier of Aerospace Science and Technology" , "Provincial Famous Brand" , "AAA Credit Level" etc.
- ◆ Jinling is the qualified manufacturer of special pressure vessel, established the biggest drying & granulating test center in China, and passed the examination of ISO 9001, ISO 14001, OHSAS18001 and CE certification.
- ◆ Jinling would like to extend the best wishes to our friends. Thank you for your support and care about Jinling's development and we will move forward hand in hand!





## 金陵愿景

成为世界一流的热能  
工程机械成套供应  
商！

### Enterprise Vision:

World top thermal engineering  
machinery supplier!

## 金陵使命

我们致力于热能工  
程事业，为客户提供  
更优的产品和服务！

### Enterprise Mission:

Provide better quality and  
service for our clients!

## 金陵核心价值观

勤奋 务实 创新 坚持

### Enterprise Core Values

Diligent, Pragmatic , Innovative , Insist



# 完美是相对的，而改变是绝对的！

## Perfection is relative, Change is absolute

“变”是唯一不变的常数！  
不变的是目标、信念和理想，  
有使命感的人，  
不会放弃对理想的追求；  
有使命感的企业，  
则是把完美当作自己的理想！  
常金，  
秉承唯才是用、优胜劣汰的法则，  
不断的完善系统，改变自己！

“CHANGE” is truth for enterprise living and development.

What never change are our goal, belief and ideal.

A man with sense of mission

will never give up his pursuit of ideal.

An enterprise with sense of mission

will treat perfect as it's ideal.

Jinling

Comply with “Only Talent For Job Engagement” and “Survival of The Fittest” as rule,

Improve and change ourselves continuously.

Comply with “Proved by Action” and “Oriented by Result” as principle,

Serve the customer and create the customer continuously.

## Expert in Drying System 成套系统解决专家

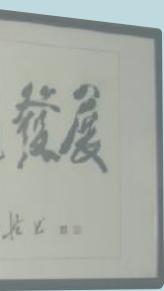


无论昨天、今天和明天，“常金”  
事业永远离不开客户和朋友的全力  
支持和帮助，“互信、合作、共赢、  
发展”，则作为“常金”一切活动的  
核心，永远不会改变。  
“常金”愿成为有实力的志士  
仁人挥洒智慧，实现梦想的沃土。  
并且也应该是一个可靠的、值得信  
赖的合作伙伴。

瞬息万变的市场、现实的竞争  
让“常金”人改变，改变让“常金”  
人走向成熟，并促使企业快速成长。  
这也是对“常金”人的付出和成绩  
给予了肯定。同样，“常金”坚信，  
勤奋、认真和智慧一定会得到认同  
和回报。

岁月飞逝，斗转星移，我们迎  
来了新千年新的希望。

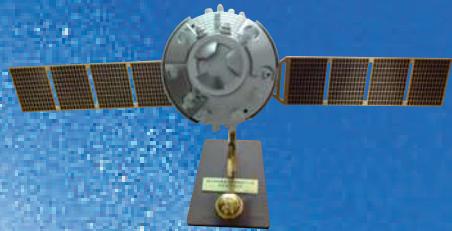
董事长致辞



董事长 柴晓峰

海纳百川  
有容乃大  
物竞天择  
适者生存





# 厂训

## Company Faith

铁的纪律 – 是我们的行为准则

做好每一件事 – 是我们的行动纲领

提高技能和素质 – 是我们的首要任务

确保产品质量 – 是我们义不容辞的责任

The hard discipline-is our behavior criterion

Complete each matters-is our grogram of action

Enhances the skill and the quality -is our most importance task

Guarantees the product quality-is our bounden responsibility



# 生产 & 装备 Manufacture & Equipments



专业的技术人才  
专业的设计方案  
专业的制造加工  
专业的售后服务

Professional and  
technical personnel  
Professional design  
Professional  
manufacturing and  
processing  
Professional service





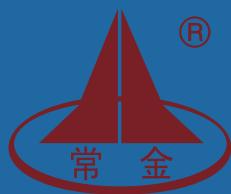
金陵科技  
JINLING TECHNOLOGY



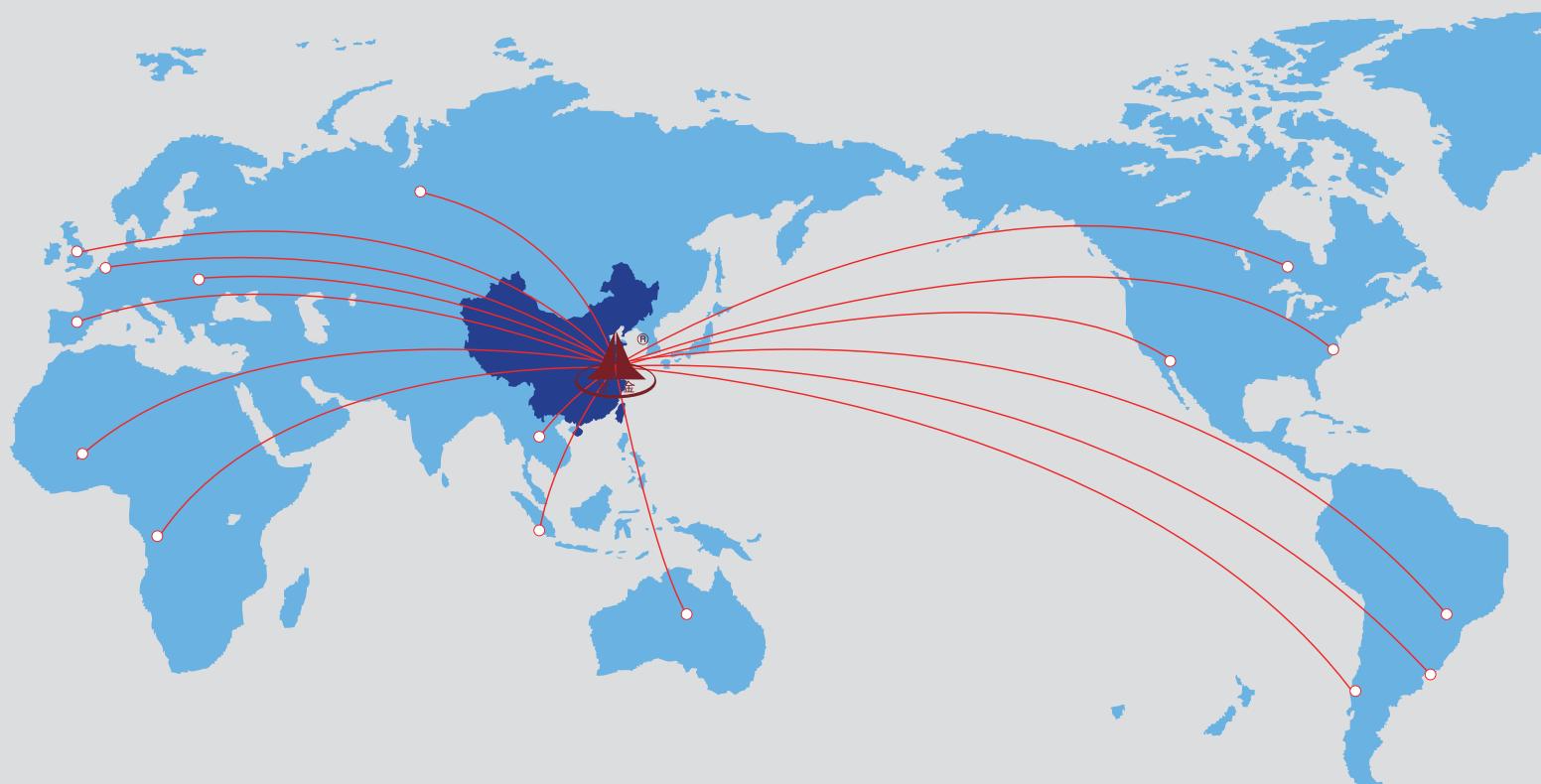
# E公司荣誉 Enterprise Honor







金陵科技  
走向世界  
Make for  
the world



干燥设备事业部

环保工程事业部

提取浓缩发酵设备事业部

制粒设备事业部

# 部分用户

# Customer





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# 干燥设备事业部

*Drying Equipment*



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## 特点 Features

- ◆ 本机采用大面积夹层加热方式, 传热面大, 热效率高。
- ◆ 本机设置不同的搅拌, 从而可顺利进行浆状、膏状、糊状物料干燥。
- ◆ 特殊出料口设计, 使出料口更加密封和不容易积料, 并且出料更方便。(此设计为金陵专利产品)
- ◆ 轴、耙叶的特殊加工, 大大保证了轴的强度和同心度。
- ◆ 可根据用户要求在轴内通介质和增加振击装置。
- ◆ 根据不同的物料配置不同的过滤形式。
- ◆ 采用半管式或整体夹套形式。
- ◆ 热源选用热水、蒸汽、导热油形式。
- ◆ 维修简单方便, 造价低, 生产周期较短。
- ◆ 可根据用户要求设计取样口。
  
- ◆ The dryer adopt jacket contact heating, its heat contacting area is large and the heating efficiency is high.
- ◆ Different agitating design are suitable for liquid, paste or solid form raw material.
- ◆ Special design of discharging port, makes better sealing and less material accumulation, discharging is easier. (We own the Patent)
- ◆ There are two sealing types available for choice, mechanical seal and packing seal.
- ◆ The special techniques of shaft and paddles promise high strength and concentricity.
- ◆ Thermal oil, steam or hot water are available for choice to be as heating medium.
- ◆ Heating exchange form could be half pipe or jacket
- ◆ Different filtering design for different raw material

## 概述 Principle

◆ 本机型为简易式普通结构形式, 隶属国内第一代产品。主要针对密封性等要求不高的粉粒体物料的干燥或冷却。该机采用两端支撑轴承座结构, 选用两套轴承设计, 采用哈弗形式轴承座, 一般采用填料密封, 减速机侧装或直联结构设计, 搅拌轴臂及主机设计较为简单。

ZHG-I is the first generation vacuum paddle dryer, it is specially for drying or cooling the powder and granules which doesn't need high vacuum condition. Both ends of ZHG-I adopt supporting bearing seat with two bearings design, usually the dryer equipped with packing seal, speed reducer directly connect with driving shaft.

## 原理 Principle

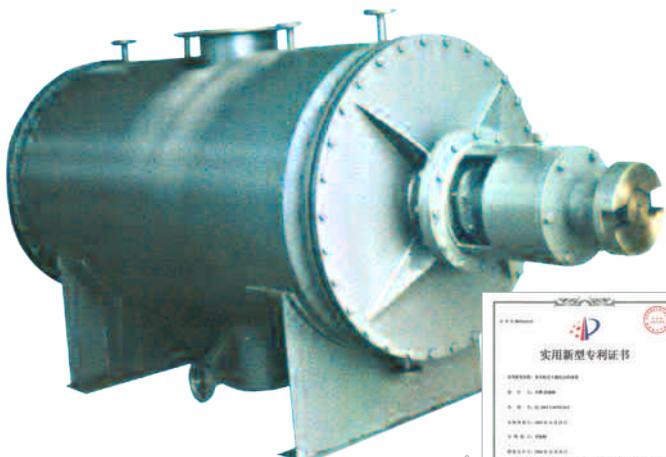
湿物料分批次投入夹套加热的容器内, 在真空状态下, 带有抄板的搅拌器不断清除热面上的物料, 传导加热蒸发, 并在容器内推移形成循环流, 水分或溶剂蒸发或回收后经真空泵排出。

Raw material dried in batch production. Under vacuum condition, agitator keep stirring raw material, paddles on agitator will scrape down the material which adhere to the inner chamber. Vapor and solvent will be recovered by condenser or discharged by vacuum pump.



氟化工(卧式)专用真空搅拌干燥机  
Vacuum paddle dryer specially for fluorine chemical industry

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- ◆ After modification, shaft concentricity, sealing effect, strength and life span are highly improved.
- ◆ Different agitator design for different raw material, agitator is available to filled with heating or cooling medium.
- ◆ Our company could design and manufacture 60 cubic meter large scale paddle dryer.
- ◆ Batch production or continuous production design are available for choice.
- ◆ Clockwise and counter-clockwise rotation are available to disperse raw material.
- ◆ Different sealing type are available for choice.



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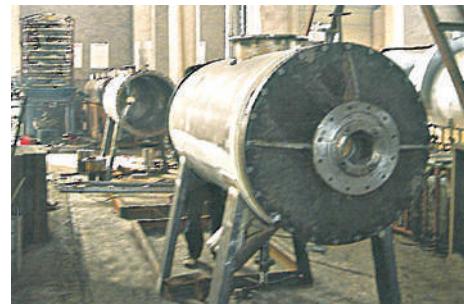
## 概述 Principle

- ◆ 该系列产品为本公司自行开发设计的第二代产品(高新技术产品), 在引进吸收国内外真空耙式干燥技术基础上, 对其进行一系列加工工艺、结构设计等针对性改进、优化和创新设计。
- ◆ 本公司自行改进设计, 拥有多项专利, 专业制造!

ZHG-II is the modified second generation vacuum paddle dryer combined foreign technology, It is working better and Jinling owns the patent.

## 特点 Principle

- ◆ 改进后的产品同心度、密封性、强度、使用效果和寿命都有大幅度提高;
- ◆ 针对不同物料采用不同的搅拌结构方式, 轴内可选配加热或冷却设计;
- ◆ 公司可自行设计生产在60m<sup>3</sup>以内的大型真空耙式干燥机;
- ◆ 根据物料情况, 在真空状态下可设计批次或连续操作;
- ◆ 可根据物料特性设计正反转操作, 以强制挤压、分散块状物料;
- ◆ 可根据物料特性及用户要求设计柔性启动方式;
- ◆ 公司可根据用户要求选配不同的密封填料或密封环形式。



农药专用真空耙式干燥机  
Vacuum paddle dryer for agro-chemical industry

## 原理 Principle

- ◆ 本干燥设备是在引进吸收国内耙式干燥技术的基础上改进的一种新颖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。
- ◆ 本公司是国内耙式干燥机最专业的生产厂家。
- ◆ It is an innovated horizontal batch-production vacuum dryer on the basis of conventional vacuum paddle dryer. The moisture of wet material will be evaporated by heat transmission. The agitator with paddle will remove material adhere to the inner chamber. The evaporated moisture will be exhausted by vacuum pump.
- ◆ Jinling is the most professional manufacturer of vacuum paddle dryer



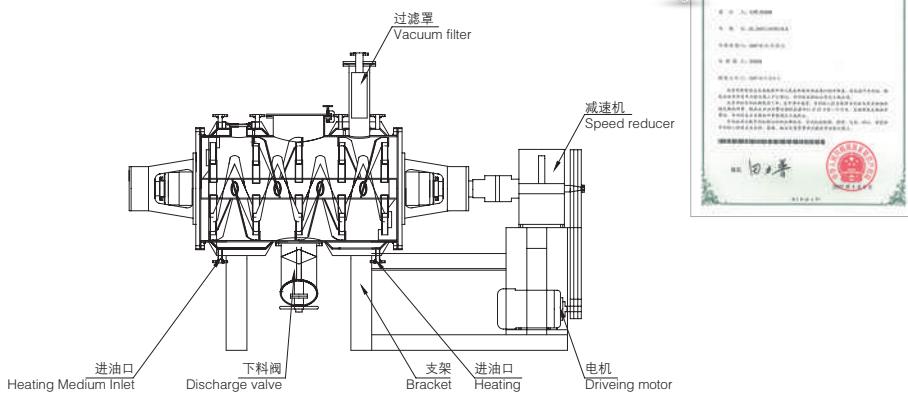
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## 概述 Principle

- ◆ 该机型为我公司自行改进设计的第三代产品，可适应制造大型高真空耙式干燥机。
- ◆ 机械密封结构主要是为了使真空耙式干燥机长时间保持高真空及有效避免杂质进入物料而采用的一种精密密封结构形式。一般选用单端面机封、波纹机封和双端面机封，端面材料一般选用石墨、碳化硅、合金钢材料。
- ◆ 为保证密封性及干燥机使用寿命，特别是针对耐磨性较大、腐蚀性较大的盐类、带有液体、溶剂等物料，进行了系列创新设计和加工，从而使轴的跳动量，设备的膨胀延伸、稳定性和使用寿命等有了成倍提高。公司是目前国内真空耙式干燥机顶级生产制造企业。

- ◆ ZHG-III is the third generation vacuum paddle dryer developed by Jinling.
- ◆ ZHG-III adopt mechanical seal for getting high vacuum degree and purity of product, usually there are three kinds of mechanical seals are available for choice, single end seal, bellow seal and double ends seal. Mechanical seal material is usually adopt graphite, silicon carbide, alloy steel.
- ◆ It is suitable for high abrasive, strong corrosive raw material, the dryer has less shaft run out, better controllable heat expansion and more stable working condition.

## 流程图 Flow chart



10m<sup>3</sup> 大型真空热板式干燥机

10m<sup>3</sup> volume vacuum paddle dryer.

## 技术参数 Technical parameters



# ZXG 真空锥形混合干燥机

ZXG Conical Vacuum Dryer

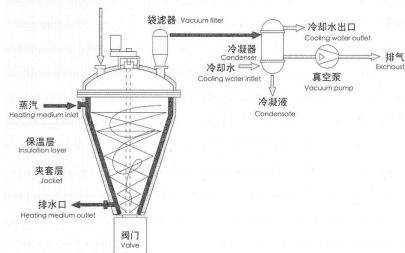
新产品  
China National High & New  
Technological Equipment



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## 特点 Features

- ◆ 该干燥设备集混合和干燥在同一容器内完成，提高了生产效率。
- ◆ 采用夹套加热，降低使用能耗。
- ◆ 采用真空干燥形式，保证了传热和传质，特别适应热敏性物料，便于回收溶剂的粉粒体物料的干燥。
- ◆ 结构简单，容易清洗，出料方便，符合GMP规范。
- ◆ 提供多种不同的搅拌形式选配，可进行批量生产。
- ◆ 也可进行冷却、杀菌、反应等操作。
- ◆ 公司自行研发设计单锥螺杆结构、抄板结构、螺带结构等形式。
- 1. Mixing and drying complete in one machine, improve productive efficiency.
- 2. ZXHG adopt jacket for heating, reduce energy consumption.
- 3. ZXHG adopt vacuum drying, could keep heat and mass transfer, especially suit for thermal sensitive material.
- 4. The structure is simple, easy to clean, convenient in discharging, which could meet GMP standard.
- 5. Different agitator form are available for choice
- 6. The dryer is also available for cooling, reacting or sterilization.



## 原理 Principle

◆ 锥型真空干燥机是一种单锥形搅拌型密闭式真空干燥机，它通过一个夹套加热的单锥真空密闭罐由搅拌桨不断翻动物料，使物料均匀受热；水分或溶剂得到蒸发；达到干燥的目的。该设备采用单锥型罐体设计，卫生级不锈钢材质制造，结构简单；操作方便；批次型间隙干燥，清洗更彻底；是一种符合 GMP 要求的精烘包车间理想的干燥设备，广泛应用于制药、生物、化工、食品等行业的粉体、滤饼、液体的浓缩、干燥、蒸发及溶剂回收的操作。

◆ ZXG is a closed conical vacuum heat contacting dryer, there has an agitator inside to stir the raw material. ZXG could meet GMP standard, it is widely used for pharmaceutical, biological, chemical and food industries. It is suitable for drying and concentrating liquid, filter cake, powder and granule shape material.



## 技术参数 Technical parameters

型号Type	50	100	200	500	1000	1500	2000	3000	4000	5000	6000	10000
规格spec												
容量Volume(L)	30	60	120	300	600	900	1200	1500	2400	3000	3600	6000

动力Power(kw)	1.5	1.5	2.2	3.7	5.5	5.5	7.5	11	15	22	30	55
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备注：以上参数仅供参考，具体视物料状态确定



电池材料专用真空搅拌干燥机  
Vertical Vacuum Agitating Dryer for Battery Material Industry

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### 特点 Features

- ◆ 结构简单，清洗方便，占地面积小
- ◆ 夹套加热，能耗低，干燥量大
- ◆ 该干燥设备特别针对膏糊状物料的干燥和冷却
- ◆ 密闭操作，便于溶剂回收
- ◆ 可根据不同的要求，设置不同的转速，密封形式及搅拌桨叶等
- ◆ 可选配破碎装置
- ◆ 可选配316L双相钢，内衬陶瓷等不同材质要求。

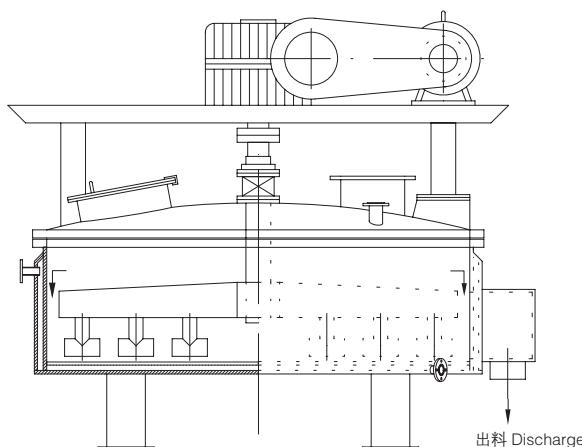
1. The structure of the dryer is very compact, it is convenient for clean, occupied less area.
2. Jacket heated, the energy consumption is low, capacity could be very big.
3. The dryer is also available for drying or cooling paste form raw material..
4. Closed operation, it is convenient for solvent recovery.
5. Different rotating speed, seal form and agitator form as optional choice according to raw material.
6. Crushing device as optional design.

### 原理 Principle

- ◆ 本产品为公司于2008年国内首创设计生产，并为国内首创开发应用于电池材料行业。
- ◆ 本发明的目的提出一种立式搅拌真空干燥形式。在夹套加热的密闭型容器内，加入的物料在真空状态下；随着立式搅拌浆的不断翻抄，物料表面不断更新，从而加快了干燥速率，湿空气由真空泵抽出，干燥后的物料由侧面或底部排料口定时排出。
- ◆ LJG is exclusively developed by Jinling in 2008, it is invented and applied for battery material industry.
- ◆ Hot water, steam or thermal oil was filled into the dryer jacket, under the vacuum environment, raw material will be agitated and dried into the dryer. Evaporated moisture will be exhausted by vacuum pump. The dryer adopt batch production.

型号 model	2m <sup>3</sup>	3m <sup>3</sup>	4m <sup>3</sup>	8m <sup>3</sup>
工作容积 working volume L	1000	1500	2000	4000
功率 power kW	18.5	22	30	55-75

### 流程图 Flow chart





## KJG 系列桨叶干燥机

KJG Double Shaft Paddle Dryer

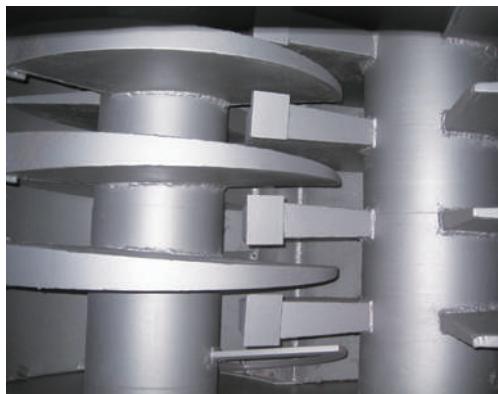


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### 原理 Principle

◆ KJG桨叶干燥机为国内第一代的传统楔形结构形式。桨叶式干燥机是一种传导加热的低转速搅拌型干燥机。在干燥器筒体上设置夹套, 空心轴上设置空心桨叶, 在其中通入热载体, 湿物料在搅拌桨叶的搅动下筒体及桨叶热表面进行充分热交换, 以达到干燥目的。结构形式一般为卧式, 双轴或四轴形式。

◆ KJG double paddle dryer is a kind of contacting dryer. There is jacket on the body of dryer, hollow paddle strongly welded on two hollow shafts, filling heating medium (could be hot water, steam or thermal oil) in them, wet raw material is heated, dried as well as driven forward by two shafts.



配置 Configuration	双轴 Double shaft								四轴 Four shaft	
型号 Model	5型	15型	20型	40型	60型	90型	100型	120型	200型	240型
传热面积 Heating area m <sup>2</sup>	5	15	20	40	60	90	100	120	200	240
主机功率 Power of main motor kw	4	15	18.5	30	45	55	75	90	150	180
备注 Note	根据不同的特性和要求采用不同的材质及配置 Adopt different construction material and configure based on different feature									



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## 原理 Principle

- ◆ 该产品为本公司自行开发设计的第二代桨叶干燥机，有圆盘、半圆盘、螺旋结构等不同的形式。
- ◆ 圆盘桨叶干燥机由互相啮合的一到四根桨叶轴、带有夹套的壳体、机座以及传动部分组成，物料的整个干燥过程在半封闭或封闭状态下进行。
- ◆ 干燥机以蒸汽、热水或导热油作为加热介质，轴端装有热介质导入出的旋转接头。加热介质分为两路，分别进入干燥机壳体夹套和桨叶轴内腔，将器身和桨叶轴同时加热，以传导加热的方式对物料进行加热干燥。被干燥的物料由螺旋送料机定量地连续送入干燥机的加料口，物料进入加料器后，通过桨叶的转动使物料翻转、搅拌，不断更新加热界面，与器身和桨叶接触，被传热传质，使物料所含的表面水分蒸发。同时，物料随桨叶轴的旋转成螺旋轨迹向出料口方向输送，在输送中继续搅拌，渗出的水分继续蒸发。最后，干燥的产品由出料口排出。

YJG is the second generation double shaft paddle dryer developed by Jinling, the form of paddle could be round plate, half round plate or screw.

YJG could be consisted of one to four shafts, whole operation will be finished in closed or partial closed environment.

1 Drying efficiency could arrives 80%-90%. Heat transfer coefficient K is 100-300Kcal/h.m<sup>2</sup>°C . Evaporation capacity is 10-30Kcal/h.m<sup>2</sup>.

2 The dryer support continuous operation and batch operation, support vacuum drying for thermal sensitive material and normal drying. Support heating, evaporating and cooling.

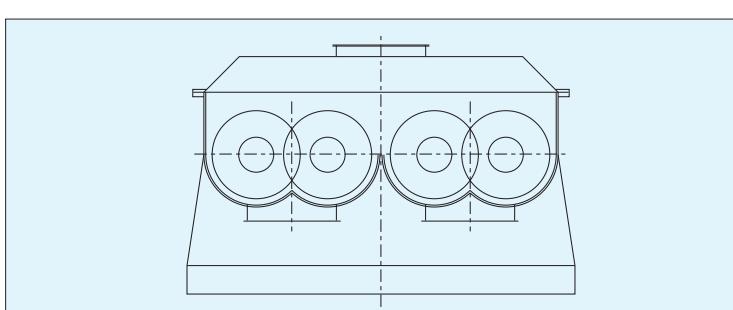
3 Thermal oil, steam, hot water and chilling fluid are available to be used as heating/cooling medium.

4 Special structure of paddle which has large heating area.

5 Structure of dryer is very compact, almost of the dryer could be transported by normal container.



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多轴真空圆盘桨叶干燥机  
Multi Shaft Vacuum Round Plate Dryer



200m<sup>2</sup> 大型真空桨叶干燥机  
200 Square Meter Large Scale Vacuum Double Shaft Round Plate Dryer



## 特点 Features

- ◆ 公司自行创新设计的多种真空桨叶干燥结构形式，并已大批量投入生产应用，稳定性、效能、强度都大大提高。其中高真空桨叶干燥机已申请国家发明专利；
- ◆ 轴承座整体设计及整体车加工，可选择增设冷却装置；
- ◆ 筒体、轴承、轴均设计热膨胀自由滑动，主机整体框架设计；
- ◆ 整体加强型设计，强度及使用寿命更有保障；
- ◆ 桨叶片为整体焊接，强度更好；刮板根据物料状态可增设，剪切和翻抄性能更佳；
- ◆ 结构设计更紧凑，单台桨叶面积可设计≤ 500m<sup>2</sup>的大型桨叶干燥机；
- ◆ 直联传动结构设计，运转更平衡，降低链条传动带来的摆动及松紧问题；
- ◆ 金陵公司特有的加工及装配工艺，使设备的同心度更有保障，两端密封性能更优越；
- ◆ 可根据不同情况，设计半圆管夹套加热及整体夹套加热型；
- ◆ 可根据物料要求，设计不同的出料形式，从而保证物料干燥停留时间，进一步提高综合效能。

- ◆ Combined with overseas' technology, Jinling developed new two shafts and four shafts vacuum paddle dryer.
- ◆ The dryer adopt one bearing seat in whole piece, cooling device is available for choice.
- ◆ Drying chamber, bearing and shaft is available for heat expansion. The dryer is designed with frame which could prevent deforming during transport and lift.
- ◆ Whole body is strengthened, which could promise a longer life span
- ◆ The round plate form paddle adopt integral welding which has better strength. Quantity and form of scraper on paddle will be designed according to the feature of raw material.
- ◆ Overall size of paddle dryer is very compact, a single unit could be designed with max 500m<sup>2</sup> heating area.
- ◆ Driving through direct coupling, which is more stable. Direct coupling could prevent swaying or loosen problem caused of chain driving.
- ◆ Special installation process makes our dryer has better shaft concentricity, sealing on two ends are better.
- ◆ Both semicircular pipe jacket or whole body jacket is available for choice.
- ◆ Different discharging method is available in design according to the features of different raw material. Necessary drying retention time could be promised.
- ◆ Special design for preventing raw material blocking up during feeding.

## 技术参数 Technical parameters

配置 Configuration	双轴 Double shaft										四轴 Four shaft		
型号 Model	5	15	20	40	60	80	100	120	150	200	300	400	500
传热面积 Heating area m <sup>2</sup>	5	15	20	40	60	80	100	120	150	200	300	400	500
主机功率 Power of main motor kw	4	15	18.5	22	37	45	55	75	90	110	180	220	264
备注 Note	根据不同物料的特性和要求采用不同的材质及配置 Adopt different construction material and configure based on different feature of sludge												



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## 原理 Principle

◆ 本公司独立设计生产的真空连续热板式干燥机达到国外同步先进水平。物料加入真空型盘式干燥机, 由于物料在真空状态下沸点降低并随着耙叶的不断翻炒, 物料表面不断更新, 从而大大加快了干燥速率, 湿空气由真空泵抽出。此型干燥设备主要针对热敏性、有毒性、易氧化或需溶剂回收物料的干燥。

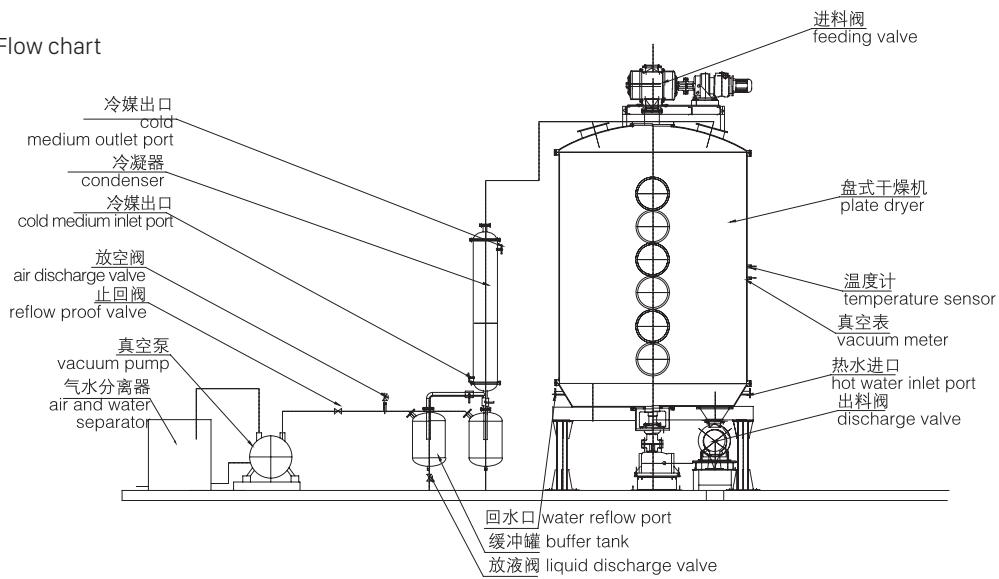
◆ Raw material was agitated inside the dryer under vacuum condition. Evaporated moisture was exhausted by vacuum pump. Drying efficiency of the dryer is very high, it is suitable for drying heat sensitive material, toxic material, the material that easy to oxidize or needs to recover solvent.



## 特点 Features

- ◆ 在高真空状态下, 保持物料连续或半连续进、出料。
- ◆ 密闭型操作, 特别适应于有毒物料或易氧化物物料的干燥。
- ◆ 可方便地回收载湿气体中的有机溶剂。
- ◆ 能耗低、效率高、安全方便、物料不易污染。
- ◆ 在真空状态下, 连续进出料, 有效避免因进入的空气导致物料飞扬, 基本保证真空度保持在-0.09Mpa以内。
- ◆ Under the state of vacuum, the dryer can keep raw material feeding and discharging in continuous or half-continuous production..
- ◆ Closed operation, it is particularly suitable for drying raw material which is toxic or easy to oxidize.
- ◆ It is very convenient to recover organic solvent from exhausted gas.
- ◆ Low energy consumption, high efficiency, safe and convenient operation, product won't be polluted.

## 流程图 Flow chart





## PGC 系列热板式干燥机

PGC Hot Plate Dryer

新产品  
China National High & New  
Technological Equipment



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### 特点 Features

- ◆ 本公司专业引进国外悬轴设计理念, 针对不同的物料进行专业改进设计制造, 从而使效能、强度和稳定性等有了大幅提高。
- ◆ 多种刮板结构设计, 使残存杂质大大降低。
- ◆ 补偿加热设计, 使产能大大提高。
- ◆ 特殊的主轴传动结构, 使设备强度、平整度更好, 维护更方便。
- ◆ 选配多种不同的均匀进料、布料及破碎等方式, 避免漏料及有效提高了干燥效能。
- ◆ Our company introduced suspension shaft structure, different design will be made based on the feature of different material, improve the dryer's efficiency, strength and stability.
- ◆ Different scraper design reduce residual product.
- ◆ Heat supplement design to increase the output capacity.
- ◆ Special driving shaft structure make the better strength, evenness and more convenient maintenance.
- ◆ Different feeding, distribution and break form are available for choice based on feature of raw material.

### 原理 Principle

◆ 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, 在大干燥盘上物料向里移动并从中间落料口落入下一层小干燥盘中。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。中空的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。水份由设在顶盖上的排湿口排出。并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, 可提高干燥机的生产能力和效果, 也能进行热解和反应操作。该设备集传导干燥和搅拌输送之长, 结构上采用薄板冲压焊接的大小加热盘和摆动可调的回转耙叶的巧妙组合, 配以定量加料和无级调速; 工艺上采用串并联输入加热介质和末期冷却降温等措施, 料层薄, 热阻小, 暴露表面大, 加热面积100%利用, 充分发挥了传导干燥热能利用率高的优点。实践表明, 该设备结构新颖紧凑, 生产密闭连续, 调解维修简便, 操作稳定可靠, 具有弹性大、效率高、能耗省、干燥时间可控。产品质量好、劳动强度轻、环抱好、占地少、适用面广等优点。

◆ Wet raw materials are fed continuously on the first hot plate on the top of dryer. Raw materials then will be turned and agitated under the function of rotating rake. When on the small hot plate, raw material will move to plate outer edge and drop down from the outer edge of the big hot plate underneath, then will move inner-ward and drop down from its central hole to the small hot plate on the lower layer. Both small and large drying plates are arranged alternately so that raw material can go through the whole dryer continuously. Dried product will drop from the lowest layer of hot plate to the bottom layer of the chamber body, and will be moved by rakes to discharging port. The moisture will be removed from the moisture discharging port on top of chamber, or sucked out by vacuum pump (only for vacuum type hot plate dryer).

◆ The dryer support using hot water, steam or thermal oil as heating resource. It also support using chilling water for cooling.



## 特点 Features

### (一) 调控容易、适用性强

- ◆ 通过调整料层厚度、主轴转速、耙臂数量、耙叶形式和尺寸可使干燥过程达到最佳。
- ◆ 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。
- ◆ 物料的停留时间可以精确调整。
- ◆ 物料流向单一，无返混现象，干燥均匀、质量稳定、不需再混合。

### (二) 操作简单、容易

- ◆ 干燥器的开车、停车操作非常简单。
- ◆ 停止进料后，耙叶能很快地排空干燥器内的物料。
- ◆ 通过特殊的大规格检视门的视镜，可以对设备内进行很仔细的清洗和观察。

### (三) 能耗低

- ◆ 料层很薄，主轴转速低，物料传送系统需要的功率小，电耗少。
- ◆ 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

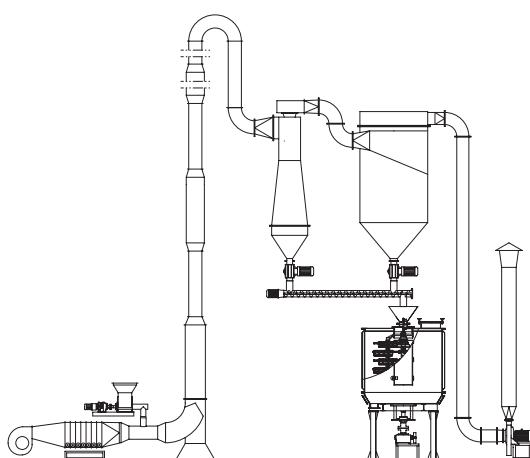
- ◆ 由于设备内气流速度低，而且设备内湿度分布上高下低，粉尘很难浮到设备顶部，所以顶部排湿口排出的尾气中几乎不含有粉尘。

### (五) 干燥速度快

- ◆ 固定盘被设计成夹层，可用液体或蒸汽作为热量传递媒介而进行加热或冷却。物料从盘子边缘像瀑布一样落到下一层盘子中，加快了干燥或冷却速率。(如夹层热源为蒸汽，在合同中应注明)



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### 1. Easy production operation, good adaptability.

- (1) User can obtain the best drying effect by adjusting thickness of raw material pavement, shaft rotating speed, quantity and form of rakes.
- (2) Each layer of hot plate could be filled in heating medium or cooling medium for drying or cooling.
- (3) Retention time of material can be accurately controlled.

### 2. Convenient operation

- (1) Operation panel is simple to use.
- (2) A thorough discharging could be finished very soon after stop feeding
- (3) Inspect the whole drying process or dryer washing process via observation window

### 3. Low energy consumption

- (1) The driven motor of dryer consumes very less power.
- (2) Drying through indirect heating, which has high efficiency.

### 4. Friendly operation environment, solvent can be recovered.

- (1) Air speed and air volume in drying chamber is very less, powder material is barely blow up.
- (2) There has very big range of moisture content between bottom hot plate layer and top hot plate layer, dried powder product which located at bottom layers is far from exhausting vent, wet material which located at top layers has large bulk density. It makes powder barely out.

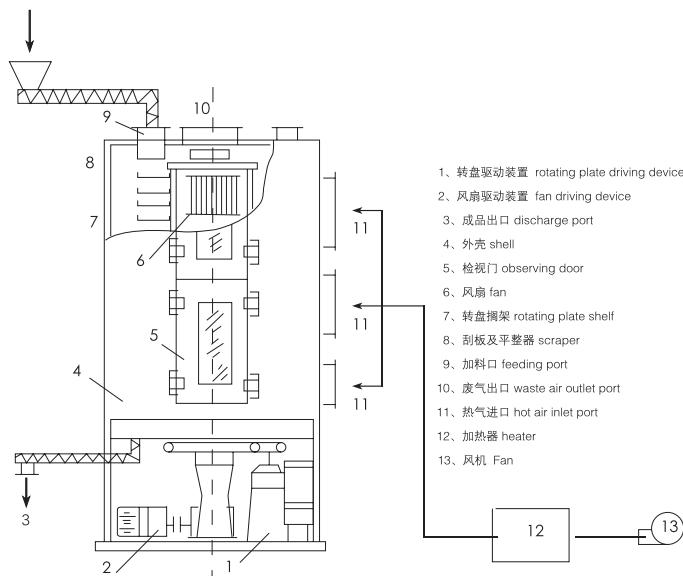
### 5. High drying efficiency

规格 Parameters	外径 Diameter (mm )	高度 Height(mm )	干燥面积Drying area (m <sup>2</sup> )	功率 Power(kw )
1200/4	1850	2608	3.3	1.1
1200/6		3028	4.9	
1200/8		3448	6.6	
1200/10		3868	8.2	
1200/12		4288	9.9	
2200/6	2900	3262	18.5	3.0
2200/8		3682	24.6	
2200/10		4102	30.8	
2200/12		4522	36.9	
2200/14		4942	43.1	
2200/16		5362	49.3	
2200/18	2900	5782	55.4	5.5
2200/20		6202	61.6	
2200/22		6622	67.7	
2200/24		7042	73.9	
2200/26		7462	80.0	
3000/8	3800	4050	48	11
3000/10		4650	60	
3000/12		5250	72	
3000/14		5850	84	
3000/16		6450	96	
3000/18		7050	108	



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流程图 Flow chart



## 概述 Principle

- ◆ 该机型为本公司自行开发设计生产的一种新型干燥设备。该机为全封闭作业，也可设计成闭路循环加热干燥模式。
- ◆ XGW is developed by Jinling, it is closed operated and available to become circulated operation.

## 原理 Principle

- ◆ 本干燥设备系外加热或竖型涡轮干燥机，凭借中心涡轮风扇的作用，按每区段输入不同热风量和废气循环，促进对流干燥，使湿物料在每层固定梳整器和刮板的作用下，自上而下逐盘移动和对流干燥。干燥成品从底部连续出料。
- ◆ 本机设计新颖、结构紧凑、控制简便、干燥均匀、能耗低、适用面广。适用于结晶体、无定形、粉粒状物料或热敏性物料的缓慢加热干燥、冷却及溶剂回收操作。
- ◆ This machine is belong to the type of out heating or vertical turbine dryer. Rely on the action of central turbo fan, it can introduce different hot air amount and waste gas cycle in accordance with every section to promote convective drying and make material get dried, move from up disk to lower disk one by one under the action of fixed comb and scraper. The dried finished product will be discharged at the bottom continuously.
- ◆ XGW is innovative in design, compact in structure, simple in control, uniform in drying, low energy consumption, wide in application field. It is suitable for drying crystal, amorphous, powder, granule and paste material as well as thermal sensitive material through slow heating, cooling and solvent recovering.

## 技术参数 Technical parameters

型号 Type	XGW1200-24	XGW2000-24
干燥面积 Drying area(m <sup>2</sup> )	16	48.2
耗用功率 Power consumption(kw)	~4.4	~12.0
风机转速 Rotating speed of fan(rpm)	200-500	200-500
转盘转速 Rotating speed of turnplate(rpm)	0.15-0.9	0.15-0.9
生产能力 Capacity(Kg/h)	30-80	80-350
层数 Quantity of layer	24	24
直径 Diameter(mm)	1200	1200



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## 特点 Features

- ◆ 金陵公司自行独立开发设计生产的减振方式，大大降低疲劳开裂现象，提高使用寿命，稳定性更好，噪音更小，设备可以做得更大。同时采用不同的进风对流方式和物料输送方式，根据不同的物料针对性设计，达到最佳效能。
- ◆ 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调节，操作方便。
- ◆ 物料沿螺旋床自下而上作圆周运动的同时，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。
- ◆ 对物料的表面及形状基本没有损伤。
- ◆ 尾气粉尘可以采用不同的收集处理方式。
- ◆ Full contact between hot air and raw material, high drying efficiency
- ◆ The structure is compact and it occupies less area.
- ◆ Retention time of raw material is adjustable, the dryer is easy operated..
- ◆ Vibration force makes raw material jumping up, which increase contact between hot air and raw material.
- ◆ The dryer adopt continuous production, it could meet GMP standard.
- ◆ Less broken rate for ball shape raw material.

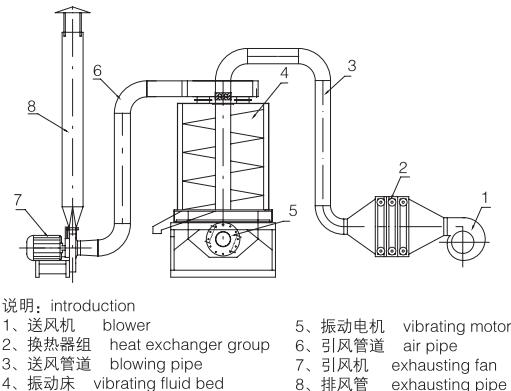
## 概述 Descriptions

- ◆ 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；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。从而使物料达到了干燥的目的。
- ◆ 该干燥设备产品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。
- ◆ Wet raw material enters into helix vibration plate from top and moves along with the helix plate under the function of vibration force and gravity, dried product is discharged at the bottom layer. Meanwhile clean hot air entered into the dryer from the bottom helix plate and exhausted from the top outlet vent. Material will be dried during the process.

## 应用 Applications

- ◆ 主要适用于药丸、饲料、化工、食品、建材等行业颗粒、条状、块状物料的干燥。
- ◆ The dryer is suitable for drying granule, strip and ball shape material in chemical industry, pharmaceutical industry, food industry, construction material industry, feed industry and so on.

## 流程图 Flow chart



## 技术参数 Technical parameters

型号 Type	LZG-1.0	LZG-1.2	LZG-1.4	LZG-1.6	LZG-1.8	LZG-2.0
直径 Diameter (mm)	1000	1200	1400	1600	1800	2000
振动电机功率 Power (kw)	2×1.1	2×1.1	2×1.5	2×1.5	2×2.2	2×3.7
进风温度/Inlet air temperature (°C)				60-200		





# BZG 系列连续热板式振动干燥机

BZG Vibrating Plate Dryer

国内首创  
Initiative Equipment



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## 特点 Features

- ◆ 盘面直径可调，盘层可调。
- ◆ 温度单层独立可调，介质有：热水、导热油蒸汽、冷水选配。
- ◆ 进出料时间和料层厚度可调。（单层面物料停滞时间≤ 25 分钟可调）
- ◆ 振动频率和幅度可调。
- ◆ 由于物料覆盖整个热板面，因此热利用率高。
- ◆ 配套定量加料系统，保证连续进出。
- ◆ 可选配热风补偿辅助加热干燥，增大排湿量，从而提高效能。
- ◆ 可选配 PLC 触摸自动控制系统。
- ◆ 可选配快拆设计，清洗更方便，且盘面不容易残有物料，符合“GMP”设计要求。
- ◆ 占地面积小，能耗低，连续密闭作业是替代烤箱回转流动性较好物料的理想设备。
- ◆ 根据不同的要求，可选用常压和真空两种形式进行干燥或冷却溶剂回收。

- ◆ The diameter and layer of plate is adjustable
- ◆ The temperature of each layer could be adjusted separately, heating resource: hot water, heat conducting oil, steam, cold water.
- ◆ The time of feeding, discharging and the thickness of raw material layer is adjustable. (retention time of single layer ≤30 min is adjustable.)
- ◆ Frequency and range of vibration is adjustable.
- ◆ Since raw material could cover all of hot board, heat utilization is good.
- ◆ Supporting feeder could keep continuous feeding.
- ◆ Hot air assistant heating drying as option to add amount of moisture exhaustion and improve heating efficiency.
- ◆ PLC and touch screen as option.
- ◆ Quick disassemble design as option, easy in clean and less residue of raw material on plate. It could meet the requirement of GMP.
- ◆ Less occupied area, low energy consumption and continuous closed work, it is an ideal equipment which could substitute for drying oven.

## 技术参数 Technical parameters

型号 Type	BZC-1.0	BZC-1.2	BZC-1.5	BZC-1.8	BZC-2.0
直径 Diameter	1000	1200	1500	1800	2000
振动电动机 Power of motor ( kw )	2×1.1	2×1.5	2×2.2	2×3.7	2×3.7
热源 Heating Medium	热水、蒸汽或导热油加热 Hot water, steam or thermal oil				

## 原理 Principle

- ◆ 本机是公司 2009 年自行开创性研发生产的一种新型干燥机，并已申报国家专利。
- ◆ 物料经定量加料口连续进料，经过多个层叠设置的热板干燥盘，充分传热传质，并在激振力作用下，作周向滚动运动，湿热空气从顶部排出，成品从底部出料。本机传热面积大、热效率高、能耗低、调节范围大、物料停留时间长、清洗方便，适用于医药、化工、食品、特种行业等流动性较好的粉粒体物的干燥、冷却。

- ◆ The dryer is developed by our company and we have already applied patent.
- ◆ Raw material is fed by feeder continuously, it will finish heating and mass transfer through several hot board drying plate and does movement of circumference rolling under the function of excitation force. Damp air will be exhausted from top side and finished product will be discharged from bottom side.
- ◆ The dryer has large heat conducting area, high heating efficiency, low energy consumption and large scope of adjustment. Raw material has long staying time, easy in clean. It is suit for drying, cooling the powder and granules which has good fluidity in pharmaceutical industry, chemical industry, food industry etc.



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## 概述 Descriptions

◆ 浸膏型专用喷雾干燥机是一种针对性设计开发的专用干燥设备，主要适用于熔点低、含糖高的产品的干燥，并具有不易粘壁、吸潮等特点。该装置根据干燥产品的特点和性质确定不同的喷雾干燥工艺。该机自动化程度高，操作方便，凡进入干燥系统的风都经过过滤处理。凡与物料接触部位均采用不锈钢制作，符合“GMP”要求。

◆ ZPG spray dryer is specially designed for the raw material which is easy to stick on the chamber and has low melting point. It is suitable for the liquid raw material such as vegetable extract, juice or some other liquid which has high sugar content. The design of ZPG is depends on different specific condition.

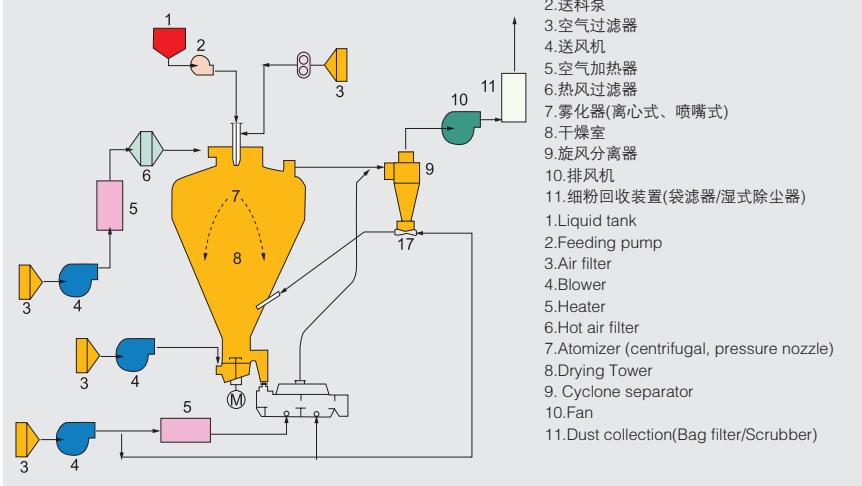
## 特点 Features

- ◆ 塔体选配冷风夹套，减少粘壁等现象。
- ◆ 塔体上装有自动振打装置。
- ◆ 塔体、管路配有机开清洗孔及排污孔。
- ◆ 选配自动控制恒温加料罐。
- ◆ 选配高压洗塔随机附件。
- ◆ 选配 PLC 控制，DCS 监控检测。
- ◆ 物料收集选配两级旋风除尘装置，或一级旋风除尘器和湿式除尘器。
- ◆ 雾化器选配变频调速控制。
- ◆ 选配扫壁装置。
- ◆ 三效过滤，空气净化要求达 10-30 级。
- ◆ 选配空气除湿机，流化床冷却机和振动筛选机。

- ◆ The tower is equipped with cooling air jacket, which reduces the chamber temperature to avoid product melting on the chamber.
- ◆ Pneumatic chamber vibrator help to discharge the part of adhesive solid product.
- ◆ More clean man hole on both tower and pipe to help easy cleaning.
- ◆ Heating agitator tank for raw liquid material as an optional choice.
- ◆ Smaller discharge angle and arc transition design to help smooth discharging.
- ◆ Cooling air sweeping (on inner chamber) as an optional choice

用于精密化工、食品行业。

It is used in chemical industry and foodstuff.



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### 原理 Principle

◆ 空气经过滤和加热，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，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。

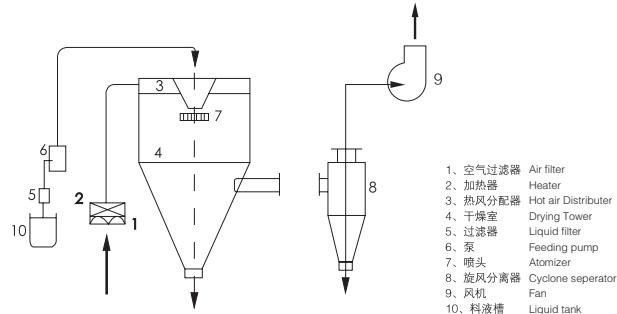
◆ Hot air enters into dryer in spiral form under the function of air distributor after being filtered and heated. By passing through high-speed rotary atomizer on top of tower, the liquid raw material will be sprayed into the extremely fine mist beads. Through the very short time of contacting with hot air, the liquid can be dried into final solid powder products. The final products will be discharged continuously from the bottom of drying tower and from cyclone separator. Waste tail air will be discharged from exhaust fan.

### 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，完成干燥时间仅需数秒种，特别适用于热敏性物料的干燥。
- ◆ 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。
- ◆ 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。
- ◆ High speed drying. After liquid raw material being sprayed, its' surface area will be increased greatly. With higher drying efficiency, 95%-98% of water could be evaporated in a few seconds. Drying time is very short, it is suitable for heat sensitive raw material.
- ◆ Product comes from spray dryer has very good uniformity, solubility, fluidity and purity.
- ◆ The production procedures are simple, the operation and control are easy. Liquid with the moisture contents ranges 40-60% (for some special materials, the moisture content is available at 90%) can be dried into the powder in one time. There is no need for grinding or sieving after spray drying, this simplifies operation procedures and improves product purity. Product size, bulk density, moisture content is adjustable in certain ranges.



流程图 Flow chart



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## 技术参数 Technical parameters

项目 参数 型号 Item/parameters/type	LPG					
	5	25	50	100	150	200-2000
入口温度 Inlet air temperature ( °C )	140-350自控140-350 automatically controlled					
出口温度 Outlet air temperature ( °C )	80-90					
水分最大蒸发量 Max capacity of evaporation moisture (kg/h)	5	25	50	100	150	200-2000
离心喷雾头传动形式 transmission form of centrifugal atomizer	电动 Electric	机械传动或电动 Mechanical transmission or electric				
转速 Rotating speed (rpm)	25000	18000	18000	18000	15000	8000-15000
喷雾盘直径 Diameter of atomizer (mm)	50	120	120	120	150	180-340
热源 Heating resource	电 Electric	电 Electric	蒸汽 + 电, 燃油、煤气 Electric+steam, fuel oil and gas	蒸汽 + 电 Electric+steam	蒸汽 + 电, 燃油、煤气 Electric+steam, fuel oil and gas	由用户自行解决 Settled by customer
电加热最大功率 Max electrical heating power (kw)	18	36	60	81	99	根据具体情况确定 Decided according to the situation



# YPL 系列压力式喷雾干燥机

YPL Pressure Nozzle Spray Dryer

技改产品  
Technical Modified  
Equipment



## 概述 Descriptions

◆ 压力式喷雾干燥机是采用压力式雾化器借助压力泵的压力将溶液或浆状的物料雾化成细微液滴，使表面积显著增大，经与热风进行充分热交换得以快速干燥(十几秒至几十秒)，从而得到粉体或细小颗粒产品的设备。

◆ The liquid or paste form raw material is sprayed into fine mist under the function of high pressure pump. Mist form material then contact with hot air to become small granules. Final product is collected from the bottom of tower and cyclone separator.

## 特点 Features

- ◆ 干燥速度快，特别适用于热敏性物料；
- ◆ 所得产品为球状颗粒，粒度均匀，流动性、溶解性好；
- ◆ 使用范围广，可进行热风干燥、造粒、也可以进行冷却造粒、喷雾结晶、喷雾反应等；
- ◆ 可配备细粉回送，再湿附聚系统，适当调整对物料粒径的要求；操作简单稳定，控制方便，容易实现自动化作业，产品粒径、松密度、水份在一定范围内可以调节。

- ◆ Drying speed is fast and it is suitable for drying heat sensitivity material.
- ◆ Products from spray dryer are ball shape granules with good uniformity, solubility, fluidity and purity.
- ◆ The dryer is available for liquid drying or melted solid cooling.
- ◆ Product size, solubility, bulk density and color is adjustable in certain ranges.

## 应用范围 Applications

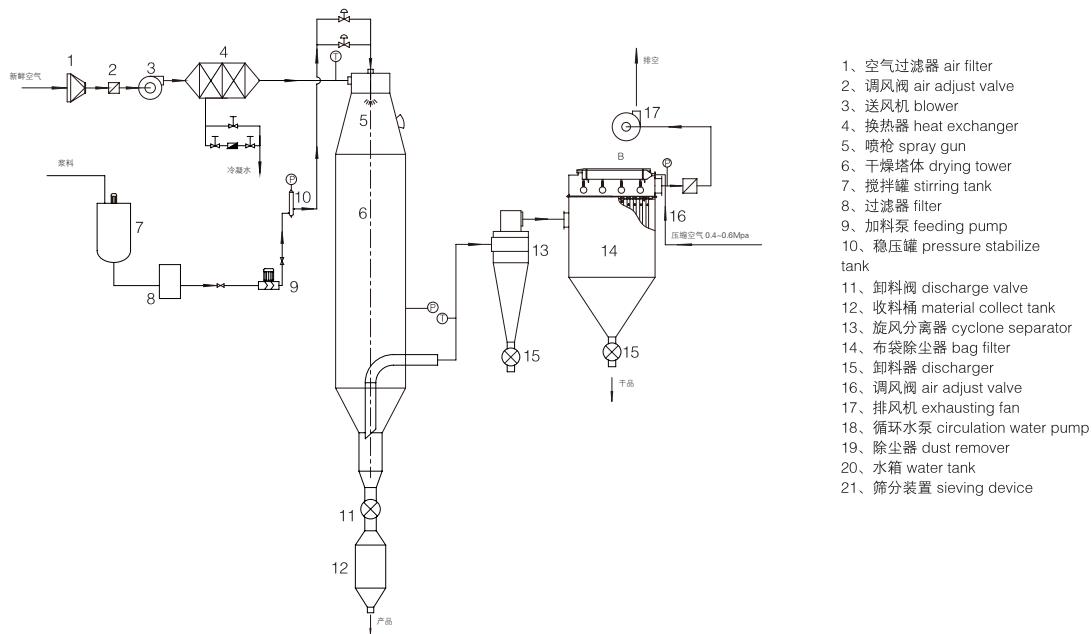
- ◆ 食品、医药、化工、染化、陶瓷、生化、农药、塑料等适用具有相应流动性的液体。
- ◆ It is applicable in foodstuff, pharmaceutical, chemical industries, dyestuff, ceramics, biochemical, plastic industries and so on.



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## 结构简图 Structure Diagram



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## 技术参数 Technical parameters

型号 Type	单位 Unit	50	100	150	200	300	500	1000
水份蒸发量 Amount of evaporated water	kg/h	50	100	150	200	300	500	1000
外形尺寸 Overall size (Ø*H)	mm	1600 x8900	2000 x11500	2400 x13500	2800 x14800	3200 x15400	3800 x18800	4600 x22500
高压泵压力 Pressure of pump	MPa				0.5-8			
功率 Power	KW	8.5	14	22	24	30	82	30
进风温度 Temperature of inlet air	°C				300-350			
物料回收 Raw material collection	%				>97			
电加热 Electric heater	KW	75	120	150	温度低于200时, 具体按实际计算。			
电加蒸汽 Electric+steam	MPa+KW	0.5+54	0.6+90	0.6+108	When the temperature is lower than 200°C, the parameters should be calculated according to practical condition.			
热风炉 Hot air furnace	Kcal/h	100000	150000	200000	300000	400000	500000	1200000

注:

- 1、水份蒸发量与物料特性、蒸发温度 相关。
- 2、用户可选用顺流、逆水流、返粉等干燥方式, 以达到需要的产品效果。
- 3、流程简图只作示意, 请用户根据需要选购其中的组件。

Note:

- 1 The amount of evaporated water is related to characteristic of raw material and temperature of evaporation.
- 2 Customer could choose different drying way such as: current steam, countercurrent steam and powder returning drying to meet the requirement of product.
- 3 The flow chart sketch is just for show, customer could pick subassembly according to need.



## GT 系列滚筒刮板干燥机

GT Rotary Drum Dryer

技改产品  
Technical Modified  
Equipment



### 原理 Principle

◆ 滚筒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，粘附着一定厚度的料膜，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，使料膜中的水份迅速蒸发、脱湿、水份经风机排出。干燥好的物料被装置在滚筒表面的刮刀铲离滚筒，再通过螺旋输送器再将干物料集中、包装。

◆ GT rotary drum dryer is a kind of indirect heating dryer in continuous production. Raw material fed from top or bottom of drum and stick on the drum. Filling steam or thermal oil inside the drum, the heat then transferred to raw material, thus raw material could get dried. Flake form dried product will be scraped off, and preliminarily crushed as well as transported by screw conveyor. Evaporated moisture will be sucked out by exhausting fan. The dryer is suitable for liquid or paste form raw material with certain viscosity.

### 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，其余热量全都用于筒料膜湿分的蒸发上，热效率可达 80%-90%。
- ◆ 操作弹性大，适用性广。可调整滚筒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。这给滚筒干燥操作带来很大方便，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 10-15 秒，在适合于热敏性物料。若将滚筒干燥机设置在真空器中，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 10~50kg.H<sub>2</sub>O/m<sup>2</sup>.h 的蒸发量。
- ◆ High efficiency. Almost all of the heat could be used on drying, drying efficiency could reach 80-90%.
- ◆ Widely used. The dryer is available for drying the raw material with large moisture content range. We could get the best drying effect by adjust feeding rate, thickness of pavement, drum rotating speed, feeding form etc.
- ◆ Short retention time. Drying time only remains 10-15 seconds, it is suitable for heat sensitive material



酵母专用滚筒刮板干燥机  
Yeast Slurry Rotary Drum Dryer

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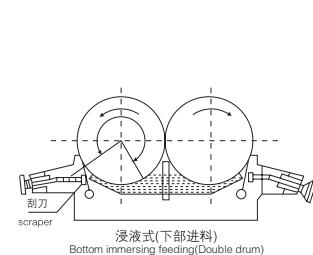
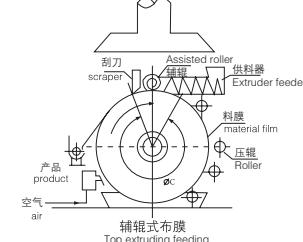
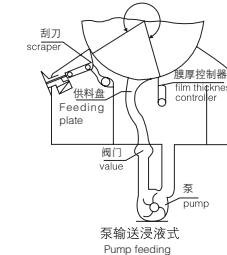
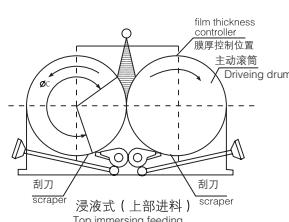
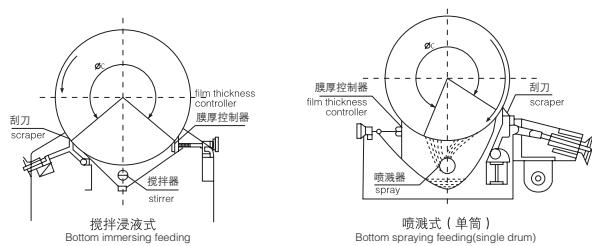
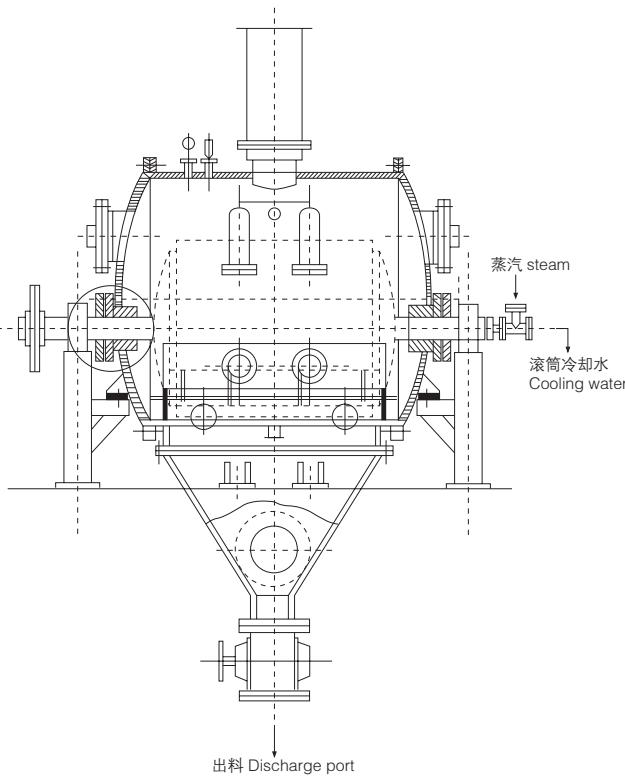


## 应用 Applications

- ◆ 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。
- ◆ It is suitable for drying liquid raw material or sticky material in chemical industry, dyestuff industry, pharmaceutical industry, foodstuff industry, and metallurgy industry and so on.



## 结构简图 Structure Diagram



## 技术参数 Technical parameters

参数 Specification	规格 Parameters	800×600	ø1000×2000	ø1200×2000	ø1400×2400	ø1600×2400	ø2000×3500
主电机功率 Main motor power (kw)	3	4	5.5	7.5	11	15	
传热面积 Heat transfer area ( m <sup>2</sup> )	4	6.2	7.5	10.5	12	22	
滚筒转速 Rotating speed of drum (r/min)			0.5-5				
工作热源 Heating resource		导热油、水、蒸气	Thermal oil, steam, hot water				
加料方式 Feeding method		顶部或底部	Top or bottom feeding				



# ZLG 系列振动流化床干燥机

## ZLG Vibrating Fluidized Bed Dryer

技改产品  
Technical Modified  
Equipment



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### 原理 Principle

◆ 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物料换热后, 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 dryer from the feeding end and moves forward continuously along under the function of vibration. The hot air penetrate fluid bed plate and dry damp raw material. Then the damp air is exhausted out through cyclone separator and dried raw material is discharged through discharge end.



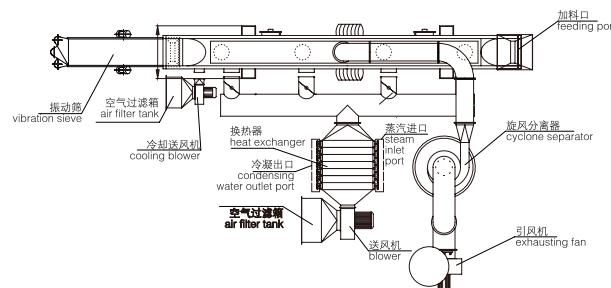
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### 技术参数 Technical parameters

机型 Type	流化床面积 area of fluid-bed ( m <sup>2</sup> )	进风温度 temperature of inlet air ( °C )	出风温度 temperature of outlet air ( °C )	蒸发水份能力 Evaporate moisture ( kg/h )	振动电机功率 vibration motor ( kW )
ZLG0.30×3	0.9	70-140	40-70	20-35	0.75×2
ZLG0.30×4.5	1.35	70-140	40-70	35-50	0.75×2
ZLG0.45×4.5	2.025	70-140	40-70	50-70	1.1×2
ZLG0.60×4.5	2.7	70-140	40-70	70-90	1.1×2
ZLG0.45×6	2.7	70-140	40-70	80-100	1.1×2
ZLG0.6×6	3.6	70-140	40-70	100-130	1.5×2
ZLG0.75×6	4.5	70-140	40-70	120-170	1.5×2
ZLG0.9×6	5.4	70-140	40-70	140-170	2.2×2
ZLG0.6×7.5	4.5	70-140	40-70	130-150	2.2×2
ZLG0.75×7.5	5.625	70-140	40-70	150-180	3.0×2
ZLG0.9×7.5	6.75	70-140	40-70	160-210	3.0×2
ZLG1.2×7.5	9	70-140	40-70	180-270	3.7×2
ZLG1.5×7.5	11.25	70-140	40-70	200-350	3.7×2

### 特点 Features

- ◆ 流化室高度及粉尘捕集可根据物料特性选择。
- ◆ 采用振动电机驱动, 运转平稳。
- ◆ 热效率高, 比一般干燥装置可节能 30% 以上。床层温度分布均匀, 流化均匀, 无死角现象。
- ◆ 料层厚度和机内移动速度及振幅均匀可在设计范围内调整, 可调性好, 适用面宽。
- ◆ 对物料表面损伤小, 可用于易碎物料的干燥, 有多种孔板形式可选配。
- ◆ 采用全封闭式结构, 有效地防止了物料与外界的交叉污染, 环境清洁, 可连续作业。
- ◆ 采用高水份物料大批量生产时, 可采用多台串联的方式以达到用户要求。
- ◆ 可根据需要分段进风或在线筛分设计。
- ◆ Height of fluidizing chamber and dust collection is by requirement.
- ◆ The vibration is created by motor. It is stable in operation and convenient in maintenance, low noise with long life span.
- ◆ High efficiency, raw material is heated evenly with high efficiency and drying capacity is high. Compared with ordinary dryer, the energy can be saved about 30%.
- ◆ It is good in regulation and wide in suitability. The thickness of raw material, moving speed and the amplitude can be adjusted.
- ◆ It makes minimum damage to the surface of raw material. The equipment can be used for drying easy broken raw materials. The dryer also suitable for drying irregular shape raw material.
- ◆ The dryer adopt closed operation, protect raw material from cross-contamination, it is in continuous production.

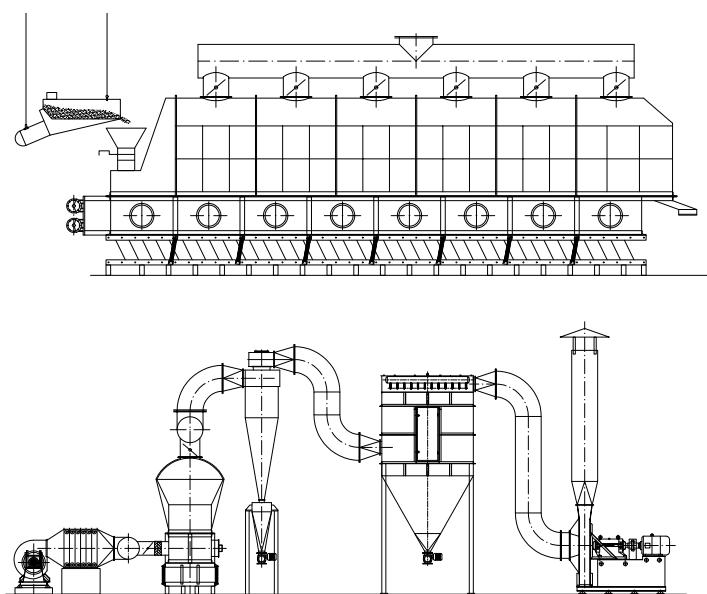




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### 结构示意图 Structure Diagram



### 技术参数 Technical parameters

机型 Model	流化床面积 (m <sup>2</sup> ) Fluid bed area	进风温度 (°C) Inlet air temperature	出风温度 (°C) Outlet air temperature	蒸发水量 (kg/h) Evaporated moisture	振动电机功率 (kW) Vibration motor power
SLG 2x18	36	70-140	40-70	600-1500	11x2

### 原理 Principle

- 本公司在引进吸收国外技术的基础上自行开发生产的专用流化床干燥装置，主要由下腔、中腔、上腔、底座、流化床板、喷孔、震动系统、收料系统、送引风机系统等组成。箱式激振器上装有两只振动电机，通过偏心块旋转产生水平方向的激振力，经弹簧（共振簧）作用，产生一个垂直方向的分力和一个水平方向的分力，垂直方向的分力与通过喷孔形成的高压热空气一起将床板上的物料抛起，使物料处于流化状态，而水平方向的分力使物料可以一定速度均匀向前输送（风速、料层厚度、出料速度均可调节），经溢流堰和出料斗排出，从而完成干燥作业。
- SLG is the modified dryer based on ZLG, it is consisted of top chamber, intermediate chamber, bottom chamber, vibration plate, vibration motor, production collection system, ventilation system etc. Vibration motor generate the force in two direction, vertical force vibrate the raw material up, cooperate with hot air, raw material is fluidized and dried inside of dryer, horizontal force transfer the product moving forward.

### 特点 Features

- 料层厚度可根据物料特性设置，一般≤300mm以内调节，从而使停留时间大大延长。
- 床板厚度可根据设备大小配置，避免开裂。
- 床面喷孔有多种结构形式选配。
- 可选配弹性支撑结构，使床面积更大，中腔体振动装机功率更小。
- 特别适用于大批量、连续、黏性较大，要求干燥停留时间较长的粉粒体物料。
- Thickness of raw material distribution is adjustable, usually it is less than 300mm.
- Thickness of vibration plate will be designed according to the size of dryer
- Different vibration plate open hole style available for choice
- Elastic support structure is available for choice.
- It is suitable for large scale, continuous production, it is suitable for high viscosity raw material which needs a long drying retention time.

### 应用范围 Applications

- 柠檬酸、硫酸钠、聚丙烯酰胺等低粘性物料的干燥和冷却。
- Drying and cooling of citric acid, sodium sulfate, polyacrylamide



## XF 系列沸腾干燥机

XF Horizontal Fluidized Bed Dryer

技改产品

Technical Modified  
Equipment



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### 原理 Principle

◆ 洁净的热风经阀板分配进入床体内, 从加料器进入的湿物料被热风形成沸腾状态。由于热风与物料广泛接触, 增强了传热传质的过程, 因此在较短时间内就可干燥。从床体的一端进入, 经过几十秒至几小时的沸腾干燥, 自动或批次从床体另一端流出。本设备一般进行负压操作。

◆ Clean and hot air enters into fluid bed through air distributor. The wet raw material fed from feeder forms the fluidizing state by hot air. Because of the complete contact between hot air and raw materials, drying time is very short. Hot air enters from one side of dryer, and discharged from the other side after several seconds fluidizing. The dryer works under negative pressure.

XF model horizontal fluidized bed dryer is consist of air filter, fluidized bed, cyclone separator, bag filter, high speed centrifugal fan, operation table and so on. Because of the different feature from different raw material, it is necessary to equip bag filter in accordance with particle size.



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### 特点 Features

◆ 处理量大, 其体积给热系数一般为 $2330-6590W/(m^3\cdot^{\circ}C)$ 。

◆ 物料在干燥机内的停留时间和温度可以自由调节。

◆ 设备结构简单、维修方便, 床层内温度分布均匀。

◆ 设备可进行连续、半连续或间歇操作。

◆ 适用于颗粒性物料的干燥、湿含量太高的物料应特殊处理。

◆ 床孔结构可根据物料要求调整。

◆ The capacity is big, its volume heat transfer coefficient is generally  $2330-6590W/(m^3\cdot^{\circ}C)$ .

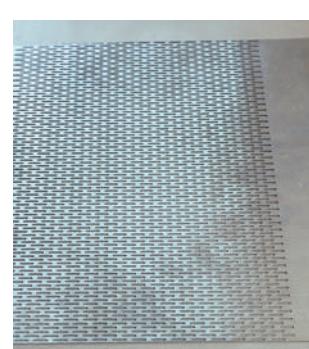
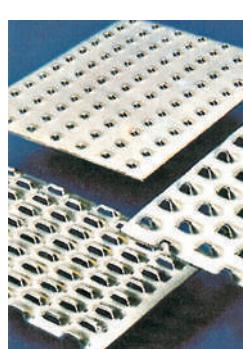
◆ It could adjust residence time and temperature of material.

◆ The equipment is simple in structure, convenient in maintenance, temperature in bed id uniform.

◆ The equipment could carry on continuously operation, half continuously operation or batch operation.

◆ It is suitable for drying granule material, special processing should be offered to the material with high water content.

◆ The bed hole structure could adjust by requirement.





## 应用 Applications

◆ 医药品、化工原料、食品的干燥作业。适用物料粒径一般为0.1-6mm, 最佳粒径为0.5-3mm。

◆ It is widely used for medicines, chemical raw material, foodstuff and so on. The suitable diameter of raw material will be 0.1-6mm. The best diameter of raw material will be 0.5-3mm.

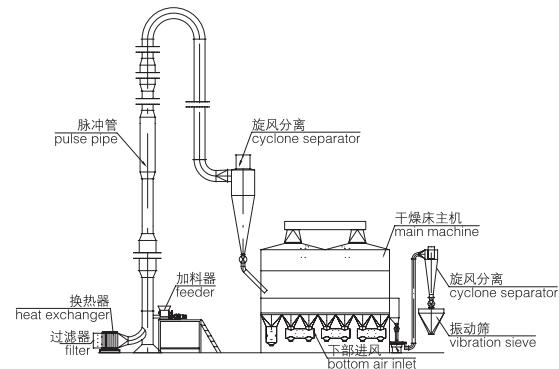
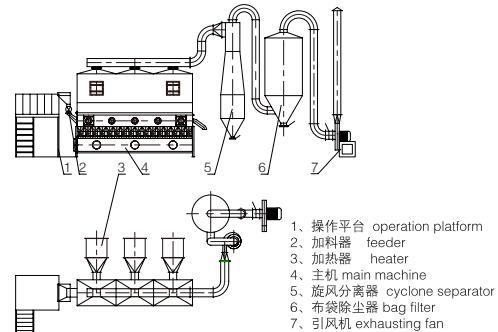
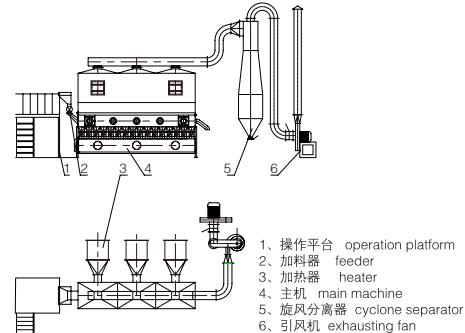


CPE 专用流化床干燥机 CPE Fluidized Bed Dryer



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## 结构简图 Structure Diagram



气流流化床组合干燥机  
Flash drying & fluidized bed drying combination

## 技术参数 Technical parameters

型号Type	干燥能力 Capacity (kg/h)	风机功率 Power of fan (kw)	进风温度 Temperature of inlet air (°C)	进料形式 Feeding form
XF10	10-15	7.5	60-200	1.星形加料器 Star shape feeder 2.气力自行输送 Pneumatic automatic transmission 3.水分蒸发量视物料情况另订
XF20	20-25	11	60-200	
XF30	30-40	18.5	60-200	
XF50	50-80	30	60-200	
XF 1x6	~200	60	150	
XF 2x12	~1200	230	150	



## GFG 系列高效沸腾干燥机

GFG High-Efficiency Fluidized Bed Dryer



### 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（小型机不设搅拌）。
- ◆ 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，气流经过过滤。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 30 分钟左右。
- ◆ 医药、食品、饲料、化工等领域流动性较好的粉粒状物料的干燥。

- ◆ The structure of fluid bed is of round so to avoid dead corner.
- Inside the trolley there is an agitator (as optional choice) in order to avoid agglomeration of raw material and forming dead corner.
- ◆ Manual discharging and automatic discharging as option
- ◆ The dryer is in conformity with the requirement of GMP.
- ◆ Drying speed is fast and temperature is uniform. In general the drying time is 20-30 minutes per batch.

### 原理 Principle

◆ 空气经净化加热后，由引风机从下部导入，穿过料斗的网孔板。在工作室内，经搅拌和负压作用形成流化状态，水份快速蒸发后随着排气带走，物料达到干燥的目的。

◆ Under the function of exhausting fan, fresh air will be firstly filtered during passing through air filter, and then enter the drying chamber after uniformly distributed. The state of fluidization is formed through stirring and negative pressure. Damp air is evaporated and removed rapidly and raw material is dried quickly.



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### 技术参数 Technical parameters

项目 Item		机型 Type						
投料 Capacity (kg)		60	100	120	150	200	300	500
风机 Fan	风量 Amount of air ( m <sup>3</sup> /h )	2361	3488	4000	4900	6000	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	18.5	22	30	45
搅拌功率 Stirring power (kw)		0.55	0.55	0.55	0.55	0.75	1.10	1.50
搅拌转速 Stirring speed (rpm)		11						
蒸气耗量 Steam consumption (kg/h)		140	170	170	240	280	360	451
操作时间 Operation time (min)		15-30 ( 视具体物料而定 ) (depends on raw material)						
主机高度 Height	圆形 Round (mm)	2700	2900	2900	2900	3100	3600	3850

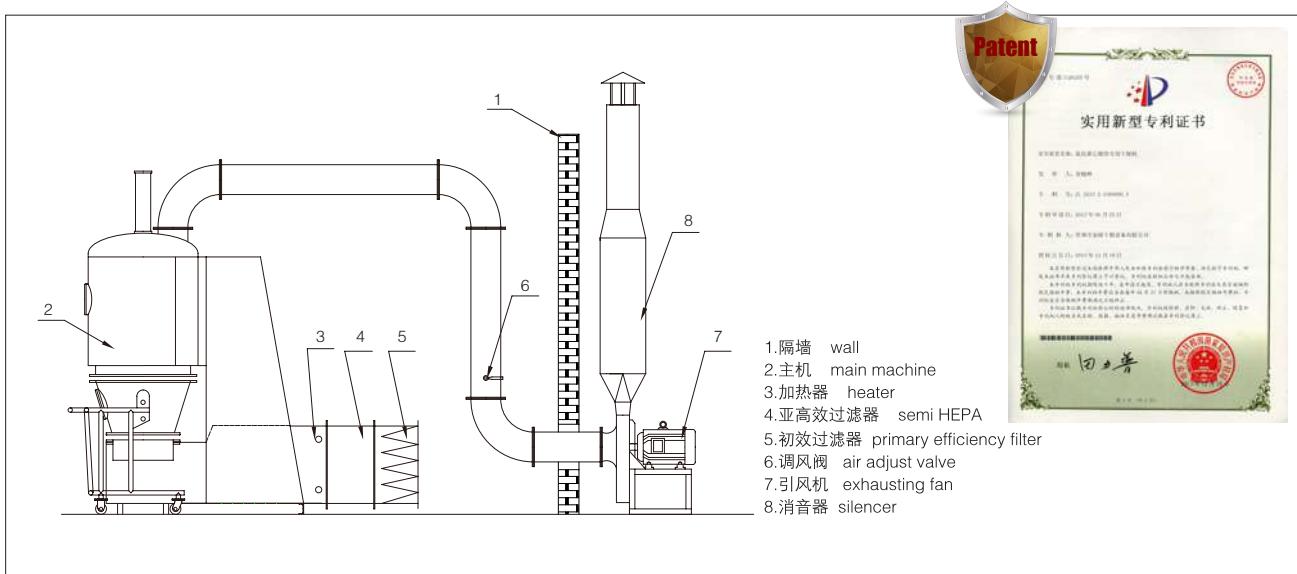


特点 Features

- ◆ 根据物料干燥过程中水份挥发特点及物料脱水后自身比重的改变，在不同区域内配置了不同的风量与风压及不同的区间温度，以满足物料烘干要求。
- ◆ 该干燥设备在床内配置有搅拌装置，强制物料在热空气中形成流化效果，避免物料因水份过高而团聚，或因加料量太大而囤积在床面，从而加快了干燥速度。
- ◆ 在沸腾室后配置的旋风除尘避免了粉尘飞扬，并可根据用户要求配置布袋除尘或水幕除尘装置。
- ◆ 特别适用于低温、热敏性物料的流化干燥。
- ◆ 针对剧毒或危害性大的物料，公司特别设计全封闭操作结构形式供选用。



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## XSZ 系列闪蒸干燥机

XSZ Spin Flash Dryer

技改产品

Technical Modified  
Equipment



### 原理 Principle

◆ 热空气由入口管以适宜的喷动速度从干燥机底部进入搅拌粉碎干燥室，对物料产生强烈的剪切、吹浮、旋转作用，于是物料受到离心、剪切、碰撞、摩擦而被微粒化，强化了传质传热。在干燥机底部，较大较湿的颗粒团在搅拌器的作用下被机械破碎，湿含量较低、颗粒度较小的颗粒被旋转气流夹带上升，在上升过程中进一步干燥。由于固气两相作旋转流动，固相惯性大于气相，固气两相间的相对速度较大，强化两相间的传质传热，所以该机生产效率高。

◆ Hot air enters into stirring and crushing and drying chamber from the bottom of dryer with suitable spouting speed. It exerts strong shearing, blowing, floating and rotating effect. It strengthens the process of heat and mass transfer. At the bottom of dryer, the large and damp granule is crushed under the action of stirrer and the granule that is small in particle and contain less moisture will lift accompanied with revolving air steam. During the period of lift, it is dried further. Because gas and solid two phase flow in rotating and the inertia of solid phase is more than that of gas and the relative velocity between solid and gas phase is large, so it strengthens the process of heat and mass transfer. Therefore the machine has large drying capacity.



钛材闪蒸干燥机

### 特点 Features

- ◆ 多种加料装置供选择，加料连续稳定，过程中间不容易产生架桥现象。
- ◆ 干燥机底部可根据需要选配冷却装置，避免了物料在底部高温区产生粘接、碳化现象。
- ◆ 特殊的气密封装置和轴承冷却装置，有效延长传动部分使用寿命。
- ◆ 特殊的分风装置，降低了设备阻力，并有效提供了干燥器的处理风量。
- ◆ 干燥室可选配分级环及旋流片，物料细度和终水份可调。
- ◆ 相对其它干燥方法而言，可有效增加物料比重。
- ◆ 干燥室内周向气速高，沿主机周壁呈螺旋状上升干燥，这样既降低了主机高度，延长了干燥停留时间，同时又具备了一定的扫壁作用。
- ◆ There are many kinds feeding equipment for choosing and feeding is continue and static.
- ◆ There is a cooling device at the bottom of dryer, where is high temperature area heat sensitivity raw material can not contact with heat surface directly, therefore it solves the metamorphose problem of heat sensitivity raw material.
- ◆ There are pressured seal and bearing cooling device, so can make the life of machine longer.
- ◆ There is special equipment for sharing wind, and raising the amount of hot air.
- ◆ There are rotational flow pieces inside the drying chamber. It is used to control the moisture and granule of raw material to needed level.
- ◆ The machine could add specific gravity of materials compare with other drying method.
- ◆ Because gas speed at circle inside the drying chamber is high and the staying time of raw material is short, so it could prevent material stick to me wall and metamorphose problem, high efficiency and quick speed can be realized. 8. It is possible for small equipment to carry out large-scale production.

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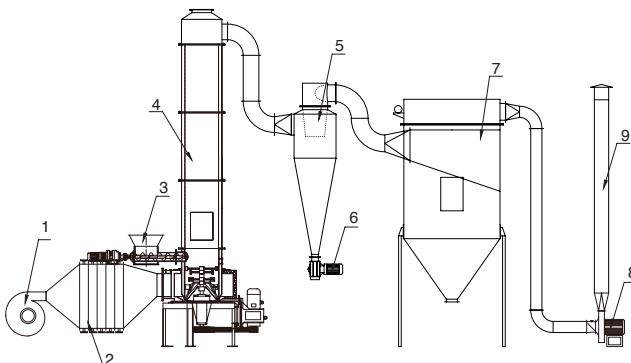


ø1600 型闪蒸干燥机现场  
ø1600mm spin flash dryer



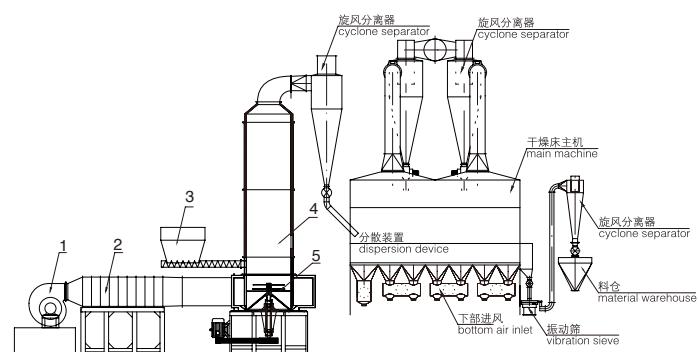
ø2000 型闪蒸干燥机发货现场  
ø2000mm spin flash dryer

### 流程图 Flow chart



1. 送风机 blower  
2. 换热器 heat exchanger  
3. 加料器 feeder  
4. 干燥主机 main machine  
5. 旋风分离器 cyclone separator  
6. 关风机 discharge valve  
7. 脉冲式除尘器 bag filter  
8. 引风机 exhausting fan  
9. 排风管 exhausting pipe

### 结构示意图 Structure Diagram



CPE 专用闪蒸干燥机流程图 Flash dryer flow chart specialize for CPE

### 技术参数 Technical parameters

型号 Type	筒体直径 Barrel diameter (mm)	主机尺寸 Main machine size (mm)	主机功率 Main machine power (kw)	处理风量 Amount of air flow(m <sup>3</sup> /h)	蒸发水分 Evaporate moisture (kg/h)
XSZ-4	400	500×3500	4	1250-2500	25-70
XSZ-5	500	600×4000	5.5	1500-4000	30-100
XSZ-6	600	700×4200	7.5	2500-5000	40-200
XSZ-8	800	900×4600	11	3000-8000	60-600
XSZ-10	1000	1100×5000	15	5000-12500	100-1000
XSZ-12	1200	1300×5200	18	10000-20000	150-1300
XSZ-14	1400	1500×5400	30	14000-27000	200-1600
XSZ-16	1600	1700×6000	45	18700-36000	300-2000
XSZ-20	2000	2100×6500	55	22000-45000	400-2500

注: 表中所列蒸发量, 参考进风温度200℃, 出风温度80℃时蒸发量, 特殊物料以上参数将有变动。

Note: All above parameters are based on 200℃ inlet temperature and 80℃ outlet air temperature.



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## QG系列气流干燥

QG Flash Dryer

### 原理 Principle



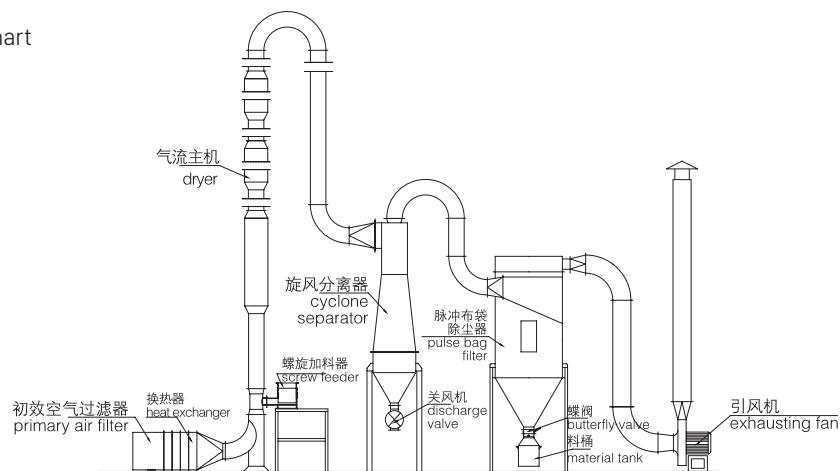
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- ◆ 物料经加料口均匀推进，高速受热空气将粉状物料在管道内迅速传热提升。干燥后的物料经分离后连续出料，湿空气经引风机排出。
- ◆ Raw material is fed uniformly into the dryer by screw feeder. Wet material is blown up quickly in drying chamber by hot air. Product discharged continuously after drying and separation. Drying time is generally several seconds.

### 应用 Applications

- ◆ 这种类型的设备，适应粘度较小的粉粒体物料的干燥冷却，例：安眠酮、A.B.C 中间体、A.B.S 树脂、A.S.C、白炭黑、苯茶毗唑酮、茶粕、草酸催化剂、促进剂 m、d.m、触媒、沉淀炭粉、对乙酰氨基苯磺酰氨、对氨基水杨酸、哆耳玛托、对苯二酸、二乙苯铵、二氧化钛、活性碳、氟硅酸钠、氟石矿、副产硫铵、硅胶粉末、合成树脂、磺酸钙、聚丙烯树脂、金霉素、焦硅酸钠、糠氯酸咖啡渣、口服葡萄糖、硫酸钠、硫化矿、磷矿粉、兰 BB、P.V.C、熔融磷肥、四环素、三氧化铁、碳酸钙、钛铁矿、铜矿、土豆粉、尾煤、硬脂酸盐、玉米蛋白、药品、药剂、氧化铁、酒渣等。
- ◆ The equipment can meet different need of raw materials. Besides the mentioned raw materials in basic model, there are hyminal, A.B.C intermediate, white carbon black, tea, catalyst of oxalic acid, promote agent m, m.d, catalyst, deposited carbon powder, N-acetyl-sulfanily chloride, p-aminosalicylic acid, p-phthalic acid, diethyl aniline, titanium dioxide, active carbon, sodium fluosilicate, ammonium sulphate, powder of silicon glue, synthesis resin, calcium sulphate, pp resin, aureomycin, sodium polysilicate, oral glucose, sodium sulphate, mine of sulphate, mine of phosphorus, BB blue, melting phosphours fertilizer, tetracycline, ferric oxide, calcium carbonate, titanium/ferric mine, copper mine, powder of white potato, tail coal, stearate, zein, medicine, medical agent, ferric oxide, less residue and so on.

### 流程图 Flow chart



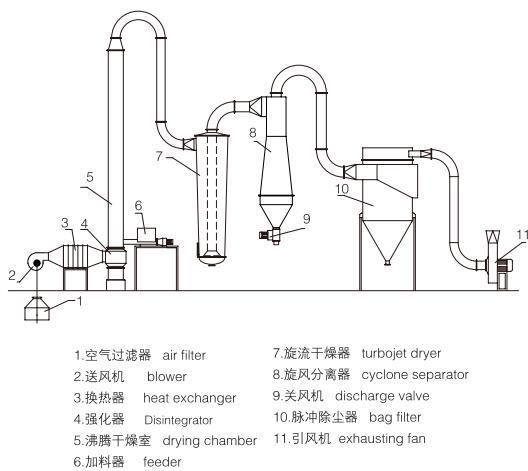
### 技术参数 Technical parameters

型号 Type	蒸发水份 (约) Evaporate moisture(kg/h)	装机功率 (约) Power(kw)	占地面积 (约) Occupied area(m <sup>2</sup> )	高度 (约) Height(m)
QG 50	50	7	20	14
QG 100	100	13	32	14
QG 200*	200	21	40	15
QG 250	250	24	64	15
QG 500	500	43	96	18
QG 1000*	1000	100	120	18
QG 1500*	1500	150	200	20



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### 流程示意图 Flow chart



### 技术参数 Technical parameters

型号 Type	蒸发水分(以表面水分计算)(约) Evaporate moisture (kg/h) (calculated with the surface moisture)	装机功率(约) Power (kw)	占地面积(约) Occupied area(m <sup>2</sup> )	高度(约) Height (m)
JG50	50	10	20	9
JG100	100	20	32	11
JG200	200	31	40	11
JG250	250	32	64	13
JG500	500	54	96	13
JG1000	1000	135	120	15
JG1500	1500	175	200	16

### 应用 Applications

◆ 本机特别适合含湿量比较大的，呈滤饼状的湿物料，以及用 QG 系列气流干燥方法难以干燥的物料，如：醋酸乙烯及氯乙烯的共聚物，醋酸纤维素，催化剂、C.M.C.、CT-1 树脂、煅石膏、电解二氧化锰、蒽醌磺酸铵盐、氟石、硅藻土、硅胶催化剂、骨粉、过氯酸钾磺铵类药物、合成树脂、活性筋、活性白土、化学滤饼、金红石型钛白粉、癸二酸、硫酸铜、硫酸铝、硫酸钠、磷酸钙、磷酸酯化淀粉、染料、柠檬酸钙、煤泥、粘土、粘土水泥、氢氧化铝、氢氧化钡、乳酸钙、食品、三聚氰酸、石膏浆、石灰、生物制品、碳黑、碳酸钙浆、污泥渣、有机化学品硬脂酸铝、氧化铁、有机燃料、玉米蛋白饲料、阴湿泥浆、云母粉、药剂、颜料、重铬酸钾纸浆、酒糟渣等。

◆ This dryer is suitable for the raw materials that contains more moisture and appear paste and other raw materials that can not be dried with other drying methods. For example, copolymer of vinyl acetate and chloroethylene, cellulose acetate, catalyst, C.M.C, CT-1 resin, burnt plaster, electrolytic manganese dioxide, anthraquinone ammonium sulphonate, flour, diatomaceous, silica gel catalyst, born powder, potassium perchlorate sulfonamide, synthesis resin, active gluten, active argil, chemical filter cake, titanium dioxide, decanedioic acid, cooper sulphate, aluminum sulphate, sodium sulphate, calcium phosphate, starch, dyestuff, calcium citrate, coal earth, cement, compounds, ferric oxide, organic fuel, maize albumen feed, mica powder, medicine, dyestuff, paper pulp of potassium perchromate, lees residue and so on.

### 原理 Principle

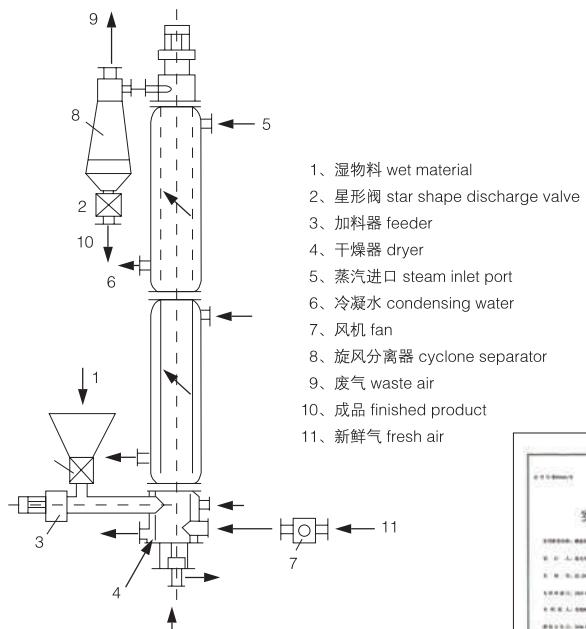
◆ 强化型气流干燥是在普通气流干燥机上，增加一套转速可以无级调节的强化器，湿物料通过螺旋加料器进入强化器后和热气流充分混合，在飞速旋转的刀片撞击和推进下，物料被破碎成细颗粒，在干燥的同时向出口移动，进一步均匀干燥。风力无法吸引的湿重颗粒继续被击碎、干燥、直至能被风吸起进入干燥管。

◆ JG could remove moisture from raw materials of granule or powder that are easy to dehydrate (mainly water in surface). Under the drying air, the quality of finished products can be controlled to the best state because of raw material can stay here in a short time. The dryer of our factory is developed to add a reinforced device of stepless speed exchange on the basis of basic type. When the humidity raw material is fed through screw feeder, it is mixed with air fully and under the broken and pushed by rotating knives, raw material is broken to fine granule. It moves onto the outlet at the same time of drying. Finally it enters into drying pipe under the absorbing of air force. At the place it is dried further. The humidity and heavy granule that is not absorbing of air force. At the place it is dried further. The humidity and heavy granule that is not absorbed by air is broken and dried continuously till entering the drying pipe. The eddy dryer also may deliver according to the requirement.



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流程图 Flow chart



- 1、湿物料 wet material
- 2、星形阀 star shape discharge valve
- 3、加料器 feeder
- 4、干燥器 dryer
- 5、蒸汽进口 steam inlet port
- 6、冷凝水 condensing water
- 7、风机 fan
- 8、旋风分离器 cyclone separator
- 9、废气 waste air
- 10、成品 finished product
- 11、新鲜气 fresh air



## 特点 Features

◆ 本机传热系数大(175–500W/m<sup>2</sup>k)、能耗低(1.3–2.0kg蒸汽/kgH<sub>2</sub>O)、结构紧凑、附属设备少、占地小，与气流干燥相比，干燥设备和操作费可节约50%，对于气力输送的含水或含溶剂类粉粒状(3μm–3mm)物料可进行连续加热、干燥、冷却及溶剂回收操作。

◆ The machine has high heat transfer coefficient (175–500W/m<sup>2</sup>k) and low energy consumption (1.3-2.0kg steam/kgH<sub>2</sub>O), compact structure and occupies small area. Compared with air steam drying, the expanse of equipment and operation can be saved about 50%. For granule powder material (3μm-3mm) containing water or solvent which transported by pneumatic force can be carried out heating, drying, cooling and recovering solvent continuously.

## 原理 Principle

◆ 本机为本公司自行开发生产的一种新型干燥设备，综合了气力输送和传导加热技术的优点，以空气或惰性气体为运载介质，使沿着夹套筒体内壁螺旋上升的物料薄膜，不断的获得热量，从而在3–15秒短时间内达到瞬间干燥的目的。

◆ LGW combines the advantages of pneumatic transmission and conduction heating technology and uses air or inert gas as carried medium. The material film lifted along with helix at inner wall of jacket body will obtain heat continuously and will be dried within 3–15 seconds.

## 技术参数 Technical parameters

型号 Type	驱动功率 Driving power (kw)	蒸汽压力 Steam pressure (Mpa)	转管转速 Rotating speed (rpm)	生产能力 Capacity (kg/h)	外形尺寸 Overall size (mm)
LXG300	0.75	0.2-0.6	9.1	25-75	Ø300*6040
LXG400	1.1	0.2-0.6	5.2	50-120	Ø400*8700
LXG800	5.5	0.2-0.6	3.8	100-400	Ø800*1200



### 概述 Descriptions

◆ 回转滚筒干燥机是主体略带倾斜并能在一定范围内可调转速的圆筒体，湿物料由加料机送入圆筒内，在内筒均布的抄板器翻动下，均匀分散并与通过筒内的热风（并流或逆流）充分接触，加快了干燥传热，传质。从而达到干燥的目的。该设备可选用各种形式抄板来适应不同的物料，结构简单，运转可靠，维修方便，生产能力大。

◆ Wet raw material is fed into dryer by screw feeder, and it will be distributed by rising board inside. Dispersed raw material has bigger surface, it could fully contact with hot air and obtain higher drying efficiency. Rising board form is adjustable depends on different raw material. Kiln rotating speed is adjustable.

◆ Rotary kiln dryer has simple structure, which makes its long life span.

### 应用 Applications

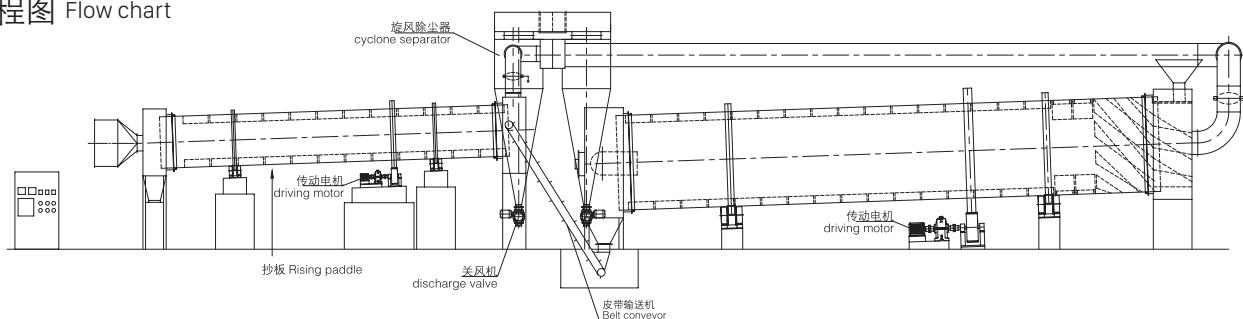
- ◆ 适用于化工、矿工、冶金等行业大颗粒，大比重物料的干燥。如矿石、高炉矿渣、煤、金属粉末、磷肥硫铵、污泥、煤泥等。
- ◆ 对有特殊要求的粉状、颗粒状物料的干燥。如：GP发泡剂、洒槽渣、轻质碳酸钙、活性白土、磁粉、石墨、药渣。
- ◆ 要求冷却，且需大批量连续作业的物料。
- ◆ 高温煅烧应在订货时注明。
- ◆ 根据尾气含炭量的不同选用旋风，布袋、水脉、除尘处理。
- ◆ 热源采用：电、蒸汽、热管、热风炉或废热。

1. It is suitable for drying raw materials that have large size and heavy specific gravity. For example: ore, slag of blast furnace, coal, metallic powder, phosphorus fertilizer, ammonium sulphate and so on.
2. It is suitable for powder, granule shape raw materials which have special requirements to drying. For example: GP vesicant, less, light calcium carbonate, active white earth, magnetic powder, graphite, medical slag and so on..
3. It is suitable for the material which need cooling, and need large quantity continuous operation.
4. If need high drying temperature should be noted when order.
5. Choose different methods of dust treatment such as cyclone separator, bag filter and washing tower according to the carbon content in tail gas.
6. Heat resource used: electricity, steam, heat pipe, furnace or waste heat .



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### 流程图 Flow chart



### 技术参数 Technical parameters

型号 model		0.8-6	1.0-8	1.0-10	1.2-10	1.2-12	1.5-10	1.5-16	1.8-16	1.8-18	2-18	2-20	2.5-18	2.5-22	3-20	3-25	3.5-25	3.5-30	
简体 rotary drum	直径 diameter(m)	0.8	1		1.2		1.5		1.8		2.0		2.5		3		3.5		
长度 length(m)		6	8	10	10	12	10	16	16	18	18	20	18	22	20	25	25	30	
斜度 slope%																			
转速 rotating speed(rpm)		2-7				2-5				2-3				1-3					
电机功率(约) power of motor(kw)		4	5.5		7.5		11		15	18.5		22		30	37	45	55	75	90



# DZG 系列多回路回转滚筒干燥机

## DZG Re-circulating Rotary Kiln Dryer

技改产品  
Technical Modified  
Equipment



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### 原理 Principle

- ◆ 多回路回转滚筒是在引进国外技术基础上改进设计的一种新型连续干燥机。本工艺采用三套内筒设计，物料经螺旋定量加料口进入内腔，与导入的热空气在扩板和气流的作用下，夹带着物料经过二次折流后物料充分传热传质。干物料经旋风或布袋收集，湿空气经引风机排出，从而大大提高效能，减少占地面积。
- ◆ Re-circulating rotary kiln dryer is a kind of modified kiln dryer with the combination of European technology. There are three layers of drying chamber, raw material is fed into inner chamber, and being dispersed by rising board. Under the function of hot air and rotary drum, raw material will be carried into middle layer chamber and then outer chamber.
- ◆ The dryer could improve drying efficiency by lengthen heat transfer time. And it saves more space than conventional rotary kiln dryer.

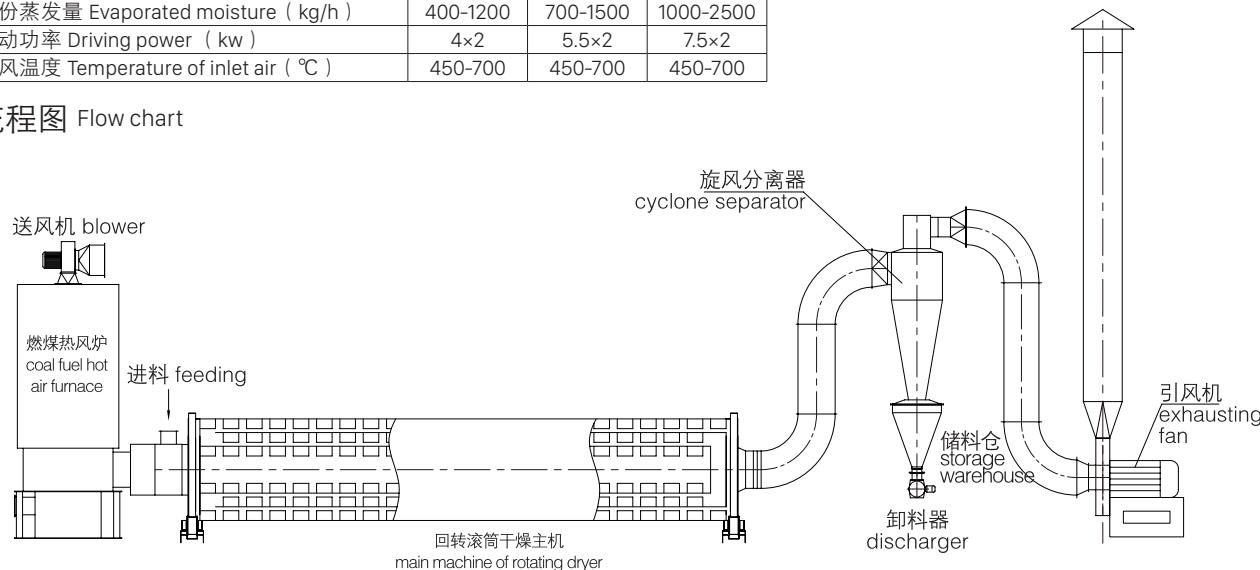
### 应用 Applications

- ◆ 本生产线已广泛应用于万寿菊、银杏叶、酒糟、木屑、秸秆、牧草等片状、纤维状物料的烘干。
- ◆ 专业制造、工艺先进、成套配置。
- ◆ 我公司可根据用户要求，提供不同的生产工艺，并选用不同的规格设备来满足用户的需求，力将先进的生产工艺、优良的设备、完美的服务提供给用户。
- ◆ The processing line has been widely used for drying Marigold, Ginkgo biloba, distiller's grains, sawdust, straw, grass and other flaky, fibrous material
- ◆ Professional manufacture, advanced technology, perfect service
- ◆ Jinling could provide different process, equipment and provide plant layout, reference to meet the requirement of customer, we will try our best to provide you advanced technology, good quality equipment and perfect service.

### 技术参数 Technical parameters

项目 Item	型号 Type	ø1.5×6-10	ø2×12-20	ø2.4×15-20
水份蒸发量 Evaporated moisture ( kg/h )	400-1200	700-1500	1000-2500	
驱动功率 Driving power ( kw )	4×2	5.5×2	7.5×2	
进风温度 Temperature of inlet air ( °C )	450-700	450-700	450-700	

### 流程图 Flow chart

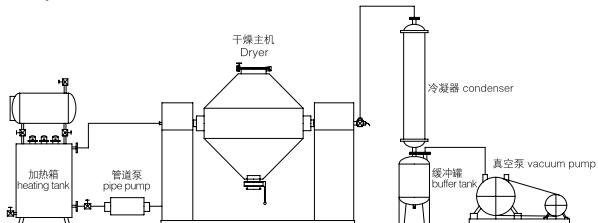




Filtering &amp; Washing &amp; Drying Multifunctional Machine

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### 流程示意图 Flow chart



推荐的工艺安置示范 溶剂回收工艺安置  
Example of installation for recommended technology: installation of solvent recover

### 原理 Principle

◆ 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，向夹套内通入介质进行加热，热量通过罐体内壁与湿物料接触。湿物料吸收后蒸发的水汽，通过真空泵经真空排气管抽走。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。

◆ SZG Vacuum Rotary Dryer is a kind of double conical vacuum dryer. Under the vacuum condition, filling the heat medium into dryer jacket, raw material being dried with the contact of dryer chamber. Evaporated moisture is sucked out by vacuum pump. Due to the rotating of dryer body, raw material is moving inside the chamber, which increase the drying speed and uniformity.

◆ The dryer is suitable for powder and granule form raw material with good fluidity.

### 应用 Applications

- ◆ 本机适用于医药、食品、化工等行业的粉、粒状且流动性较好的物料干燥。
- ◆ 易燃易爆物料的干燥应特别注明。
- ◆ 采用热水或高温导热油加热时，应在订货前说明。如需提供压力容器，订货时另注明。
- ◆ 符合“GMP”要求时另行说明：溶剂回收装置等配套件另行说明。
- ◆ 材质有内外不锈钢，内壁搪瓷，其中不锈钢有304、321、316、2205、哈氏合金等可供选择。
- ◆ 2000型以上建议采用调速控制，轴中心采用一体加工。
- ◆ The dryer is suitable for drying and mixing powder or granule shape raw material of pharmaceutical industry, foodstuff industry, chemical industry and so on.
- ◆ Flammable and explosive material drying should be claimed.
- ◆ When use hot water or heat conducting oil as heating resource, should be claimed before the order. Please claimed when order if need certificate of pressure vessel.
- ◆ Please claim it when need GMP standard. (It should use direct gear drive, closed construction, vacuum cover is sintered metal mesh).
- ◆ Material: SS304/SS316L/SS321/ hastelloy etc, inner wall is enamel for your choice.
- ◆ We recommend being adopt speed adjustable control and central axis integrated procession when the volume of machine is larger than 2000L

### 技术参数 Technical parameters

项目 Item	单位 Unit	机型 Type												
		100	200	350	500	750	1000	1500	2000	3000	4000	5000	6000	8000
名称 Name														
总容积 Total volume	L	100	200	350	500	750	1000	1500	2000	3000	4000	5000	6000	8000
工作容积 Working volume	L	50	100	175	250	375	500	750	1000	1500	2000	2500	3000	4000
加热面积 Heating area	m <sup>2</sup>	1.16	1.5	2	2.63	3.5	4.61	5.58	7.5	10	12	14	16	20
转速 Rotating speed	r/min	6						4	4	3	1-2			
功率 Power	kW	0.75	1.1	1.5	1.5	2.2	3	3	4	5.5	7.5	11	15	22
转架高度 Rotating frame height	mm	1810	1910	2090	2195	2500	2665	2915	3055	3330	3800	4200	4500	5200
罐内设计压力 Inside tank pressure	MPa	-0.09-0.096												



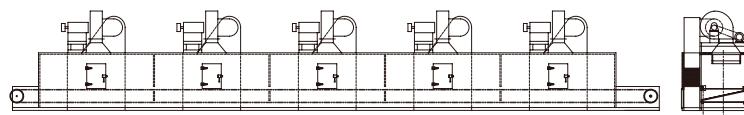
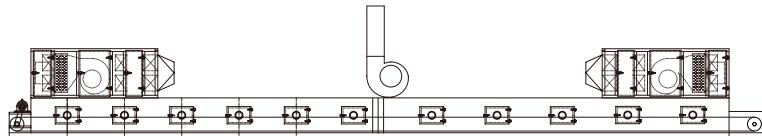
## 主要特点 Feature

- ◆ 可选配不同的加热方式或循环形式；
- ◆ 网带的长度、宽度和层数可根据需要选配；
- ◆ 机械式预脱水过程使叶子表面的大量水份去掉，从而减少了干燥强度、降低了能耗；
- ◆ 特殊的热风干燥系统，增加物料的穿透性和干燥速率；
- ◆ 网带速度的调节和不同区间的温度控制，有效保证了干燥时间；
- ◆ 选配强磁去铁装置，可有效除去金属杂质。
- ◆ Different heating and circulation method is available for choice.
- ◆ Length, width and layer quantity of belt is designed based on production requirement.
- ◆ The machine pre-dehydration process could remove massive moisture on leaf surface, thus reduced the drying strength, and reduced the energy consumption.
- ◆ Special hot air drying system, increase material penetrability and drying rate.
- ◆ The adjustment of belt speed and the different section temperature control, it guaranteed the drying time and material quality and color.
- ◆ strong magnetism iron removal device is available for choice, it could remove metal impurities effectively.

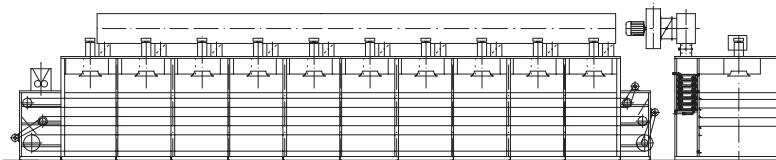


## 技术参数 Technical parameters

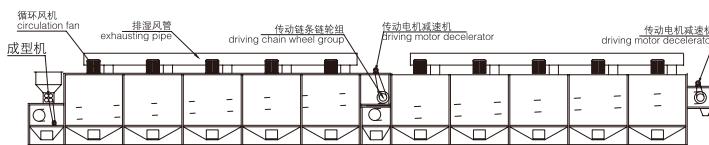
型号Type	1.2-8	1.2-10	1.6-8	1.6-10	2-8	2-10
单元数Unit number	4	5	4	5	4	5
带宽Belt width (m)	1.2	1.2	1.6	1.6	2	2
干燥段长Drying section length (m)	8	10	8	10	8	10
铺料厚Thickness of the material(mm)	10-80					
使用温度Temperature (°C)	60-150					
蒸汽压力Steam pressure(Mpa)	0.2-0.8					
蒸汽耗量Steam consumption (kg/h)	120-300	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 strength (kgH <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)	8.8	11	12	15	16	20
设备总功率Total power of the dryer(kw)	10.1	12.3	13.3	16.3	17.3	21.3



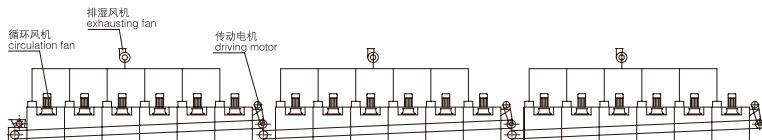
三层带式生产线 Three layers belt dryer



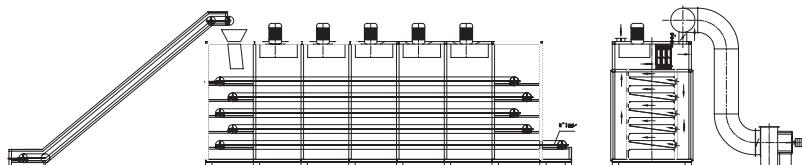
颜料带式生产线 Pigment belt dryer



脱水蔬菜生产线 Fruit &amp; vegetabal belt dryer line



五层带式生产线 Five layers belt dryer



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## GMP非标型、CT-C系列热风循环烘箱

GMP, CT-C Hot-air Tray Dryer

### 原理 Principle



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◆ 本产品经过几次升级换代，达到了国内外先进水平。它是利用蒸汽或电为热源，用轴流风机与热交换器以对流的方式加热空气。热空气流经烘盘与物料进行热传递。新鲜空气从进风口进入烘箱进行补充，再从排湿口排出，不断的补充新鲜空气与不断的排出湿热空气，这样来保持烘箱内适当的相对湿度。本烘箱最大的特点是大部分热风在箱内进行循环从而增加了传热，节约了能源。

◆ The CT-C Tray dryer support to use steam, electric, gas or oil as heating resource . The laminar air flow passes through the drying trays and carry out the heat transmission to drying raw material. Fresh air is introduced, hot damp air is discharged continuously as the same time. In this way, Appropriate RH in dryer can be maintained. The ultimate advantage of dryer is that most hot air is re-cycled inside, it increases heat transmission and saves energy. It makes heat efficiency of dryer raise from 3-8% of traditional drying oven up to about 35-50%. The dryer adopt reinforced ventilation to decrease temperature difference. User can adjust air distributor in order to make the temperature difference at the best state.

◆ CT-C tray dryer adopt low noise high temperature resistant axial fan and also equips with automatic constant temperature control system, computer control system for customer's choice.

### 说明 Explanation

- ◆ 加热热源蒸汽、电、导热油、汽电两用、微波辅加热、天然气或柴油直接加热型等供用户选择。
- ◆ 使用温度：蒸汽加热 50–150°C。
- ◆ 用电、远红外温度 50–350°C。
- ◆ 可配套自控系统、PLC 控制系统、记录仪等供用户选择。
- ◆ 常用蒸汽压力 0.2–0.8MPa(2–8kg/cm<sup>2</sup>)
- ◆ 配用电加热按 I 型计算 15kw、禁止使用易燃易爆物料。
- ◆ 特殊规格和要求在定货时表明。
- ◆ 非标烘箱不同要求的材质，另行设计选配。
- ◆ 使用温度大于 140°C 或小于 60°C，要在订货时注明。
- ◆ 本厂出厂的烘车，烘盘尺寸统一，可以互换。
- ◆ 烘盘尺寸 :460x640x45mm。
- ◆ 防爆电机和电柜另行确认。
- ◆ 如要求 GMP 烘箱，请在订货时说明。
- ◆ There are four kinds of heating resource for choice: steam, electricity, heat conducting oil, both steam and electricity.
- ◆ The temperature (steam heating): 50–150°C .
- ◆ The temperature (when using electricity and far-infrared): 50–350°C
- ◆ The automatic control system or the computer control system is selectable.
- ◆ Commonly used steam pressure 0.2–0.8 MPa (2–8kg/cm<sup>2</sup>).
- ◆ Standard electric heating is 15kw for type CT-1, CT-C-1, easy flammable and explosive material is forbidden.
- ◆ The special requirements should be indicated at the time of order.
- ◆ The price for the non-standard oven should be consulted.
- ◆ If the operation temperature is more than 140°C or less than 60°C it should be indicated at the time of order.
- ◆ The oven and baking tray made by our factory are uniform in the dimensions, and can be exchanged with each other.
- ◆ Drying tray dimensions: 460\*640\*45mm
- ◆ Explosive-proof motor and control cabinet as option.





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防爆电柜示意图  
schematic diagram of explosion-proof electric control cabinet

### 技术参数 Technical parameters

型号规格 Type	每次干燥量 Capacity (kg/batch)	配用功 率Power (kw)	耗用蒸汽 Steam consumption (kg/h)	散热面积 Heating radiation area(m <sup>2</sup> )	风量 Amount of air (m <sup>3</sup> /h)	上下温差 Temperature gap between top and bottom (°C)	配用烘盘 Drying tray (只)	外形尺寸 Overall size ( LxWxH ) mm	配套烘 车Drying Trolley (辆) (set)
GMP/CT-C-0	25	0.45	5	5	3400	±2	16	1480 x 1100 x 1750	0
GMP/CT-C-IA	50	0.45	10	10	3400	±2	24	1400 x 1200 x 2000	1
GMP/CT-C-I	100	0.45	18	20	3450	±2	48	2300 x 1200 x 2000	2
GMP/CT-C-II	200	0.9	36	40	6900	±2	96	2300 x 2200 x 2000	4
GMP/CT-C-III	300	1.35	54	120	10350	±2	144	2300 x 3220 x 2000	6
GMP/CT-C-IV	400	1.8	72	160	13800	±2	192	4460 x 2200 x 2290	8



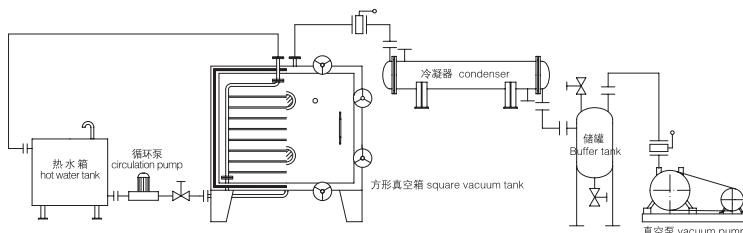
## YZG/FZG 系列真空干燥机

YZG/FZG Vacuum Tray Dryer



热水加热、溶剂回收真空干燥系统图

Diagram of vacuum tray dryer system



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### 特点 Features

- ◆ 真空下物料的沸点降低，使干燥的物料受热更加均匀。
- ◆ 热源可采用低压蒸汽导热油、电，热水方式加热。
- ◆ 可另行选配不同形式的真空泵。
- ◆ 在干燥前可进行消毒处理，干燥过程中无任何不纯物混入，符合 GMP 要求。
- ◆ 属于静态真空干燥器，故干燥物料的形体不会损坏。
- ◆ Under the vacuum condition, the boiling point of raw material will decrease and could heated more uniform.
- ◆ Hot water, steam and thermal oil are available heating resource.
- ◆ The heat loss is less.
- ◆ Operated in closed vacuum condition, there has no cross-contamination, which meet GMP standard.
- ◆ Static drying, raw material could keep its integrity during drying.

### 原理 Principle

- ◆ 所谓真空干燥，就是将干燥物料放在烘盘内同时处在真空条件下，进行传热加热干燥，并利用真空泵进行抽气抽湿，加快了干燥速率。
- ◆ 如采用冷凝器，物料中的溶剂可通过冷凝器加以回收；
- ◆ The dryer adopt vacuum pump to suck out most of the air and evaporated moisture out. Filling hot water, steam or thermal oil inside the dryer, raw material is putted into drying tray and dried under vacuum environment.

### 技术参数 Technical parameters

规格 Specification	名称 Name							
	YZG-600	YZG-1000	YZG-1400	FZG-15	FZG-20	FZG-40	FZG-60	FZG-99
箱内尺寸(约) Inner chamber size (mm)	Ø600x976	Ø1000x1527	Ø1400x2054	1500x1400 x1220	1660x1550 x1420	1660x1550 x1756	2130x1540 x1633	1600x2200 x1700
烘架层数 Layers of drying shelf	4	6	8	8	8	10	9	11
层间距离 Space of layer(mm)	81	102	102			122		
烘盘尺寸 Size of tray (mm)	310x600x45			460x640x45				
烘盘数 Quantity of tray	4	12	32	32	48	60	72	99
烘架管内使用压力 Working pressure in drying shelf (MPa)					≤0.784(8kg/cm <sup>2</sup> )			
箱内温度 Temperature in chamber(°C)						≤150		
箱内空载真空度 Vacuum degree in chamber(Torr)						≤30		

上述数据，仅供参考，如有特殊要求，本厂提供设计，咨询服务。  
The above parameters are only for reference.



**环保工程事业部**

***Environmental Protection***



### 一、主要处理污泥种类

#### First. Types of Sludge

生活污泥、化工污泥、白泥、油泥、纺织污泥、纸浆污泥、颜料污泥、电镀污泥等。

Municipal Sludge, Chemical Sludge, Kaolin Sludge, Oil Field Sludge, Textile Sludge, Paper Pulp Sludge, Pigment Sludge, Electroplating sludge etc.

### 二、污泥的成份：

#### Second. Component Analysis

污泥主要由低级的有机物如氨基酸、腐植酸、细菌及其代谢产物、多环芳烃、杂环类化合物、有机硫化物、挥发性异臭物、有机氟化物等组成，此外，还含有无机物和汞、镉、铅等重金属物质。污泥是污水处理产生的容积最大的副产品，一般含水率为80~90%，每万立方米污水处理量可产生10吨以上的污泥（按含水率80~90%的污泥计算）。

Sludge is mainly composed of low organic matter such as amino acids, humic acids, bacteria and their metabolites, polycyclic aromatic hydrocarbons, heterocyclic compounds, organic sulfur compounds, volatile organic compounds, organic fluoride and so on. In addition, it also contains inorganic and mercury, cadmium, lead and other heavy metals. The sludge usually contains 80-90% moisture content, every ten thousands cubic meter sewage water could generate more than 10 tons sludge.

### 三、污泥的主要特性

#### Third. The Characteristics of Sludge

一般污水处理厂产生的污泥为含水量在65~90%不等的固体或流体状物质，其中的固体成分主要由有机残片、细菌菌体、无机颗粒、胶体及絮凝所用药剂等组成，是一种以有机成分为主，组分复杂的混合物，其中包含有潜在利用价值的有机质、氮、磷、钾和各种微量元素。

##### (1) 物理特性

污泥组成为水中悬浮固体经不同方式胶结凝聚而成，结构松散，形状不规则，比表面积与孔隙率极高（孔隙率常大于99%），含水量高，脱水性差。外观上具有类似绒毛的分支与网状结构。

##### (2) 化学特性

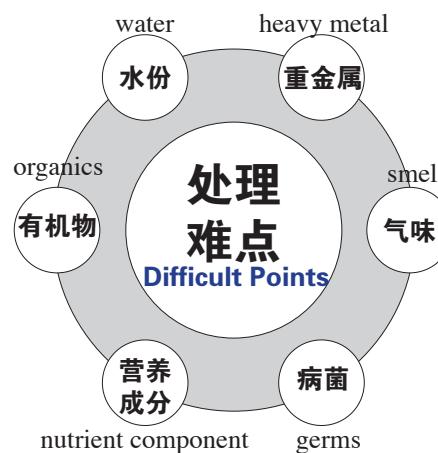
生物污泥以微生物为主体，同时包括混入生活污泥泥沙、纤维、动植物残体等固体颗粒以及可能吸附的有机物、金属、病菌、虫卵等物质。污泥中也含有植物生长发育所需的氮、磷、钾及维持植物正常生长发育的多种微量元素和能改良土壤结构的有机质。

##### (3) 污泥中水分的存在形式及其性质

污泥中的水分有四种形态：表面吸附水、间隙水、毛细结合水和内部结合水。毛细结合水又分为裂隙水、空隙水和楔形水。表面张力作用吸附的水分为表面吸附水。间隙水一般要占污泥中总含水量的65%~85%，这部分水是污泥浓缩的主要对象。毛细结合水：浓缩作用不能将毛细结合水分离，分离毛细结合水需要有较高的机械作用力和能量，如真空过滤、压力过滤、离心分离和挤压可去除这部分水分。各类毛细结合水约占污泥中总含水量的15%~25%。内部结合水：指包含在污泥中微生物细胞体内的水分，含量多少与污泥中微生物细胞体所占的比例有关。去除这部分水分必须破坏细胞膜，使细胞液渗出，由内部结合水变为外部液体。内部结合水一般只占污泥中总含水量的10%左右。

### 四、污泥的处理难点

#### Fourth. Difficult Points of Sludge



Sewage sludge refers to the residual, semi-solid material that is produced as a by-product during sewage treatment of industrial or municipal wastewater. The term septage is also referring to sludge from simple wastewater treatment but is connected to simple on-site sanitation systems, such as septic tanks.

Class A sludge is typically dried and pasteurized, and is also known as "exceptional" quality.

Class B includes all sludge not classified as Class A. Class B sludge is typically "undigested" and is volatile.

Both classes of sludge may still contain radioactive or pharmaceutical wastes

The amount of sewage sludge produced is proportional to the amount and concentration of wastewater treated, and it also depends on the type of wastewater treatment process used. It can be expressed as kg dry solids per cubic metre of wastewater treated. The total sludge production from a wastewater treatment process is the sum of sludge from primary settling tanks (if they are part of the process configuration) plus excess sludge from the biological treatment step. For example, primary sedimentation produces about 110–170 kg/ML of so-called primary sludge, with a value of 150 kg/ML regarded as being typical for municipal wastewater in the U.S. or Europe. The sludge production is expressed as kg of dry solids produced per ML of wastewater treated; one mega litre (ML) is 10<sup>3</sup> m<sup>3</sup>. Of the biological treatment processes, the activated sludge process produces about 70–100 kg/ML of waste activated sludge, and a trickling filterprocess produces slightly less sludge from the biological part of the process: 60–100 kg/ML. This means that the total sludge production of an activated sludge process that uses primary sedimentation tanks is in the range of 180–270 kg/ML, being the sum of primary sludge and waste activated sludge.



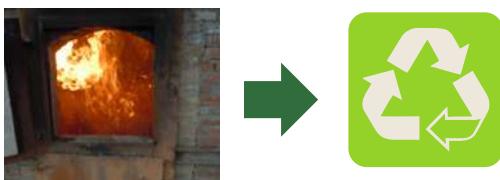
## 五、污泥处理的目标

## Fifth. Purpose of Sludge Processing

## 一、减量化 First. Reduction



## 二、无害化 Second. Harmlessness



## 三、资源化 Third. Resource Utilization



污泥的脱水干化、焚烧是目前污泥处理的主要方法。已经逐步成为处理污泥的主流之一，具有突出优点。污泥的预脱水及尾气处理的方式较多，可根据不同的产量要求等选配。公司经过多年实际操作经验，结合国情和性价比，最终选定桨叶、带式、回转滚筒三大系列设备作为污泥干化的主要装备。基本涵盖各种污泥的干化要求，进行了一系列的自主创新、改进和优化设计、制造加工，成立目前国内污泥干化装备行业顶级制造企业。以下简单介绍三种干化及焚烧系统的工艺及主要特点：

Sludge De-watering, drying and incineration is becoming the most popular way to processing sludge. This method has obvious advantages. Combined the sludge drying situation in China and overseas countries, sludge paddle dryer, belt dryer and rotary kiln dryer could cover all sludge drying requirement. Based on original technology, we make a lot improvements on dryer specially based on drying sludge:

**一、污泥专用桨叶干化装置**—主要适用于经过压滤后，杂质少的污泥及腐蚀性较大的各种污泥处置，采用蒸汽、导热油介质的热传导型干化装置。

First. Sludge Paddle Dryer Is suitable for mechanical de-watered sludge which contains less debris or has strong corrosion, It Is a kind of heat contacting dryer which adopt steam or thermal oil as heating medium.



**二、污泥专用回转滚筒干化装置**—主要适用于腐蚀性较大及大批量处置污泥干化的主要装备。采用热风或废热气作为主要介质，直接加热排放。Second. Sludge Rotary Kiln Dryer Is suitable for strong corrosion sludge with massive production requirement. It Is a convective dryer which adopt (waste) hot air as heating resource.



**三、污泥专用带式干化装置**—主要适用于终水分较低、腐蚀性较小、异形的污泥等干化的主要装备。采用热风或废热作为主要介质循环加热后排放。

Third. Sludge Belt Dryer Is suitable for drying less corrosive sludge, and the situation when the final dried sludge requires very low moisture content. It Is a convective dryer which adopt low temperature (waste) hot air.



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# 污泥干化、焚烧成套处理技术与装备

Sludge Drying and Incineration System

## 污泥专用圆盘（桨叶）干化系统 Sludge Double Shaft Paddle Drying System

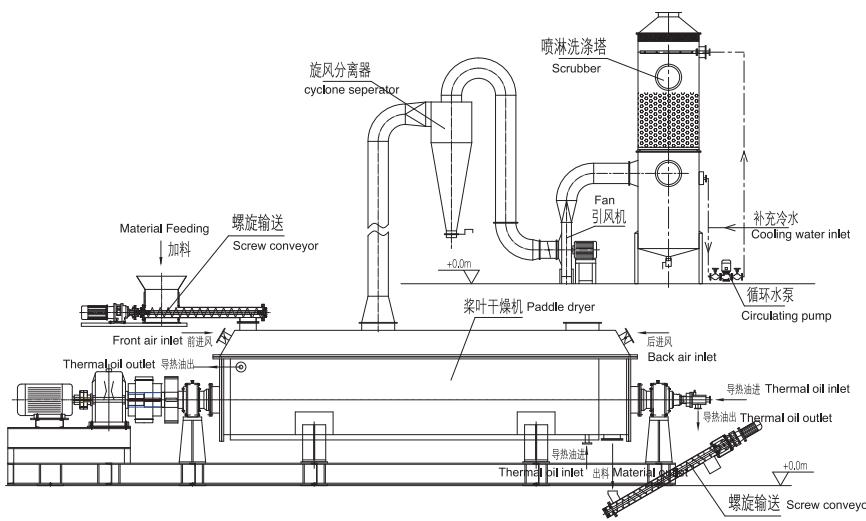


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### 桨叶干化简介 Brief Introduction

- ◆ 桨叶式干燥机是一种在设备内部设置搅拌桨，叶片分圆盘型、螺旋形和楔型三种方式，使湿物料在桨叶的搅动下，与加热载体的热表面充分接触，从而达到干燥目的，结构形式一般为卧式，单轴、双轴或四轴。桨叶式干燥器分为热风式和传导式。热风形式即通过热载体（如热空气）直接与被干燥的物料接触并进行干燥，传导形式即热载体并不与被干燥的物料直接接触，而是热表面与物料传导接触并进行干燥。污泥覆盖桨叶并与桨叶面的相对运动产生洗刷作用。
- ◆ 空心轴上密集排列着空心桨叶，热介质经空心轴流经桨叶。单位有效容积内传热面积很大（一般单台双轴桨叶面积≤200m<sup>2</sup>左右；单台四轴桨叶面积≤400m<sup>2</sup>左右），热介质温度从60~320℃，可以是水蒸气，也可以是液体型：如热水、导热油等。间接传导加热，热量均用来加热物料，热量损失仅为通过器体保温层和排湿向环境散热。

### 桨叶干化工艺 Layout Diagram



常州市首台（套）重大装备及关键部件

研制单位：常州市金陵干燥设备有限公司  
装备名称：空心桨叶干燥机（试验型）

常州市经济和信息化委员会  
二〇一一年十二月

- ◆ Sludge paddle dryer dried through heat contacting. There are three types of paddle, round plate type, wedge type and hollow screw type. There could be two shafts or four shafts structure.
- ◆ Largest two shaft paddle dryer could be designed with 200 square meter heating area, largest four shaft type could be 400 square meter heating area.
- ◆ Heating resource could be hot water, steam or thermal oil. Temperature of heating medium is available ranges from 60~320 centigrade.
- ◆ Sludge paddle dryer is very compact with less heat loss.



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污泥专用圆盘（桨叶）干化系统  
Sludge Double Shaft Paddle Drying System

性能特点 Features

- (1). 设备结构紧凑，装置占地面积小。干燥所需热量主要是由排列于空心轴上的空心桨叶壁面提供，而夹套壁面的传热量只占少部分。所以单位体积设备的传热面大，可节省设备占地面积，减少基建投资。
- (2). 热量利用率高。污泥干燥机采用传导加热方式进行加热，所有传热面均被物料覆盖，减少了热量损失；热量利用率可达 85% 以上。
- (3). 桨叶具有一定的洗刷能力，可提高桨叶传热作用。旋转桨叶的倾斜面和颗粒或粉末层的联合运动所产生的分散力，使附着于加热斜面上的污泥带有清理功能。另外，由于两轴桨叶反向旋转，交替地分段压缩和膨胀搅拌功能，传热均匀，提高了传热效果。
- (4). 可实现连续化、全封闭作业，降低人工及粉尘排放。
- (5). 尾气处理方面系统一般采用常压或负压两种形式，根据不同的情况尽可能减少排气风量，从而降低尾气处理成本，对于污泥蒸发的臭味可另采用除臭系统处理后达标排放。
- (6). 本公司针对有毒及含有溶剂的高危化工污泥等可设计成高真空桨叶干燥进行低温干化工艺（已申请发明专利）。这样不仅可以直接回收溶剂，还可以大大降低废气排放量，安全性及环保性能大大提高。

1. Drying efficiency could arrive 80%-90%. Heat transfer coefficient K is 100~300Kcal/h.m<sup>2</sup>°C . Evaporation capacity is 10~30Kcal/h.m<sup>2</sup>.
2. The dryer support continuous operation and batch operation, support vacuum drying for thermal sensitive material and normal drying. Support heating, evaporating and cooling.
3. Thermal oil, steam, hot water and chilling fluid are available to be used as heating/cooling resource.
4. Special structure of paddle which has large heating area.
5. Structure of dryer is very compact, almost of the dryer could be transported by normal container.
6. We developed High Vacuum Paddle Dryer which is suitable for hazardous waste or the waste need to recover solvent. We own the patent of high vacuum paddle dryer.



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桨叶污泥干燥机性能参数（参考） Parameters of Sludge Paddle Dryer (For Reference Only)

配置 Configuration	双轴 Double shaft										四轴 Four shaft		
	5型	15型	20型	40型	60型	80型	100型	120型	150型	200型	300型	400型	500型
传热面积 Heating area m <sup>2</sup>	5	15	20	40	60	80	100	120	150	200	300	400	500
主机功率 Power of main motor kw	4	15	18.5	30	37	45	55	75	90	110	180	220	264
备注 Note	根据不同污泥的特性和要求采用不同的材质及配置 Adopt different construction material and configure based on different feature of sludge												



### 污泥专用圆盘（桨叶）干化系统 Sludge Double Shaft Paddle Drying System

#### 关键技术创新点及改进设计

Innovation Technology and Reforming Design

- (1)、公司吸收国外圆盘桨叶技术理念，创新设计第二代双轴或四轴结构形式，并已大批量投入生产应用；
- (2)、轴承座整体设计及整体车加工，可选择增设冷却装置；
- (3)、筒体、轴承、轴均设计热膨胀自由滑动，主机整体框架设计；
- (4)、整体加强型设计，强度及使用寿命更有保障；
- (5)、桨叶片为整体焊接，强度更好；刮板根据物料状态可增设，剪切和翻抄性能更佳；
- (6)、结构设计更紧凑，单台桨叶面积可设计 $\leq 500m^2$ 的大型桨叶干燥机；
- (7)、直联传动结构设计，运转更平衡，降低链条传动带来的摆动及松紧问题；
- (8)、金陵公司特有的加工及装配工艺，使设备的同心度更有保障，两端密封性能更优越；
- (9)、可根据不同情况，设计半圆管夹套加热及整体夹套加热型；
- (10)、可根据物料要求，设计不同的出料形式，从而保证物料干燥停留时间，进一步提高综合效能。
- (11)、专用防架桥进料设计。

1. Combined with overseas' technology, our company developed new two shaft and four shaft structure paddle dryer.
2. The dryer adopt one bearing seat in whole piece, cooling device is available for choice.
3. Drying chamber, bearing and shaft is available for heat expansion. The dryer is designed with frame which could prevent deforming during transport and lift.
4. Whole body is strengthened, which could promise a longer life span
5. The plate paddle adopt integral welding which has better strength. Quantity and form of scraper on paddle will be designed according to the feature of raw material.
6. Overall size of paddle dryer is very compact, a single unit (with two shaft) could designed with max  $250m^2$  heating area.
7. Driving through direct coupling, which is more stable. Direct coupling could prevent swaying or loosen problem coursed of chain driving.
8. Special installation process makes our dryer has better shaft concentricity, sealing on two ends are better.
9. Both semicircular pipe jacket or whole body jacket is available for choice.
10. Different discharging method is available in design according to the features of different raw material. Necessary drying retention time could be promised.
11. Special design for preventing raw material blocking up during feeding.



电镀污泥干化生产线  
Electroplating Sludge Drying Processing Line



鸡粪干化生产线  
Chicken Manure Drying Processing Line



生活污泥干化生产线  
Municipal Sludge Drying Processing Line



化工污泥干化生产线  
Chemical Industry Sludge Drying Processing Line

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### 污泥专用真空圆盘（桨叶）干化系统

### Sludge Vacuum Paddle Drying System



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◆ 真空圆盘桨叶干化系统由密封进料系统、真空圆盘桨叶干化机、密封出料系统、尾气处理系统等子系统组成，系统通过控制可燃组分、控温、控压、控氧的方式实现了运行的安全控制，针对含油含有机溶剂的污泥干化回收等有较高的适用性，是目前污泥干化工艺中安全性最高的系统之一。

◆ 本产品已申请发明专利。设备基于常压干化设备，改进了设计，增强了系统的耐压能力，实现了系统的高负压环境，有效地防止了爆燃气体在干化仓内部积聚。

◆ Sludge Vacuum Paddle Dryer system is consisted of sealed feeding system, paddle dryer, sealed discharge system, tail air processing system etc. The whole system could provide highest security through the control of oxygen content, temperature and pressure. It is specially suitable for drying solvent contained, flammable or explosive sludges, such as oily sludge, coal chemical sludge etc.

◆ The dryer is patented. Its design has been improved based on atmospheric pressure type dryer.



真空圆盘型桨叶 Round Plate Paddle



## 污泥干化、焚烧成套处理技术与装备

Sludge Drying and Incineration System

### 污泥专用带式干化系统

Sludge Belt Drying System



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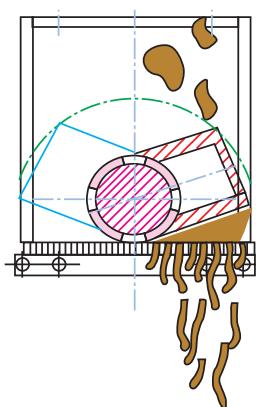


### 系统简介 Brief Introduction

- ◆ 脱水污泥通过进料系统送至挤条机均匀铺设在专用干化带上，干化带将污泥送入装置的主体结构；物料由加料器均匀地铺在网带上，网带采用不锈钢输送翻板，由传动装置拖动在干燥机内移动。带式干化机由若干个独立的单元段组成。每个单元段包括循环风机、加热装置、独立的新鲜空气抽入系统和尾气排出系统。对干燥介质、产量、温度、湿度和尾气循环量等操作参数，可进行独立控制，从而保证带干机工作的可靠性和操作条件的优化。该系列可实现连续低温干化，具有操作简单，能耗低，效能较高，处理量大等特点。
- ◆ 尾气可选择设计经过热能回收或冷凝降温后，排放气体通过处理，吸收和氧化大部分的有机物质，另外一些碱性分子（如胺）在这个阶段也被去除。系统可选配组合式废气洗涤单元（酸洗 / 碱洗 / 氧化洗涤、自动制备和配料单元（酸 /  $H_2SO_4$ ）。
- ◆ Sludge distributed on belt conveyor through the extruder. Belt conveyor transport the sludge into belt dryer and distribute it uniformly. The belt on dryer adopt reversible plate which is driven to moving forward by driving device.
- ◆ The dryer is consisted of several independent drying units, each unit equipped with circulation fan, heating device etc. Each unit could control air amount, temperature, humidity and circulation amount independently to realized the best operation condition.

The dryer could drying in low temperature with continuous production , it has advantages of simple operation, low energy consumption, high efficiency and large scale production etc.

- ◆ Tail air will be processed by incineration or condensing and chemical formula.





## 污泥专用带式干化系统

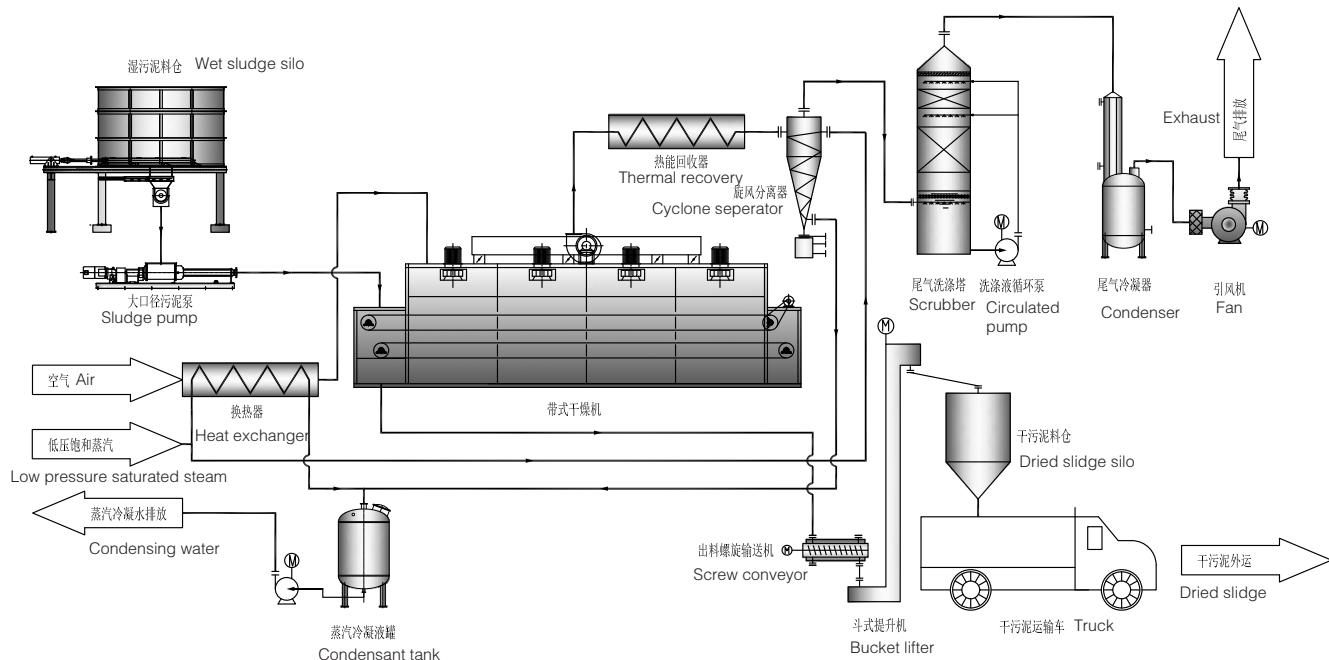
### Sludge Belt Drying System

#### 性能特点 Features

- 1) 高效节能, 可利用废热循环加热。
- 2) 连续大批量生产, 操作简单, 运行费用低。
- 3) 可实现自动化运行, 安全可靠。
- 4) 料层厚度、输送速度、运行温度均可调配, 适用范围广。
- 5) 运行成本低, 热效率高, 特别适用于终水份 <20% 的污泥烘干。
- 6) 可根据不同处理量及污泥水分调节干化模块数量及结构形式。

- 1) Sludge belt dryer is high efficient, it is available to adopt circulation hot air
- 2) Continuous production, simple operated and low cost
- 3) It is available for automatic operation.
- 4) Sludge thickness, conveying speed and drying temperature are adjustable
- 5) Low operation cost and high efficiency, it is suitable for drying sludge which final moisture content requirement less than 20%.
- 6) The quantity and type of drying section could be specially designed according to the feature of sludge.

#### 带式干化工艺 Layout Diagram



#### 系统配置 Parameters table of sludge belt dryer

编号	30t/d	50t/d	75t/d	100t/d
进料含水率 Moisture content of inlet material %		80		
出料含水率 Moisture content of outlet material %		30		
物料出温 Temperature of outlet material °C		80		
循环温度 Tempertature of circulation air °C		130		
尾气温度 Tempertature of tail air °C		80		
小时蒸发量 Capacity of water evaporation kg/h	887.5	1479	2218	2958
干燥面积 Drying area m <sup>2</sup>	60	100	150	200
装机功率 Installation power kw/h	120	140	170	200



## 污泥干化、焚烧成套处理技术与装备

Sludge Drying and Incineration System

### 污泥专用滚筒干化系统 Sludge Rotary Kiln Drying System

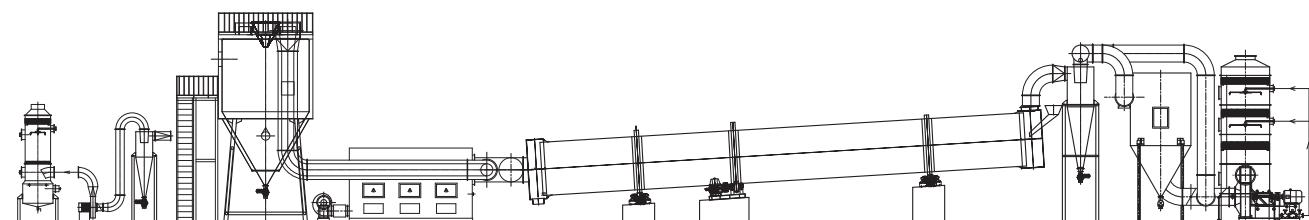


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#### 回转滚筒干化工艺 Drying Process of Sludge Rotary Kiln Dryer

◆ 废热空气或换热空气进入转筒干燥器内，在通道中直接与湿污泥传热传质，配套专用破碎装置（特殊结构设计），使污泥中的水分快速蒸发，污泥颗粒较小的随气体一起由外通道排出干燥器收集，而较大的污泥颗粒在干燥器中停留的时间较长，直至干化完成。部分废气抽出，经除臭器处理达到大气排放标准后（或经水沫除尘降温后）排入大气中。

Wet sludge (20-40% solid content) was dispersed inside the rotary kiln dryer, and contact with (waste) hot air. Moisture will be evaporated very fast, small particle sludge will be dried and collected by collection system, sludge in large particle has longer drying retention time. Tail air will be discharged into atmosphere after being processed.





## 污泥专用滚筒干化系统

### Sludge Rotary Kiln Drying System

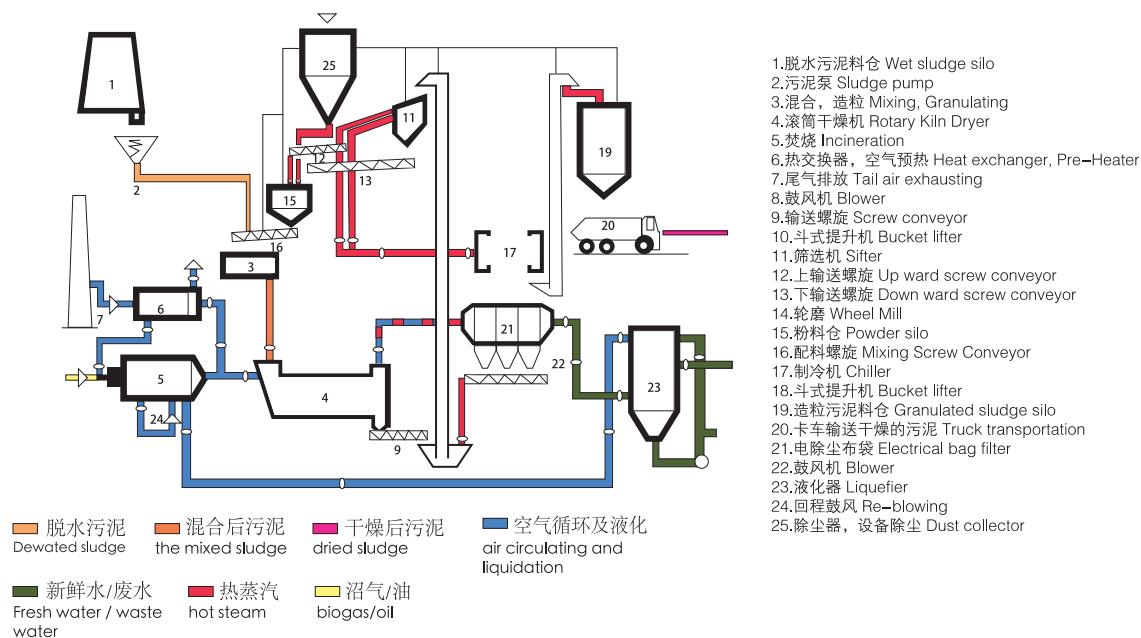
#### 关键技术创新点 Technical Innovation

- (1) 根据污泥干化过程中的特性及状态，分段采用不同的分散破碎装置，大大提高干化效能。
- (2) 采用特殊密封材料，保证密封效果，且寿命大大提高
- (3) 轴承采用冷却装置，降低轴承使用温度，延长使用寿命；
- (4) 可采用间接加热方式，减少排风量及提高热利用率；
- (5) 根据不同状态的物料采用不同抄板形式，降低粘结程度；
- (6) 根据物料特性采用不同的进料方式，以防止进料堵塞。

- (1) Adopt different disperser and lifter on different part of kiln dryer based on drying condition of sludge
- (2) Adopt special sealing to obtain better effect and longer life span
- (3) There has cooling device of bearing, which lengthen its life span
- (4) Indirect heating rotary kiln dryer is available as an option.
- (5) Adopt different disperser based on different features of sludge
- (6) Adopt different feeding method based on different feature of sludge.



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#### 滚筒污泥干燥机性能参数 (参考) Parameters of sludge rotary kiln dryer (for reference)

干燥 条件 Drying Condition	进料含水率 Primary moisture content %	80		
	出料含水率 Final moisture content %	40		
	物料出温 Product temperature °C	90		
	进风温度 (配热风炉) Inlet air temperature (equipped with furnace) °C	500		
	出风温度 Outlet air temperature °C	100~130		
物料 数据 Parameters	加料量 Feeding capacity t/d	50	100	200
	水份蒸发量 Evaporation amount t/d	~33	~66	~132
	出料量 Output capacity t/d	~17	~34	~68
	设备型号 Model	ø1500×12000	ø2000×16000	ø2800×20000
	装机功率 Installation power kw/h	~70	~110	~200
	主机外形尺寸 (参考) Over all size (for reference)mm	24000×3500×5500	34000×4000×6500	44000×5000×8500



### 危险废物焚烧成套处理技术与装备

### Sludge Drying and Incineration System

#### 概述 Descriptions

焚烧工艺目前国内主要采用回转窑焚烧技术和流化床焚烧技术。广泛应用于焚烧各种类型固体、半固体或液体废弃物，尤其适用于含水率较高、难处理的工业废弃物及危险废弃物。

The most two popular incineration process in China are rotary kiln incinerator and fluidized bed incinerator. They are widely used in solid, semi-solid and liquid waste incineration, particularly they are suitable for high moisture content and hazardous waste incineration.

#### 原理 Principle

物料在回转窑内完成干燥、燃烧、热解过程，窑尾设在二燃室下部，有完成独立的自支撑机构，分别与二燃室和刮板出渣机连接，燃尽后的炉渣经水淬后由刮板机排出，同时也利于将回转窑烟气导向二燃室。危废在回转窑中焚烧产生的烟气进入二燃室进行再次燃烧，二燃室燃烧温度达 1100°C – 1300°C。为充分回收利用烟气的热能，焚烧后的高温烟气经过热能回收装置回收热能。为避免烟气中的二噁英低温再合成，极冷塔急冷烟气在 1S 内，将烟气从 500°C 降到 200°C 以下，避开二噁英的合成区域。然后经干法脱酸、布袋除尘、湿法脱酸、活性炭吸附、烟气加热、进入烟囱，经烟气在线监测系统，达标排放。

The material is dried, incinerated and pyrolysed in rotary kiln incinerator. The discharge end of kiln is underneath secondary combustion chamber, it has independent bracket device, and connected with secondary combustion chamber as well as scraper discharger. Incinerated ash is discharged by scraper after water chilled. The burnt smoke will be incinerated again in secondary combustion chamber, in where the temperature is 1100-1300 Centigrade. Incinerated smoke will be recovered. Cooling tower will decrease the smoke temperature from 500 Centigrade to 200 Centigrade within 1 second to prevent forming of Dioxin. The qualified tail air could be discharged into atmosphere after processed by dry-process deacidification, dust collector, wet process deacidification, active carbon tank, re-heat system and monitoring system.

#### 主要特点 Features

1. 适用范围广，运行稳定可靠。
2. 操作维护简单，使用寿命长。
3. 自动化程度高，采用智能化中央监控系统。兼容数据网络实时传输和处理。
4. 可进行余热利用。
5. 焚烧效率高，有害成分去除分解率可达 99.99% 以上，能满足彻底无害化的要求。

1. Widely application and stable operation.

2. Simple maintenance and long life span.

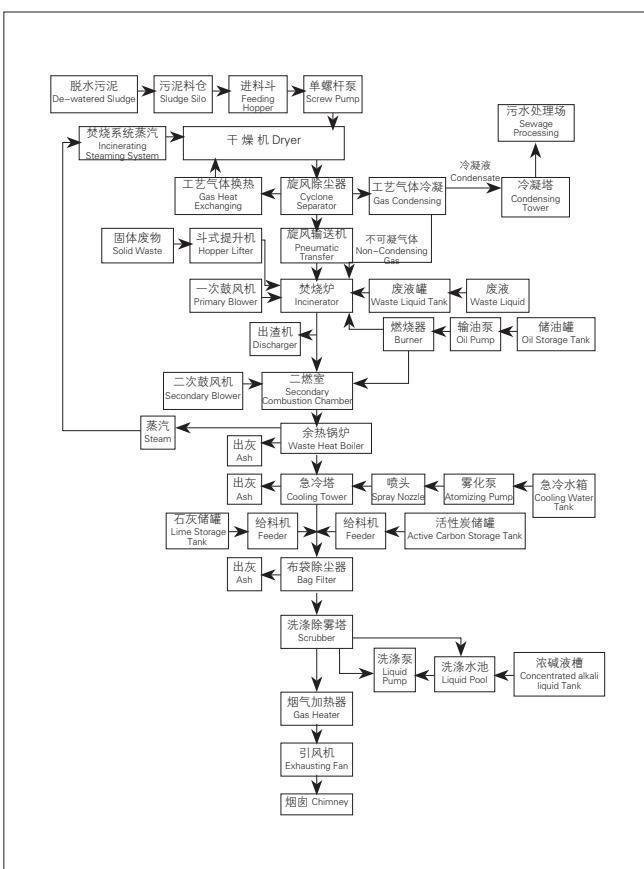
3. It adopt intelligent centralized monitoring system with high level of automation. The system support to connect with internet.

4. Waste heat utilization

5. High efficiency, it could remove 99.99% harmful components.

#### 污泥“干化 – 焚烧”处理工艺流程图（参考）

Sludge “Drying–Incineration” Process (For Reference)

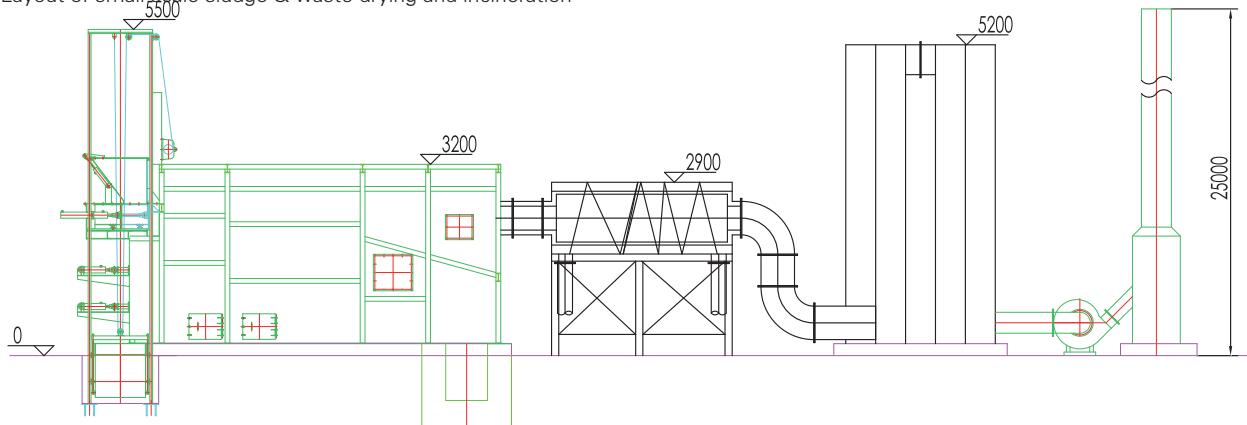




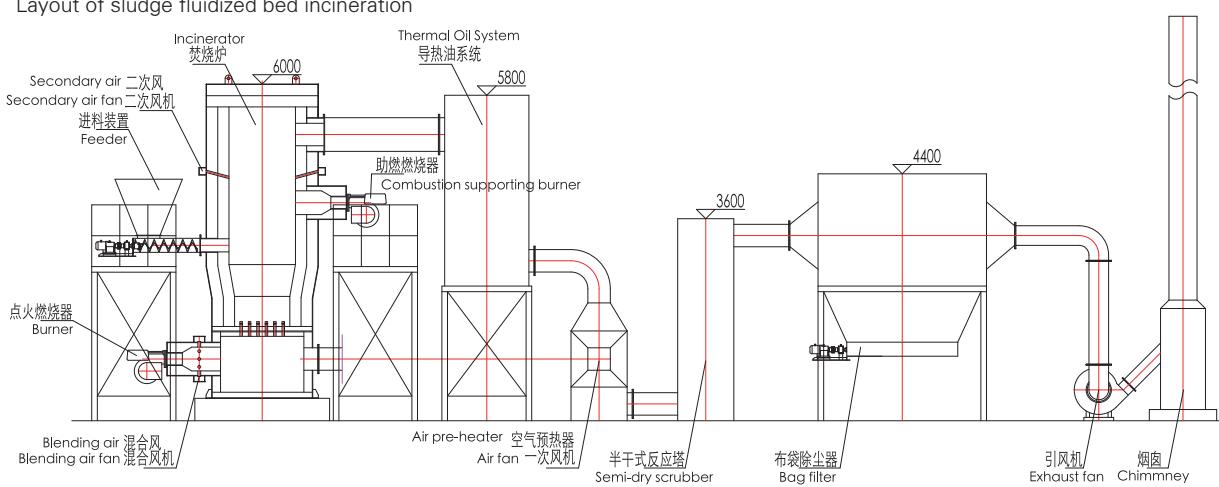
危险废物焚烧成套处理技术与装备  
Sludge Drying and Incineration System



小型污泥垃圾干化焚烧一体机布置图  
Layout of small scale sludge & waste drying and incineration



污泥流化床焚烧工艺流程图  
Layout of sludge fluidized bed incineration





◆ 中小型市政水处理厂污泥产生量较少，以 2 万吨 / 天的市政水厂为例，每天产生脱水污泥量约 6-10 吨。鉴于现有水厂选址限制，一般到远距离填埋场过程运输很远，特别是山区更加麻烦。污泥填埋承载力差，二次污染等问题，较多的垃圾填埋场已基本不愿回收填埋或提高处置费用。同时，生物质秸秆等物料随意焚烧或丢弃，严重影响环境及资源浪费。针对该系列问题，结合中国的城乡结构，我公司研发的多种污泥生物质协同处理技术与装备，在实用性、稳定性、可靠性、效益型及节能环保上，达到国内一流水平，全面解决了污泥无害化问题及秸秆焚烧等问题。

◆ 本技术的特点在于以污泥为主要成分，热量主要有发酵污泥产生，助燃剂起到调节固定碳，改善燃烧条件的作用。而以木屑或植物秸秆作为助燃剂，能节省颗粒燃料的成本。本技术通过颗粒燃料的焚烧有效地将污泥、秸秆协同处置，一方面利用城市生活污水污泥的热量，另一方面结合固体废弃物（木屑，植物秸秆等）的处置，达到以废治废的作用。

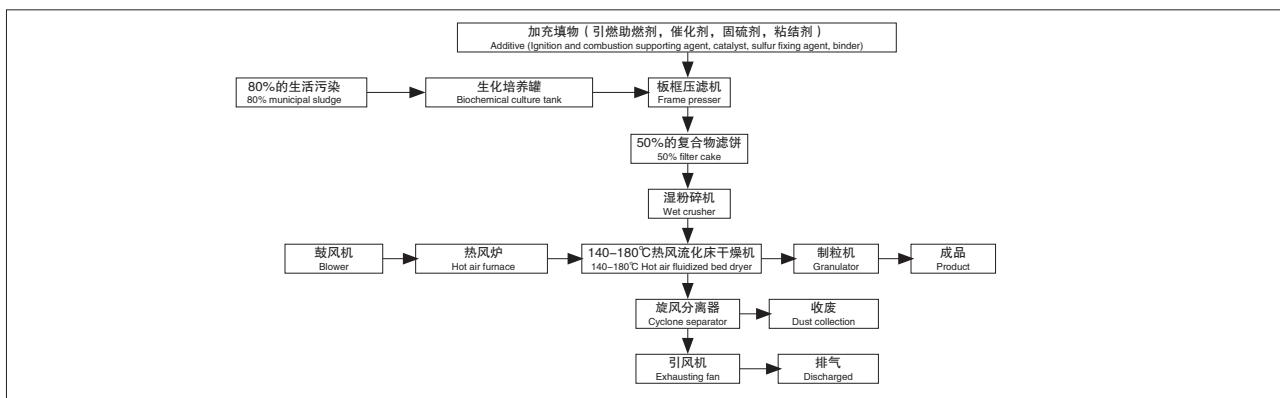
◆ 热量循环利用，尾气达标排放，粉尘制砖，从而达到全面资源化、减量化，节能环保，几乎达到“0”排放的最终目的。该工艺特别适用于小型市政污水厂、农村、山区等区域。项目投资小，建设快，运行稳定，自给自足，是目前最适合国情的推广项目。

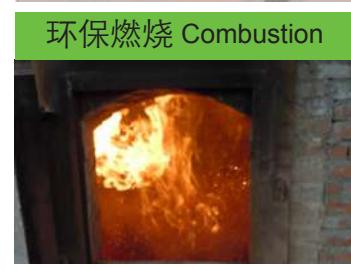
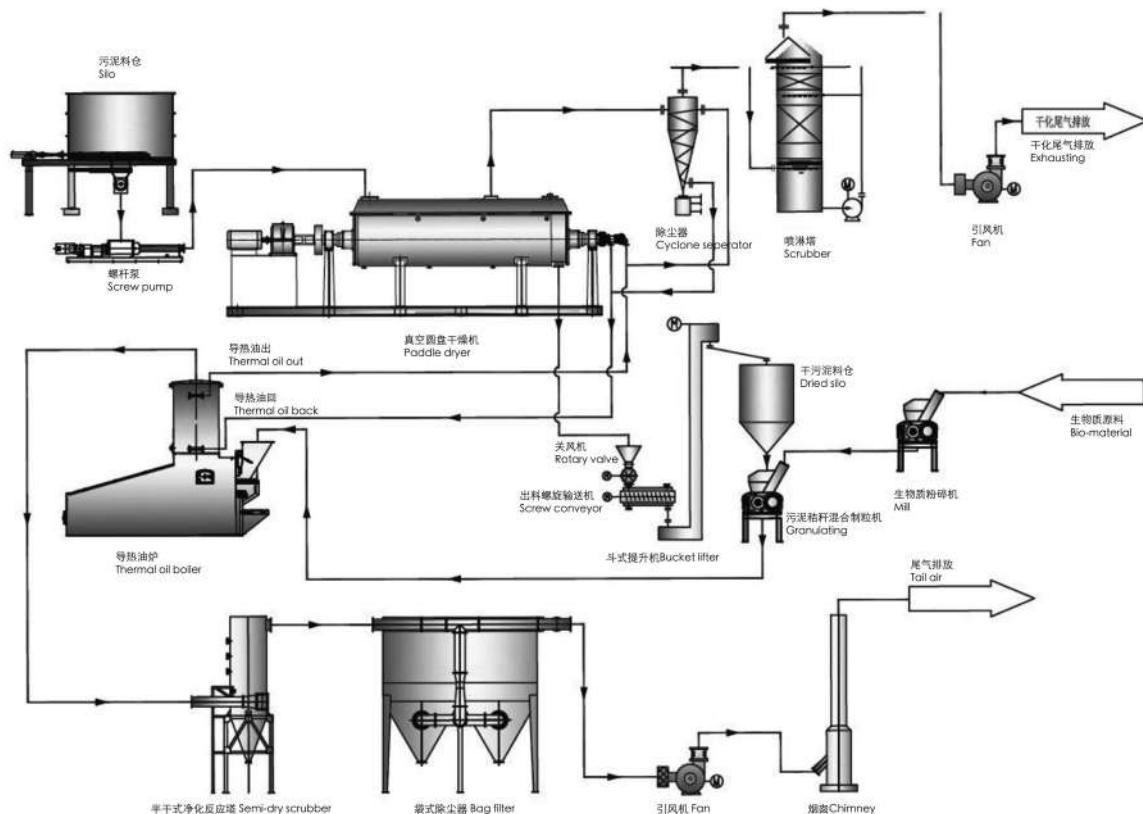
- ◆ The sludge fuel contain de-watered municipal sludge, ignition combustion supporting agent, sweetening agent, binder, catalyst.
- ◆ The mass percentage of dewatered sewage sludge: 40-45%. Combustion desulfurization agent for 40-45%, 5-10%, binder For 3-5%, the residual water content is: 10-15%, ignition agent is as follows: 2%,
- ◆ Among sludge fuel, the combustion agent are wood or straw.
- ◆ Desulfurization agent is calcium hydroxide.
- ◆ The binder is clay.
- ◆ Ignition agent is Potassium Permanganate.

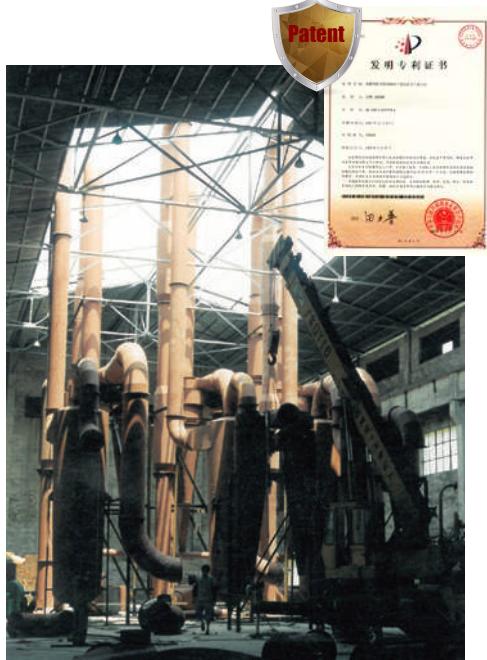


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### 生产工艺流程 Processing







## 餐厨垃圾高真空搅拌干化装置 Food waste high vacuum agitating dryer



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- ◆ 该干燥机组是针对渣糟类粗纤维物料而设计的一款较为新型的干燥设备。
- ◆ 现有渣糟类干燥机一般都采用沸腾床、滚筒式组合式干燥机干燥，生产过程中由于渣糟类水份在进入干燥机时不稳定，造成热风干燥后的干燥渣糟最终含水量不稳定。而且就设备流程而言，以前大都采用锥形螺杆压榨机对湿物料进行压榨，降低渣糟中初含水量，再由卧式沸腾干燥机串连使用进行热风干燥。锥形螺杆压榨机对某些颗粒度较小的糟类存在压滤问题。而卧式沸腾干燥机则由于结构原因，使渣糟在设备中沉积导致炭化及着火。
- ◆ 本干燥机组针对不同的物料采用多种专用干燥机组合使用，充分克服了以往结构存在的弊端，改变了传统的干燥模式，节约了人力投入，降低了生产总能耗，提高了渣糟类干燥机的可操控、实用性、经济性和环保性要求。公司拥有 400t/ 天处理啤酒糟稳定应用案例，以及处理量 10t/ 天木屑应用案例。
- ◆ The system is specially designed for processing sawdust and all kinds of production waste.
- ◆ The system could adopt different combination to meet different needs, such as mechanical de-watering, belt dryer, flash dryer, paddle dryer etc. The classic example we've finished such as 400T/d brewer's waste processing, 10T/d sawdust processing etc.

应 用

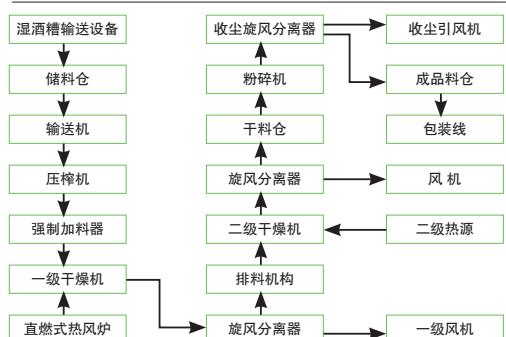
◆本生产线已广泛应用于啤酒糟(粗糟、细糟)、白酒糟、豆渣、万寿菌、木屑、塑料、淤泥等领域。

◆我公司可根据用户要求,提供不同的生产工艺,并选用不同规格的设备来满足用户的需求,并规划厂房布置及提供参考意见,力将先进的生产工艺、优良的设备、完美的服务提供给用户。

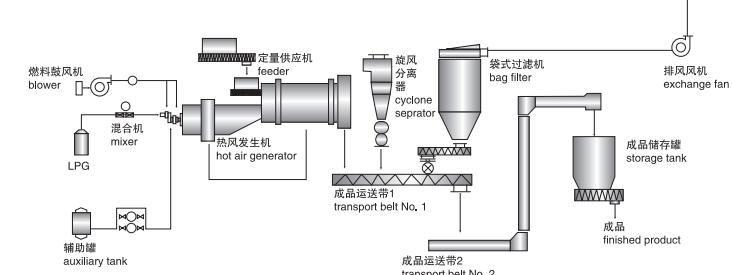
- ◆ This production line has been widely applied in the beer brewer's grain, white distiller's grain, been waste, long life fungus, silt and so on.

- ◆ Our company could provide different processes according to the user's request. Selecting the different equipment of specifications to satisfy the user's demand, and plan workshop for customer. We will try our best to provide advanced process, equipment and perfect service to our customer.

## 生产流程一 Process Line I:



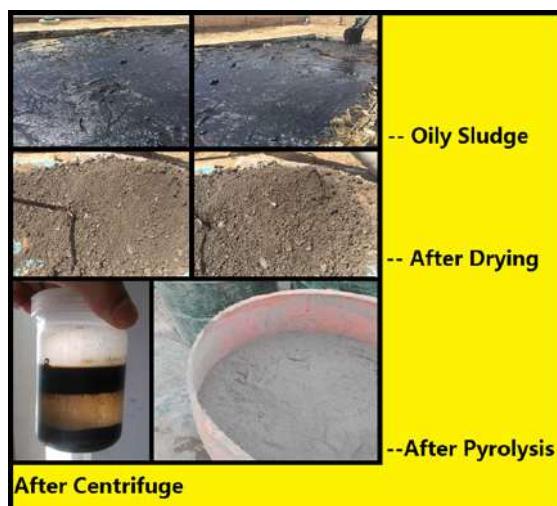
## 生产流程二 Process Line II:



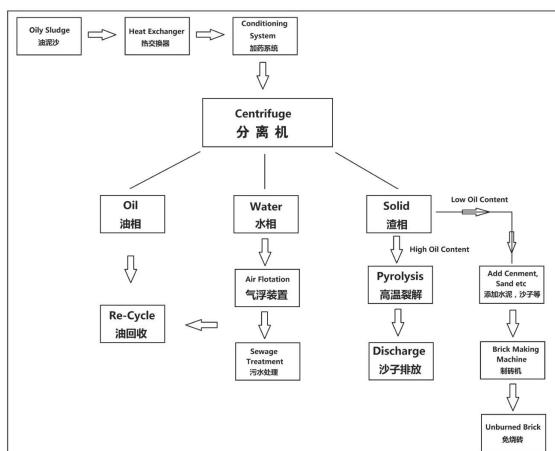


适用范围：落地油泥、罐底油泥、油基泥浆等

Application: Oil field Sludge, tank bottom oily sludge, oil base mud etc.



工艺流程示意图 Process Layout



油泥分离技术

通过对污泥的调质，改变污泥粒子表面的物化性质和组分，破坏污泥的胶体结构，减小与水的亲和力，从而改善脱水脱油性能，实现油、水、渣三相的完全分离。

**高温炭化：**热裂解工艺处理含油污泥技术是一种新的含油污泥无害化处理技术，反应条件要求较高。主要基于高温热解，第一阶段必须使含油污泥尽可能多的脱除水，第二步在旋转窑内加热至500–600°C，同时氮气吹扫，热解气进行油水分离。

**系统优点：**

- 1) 设备简单，运行成本低，能效高。因此与焚烧技术相比投资略低，运行成本远远低于焚烧技术；
- 2) 热解产物以易储藏的液体油的形式回收，固体残渣热值也较高；
- 3) 对环境造成二次污染的可能性较小；
- 4) 处理后污泥中的重金属钝化富集于固体残渣中，处理温度低、不凝气产量小，NO<sub>x</sub>, SO<sub>2</sub>、有机氯化物等有害气体产量也较少，气体易处理。

**Brief Introduction**

Changing the physical & chemical properties and components of the sludge particles, destroying its colloidal structure, reducing its affinity with water, improving dewater ability and de-oil performance through conditioning the sludge. to realize complete separation among oil, water and solid content.

Pyrolysis process is a new technique of oily sludge harmless processing. The working principle is based on high temperature heating, it should dry the sludge as much as possible before pyrolysis, then put it into rotary kiln with 500-600°C heating temperature, spray nitrogen at the mean time to separate oil and water.

Oily sludge pyrolysis process has following advantages:

- Process equipments don't have to endure high temperature or high pressure, it has lower investment and much lower operation cost than incineration process;
- High energy recovery rate, product of pyrolysis is liquid oil which is convenient in storage, solid residue has high calorific value
- Heavy metal is concentrated inside the solid content after process, non-condensable gas amount is little, NO<sub>x</sub>, SO<sub>2</sub> or Organic chloride amount are little.



**适用范围：垃圾渗滤液的浓缩液的固化处理，  
化工制药食品等工业的残留母液的固化处理，  
RO 浓盐水以及高有机含量的高盐废水的固化处理**

**Application: High salinity wastewater such as waste leachate and pharmaceutical extraction liquor**

### 前言

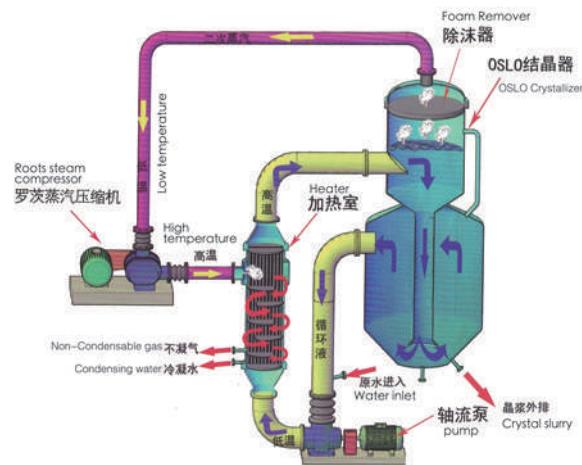
◆ 高盐废水有很多种处理方法，在新的环保法出台之前，主要的思路还是要将废水的 COD 下降，然后用水稀释后排出。在新的排放标准执行之后，3000ppm 的高限，使得稀释法没有多少可行性（用水量太大）。在这些技术里有生物降解法、电解氧化法等等，不要说除盐，就是降低 COD 都困难重重，高盐的存在会抑制生物降解的活力。在有了分离水中盐份的思维之后，膜分离技术获得大力的推广，但是真正使用起来问题也很多。就目前而言，所用的技术评估下来，蒸发浓缩—干燥固化—回收利用—或固化后交危废中心处理，是相对比较可靠地处理方式。本公司结合 MVR 节能原理与技术，实现浓缩干化一步法的处理装置，拥有独立自主知识产权的核心技术。也可针对不同的废水，采用其他不同的方式处理。

◆ High salinity wastewater is produced during chemical production, landfill leachate or reverse osmosis process, it is a kind of wastewater which has COD 50000-100000mg/L, 5%-15% salinity content (50000ppm-150000ppm) and it is very difficult to process. Because of high organic content and  $\text{Ca}^{2+}$ 、 $\text{Mg}^{2+}$ 、 $\text{Si}^{4+}$  concentration, conventional evaporator or MVR couldn't work for a long time because of scale formation. Even liquid incineration system will be blocked up because of high salinity.

### 主要特点 Features

- 1、占地面积小，不受设置场合的限制；
- 2、可去除氨氮及难降解有机物；
- 3、操作管理方便，易于实现自动化；
- 4、加热器、预热器及冷凝器管板均采用整体管板，延长设备使用寿命；
- 5、采用液位自动控制系统，自动进料，冷凝水自动排放；
- 6、出料采用分离装置，增加出料晶体含量，分离后获得大部分晶体、母液回流少、需要重新消耗的热能少，特别节能。
- 7、采用强制循环蒸发器，具有传热系数高、蒸发强度大、减少结壁与堵管等优点，尤其适用于蒸发过程中产生晶体的物料。
- 8、采用泵自循环系统，使晶体及母液时刻保持循环、避免晶体沉积堵管。

1. Less occupied space
2. It could remove ammonia nitrogen and refractory organic compounds
3. Easy and high automatic operation
4. Heater, pre-heater and condenser are made of complete steel plates (pipes), which has longer life span
5. Equipped with level sensor, automatic feeding and discharging
6. Equipped with discharging separator, Increase amount of crystal product
7. Adopt force circulation, high efficient heat transfer rate, high evaporation capability.
8. Adopt pump circulation system to keep crystal and mother liquid circulated, reduce crystal blockage problem.



### 一、MVR 含盐废水处理工艺

◆ 调节池中的废水由进料泵送入预热器，经预热器吸收蒸汽冷凝液的显热后，进入 MVR 蒸发器循环，经加热器升温后进入蒸发室蒸发，蒸发温度为 92℃左右，溶液下降致蒸发器底部，达到一定的浓度时，过饱和的溶液会在蒸发器析出结晶，沉降至底部结晶器，由出料泵送至离心机分离。未达到结晶浓度的溶液在循环泵的驱动下送入换热器升温，进入下一个循环。

◆ 蒸发器中的二次蒸汽向上运动，经管道进入 MVR 压缩机将二次蒸汽压缩升温至 103℃左右后，回加热器加热释放潜热，高温冷凝水进入预热器壳层对原料液体进行预加热，充分利用其余热。

◆ Vapor-compression evaporation is the evaporation method by which a blower, compressor or jet ejector is used to compress, and thus, increase the pressure of the vapor produced. Since the pressure increase of the vapor also generates an increase in the condensation temperature, the same vapor can serve as the heating medium for its "mother" liquid or solution being concentrated, from which the vapor was generated to begin with. If no compression was provided, the vapor would be at the same temperature as the boiling liquid/solution, and no heat transfer could take place.

◆ It is also sometimes called Vapor compression distillation (VCD). If compression is performed by a mechanically driven compressor or blower, this evaporation process is usually referred to as MVR (Mechanical Vapor Recompression). In case of compression performed by high pressure motive steam ejectors, the process is usually called Thermocompression or Steam Compression.



## 二、高盐废水真空连续蒸发干燥一体机（选配 MVR 技术）(已申请发明专利) Second. Thin Film Evaporator & Dryer. (We own the patent)

本公司结合 MVR 高盐废水蒸馏设备的缺点与不足，开创性的研发设计了以液体一步法直接到固体的高真空连续蒸馏方法，并可根据产能、物料特性、粘度的特点，采用不同要求，配套不同附件的成套设备，从而彻底解决高盐废水的处理难题（本公司已申请发明专利）。

高盐废水是化工生产，垃圾渗滤，或反渗透过程形成的一种处理难度极高的废水，其 COD 在  $3 \times 10^4 \sim 1 \times 10^5 \text{ mg/L}$ ，其含盐质量浓度为 5%~15% ( $5 \times 10^4 \sim 1.5 \times 10^5 \text{ ppm}$ )，甚至更高。其超高的有机物浓度和  $\text{Ca}^{2+}$ 、 $\text{Mg}^{2+}$ 、 $\text{Si}^{4+}$  的浓度，常规的多效蒸发器和 MVR 蒸发工艺因结垢等问题无法彻底解决浓缩后继续干化的问题。即使使用液体焚烧系统，也会由于高盐而受阻。

本系统针对高有机物浓度的高盐废水典型特点，有效克服高有机物和高盐的相互影响，能够有效地实现废水中盐和有机物的分离。盐类成分直接干化结晶排出；同时根据有机物的理化特性，可实现有机溶剂的回收，有效的降低废水的 COD 浓度，为后续的生化处理提供可能。

The system is specially designed according to the feature of high salinity wastewater, it could overcome interaction between organic stuff and salt, and could separate the salt content out of organic wastewater. Salt ingredients will be crystallized, organic solvent could be recovered.

The treatment system is consisted by two parts: one is concentration device (concentrate the raw liquid to 18% salinity content, it is available to choose MVR based on salinity type), the other is desalination device (We own invention patent), which could distill the high salinity wastewater to solid in one step.

### 系统优点 Advantages:

1. 热效率高
2. 操作弹性大，适用范围广。
3. 运行过程中各种参数的调整范围大，如进料的浓度、温度，料膜的厚度，加热介质的温度，主机运转的速度等都可以改变物料中盐的结晶效率。这些运行参数相对独立，这给整个过程带来很大的方便，使之能够适应多种物料的浓缩干燥和不同产量的要求。
4. 特别针对腐蚀性强，小批量的高盐废水处理，优点尤为突出。
5. 可实现低温条件下完成液 – 液相、液 – 固相浓缩蒸馏，比传统工艺设备效率提高 3–5 倍。
6. 增设（选配）MVR 系统，更是可以最大程度的减少蒸汽使用，降低运行成本；
7. 可直接将高盐废水蒸发浓缩成固体排出，一步法到位，工艺简单实用，从而彻底解决堵管、结垢等问题。
8. 可以针对不同物料的特性、工况条件、产能、终含水分等要求，选配真空或常压结构形式的成套蒸馏装置。
9. 系统操作简单，维修方便，占地面积小，可实现全自动连续操作。
10. 适用面宽，浓缩比高，产物浓度可以任意设定、控制并调节，机器运行稳定。
11. 加热介质可以选用蒸汽、导热油、热水等。
12. 可实现连续、半连续、间歇式浓缩干燥作业。
1. High Efficiency
2. Wide range of application.
3. It could adjust liquid concentration, temperature, thickness of liquif film, heat medium to adjust production effect, It is suitable for both concentrating and drying
4. It is specially suitable for strong corrosion waste water processing with small scale production.
5. It could realize the production of "liquid to liquid" or "liquid to solid" In one step, efficiency is 3-5 times than conventional methods.
6. MVR as an option to reduce energy consumption
7. It could evaporate high salinity waste water into solid in one step, prevent bolckage problem.
8. Vacuum operation and atmospheric operation is available for choice based on working condition.
9. Easy operation and maintenance, less occupied space and high automatic work.
10. Wide range of application, concentration level is adjustable.
11. Steam, thermal oil or hot water is available for choice as heating medium
12. It could realize batch production of continuous production.



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**提取浓缩发酵事业部**

***Extraction & Evaporation & Fermentation***

# TQ 系列多功能提取罐

## TQ Multifunctional Extracting Tank



直筒型提取罐  
Straight cylindrical type extracting tank



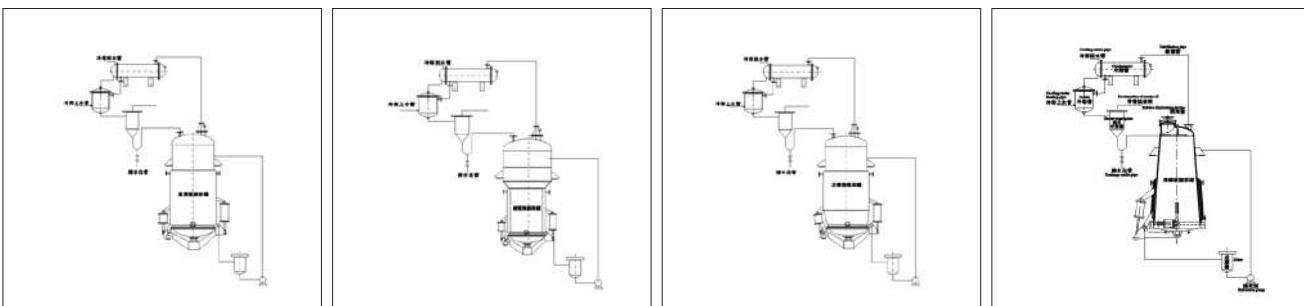
蘑菇型提取罐  
Mushroom type extracting tank



正锥型提取罐  
Normal taper type extracting tank



倒锥型提取罐  
Upside-down taper type extracting tank



### 应用范围 Applications

◆ 本设备可用于中药、食品、化工行业的常压、微压、水煎、温浸、热回流、强制循环、渗漉、芳香油提取及有机溶媒的回收等多种工艺操作。倒锥型提取罐最突出的特点是出渣非常方便，加热效果好。罐体配备 CIP 清洗自动旋转喷洗球，测温孔、防爆视孔灯、视镜、快开式投料口等，确保操作简便，符合 GMP 标准。设备内筒体材质为进口 304，夹套采用全封闭硅酸铝纤维保温，外筒体贴 304 亚光薄钢板饰面。设备成套供应包括：除沫器、冷凝器、冷却器、油水分离器、过滤器、气缸控制台等附件。

◆ The equipment is applicable to the multiple technology operations of normal pressure, micro pressure, water frying, warm soaking, thermal reflux, compulsory circulation, filtration, redolent oil extraction and organic solvent recycling for traditional Chinese medicine, food and chemical industry. The most prominent features of the upside-down taper type extracting tank are convenient residue discharging and good heating effect. The tank body is equipped with CIP cleaning automatic cleaning ball, temperature measuring hole, explosion-proof view lamp, sight glass, quick open feeding port etc., which can guarantee the convenient operation and are in accordance with GMP standard. The tank body inside the equipment is made of imported SUS304, and the jacket is made of completely sealed aluminum silicate fiber for heat preservation. The external tank body is lined with SUS304 matte thin steel sheet for surface decoration. The complete equipment supplied shall include: de-foamer, condenser, cooler, oil and water separator, filter, cylinder control and other accessories.

### 技术参数 Technical parameters

规格 Specification	型号 Model							
容积 Volume	TQ-0.5	TQ-1	TQ-2	TQ-3	TQ-4	TQ-6	TQ-8	TQ-10
罐内设计压力 Inner tank design pressure					0.09			
夹层设计压力 Jacket design pressure					0.3			
加料口直径 Diameter of feeding port (mm)	400	400	400	400	500	500	500	600
加热面积 Heating area(m <sup>2</sup> )	2.4	3	4.7	6.8	8	10	12	13
冷凝面积 Condensing area(m <sup>2</sup> )	3	4	5.4	8	14	18	22	24
冷却面积 Cooling area(m <sup>2</sup> )	1	1	1	1.5	1.5	2	2	3
过滤面积 Filtering area(m <sup>2</sup> )	0.25	0.25	0.25	0.25	0.25	0.30	0.30	0.30
排渣门直径 Diameter of residue discharging port (mm)	600	800	800	1000	1000	1200	1400	1500
耗气 Steam consumption(t/h)	285	285	346	570	660	718	903	1140
耗水 water consumption(t/h)	2.1	2.1	2.5	4.2	4.5	5.5	6.7	6.7
电动功率 Electric power(kW)	2.2	2.2	3	4	5.5	5.5	7.5	7.5
搅拌转速 Stirring speed(r/min)	36	36	36	36	36	36	36	36

注：1.TQ 多功能提取罐加入必要装置后可组合成动态提取系统。

Note:1)TQ extractor could be upgraded to a dynamic extracting system.

2. 设计压力、加热面积、加料口直径、过滤形式、排渣门直径可根据用户要求定制。

2)Design pressure, heating area, feeding port, filtering form and diameter of discharge port could be adjusted according to user's requirement.

3. 用户可根据自己的工艺要求是否采用搅拌系统及搅拌形式。

3)Agitator system is available for choice.

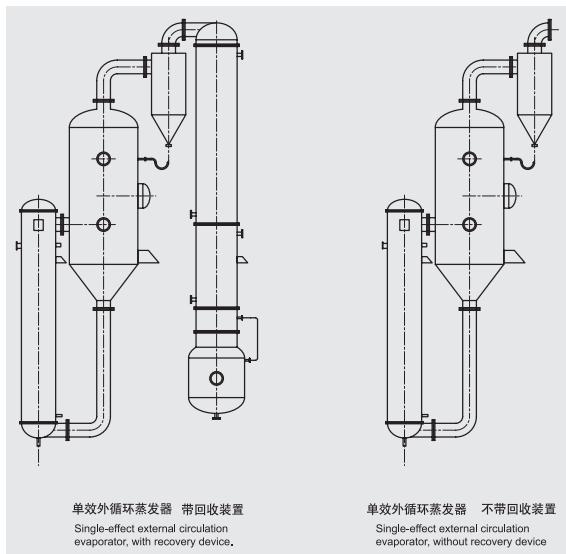


## DN 系列单效浓缩器

### DN Single-effect Concentrator



工艺示意图 Process Chart



技术参数 Technical parameters

参数 Parameter	型号 Type			
	DN500	DN1000	DN1500	DN2000
蒸发量清水 Evaporating capacity(kg/h)	500	1000	1500	2000
蒸汽压力 Vapor pressure(MPa)			< 0.25	
耗汽量 Steam consumption(kg/h)	≤500	≤1000	≤1500	≤2000
蒸发温度 Evaporating temperature(°C)			75-85	
真空度 Vacuum degree(MPa)			-0.08	
循环耗水量 (约) Circulation water consumption(T/h)	20	40	60	80
浓缩比重 Concentrating ratio	1.2-1.3			
容器类别 Vessel type	一类 category 1			
外形尺寸 Overall size(L × W × H)	2×1×3	2.2×1.2×3.3	2.5×1.3×3.5	4.6×2.35×5.1

### 应用范围 Applications

◆ 本系列主要应用于中药、西药、葡萄糖、酿酒、淀粉、口服液、食品、化工等工业有机溶剂（如酒精）的回收，适用于批量小、品种多的热敏性物料的低温真空浓缩。

◆ The concentrator is suitable for Traditional Chinese Medicine, Western Medicine, Glucose, Starch, PeroralLiquid, Foodstuff, Chemical Industry etc. to reclaim organic solvent (alcohol etc.). especially for some mini batch, many types and heat-sensitive raw material.

### 主要特点 Features

◆ 回收功能：回收能力大，采用真空操作方法，改进了设备的工艺流程。比老型同类设备提高生产率5-10倍，降低能耗30%，具有投资小，回收效益高的特点。

◆ 浓缩液料：本设备采用外加热自然循环与真空负压蒸发相结合的方式，蒸发速度快，浓缩比重可达1.3；液料在全密封中无泡沫浓缩，用本设备浓缩出来的药液，具有无污染，药味浓的特点，而且清洗方便。设备操作简单，占地面积小。加热器、蒸发器采用不锈钢保温结构，保温层外表采用不锈钢花钢板，美观大方。设备与液料接触部位均采用优质不锈钢制造，符合GMP标准。

◆ Solvent recovery: strong ability, improving production procedure, using vacuum operation. So productivity can increase 5-10 times, consumption can reduce about 30%. Good benefit as well as little investment.

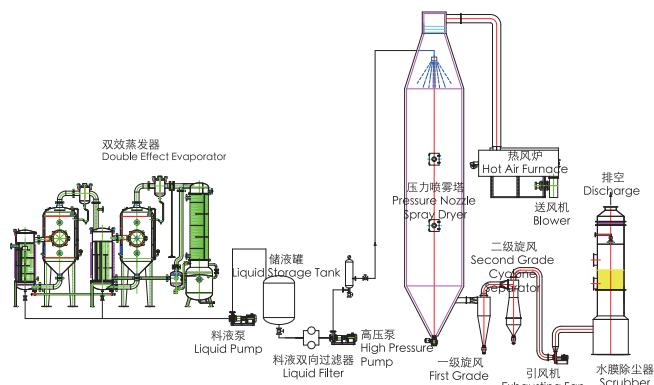
◆ Evaporating rapidly, great concentrating ratio (can be 1.3) with joining outer heating nature circulation and vacuum evaporation process. Non-foam concentrated in sealed tank, the concentrated liquid is no pollution and strong drug taste. Easy to clean(just opening heater cover). Easy to operate, small equipment volume. Made by high quality stainless steel according to GMP standard. Heater and evaporator all covered by insulation. with polished SS plate on outer skin to make whole equipment elegant and beautiful.



### 主要特点 Features

- ◆ 节能实用: 按 1000 型计算, 同单效外循环蒸发器相比较, 一年节约蒸汽 3500 吨, 节约水 9 万吨, 节约电 8 万度。
- ◆ 采用外加热自然循环与真空负压蒸发相结合的方式, 具有蒸发速度快, 浓缩比重大等特点。液料在全密封中无泡沫浓缩, 具有无污染, 药味浓的特点。清洗方便。
- ◆ 采用二效同时蒸发, 二次蒸汽得到充分利用, 既节省了锅炉的投资, 又节约能耗, 耗能与单效浓缩器相比降低 50%。
- ◆ 与物料接触部位均采用优质不锈钢制造, 符合 GMP 标准。加热器、蒸发器均设有保温层, 保温层采用不锈钢研花钢板, 使设备在整体布局上显得美观大方。可按用户需求配备冷凝水自动排水装置。
- ◆ Energy-saving: estimating according to the model 1000, compared with single-efficiency concentrator: about 3,500 tonnes vapor, 90,000 tonnes water and 80,000 kwh power can be saved per year.
- ◆ Evaporating rapidly, great concentrating ratio with joining outer heating nature circulation and vacuum evaporation process. Non-foam concentrated in sealed tank, the concentrate liquid is no pollution and strong drug taste. Easy to clean(just opening heater cover).
- ◆ Two-efficiency evaporating at the same time, secondary vapor can be used fully, energy-saving as well as boiler cost saving. Energy consumption can reduce 50% contrast with single-efficiency concentrator.
- ◆ Made by high quality stainless steel according to GMP standard. Heater and evaporator all covered by insulation, with polished SS plate on outer skinto make whole equipment elegant and beautiful.

### 浓缩干燥一体流程示意图



### 技术参数 Technical parameters

参数 Parameter	型号 Type					
蒸发量清水 Evaporating capacity(kg/h)	SN500	SN1000	SN1500	SN2000	SN3000	SN5000
蒸汽压力 Vapor pressure(MPa)	500	1000	1500	2000	3000	5000
耗汽量 Steam consumption(kg/h)	≤250	≤500	≤750	≤1000	≤1500	≤2500
蒸发温度 Evaporating temperature(°C)	一效 One-efficiency			80-90		
	二效 Two-efficiency			55-70		
真空度 Vacuum degree(MPa)	一效 One-efficiency			-0.02~-0.04		
	二效 Two-efficiency			-0.05~-0.08		
循环耗水量 Circulation water consumption(T/h)	12.5	25	37.5	50	75	125
浓缩比重 Concentrating ratio				1.2-1.3		
容器类别 Vessel type				一类 category 1		
外形尺寸 (参考)Overall size(L×W×H) m	4×1.5×3.3	5×1.6×3.5	6×1.6×3.7	6.5×1.7×4.3	6.5×1.7×4.3	7.7×2.27×5.6



## SZ 三效节能浓缩器

SZ Series Triple-effect Concentrator



### 主要特点 Features

- ◆ 节能效益显著：按 1000 型计算，同单效外循环蒸发器相比较，一年节约蒸汽 5400 吨，节约水 14 万吨，节约电 13 万度。
- ◆ 采用外加热自然循环与负压蒸发相结合的方式，具有蒸发速度快，浓缩比重大，可达 1.2~1.3。
- ◆ 采用三效同时蒸发，二次蒸汽得到反复利用，既节省了锅炉的投资，又节约能源消耗，耗能与单效浓缩器相比降低 70%。
- ◆ 多功能操作特点：(1) 一效、二效、三效可以反复并锅收膏；(2) 可以间歇、连续进料。
- ◆ 与物料接触部位均采用优质不锈钢制造，符合 GMP 标准。本设备加热器、蒸发器均设有保温层，保温层外表采用不锈钢花钢板。



### 技术参数 Technical parameters

参数 Parameter	型号 Type							
蒸发量清水 Evaporating capacity(kg/h)	500	1000	1500	2000	3000	5000	8000	
蒸汽压力 Vapor pressure(MPa)				< 0.25				
耗汽量 Steam consumption(kg/h)	≤200	≤400	≤600	≤800	≤1200	≤2000	≤3200	
蒸发温度 Evaporating temperature(℃)	一效 One-efficiency				85-95			
	二效 Two-efficiency				70-80			
	三效 Three-efficiency				55-65			
真空度 Vacuum degree(MPa)	一效 One-efficiency				-0.02~0.04			
	二效 Two-efficiency				-0.05~0.06			
	三效 Three-efficiency				-0.08~0.09			
循环耗水量 Circulation water consumption(T/h)	10	18	25	35	50	85	135	
浓缩比重 Concentrating ratio				1.2~1.3				
容器类别 Vessel type	一类 category 1							
外形尺寸 (参考)Overall size(L×W×H)	5×1.3×3	6.5×1.5×3.3	7×1.7×3.5	7.5×2×4	7.8×2×4	8×2×4.5	9×2.5×5	

### 应用范围 Applications

- ◆ 该系列产品适应于中药、西药、葡萄糖、淀粉、味精、乳品、化工等溶液的浓缩，尤其适用于热敏性物料的低温真空浓缩。
- ◆ The concentrator is suitable for Traditional Chinese Medicine, Western Medicine, Glucose, Starch, Monosodium Glutamate, Dairy Products, Chemical Industry etc. to concentrate solutions, especially for some heat-sensitive raw material.

◆ Marked energy-saving benefit: estimating according type 1000, compared with single-efficiency concentrator: about 5,400 tonnes vapor, 140,000 tonnes water and 130,000 kw.h power can be saved per year.

◆ Evaporating rapidly, great concentrating ratio (can be 1.2~1.3) with joining outer heating nature circulation and vacuum evaporation process together.

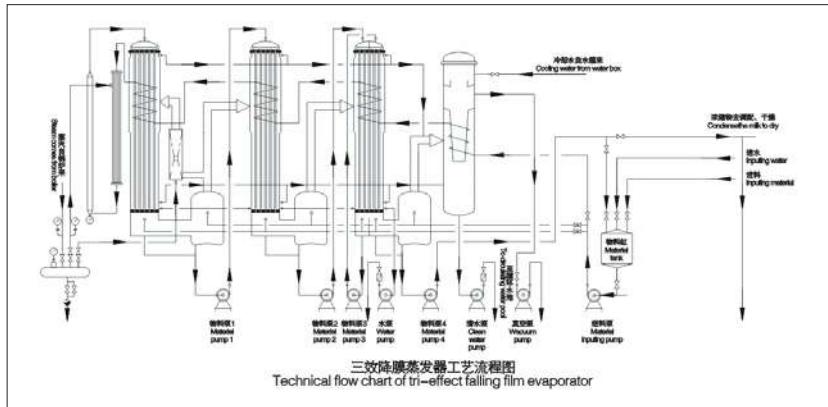
◆ Three-efficiency evaporating at the same time, secondary vapor can be used again and again, energy-saving as well as boiler cost saving. Energy consumption can reduce 70% contrast with single-efficiency concentrator. The whole investment is able to take back from energy-saving cost within one year.

◆ Multi-functional operation: 1) one, two, three efficiency can get poultice material at the same time repeatedly; 2) the alternative raw material supply method can be intermittent or continuous.

◆ Made by high quality stainless steel according to GMP standard. Heater and evaporator all covered by insulation, with polished SS plate on outer skin to make whole equipment elegant and beautiful.



工艺示意图 Process Chart



## 应用范围 Applications

- ◆ 单效、双效、三效降膜浓缩机组，适用于牛奶、果汁、生化、制药、调味品、食品添加剂等物料的浓缩。
- ◆ SJM is suitable for concentrating milk, juice, chemical stuff, pharmaceutical stuff, flavor, food additives etc.

## 设备配套、主要附件 Main Components

- ◆ 加热器、分离器、冷凝器、预热器、真空系统、热压泵、电器仪表、控制柜、工作平台等。SUS304 或 SUS316L，根据物料工艺要求。
- ◆ Heater, Separator, Condenser, Pre-heater, Vacuum System, Jet Heat Pump, Electrical Components, Control Cabinet, Operation Platform etc. Made of SUS304 or SUS316L.

## 主要特点 Features

- ◆ 物料在加热管中停留时间很短，特别适合热敏物料的浓缩，可连续进料，连续出料。
- ◆ 蒸发温度较低，可根据客户要求选择效数和蒸发温度。
- ◆ 加热蒸发器顶喷淋布膜装置独特，成膜均匀。
- ◆ 冷凝器结构独特，传热系数大，效果好。
- ◆ 采用喷射热压泵，节能效果明显。
- ◆ 可根据用户要求采用自控和手控两种机型。
- ◆ Short retention time and continuous production, it is very suitable for heat sensitive product.
- ◆ Low evaporating temperature, effectiveness and temperature could be designed according to client's requirement.
- ◆ Special distribution device to make uniform product film.
- ◆ Special designed condenser, it has high heat transfer coefficient.
- ◆ Adopt jet heat pump which has better efficiency.
- ◆ Automatic control or manual control are available for selection.

## 技术参数 Technical parameters

型号 Type	SJM500	SJM1000	SJM1500	SJM2000	SJM3000	SJM5000	SJM6000	SJM8000
参数 Parameter								
蒸发量 Evaporating capacity(kg/h)	500	1000	1500	2000	3000	5000	6000	8000
蒸汽压力 Vapor pressure(MPa)					0.1-0.25			
耗汽量 Steam consumption(kg/h)	185	370	555	740	1110	1850	2220	2960
循环耗水量 Circulation water consumption(T/h)	5	10	13	15	18	25	30	40
设备重量 weight	2060	2480	3280	4200	4860	5770	6430	7600
外形尺寸 (参考) Overall size(mm)	L	7080	7680	8380	8890	9500	10200	11500
	W	900	1000	1100	1200	1300	1400	1600
	H	3500	4000	4600	4600	4900	5300	5800
真空度 (绝对压力) Mpa vacuum					蒸发温度 Evaporating temperature(°C)			
一效 One-efficiency	-0.048~0.057				80-85			
二效 Two-efficiency	-0.031~0.038				70-75			
三效 Three-efficiency	-0.019~0.025				60-65			



# 离心刮板薄膜蒸发器

Centrifugal Thin-film Evaporator



## 概述 Descriptions

◆ 该系列产品是利用高速旋转将液体分布成均匀薄膜而进行蒸发或蒸馏的一种高效蒸发、蒸馏设备，也可进行脱臭、脱泡反应及加热、冷却等单元操作，可广泛适用于中、西制药、食品、轻工、石油、化工、环保等行业。

◆ The machine is a high-efficient evaporation and distillation equipment which distribute the liquid in thin film by high speed rotation. It is also available for seatening, debubbling, heating or cooling operation. It can be widely used in chinese and western pharmacy, food, light industry, petroleumchemical, environmental protection industries etc.

## 主要特点 Features

- ◆ 采用离心式滑动沟槽转子，在筒体蒸发段内壁表面附着处理液中的淤积物可被活动刮板迅速移去，和固定间隙的刮板蒸发器相比，蒸发量可提高40-69%。
- ◆ 传热系数值高，蒸发能力大，蒸发强度可达到  $200\text{kg/m}^2\cdot\text{hr}$ ，热效率高。
- ◆ 物料加热时间短，约5秒到10秒之间，且在真空条件下工作，对热敏性物料效果更好。
- ◆ 适应粘度变化范围广。
- ◆ 改变刮板沟槽倾斜方向，可以调节物料在蒸发器的处理时间。
- ◆ 蒸发段筒体内壁经过精密镗削并抛光处理。
- ◆ 操作方便，调节方便，在密闭条件下，可以自控进行续性生产。
- ◆ 设备占地面积小，结构简单，维修方便，清洗方便。

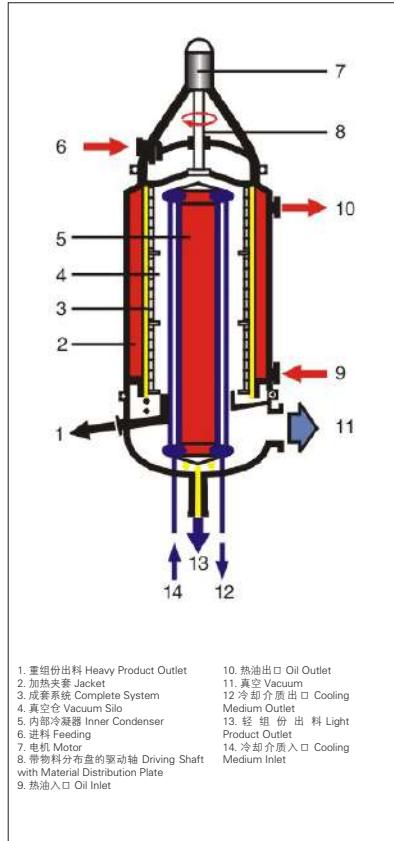
- ◆ It adopts centrifugal sliding rotor, the scraper could remove adhere product in higher efficiency than stable rotor evaporator. The evaporation capacity could be 40-69% higher.
- ◆ It has higher value of heat transfer coefficient and bigger evaporation capability, the intensity of evaporation can arrive  $200\text{kg/m}^2\cdot\text{hr}$ , it has higher thermal efficiency.
- ◆ Short heating time, it is only 5-10 seconds, very suitable for heat sensitive material.
- ◆ It is suitable for evaporating the product which has different viscosity.
- ◆ It could adjust the evaporating time by changing groove orientation of the rotor.
- ◆ Inner chamber is precisely processed and polished
- ◆ Convenient operation, and it is available for continuous production.
- ◆ It occupied less space, has simple structure, and easy to repair and clean.

## 技术参数 Technical parameters

参数 Parameter	型号 Type GBN1	GBN2	GBN4	GBN6	GBN10	GBN12	GBN20
热换面积 Heat transfer area ( $\text{m}^2$ )	1	2	4	6	10	12	20
蒸汽压力 Steam pressure(MPa)				0.3			
真空度 Vacuum degree(MPa)				-0.08			
蒸发量 Evaporating capacity(kg/h)	200	400	800	1200	2000	2400	4000
耗汽量 Steam consumption(kg/h)	220	430	840	1260	2100	2600	4800
电机功率 B.H.P(KW)	1.5	3.0	4.0	5.5	11	11	15
转速 Agitator speed(rpm)	250	250	136	136	88	88	88
设备高度 ( 参考 ) Height m	3100	4800	5680	6410	7200	7800	9850



工艺示意图 Process Chart



## 技术参数 Technical parameters

型号 Type	蒸发面积 m <sup>2</sup> evaporating area	冷凝面积 m <sup>2</sup> condensing area	高度 mm height	内径 mm vessel dia.	重量 kg weight
DZ0.06	0.06	0.06	1000	80	20
DZ0.1	0.1	0.11	1100	125	40
DZ0.3	0.3	0.38	1600	160	100
DZ0.75	0.75	1.2	2100	280	200
DZ1.5	1.5	2	3200	350	500
DZ3	3	5	3800	500	900
DZ4.5	4.5	7.5	5000	500	1100
DZ6	6	10	5300	800	1500
DZ9	9	16	6200	1000	3000
DZ12	12	24	6500	1200	6000
DZ18	18	36	7200	1500	9000
DZ24	24	50	8500	1500	12000
DZ36	36	80	9300	2000	23000
DZ50	50	120	11000	2200	30000



## JN 系列真空浓缩罐

JN Vacuum Concentrator

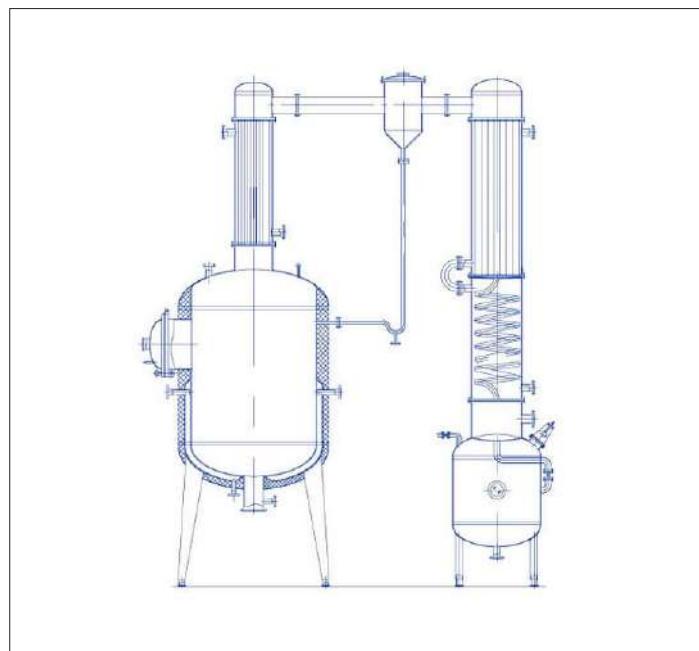


◆ The equipment is mainly consist of main tank, condenser, vapor-liquid separator, cooler, and liquid receiving barrel. Concentrator is covered with jacket; condenser is vertical pipe type; cooler is snake pipe type. It's widely used in Pharmaceutical, Foodstuff, Chemical Industry to proceed such process, like concentrating, alcohol recovery and simple return extracting.

### 应用范围 Applications

◆ 该系列设备主要由浓缩罐主体、冷凝器、汽液分离器、冷却器、受液桶五个部分组成，浓缩罐为夹套结构，冷却器为盘管式结构。可用于制药、食品、化工等行业对料液的浓缩、并且当作回收酒精和简单的回流提取之用。

### 工艺示意图 Process Chart



### 技术参数 Technical parameters

参数 Parameter	型号 Type							
蒸汽压力 Vapor pressure(MPa)	< 0.25							
蒸发能力 evaporation ability ( kg/h )	20	40	60	80	100	130	160	350
加热面积 heating area ( m <sup>2</sup> )	0.4	0.6	0.8	1.1	1.2	2.0	2.5	5.5
冷凝面积 condensing area ( m <sup>2</sup> )	1.2	1.7	2.4	3.0	3.2	3.6	4.5	14
冷却面积 cooling area ( m <sup>2</sup> )	0.25	0.35	0.45	0.6	0.7	0.85	1.1	3
受液槽容积 storage capacity ( L )	15	45	60	76	100	125	140	185
耗能 diameter of condensing hole ( kg/h )	23	46	70	92	115	150	185	403
真空度 vacuum degree(MPa)	-0.08							
容器别类 vessel type	一类 Category 1 pressure vessel							
设备重量 weight(kg)	410	470	605	715	862	1015	1250	2600
外形尺寸 (参考) overall size ( mm )	L	1200	1350	1700	1800	2100	2400	2730
	W	600	750	800	950	1200	1300	1500
	H	2200	2200	2700	2850	3400	3400	4700

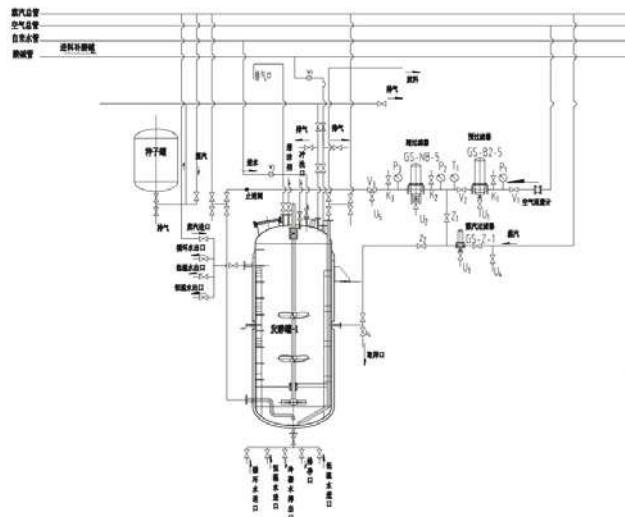


### 概述 Descriptions

◆ 本系列设备是一种对物料进行机械搅拌与发酵的设备。该设备采用内循环形式，采用搅拌分散和打碎气泡，罐内特别设计安装了无菌呼吸系统或无菌正压发酵系统，罐体设有夹套，通过对介质的加热、冷却来进行循环加热、冷却。

◆ It's a kind of equipment for mechanical mixing and fermenting, It Is Inner circulation type, dispersing foam by blades and breaking them into pieces. Asepsis respiration system or asepsis compression ferment system are specially designed. Tank body covered with jacket, which is available for heating or cooling.

### 工艺示意图 Process Chart



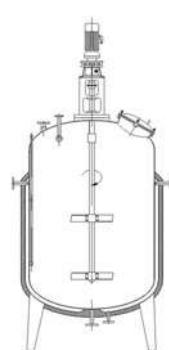
### 技术参数 Technical parameters

型号 Type	FXG0.05	FXG0.1	FXG0.2	FXG0.5	FXG1.0	FXG2.0	FXG5.0	FXG10.0	FXG20.0	FXG50.0	FXG60.0
容积 Volume(L)	50	100	200	500	1000	2000	5000	10000	20000	50000	60000
发酵罐直径 Diameter(mm)	400	500	500	700	900	1100	1400	1800	2300	3100	3200
发酵罐高 Height(mm)	990	1135	2330	2600	2900	3800	4545	5250	6550	8550	10730
罐内压力 Pressure inside tank(Mpa)							0.2				
夹套压力 Pressure inside jacket(Mpa)							0.3				
搅拌浆数量 QTY.of blade	2	2	2	3	3	3	3	3	4	4	4
搅拌转数 Mixing speed(rpm)	<360	<360	<360	<220	<180	<136	<136	<125	<110	<110	<110
电机功率 Mixing power(KW)	0.55	0.55	0.75	1.1	3	3	5.5	11.5	23	55	55
传热方式 Heating type	夹套 Jacket							热换管 Heat-exchange tube			



## FYG 系列反应罐

FXG Ferment Tank



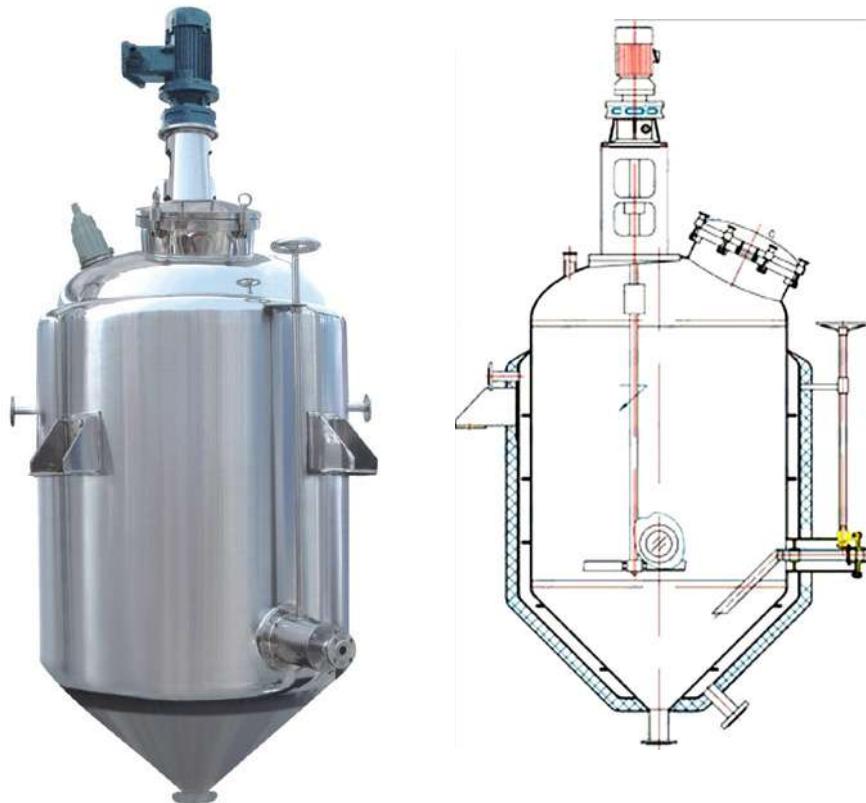
### 概述 Descriptions

◆ 该系列设备主要应用于医药、化工、食品、轻工等行业的水解、中和、结晶、蒸馏、蒸发等生产过程。搅拌型式有锚式、框式、桨式等；转动机构可采用摆线针轮减速机、无级变速减速机等；密封装置可选机械密封；加热冷却可采用夹套、半管、盘管结构；加热方式有蒸汽、电加热、导热油等；以满足耐酸碱、耐高温、耐磨损、抗腐蚀等不同工作环境的工艺环境的工艺需要。可根据用户工艺要求进行非标设计、制造。

The equipment is mainly used for the production process such as hydrolysis, neutralization, crystallization, distillation and evaporation etc. It is widely used in the medicine Industry, chemical industry, food and light industry etc. The reaction kettles could be made of SUS304, SUS316L, 321, 904L double-phase steel or composite material etc. materials. The blending forms are divided into anchor type, frame type and oar type etc. The rotation mechanism can adopt cycloid pin gear reducer or stepless speed reducer etc. The sealing mechanism can adopt mechanical sealing. The heating and cooling can adopt jacket, semi-tube or coil structure. The heating methods are steam, electric heating and thermal oil to satisfy the technology requirements under different working conditions such as anti-acid, anti-alkali, anti-high-temperature, anti-abrasion or anti-corrosion.

### 技术参数 Technical parameters

参数 Parameter	型号 Type									
容积 Volume(L)	100	200	500	1000	1500	2000	2500	3000	4000	5000
公称直径 Nominal diameter(mm)	500	600	800	1000	1200	1200	1400	1400	1500	1600
釜内公称压力 Nominal pressure in the kettle(MPa)	0.25~0.5									
夹套公称压力 Nominal pressure in the jacket(MPa)	0.30									
电机功率 Motor power(kW)	1.1	1.5	2.2	4.0	4.0	4.0	5.5	5.5	5.5	7.5
搅拌转速 Blending rotation speed(r/min)	85									
容器别类 Vessel type	一类压力容器 Class I pressure vessels									



## 概述 Descriptions

◆ 本设备适用于中药、口服液、食品、保健品、化工等行业的酒精沉淀。酒精沉淀罐系醇沉（亦称换溶或醇杆）旧工艺新开发的专用设备，主要用于中药水煎液经浓缩后的溶液进行冷冻或常温酒精沉淀的操作，也可用于中药醇提后，对浓缩液进行水沉淀的操作。本设备是由附夹套的椭圆封头、锥形底的圆筒体、内装三叶式搅拌以及特殊的微调旋出液管等组装而成。中药水煎浓缩液采用加入酒精配成一定醇度的液体，然后常温、低温冷冻沉降进行液固分离，以提高中药提取液的纯度及透明度。本设备与物料接触部分均采用不锈钢制造，经久耐用，并符合 GMP 标准要求。

◆ This tank is suitable for Traditional Chinese Medicine, Peroral Liquid, Foodstuff, Health food, Chemical Industry etc. It's a special equipment for alcohol sediment, mainly to freeze concentrated herbal drug-decoction or for water sediment after depositing alcohol from the concentrated liquid. It consists of ellipse head with jacket, round barrel with cone, three blades agitator and special micro-adjustment outlet etc. Adding alcohol in TCM drug-decoction to make liquid with some alcohol degree, then proceed liquid & solid separating at normal or low temperature freezing to increase the purity and clarity of extracting liquid. Made by high quality stainless steel plate which has good corrosive-resistant performance according to GMP standard.

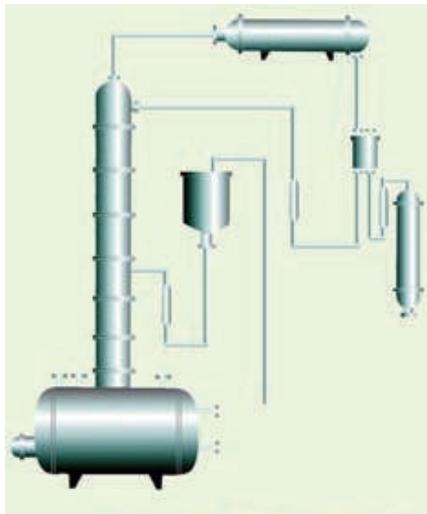
## 技术参数 Technical parameters

参数 Parameter	型号 Type						
容积 Volume(L)	300	500	1000	1500	2000	3000	6000
热换面积 Heat transfer area ( m <sup>2</sup> )	1.8	3.0	4.5	5.4	6.2	8.1	12
工作温度 Working temperature ( °C )	-15~25						
换热介质工作压力 Heat medium working pressure ( MPa)	<0.25						
工作压力 Working pressure ( MPa)	<0.09						
搅拌转速 Rotation speed(r/min)	132						
搅拌功率 Mixing power(kW)	0.75	0.75	1.5	1.5	2.2	3	4
总重量 (参考) Weight(kg)	450	500	580	630	910	1410	2080



## JH 系列酒精回收塔

JH Alcohol Recovery Tower



◆ 该设备是利用酒精沸点低于水及其溶液沸点的原理,用稍高于酒精沸点的温度,将需回收的酒精溶液进行加热蒸发,经塔体精馏后蒸发出高浓度酒精蒸汽。再经冷凝器冷却回收,获得符合浓度要求的酒精。该装置只计五大主体,其他附件为选配。

◆ The equipment takes advantage of the principle that the boiling point of ethanol is lower than that of water and their solution. It applies the temperature that is higher than the boiling point of ethanol slightly to heat and vaporize dilute solution. The steam of high concentration ethanol is vaporized by distillation tower and then cooled and recovered by condenser. In this way, ethanol in conformity with the requirement is got.

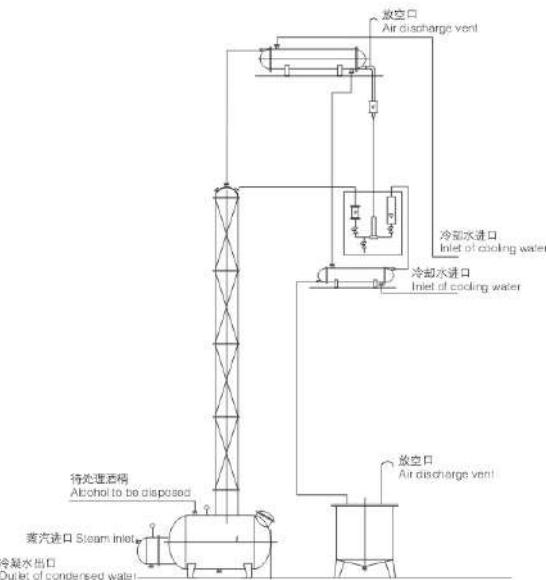
### 应用 Applications

◆ 本装置适用于制药、食品、轻工、化工等行业的稀酒精回收。也适用于甲醇等其他溶媒的蒸馏。

◆ 本装置根据用户的要求,可将30° 左右的稀酒精蒸馏至90–95° 酒精, 成品酒精度要求较高, 可加大回流比, 但产量则相应降低。

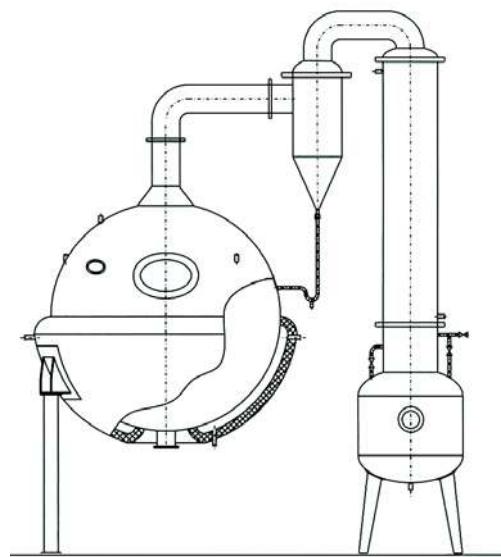
◆ The device is suitable for recovering dilute ethanol of pharmaceutical industry, foodstuff industry, light industry, chemical industry and so on. It is also suitable for distilling solvents such as methanol and so on.

◆ Using this device, about 30° of dilute ethanol can be distilled into 90–95° as request. If the finished product has higher requirement to alcohol content, the ratio of reflex should be increased. But the output will be decreased.



### 技术参数 Technical parameters

型号 Type	塔径 Diameter of tower (mm)	塔釜容积 Volume of tower (L)	塔身高度 Height of tower (mm)	高位罐容积 Volume of high level tank (L)	冷凝面积 Condensing area ( m <sup>2</sup> )	冷却面积 Cooling area ( m <sup>2</sup> )	换热面积 Heat exchange area ( m <sup>2</sup> )	回收能力 Recovery capacity ( kg/h )	回收浓度 Recovery concentration ( % )
T-200	Ø200	1000	6000	1000	5	1	3.0	45-50	> 90
T-300	Ø300	1500	7000	1000	9	1.5	6.0	90-110	
T-400	Ø400	2000	7000	2000	11	2.2	6.5	180-200	
T-500	Ø500	2500	7000	2000	18	4	10	190-310	
T-600	Ø600	2500	7500	2000	25	6	15	430-450	
T-800	Ø800	3000	7500	2500	45	8	26	750-780	



## 概述 Descriptions

◆ 球形浓缩罐主要由浓缩罐主体、冷凝器、汽液分离器、受液桶四个部分组成，可用于制药、食品、化工等行业对料液的浓缩、蒸馏及有机溶媒的回收等工艺。由于采用减压浓缩，故浓缩时间短，且不会破坏热敏性物料的有效成份。

◆ The equipment is mainly consists of main body, condenser, vapor & liquid separator, liquid receiving barrel. It's widely used in Pharmaceutical, Foodstuff, Chemical Industry to proceed such process like: concentrating, distillation and recovery some organic solvent. Short concentration time by using vacuum concentration process. will not cause any damages of heat-sensitive raw material.

## 技术参数 Technical parameters

型号 Type	100	250	500	700	1000	1500	2000	3000
蒸汽压力 Vapor pressure(MPa)					<0.25			
蒸发能力 Evaporating ability ( kg/h)	45	80	110	150	200	280	410	527
加热面积 Heating area(m <sup>2</sup> )	0.8	1.0	1.5	2.7	3.1	4.0	5.0	6.2
冷凝面积 Condensing area(m <sup>2</sup> )	2.0	3.0	4.0	5.0	8.0	12.5	18.5	20.2
检查孔直径 Diameter of condensing hole(mm)	150	250	400	400	400	400	400	400
耗能 Energy consumption(kg/h)	50	90	120	160	195	300	450	580
真空度 Vacuum degree(MPa)					-0.08			
容器类别 Vessel type	一类 Category 1 pressure vessel							
外形尺寸 (参考) Overall size	L	1420	1000	2100	2200	2000	3000	3600
	W	700	1000	1200	1400	1500	1600	1900
	H	2400	2300	2500	2800	2700	3600	4000



## MVR 系列浓缩蒸发系统



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(The picture is exclusively owned by JINLING.)

## 技术参数 Technical parameters

进料量 (t/h) Feeding Capacity	5
生蒸汽耗量 (t/h) Steam Consumption	0.1 ( 饱和蒸汽 )
生蒸汽压力 (MPa) Steam Pressure	0.30 ( 绝压 )
二次蒸汽压力 (KPa) Secondary Steam Pressure	50/110
二次蒸汽温度 (约) (℃) Secondary Steam Temperature	85/105 汽相
料液温度 (℃) Liquid Temperature	92 ± 2
换热器损失 (%) Heat Loss	~5.0%
蒸发器循环类型 Circulation Type	强制式循环
装机总功率 (kw/h) Installation Power	~300

## 原理 Principle

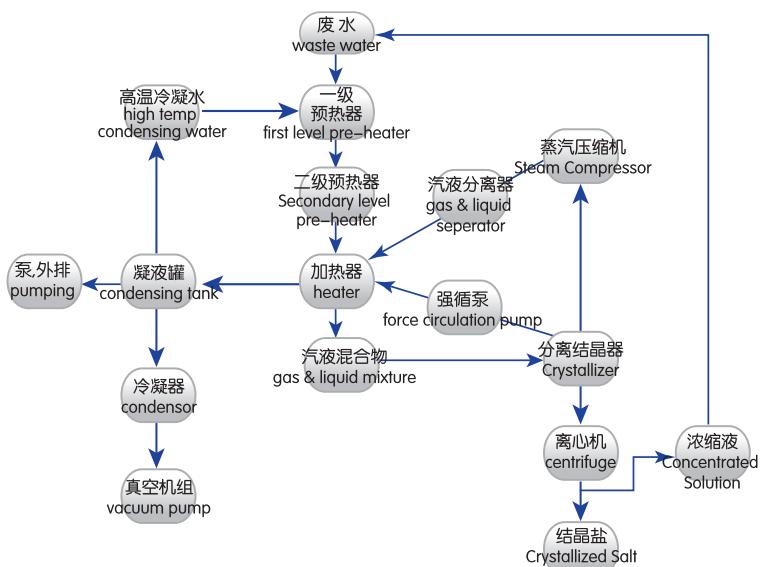
从蒸发器出来的二次蒸汽经过压缩机的压缩，压力和温度随之升高，热焓随之增加，被送到蒸发器的加热室当作加热蒸汽热源即生蒸汽使用，使料液维持蒸发状态，而加热蒸汽将热量传递给物料本身冷凝成水。这样，原来要废弃的蒸汽就得到了充分的利用，回收了潜热，又提高了热效率。其工作过程是低品位的蒸汽经压缩机压缩，温度、压力提高，热焓增加，然后进入换热器冷凝，以充分利用蒸汽的潜热。The vapor from evaporator will be compressed again by compressor, temperature and pressure of vapor is rising up. It will be re-cycled back to the evaporator and be used as heating medium. All potential heat are completely used, MVR has very high efficiency.

## 特点 Features

- 1、占地面积小，不受设置场合的限制；
- 2、可去除氨氮及难降解有机物；
- 3、操作管理方便，易于实现自动化；
- 4、加热器、预热器及冷凝器管板均采用整体管板，延长设备使用寿命；
- 5、采用液位自动控制系统，自动进料，冷凝水自动排放；
- 6、出料采用分离装置，增加出料晶体含量，分离后获得大部分晶体、母液回流少、需要重新消耗的热能少，特别节能。
- 7、采用强制循环蒸发器，具有传热系数高、蒸发强度大、减少结壁与堵管等优点，尤其适用于蒸发过程中产生晶体的物料。
- 8、采用泵自循环系统，使晶体及母液时刻保持循环、避免晶体沉积堵管。

- 1. It occupied very less space.
- 2. It could remove ammonia, nitrogen or some other organic stuff
- 3. Convenient operation, and automatic control
- 4. Heater, Pre-heater and condenser adopt complete plate & pipe structure, which has longer life span
- 5. Automatic liquid level control, automatic feeding and condensing water drainage
- 6. Special separator on discharging part could Increase crystal product content.
- 7. It adopt forcing circulation evaporator, which has high efficiency, evaporation capability, and less blockage, It is suitable for crystallization product.
- 8. The liquid keep circulating Inside, to avoid crystal settled down and block the machine up.

## 工艺示意图 Process Chart





**制粒设备事业部**

***Granulation***



## GMP 型干法辊压造粒机

GMP Dry Granulator (Specially In food and pharmaceutical Industry)



### 概 述 Descriptions

◆ 在吸收国外设计理念的基础上自行开发的一种 GMP 专用干法造粒机，与原干法造粒机相比：成粒度，效能，清洗，维护等性能大大提高，且该设备的设计理念是基于将工艺区与设备传动区明确的区分，驱动装置和控制单元与产品的分隔该设计，遵照“GMP”规范要求，更能敏捷、快速地将部件装拆，进行表面清洗，接触物料部件均采用不锈钢制作。

◆ GMP dry granulator is developed with combination of Germany technique. Compared against conventional dry granulator, GMP has much better granulation rate, and it is easier for a thorough cleaning. It is specially designed for pharmaceutical and food industry, which could meet GMP standard.

### 应 用 Applications

◆ 适用于化学药、化工产品、纯碱、肥料、饲料、塑料助剂、食品、化妆品、合成洗涤剂等各种干粉制粒。

◆ The equipment is suitable in pharmaceutical industry, food Industry, chemical industry, soda ash, fertilizer, feed, plastic additive, cosmetic, synthetic detergent and so on.



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## 特 点 Features

- ◆ 进料装置内部安有搅拌破碎螺旋装置，保证送料均匀。
- ◆ 采用水平螺旋送料，对物料进行强迫预压，转速连续可调。
- ◆ 压辊采用立式或卧式，压辊表面经特殊处理，硬度高。
- ◆ 根据物料特性不同可采用不同表面形状的压辊。
- ◆ 主传动采用可调液压支撑，保证压制过程的压力稳定、密度均匀。
- ◆ 工作运行区域封闭，并通过透明有机玻璃观察其工作状况。
- ◆ 采用单级 D 形制粒装置，降低了破碎后颗粒中的细粉含量。
- ◆ 根据需要可更换筛网，以获得不同目数的物料颗粒。
- ◆ 改进进料螺旋与压辊之间速比，可获得不同硬度 ( 或比重 ) 的颗粒。
- ◆ 模块化设计，拆卸简易，自动化操作。
- ◆ 与物料接触的零部件，采用优质不锈钢。
- ◆ 密闭的干法制粒系统减少生产过程中的粉尘污染。
- ◆ Vertical feeding instead of conventional horizontal feeding.
- ◆ Screw feeder feeding the raw material into rollers.
- ◆ Roller are cantilever installed, which is easy for dissemble and clean.
- ◆ Vertical layout of two rollers, could avoid raw material dropping because of gravity.
- ◆ Two level of sifting system could increases granulation rate
- ◆ The granulator works in closed operation, which avoids dust pollution.
- ◆ PLC and touch screen as an optional choice



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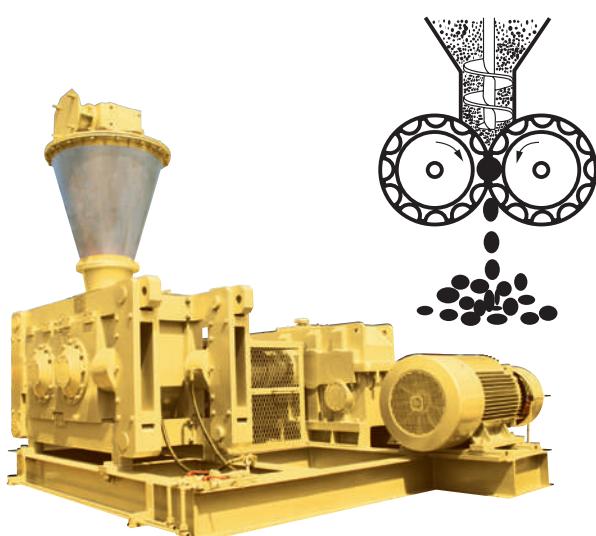
## 技术参数 Technical parameters

型号 Model	GMP×100	GMP×120	GMP×150	GMP×180
压辊宽度 Width of roller ( mm )	100	120	150	180
压辊直径 Diameter of roller (mm)	240	240	250	300
压辊最大压力 / 压辊宽度 Max pressure of roller/width of roller	21.3 kN/cm			
压片厚度 Thickness of material piece ( mm )	1-4	1-4	1-4	1-4
连续处理能力 ( 约 )Capacity(Kg/h)	80-150	150-250	200-300	250-500
颗粒范围 Size of granules			可调 adjustable	
成品率 ( 约 )Productivity	65% - 75%	65% - 75%	65% - 75%	65% - 75%
压辊与加料转数 Rotating speed of roller			可调 adjustable	
装机总功率 ( 约 )Total power (kw)	~15	18	22	28
外形尺寸长 × 宽 × 高 ( 约 )Overall size (mm) (L × W × H)	2100 × 1500 × 1800	2100 × 1500 × 1800	2100 × 1500 × 1800	2100 × 1500 × 2000



# GZL-I型干法辊压造粒机

GZL-I Dry Granulator



## 特 点 Features

- ◆ 物料经机械压力强制压缩成型,可以不添加任何湿润剂,产品纯度得到保证。
- ◆ 干粉直接造粒,无需后续干燥过程,更有利于现有生产流程的衔接和改造。
- ◆ 颗粒强度高,堆积比重的提高较其它造粒方式都更为显著。尤其适合于增加产品堆积比重的场合。
- ◆ 可控制环境污染,减少粉体浪费和包装成本,提高产品运输能力。
- ◆ 结构紧凑,维修方便,操作简单,工艺流程短,能耗低,效率高,故障率低,适合原料范围广,辊压力可根据不同物料自由调整。
- ◆ 加料和喂料装置采用变频无级调整控制,自动化程度高,可实现一人多机控制,劳动强度低及可长期连续运转等特点。
- ◆ 主要传动部件均采用优质合金材料、不锈钢材料、钛材、铬和其他表面合金制作,大大提高了耐磨损、耐腐蚀、耐高温及耐压能力,使该机具有较长的使用寿命。
- ◆ The granulation is finished by pressure, there's no need any binder, it could promise the purity of product.
- ◆ The granule product has good strength and high bulk density
- ◆ It could reduce environmental pollution, reduce powder waste and freight cost
- ◆ The granulator has compact structure, easy for maintenance and repair
- ◆ Feeding system adopt VFD control, it could realize automatic operation
- ◆ Main driving parts are made of High quality alloy material, stainless steel, titanium, chromium etc, which are abrasion-proof, corrosion-proof, high temperature-proof, and have long life span.

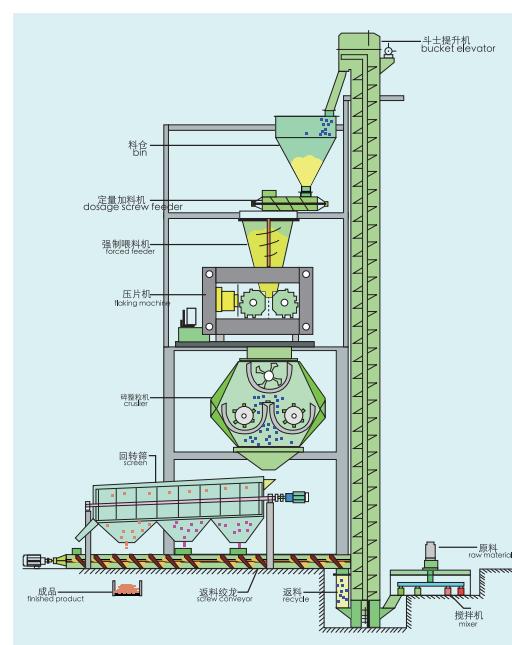


## 概 述 Descriptions

- ◆ GZL系列干法辊压造粒机是采用干法挤压工艺技术,对含水量<10%的粉状物料进行压缩成片,再经过破碎、整粒、筛分工艺,使片块状物料变成符合使用要求的颗粒状物料。
- ◆ 干法辊压造粒主要是靠外部加压方式,使物料强制通过两个反面旋转的辊轮间隙,压缩成片。在辊压过程中,物料的实际密度能增大1.5-3倍,从而达到一定的强度要求。
- ◆ GZL dry granulator is suitable for granulating the powder which contains lower than 10% water content. With hydraulic pressure, two roller contactor press the powder in flake shape, after breaking, sifting and granulating, the product become granules.

## 原 理 Principle

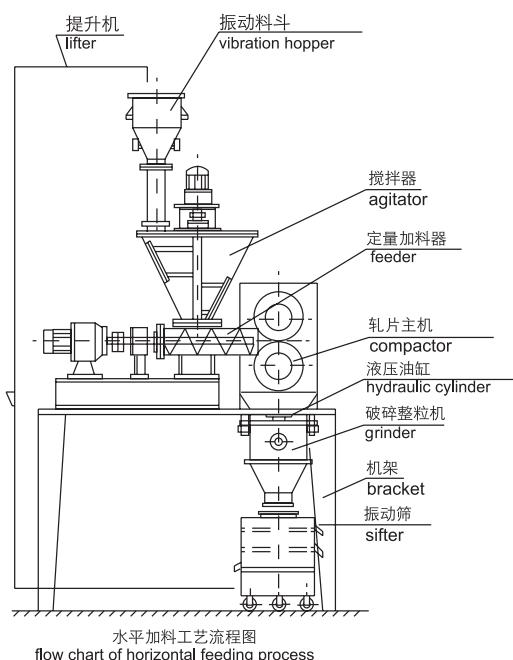
- ◆ 各种干粉物料从设备顶部加入,经脱气、螺旋预压进入两个平等轧辊,轧辊相对旋转,物料被强制送入两辊之间,轧辊将物料咬入辊隙进行压缩,物料通过压缩区后,物料的表面张力和重力使之自然脱出。脱出后的指条状团块进入碎粒机由旋转刀排破碎,被破碎的物料进入整粒机通过滚动刀排使颗粒和部分粉状物料进入旋振筛进行筛分。合格品通过输送机被送入成品仓。粉状筛下物料通过输送机再次被送回原料仓进行二次辊压,挤压力的大小可根据造粒操作的需要由液压油缸的压力进行调节。
- ◆ 通过改变辊面开槽形式,可得到片状、条状、扁球状物料。
- ◆ The raw material is fed from top, enter the horizontal roller compactors via screw conveyor. Under high hydraulic pressure, powder form raw material becomes flake form products, it will discharged from roller compactor automatically by gravity. Then flake form products will enter breaker, sifter and granulator in sequence to become granules. The part of granules which smaller or larger than requirement will be re-cycled to the dry granulator again.
- ◆ The product shape could be flake, strip or oval shape.





## 应用 Applications

- ◆ 石油化工，精细化工，医药，食品，金属粉末，生物工程，农药，肥料，矿产，煤炭
- ◆ Petro-chemical, fine chemical, pharmaceutical, food-stuff, metal powder, Bio-engineering, pesticide, fertilizer, mine and coal.



## 技术参数 Technical parameters

项目 item	型号 model	GZL-240	GZL-360	GZL-450	GZL-650
轧辊直径 diameter of roller (mm)	Φ 240	Φ 360	Φ 450	Φ 650	
轧辊有效使用宽带 width of roller (mm)	80~160	180~500	220~700	300~800	
轧辊转速 revolution of roller(rpm)	15~32	14~30	10~25	11~25	
最大成形压力 Max. pressure of roller (Mpa)	12	16	21		
轧片最大厚度 Max. thickness of flake(mm)	4	8	8	8	
成品粒度 diameter of finished flake(mm)	0.5~6	0.5~8	0.5~6	0.5~6	
成品产量 (约) capacity of finished product (kg/h)	160~400	400~2400	680~4000	1000~5000	
主机功率 power of main machine (kw)	7.5	22~37	45	75	
装机总容量 (约) total power (kw)	20	50	80	125	
外形尺寸 (约) overall dimension(L × W × H) (mm)	1500×1300×5000	2000×2000×9000	2500×2500×10000	3500×3500×10000	



# PGL 喷雾干燥制粒机

PGL Spraying Granulator



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气体流程  
Gas flow

## 概述 Summary

- ◆ 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 spray drying/ fluid granulating in one body and realize liquid material granulating in one step.
- ◆ Using the spraying process, it is particularly suitable for micro auxiliary raw materials and thermal sensitive raw materials. Its effect is 1-2 times than FL fluid bed granulator.
- ◆ 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%. 0.2-2mm granule could be made.
- ◆ The improved inner multi-fluid atomizer could treat the liquid extract with 1.3g/cm<sup>3</sup> of gravity.

## 原理 Principle

- ◆ 将一定的粉体物料放入流化床内作为晶种，液态物料经泵送至喷嘴雾化器。首先与喷雾用高温空气瞬间除去部分水份，残余水份则在底部流化床低温干燥完成，并同时成粒。
- ◆ Put certain amount of powder raw material into fluid bed as seed crystal. Meanwhile liquid raw material is pumped into the atomizer, part of moisture are removed momentarily through contacting with hot air, the residual moisture is removed at the bottom of fluid bed and finished drying by fluid bed relatively low temperature. Then the granule could be got.

## 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。

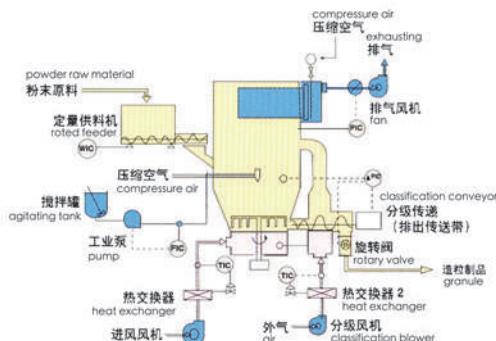
食品:可可、咖啡、奶粉、颗粒果汁、调味品等。

其它行业:农药、饲料、化肥、颜料、染料等。

Pharmaceutical industry: tablet, infusion, capsule granule, granule of Chinese medicine without sugar or with low sugar.

Foodstuff industry: cocoa, coffee, milk powder, juice of granule, flavoring and so on.

Other industry: pesticides, feed, chemical fertilizer, pigment, dyestuff and so on.



## 技术参数 Technical parameters

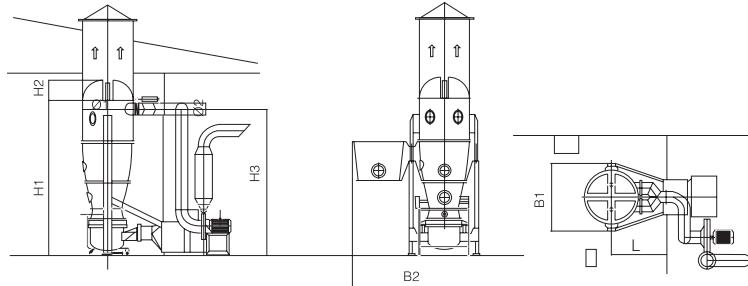
项目 Item	规格 Specification		3	5	10	20	30	40	80	120	150
原料容器 Volume of container	L	26	50	100	220	300	420	670	1000	1500	
供液量 Liquid speed	kg/h	2-4	4-6	6-15	15-25	20-40	30-60	60-100	20-160	100-200	
液体比重 Specific gravity of liquid	kg/L	≤1.3									
蒸汽量 Consumption of steam(0.6Mpa)	kg/h	25	50	120	160	240	280	300	380	465	
压缩空气 Compressed air(0.6Mpa)	m <sup>3</sup> /min	0.4	0.6	0.9	0.9	1.1	1.1	1.3	1.6	1.8	
辅风机 Auxiliary fan	kW	0.55	0.75	0.75	1.1	1.5	1.5	1.5	2.2	2.2	
主风机 Main fan	kW	3	4	7.5	11	18.5	18.5	22	30	37	
主机尺寸 Size of main equipment	H <sub>1</sub> (mm)	1900	2360	2680	3150	3630	3630	4120	5050	5400	
	H <sub>2</sub> (mm)	190	260	340	490	540	590	690	890	990	
	H <sub>3</sub> (mm)	1680	2140	2460	2930	3410	3410	3900	4830	5180	
	Ø1(mm)	400	550	700	1000	1100	1200	1400	1800	2000	
	Ø2(mm)	150	180	180	250	280	280	315	355	355	
	B(mm)	860	1010	1160	1460	1560	1660	1860	2260	2460	
	L(mm)	1050	1050	1250	1400	1450	1500	1600	1800	2000	

所有尺寸仅供参考，视物料情况，本公司有变更权利，不另行通知。

All size are only for reference.



结构简图 Structure Diagram



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## 原理 Principle

◆ 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 material is in a boiling state in fluid bed, heated and mixed by filtered hot air. Then spray binder into fluid bed, make the dry powder material agglomerate and become granules. The moisture in granule is evaporated by hot air and binder is solidified. Finally, the ideal, uniform and porous finished granule will be got.

## 技术参数 Technical parameters

### 主要特点 Feature

- ◆ 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制粒;
- ◆ 采用抗静电滤布,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 granulating, the flow property is improved and the dust is reduced.
- ◆ Because of powder granulating, its solving property is improved.
- ◆ The mixing, granulating and drying could be completed in one machine.
- ◆ Being adapted anti static filter bag, the operation is safe.
- ◆ There is explosion releasing hole to keep the people's security when explosion.
- ◆ The equipment has no dead corner, easy for feeding, discharging and clean. It could meet the requirement of GMP.

项目 Item		机型 Model of specification											
名称 Name	单位 Unit	3	5	15	30	45	60	90	120	150	200	300	500
原料容器容积 Volume of container	L	12	22	45	100	155	220	300	420	550	670	1000	1500
生产能力 capacity	kg/批 batch	3	5	15	30	45	60	90	120	150	200	300	500
蒸汽 steam	压强 Pressure	Mpa	0.4-0.6										
	耗量 Consumption	kg/h	10	18	35	60	99	120	130	140	161	180	310
风机功率 Power of fan	kw	2.2	3	4	5.5	7.5	11	15	18.5	22	22	30	45
电加热功率 Power of electric heater	kw	6	9										
噪音 Noise	dB	风机隔离处理噪音低于75分贝 No more than 75db											
压缩空气 Compressed air	压力 Pressure	Mpa	0.6										
	耗量 Consumption	m <sup>3</sup> /min	0.3	0.3	0.6	0.6	0.6	0.9	0.9	0.9	1.1	1.3	1.5
主机尺寸 Size of main equipment		H <sub>1</sub> (mm)	2600	2600	2100	2250	2250	2850	2850	2850	3300	3500	3850
		H <sub>2</sub> (mm)			250	320	420	490	490	590	640	690	790
		H <sub>3</sub> (mm)			1900	2050	2050	2600	2600	2600	3000	3280	3630
		B <sub>1</sub> (mm)	1550	1650	1010	1160	1320	1460	1560	1660	1760	1860	2060
		B <sub>2</sub> (mm)			1650	1800	2060	2460	2660	2800	3060	3260	3660
		Ø1(mm)	300	400	550	700	860	1000	1100	1200	1300	1400	1600
		Ø2(mm)	150	180	180	180	250	280	280	280	280	315	355
		L(mm)	850	1000	1100	1250	1530	1530	1530	1650	1650	1750	1850

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# FLP 多功能制粒(丸) / 包衣干燥机

FLP Multifunctional Fluidized Bed Granulator / Coater / Pelletizer



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## 概述 Summary

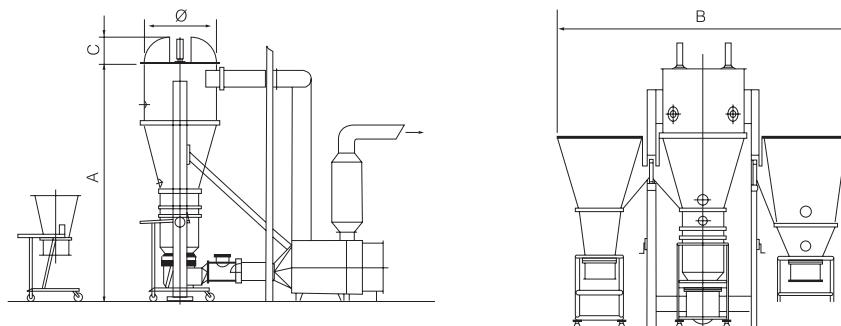
◆ 系列多功能制粒/包衣机是集喷雾制粒--离心包衣--一体化的多功能设备。该机兼容多种工艺操作。特别适用于医药、食品、化工等行业多品种制粒包衣。所制备的颗粒可为多孔性速溶颗粒, 也可为致密的球(丸)颗粒, 真球度极高。该机密闭性好、平滑光洁、无死角、易清洗、操作简便。整个工艺均用单机即可作业。并在同一封闭负压容器内完成一步制粒(丸)包衣。

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

◆ The finished granule is porous, solve quickly, finished pellet is compact and has high degree of ball. The machine has good seal, surface of the equipment is neat and lubricity inside and outside, no dead corner and easy to clean. It could finish granulating, pelletizing and coating in one machine.



## 结构简图 Structure Diagram

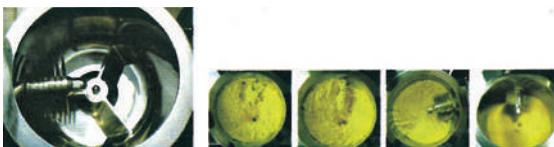


## 技术参数 Technical parameters

项目 Item		机型 Specification						
名称 Name	单位 Unit	3	5	10	15	30	60	120
容器直径 Dia of container	mm	400	600	700	800	1000	1200	1500
生产能力 capacity	kg/批h	0.75-3	1.2-5	2.5-10	3-15	7.5-30	15-60	30-120
风机功率 Power of fan	kw	3	4	5.5	7.5	7.5	11	18.5
蒸汽 Steam	压强 Pressure	Mpa	0.4-0.6					
耗量 Consumption	kg/h	电6kw	20	35	42	60	160	2440
压缩空气 Compressed air	压强 Pressure	Mpa	0.6					
耗量 Consumption	m <sup>3</sup> /min	0.3	0.4	0.6	0.6	0.9	1.1	1.5
噪音 Noise	dB	风机处理不大于75分贝 No more than 75 db						
主机功率 Size of main equipment	H <sub>1</sub> (mm)	2600	2600	2790	3350	3720	3850	4190
	H <sub>2</sub> (mm)			340	490	590	690	790
	H <sub>3</sub> (mm)			2570	3130	3500	3630	3975
	Ø1(mm)	400	500	700	1000	1200	1400	1600
	Ø2(mm)	150	180	250	250	280	280	315
	L(mm)	800	800	1250	1400	1500	1600	1700
	B <sub>1</sub> (mm)	1550	1650	1160	1460	1660	1860	2060
	B <sub>2</sub> (mm)			1860	2460	2860	3260	3660



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### 原理 Principle

◆ 粉体物料与粘合剂在圆筒形容器中由底部混合桨充分混合成湿润软材, 然后由侧置的高速粉碎桨切割成均匀的湿颗粒。

◆ The powder raw material and binder in barrel will be stirred into wet soft material by stirring oar, and then be cut into uniform wet granule by cutting oar.

### 主要特点 Feature

◆ 本机采用卧式圆筒构造, 结构合理; 充气密封驱动轴, 清洗时可切换成水; 流态化造粒, 成粒近似球形, 流动性好; 较传统工艺减少25%粘合剂, 干燥时间缩短; 每批次干混2分钟, 造粒1~4分钟, 工效比传统工艺提高4~5倍; 在同一封闭容器内完成, 干混 - 湿混 - 制粒, 工艺缩减, 符合GMP规范, 整个操作具有严格的安全保护措施。

- ◆ 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 for tablet pressing procedure.
- ◆ Compare 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.

### 技术参数 Technical parameters

项目 Item		规格 Specification							
名称 Name	单位 Unit	10	50	150	200	250	300	400	600
容积 Capacity	L	10	50	150	200	250	300	400	600
产量 Output	kg/batch	3	15	50	80	100	130	200	280
混合速度 Mixing speed	r.p.m	300/600	200/400	180/270	180/270	180/270	140/220	106/155	80/120
混合功率 Mixing power	kw	1.5/2.2	4/5.5	6.5/8	9/11	9/11	13/16	18.5/22	22/30
切割速度 Cutting speed	r.p.m	1500/3000							
切割功率 Cutting power	kw	0.85/1.1	1.3/1.8	2.4/3	4.5/5.5	4.5/5.5	4.5/5.5	6.5/8	9/11
压缩空气耗量 Consumption of compressed air	m <sup>3</sup> /min	0.6	0.6	0.9	0.9	0.9	1.1	1.5	1.8



**QZL 球形抛丸机**

QZL Pelletizer



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(The picture is exclusively owned by JINLING.)

### 原理 Principle

◆ 本机是通过设置旋转离心盘、鼓风机、气动喷枪，将湿颗粒制成美丽的球丸。将前道工序做成的湿颗粒投入旋转离心盘内，启动鼓风机后再将旋转离心盘启动，使湿颗粒受到环隙空气浮力、旋转离心力、自身重力作用，呈环周绳股状运动，从而形成真球度极高的球丸。旋转盘自动升降，使物料的收集和制丸速度大大提高。

◆ This machine makes damp granule into beautiful pellet by setting rotating centrifugal disk, blower, and pneumatic nozzle. Feed damp granule into rotating centrifugal disk, start fan then start rotating centrifugal disk. It can make the damp granule undertaken the action of air floating force in ring gap, rotating centrifugal strength and gravity itself, appear circle rope-turning movement and become high-degree ball shape pellet. The automatic lifting and dropping of rotating plate improves the material collection speed and pelletizing speed a lot.

### 技术参数 Technical parameters

型号Specification	230	400	500	700	1000	1300
动力Power(kw)	0.75	0.55	0.75	3.0	4.0	7.5
能力Capacity(kg/h)	2.5-4	5-8	8-16	40-80	120-200	150-300

所有尺寸仅供参考,视物料情况,本公司拥有变更权利,并不另行通知.  
All sizes are used for reference only.



# 其他辅助设备

***Other Assistant Equipment***



## 系列热风炉系列

Hot air Furnaces

### JRF/RLY/GMF 系列热风炉

JRF/RLY/GMF Series Coal Fired Hot Air Furnace



系列燃煤热风炉

系列燃油热风炉

#### 原理 Principle

◆ 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)。采用直燃式请在订货时说明。

◆ The coal furnace is an indirect type furnace which provides clean hot air after heat exchange. It has very high heating efficiency which could reaches 60-75%. It has compact structure, less occupied area, safe operation, and its' price is only half of same capacity boiler. The furnace adopt high temperature resistant design, it has longer life span than other kind of coal furnace. Special design prevent dusting on heat exchanger, it has stable temperature output. Besides coal, It also support burning wood, charcoal, husk or other biomass.

### 系列直燃式热风炉

Series Gas / Oil Fired Hot Air Furnace



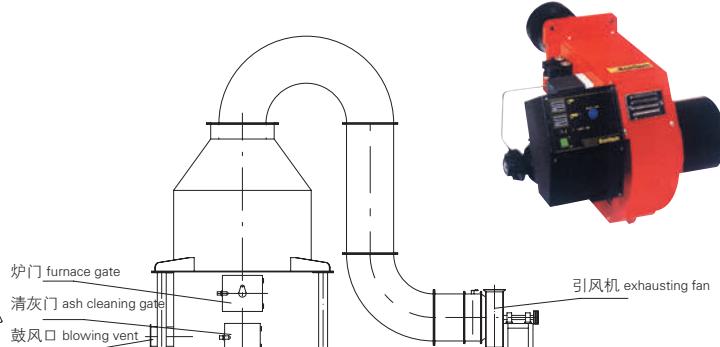
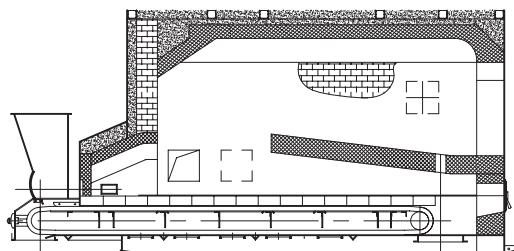
系列直燃式热风炉



#### 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，并采用了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。该炉的各项技术经济指标均达到了国内领先水平。如采用稻壳等作燃料时，应配备风送系统。

◆ The furnace support to burning natural gas, LP gas, bio-gas, diesel, or heavy oil as heating resource to generate heat. There are two kinds of designs, direct burning and indirect burning. Direct type furnace will burning gas or oil, and directly introduce burned smoke inside dryer, it's output temperature could maximally reach to 600°C. Indirect type furnace will burning gas and introduced clean hot air into dryer after heat exchanging, maximally it's output temperature could be around 300°C. The choice of direct or indirect type depends on user's raw material. When output temperature reaches settled value, gas burner will stop working or changed into "small flame" automatically. Gas burner adopt Italy brand Riello or Unigas





## MC 系列脉冲布袋除尘器 MC Pluse Bag Filter



### 概 述 Descriptions

▲ MC方型脉冲布袋除尘器是在MC-I型的基础上经改进修改而成的，它除了具有I型除尘效率高、处理风量大、性能稳定、操作维修方便等特点外，还具有比I型使用效果好、不易积粉、应用范围广等特点，广泛适用于粮食食品、饲料、冶金化工、建材、医药等行业的通风除尘和粉尘回收。

▲ MC pluse bag filter has high dust collection rate, large processing capacity, stable operation and easy maintenance, It is widely used for food industry, feed industry, chemical industry, pharmaceutical industry etc.

### 技术参数 Technical parameters

项目 item	型号 spec	MC24	MC36	MC48	MC60	MC72	MC84	MC96	MC120
过滤面积 filtering area (m <sup>2</sup> )		18	27	36	45	54	63	72	90
滤袋数量(只) quantity of filtering bag (pcs)		24	36	48	60	72	84	96	120
过滤风速 filtering air speed (L/m <sup>2</sup> · s)		20~40	20~40	20~40	20~40	20~40	20~40	20~40	20~40
过滤风量 filtering air volume(m <sup>3</sup> /h)		1300~2600	1500~3900	2600~5200	3240~6480	3900~7800	4550~9100	5200~10500	6500~13000
最大外形尺寸 mm	L	1000	1400	1800	2200	2600	3000	3560	4360
Max. overall dimension	W × H	1450 × 3700			1450 × 3850			1450 × 4100	
脉冲阀数量	quantity of solenoid valve	4	6	8	10	12	14	16	20
清灰装置	dust remover	耗用压缩空气量	compressed air consumption m <sup>3</sup>	0.07~0.30	0.11~0.40	0.15~0.50	0.18~0.60	0.22~0.60	0.25~0.90
		压缩空气压力	compressed air pressure kg/cm <sup>2</sup>	5 ~ 7					

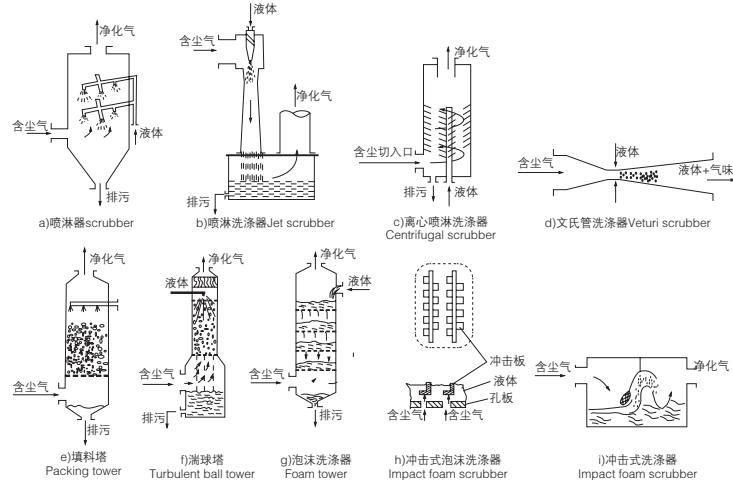
## 水沫除尘装置 Scrubber

### 原 理 Principle

▲ 当气体冲击到湿润的器壁时，尘粒被器壁所粘附或当气体与喷洒的液滴相遇时，液体在尘粒质点上凝集，增大了质点的重量，而使之降落回收，从而达到除尘效果。

▲ When the gas contact with the moist chamber and packing material, or when the gas contact the sprayed filtering liquid, It will be covered by filtering liquid. It becomes heavier and drop back to the collection tank.

### 结构示意图 Schematic of structure





## 系列粉碎机

Grinder

### 30B 万能粉碎机 30B Universal Grinder



▲ 本机利用活动齿盘和固定齿盘间的高速相对运动，使被粉碎物料经齿盘冲击、摩擦及物料彼此间冲击等综合作用获得粉碎。

▲ The grinder is widely used for pharmaceutical, agriculture, food and chemical industries. It grinds material through relative motion between movable mill gear and static mill gear.

The grinder has stable operation and compact structure. Mesh size of grinded product could be adjusted by replacing different size screen. It is available for grinding heat sensitive raw material with cooling water jacket and cooling air ventilation design. Bag filter as an optional choice for obtaining a good operation environment.

型号 model	30
生产能力 productive capacity	40-200
成品细度 (mm) degree of fineness of finished product	0.173~0.117(80~120 mesh) 含量 ≥ 85%
最大进料粒度 (mm) max size of inlet material	8
总功率 total power(kW)	5.5
活动齿盘直径 (mm) diameter of movable teeth disc	φ318
重量 weight	320

### WFJ 系列微粉碎机

WFJ Fine Grinder



该微粉碎机，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机腔内产生的热量源源不断地排出，故也适应于热敏性物料的粉碎。

WFJ model grinder is consist of grinding chamber, piping device, dust collection device and electric control device. There are grading system which could finish grinding and grading in one time. WFJ is in continuous production, and it is suitable for heat sensitive material.

WFJ could maximally grinding raw material into 450 mesh.

型号Type	WFJ-15	WFJ-18	WFJ-32
生产能力Capacity (kg)	10-200	20-450	60-1000
进料粒度Size of inlet material (mm)	<10	<12	<15
出料粒度Size of outlet material (mm)	80-320	80-450	80-450
总功率Power (kw)	13.7	19.07	38.85
主转速Rotating speed of main axis (rpm)	4500	4480	4000

### CSJ 系列粗粉碎机 CSJ Rough Mill



▲ 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，物料自动从出口处流出。

▲ Raw material being fed into grinding chamber by feeder, stroked and impacted by the knife-edges and knife file, cut and grinded simultaneously by rotating knife and fixed knife. Material will be discharged from outlet automatically by centrifugal force.

型号type	CSJ-250	CSJ-500
进料粒度inlet material size	≤100mm	≤100mm
出料粒度outlet material size	0.5-20mm	0.5-20mm
主轴转速main axis speed	940rpm	1000rpm
功率power	4KW	11kw
产量capacity	50-300	80-800kg/h

### 中草药粉碎机

Fiber Grinder



▲ 广泛应用于制药、化工食品、染料等行业粉碎，该机械由于剪切及撞击原理所以对各种状态物料均匀可粉碎。特别针对纤维状物料的粉碎。采用固定和旋转片互合剪切及撞击、在旋转盘高速运转达到了快速粉碎。成品连续从旋风分离，空气经布袋过滤后排出。

▲ It grinds raw material through the relative motion between movable rotary mill vane and static mill vane. Grinded product is discharged via bottom port, dust will be collected by bag filter, a good operation environment could obtained. It is specially suitable for grinding fiber form raw material.

名称	功率 (kw)	细度 (mesh)	生产能力 (kg/h)	主轴转速 (rpm)	进料细度 (mm)	重量细度
WFS130	2.2	20-200	5-25	6000	< 10	中药粉碎机
WFS200	3	20-200	20-90	4500	< 10	
WFS250	5.5	20-200	70-150	3000	< 10	
WFS300	5.5	20-200	100-200	2500	< 10	



## YK-160 摆摆式颗粒机

### YK-160 Swaying Granulator



▲ 本机是一种将潮湿粉末混合物，在旋滚筒的正、反旋转作用下，强制性通过筛网而制成颗粒的专用设备。C型为加重型适合粘度大的物料。

▲ 该机型制成的颗粒为不规则且较易扩散的颗粒。可根据产量要求配套大型机生产。

▲ 本机适用于制药、食品、化工、固体料等行业的制粒，或将结块状物料打成小颗粒。

▲ Under the action of clockwise and counterclockwise rotation of roller, wet powder will be forced to pass through sieve and then become granules. The granules made by YK-160 is irregular shape and easy to dissolve into water. The machine is suitable for pharmaceutical, foodstuff, chemical, solid drink and so on industries.

型号 Model	A, B	C
生产能力 Capacity(kg/h)	100~200	150~300
电机功率 Power of mot(kw)	2.2	3
滚筒转速 Revolution of motor(r/min)	65	65
摇摆角度 Sway angle(°)	360	360
滚筒直径 Diameter of roller(mm)	Ø160	Ø160
重量 Weight(kg)	~300	450
外形尺寸 Overall dimension(mm)	1150x680x1150	1260x750x1150

## XL 系列挤压造粒机

### XL Extruding Granulator

#### 原理 Principle



▲ 将搅拌好的物料根据筛孔大小制成所需颗粒，对粘性较高或受热量稠的物料应特别说明，以便调整。该机制粒成型率高、圆柱状颗粒且强度较好、颗粒美观、自动出料、适合与流水作业操作。

The machine will make different size of granule according to change different diameter size of sieve. Special version should be offered when the material has high viscosity. XL has a high success rate in making material into column shape granule. The product has good intensity and beautiful appearance. The machine discharges automatically and suitable for flow process

#### 应用 Applications

本机是制药、食品、冲剂、化工、固体饮料等行业的理想机械。

The machine is mainly suitable for pharmaceutical industry, foodstuff industry, chemical industry, powdered drinks and so on.

#### 技术参数 Technical Parameters

碾刀尺寸 Extension knife size (mm)	制粒直径 Diameter of sieve ( mm )	重量 Weight ( Kg )	电机功率 Motor power ( Kw )	生产能力 Capacity ( kg/h )
Ø300	1-3	480	4	100-300

## 系列振荡筛

### Sifter



◆ It sifting and grading raw material through vibration force. It is in continuous production. One to four layers screen in one sifter is available for choice.

◆ There has cover to avoid dust flying during sifting. It adopts spring to reduce vibration force, and makes the sifter a stable working condition.

◆ It is available for large scale production.

◆ 振荡筛有单振动和双振动两种形式。该机以它独有的高效、节能、低噪音等特性深受广大用户的欢迎，广泛适用于医药、化工、食品等行业的各种物料连续过筛，根据用户需要可制做成1~4层筛面。

◆ 本机上部采用快拆式手柄，把整机连成一个整体，上盖采用全密封，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，可调整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。

型号spec	ZS-350	ZS-515	ZS-650	ZS-800	ZS-1000	ZS-1500
生产能力 capacity (kg)	40-500	60-600	80-800	150-1200	300-2000	350-2800
过筛目数 meshes	12-200	12-200	12-200	12-200	5-325	5-325
电机功率 power (kw)	0.55	0.55	0.55	0.75	1.5	2.2
主轴转速 speed (rpm)	1380	1370	1370	1500	1500	1500
外形尺寸 overall dimension	540x540x1060	710x710x1290	880x880x1350	1000x1000x1400	1100x1100x1200	1600x1600x1200
净重 weight (kg)	100	180	250	300	350	400



## 系列混合机

Mixer

### CH 系列槽形混合机 CH Slot Mixer



◆ 该机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，搅料轴两端设有密封装置，能防止物料外泻，广泛适用于制药、化工、食品等行业。

◆ CH slot ribbon mixer is usually for mixing wet powder or filtered cake form material. The gap between ribbon agitator and chamber are very small, there has no mixing dead corner. Two shaft ends being properly sealed, and there's no leaking problem.

◆ CH is available for mixing solid material with liquid material.

容量Volume ( L )	100	150	200
电机功率Power of motor ( Kw )	2.2	3	3
搅拌转速Stirring speed ( rpm )	24	24	24
倒料角度Discharge angle(° )	105	105	105
重量Weight ( kg )	350	500	650

### ZKH 系列混合机 ZKH Mixer



◆ 混合筒结构独特、混合功效高、无死角、筒体用不锈钢材料制作、内外壁抛光、外形美观、混合均匀、用途广泛。符合 GMP 标准。  
◆ Its mixing efficiency is high and there's no dead corner. It's inner and outer wall is processed through polishing. The scope of application is wide.

型号规格Type	0.18	0.5	1.0	1.5	2.5	4.0	6.0
生产能力Capacity (kg/h)	72	200	400	600	1000	1600	2400
进料时间Feeding time(min)	3-5	4-6	6-9	6-10	8-15	10-15	18-25
混合时间Mixing time(min)	4-8	6-10	6-10	6-10	8-12	8-12	
全容积Total volume(m <sup>3</sup> )	0.18	0.5	1.0	1.5	2.5	4.0	6.0
搅拌转速Stirring speed(rpm)	12	12	12	12	5	5	
电机功率Power of motor(kw)	1.1	2.2	4	4	7.5	11	18.5
回转高度Rotating height(mm)	1580	2400	2840	3010	3680	4350	5300

### DSH 系列双螺旋锥形混合机 DSH Conical Screw Mixer



◆ 该机自转均有一套电机及摆线针轮减速机来完成，采用两螺杆非对称搅拌，使物料搅拌范围大，混合速度快，对比重悬殊，混配比较大的物料混合更为适合。本机物料接触部分均为不锈钢制造。

◆ DSH conical screw mixer is widely used for pharmaceutical, chemical and animal feed industries. There are two screw inside the mixer, main shaft rotating in one direction, and two screw rotating in opposite direction. It forces raw material moving and blending completely inside the chamber

◆ DSH has very fast mixing speed and high mixing precision, it is specially suitable for the materials which have big difference of bulk density. It is available for mixing solid material with liquid material.

型号Type	0.3	0.5	1	2	4	5	6	10
全容积Total volume ( m <sup>3</sup> )	0.3	0.5	1	2	4	5	6	10
装载系数Feeding ratio								0.4-0.6
混合物料Mixing material ( $\mu\text{m}$ )								40-3000
工作条件Working condition								常温、常压、粉尘密封Normal temperature, pressure and dust seal
功率Power ( kw )	2.2	3	4	5.5	11	15	18.5	22
混合时间Mixing time ( min )								( 根据物料确定)(depend on different material)

### SYH/EYH 系列运动混合机 SYH/EYH Mixer



◆ 装料的筒体在主动轴的带动下，作周而复始的平移、转动和翻滚等复合运动，促使物料沿着筒体作复合运动，从而实现多种物料的互相流动、扩散、积聚、掺杂，以达到均匀混合的目的。

◆ Raw material moving in three directions inside the chamber, include vertical moving, horizontal moving and rotary moving. Three directions moving forces raw material blended completely.

◆ SYH is suitable for the raw material which has big difference of bulk density, mixing precision could reach 99.9%. It's loading rate could arrives to 90%.

型号规格Type	5	15	50	100	200	400	600	800	1000	1200	1500
料筒容积Volume of material barrel ( L )	5	15	50	100	200	400	600	800	1000	1200	1500
最大装料容积Max charging volume ( L )	4.5	13.5	45	90	180	360	540	720	900	1080	1350
主轴转速Rotating speed of main axis ( r/min )						0-20		0-15	0-13	0-10	0-9
电机功率Power of motor ( kw )	0.25	0.37	1.1	1.5	2.2	4	5.5	7.5	11	11	18.5

# 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. 干燥物料的形态:  微粉  颗粒  片状  滤饼  膏状

Shape of raw material Micro powder Granule Flake Filter cake Paste

to be dried:  粉料  块状  纤维状  糊状  液体

Powder Block Fibric form Mushy Liquid

2. 干燥物料的初含水: \_\_\_\_\_ % 产品终含水: \_\_\_\_\_ % PH值: \_\_\_\_\_ 溶点: \_\_\_\_\_ °C,

Primary moisture of raw material to be dried Final moisture of finished product PH value MP

物料最高承受温度: \_\_\_\_\_ °C, 物料松散程度: \_\_\_\_\_

Max. withstood T of raw material Bulk density of raw material

3. 湿分主要成份: \_\_\_\_\_

Main ingredient of damp powder

4. 水份存在形式:  表面水 Surface water  结晶水 Crystal water

Existed form of moisture

5. 成品细度: mm(目Mesh) 湿品堆比重 kg/m<sup>3</sup> 产品堆比重: kg/m<sup>3</sup>

Fineness of finished product Bulk specific gravity of damp product Bulk specific gravity of finished product

6. 物料有关其他特征:  粘性  软化点  异味  易爆性  透气性  腐蚀性(PH值)

Reletive other character- Viscosity Softening point Peculiar smell Explosion hazard Gas permeability Causticity(pH value)

istics of raw materials  热敏性  相变点  可燃性  静电性  团聚性  晶体或颗粒折易粉碎性

Thermal sensitive Transition point Inflammability Electric static Constipate Comminuted of crystal or granule

7. 干燥产量要求: 湿品 \_\_\_\_\_ kg/h 或 干品 \_\_\_\_\_ kg/h,

Requirement of output Damp product or dried finished product

8. 颗粒产品能否破坏:  能  不能

Whether the granule can be damaged Yes No

9. 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

10. 干燥方式要求:  连续干燥  间隙干燥

Requirements of drying method Continuous drying Drying in batch

11. 可供的热源:  电  蒸汽  热水  导热油  燃气炉  燃油炉  燃煤炉

Heat source to be supplied Electricity Steam Hot water Heat conduction oil Gas fuel furnace Oil fuel furnace Coal fuel furnace

12. 选购设备要求制作材质 \_\_\_\_\_

Required material for manufacturing equipment when selection

13. 环保要求、物料回收方式及回收率的要求  旋风  布袋  湿法除尘

Requirements of environmental protection, recovery and its rate Vortex Cloth Bag Dust Filter Humid

14. 可供安装场地 \_\_\_\_\_

Field to be installed

15. 其他要求 \_\_\_\_\_

Other requirements



National High & New Technological Enterprise  
 Pressure Vessel Qualified Manufacturer  
 Industrial Standard Draft Enterprise  
 Provincial Technological Enterprise  
 Self Import & Export Enterprise  
 Municipal Famous Brand



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