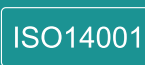
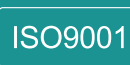


API 工程解决方案
API Engineering Solutions



JTNB 过滤洗涤干燥机

JTNB-Agitated nutsche filter dryer



关于镇田 ABOUT JHENTEN

浙江镇田机械有限公司成立于1986年，拥有超过30年的设计、制造和服务特殊不锈钢罐和容器的经验。在镇田，我们的工程技术和专业知识始终专注于存储容器、工艺罐和定制不锈钢制造的创新和复杂的卫生级设计。我们的客户认识到镇田正在为所在行业中最具挑战性的存储、混合和处理应用程序获得最高价值的产品和技术提供解决方案。镇田机械背后的技术能力确保了高质量的产品在混合、搅拌、加工和储存的广泛应用。

● 制药工程 ● 食品饮料 ● 日化 ● 精细化工 ● 新能源

镇田设计产品采用优质的原材料和最先进的制造工艺，在广泛的不锈钢容器(包括搅拌容器、压力容器、水平和立式储罐)应用中实现客户对产品的期望。

镇田可以根据特定容器体积、设计和使用的要求为客户提供合适的搅拌技术、传热解决方案和清洗方案。

- 我们为各类立式及卧式储罐制造独特的垂直和水平搅拌。
- 我们制造全系列搅拌器—推进式、涡轮式、桨叶式、锚框式、螺带式等—用于加工、混合和混合容器。
- 我们设计不同的传热表面形式，包括蜂窝板、盘管和半管夹套，用于几乎任何容器的加热和冷却。
- 我们选择各种清洁方式——CIP、喷淋球——有助各类容器的清洁，降低能耗，降低清洁周期的需水量。

镇田可以满足您所有特殊行业的应用，使用更高级的合金(如Hastalloy和钛等材料)定制不锈钢设备容器。如果压力容器需要美国机械工程师协会(ASME)认证，我们可以将其与其他规范一起提供，包括加拿大CRN和欧盟PED。

镇田机械制造的产品已经被认为不锈钢制造行业的一个标杆，我们始终秉承传统的价值观，对工作不懈努力和对产品可靠性保证。我们的员工始终以质量为导向，并不断利用创新的设计和简化流程。这显示了镇田在与客户分享我们的工程技术、设计能力和制造经验方面的优势。

Zhejiang Jhenten Machinery found on 1986, have more than 30 years experience on designs, builds, and services exceptional stainless steel vessels. We focus our engineering skills and expertise on the innovative and sophisticated sanitary design of storage vessels, process tanks, and custom stainless steel fabrications. Our customers recognize that they are getting the highest value products and technology solutions for the most challenging storage, mixing and processing applications in their industries. The technology behind Jhenten Engineered Products ensures quality in a wide range of markets that mix, blend, process and store.

● Pharmaceuticals ● Food & Beverage ● Personal Care
● Fine Chemicals ● New Energy

Jhenten Engineered Products uses leading edge materials and state of the art fabrication to deliver on our customers' expectations across a broad range of stainless steel tanks for storage, mixing and processing, including agitated vessels, pressure vessels, horizontals and vertical storage tanks.

The agitation technologies, heat transfer solutions and cleaning options Jhenten provides to customers are designed for the demands of specific vessel content, design and use.

- We manufacture unique vertical and horizontal agitation for different tanks.
- We fabricate a full line of agitators—Propeller, turbine, paddle, anchor, ribbon and more—for processing, mixing, and blending vessels.
- We engineer heat transfer surfaces including dimple, channel and half pipe for heating and cooling of virtually any vessel.
- Various cleaning options—CIP, spray ball— facilitate the cleanability of vessels, reduce energy consumption, and lower water demand in the cleaning cycle.

Jhenten can meet the specifications of all your specialized applications with custom stainless steel fabrication using higher alloys such as Hastalloy and Titanium and so on. And if a pressure vessel requires ASME certification, we can provide that along with other codes, including CRN and PED.

Jhenten Engineered Products is perceived as a quality organization in stainless steel manufacturing, held in high regard for its traditional values of hard work and reliability. Our employees are quality driven, always ready to take advantage of new ideas and streamline processes. And this shows in the pride they take in sharing our engineering know-how, design capabilities and fabrication experience with our customers.



镇田的团队成员来自制药及化工行业的生产，设计，及设计院专家团队，是业内的资深专业人才，我们的涉及的领域主要涵盖：工艺，自控，机械，电气，验证文件及项目管理，我们能够完成基础设计和深化设计。

基础工程设计

- ◆ 工艺组件的设计
- ◆ 过程描述
- ◆ 物料和能量平衡
- ◆ 工艺流程表、工艺和仪表图 (P&ID)
- ◆ 设备清单和规格
- ◆ 一般布局
- ◆ 成本和进度规划

Jhenten team members from the pharmaceutical and chemical industry production, design, and institute expert team, is the industry's senior professionals, our involved fields mainly cover: process, automation, machinery, electrical, verification documents and project management, we can complete the basic and detail engineering.

BASIC-ENGINEERING

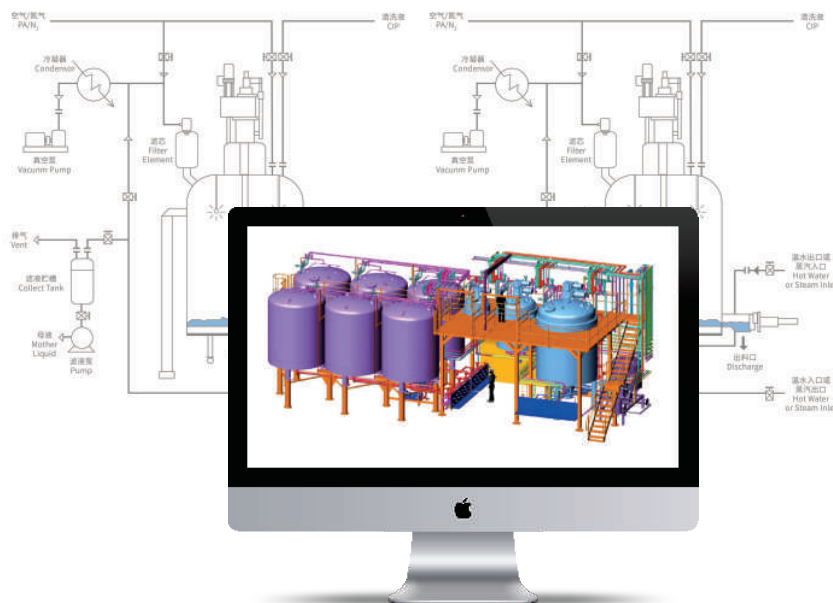
- ◆ Design of process components
- ◆ Process description
- ◆ Material and energy balance
- ◆ Process flow sheet, process and instrumentation diagram (P&ID)
- ◆ Equipment list and specifications
- ◆ General layout
- ◆ Cost and schedule planning

深化工程设计

- ◆ 二维和三维布局设计
- ◆ 管道工程包括管道轴测面
- ◆ 测量和控制的规划设计
- ◆ 流程开发和详细程序设计
- ◆ 监督协调电气工程及控制系统规划
- ◆ 监督协调结构规划

DETAIL-ENGINEERING

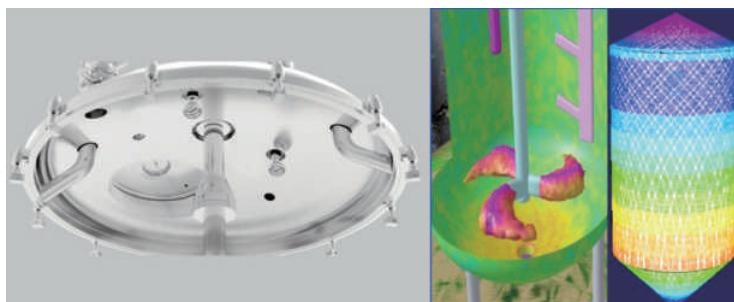
- ◆ Layout design in 2D and 3D
- ◆ Piping engineering including isometrics
- ◆ Planning and design of measurement and control technology
- ◆ Development of process and program sequences
- ◆ Supervision/coordination of planning of electrical engineering/control systems
- ◆ Supervision/coordination of construction planning



我们的设计工作采用了最先进的工程设计类软件并可完成以下服务

OUR DESIGN TEAM WILL WORK WITH YOU TO DEVELOP THE BEST DESIGN, DESIGN TOOL INCLUDE

- ◆ 二维图纸
- ◆ 三维建模
- ◆ 搅拌CFD 模拟
- ◆ 压力容器强度计算
- ◆ 有限元分析
- ◆ 通用流程模拟软件/换热计算
- ◆ AUTOCAD
- ◆ 3D—Model emulate/Solidworks /UG
- ◆ Agitator CFD simulation
- ◆ Pressure vessel design calculation /PVelite/SW6/AutoPipeVessel
- ◆ Finite element analysis
- ◆ General process simulation software/Heat transfer calculation Aspen /HTRI



JTNB 过滤洗涤干燥机

JTNB AGITATED NUTSCHE FILTER DRYER

镇田过滤洗涤干燥机 是一种用于制药、化工、精细化工和食品工业的固液分离、加压过滤和真空干燥的高品质设备。

在过滤应用中，有些产品由于其特殊的危险或有毒特性，或者为了防止交叉污染，在其制造过程中希望以密封的方式进行处理。镇田设计的过滤器干燥机设计结构完全可以满足这些需求，保证用户获得无污染的纯物质。

镇田过滤洗涤干燥及根据完全根据GMP标准设计，适用于所有类型的制药和精细化工应用。我们的机器在无菌应用中是可验证的，我们有特殊的设计来安装在洁净室内。

特点

- ◆ 过滤面积涵盖0.07m²到8m²，操作容积涵盖20L到17m³，选择范围广；
- ◆ 操作压力3Bar，操作温度最大可达200摄氏度；
- ◆ 根据国标压力容器设计并取证；
- ◆ 卫生级设计，符合制药行业应用，完全符合GMP和美国FDA认证要求；
- ◆ 物料直接接触部件均选用无毒，耐腐蚀的316L或者304材质，密封可采用PTFE、FFKM或EPDM等密封材料；
- ◆ 驱动部件电机减速机带不锈钢防护罩；
- ◆ 筒体夹套加热冷却，搅拌可带加热冷却夹套；
- ◆ 底部过滤板自动升降，且过滤板维护更换便捷；
- ◆ 液压底部锁盖系统，自动操作，安全可靠；
- ◆ 滤饼过滤，清洗和净化一体；
- ◆ 无菌出料阀卸料。

JTNB Agitated Nutsche Filter Dryer is a high-quality equipment designed for solid-liquid separation processes, by filtration under pressure and vacuum drying, can be use for the pharmaceutical, chemical, fine chemical and food industries.

Within the filtering applications, there are products which, due to their special hazardous or toxic characteristics, or prevent cross-contamination, are more desirably treated in a hermetic way during their manufacturing process.

JTNB Nutsche Filter Dryers have been specially designed to guaranteeing the obtaining of pure substances which are free from polluting elements. Designed in accordance with the GMP standards, for all types of pharmaceutical and fine chemical applications. Our machines are validatable in sterile applications and we have special designs to install inside clean rooms.

FEATURES

- ◆ Filtering surface from 0.07 up to 8 m². Operation capacity from 20L up to 17 m³.
- ◆ Operating pressure of 3 bar(g), Operation Temperatures up to 200°C.
- ◆ Design according to Gb150I.
- ◆ Hygienic design for pharmaceutical industrial, fully meet GMP and FDA requirements.
- ◆ Direct contact parts of materials are made of 316L or 304, which are non-toxic and corrosion-resistant. Sealing material PTFE, FFKM or EPDM can be used.
- ◆ Drive unit with stainless steel cover.
- ◆ Heating/cooling of the body and/or agitator.
- ◆ Bottom filter with automatic lifting and lowering, easy exchangeable filter plate.
- ◆ Oil hydraulic bottom sealing system, automatic operate and safety.
- ◆ Cake filtration, washing and purification.
- ◆ Unloading of the cake by the sterile discharge valve.



电机Motor

旋转接头Rotating joint

减速箱Gear box

除尘器Dust filter

传动轴Drive shaft

滤芯Filter element

清洗球Cleaning ball

波纹管Corrugated pipe

壳内壁Inner wall of shell

外壳加热保温层Shell heating insulation layer

S型搅拌桨S-type stirring paddle

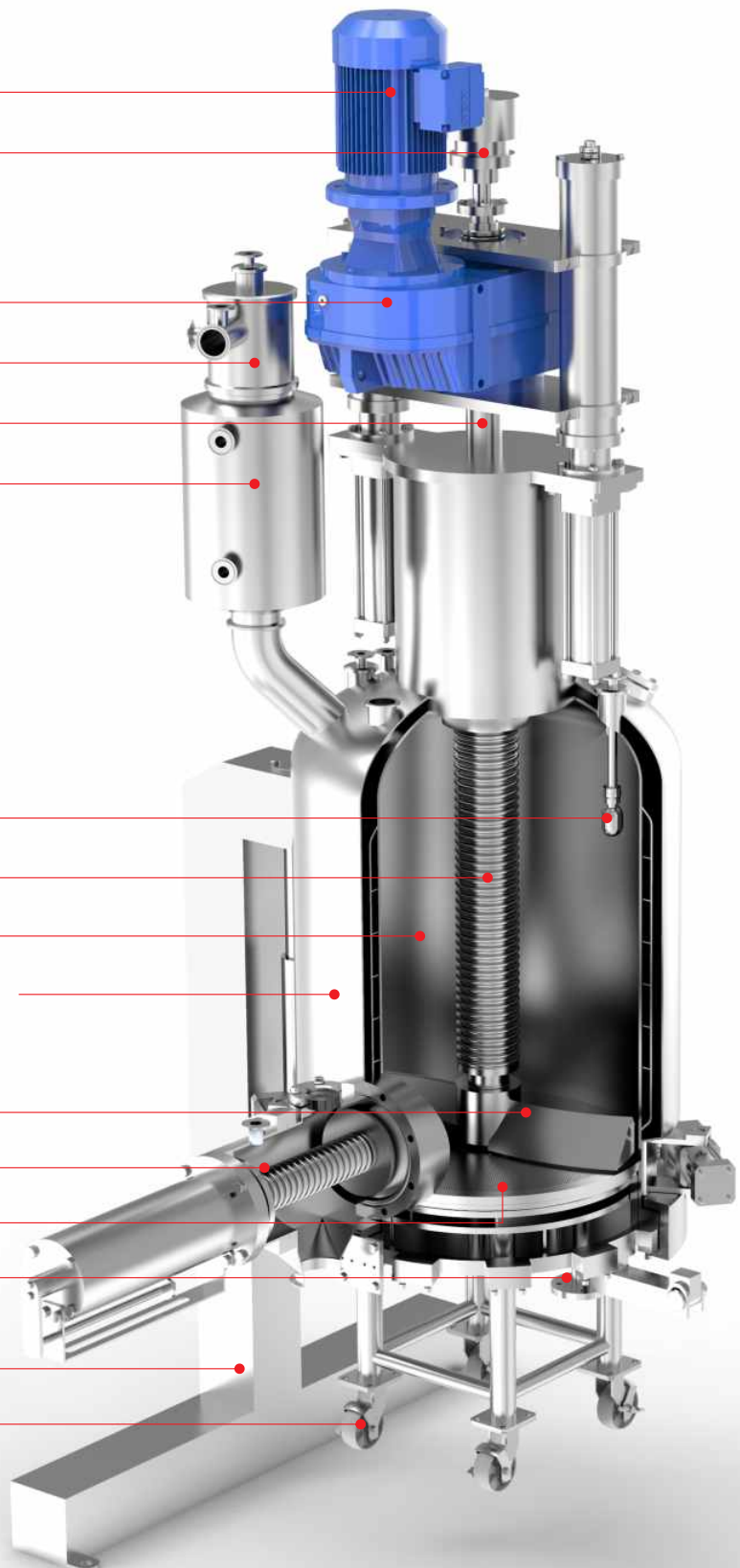
无菌出料阀Sterile discharge valve

滤板Filter plate

液体出口Liquid outlet

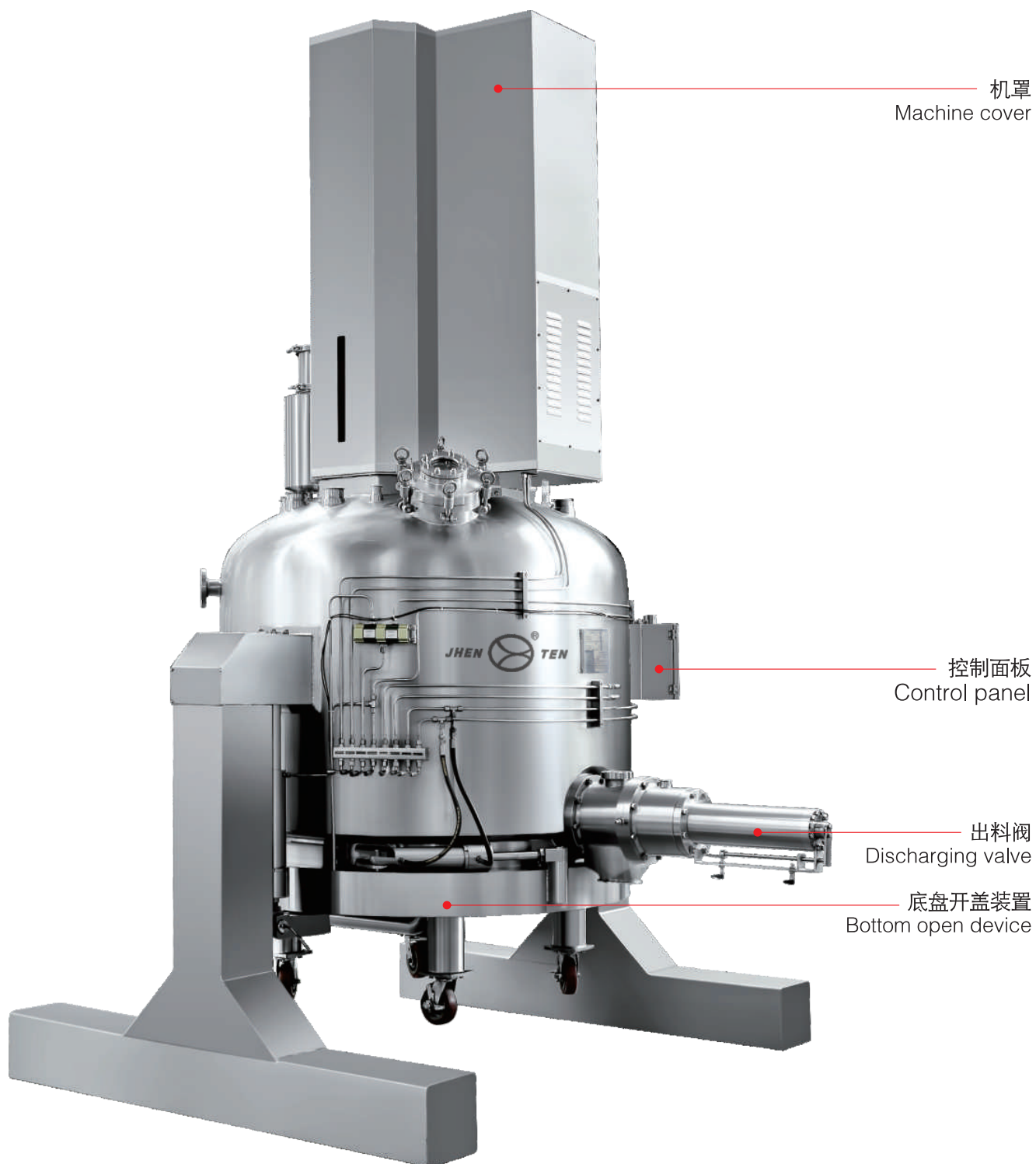
支腿Landing leg

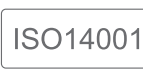
万向轮Universal wheel



JTNB 过滤洗涤干燥机

JTNB AGITATED NUTSCHE FILTER DRYER





选项

- ◆ 内部镜面抛光粗糙度 $\leq 0.4 \mu\text{m}$
- ◆ 内部电解抛光, 粗糙度 $\leq 0.2 \mu\text{m}$
- ◆ 提供哈氏合金, 钛材, 超级双相不锈钢等材质供选择
- ◆ 美标ASME认证, PED/CE/AD-2000/EN13445产品认证
- ◆ CIP/SIP系统
- ◆ 特殊的无菌级机械密封
- ◆ 无菌取样阀
- ◆ 可配套冷凝系统, 真空系统及加热单元
- ◆ 手动操作系统及手动出料
- ◆ 国标/欧标/美标防爆认证证书, UL/CSA认证清单配件
- ◆ 提供DQ/IQ/OQ文件

典型的应用

- ◆ 精细化学品和制药: 抗生素、原料药、生物技术、着色剂、晶体、香精和香料、天然提取物、肽、制药合成、维生素。
- ◆ 化学: 添加剂, 催化剂, 着色剂, 金属粉末, 矿物, 颜料, 聚合物。
- ◆ 食品: 添加剂, 动物提取物, 着色剂, 香料和芳香, 天然提取物, 维生素补充剂。

OPTIONS

- ◆ Internally mirror polished $Ra \leq 0.4 \mu\text{m}$.
- ◆ Internally electro polished ($Ra \leq 0.2 \mu\text{m}$).
- ◆ Hastelloy(C276/C22), TA, Super duplex stainless steel and so on for option.
- ◆ ASME VIII div.1-PED/CE/AD-2000/EN13445.
- ◆ CIP/SIP systems.
- ◆ Agitator with special sterile mechanical seal.
- ◆ Aseptic sampling valve.
- ◆ With condensation system, vacuum and heating unit.
- ◆ Manual control and discharge;
- ◆ GB/ATEX/C1D1 explosion proof execution with official certificate, UL/CSA list.
- ◆ DQ, IQ and OQ protocols.

TYPICAL APPLICATIONS

- ◆ FINE CHEMICALS and PHARMACEUTICAL: Antibiotics, API, Biotechnology, Colorants, Crystals, Essences and flavors, Natural extracts, Peptides, Pharmacy synthesis, Vitamins..
- ◆ CHEMICAL: Additives, Catalysts, Colorants, Metallic powders, Minerals, Pigments, Polymers.
- ◆ FOOD: Additives, Animal extracts, Colorants, Flavors and aromas, Natural extracts, Vitamin complements.

JTNB 过滤洗涤干燥机

JTNB AGITATED NUTSCHE FILTER DRYER

技术参数 TECHNICAL PARAMETERS

标准型号	过滤面积 (m ²)	内直径 (mm)	公称容积 (m ³)	筒体高度 (mm)	滤饼高度 (mm)	桨叶提升高度 (mm)	搅拌电机功率 (KW)	设备净重 (Kg)	设备总高 (mm)
JTNB-400	0.12	400	0.05	450	100	120	手动/0.75	250	1500
JTNB-500	0.19	500	0.15	650	140	160	2.2	1450	2600
JTNB-600	0.28	600	0.22	700	180	200	2.2	1650	2900
JTNB-800	0.5	800	0.53	900	200	220	3.0	2300	3300
JTNB-900	0.62	900	0.66	900	200	220	4.0	2800	3500
JTNB-1000	0.78	1000	0.93	1000	220	250	5.5	3600	3800
JTNB-1200	1.1	1200	1.3	1000	250	300	7.5	4700	3900
JTNB-1400	1.53	1400	2.0	1100	300	350	11	6400	4400
JTNB-1600	2.0	1600	2.7	1100	300	400	15	7400	4500
JTNB-1800	2.5	1800	3.8	1200	350	400	15	10500	4700
JTNB-2000	3.0	2000	4.8	1200	400	450	18.5	11500	5100
JTNB-2300	4.0	2300	6.8	1250	400	450	22	12600	5200
JTNB-2600	5.3	2600	9.1	1250	450	500	22	17200	5500
JTNB-2800	6	2800	10.8	1250	450	500	30	22000	5700
JTNB-3000	7	3000	14.4	1500	550	600	37	25000	5900
JTNB-3200	8	3200	16.6	1500	550	600	45	28000	6000

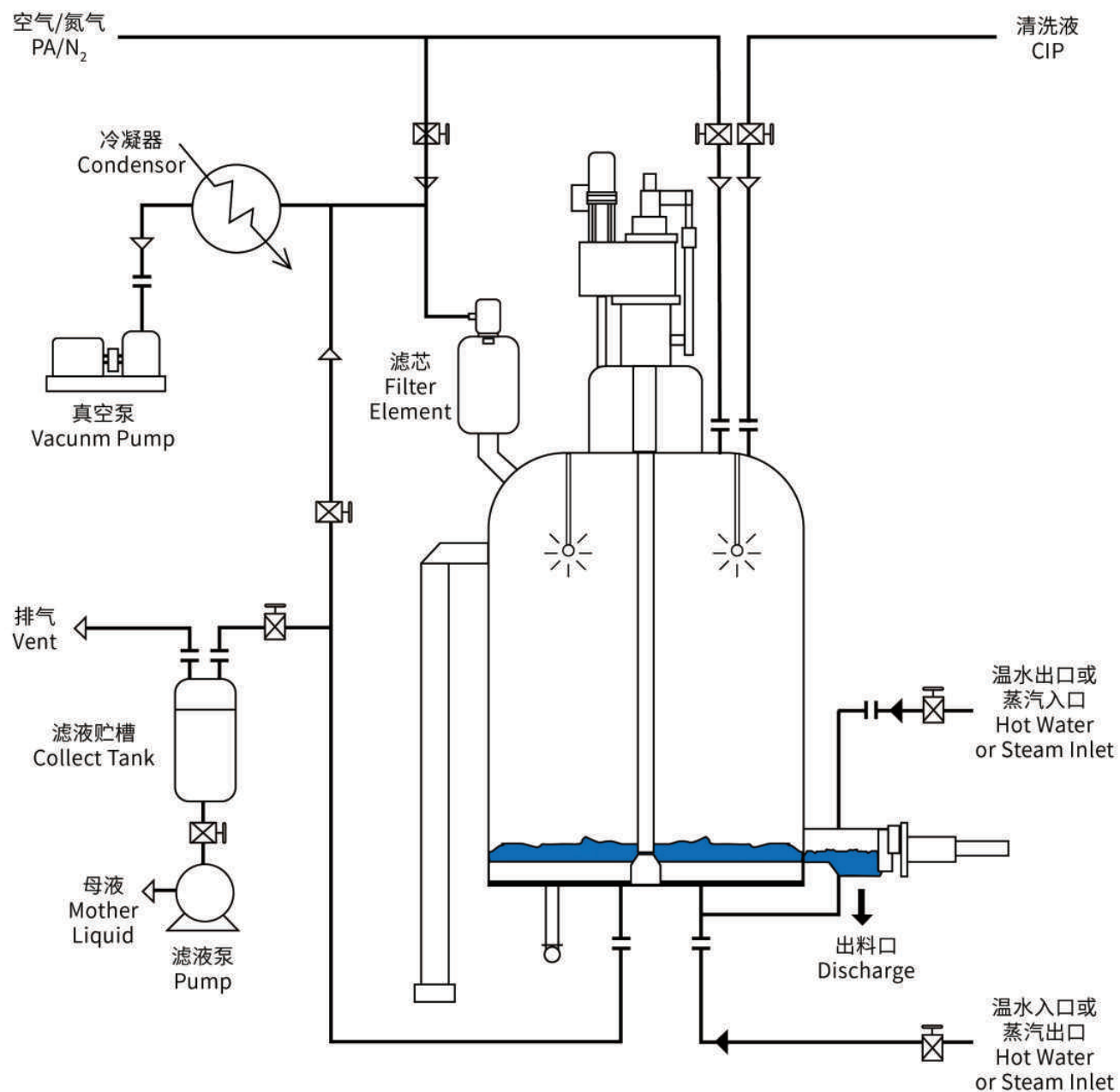
工艺流程介绍

- ◆ 进料:
通常从反应釜或者结晶罐里面, 将固液物料送入三合一内。
- ◆ 过滤:
液体/固体通过滤板分离, 过滤(溶剂)液体收集在母液罐中。
- ◆ 洗涤:
通常用洗涤液来清洗产品滤饼, 用搅拌器将浆料中的固体搅拌进行充分洗涤。
- ◆ 平料:
用搅拌器将物料湿饼抹平, 避免产生裂缝和漏液。
- ◆ 干燥冷却:
容器内可抽真空进行干燥, 同时在夹套罐壁, 底盘和搅拌桨内通入热媒进行加热。这样可以使产品快速达到沸点并干燥。
- ◆ 卸料:
特殊设计的搅拌器将产品推向侧出料口, 通过无菌出料阀进行出料。

WORKING PRINCIPLE

- ◆ Filling:
The vessel is filled with a slurry, generally fed from a reactor or crystallizing tank.
- ◆ Filtration:
A liquid/solid be separated through the filter plate, Filtration(solvent) liquid be collected on mother liquid tank.
- ◆ Washing:
Washing liquid are used to wash the product cake, The agitator is used the re-slurry the solid in a washing solvent.
- ◆ Smoothing:
The agitator is used to smooth the wet cake in the filter dryer, to avoid the formation of cracks or preferential paths.
- ◆ Drying and cooling:
Agitated vacuum drying consists in applying a vacuum on the vessel, while heating the walls and agitator using thermal circuits. This allows to reach the liquid boiling point and to dry the product.
- ◆ Discharging:
The specially designed agitator pushes the product out from sterile discharge valve.

过滤洗涤干燥机工艺流程
AGITATED NUTSCHE FILTER DRYER FLOW CHART



JTNB-T 筒锥式过滤洗涤干燥机

JTNB-T CONICAL BOTTOM AGITATED FILTER DRYER

优势

- ◆锥形底部设计，优异的产品排出性能，产品滞留可以忽略不计。
- ◆搅拌器和筒体及底部保持很小间隙，并具备独特的搅拌器形式。
- ◆搅拌器可均匀混合产品，不易形成团块或球状。低速搅拌对产品剪切力最小化，因此有效降低对产品机械破坏和热降解，保持产品原有的晶体结构。
- ◆传热表面积最大化，以实现最佳性能和循环时间。
- ◆符合cGMP和FDA指南，也符合无菌/蒸汽灭菌要求。
- ◆由顶部支撑的搅拌器，仅机械密封与蒸汽接触。
- ◆完全焊接的搅拌器设计，没有任何螺栓，所有边缘都是圆弧过渡，无任何清洁死角。
- ◆使用CIP系统具有出色的可清洁性，验证过程简单。

ADVANTAGE

- ◆Excellent product discharge performance with negligible product hold-up due to the conical bottom,
- ◆Close agitator to wall /bottom clearances and a unique agitator design.
- ◆The agitator permits uniform mixing of the entire product mass, without the formation of lumps or balls. The slow rotation of the agitator minimizes the shear forces applied to the product, thus limiting mechanical and thermal product degradation, maintaining the products original crystal structure.
- ◆The surface area for heat transfer is maximized for optimum performance and cycle times.
- ◆In compliance with cGMP and FDA guidelines, also in aseptic /steam sterilizable versions:
- ◆Agitator supported by the top head, with the seal in contact with the vapors only.
- ◆Entirely welded agitator design, without any bolts, with all edges rounded for good cleanability.
- ◆Excellent cleanability using CIP Systems, with simple validation process.



产品特点 FEATURES

设计规范 Design Code	国标GB/美标ASME/欧标PED/AD2000等 GB/ASME/PED/AD2000 etc.
全容积 Product volume	135-14000 liters/升
操作温度 Operating temperature	-10 to 151° C (15 to 300° F)或根据客户要求 -10 to 151° C (15 to 300° F) or per requirements
操作压力 Operating pressure	-1 to +6 bar (g) (FV to 90 psig)或根据客户要求 -1 to +6 bar (g) (FV to 90 psig) or per requirements
接触物料部分材质 Product wetted material	不锈钢, 超级双相钢, 镍基合金例如哈氏合金C22/C276, 钛材等 Stainless steels, Duplex stainless, Nickel based alloys such as Hastelloy C22/C276, Titanium, etc.,
密封材质 Sealing materials	PTFE, FKM, FEP包氟密封圈等 PTFE gaskets, O-Rings in FFKM or FEP encapsulated
区域等级 Area classification	GB/ATEX/UL/GOST
加热区域 Heated areas	所有的产品接触部分, 包括桶身及锥底夹套, 搅拌轴, 桨叶, 粉尘捕捉器等 All product wetted components, dust collector, including agitator shaft and blades
附件 Accessories	粉尘捕捉器, 取样阀, CIP系统, 视镜灯, 真空系统, 加热冷却系统等 Dust filter with automatic back cleaning, sampling valve, CIP system, sight glass with lamp, vacuum system with condenser, heating and cooling unit etc.
控制系统 Controls	控制柜, 操作箱带触摸屏, 可集成至DCS, 可实现计算机验证 Control cabinet, HMI, MCC, interface for DCS, can realize computer verification.
验证文件 Documents	操作手册, DQ, IQ, OQ, PQ Operate manual, DQ, IQ, OQ, PQ

电机Motor

旋转接头Rotating joint

减速机Gear box

粉尘捕捉器Dust filter

视镜灯 Sight glass with lamp

清洗球Spray ball

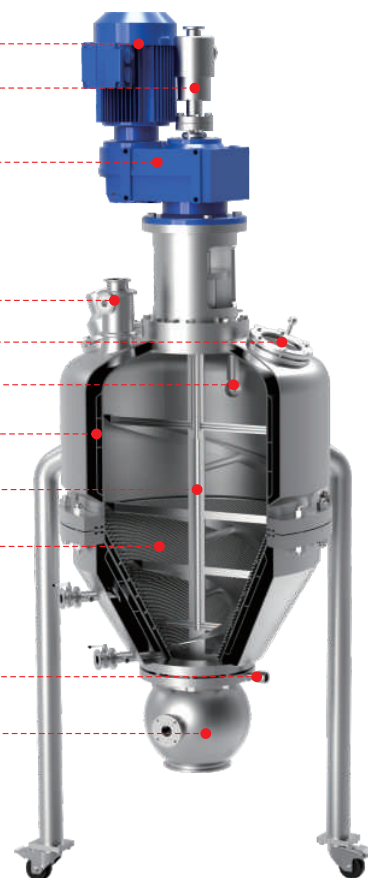
加热夹套Jacket

螺带式搅拌Ribbon agitator

烧结滤网Sintered filter plate

温度传感器Temperature sensor

出料阀Discharge valve



选型表格 SELECTION FORM

型号 Model	直径 Diameter (mm)	过滤面积 Filter area (m ²)	全容积 Full volume (m ³)	设备宽度 Equipment width (mm)	设备总高度 Total height of equipment (mm)	电机功率 Motor power (kw)	设备净重 Equipment net weight (T)
JTNB-T550	550	0.4	0.135	750	1850	根据物料的性质， 在3-55KW 范围选择 According to the nature of the material, choose between 3-55KW	0.7
JTNB-T700	700	0.7	0.32	1100	2500		1
JTNB-T1000	1000	1.4	0.87	1280	2850		2.3
JTNB-T1200	1200	2.1	1.5	1630	3500		2.7
JTNB-T1400	1400	3	2.5	1850	4150		3.5
JTNB-T1600	1600	3.8	3	1900	4200		4.3
JTNB-T1800	1800	4.8	5	2300	4800		5.7
JTNB-T2000	2000	6.1	6.2	2500	5800		8.4
JTNB-T2200	2200	7.3	8.5	2700	6300		10
JTNB-T2400	2400	8.8	10.8	3000	6800		13.6
JTNB-T2600	2600	10.2	14	3200	7200		17

注：可根据用户特殊需求，设计不同规格设备。 Note: Equipment of different specifications can be designed according to the special needs of users.

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浙江镇田机械有限公司

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