

气力输送 粉体工程

PNEUMATIC CONVEYING & POWDER ENGINEERING



山东省章丘鼓风机股份有限公司

SHANDONG ZHANGQIU BLOWER CO., LTD

山东章鼓气力输送工程公司

SHANDONG ZHANGGU PNEUMATIC CONVEYING ENGINEERING COMPANY

企业简介 Brief introduction

山东章鼓气力输送工程公司是中国粉体和气力输送系统专业技术公司，国家高新技术企业，中国机械工程学会全国管道物料输送技术专业委员会副理事长单位。全国化工粉体工程技术中心站技术委员，中国石化集团粉体工程设计中心站技术委员单位，中国颗粒学会理事单位，公司先后与清华大学、西安交通大学、浙江大学、山东大学、山东科技大学等高等院校建立了产学研基地，并长期保持着密切的合作关系。公司具有国内一流的设计中心，具有国际知名气力输送专家博士，拥有享有国务院特殊津贴专家，拥有“泰山学者”，有山东省、济南市专业技术拔尖人才，学术带头人。公司依托山东省章丘鼓风机股份有限公司的设计制造加工优势和国内知名高校、科研院所先进的气力输送工程技术、气力输送设备设计制造技术，研制开发高压密相和中低压稀相气力输送系统，从事气固两相流理论研究和应用。在粉体工程、气力输送、科研开发和工程承接等方面处于领先水平。

公司以科技为先导，以人为本，重视技术集成和科技创新。承接石化、电力、医药、食品、建材、港口、矿业等多行业多领域的气力输送工程和散料处理系统。以“清洁、高效、节能、环保”为宗旨，为用户提供优质、可靠的粉粒体输送及处理系统，满足客户的特殊要求。

公司拥有全国规模最大、试验功能最全，试验测试手段最先进的大型综合性气力输送试验中心，中心建有中低压吸压混合不锈钢试验线、高压密相试验线，输送管道总距离超过 1300 米。试验中心功能齐全，可进行气力输送试验多项指标的测定，物料特性的研究和试验数据的采集，为气力输送理论研究及实际的工程设计提供可靠的依据。

本公司可根据客户的需求，为客户提供：项目的可行性分析、项目论证、单机选型、设备性能测试、料性测定、设备安装调试、人员培训、为用户提供气源装置、供料设备、分离除尘设备、电控及 PLC+PC 控制等全套气力输送交钥匙工程以及各行业的计量、配料工程。

Shandong Zhanggu Pneumatic Conveying Engineering Company is occupational technic company of powder handling and pneumatic conveying system of China and which is the permanent syndic of the pipe material conveying committee of China machine engineering academy. The chemical engineering center technology of powder, sinopec powder engineering design, technical committee of China central unit grain pneumatic conveying technology committee, vice President of the unit. It keeps a good and close cooperating relationship with domestic famous universities like Tsinghua University , Xi an Jiaotong University, Zhejiang University,Shandong University and Shandong University of Science and Technology. The company has the first-class design center, there are two home, joint venture with world-class pneumatic conveying, experts have enjoyed a number, graduate student council allowance,an expert in shandong jinan, professional technical talented person, the number of academic. Relying on the high quality machining of Shandong Zhangqiu Blower Co., Ltd. and the advanced pneumatic conveying design and engineering technology of the known high school and academe, the company develops dense phase and middle-low dilute phase pneumatic conveying syterm, engages the theory study and application of gas-solid double phase. In the powder engineering, pneumatic conveying, sciences develop and engineering continue.

The company locate the lead level in domestic.Taking the science and technology as the precursor, take human as the fundamental, and regard technique integration and innovation. Undertake petrochemical, power, food, building materials, mining industry, and port in the fields of pneumatic conveying engineering and material processing system. Taking the cleanliness,high efficiency, saving energy and environment protection as the tenet, the company carry on pneumatic conveying engineering and material handling system, which provide the high quality and steadily conveying and handling system of the powder and granule, satisfy the special requirement of the client.

The company has the pneumatic conveying test center which is the biggest scale. the more entire test function, the advanced test way, it has the middle-low, suck-press, stainless, high pressure dense phase test line, the total conveying distance exceed 1300 meters, the test center can gather the data, mensurate index research and test the characteristic of material offer the credible gist for pneumatic conveying theory study and factual engineering design.

The company offer service based on client demand: Item feasibility analysis Item argumentation Machine type selection Facility performance test Material characteristic Facility assembling and debugging personnel training Offer the total pneumatic conveying system bargain key project including air sources, feeder facility, dust separating collector,electricity control and PLC control and so on for the client.



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山东省章丘鼓风机股份有限公司

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企业资质荣誉 Qualification honor

- 国家工商行政管理局商标局 注册商标“章鼓、齐鲁”，股票代码：002598
- GB/T 19001-2008/ISO 9001: 2008 质量管理体系认证证书
- 美国 FMRC-ISO9001 国际质量体系认证
- 欧盟 CE 认证
- State Administration for industry and trademark office registered trademarks of “章鼓，齐鲁”，Stock Code:002598
- GB/T 19001-2008/ISO 9001: 2008 Quality Management System Certification
- FMRC-ISO9001 International Quality System Certification of America
- The European Union CE certification





试验研究 Experimental research

国内最大的吸压混合综合性能气力输送试验中心

- 进行各种物料在不同浓度、不同输送速度下的输送试验
- 进行各种物料长距离单压输送试验研究
- 进行各种物料长距离单吸输送试验研究
- 吸压混合综合性能测试
- 进行沿程压力分布测定与分析计算
- 系统管道放大与缩小计算技术
- 进行单机产品供料能力、供料压力、漏气量测试与研究

The biggest positive and negative pressure colligation performance testing facility in domestic

- Pneumatic conveying experiment with different loading ratio, conveying velocity for various speed
- Long distance pressure pneumatic conveying test
- Long distance vacuum pneumatic conveying test
- Positive and negative pressure colligation performance test
- Stress distributing mensurate and analysis calculation
- The pipe magnifying and shrunken calculation technology
- Testing and researching of the feeding ability, feeding pressure and air leakage for single machine

功能齐全的高、低压管道输送试验中心

- 输送试验线长度超过 1300m
- DN80 DN125 DN200 等多种管径试验线
- 进行高压密相管道输送试验研究
- 脉冲气刀式管道输送试验与研究
- 长距离管道增压防堵技术测试
- 沿程压力分布测定
- 多种型式仓泵的组合气力输送试验研究
- 特殊物料的输送试验
- 自动控制技术开发及系统工艺研究

High and low pressure pneumatic conveying testing center

- Pipe line length exceed 1300 meters
- DN80, DN125, DN200 and more pipe test line
- High pressure dense phase test research
- Pulse gas falchion test research
- Pressure increasing and anti pipe jam test for long distance pipe
- Pressure distribution mensurating
- Muti type transport colligation pneumatic conveying test research
- Conveying test for special material
- Automatic control technic development and system technology research

生产装备

Production equipment

精湛的生产工艺，完善的质保体系，为产品的优质性能保驾护航

Exquisite production technology, perfect quality assurance system, Provide quality guarantee for product performance



气力输送概述及可输送物料 Pneumatic conveying general introduction and transportable material

气力输送是一种利用空气（气体）流作为输送动力，在管道中输送散状固体物料的技术集成系统

气力输送系统特点

- 输送管道配置灵活，从而使工厂设备工艺配置合理。
- 系统密封，粉尘飞扬逸出少，环境卫生条件好。
- 运动零部件少，维修保养方便，易于实现自动化。
- 实现散料输送，效率高，降低包装和装卸运输费用。
- 能够避免物料受潮、污损或混入其他杂质，可以保证输送物料的质量。
- 在输送过程中可以实现多种工艺操作，如混合、粉碎、分级、干燥、冷却、除尘和其他化学反应。
- 可以进行由数点集中送往一处或由一处分散送往数点的远距离操作。
- 对于化学性能不稳定的物料，可以采用惰性气体输送。

Pneumatic conveying general introduction and transportable material

Pneumatic conveying means using air (gas)as transportation power and convey dispersed solid material in the pipe

- Variable arrangement of the pipe makes the production craft process more reasonable
- The system is sealed and lead to few flying dust, it benefit for environment protection
- Few movement parts, convenient maintenance, automatic control can be realized easily
- High efficiency of transportation reduce the cost of packing, loading and unloading
- Make the material avoid being damped, polluted, damaged and mixed with other material, the quality of conveying is assured
- Multiple operation process can be realized meanwhile for the conveying, such as mixture, crush, grade, dryness cooling, and dust collection
- Send the material from couple place to one place and from one place to couple place, realize far distance operation
- For the material with erratic chemical character, can adopt inertia gas conveying



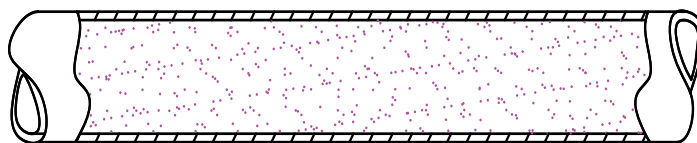
气力输送系统的三种输送方式 Three kinds of transport modes for pneumatic conveying system

A 悬浮流输送

物料输送速度高于悬浮速度。物料在管道中成悬浮状态流动。浓度比小，此输送方式适合于低压稀相短距离输送。

A Suspended flow

Material conveying speed is higher than suspension speed. Material flow in a pipe. The concentration ratio is small, the transmission method is suitable for the short distance transportation of the low pressure and dilute phase.

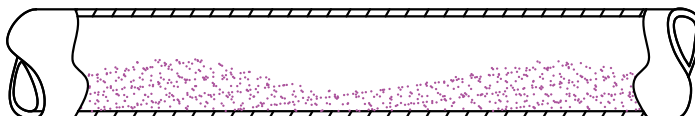


B 集团流输送

物料输送速度约等于悬浮流速度，物料在管道中成集团状态移动。浓度比适中，此输送方式适合于中压较长距离输送。

B Group flow

Material conveying speed is approximately equal to the suspension flow velocity, the material in the pipe into the group state of movement. The concentration ratio is moderate, which is suitable for medium pressure long distance transportation.

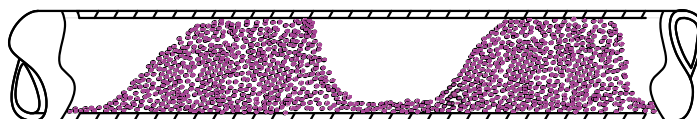


C 栓流输送

物料输送速度低于悬浮速度物料在管道中被脉冲气阀、气力、气压力切割成栓状，依靠料栓前后的空气静压差作为推动力前进，浓度比高，此输送方式适合于高压密相长距离低速输送。

C Plug flow

Material conveying speed is lower than that of the suspension velocity of material in the pipe is pulse valves, pneumatic, pneumatic cutting into a plug like and rely on slug before and after air static pressure difference as a driving force to move forward, high concentration ratio. This delivery mode for in high pressure and dense phase long distance transport at low speed.



可输送物料 Conveying material

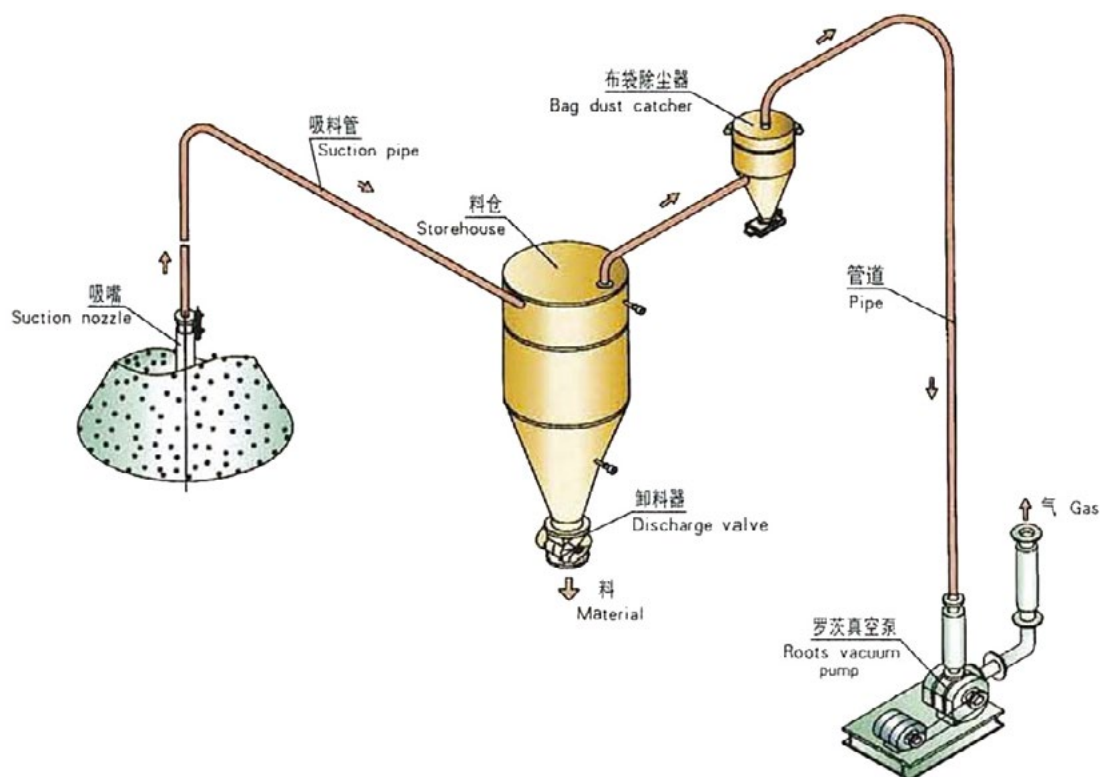
可用气力输送的粉粒料品种繁多，每种物料的料性对气力输送装置的合适性和效率都有很大的影响。因此在选定输送装置前要先对物料进行性能测定。

Available pneumatic conveying of powder and granular material variety, each kind of material the material property of pneumatic conveying device of appropriateness and efficiency have great influence; Therefore, the performance of the material must be measured before selecting the conveying device.



PP	PE	焦干粉	石油焦	硫酸钾	磷酸一胺
ABS	PVC	BaSO ₄	BPA	CaCO ₃	双氰胺
CPE	EFP	EPC	EPVC	HDPE	聚甲醛
PA6	PC	PET	PVA	PVB	VD3 粉
溴化钾	溴化钠	离子交换树脂	硫胺	三聚氰胺	二醋片
尿素	鱼粉	TPU	SAP	聚丙烯酰胺	钴酸锂
聚苯乙烯	干胶粉	复合肥	己二酸	锅炉渣	烟灰
白炭黑	活性炭	漂白土	煅烧高岭土	碳化硅粉	干酵母
滑石粉	硅砂	沸石	氢氧化钙，熟石灰	橡胶	木屑
石英粉	炭黑	水泥	木粉	盐	碳素
硬沥青	珍珠岩粉	滑石粉	烟叶	磷石膏	白土
干混砂浆	煤矸石	干砂	铝酸盐	粉煤灰	石灰粉
石墨	锆铝珠	铝矾土	苹果渣	脱硫灰	海参
小麦	大豆	玉米	果糖	杏核（带壳）	味精
豆粕	豆皮	谷朊粉	花生红衣	奶粉	桂皮粉
大豆粉	稻壳	淀粉	食品级黄原胶	苏氨酸	麦芽糊精
玉米胚芽	面粉	酵母菌细粉	饲料颗粒	蛋白粉	咖啡粉
麸皮	芝麻	豆胚片	大米	果胶	十三香
豌豆	脱水蒜片	酒糟	米糠	花生饼	皂粒
电石	硅粉	膨润土	石灰石粉	石英砂	花生壳
锌焙砂	铁精粉	钾长石粉	堇青石粉	石粉	钛精矿粉
铝土矿粉	磷矿粉	金属灰	窑灰	硫铁矿渣	钕触媒
二氧化钛	氧化镁	氢氧化铝	钕触媒	钛白粉	铜精粉
氧化铝粉	氯化钾	芒硝	氢氧化镁	锑氧粉	锆铝复合珠
硫酸亚铁	氟化铝	纯碱	碱纤维素	飞灰	硅藻土
葡萄糖	酶制剂	褐煤	煤焦	焦炭粉末	煤粉

● 稀相中、低压真空吸送气力输送系统 Middle and low suction pressure dilute pneumatic conveying system



工作原理

利用安装在输送系统终点的真空泵抽吸系统内空气，输送管内形成低于大气压的负压气流，物料同大气一起从起点吸嘴进入管道，随着气流输送到终点分离器内，物料颗粒受到重力或离心力作用从气流中分离出来，气体除尘后经离心风机或真空泵排入大气。

系统特点

本系统是以罗茨真空泵为气源，连续吸送物料的一种气力输送系统。该系统具有把物料从数处向一处集中输送，输送压力低，输送可靠，设备简单等特点。由于系统内压力低于大气压力，被输送物料不会从系统中逸出，由于吸嘴吸料，可避免取料点的粉尘飞扬，生产效率高。

Working principle

Installed by air in the end of the system in the conveying of the vacuum pump suction system, conveying tube formation below the atmospheric pressure air flow, material and the atmosphere together from the starting point of suction nozzle into the pipeline, with the airflow conveying to the end of the separator, particle material received gravity or centrifugal force is separated from the air flow, the gas after dust removal by centrifugal blower or vacuum pump is discharged into the atmosphere.

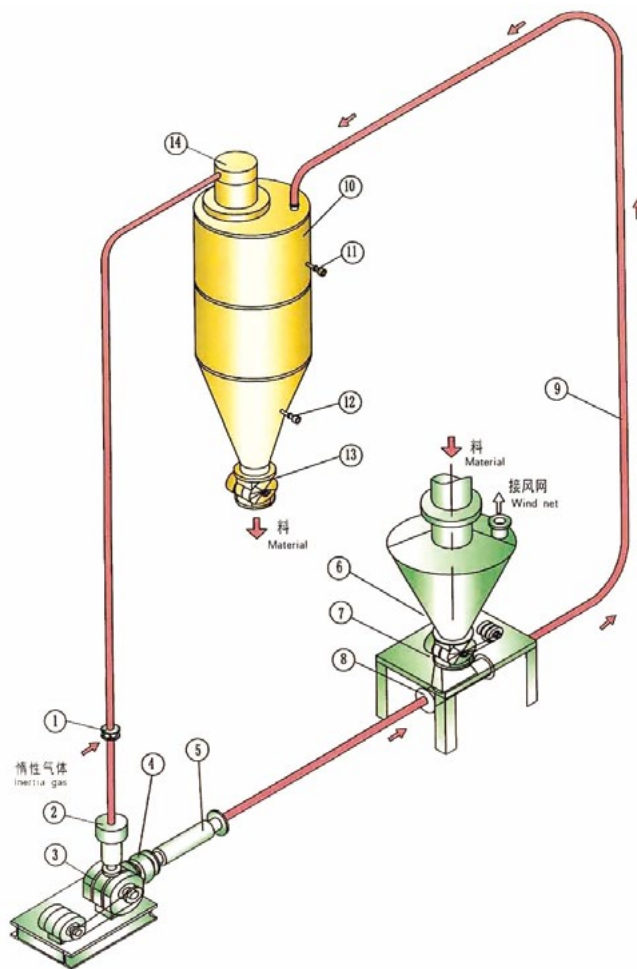
System characteristics

This system is based on the roots vacuum pump source, a continuous suction pipeline material conveying system. The system has the characteristics of the material from several places to a centralized transmission, conveying pressure, reliable delivery, equipment, and other characteristics. Due to the system pressure below the atmospheric pressure, the materials to be conveyed not from the system to escape, as the nozzle suction can avoid dust flying reclaiming, the production efficiency is high.

项目	输送方式	输送量 (t/h)	输送压力 (kpa)	输送管径 (mm)	输送高度 (m)	输送距离 (m)
参数	连续中低压吸送	0.1-150	-29.4-80	50-300	5-35	10-150

稀相惰性气体循环气力输送系统 Dilute phase inertia air circle pneumatic conveying system

- | | |
|----------|------------------|
| 1、截止阀 | Cut-off valve |
| 2、进口消声器 | Inlet silencer |
| 3、罗茨鼓风机 | Roots blower |
| 4、弹性接头 | Expansion joint |
| 5、出口消声器 | Export silencer |
| 6、抽气室 | Vent chamber |
| 7、旋转供料器 | Rotary feeder |
| 8、加速室 | Feed nozzle |
| 9、管道 | Pipe |
| 10、料仓 | Storehouse |
| 11、高料位计 | High level meter |
| 12、低料位计 | Low level meter |
| 13、卸料器 | Discharge calve |
| 14、布袋除尘器 | Bag dust catcher |



工作原理

物料从料斗中进入旋转供料器，物料在重力作用下由供料器进行定量供料，罗茨鼓风机产生压力气体，以一定的速度把物料输送到指定料库，料气分离后，气体除尘后进入进气管由风机进口吸入进行下一次输送循环。

系统特点

本系统是以罗茨鼓风机为气源，惰性气体为输送介质连续输送物料的一种循环式气力输送系统。该系统适宜输送化学性质不稳定的片状、粉状与粒状物料。具有压力低，输送可靠，惰性气体能够循环利用的特点。罗茨鼓风机在系统中起到压送鼓风机和吸送真空泵的作用。

Working principle

Material from the hopper into rotating power chatted, material under the action of gravity by feeder for the quantitative feeding, roots blower production gas pressure, to a certain speed the materials transported to designated warehouse, material air separation and gas after dust into the intake pipe by an air inlet of the fan ceiling of a conveying cycle.

System characteristics

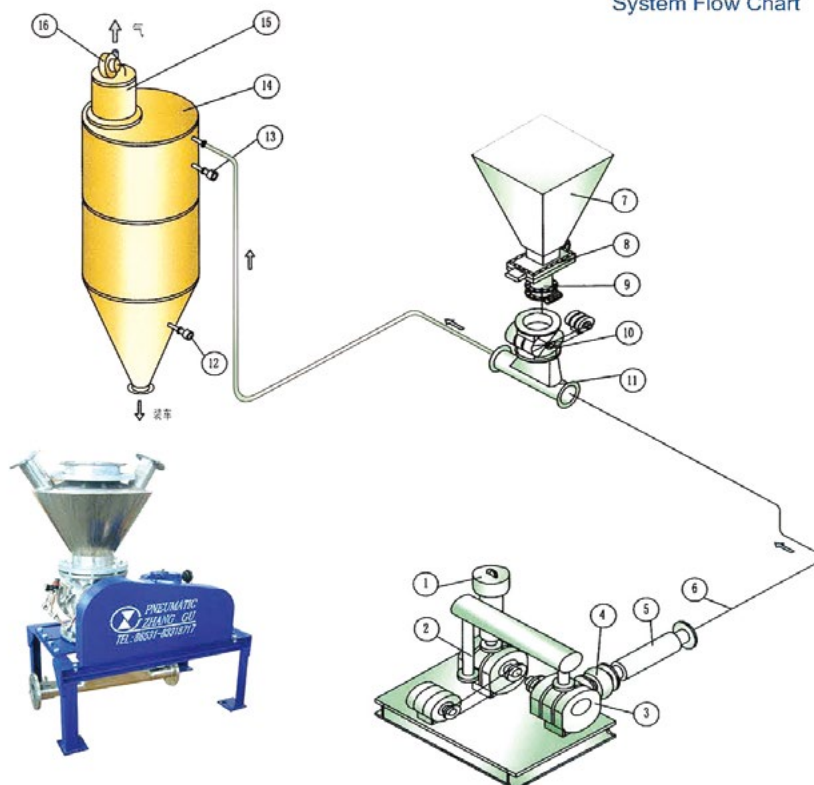
This system is a Roots blower gas and inert gas as the transmission medium for the transmission of material of a cyclic pneumatic conveying system. The system is suitable for conveying the patchy, powdery and granular material of chemical properties. With low pressure, reliable transport, inert gas can be used in the cycle of the characteristics. The blower pressure suction blower and vacuum pump on the system.

项目	输送方式	输送量 (t/h)	输送压力 (kpa)	输送管径 (mm)	输送高度 (m)	输送距离 (m)
参数	连续中低压压送	0.1-50	29.4-196	50-150	5-30	30-200

高压供料器压送气力输送系统 High pressure feeder pneumatic conveying system

系统流程图

System Flow Chart



ZRU 高性能一体化供料单元
ZRU high performance integrated feeder unit

- | | |
|-----------|-------------------------------|
| 1、吸入消声器 | Suction silencer |
| 2、一级罗茨鼓风机 | Grade 1 Roots blower |
| 3、二级罗茨鼓风机 | Grade 2 Roots blower |
| 4、弹性接头 | Expansion joint |
| 5、排出消声器 | Discharge silencer |
| 6、管道 | Pipe |
| 7、料斗 | Hopper |
| 8、手动插板机 | Handle Flashboard valve |
| 9、电动卸料机 | Electromotion discharge valve |
| 10、高压供料器 | High pressure feeder |
| 11、加速室 | Feed nozzle |
| 12、低料位计 | Low level meter |
| 13、高料位计 | High level meter |
| 14、料仓 | Storehouse |
| 15、袋式过滤器 | Bag filter |
| 16、引风机 | Suction blower |

工作原理

物料从料斗中加入，在加料阀控制作用下进入高压供料器进行定量供料，以双级串联罗茨鼓风机或空气压缩机为气源，产生高压气体，以一定的速度把物料从管道中输送到终点分离器料仓，料气分离后，气体经过滤除尘后排入大气。

系统特点

本系统是以双级罗茨鼓风机或空气压缩机为气源，产生高压气体，连续压送物料的一种气力输送系统。该系统适用于从一处向多处进行分散输送，具有压力高，密封可靠，对物料起到烘干和分级的作用。适宜中长距离输送，输送比重较大。磨损性较小的粉状和粒状物料。

Working principle

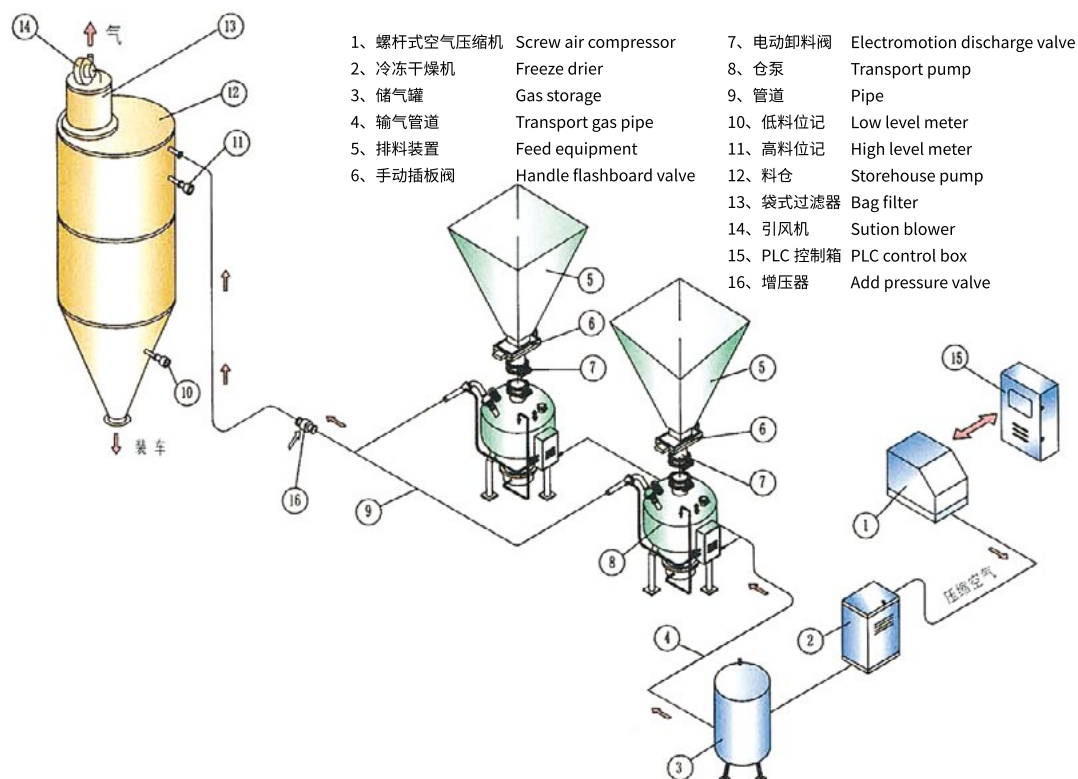
The material from the hopper to join in the charging valve control into high voltage feeder quantitative feeding, with two series Roots blower or air compressor for the gas to generate high pressure gas, at a certain speed to material from the pipeline transported to the terminal separator bin, material air separation and gas after dust filtering discharged into the atmosphere.

System characteristics

This system is in double stage roots blower or air compressor gas, resulting in high pressure gas, continuous pressure material of a pneumatic conveying system. The system is suitable for dispersing and transporting from one place to many places, which has high pressure, reliable sealing, and can be used for drying and grading of the material. Suitable medium long distance transportation, large proportion of transport. Less abrasive and granular material.

项目	输送方式	输送量 (t/h)	输送压力 (kpa)	输送管径 (mm)	输送高度 (m)	输送距离 (m)
参数	连续中低压压送	0.1-50	98-300	50-150	20-40	50-300

密相高压气力输送系统 Dense phase high pressure pneumatic conveying system



工作原理

物料从料斗中由进料阀控制加入仓泵。空压机产生高压气体，以一定的速度把物料输送到指定料库，料气分离后，气体经除尘后排入大气或接入除尘风网。

系统特点

本系统是以空压机为气源，仓泵输送物料的一种密相高压气力输送系统。该系统具有流速低，耗气量小，适宜长距离，大容量的输送，对于透气性好的物料，便于实现流态化输送。具有噪音低，破碎少的特点。适宜输送水泥、粉煤灰、矿粉、铸造型砂、化工原料等磨削性较大的物料。

Working principle

The material from the hopper to join in the charging valve control into high voltage feeder quantitative feeding, with two series Roots blower or air compressor for the gas to generate high pressure gas, at a certain speed to material from the pipeline transported to the terminal separator bin, material air separation and gas after dust filtering discharged into the atmosphere.

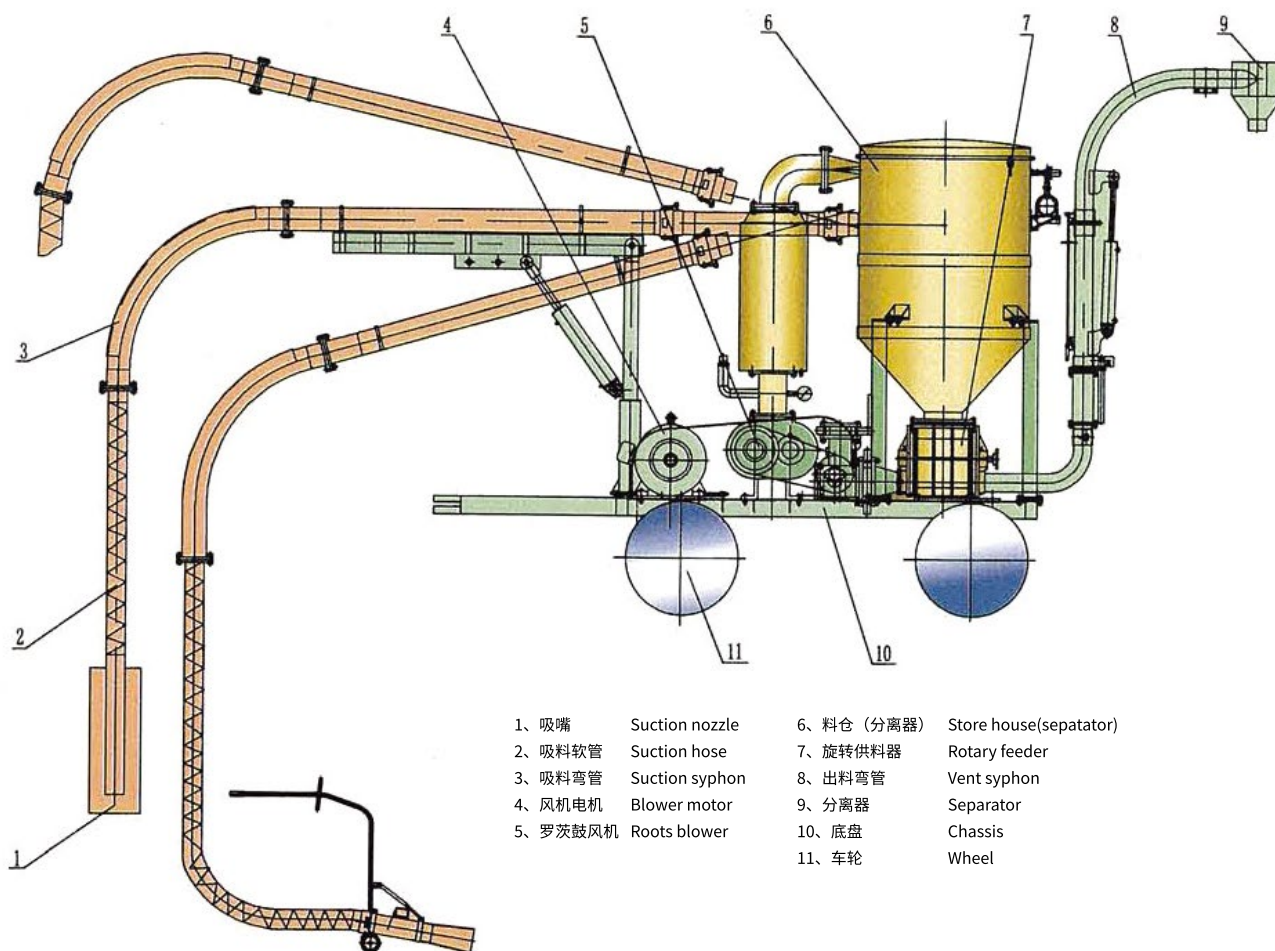
System characteristics

This system is in double stage roots blower or air compressor gas, resulting in high pressure gas, continuous pressure material of a pneumatic conveying system. The system is suitable for dispersing and transporting from one place to many places, which has high pressure, reliable sealing, and can be used for drying and grading of the material. Suitable medium long distance transportation, large proportion of transport. Less abrasive and granular material. Due to the separation of the rotary valve, the material can be automatically divided into the material plug, thus forming the dense phase pipeline transportation system.

项目	输送方式	输送量 (t/h)	输送压力 (kpa)	输送管径 (mm)	输送高度 (m)	输送距离 (m)
参数	密相高压压送	0.1-100	100-600	40-200	40	< 2000

移动式气力输送系统

Movable pneumatic conveying system



工艺流程

将气源、卸料装置、控制等集中放在一移动平台上，适合需要移动的工况，风机进口产生一定负压力，物料从吸嘴吸入，运送到分离器，物料在重力作用下进入卸料器，在电机带动下均匀供料。风机出口产生一定压力的高压气体，携带物料运送到指定位置。

Technological process

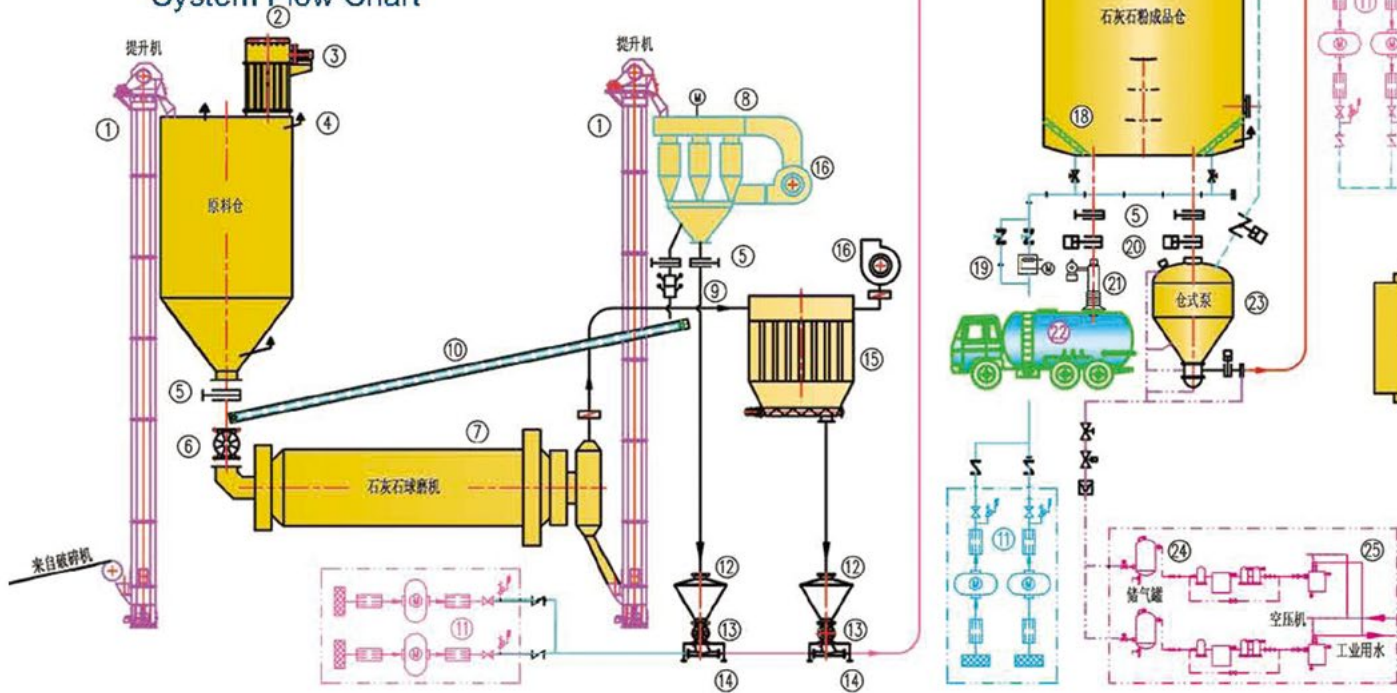
Fan imports have some negative pressure material from the suction mouth inhalation, transported to the separator, material in under the action of gravity into the discharger, in motor driven by a uniform feeding. The air blower outlet has a certain pressure of high pressure gas, carrying the material to the designated position.

脱硫工程系统

Desulphurization engineering system

系统流程图

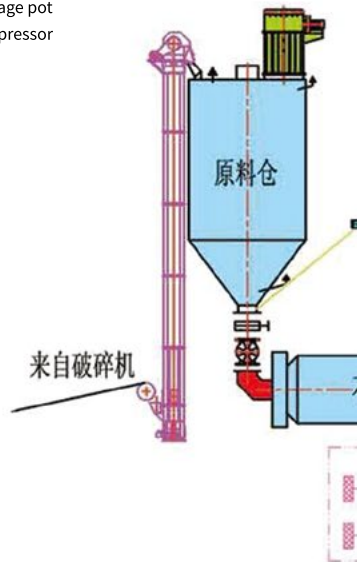
System Flow Chart



- | | |
|----------|-------------------------|
| 1、提升机 | Elevator |
| 2、仓顶除尘器 | Warehouse top filter |
| 3、引风机 | Suction blower |
| 4、料位计 | Level meter |
| 5、手动插板阀 | Handle flashboard valve |
| 6、给料机 | Feeder |
| 7、球磨机 | Mill |
| 8、选粉机 | Cassifier |
| 9、翻板阀 | Flap valve |
| 10、皮带给料机 | Belt feeding machine |

- | | |
|------------|----------------------------------|
| 11、罗茨鼓风机 | Roots blower |
| 12、抽气室 | Vent chamber |
| 13、旋转给料机 | Rotary feeder |
| 14、加速室 | Feed nozzle |
| 15、布袋除尘器 | Bag dust catcher |
| 16、高压离心风机 | High pressure centrifugal blower |
| 17、压力真空释放阀 | Vacuum pressure release valve |
| 18、气化槽 | Gasification slot |

- | | |
|----------|----------------------|
| 19、电加热器 | Electric heater |
| 20、气动插板阀 | Pneumatic plug valve |
| 21、散装机 | Bulk machine |
| 22、散装罐车 | Bulk tanker |
| 23、仓式泵 | Transport |
| 24、储气罐 | Gasstorage pot |
| 25、空压机 | Air compressor |
| 26、锅炉 | Boiler |

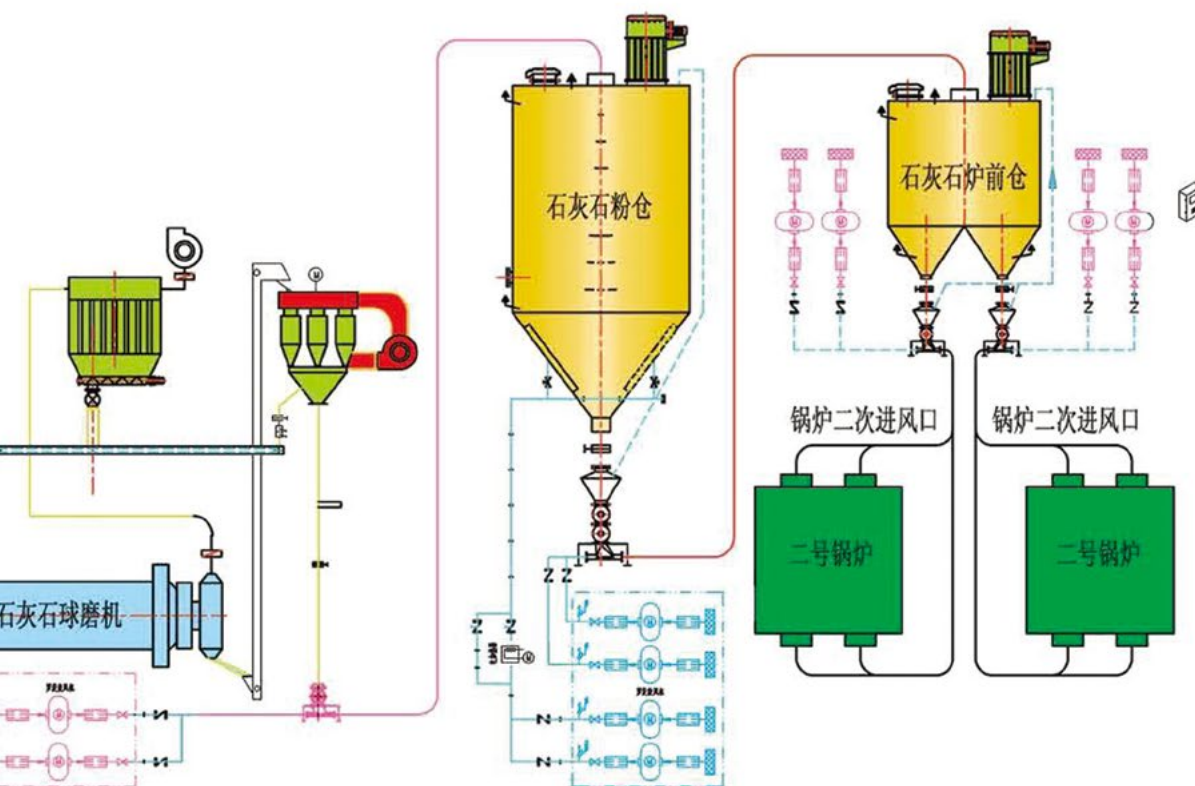
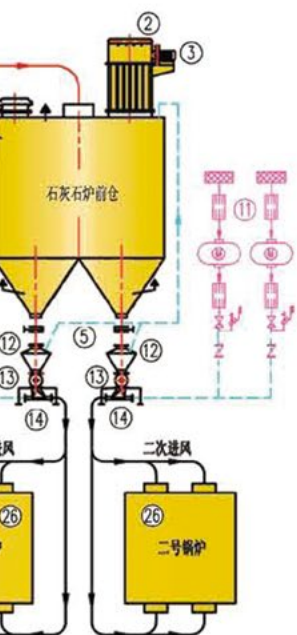


工艺流程

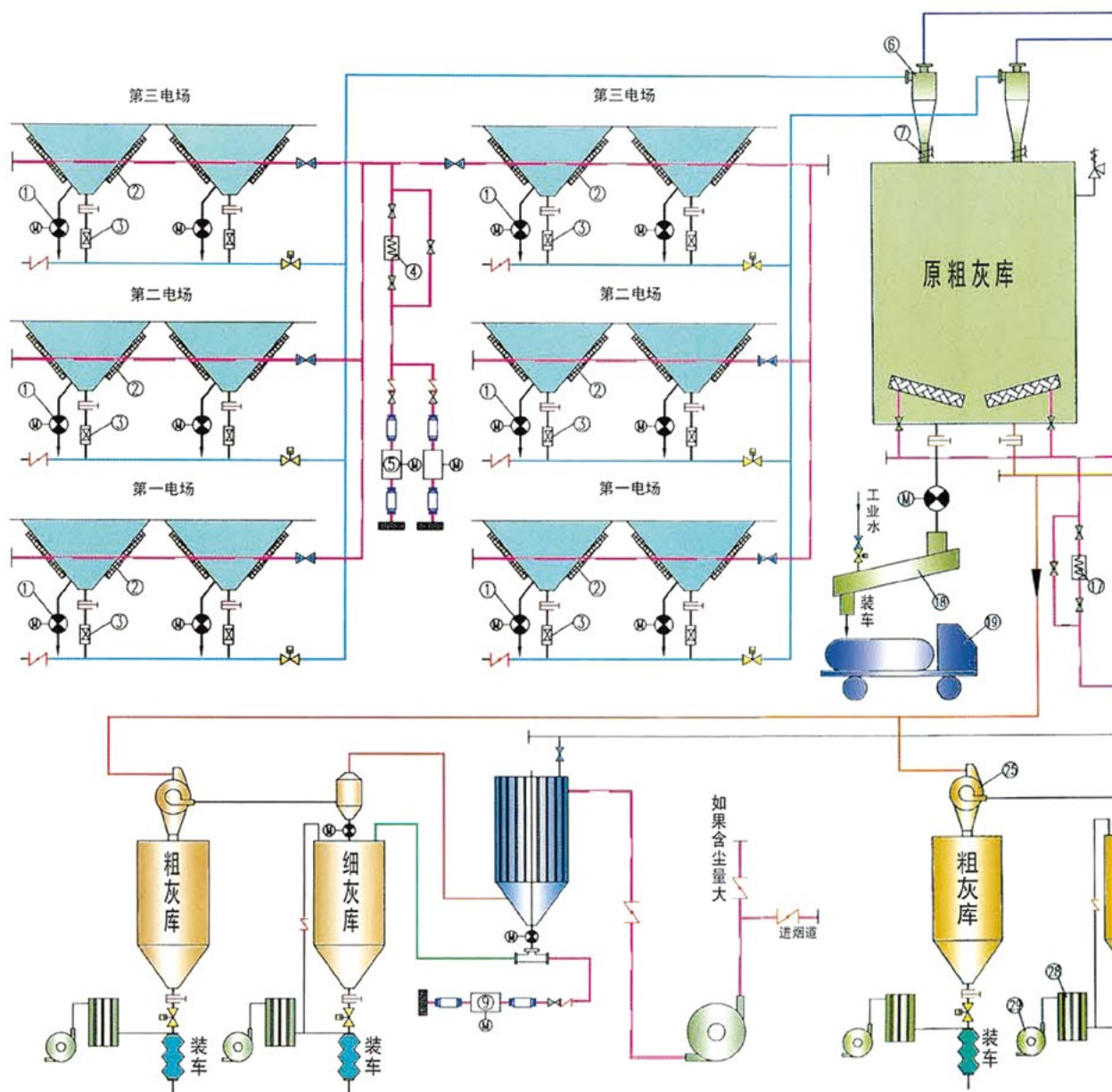
来自破碎机破碎后的石灰石颗粒经提升机提升至原料仓中，经下方的给料机定量的将石灰石颗粒加入到石灰石球磨机内，给料量即可通过变频器变频调速，也可以通过螺旋称给料机进一步实现给料量的调节。经球磨机粉碎后的物料一部分细的粉尘直接进入除尘器进行收集，一部分经提升机提升后进入选粉机进行筛选，达到细度的石灰石粉与除尘器收集的石灰石粉经气力风送的方式送至石灰石粉成品仓，尾气经仓顶除尘器过滤后净空气直接排入大气。经选粉机过滤后较粗粉粒料经皮带输送机送至磨头。对于成品库中的石灰石粉一部分通过气力输送的方式直接送至附近石灰石炉前仓，进一步通过气力输送的方式送至锅炉进行烟气脱硫，另一部分可以通过散装罐车进行外运综合利用。

Technological process

Crusher of limestone particles from the hoist to a raw material storage bin to ascend, below the quantitative feeder will limestone particles added to the lime stone ball mill, feed amount can be through the frequency control can also be through the spiral feeder further for the regulation of feeding. After grinding the material part of the fine dust directly into the dust collector to collect, the part after the hoist into powder selecting machine screen, reach the fineness of limestone powder and dust collector to collect the limestone powder sending by a pneumatic air way to send to lime powder warehouse and exhaust through the top of silo dust filter net air discharged directly into the atmosphere. The separator after filtration of coarse powder granules by belt conveyor to grinding head. For the finished product warehouse of limestone part by pneumatic conveying mode directly sent to a nearby lime stone furnace front chamber and further by pneumatic conveying way to send to boiler flue gas desulfurization (FGD), another part can be comprehensive utilization of Sinotrans by bulk tanker.



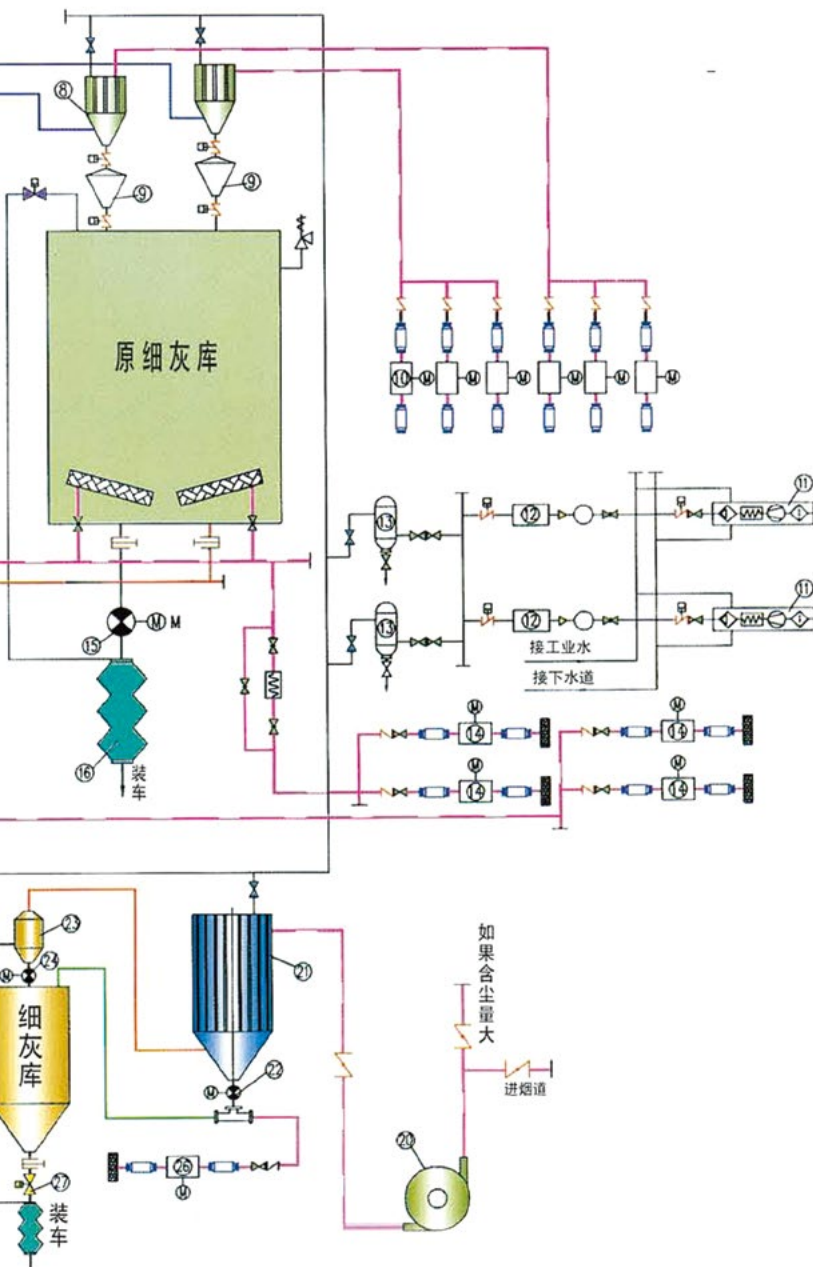
● 电厂负压除灰系统 Power station negative pressure dust eliminating system



- 1、电动锁气器 Electric airlock
- 2、气化板 Gasify board
- 3、排料阀 Discharge valve
- 4、电加热器 Electric heater
- 5、灰斗气化风机 Ash gasify blower
- 6、旋风分离器 Cyclone separator

- 7、重锤式锁气器 Heavy sinker airlock
- 8、组合式布袋除尘器 Assembled bag dust catcher
- 9、电动锁气器 Electric airlock
- 10、罗茨真空泵 Roots vacuum pump
- 11、螺杆空气压缩机 Screw air compressor
- 12、冷冻干燥器 Freeze dryer

- 13、储气罐 Gas storage pot
- 14、原灰库气化风机 Original ash storehouse gasify blower
- 15、旋转卸料器 Rotary feeder
- 16、干灰散装机 Dry ash bulk machine
- 17、电加热器 Electric heater



工艺流程

锅炉燃烧产生的烟气，经电除尘器过滤产生原粉煤灰。原灰通过排料阀进入输灰管道，在罗茨真空泵作用下，经过双级分离器分离，形成粗灰和细灰后落入原灰库。原灰库的粉煤灰可直接由卸料机装车，亦可进一步通过分选机分离成等级灰。

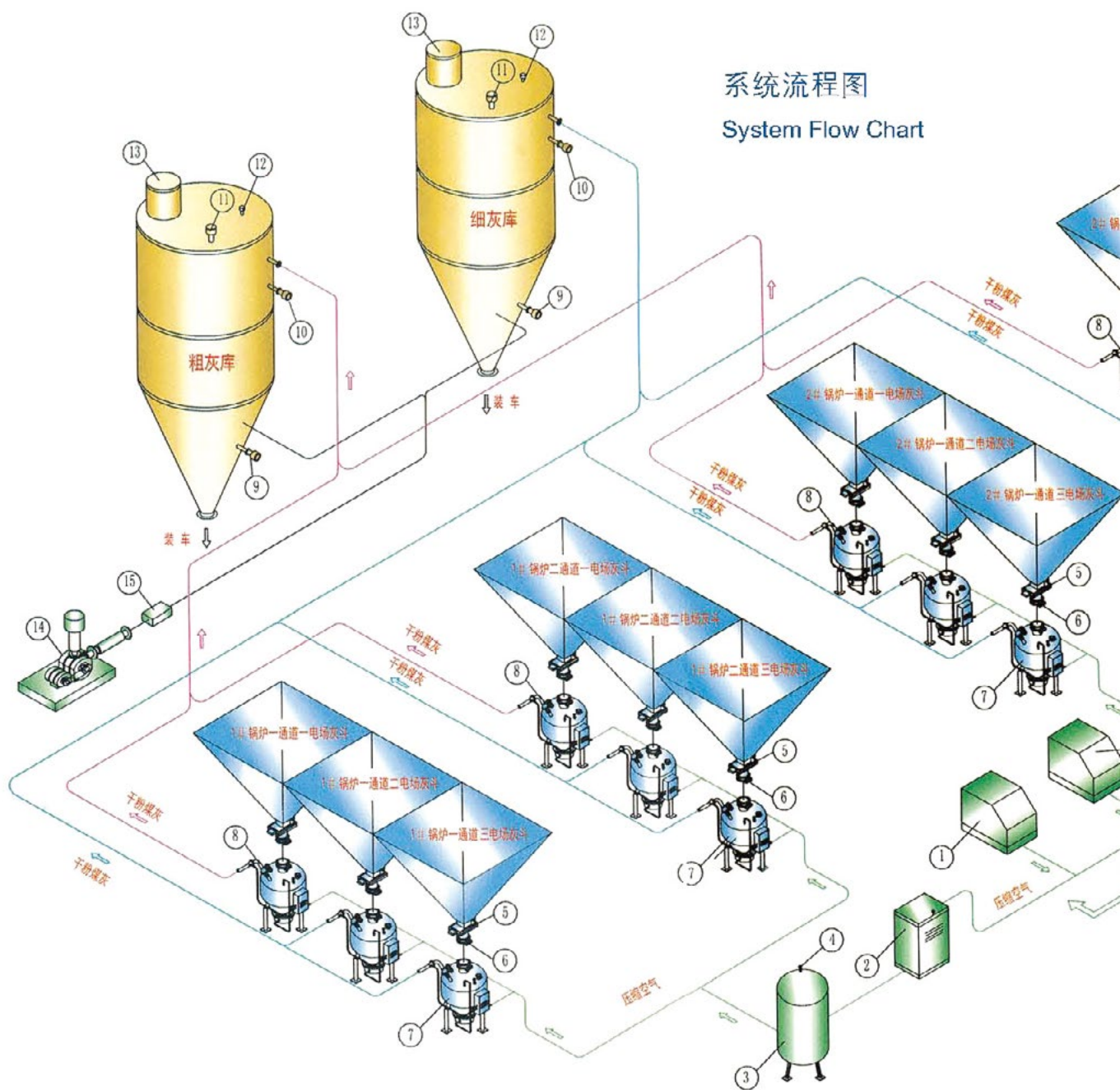
Technological process

The flue gas produced by the boiler combustion, and the original fly ash is filtered by the electric precipitator. Raw fly ash by discharging valve into the ash conveying pipe, under the action of Roots vacuum pump, after double stage separator separation, forming coarse ash and fine ash after falling into the hands of the original gray library. The fly ash can be directly discharged from the loading unloading machine, and can be further separated into a grade gray by the sorting machine.

- | | |
|--|---------------------------------|
| 18、湿式搅拌器 Wettest beater | 24、电动锁气器 Electric airlock |
| 19、粉煤灰罐车 Flyash tank car | 25、分选机 Separator choice machine |
| 20、高压离心风机 High pressure centrifugal blower | 26、罗茨鼓风机 Roots blower |
| 21、脉冲布袋除尘器 Pulsed bag dust catcher | 27、气动卸料阀 Pneumatic feeder |
| 22、旋转供料器 Rotary feeder | 28、袋式过滤器 Bag filter |
| 23、多管收集器 Multi pipe collector | 29、引风机 Suction blower |

电厂正压输送粉煤灰系统 Positive pressure conveying flyash system

系统流程图
System Flow Chart



- 1、螺杆式空气压缩机 Screw air compressor
- 2、冷冻干燥机 Freeze drier
- 3、储气罐 Gas storage
- 4、电接点压力表 Electricity join pressure gauge
- 5、手动插板阀 Handle flashboard valve

- 6、电动卸料阀 Electromotion discharge valve
- 7、上引式仓泵 Ascending suction transport
- 8、出料阀 Discharge valve
- 9、低料位计 Low level meter
- 10、高料位计 High level meter

- 11、真空释放阀 Vacuum release valve
- 12、连续料位计 Continuous level meter
- 13、袋式过滤器 Bag filter
- 14、罗茨鼓风机 Roots blower
- 15、电加热器 Electricity heater
- 16、PLC 控制箱 PLC control box

工艺流程

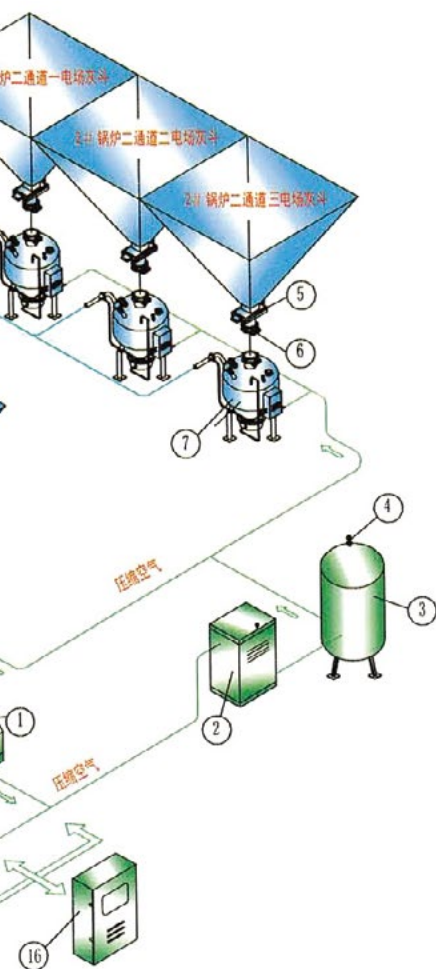
锅炉燃烧产生的烟气，经电除尘器过滤除尘，分别产生粗粉煤灰和细粉煤灰，由电厂灰斗分别卸入仓泵，在高压气体的作用下，输送到粗灰库和细灰库。

本系统采用高压密相输送粉煤灰，结构简单，能耗低，便于维护和管理，能够实现自动化控制。

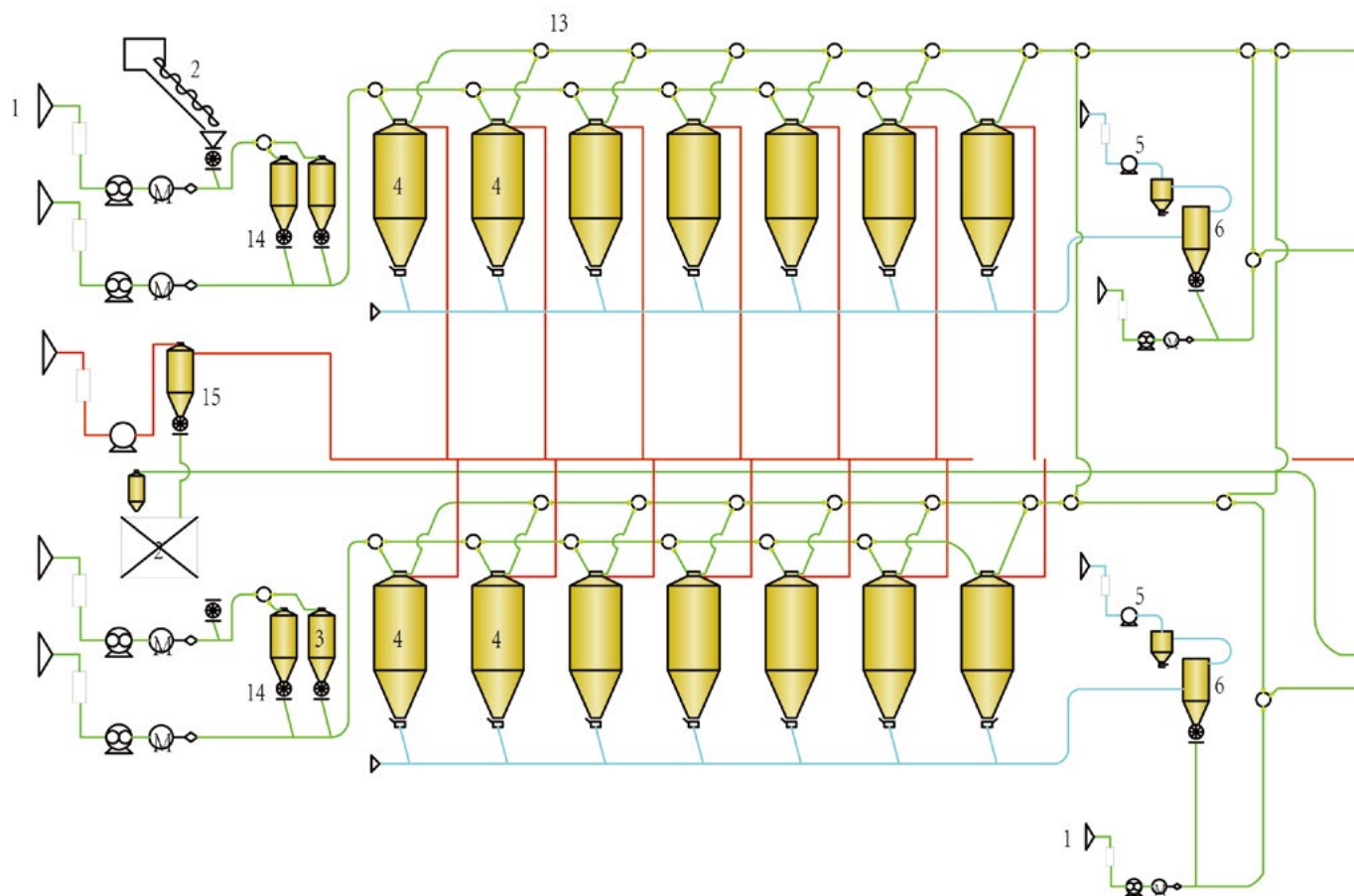
Technological process

Flue gas generated by the combustion of the boiler, the electrostatic precipitator dust filter, respectively, resulting in a coarse powder ash and fine fly ash, by the power plant hopper were unloading warehousing, pump, in under the action of high pressure gas, transported to the coarse ash silo and fine ash silo.

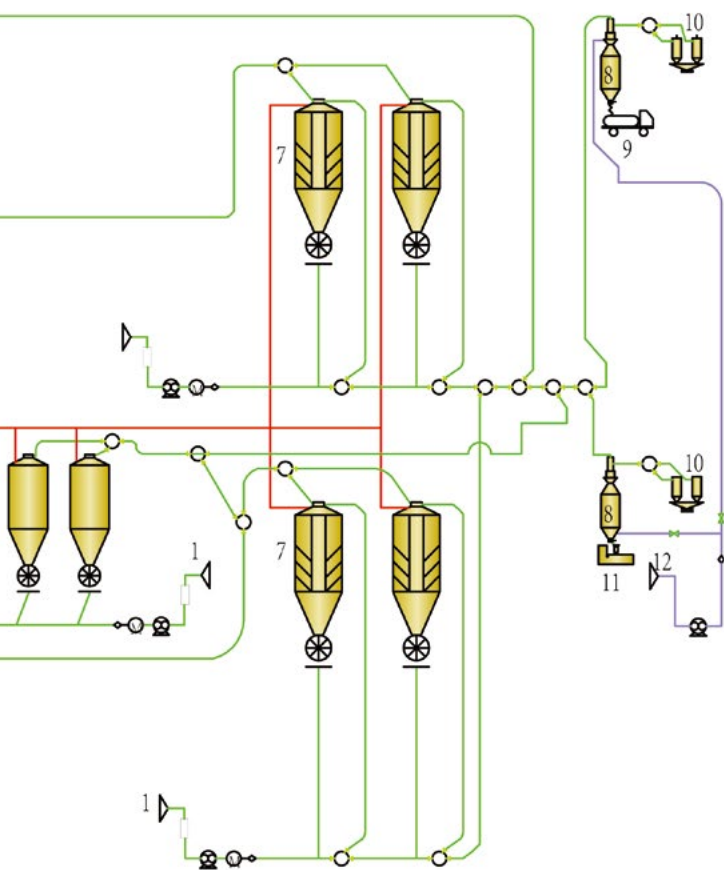
The system adopts high pressure dense phase transport fly ash, simple structure, low energy consumption, easy maintenance and management, can achieve automatic control.



● 混料配料计量及气力输送系统 Mixing metering burdening & pneumatic conveying system



- | | |
|--|-----------------------------|
| 1、罗茨鼓风机 Roots blower | 9、运输车辆 Transport vehicle |
| 2、送料设备 Supply material facility | 10、贮存仓 Stockpile storehouse |
| 3、计量设备 Measure facility | 11、包装机 Packaging machine |
| 4、料仓 Storehouse | 12、引风机 Suction blower |
| 5、真空泵 Vacuum pump | 13、分路阀 Shunt |
| 6、中间分离器、除尘器 Middle separator, dust catcher | 14、旋转供料器 Rotary feeder |
| 7、均料装置 Equality equipment | 15、除尘系统 Collection dust |
| 8、分离器 Separator | |



● 系统工程中单机产品展示 Display the equipments of system project

风机 (Blower)



SSR 系列



ZG 系列



智能罗茨鼓风机组

旋转供料器 (Rotary feeder)



ZR 系列



CR 系列



GRS 系列



SRV 系列



ZR 系列



CR 系列



AGR 系列



GRL 系列

分路阀 (Diverter valve)



EGH 系列



FL 气动系列



FL 气动系列



FL 电动系列



THFX 系列



THFX 系列



TD 系列

日本吉川圆盘给料机 (Yoshikawa circlefeeder)



CF 系列



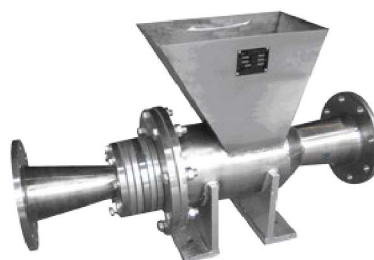
CF 系列

管道取样器 (Pipeline sampler)



QYF 固体取样器

喷射泵 (Pneumatic ejector)



喷射泵

仓泵 (Silo pump)



仓泵



仓泵

脉冲布袋除尘器 (Pulse bag filter)



脉冲布袋除尘器

● 典型客户名录 Typical client directory



品质服务承诺

1. 售前服务 专业的前期技术工程人员提供技术咨询、整体规划、系统项目方案设计、设备选型等

2. 售中服务 信守合同，保证按期为客户提供优质产品及服务；对于大型项目或复杂工况，我公司安排优秀的技术工程师对用户进行系统安装、调试指导技术服务，并进行必要的维护保养，操作培训与指导。

3. 售后服务

1) 产品在使用中，我公司定期组织技术人员进行产品质量、使用状况、改进意见等方面的回访，以便进一步提高产品质量与服务。

2) 对于用户现场出现的问题，快速做出反应。

3) 对售后服务，要求用户填写质量反馈表，并作出鉴定意见，以便提高我们气力输送产品的服务质量。

订货须知

1. 用户可结合单机样本和系统样本对我公司产品及服务进行简单了解，如果要进行产品采购，可将下列参数信息告知我们，以便我公司给您提供专业的产品选型与系统设计方案。

a) 物料特性 b) 工况条件 c) 输送参数 d) 供货范围 e) 特殊要求等

2. 本公司可根据用户的不同需求、不同工况以及特定要求，给出更经济、更合理的工艺设计方案，系统中可配置不同规格、不同型号的气源及供料单元装置，以满足用户的最终需求。

Quality service commitment

1. pre service professional technical engineers to provide technical advice, overall planning, system project design, equipment selection, etc.

2. In the sale of services, abide by the contract, ensure timely for customers to provide quality products and services; for large projects or complex conditions, our arrangements for excellent technical engineer for system users installation, commissioning technical services, and the necessary maintenance and operation of training and guidance.

3. After-sales service

1) products in our company regularly organized technical personnel for product quality and usage and suggestions for improvement, in order to further improve the quality of products and services.

2) for the user site problems, rapid response.

3) to service, ask the user to fill in the quality feedback form, and to make the appraisal opinion, in order to improve the service quality of our pneumatic conveying products.

Ordering information

1. User can be combined with single and system samples of our products and services are simple to understand, if you want to buy product, tell us about the following parameters information to our company to you provide professional product selection and design scheme of the system.

a) the material characteristics b) working conditions c) pneumatic conveying parameter d) scope of supply
e) special requirements.

2. The company can according to the different needs of users, different conditions and specific requirements that are more economic and reasonable process design scheme, the system can be configured with different specifications, different types of air supply and the feeding unit to meet the user's final demand.



山东省章丘鼓风机股份有限公司

SHANDONG ZHANGQIU BLOWER CO.,LTD

山东章鼓气力输送工程公司

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