



NO POWER CHUTE, HOPPER DUST COLLECTOR MANUAL

无动力导料槽，料斗除尘器说明书

Bulk Material Conveying System

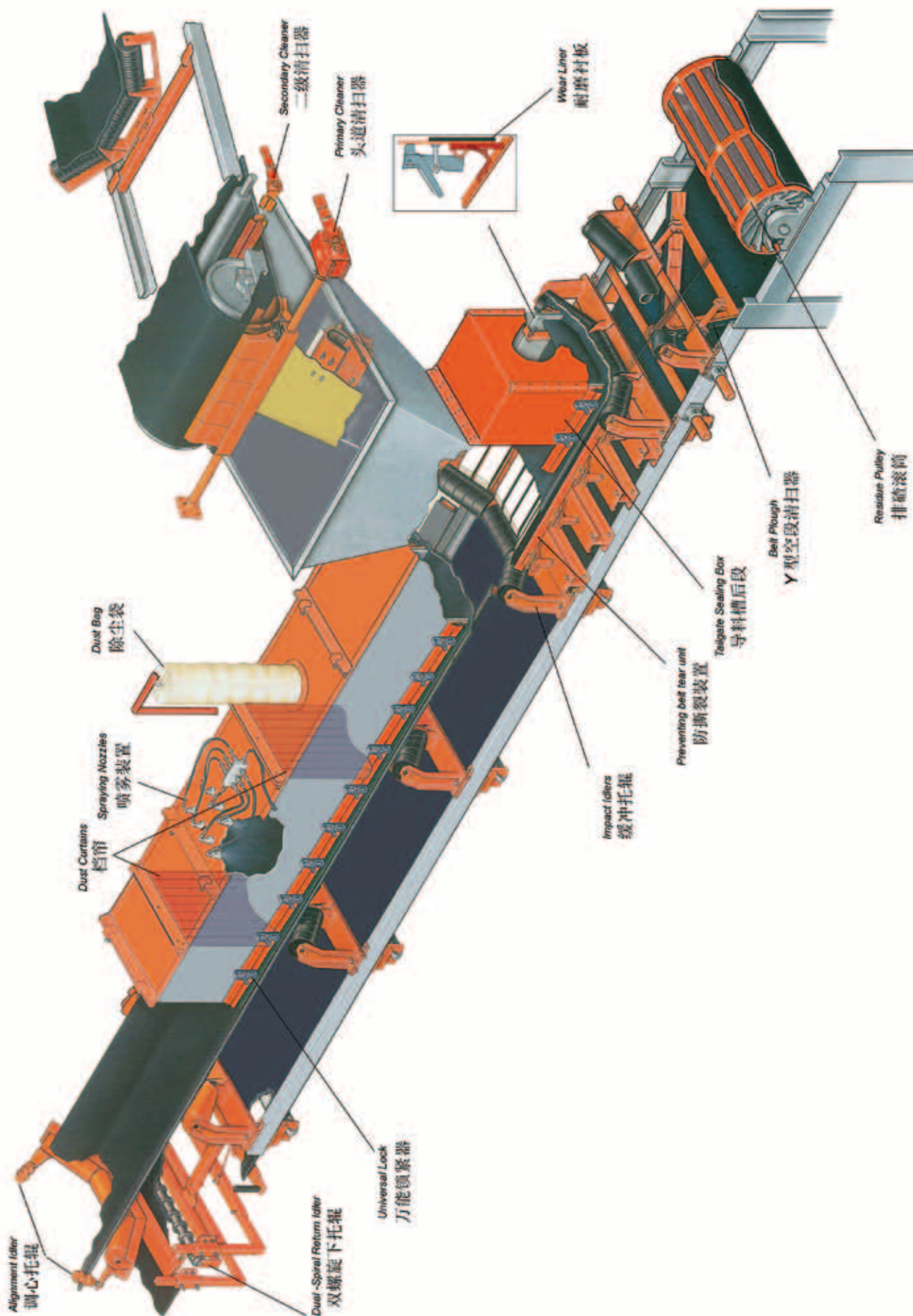
New Environment-Friendly Equipment : Aerosol (Dry Fog) Treatment

散料输送系统

新型环保设置：气雾（干雾）治理

宁波探索机械制造有限公司

NINGBO TANSUO MACHINE MANUFACTURING CO. LTD.



1. 气雾（干雾）抑尘系统说明

Aerosol (Dry Fog) Dust Suppression System Specification

TS-QWCH-100 气雾（干雾）抑尘装置是宁波探索机械制造有限公司自主研发的新型抑尘系统。主要适用于冶金、钢铁、火电、煤（矿石）码头、煤矿、焦化等工业粉尘污染严重的行业，如：火电厂转运站、翻车机室、港口的卸船机等）系统通过完美的雾化效果，稳定可靠的系统性能，大大降低工业现场粉尘的危害。筑起一道防治粉尘的防火墙，为您的安全生产保驾护航！

该产品通过提高雾化的效果，水滴越多，结合粉尘的机率就越高，降尘的效果就会越好，而水的流量却不能过大，一般散料中的含水量要控制在 6%，散料中的含水量过高不但会对燃烧造成影响，而且还容易造成散料在皮带机上打滑或落料管堵塞等现象，这就要求不但要有良好的雾化效果，还要掌握一定的雾化时机，既达到有效降尘的目的，又把握好水量的多少；对悬浮在空气中的粉尘——特别是对直径在 5 μ m 以下的可吸入颗粒进行有效地吸附作用正是传统除尘设备无法有效解决的关键问题。

另外，我公司针对许多电厂、港口、码头等采用循环降尘，对水的过滤和净化上要求高等特点也制定了相应的解决方案。

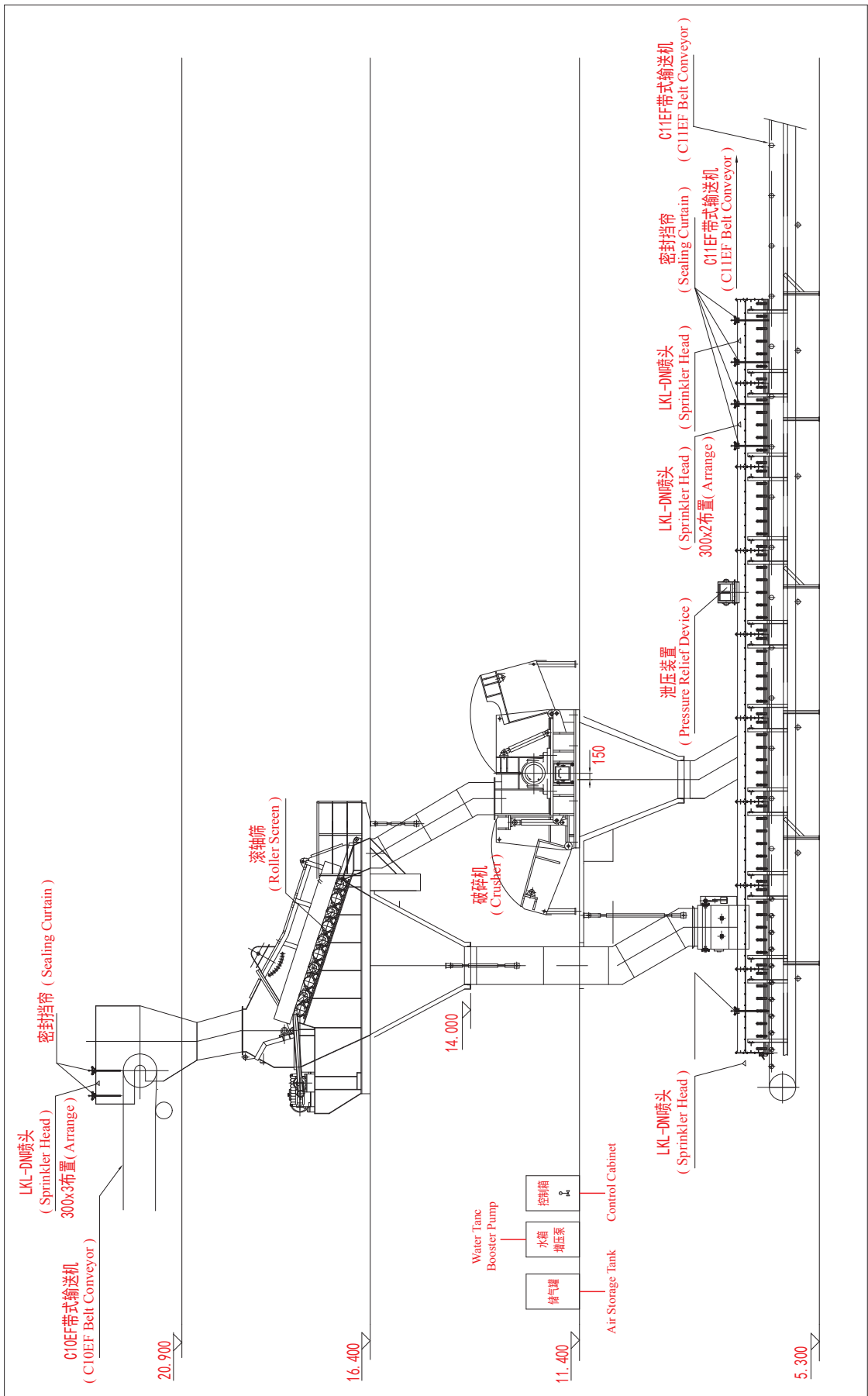
TS-QWCH-100 aerosol ⁸dry fog⁹ dust suppression device is invented by Ningbo Tansuo Machinery Manufacturing Co., LTD. It is mainly used in metallurgy, steel, thermal power, coal ⁸mine⁹ terminals, coal, coke, etc., polluting industries. Such as thermal power transfer stations, dumper room, unloading ports, etc.. The perfect atomization system, stable and reliable system greatly reduces the hazard of industrial site dust. It builds a firewall to prevent dust and your safety escort.

The product increases the effect of atomization. The more water droplets, the higher the probability of a combination of dust, Dust effect will be better, but the flow of water shouldnt be too large. In general, the moisture content of bulk materials in should be controlled at 6⁵, the high moisture content of bulk materials would not only affect the combustion, but also easily cause slipping or falling bulk material feeding tube blockage phenomenon on the belt, which requires not only a good atomization effect, but also the opportunity to master certain atomization, both to achieve effective dust suppression purposes, again much better grip water against dust suspended in the air - especially the effective absorption of respirable particles under 5 μ m in diameter can the traditional removal equipment's key issues.

In addition, the company uses circulating dust for many power plants, ports, terminals, etc. And we also developed a corresponding solution for high filtering and purifying.

2. 气雾（干雾）抑尘装置示意图

Aerosol (Dry fog) suppression device drawing

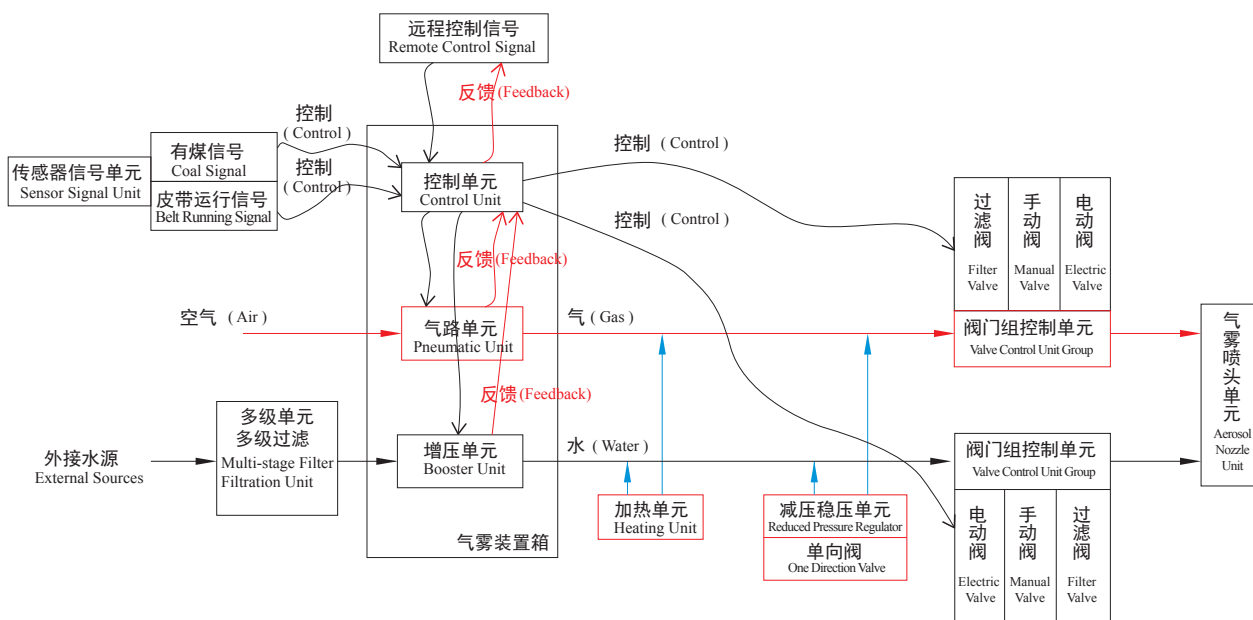


3. 系统构成

System Structure

该气雾（干雾）降尘系统主要包括气雾（干雾）装置箱（含系统控制单元、水增压单元、气增压单元等）、阀门控制组单元（含电控类阀、手动类阀、防护类阀等）、信号采集单元（含各类传感器、通讯单元等）、喷头单元（含喷头（箱）、连接组件等）、稳压、高压装置、多级过滤组装置、保温加热装置等机器、设备组成。

The aerosol⁸dry fog⁹ system includes aerosol dust⁸dry fog⁹ device box⁸including system Control unit, water booster unit, gas booster unit, etc.⁹, the valve control group of cells⁸including electrically controlled valve class, manual valve class, the class of protection valve, etc.⁹, the signal acquisition unit⁸including various types of sensors, communications unit, etc.⁹,The sprinkler head unit⁸with nozzle box, connected components, etc.⁹, the regulator, high-pressure device, multi-stage filtration group devices, insulation heating device such as machinery, equipment components.



4. 系统技术原理

System Technology Principle

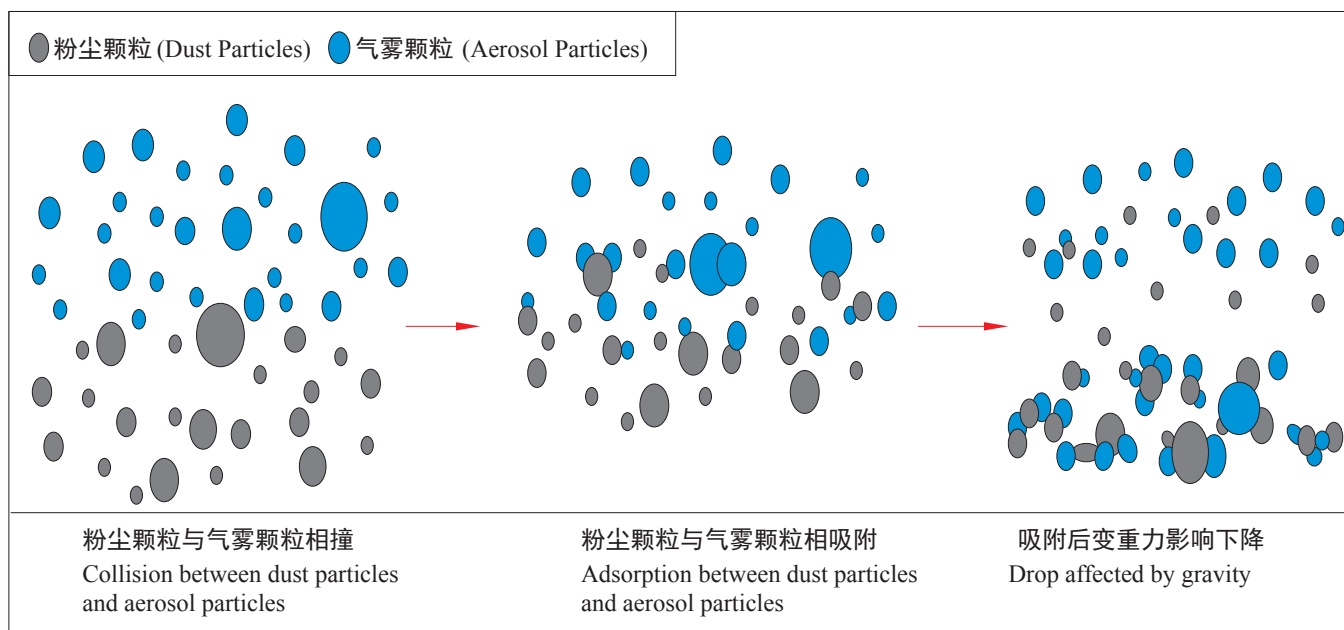
实施重力降尘及水雾压尘，通过压力将液体和气体输送到喷嘴，液体和气体在喷头处混合产生细小的雾化液滴喷出喷嘴外，从而产生直径在 1um-10um 极小的水雾颗粒，对悬浮在空气中的粉尘进行有效的吸附，快速凝聚成颗粒受重力作用而沉积下来，达到抑制粉尘，改善环境的目的。

系统具有良好的雾化调节功能，可通过改变气体和液体的压力来调整雾化装置，从而达到理想的气体流率与液体流率之比，提供微细液滴尺寸的喷雾。

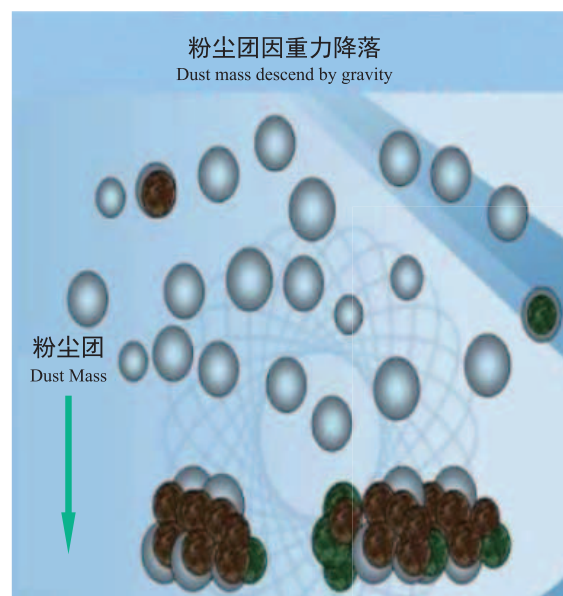
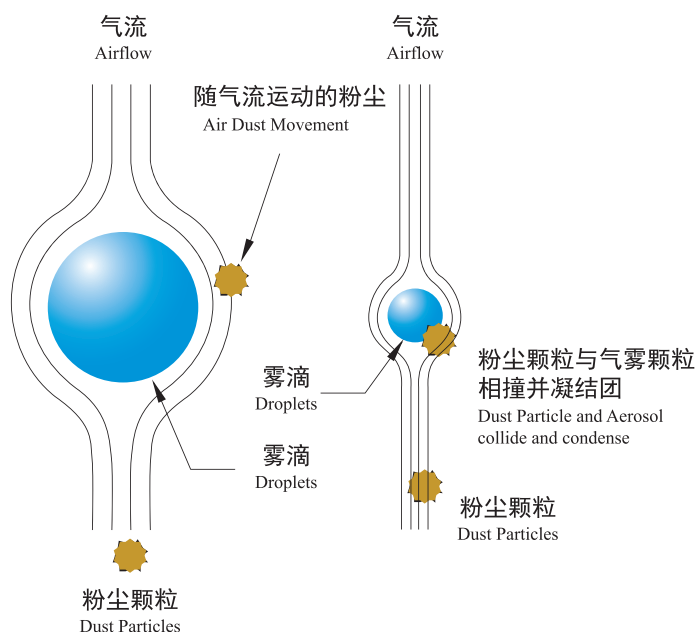
Implement Dust and spray pressure of gravity embodiment dust, supply liquids and gases to the nozzle by pressure. the liquid the head of the body and the mixed gas generated in a small discharge nozzle atomized droplets, the diameter of the resulting 1um-10um small in mist particles of dust suspended in

the air sucked effectively attached quickly condense into particles deposited by gravity, to suppress dust and improve the environment.

The system has good atomization adjustment function. By changing the pressure of the gas and liquid, it can adjust the whole atomizing device, to achieve the desired gas flow rate and liquid flow rate, to provide fine droplets size of the spray.



气雾与粉尘相碰撞过程
Collision between aerosol and dust



粉雾（干雾）与粉尘粘附演示图
Aerosol (Dry Fog) and dust adhesion demo map

5. 系统控制及功能

System Control And Function



控制系统采用 PLC 全自动程序控制，通过接收现场各种传感器的信号（如：物流传感器提供皮带上是否有料，转速传感器提供皮带是否运行等信号），系统自动将气雾（干雾）系统投入运行，按照编好的程序顺序执行，实现无人值守，同时系统可以接受远程程控的启停命令。来远程控制启停气雾（干雾）系统，同时还可以将现场运行信号等反馈到程控系统，实现远程监控。系统还配有人机操作界面，可以通过直接触摸来控制系统工作。系统可以有三种控制方式：程控自动、就地自动及就地手动。操作人员无须特殊培训就可通过界面文字提示轻松地对气雾（干雾）系统运行状态参数进行查询，并可实现气雾（干雾）系统的手动、自动和远程状态的转换。

The control system uses automatic PLC program control, by receiving the site signals from various sensors ⁸eg⁹ logistics sensors tell whether there is material on the belt, the belt speed sensor provides transportation

signals⁹, the system automatically aerosol ⁸dry fog⁹ system put into operation, in accordance with the programmed procedures along order execution, unattended, and the system can be programmed to accept remote start and stop commands. The far process control start and stop aerosol ⁸dry fog⁹ system can also be field operation signals fed to the programmable control system, achieve remote monitoring control. System comes with man-machine interface, and you can directly touch control system to work. There are three controlling party system types⁹ Programmed Auto, place automatically and manually place. Operator who needs special training tips can easily inquiry aerosol ⁸dry fog⁹ system running query parameters through the interface text, manual aerosol ⁸dry fog⁹ system, and can realize automatic and remote state of the conversion process.

标准显示	保护和报警	可调整系数参数
Standard Display	Protection and alarm	Adjustable System Parameters
排气压力显示	电机描过载停机保护	电磁阀打开、关闭延时
Exhaust Pressure Display	Power Overload Shutdown Protection	Solenoid valve opening and closing delay
排气温度显示	排气温度过高停机保护	传感器接通、关闭延时
Exhaust Temperature Display	Exhaust Temperature Shutdown Protection	Delay of sensor turn on and off
设备运行显示	排气压力过高停机保护	上限、下限压力
Equipment Operation Display	High Discharge Pressure Shutdown Protection	Upper And Lower Pressure
设备停机显示	电源缺相、错相保护	空车过久停机时间
Equipment Shutdown Display	Power Default Phase, wrong phase protection	Empty for too long downtime
运行累计时间显示	空滤、油滤、油气分离器	自动启动、停机时间
Elapsed time display	Air Filter, Oil Filter, Oil Separator	Automatic Start, Stop Time



6、系统优势

System Advantage

该系统装置将气路系统、水路系统及智能控制系统合理配置为一体化运用，使操作更方便。该系统在有效节能节水的同时实现降低工业现场粉尘，达到保护环境的理想效果。系统结构紧凑，集成化程度高，参数设置灵活，维护成本低，无二次污染。

The air system, water systems and intelligent control system is configured as one reasonable combination use, making the operation more convenient. The system is effective while achieving lower energy and water industries are field of dust, to achieve the desired effect of protecting the environment. Compact system structure, high degree of integration, flexible parameter, low maintenance cost, and no secondary pollution.

6.1 气雾（干雾）降尘与传感降尘设备对比表：

Aerosol (Dry Fog) Dust and dust sensing device comparison table

对比参数	气雾（干雾）降尘装置	水雾降尘装置	布袋降尘	静电降尘
降尘能力	降尘能力强，尤其是对 10um 以下的吸入粉尘抑制率可达 97% 以上	降尘能力弱，对 10um 以下的只吸入粉尘无抑制能力	降尘能力弱，对于分散污染源难收集、难治理	难收集、难治理 降尘能力弱，对粉尘颗粒直径有一定要求
应用领域	适用于各种无组织排放污染源，各种降温、加湿行业	适用于各种无组织排放的大颗粒污染源	适用于各种有组织排放的污染源	适用于对粉尘电阻有一定要求的污染源
运行成本	耗水量小，成本低	耗水量大，成本高	吸水性大，不抗静电，成本高	成本高
长期工作效果	效果稳定	冬季容易造成物料冰，损伤设备	吸水性大，不抗静电，通气性能差	受粉尘温度影响，对不同温度的粉尘降法效果不同
二次污染	无	增加后续污水处理	有	有
设备成本	低	低	高	高
占地面积	小	小	大	大
功耗	低	低	高	高
维护成本	低	低	高	高

Contrast Parameters	Aerosol ⁸ dry dog ⁹ dust controller	Spray Dust Suppression Device	Dust Bag	Electrostatic Dust
Dust Descend Capacity	High Dust Capacity, especially absorbable Dust suppression rate is above 97 ⁵	Weak Dust Descend Capacity. Absorb dust under 10um, no suppression	Weak Dust Descend Capacity. It's difficult to collect and treat dispersed sources	Weak Dust Descend, requirements to diameter of dust particles
Applications	Be applicable for fugitive emissions sources, various cooling	Be applicable for various large fugitive emissions	Be applicable for organized emissions sources	Be applicable for dust resistance sources emission sources
Operating Costs	Low water consumption, low cost	High water consumption, High costs	Larger Absorbent, static electricity, high costs	High costs
Long-term operating effect	steady	Easily freeze in winter, and damage equipment	Large Absorbent, static electricity	Different Descend Effect under different temperature
Secondary Pollution	None	Subsequent increase in sewage treatment	Exist	Exist
Equipment Cost	Low	Low	High	High
Covers	Small	Small	Large	Large
Function Consumption	Low	Low	High	High
Maintenance Costs	Low	Low	High	High

6.2 各除尘装置性能对比表

Dust Removal Device Performance Comparison Table

对比参数	干雾抑尘装置	水喷淋	洗涤塔除尘
抑尘能力	抑尘能力强，尤其是对 10um 以下的可吸入粉尘抑制率可达 97% 以上	抑尘能力弱，对 10um 以下的只吸入粉尘无抑制能力	抑尘能力差，接近布袋除尘
耗水量	小	大	大
后续处理费用	无	增加后续污水处理费用	增加后续污水处理费用

长期运行抑尘效果	一年四季均可运行，且抑法效果稳定	冬季运行易造成物流冻结，损伤设备，所以冬季无法使用	需采取采暖措施或放置于屋内，否则喷雾机无法使用
物料影响	无影响	增加物料的含水量，造成物料热值损失。尤其是对水敏感的材料，影响较大	无影响

Comparison Parameter	Dry Fog Suppression Device	Water Spray	Dust Scrubber
Dust Suppression Capacity	High Dust Capacity, especially absorbable Dust suppression rate is above 97 ⁵	Low Suppression capacity, Absorb dust under 10um, no suppression	Low suppression capacity, close to the dust bag
Water Consumption	Low	High	High
Follow-up treatment costs	None	Subsequent increase in the cost of sewage treatment	Subsequent increase in the cost of sewage treatment
Long-run effects of dust suppression	Run a whole year, And steady suppression effect	Logistics operation is likely to freeze, damage equipment. So it can't be used in winter.	Should use heating measures or place in the house, otherwise it can't be used sprayer
Material Impact	None	Increase the moisture content of materials, heat loss is caused by material, especially for water-sensitive materials.	None

7. 系统应用

System Application

我公司生产的气雾（干雾）降尘系统设备广泛应用于物料粉碎、筛分、输送、装卸料等组织源封闭及半封闭场所的粉尘污染治理，应用领域涉及港口码头、采掘业、非金属制品业、冶金、机械制造、电力等行业，适用范围广。

Our aerosol ⁸dry fog⁹ dust system equipment is widely used in material crushing, screening points, transportation, loading and unloading and other organizations source enclosed and semi-enclosed spaces of dust pollution, application areas. The wide ranges of domains involve ports, mining, non-metal products, metallurgy, machinery manufacturing, and electricity.

探索公司在华能福州电厂改造图

Remoulding Pictures of Huaneng Fuzhou Plant by Ningbo Tansuo



除尘装置触摸屏控制柜

Control Cabinet With Touchable Screen of Dust Collector Device

华能福州电厂应用现场

Huaneng Fuzhou Power Plant application site



头部漏斗抑尘 Hopper Dust Suppression Device

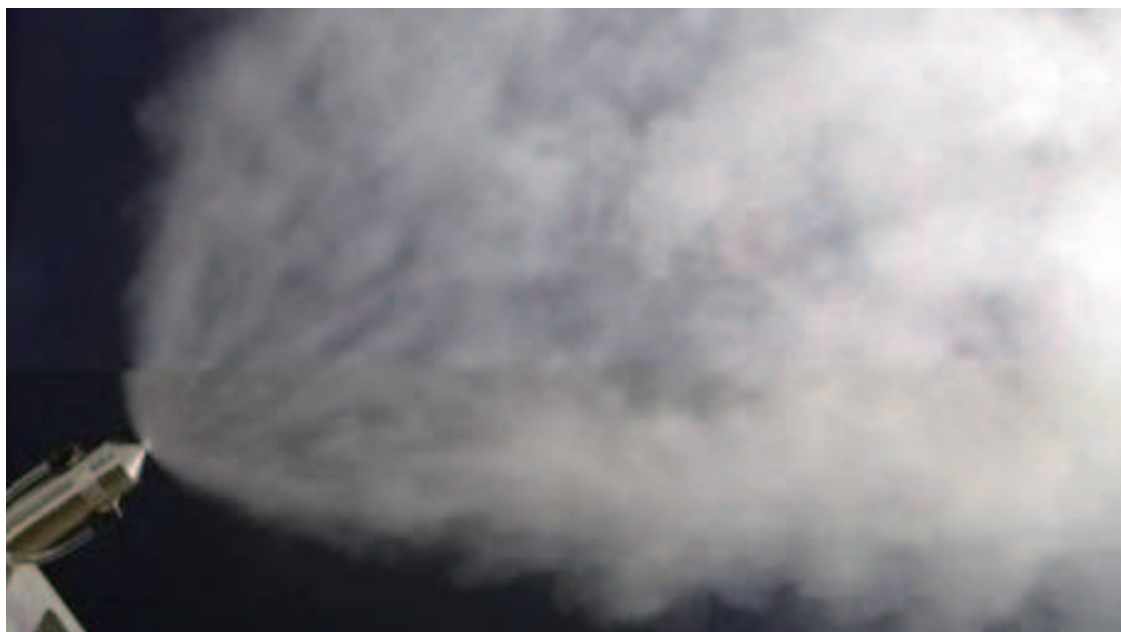


华能福州电厂应用现场

Huaneng Fuzhou Power Plant application site



导料槽出口抑尘 Dust Suppression Exit of hopper Chute



华能福州电厂应用现场

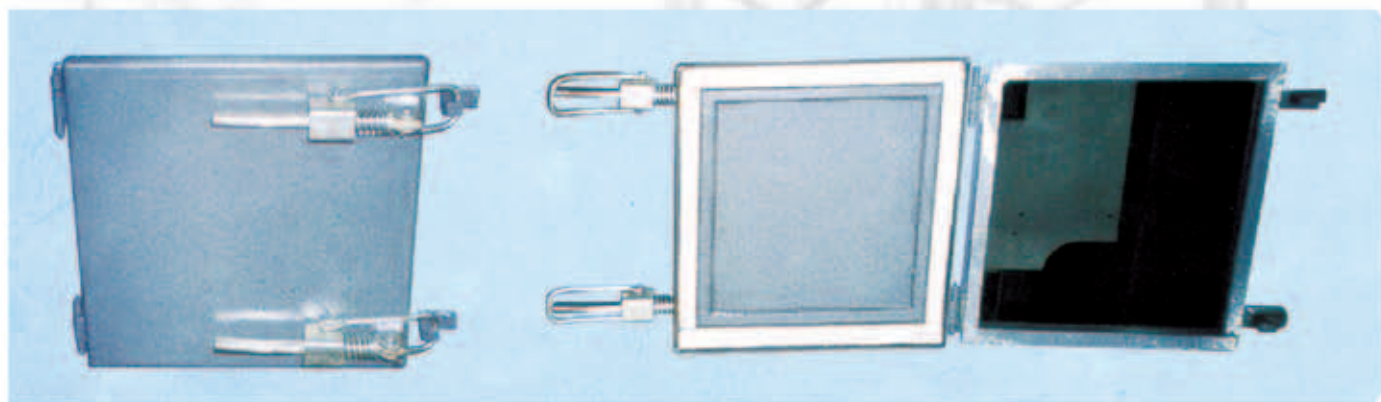
Huaneng Fuzhou Power Plant application site



导料槽尾部抑尘 Tail Dust Suppression of Hopper Chute



散料系统密封门
Powder sealed door system



料槽自动锁紧装置
Automatic locking device manger





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