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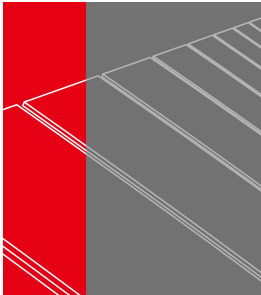


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CYCO[®]

CHANGYUAN ATOMIZING

Ultrasonic atomizing nozzle



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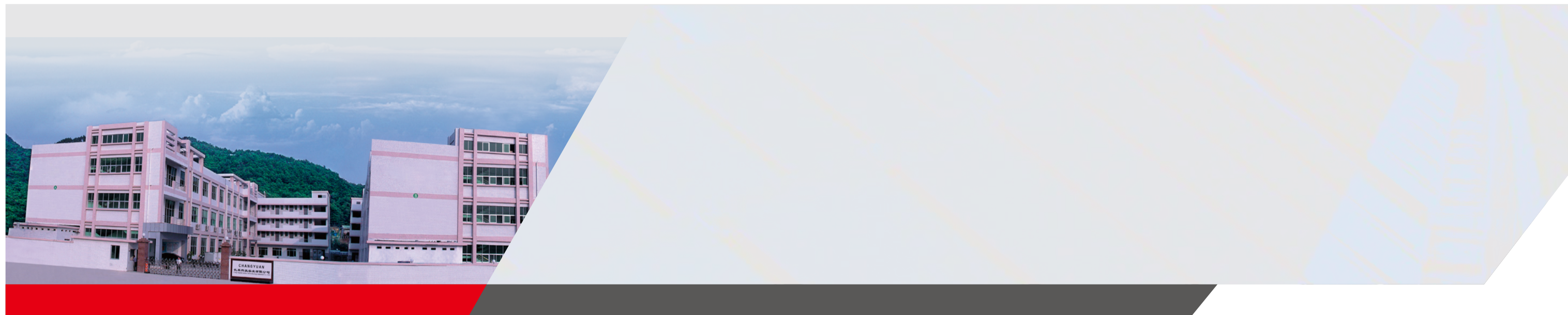


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Changyuan Atomizing

Ultrasonic atomizing nozzle

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➔ Content

- 01 ——— Company introduction
- 02 ——— Micron ultrasonic atomizing nozzle
- 04 ——— Installation methods
- 06 ——— Dust suppression system control host
- 08 ——— Ultrasonic atomization dust suppression system application
- 11 ——— Air compressor selection
- 12 ——— System engineering service
- 13 ——— Project cases

➔ Company Profile

COMPANY PROFILE

After more than ten years of development, Dongguan Changyuan Spraying Technology Co., Ltd. has become a high-tech enterprise integrating R&D, production and sales. We specialize in the manufacture of various types of spray products for industrial application. The variety is up to several thousand for more than 5,000 customers. We are one of the largest spray nozzle manufacturers in China now. The management have maintained good cooperative relationship with technical experts from Taiwan and Japan etc. We have dozens of fully automatic CNC lathes imported from Japan with an accuracy of less than 2 microns, multiple five-axis machining centers with a orifice precision of 0.1mm, high-voltage test benches and other precision droplet testing instruments. The advanced equipment better ensures the quality improvement. The nozzles can be made of engineering polypropylene, ceramics, alloys, imported 303, 304 or 316 stainless steel according to the actual working environment. Our engineers and technicians have very rich experience who can provide fast technical support according to customer's specific requirement. More than 90% of our metal materials are imported to ensure the stable quality for customers.

We provide fast sampling, short delivery time, and have multiple cargo vehicles to provide customers with fast and excellent service. We have offices in Shanghai, Tianjin, Xi'an, Chongqing, Qingdao, Wuhan, Ningbo and Changsha which are directly managed by the headquarter, and can provide better service for our customers.

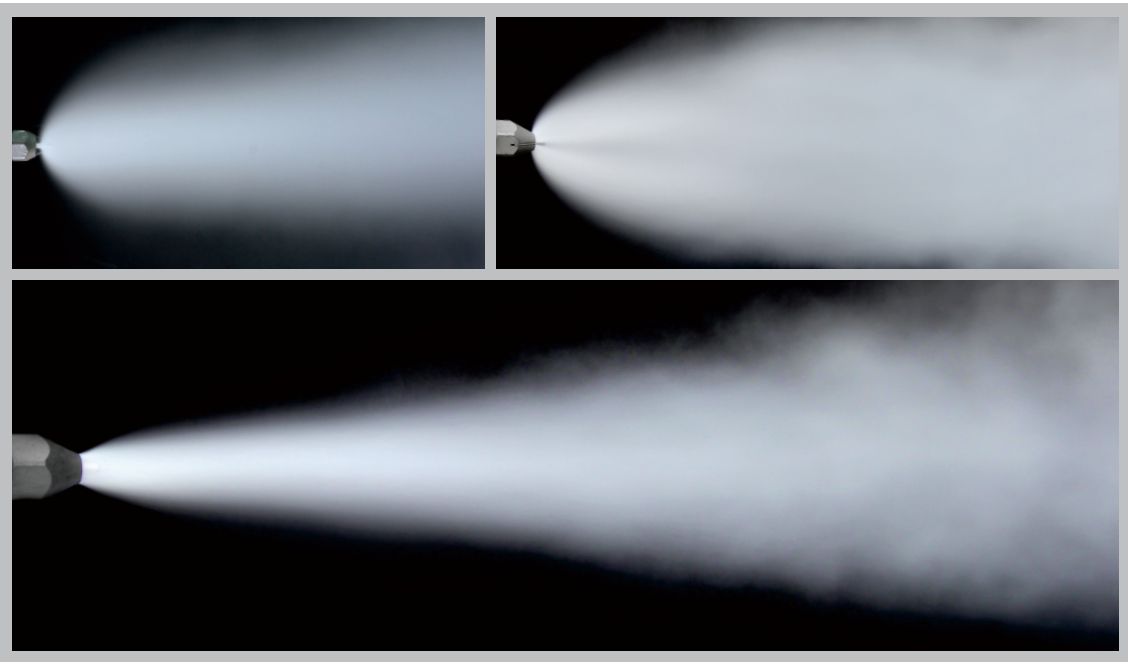
We have passed the ISO9001 and ISO14001 product quality and environmental certification. Headquartered in Dongguan, Guangdong, we are a general taxpayer with standardized management and strict system to meet the various needs of customers.

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Ultrasonic atomizing nozzle

➡ Micron ultrasonic atomizing nozzle

(一) Spray effect



(二) Principle and characteristics of atomization

Ultrasonic atomizing nozzle is mainly based on the following two steps to achieve atomization:

- ◎ First step, the fine water flow is sheared by a high-speed flow to realize preliminary atomization.
- ◎ Second step, the initially atomized water droplets are mixed with a high-speed air stream, and impinging on the vibrating head to achieve further atomizing and get extremely fine particles.

This kind of ultrasonic atomizing nozzle manufactured by high precision machine has the following advantages:

- ◎ The atomized water droplets have a small average particle size, and the maximum particle size is not much different from the minimum particle size, so the particle is very uniform, which is very important for the dust suppression.
- ◎ The vibration generated by the impact of the vibrating head and the high-speed airflow can prevent dust or other foreign matter from adhering to the nozzle hole and ensure the nozzle works normally. The product is very reliable and requires minimal maintenance .

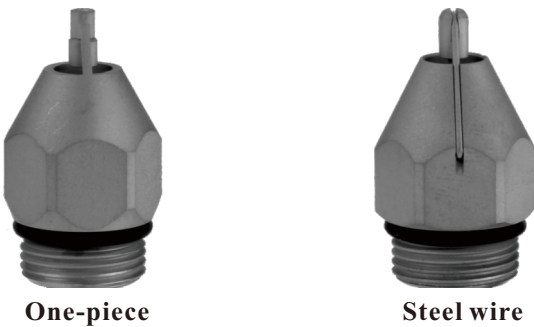
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(三) Model parameter

The following are the parameters of the our ultrasonic atomizing nozzle:

Type	Air pressure (bar)	Water pressure (bar)	Air flow volume (L/min)	Water flow Volume (L/min)	Water flow Volume (m³/Hr)	Average Particle size (μm)	Spray distance (m)without wind	Angle (°)
SK508	5.0	1.0	112	0.359	0.022	Height 0.5M: 18.02	≈ 2	80
SV882	5.0	1.0	240	0.746	0.045	Height 1.5M: 23.79	≈ 3. 5	60
SV980	3.0	0.5	307	0.688	0.041	Height 2.0M: 35.82	≈ 4	30

(四) Nozzle Appearance



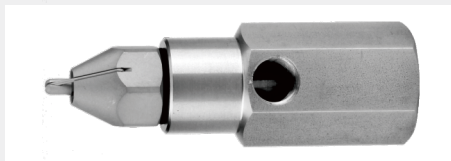
- ◎ There are two forms of nozzle appearance for each model: one -piece and steel wire. One-piece: The tripod supporting the vibrating head is connected to the main body and is not removable.
- ◎ Steel wire: The tripod and the wire supporting the vibrating head are embedded in the main body and are detachable.

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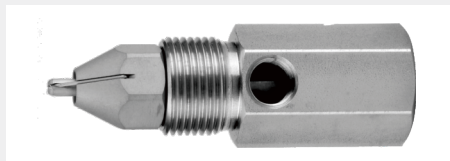
Ultrasonic atomizing nozzle

➔ Installation method

The company provides several mounting bases for ultrasonic atomizing nozzles for different occasions to meet various requirements of customers. There are ordinary base, thin wall mounting base, universal ball mounting base and spray box for options.



Ordinary base



Thin wall mounting base (with locking cap)



Flange universal ball mounting base



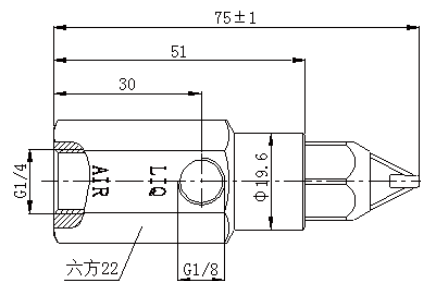
Welded universal ball mounting base



spray box

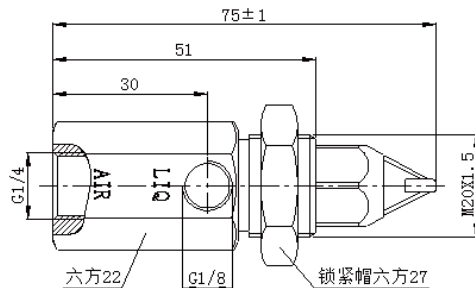
(一) Ordinary base

The normal base can be fixed by welding or other ways where it need to be fixed. The common base inlet interface thread is G1/8, and the air inlet interface thread is G1/4.



(二) The thin-walled mounting base

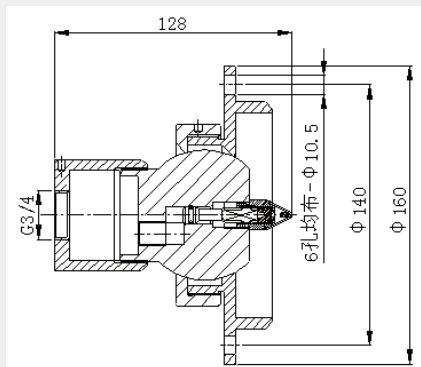
The thin-walled mounting base is suitable for mounting on a thin wall, and the external thread of the base is installed in the joint of thin-walled, and fixed by a locking cap



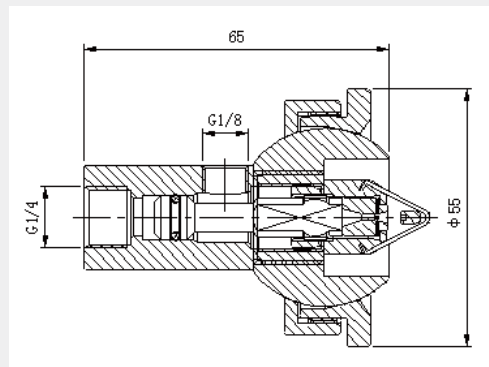
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(三) Universal ball mounting base

- (1) Flange mounted The universal ball mounting base is mounted with the flange, and the nozzle can adjust the nozzle direction within a certain range (50 degrees) through the universal ball. A heating rod can be installed in the base to prevent water condensation under cold environments.
- (2) Welded mounting The universal ball mounting base is mounted by welding, and the nozzle can adjust the nozzle direction within a certain range (50 degrees) through the universal ball. There is no heating device inside and the shape is small.



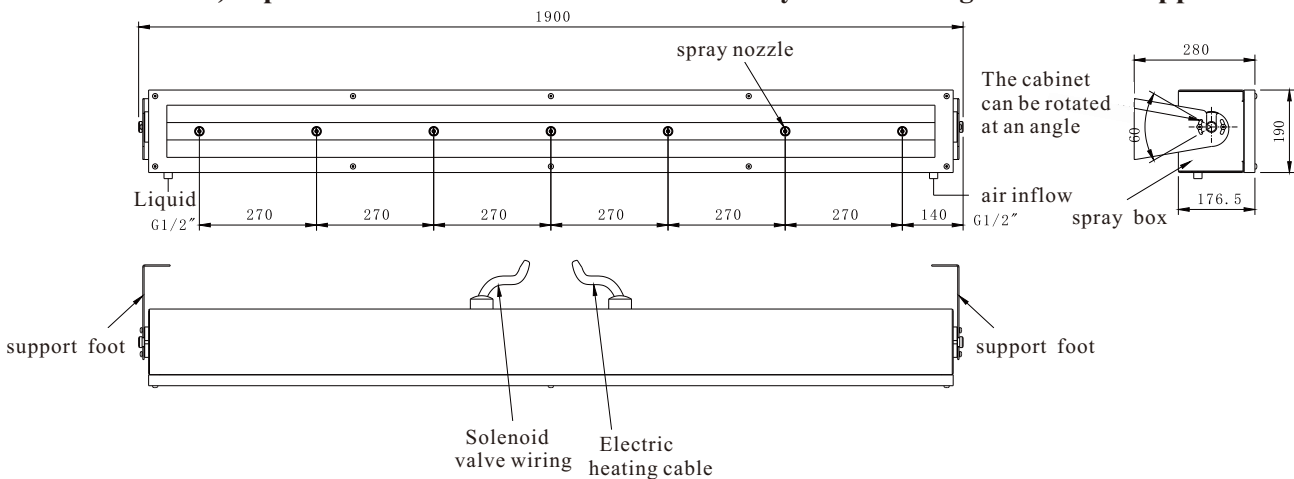
Flanged universal ball mount size



Welded universal ball mount size

(四) Spray box

The nozzle is mounted on a rectangular box that can be customized the length and number of nozzles installed. There are two types of standard spray tanks in the company. One is a spray box at the length of 1.5 meters and with 5 nozzles. Another is a spray box with 7 nozzles installed at the length of 1.9 meters. The spray box air inlet and water inlet can be controlled by a solenoid valve. A heating and moisturizing device (used in a cold environment) is provided inside the cabinet. Commonly used for large area dust suppression.



Spray box appearance dimension

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➔ Dust suppression system control host

When using an ultrasonic atomizing nozzle to suppress dust, a host system can be used to control the spray box spray switch, spray time etc.



Host and control panel

(一) Main performance of the host

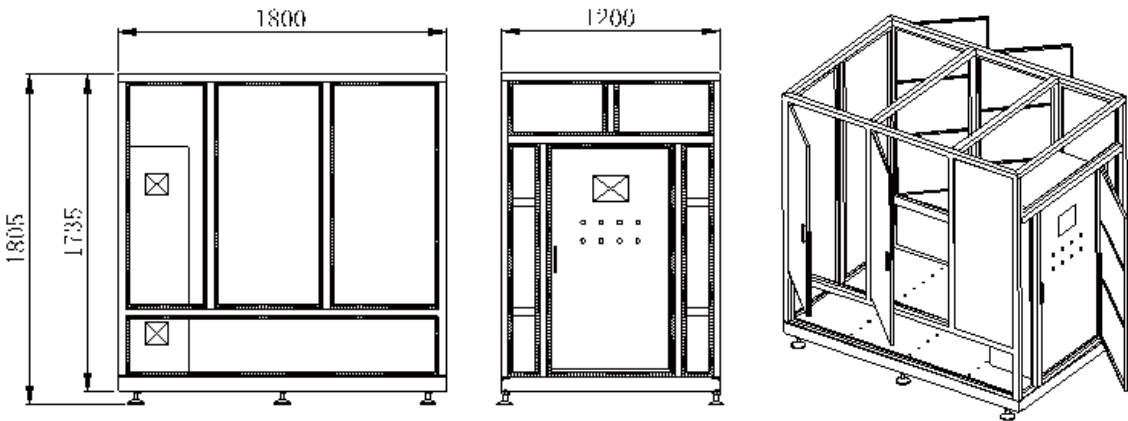
- (1)the automatic mode of operation, the spray operation is automatically control modes. In the automatic mode of operation, the spray operation is automatically controlled by the programmable logic controller (PLC) based on real timeconditions. Under the manual operation mode, the start and the stop of system can be controlled by pressing the manual button at site or coal transportation program remote control system . The system is equipped with a manual/automatic transfer switch and a remote/site selection switch, and separately provides switch position signals to the coal transportation control system. During manual operation, the operator can start to stop the spray of each point through the touch screen or text display, and also can set the parameters such as the spray cycle and the pipe purge time through the touch screen or text display.
- (2)The outdoor part of the main control system is equipped with anti-freezing measures. Each functional system and all water and air pipelines are equipped with electric heating device and designed to keep warm and anti-freeze to ensure normal use in winter of cold area.
- (3)The host control system has a HMI that can feedback the information of spray, stop spraying, filter blockage, and electric tracing work status, low air pressure, low water pressure, electric signal of system automatic/manual running status, and is connected to remote system control.
- (4)The host control system has a shutdown automatic purge and water discharging antifreeze function.
- (5)Water and air filter valves in the main control system pipeline are convenient and quick to clean. The air atomization nozzle can adjust the air flow and pressure. In order to protect the pressure and flow of other water equipment, the host system device is equipped with a booster device which is interlocked with the system.

(二) Host model parameters

Type	PWZJ-01A	PWZJ-02A
Maximum air consumption	≤5.0m³/min	≤10m³/min
Maximum water consumption	≤1m³/Hr	≤2m³/Hr
Dust suppression rate	95%以上	95%以上
Configure air compressor power	≤30KW	≤55KW
Gas tank	2m³	4m³

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Type	PWZJ-01A	PWZJ-02A
Power	AC380V	AC380V
Control method	Manual / Auto	Manual / Auto
Protection level	Ip55	Ip55
Water supply suspension	< 100u	< 100u
Water supply acidity	Neutral water	Neutral water
Host weight	850 Kg	850 Kg
Host size	2000*1200*1800	2000*1200*1800



Mainframe dimensions

(三) Host selection parameter

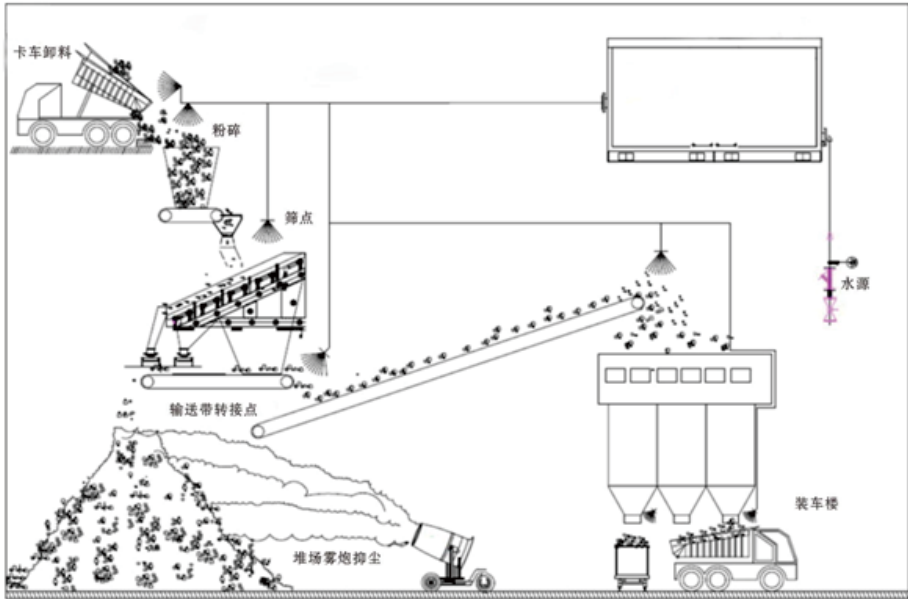
Dry fog dust suppression host and selection parameters											
Basic parameters		Water supply (m3/Hr)	1	2	3	4	8	12	16	20	32
Nozzle type	Single nozzle energy consumption parameter	Rate of host (kw)	0.75	1.1	1.1	1.5	3	4	5.5	5.5	7.5
SK508	Water Consumption (l/hr)	Nozzle qty (pcs)	45	90	136	181	363	666	727	909	1454
	Air consumption (l/hr)	Air consumption (L/min)	5040	10080	15232	20272	40656	61040	81424	101808	162848
SV882	Water Consumption (l/hr)	Nozzle qty (pcs)	22	44	66	88	177	266	355	444	711
	Air consumption (l/hr)	Air consumption (L/min)	5280	10560	15840	21120	42480	63840	85200	106560	170640
SV980	Water Consumption (l/hr)	Nozzle qty (pcs)	21	42	63	85	170	255	404	425	680
	Air consumption (l/hr)	Air consumption (L/min)	6447	12894	19341	26095	52190	78285	124028	130475	208760
The hydraulic pressure is recommended according to the third page.		Host Water inlet and outlet interface	DN25	DN25	DN25	DN25	DN40	DN50	DN50	DN50	DN65

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Ultrasonic atomizing nozzle

➔ Ultrasonic atomization dust suppression system application

The dust suppression system is applied to various dusts creating origin that need to be treated, such as coal yard discharge points, loading points, and belt transportation selection points. The following are common governance cases.



(一)Material transfer station dust suppression

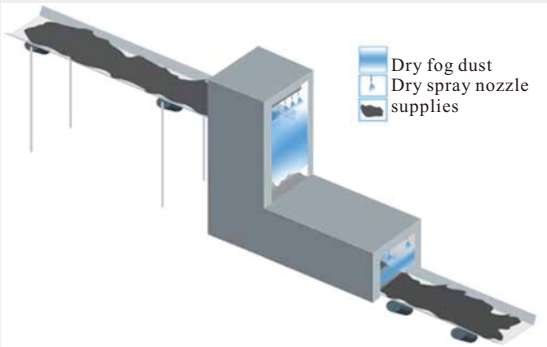
Cause of dusting

(1)Material discharging point ofbelt head

The material leaves the head of the belt and falls at a certain initial velocity, the material collides with the head shield and the coal shield to generate coal dust. The collision between the materials also generates dust. Under the movement of material and the shear of air, the high-speed airflow squeezed out of the material floats around the dust and spreads into the surrounding environment.

(2)Material loading point of the belt tail

When the material is falling, the guide slot of the belt will inform a positive pressure since the shearing and induced air, thus some dust will overflow from the gap of the guide slot; the material falls on the tail of belt with fierce collision also creating lots of dust. Another part of dust will be overflown from the slot by the wind created by running belt, and then spreading around.

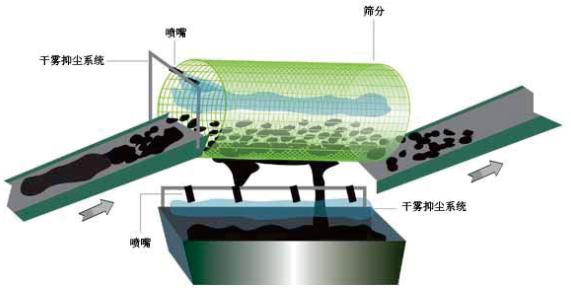


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(二) One layer screening tower dust suppression

Cause of dusting

Dusting point 1: The belt head chute, the material leaves the transportation belt material to move downward at a certain initial speed, and generates a gas flow to form a negative pressure zone during the movement. The small particle material generates dust under the influence of the air current, when the material contacts with the discharge pipe with collision and creates dust around, and the material generates a strong air flow during the collision of with the discharge pipe, and the small particle material rises under the influence of the airflow to generate dust.



Dusting point 2: Vibrating screen surface, the screen surface is open, the material vibrates continuously through the vibrating screen, and the airflow generates a negative pressure zone during the vibration process, the small particle material rises under the influence of the airflow to generate dust, and the material frequent collisions between the screen surfaces, materials, dust overflows constantly, which seriously pollute the on-site working environment. The vibrating screen is the largest and most concentrated place in the screening workshop, and is the main source of pollution in the workshop.

Dusting point 3: The discharge point of rough material of the vibrating screen, the rough material sieved by the vibrating screen falls into the chute from the tail exit of the screening machine, the material leaves the screening machine and moves downward at a certain initial velocity to generate airflow of negative pressure zone during the movement, small particles are raised under the influence of the air stream to generate dust.

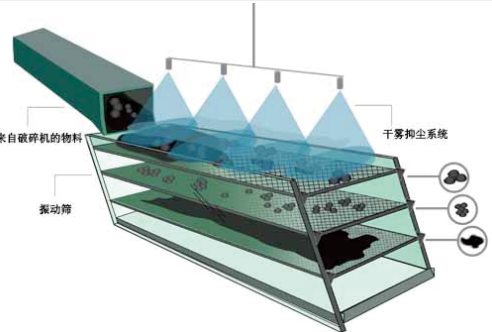
(三) Three-layer screening tower to suppress dust

Cause of dusting

Dusting point 1: The belt head chute, the material leaves the transportation belt material to move downward at a certain initial speed, and generates a gas flow to form a negative pressure zone during the movement. The small particle material generates dust under the influence of the air current, when the material contacts with the discharge pipe with collision and creates dust around, and the material generates a strong air flow during the collision of with the discharge pipe, and the small particle material rises under the influence of the airflow to generate dust.

Dusting point 2: Vibrating screen surface, the screen surface is open, the material vibrates continuously through the vibrating screen, and the airflow generates a negative pressure zone during the vibration process, the small particle material rises under the influence of the airflow to generate dust, and the material frequent collisions between the screen surfaces, materials, dust overflows constantly, which seriously pollute the on-site working environment. The vibrating screen is the largest and most concentrated place in the screening workshop, and is the main source of pollution in the workshop.

Dusting point 3: The discharge point of rough material of the vibrating screen, the rough material sieved by the vibrating screen falls into the chute from the tail exit of the screening machine, the material leaves the screening machine and moves downward at a certain initial velocity to generate airflow of negative pressure zone during the movement, small particles are raised under the influence of the air stream to generate dust.



(四)The crusher dust suppression

Cause of dusting

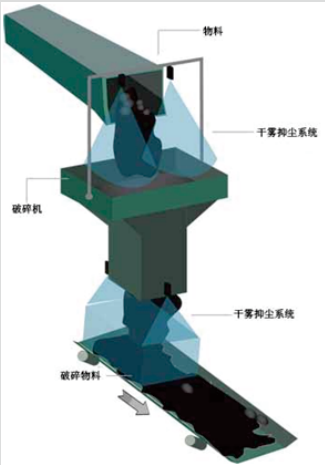
(1)Material discharging point of belt head

The material leaves the head of the belt and falls at a certain initial velocity, the material collides with the head shield and the coal shield to generate coal dust. The collision between the materials also generates dust. Under the movement of material and the shear of air, the high-speed airflow squeezed out of the material floats around the dust and spreads into the surrounding environment.

(2) When crushing materials, the crusher will generate a large amount of dust and spread around.

(3) Material loading point of the belt tail

When the material is falling after crushing, the guide slot of the belt will inform a positive pressure since the shearing and induced air, thus some dust will overflow from the gap of the guide slot; the material falls on the tail of belt with fierce collision also creating lots of dust. Another part of dust will be over flown from the slot by the wind created by running belt, and then spreading around.



➔ Air compressor selection

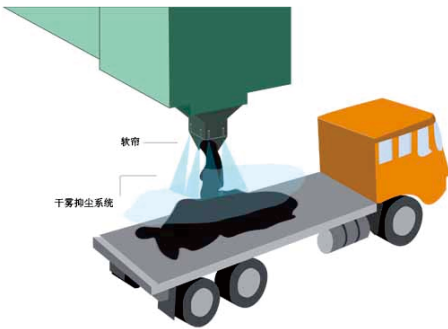
Technical parameters of a brand-type electric fixed screw air compressor



(五)The loading vehicle dust suppression

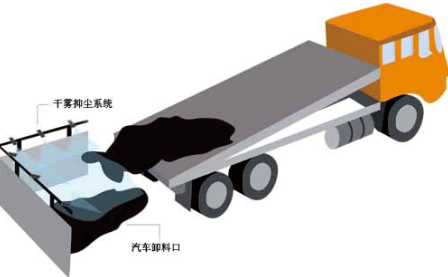
Cause of dusting

The dust is mainly generated when the material falls into the carriage from the unloading of the ash pipe. One of the reasons for dust is that when the material falls from ash pipe, the material moves downward at a certain initial speed. During movement, the air flow is generated and form a negative pressure area, the friction between air and unloading material will make the dust spread around. Secondly, the materials continue to fall down and crash when they fall into the bottom of the vehicle, the space at the bottom is squeezed. Under the shear effect of air and dust, the gas at the bottom moves outward at a high speed to form a strong airflow, which causes the dust to escape together and creating a dusting effect. In those cases, the dust, spreading under the horizontal wind, raises a large amount of dust, diffuses into the air, and spills a large amount of dust from the truck inlet, then causes the pollution.



(六)The unloading point of vehicle dust suppression

When unloading, lots of dust will be generated result from air flow, material collision, and materials-container collision. The unloading space of the vehicle is relatively spacious, so it is impossible to use cloth bags and static electricity and other ways for dust removal. The nozzles installation plan can be designed according to the situation of the site for dust suppression, which has a good effect and become the preferred way of dust suppression. When designing, we will make a detailed design according to the height of the car, side unloading, rear unloading and receiving trough penetration degree, equipment selection.



Model parameter

Type	Exhaust pressure	Exhaust volume	Motor Power	Dimensions
	Mpa	m³/min	KW	mm
1.2/8	0.8	1.2	7.5	900×700×1040
1.0/10	1	1		
0.8/13	1.3	0.8		
1.7/7	0.7	1.7	11	1060×800×1230
1.7/8	0.8	1.7		
1.5/10	1	1.5		
1.2/13	1.3	1.2	15	1060×800×1230
2.4/7	0.7	2.4		
2.4/8	0.8	2.4		
2.2/10	1	2.2	18.5	1420×850×1110
1.7/13	1.3	1.7		
3/8G	0.8	3		1080×880×1415
3/7	0.7	3		
3/8	0.8	3		
2.7/10	1	2.7	18.5	1080×880×1415
2.3/13	1.3	2.3		

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Ultrasonic atomizing nozzle

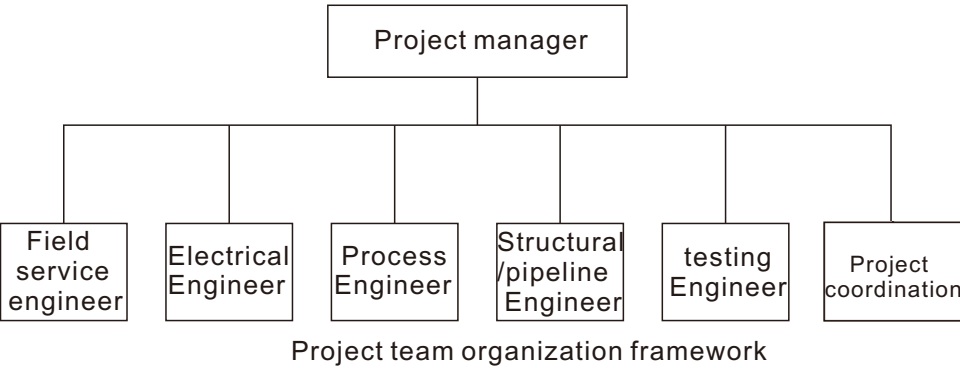
Type	Exhaust pressure	Exhaust volume	Motor rate	Appearance dimension
	Mpa	m³/min	KW	mm
3.6/8G	0.8	3.6	22	1420×850×1110
3.6/7	0.7	3.6		1080×880×1415
3.6/8	0.8	3.6		
3.2/10	1	3.2		
5.2/7	0.7	5.2	30	1300×1100×1650
5/8	0.8	5		
4.5/10	1	4.5		
3.7/13	1.3	3.7		
6.5/7G	0.7	6.5	37	1630×910×1220
6.2/8G	0.8	6.2		1300×1100×1650
6.5/7	0.7	6.5		
6.2/8	0.8	6.2		
5.6/10	1	5.6		
4.8/13	1.3	4.8		
6.0/8	0.8	6		
5.6/10	1	5.6		
4.8/13	1.3	4.8		
7.4/7G	0.7	7.4		45
7.4/7	0.7	7.4	1300×1100×1650	
7.1/8	0.8	7.1		
6.5/10	1	6.5		
5.6/13	1.3	5.6		
10.5/7G	0.7	10.5	55	1950×1160×1550
10/8G	0.8	10		
7.5/13G	1.3	7.5		1620×1230×1670
8.7/10	1	8.7		
7.5/13	1.3	7.5		1500X1250X1566
10/8	0.8	10		
8.5/10	1	8.5	75	2440×1160×1620
3/8G	0.7	13		
10/10G	1	10		1580X1320X1646
12/10G	1	12		
10/13	1.3	10		
13/8	0.8	13		
12/10	1	12		

Type	Exhaust pressure	Exhaust volume	Motor rate	Appearance dimension
	Mpa	m³/min	KW	mm
16.5/7G	0.7	16.5	90	2560×1300×1620
16/8G	0.8	16		
14/10G	1	14		
12/13G	1.3	12		
20/7G	0.7	20	110	2760×1340×1710
20/8G	0.8	20		
16/10G	1	16		
13/13G	1.3	13		
22/8G	0.8	22	132	2760×1340×1710
20/10G	1	20		
16/13G	1.3	16		
28/7G	0.7	28	160	2860×1510×1810
27/8G	0.8	27		
23/10G	1.3	23		
23/10G	0.8	20		
1.2/8	0.8	1.2	7.5	900×700×1040
1.0/10	1	1		
0.8/13	1.3	0.8		
1.7/7	0.7	1.7	11	1060×800×1230
1.7/8	0.8	1.7		

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➔ System engineering service

We have an experienced technical team with a group experienced and professional knowledge project operators who is proficient with environmental treatments. Specialized in the design, manufacture and on-site installation and commissioning of industrial projects such as dust suppression, and has done countless projects over the years and accumulated rich engineering experience.



➔ project case

