HANYOO
翰洋科技

# BG-600

# High Efficiency Coating Machine

## EQUIPMENT TECHNICAL PARAMETER

南京翰洋智能设备有限公司

NANJING HANYOO PHARMATECH CO., LTD.

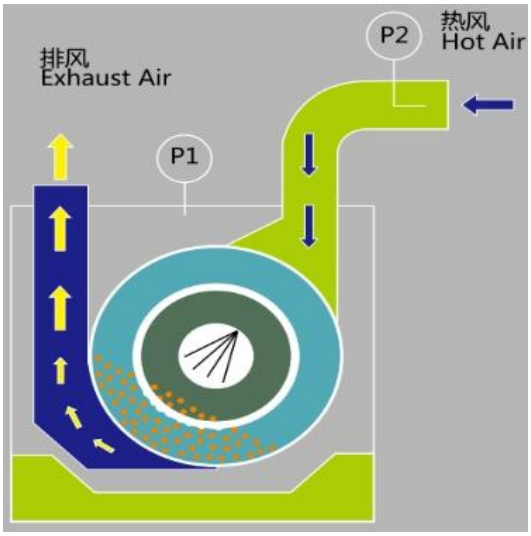
# BG-600 High Efficiency Coating Machine

## EQUIPMENT OVERVIEW

High-efficiency coating machine BGB type is a special equipment for film coating of Chinese and western medicine tablets. The equipment is manufactured in accordance with the requirements of "GMP" of the pharmaceutical industry; its entire shell, coating drum (coating pot), hot air blower, spraying device and all parts in contact with the drugs are made of stainless steel. The whole process is controlled by microprocessor programmable system, or manually operated. The control system is equipped with a variety of applications, operating state selection, automatic control of speed and air inlet temperature system, coating machine pot negative pressure and hot air velocity manual operation touch screen control, display complete and working condition record printing function. All coating operations are carried out in a closed state, no dust flying and spraying spilled liquid splash, is a high-quality and efficient, reliable, clean, energy-saving, easy to operate in line with the SOP operation of the new coating equipment.

# EQUIPMENT STRUCTURE

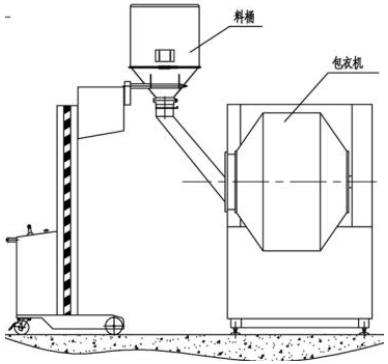
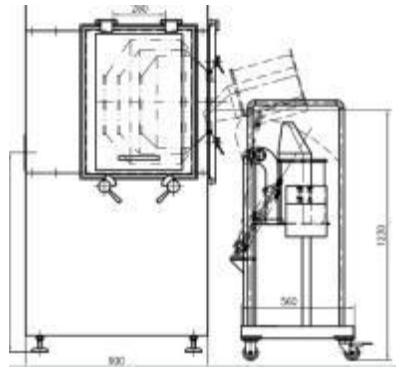
The complete set of equipment mainly consists of the main machine, high-efficiency hot air cabinet, exhaust dust removal cabinet, electrical control cabinet, slurry parts (spray gun, peristaltic pump, mixing tank), control system and other components.

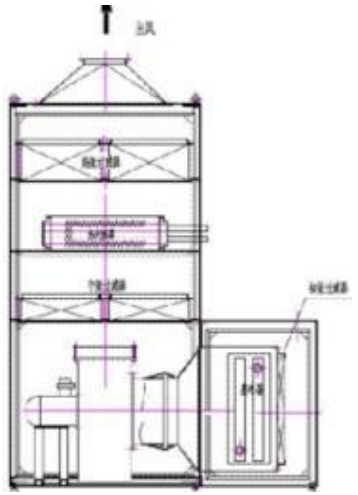


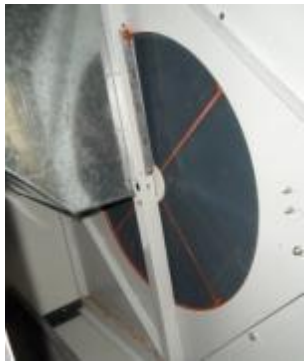
# TECHNICAL PARAMETERS

| sports event | unit (of measure) | Technical Parameters |
|---|---|---|
| Replaceable rollers | L | 350/600L (refers to effective volume) |
| Coating capacity range | kg/lot | 100-500 Vegetable stacking density 1kg/dm$^3$ |
| Discharge method | | reversing outfeed |
| Coating deflector | | 6-piece removable |
| Coating applications | | Suitable for water-soluble film coating, slow and controlled release coating, etc. |
| Coating drum speed | rpm | 3-22 |
| operating temperature | °C | Normal temperature~80 |
| Heating medium (steam) | MPa | Vapor pressure 0.3~0.5 |
| Steam consumption | kg/h | 350 |
| Host power | kW | 4 |
| Hot air cabinet power | kW | 4.0 |
| Exhaust cabinet power | kW | 11.0 |
| Peristaltic pump power | kW | 0.18 |
| Cleaning pump power | kW | 5.0 |
| Compressed air pressure | MPa | 0.4~0.6 |
| Compressed air consumption | m$^3$ /min | 1.5 |
| Cleaning water consumption | L/min | 130 |
| Power supply specifications | | AC380V 50Hz 3P 5W |
| material (that sth is made of) | | SUS316L stainless steel |
| surface treatment | | Product contact surfaces mirror polished Ra≤0.4 μm; the rest sandblasted |
| noises | dB(A) | The whole machine operation noise is less than 75. |
| weights | kg | About 2200 |
| working environment | temp | Air temperature of the working environment; 5℃ ~40℃. |
| | humidity level | Relative humidity not exceeding 90% at a maximum temperature of 35°C |
| | height above sea level | Altitude not exceeding 2000 meters, relative air pressure not less than 79.5 KPa |
| Installation Requirements | | The site should be equipped with a power supply, purified and dried compressed air source and other supporting drying |

# STRUCTURAL AND FUNCTIONAL DESCRIPTION

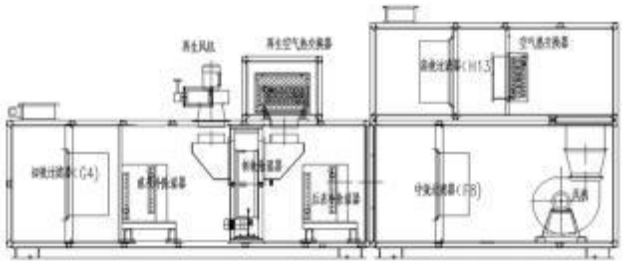
| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| Charging method | | manual feeding | 1 ) With mobile elevator JTY-100B feeding (including 100L drum)<br>2)Tipping and feeding machine JFY-A<br>Feeding: electric feeding device, manually move the feeding device to the package host feeding position, operate the button on the body of the loading machine to complete the feeding and unloading device interface will be tightly attached to the inner wall of the drum of the coating machine, with the drum of the coating machine to rotate together, the particle<br>In the rotation of the natural flow into the unloading device into the finished tablets container (receiving barrel by the demand side to provide their own). |  <br>  <br>  |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| Highly efficient hot air Salix multi nervis | air intake section | - Single layer 304 stainless steel air duct<br>- Ducts are flanged<br>- Equipped with wind speed detection Bittorio | Hot air cabinet air inlet pipe is equipped with air volume sensor, air inlet air volume automatic control and touch screen display: air volume automatic control system consists of Austrian EE650 wind speed sensor, wind volume setting control Siemens touch screen PLC and actuator Siemens frequency converter, when the user according to the process requirements through the touch screen input air volume parameters through the PLC algorithm to send a signal to the frequency converter to start the inlet fan, through the wind speed sensor to measure the feedback signal and the PLC signal balance. Measured by the wind speed sensor feedback signal and PLC signal balance, when the balance point is found, the fan will maintain a certain speed work, so as to achieve the purpose of automatic control of air volume. |  <br>(Surface-cooled dehumidifying hot-air cabinet) |
| | ventilator | - Adoption of centrifugal fans with frequency control of fans<br>- Explosion-proof type for motor and fan | |  |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| | Prefilter (Primary/Intermediate) | - Primary filter G4, intermediate filter F8<br>- Differential pressure display for primary and secondary filters on site | | |
| | heaters | Inlet air temperature control: The inlet air temperature signal is input to PLC and compared with the set value (80℃), the heat exchanger will be controlled automatically, so as to achieve the control of the coating temperature value.<br>- Copper tube and aluminum fin steam heater with high conduction efficiency.<br>- Inlet air temperature PID control, domestic proportional valve regulation, temperature control accuracy ± 3 ℃.<br>- Regulators, safety valves, etc. for steam lines are to be configured by the demand side. | - Addition of preheating (electric heating)<br>- Steam heating: PID control of inlet air temperature, proportional adjustment of imported control valve, temperature control accuracy ±2℃.<br>- The hot air cabinet is equipped with a cold/hot proportional control damper to control the speed of rapid cooling, and the shape of the hot air cabinet is changed to a horizontal type.<br>- Electrically heated<br>- Steam, electric heating dual-use |  <br>(Horizontal hot air cabinet) |
| | High efficiency | - Mounted behind heater<br>- H13 High efficiency filter with high temperature resistance, temperature resistance 250℃, quick-fit structure.<br>- DOP Detection Port | - The high efficiency filter is equipped with a differential pressure transmitter, which is available at the HMI.<br>Display the differential pressure of | |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| | filtration tool | - Differential pressure display in situ | the HEPA filter with alarm function. | |
| | surface cooling and dehumidification (Options) | - With table cooling dehumidification, with angle seat valve control chilled water on and off; users provide ≤ 7 ℃ cold water, absolute moisture content D ≥ 9.06g / Kg<br>- Humidity sensor at air intake, relative humidity screen display<br>- A humidity sensor is provided after the meter is cooled to display the absolute humidity value after the meter.<br>- Chilled water proportional valve regulation, PID control | - | |
| | Rotor dehumidification (Options) | Relative surface cooling dehumidification, the user to provide ≤ 7 ℃ cold water, absolute moisture content D ≥ 6g / Kg.<br>Structure: The dehumidification unit mainly consists of dehumidification rotor section, regeneration fan, regeneration heater, regeneration filter and processing fan section, surface cooling section, heating section, processing wind primary, middle and high efficiency filter section and cabinet. | | |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| | | Material :<br>The cabinet of the dehumidification unit adopts rigid aluminum alloy frame, which has the characteristics of good strength, compact and reasonable structure, and strong anti-corrosion ability. It also has measures to prevent "cold bridge" and avoid "condensation".<br>- The dehumidification unit adopts double-layer heat preservation board structure (the outer board is 304 stainless steel drawing board) (the inner board of the high-efficiency filtration section is 304 stainless steel drawing board with high-efficiency partition board), and there is high-density heat preservation material in the middle, and the reasonable design makes the heat preservation, fire prevention, strength, anticorrosion and sound insulation effect reach the best.<br>- The dehumidifying rotor of the dehumidifying unit is made of silicone media rotor.<br>- The fan adopts a general brand high-efficiency and energy-saving centrifugal fan.<br>- The surface cooler is made of copper tube material with hydrophilic aluminum fins. | | |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | |  | | |
| | humidify | **Dry Steam Humidifier Working Principle**<br>JSGZ dry steam humidifier using an external steam source, through the vapor separation device, the dry steam obtained through a special nozzle uniform spray, the use of air-conditioned wind diffusion to the control area, the vapor separator will be separated from the condensate discharged through the trap. My company developed the dry steam humidifier, all made of stainless steel material using special conical stainless steel vapor separation device, but also for the second evaporation vaporization, so that the steam with a greatly reduced amount of water, the nozzle using the popular multi-jet holes in small aperture technology, double insulation jacket design, the maximum prevention of the spray holes with water. Continuous high-precision control can be realized, is an economic, efficient humidification, especially suitable for hospital operating rooms and other clean and sterile humidification occasions. | |  |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| | | **Features of Dry Steam Humidifiers**<br>:: High stability<br>All stainless steel material, unique multi-jet hole small aperture structure design, no entrainment of water droplets, the use of vapor-liquid separation network secondary separation technology, play a muffled filtration and secondary vapor separation and evaporation role. No running parts, stable and reliable operation.<br>High humidification efficiency<br>This type of humidification is isothermal humidification, through the vapor separation device after the ejection of dry steam all vaporized into the air, humidification efficiency is basically 100%.<br>●High control accuracy<br>A variety of control methods (manual, solenoid valve, electric switch, electric proportional, pneumatic) can be flexibly selected by the user, suitable for different working conditions and environments, and the electric proportional control can achieve high-precision control.<br>Dry Steam Humidifier Controls<br>Electric actuator control method (remote precise regulation and control) | | |

| sports even | basic composition | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | **electrical heating humidify** | The use of electric heaters as a heating device to heat the water in the stainless steel tank to boiling, producing pure and sterile steam, Chen Peiwen gas for humidification;<br>The humidifier will start the drainage pump to remove some of the flocculent scale dirty water and replenish the fresh water, which makes the humidifier tank less scaling and prolongs the service life, and if softened water or deionized water is used, it will prolong the maintenance cycle of the humidifier to several years. The control system intelligently adjusts the output power of the module according to the input control signal, so that the humidification amount is adjusted strictly according to the input signal, in order to adapt to the environment of high precision control requirements.<br>**hallmark**<br>Utilizing the drain pump to realize automatic cleaning, avoiding the problem of easy to block the drain valve<br>The electric heaters are grouped to run, using the control precision to improve the reliability of the unique preheating and heat preservation function comes with a proportional humidity control function, can be directly linked to the humidity transmitter. | |  |

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| | **pure steam humidify** | Working Principle: Raw water enters into the evaporator tube process through pump and industrial steam enters into the shell process when exchanging heat, and the raw water vapor is separated into pure steam through separator, which is transported to the point of use by the pure steam outlet. Pure steam should be sampled and tested online before use, and at the required pressure.<br>Force value range is conveyed to the point of use.<br>**Uses:** Pure steam is used for warm sterilization and other process, equipment and piping disinfection. The condensate comes into direct contact with the surface of equipment or articles, or with materials used to analyze the properties of the articles. Pure steam is also used to humidify the air in clean rooms where materials are directly exposed to air of the appropriate cleanliness level.<br>Non-condensable gases (non-condensable gases air, nitrogen, can be entrained in the steam at the outlet of a pure steam generator, turning the otherwise line-pure steam into a mixture of steam and gas. The volume of non-condensable gases should not exceed 3.5 ml per 100 ml of saturated steam according to HTM2010 Part III). | | |

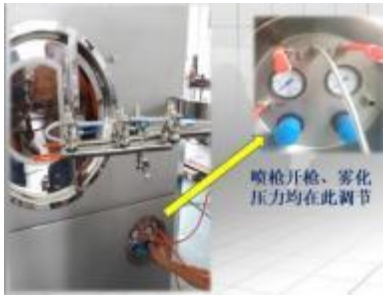
| | | | | |
|---|---|---|---|---|
| | | Overheating: according to HTM2010 part 3, the degree of overheating should not exceed<br>Excess 25°C<br>**Dryness:** Measures the total amount of liquid-phase water carried in the vapor. For example, a steam with a dryness of 95% releases about 95% of the latent heat of saturated steam. In other words, in addition to causing carrier over-humidification, the latent heat of steam is significantly less than that of saturated steam when the dryness of the steam is less than one.<br>Dryness<br>The degree can be determined by testing and the values obtained are mostly approximate. | | |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | chiller | International brand hermetic scroll maintenance-free compressor.<br>All the original electrical appliances and refrigeration systems are made of world-famous brands.<br>Designed for industrial durability, with internal stainless steel tanks and high head specialties.<br>Use a water pump.<br>Complete fault protection: high and low pressure protection, exhaust protection, oil level protection.<br>protection, water flow protection, reverse defect protection, chilled water anti-freeze protection, cooling<br>Water overheating protection and more. | |  <br>  <br>Air-cooled chiller |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| hosts | Coating Roller | - Surface for stamping mesh, diameter of 3mm round holes, opening rate ≥ 40%<br>- Material in contact with material 304 stainless steel | - 316L stainless steel is used as the metal material in contact with the material.<br>-Roller with long holes for small diameter tablets.<br>- A temperature sensor for the tablet bed detects the actual temperature of the tablets and displays it on the touch screen (HMI). |  |
| | spoiler (automotive) | Under the action of streamline deflector stirrer, the material turns over smoothly and exchanges frequently, eliminating the phenomenon of the pistil falling from the height and collision, eliminating the debris and knocking edge, and improving the rate of finished products. The narrow upper surface of the deflector plate avoids the adhesion of the dressing on its surface, saves the dressing and improves the quality of the medicine. | - |  |

| | | | | |
|---|---|---|---|---|
| | **Mainframe Enclosure** | - Inlet and exhaust air inlet design temperature sensor screen display<br>- Acrylic glass front door window for a clear view of the production inside the drums<br>- Top design LED explosion-proof light, easy to observe the coating state<br>- Inverter-controlled drive motors for coating drums<br>- Differential pressure detection in the drum, local differential pressure gauge display<br>- Flow regulators<br>- Manual drain valves are provided at the lowest point of the wash drain chute and wash pan.<br>- Lower cabinet with emergency stop button and gun air control panel<br>(with regulator, pressure gauge and spare connection) . | - The upper box is equipped with a negative pressure sensor to detect the actual negative pressure inside the machine, negative pressure is automatically controlled and displayed on the touch screen (HMI).<br>- Manual Sampler, Hermetic Sampling |  |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | both sides of the door | - Sealed with silicone strips<br>- Gas spring type opening (hanging type if there is not enough space on both sides of the user, depending on the layout of the user's room) | |  <br>  <br>  |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | **Rear & Bottom troops** | - Rear: control wire junction box, compressed air distribution assembly, rotating chain, drain valve, etc.<br>- Bottom: motor, fan (explosion-proof) | | |
| **Pulp spraying parts** | **airbrush** | - For film coating, the aperture of spraying needle is ¢1.0 or ¢1.2 ㎜.<br>**- Two-way control: the** gun is divided into two ways to control the firing, atomization pressure adjustable in two ways<br>**- Self-clearing function:** the use of through the needle plunger design, with: when the phenomenon of clogging during operation, as long as the closure of the air pressure, the needle in the tail under the action of the spring to the head of the gun to move, through the needle into the mouth of the nozzle can be removed from the clogging, an effective solution to the gun dripping, clogging problems; the system can be set up to clear the gun time intervals, it takes a few seconds to complete the clearing action. | - Stop the slurry spraying system when the atomization pressure falls below the set value, and the pressure gauge shows.<br>- Imported shlick spray gun (generally not recommended, late replacement parts trouble, my company spray gun at home and abroad has been used very well) |  |

| spor ts | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | | **- Nozzle 360 degrees adjustable**: oval atomizing surface can be rotated 360 degrees according to the amount of material to be injected, the nozzle can be adjusted to the amount of material to be injected.<br><br>**- Anti droplet phenomenon**: 0.3MPa air pressure to shoot, when shooting first open the gas and then open the dressing, shut down the gun first shut down the dressing and then shut down the gas.<br><br>- The adjusting bolt at the end of the spray gun allows fine adjustment of the amount of slurry to be sprayed:<br><br>- We have two national patents: ZL96206288.X and ZL96206289.8.<br><br>**- Needle 316L stainless steel, gun body 316L stainless steel, nozzle,** nozzle **sleeve made of titanium GMP compliant** | |  <br>  |

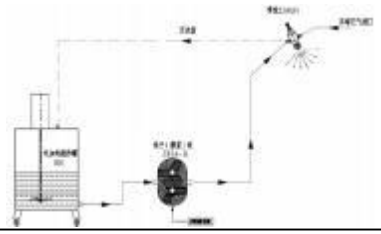
| spor ts | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| | | | |  <br>(Han Yang spray gun)<br>  <br>  <br>(Imported shlick gun) |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| | peristaltic pump | - Explosion-proof peristaltic pump RD-120A<br>- Material 304 stainless steel<br>- Structural components: drive mechanism, pump head, pump wall, infusion hose and casing and other components.<br>- The infusion hose adopts Φ13, Φ16 standard special silicone rubber hose, which meets the requirements of food and drug quality standards and can be autoclaved;<br>- Equipped with a speed control handle: stepless speed regulation, countless display<br>**parameters**<br>- Maximum flow rate: ≤ 50 L/h; output pressure: 0.05-0.1Mpa<br>- Power: 180 W: medium temperature: 0-80 ℃ ℃<br>- Speed: 40-200 r/min: Hose diameter: Φ13, Φ16 mm<br>- BGB-40 or above (including 40) with RD-120A peristaltic pump, 40 or below using Lange BT100-2J | - Standard peristaltic pump to increase the frequency converter to realize the speed of touch-screen adjustable.<br>- Explosion-proof peristaltic pump, one gun, one pump head, frequency control RD-120B<br>  ; purchased .<br>- Imported WASTON MARLOW peristaltic<br>  <br>(WASTON MARLOW) |  <br>(RD-120A Peristaltic Pump) |

| spor ts | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| | RD-120B | - Hanyang brand explosion-proof peristaltic pump RD-120B, frequency conversion control<br>- Material 304 stainless steel<br>- Structural components: drive mechanism, pump head, pump wall, infusion hose and machine Shell and other components.<br>- The infusion hose is made of special silicone rubber tubing that meets food and pharmaceutical quality standards. Standard requirements, autoclavable;<br>- Equipped with frequency converter to control the speed on the touch screen, digital display.<br>- Technical parameters: Maximum flow rate of 0.6L/min (water as a medium, speed 20-145RPM adjustable, hose 25 #, medium temperature to 80 degrees; | _ |  <br>  <br>(RD-120B Peristaltic Pump) |
| | mass flow meter | Working Principle<br>1) Real-time acquisition of analog or digital communication signals from the flowmeter<br>2) Calculation of the instantaneous flow rate against a preset value by means of a Siemens controller<br>3) According to the PLC control program, through the output of 4-20 mA analog signal to the pump frequency converter for speed control, to achieve accurate flow control | _ |  |

| spor ts | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| | | 4) At the same time, the weight totalizer accumulates the weight of the material flowing from the dispensing tank.<br>When the totalized value is equal to the set weight, the pump and spraying will stop. | |  |
| | **mixing tank** | - Single layer 304 stainless steel<br>- Pneumatic mixing<br>- Power supply voltage: three-phase five-wire: 380V<br>- Mounted on four wheels, so the movement is flexible, and the design of the peristaltic pump in the peristaltic pump fixing bolts, can be fitted with a peristaltic pump into one, easy to use. | - Addition of insulation to mixing tanks (double layer)<br>- Add-on METTLER electronic scale with METTLER. Toledo electronic scale (with trolley), the mixing tank is placed on the trolley of the electronic scale, the electronic scale is connected to the system to realize the touch screen display to show the instantaneous flow rate of the spray slurry and the cumulative flow rate. |  <br>(Single mixing tank) |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | | | |  (Electrically heated holding and mixing tank)    |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | icing function (Options) | Additional domestic rotor pump or imported high-pressure piston pump + U.S. Spray gun + temperature and pressure resistant piping and control system to achieve the automatic sugar coating function | – |   |
| Exhaust Dust Cabinet | bag vibration eliminate dust (i.e. filter out suspended particles) | - Explosion-proof fan, motor IP55, F-class insulation, energy efficiency class not less than level 3<br>- The frequency converter adjusts the fan motor speed to control the negative pressure inside the drum;<br>- The standard use of vibration type filter bag dust collector, anti-static material, can be disassembled and cleaned;<br>- The cloth filter diameter 20 micron level F9. Filtration efficiency 90%-95%<br>- Filter Differential Pressure Gauge Field Display<br>- Dust collection drawer at the bottom of the cabinet for material collection. | - Differential filter pressure display with alarm interlocking function<br>- The use of cartridge pulse dust removal, filtration accuracy H10, there are three types of forms see right |  (Standard bag vibration dust removal) |

| sports event | basic composition | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | | | |  (Cartridge dust collection, stainless steel housing) |

# Cartridge Pulse Dedusting

## MAIN APPLICATION

CT series cartridge dust collector is a high-efficiency dust collector developed by our company on the basis of introducing, digesting and absorbing the advanced technology of foreign cartridge dust collector and combining with the actual situation in China, which has ideal effect in capturing small and dry non-fiber dusts, and is especially suitable for the purification of dusty gases in the production line of pharmaceuticals, such as mixing machines, tablet presses, dosage, and food processing.

# WORKING PRINCIPLE

Under the action of the main fan of the system, the dusty gas enters into the air box at the bottom of the dust collector from the air inlet of the upper part of the dust collector for the pre-treatment of the dusty gas, and then it enters into the dust collecting chamber of the upper box from the bottom. After the dust particles with fine granularity and small density enter into the filtering chamber, through the combined effect of Brownian diffusion and sieve filtration, the dust is adsorbed in the external surface of the filtering material, and the clean filtered gas enters into the net gas chamber of the box by the exhaust pipe through the fan, and is discharged. The clean gas through the filter cartridge enters into the clean gas chamber of the box body and is discharged through the exhaust pipe through the blower to the air outlet. As the filtration condition continues, the dust accumulated on the outer surface of the filter cartridge will be more and more, which will correspondingly increase the operating resistance of the equipment, which increases with the increase in the thickness of the dust layer on the surface of the filter media. In order to ensure the normal operation of the system, the upper limit of the dust collector resistance should be maintained in the range of (Example: 1400~1600Pa), when it exceeds this limit, it should be cleared by the PLC pulse automatic control through the fixed resistance or timing instructions.

The cleaning process of this cartridge dust collector is the opening and closing of the pulse valve controlled by PLC program. When the pulse valve opens, the compressed air in the air bag is ejected through the pulse valve through the small hole on the blowing pipe with a high-speed, high-pressure ejection airflow, thus forming an induced defective flow equivalent to 1 to 2 times of the volume of the ejected airflow, which enters into the cartridge together, resulting in an instantaneous positive pressure in the cartridge and generating a bulge and a micro-motion; the dust deposited on the filter material is dislodged and drops into the dust hopper, and the dust in the hopper is discharged through the ash unloading valve. The dust in the dust hopper is discharged through the ash unloading valve. The dust is cleaned in this order, and this way of cleaning is not only

thorough, but also avoids the secondary adsorption of dust produced by blowing dust cleaning.

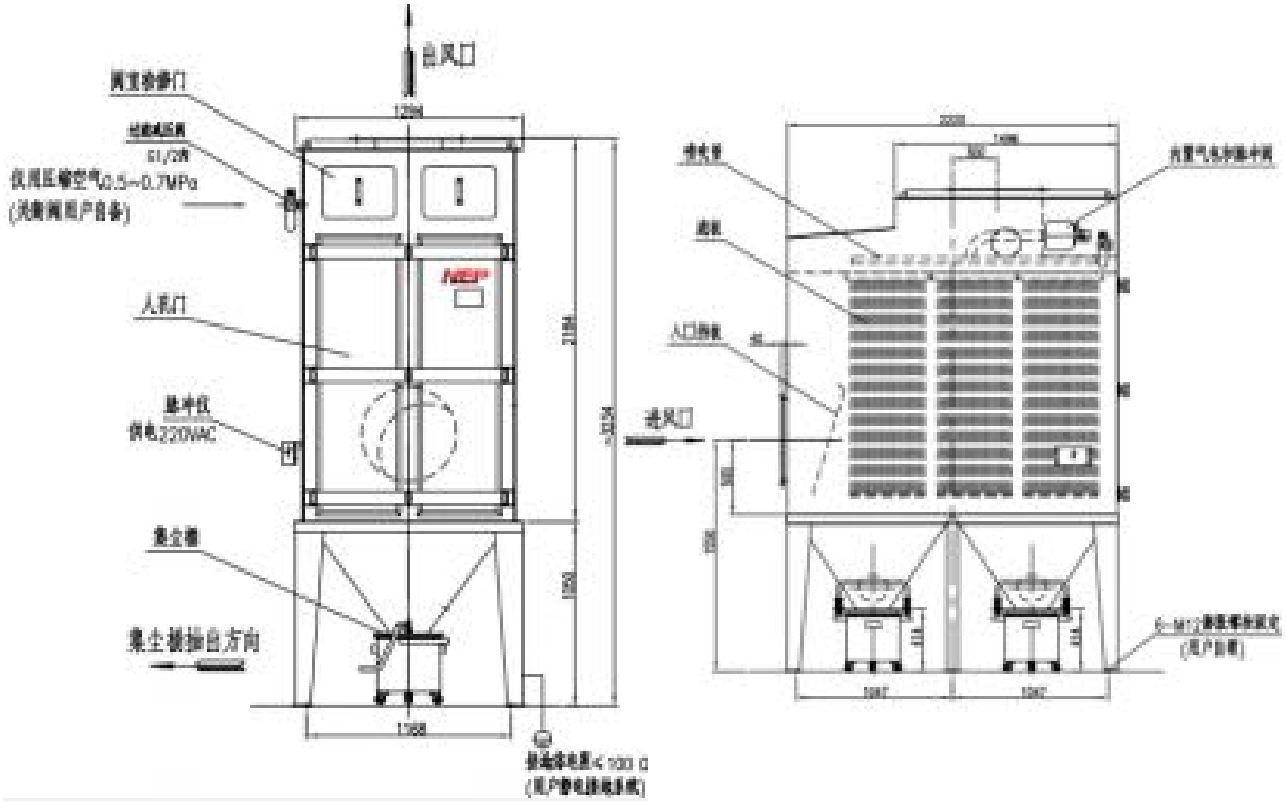
## STRUCTURAL CHARACTERISTIC

The structure of the cartridge dust collector is composed of air inlet, box, cartridge support, ash cleaning device, ash hopper, ash collection bucket and so on. It adopts advanced immersed-flow layout and inclined mounting structure of filter cartridge, thus the dust collector has good effect of synchronized dust cleaning during the working process, and the cartridge adopts film-coating treatment, which has a purification efficiency of over 99.9% for dusts above sub-micron level, and at the same time, it has the features of low operating resistance and long service life. The dust inlet is equipped with a dust baffle plate, which has a buffer and wear-resistant effect, so that the dust will not directly tell the impact of the filter cartridge, thus prolonging the service life of the filter cartridge.

The 15-degree inclined installation of the filter cartridge makes it more convenient to dismantle the cartridge, and there are no transmission parts in the body of the dust collector, which reduces the maintenance work to a minimum, and the cartridge can be used for a long time without replacing for general dusts, which eliminates the tedious workers who need to change and clean the filter bag frequently in the commonly-used bag-type dust collector and saves a large amount of maintenance fees. The compressed air is used to clear the dust by pulsing at regular intervals, which ensures that the dust collector runs continuously with low resistance. It adopts the whole assembling type combination, simple structure, convenient and simple maintenance, and low transportation cost.

# Dedusting method I.

The sintered plate cartridge type dust collector is used, as shown below.

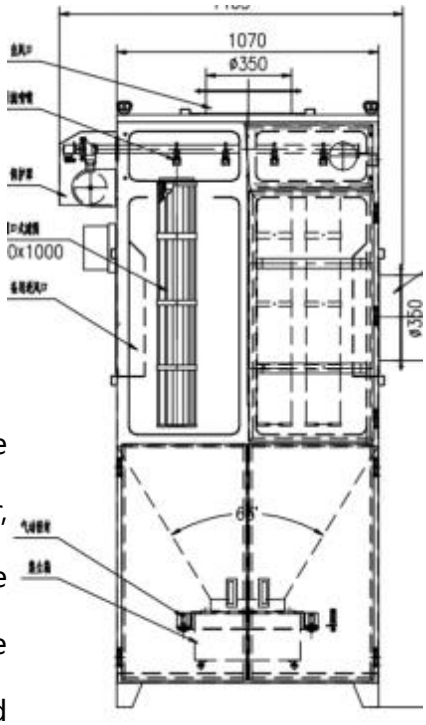



# TECHNICAL PARAMETERS

| MODEL | SINTERED PLATE DUST COLLECTOR |
|---|---|
| Handling of dust | Coating dust |
| Gas capacity $m^3$ /h | 10000 |
| Filter area $m^2$ | 171 |
| Filtering air velocity m/min | 0.97 |
| Special Configurations | Overall anti-static design |
| Inlet dust concentration mg/$m^3$ | <5000 |
| Outlet dust concentration mg/$m^3$ | <10 |
| Maximum working pressure Pa | ±12000 |
| Maximum working | 70 |
| Compressed air consumption | 0.42 @5min cleaning cycle |
| Resistance Pa | 1500~2500 |
| total power | ≤1 kw |
| Weight | ~1800kg (load design can be based on 3500kg) |
| Filter plate specifications | Sintered Plate DF1500 AT ↑ |
| Number of filter plates | 36 |
| Solenoid Valve Specifications | 40M (Baoshuo) |
| Number of solenoid valves | 6 |
| Instrumentation and control | Pulse meter only (220VAC power supply), fan control at user's expense |
| color | RAL9002 off-white |

## DUSTING METHOD TWO:

Cartridge Pulse Dedusting (Sheng Yue) (Option)




## WORKING PRINCIPLE

In normal operation, the dust gas from the top of the equipment or perhaps the upper part of the dust remover, dust filtered by the cartridge, is blocked in the surface of the cartridge filter material, clean air through the process of the center of the cartridge through the air outlet. After a period of time of filtration, the dust on the surface of the cartridge will accumulate more and more, and the increase of the resistance of the cartridge will affect the air volume of the system, and it is necessary to clear the dust attached to the outside of the cartridge through the process of the cleaning system to stop clearing, and to complete the regeneration effect of the cartridge. Pulse blowback cleaning is through the process of timing controller in accordance with the pre-set time to a pulse solenoid valve control to make it open, the airbag within the high-pressure air will enter the center of the filter cartridge in a flash, to stay outside the filter material of the dust blowing clean. Dust driven by airflow and gravity, fall into the dust collection bucket, complete the reuse of the filter cartridge.

## PRODUCT FEATURES

1. Adopting the advanced sedimentary flow structure and cartridge slanting installation structure, so the dust collector in the process of synchronization of the task in the dust clearing results.
2. The dust inlet is equipped with a dust baffle plate, which is cushioning and wear-resistant, and does not allow the dust to directly impact the filter cartridge at high speeds, thus

extending the application life of the filter cartridge.

3. Cartridge 15 ° tilt pumping device, can make the cartridge disassembly and replacement more convenient, so that its maintenance tasks to a minimum. For common dust, the filter cartridge can be used for a long time without changing, eliminating the tedious task of often changing the filter bag for frequent use of bag-type dust collector, and saving a lot of maintenance costs.
4. Modular combination, the size can be chosen at random can expand the original combination, increase the dust removal unit, do not need to stop too much modification of the original equipment.
5. Adopting the differential pressure table to display the value of filter cartridge resistance in time, accurately responding to the amount of dust accumulation in the filter cartridge, which can be used as the main basis for changing the filter.
6. The pulse blowback type is equipped with a blowback deflector nozzle, which improves the blowback air volume by more than 20%.

# Donaldson Cartridge Dust Cabinet


## BRIEF DESCRIPTION OF EQUIPMENT

Donaldson dust collector is a kind of dust collecting equipment suitable for continuous operation, it adopts modular design, the airflow direction is from up to down, which can prevent the filter material from backwashing, make the collected dust overflowing again, and produce the phenomenon of secondary pollution of the filter material, this is the biggest difference between it and the general market of the cloth bag dust collector, the filter material used is the cartridge type cartridge to increase the filtration area by the wrinkled surface, and with the microfiber cartridge material, it can reach 99.999% dust removing efficiency. Microfiber cartridge material, up to 99.999% dust removal efficiency.

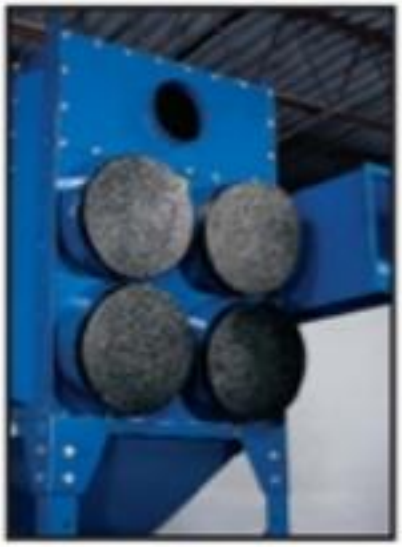
## WORKING PRINCIPLE

Under the action of the main fan of the system, the dusty gas enters into the air box at the bottom of the dust collector from the air inlet of the upper part of the dust collector for the

pretreatment of dusty gas, and then it enters into each dust chamber of the upper box from the bottom; after the dust particles with fine granularity and small density enter into the filtering chamber, through the combined effect of Brownian diffusion and sieve filtration, the dust is adsorbed in the outer surface of the filtering material, and the clean gas through the filtering cylinder enters into the net gas chamber of the box and is discharged by the exhaust pipe through the fan to the outlet (Figure). The clean gas through the filter cylinder into the clean gas chamber of the box body by the exhaust pipe through the fan convergence to the outlet discharge (as shown in the figure) With the filtration conditions continue, the dust accumulated in the outer surface of the filter cartridge will be more and more, and accordingly increase the operating resistance of the equipment, resistance with the filtration of the dust layer on the surface of the thickness of the layer and increase. In order to ensure normal operation of the system, the upper limit of the dust collector resistance should be maintained within the range of (e.g., 1400 to 1600 Pa), and when this limit is exceeded, the PLC Pulse Automatic Control should issue a command to clear the dust by means of a fixed resistance or a timed command. The cleaning process of this cartridge dust collector is the opening and closing of the pulse valve controlled by the PLC program. When the pulse valve opens, the compressed air in the air bag is ejected through the pulse valve through the small holes on the blowing tube with a high-speed and high-pressure induced air flow, thus forming an induced defective flow equivalent to 1 to 2 times of the volume of the induced air flow, which enters into the cartridge, resulting in an instantaneous positive pressure in the cartridge and generating bulge and micro-movement; the dust deposited on the filter material is dislodged and drops into the dust hopper, and the dust in the hopper is discharged through the ash unloading valve. The dust in the dust hopper is discharged through the ash unloading valve. The dust is cleaned in this order, and this way of cleaning is not only thorough, but also avoids the secondary adsorption of dust produced by blowing dust cleaning.

# STRUCTURAL CHARACTERISTIC

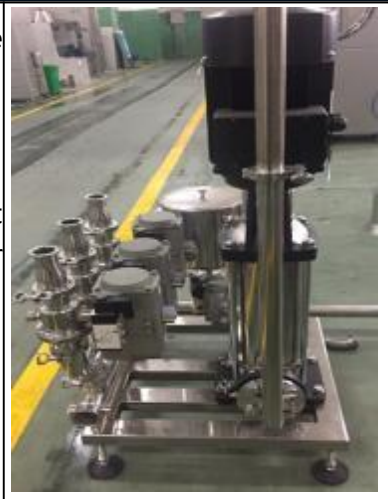
Adopting advanced immersed-flow layout and diagonal mounting structure of the filter cartridge, the dust collector has good effect of synchronous dust cleaning during the working process, and the filter cartridge adopts the treatment of film coating, which has a purification efficiency of over 99.999% for the dust above sub-micron level and at the same time, it has the features of low operating resistance and long service life. The dust inlet is equipped with a dust baffle plate, which has a buffer and wear-resistant effect, so that the dust will not directly tell the impact of the filter cartridge, thus prolonging the service life of the filter cartridge. The 15-degree inclined installation of the filter cartridge can make the cartridge disassembly more convenient, and the dust collector body is not set up transmission parts, so that the maintenance work is reduced to a minimum, the general dust, the filter cartridge can be used for a long time without the need to replace the commonly used bag type dust collector needs to be often changed and wash the filter bag of the cumbersome workers and, and saves a lot of money on maintenance. The compressed air is used to clear the dust by pulse at regular intervals, which ensures that the dust catcher runs continuously with low resistance. It adopts the whole assembling type combination, simple structure, convenient and simple maintenance, and low transportation cost.



| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| provide information fixtures | - Material 304 stainless steel<br>- Positive rotation clockwise discharge<br>- Two sets of components make up the discharge unit: see figure | | - Material contact material 316L stainless steel |  |
| containment systems | fabric | - By an operator interface, an electronic control cabinet, box material spraying plastic<br>- Operating terminal with Siemens TP700 touch screen (mounted on the face of the main unit)<br>- Electronic control cabinet is equipped with Siemens PLC S7-200smart series program controllers, air switches, relays, contactors, Danfoss inverters and other necessary control of all electrical appliances and all wiring<br>- Needle printer as standard | - Increase in touch screen size to TP900 or TP1200 - PLC control system with S7-300<br>- Equipped with UPS to maintain computer power for 15OR30 minutes<br>- Increase the communication interface to connect with the host computer<br>- with electronic sub-signature, recording function (i.e. with Siemens Audit software corresponding to Part 11)<br>- A4 laser printers | |
| | operating privilege | - Multi-level management of operation, process and management, privilege operation can be protected by password login | |  |
| | control function | - PLC program control, manual and automatic control programs<br>- I/O Control Detection<br>- Recipe setting, process parameter modification, recipe and process parameter storage<br>- Automatic fault diagnosis system: overload, motor and other abnormalities occurring in the operation process alarm, while the relevant | | |

| | | | | |
|---|---|---|---|---|
| | | linkage protection<br>- Control parameters with printing function | | |
| | Alarm Records | - Abnormal inlet air temperature<br>- Warning: Inlet air temperature too low!<br>- Warning: Intake air temperature too high! | | |

| sports | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Diagram |
|---|---|---|---|---|
| | | - Warning: Exhaust air temperature too low!<br>- Warning: Excessive exhaust air temperature!<br>- WARNING: The gun is not on and the dosing pump operates continuously for more than 20 seconds!<br>- Turn on the hot air before turning on the heat!<br>- Before turning on the gun, turn on the main unit!<br>- Failure of exhaust inverter<br>- Abnormal exhaust air temperature<br>- Hot air inverter failure<br>- Abnormal hot air temperature, please check the sensor and module.<br>- No compressed air, check<br>- Vibrator motor overcurrent Check the vibrator motor.<br>- Failure of mainframe inverter<br>- Abnormal negative pressure in mainframe | |  |

| spor ts | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| **WIP In-Line Cleaning** System **(for BGB-D) (type of machine)** | | - Manual hand-wiping of the external surfaces of the main and auxiliary engines<br>- WIP in-line cleaning system: the main machine is equipped with a number of fixed cleaning balls in the top of the upper chamber, air inlet and outlet, and a rotary cleaning in the drum;<br>- Increase the automatic control pneumatic butterfly valve in the air inlet and exhaust pipelines connected with the host;<br>- Bypass valves for exhaust cabinets<br>- The cleaning system has a circulating function for the cleaning medium. Cleaning media inlet: Detergent hopper and three other media inlets.<br>- The control valves and infusion pumps of each inlet and outlet water (liquid) pipeline device are controlled by PLC, and automatically cleaned according to the set program. PLC can store a number of different cleaning programs for calling under different circumstances. The PLC can store a number of different cleaning | -Purge water pressure and temperature screen or meter display<br>-Conductivity test<br>-Adding plate and frame steam heat exchangers to generate a hot water source<br>-Additional purified water storage tanks |  <br>(Cleaning of pumping stations)<br>  <br>(water storage tanks) |

| | | | |
|---|---|---|---|
| | programs to be called under different circumstances. Different parts of the host are configured with a number of spray heads for in-situ cleaning of the coating machine;<br><br>- Configuration of independent cleaning fluid pressurization distribution station, to ensure that the pressure of the cleaning fluid shot from the shower head is up to 0.4Mpa, on the coating machine. | | |

| spor ts | basic composit | Standard Performance | Options: price subject to addition | Outline Structure Reference Drawing |
|---|---|---|---|---|
| | | Effective flushing. The booster pump is a residual liquid self-discharging type.<br>- Under PLC control, the residual water in each shower head is flushed out by compressed air.<br>- Fully automatic drying process under PLC control.<br>- Guns, connecting lines, air inlet and outlet hoppers inside the drum are disassembled and moved for cleaning. | | |
| | **Explosion protection (option)** | 1) The motors, fans and lighting of the equipment are explosion-proof.<br>2) Explosion-proof air inlet and exhaust air temperature sensors at the operation site<br>3) The solenoid valves involved in the operation site use explosion-proof solenoid valve coils.<br>4) Explosion-proof junction box for control line at the rear side of the main unit<br>5) The touch screen is suitable for explosion-proof environment in Zone II.<br>6) Emergency stop button adopts explosion-proof type button,<br>7) The internal control voltage of the wire adopts the safe voltage ≤ 24 volts<br>8) Each main and auxiliary engine is equipped with a grounding terminal.<br>(9) The electronic control cabinet is not explosion-proof installed to the non-explosion-proof area | | |

| | | | |
|---|---|---|---|
| other than | The supplier will provide the connecting duct between the main and auxiliary machines to the ceiling 500mm, if the total length of the duct exceeds 10 meters according to the layout plan, the price of the exceeding part will be calculated separately;<br>Cables are the responsibility of the user according to the pre-buried method; | | |

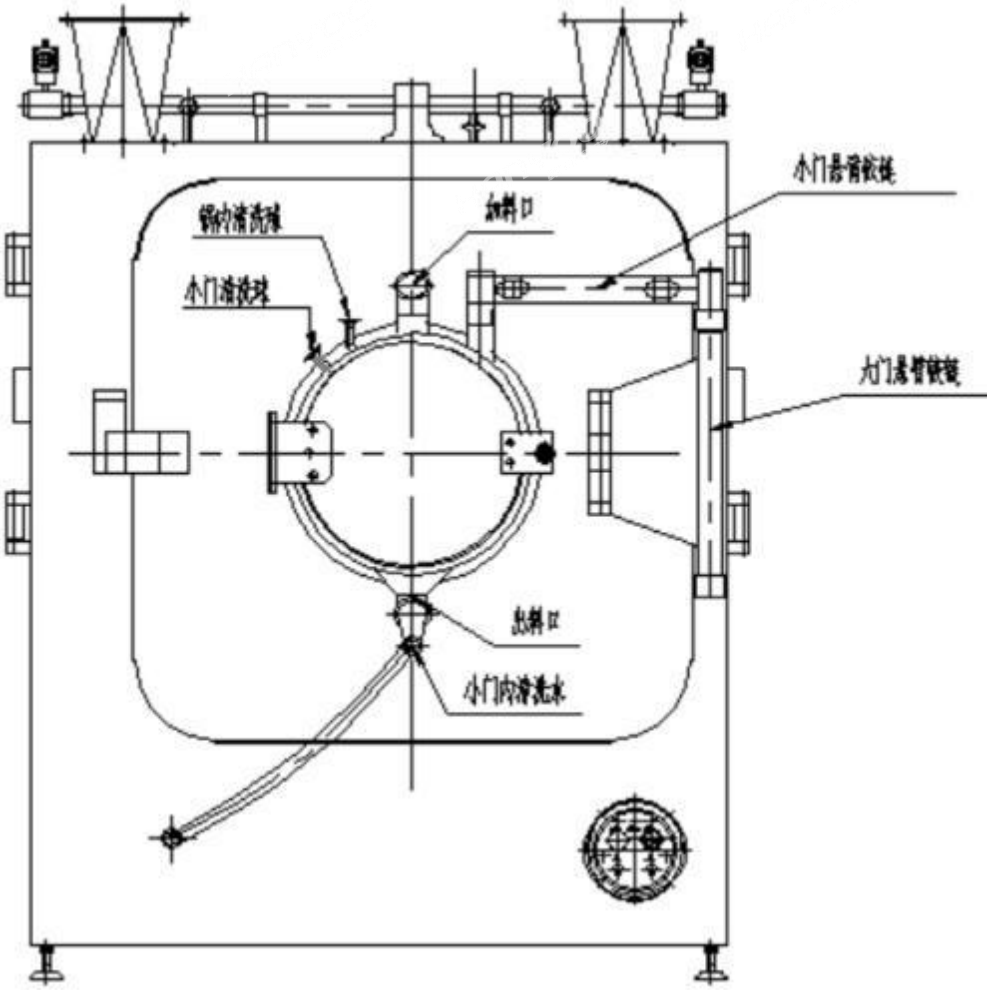
# MAIN AND AUXILIARY ENGINE TABLE

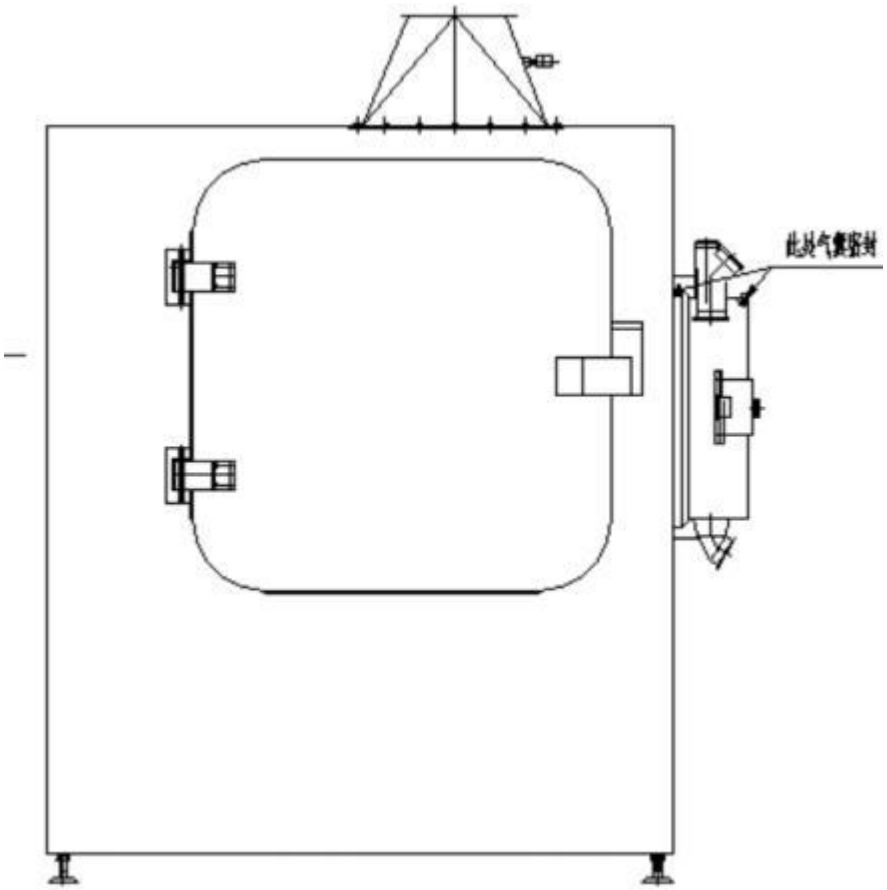
| NO. | NAME (OF A THING) | MODEL | QTY | NOTE |
|---|---|---|---|---|
| 1 | hosts | Model 600 | 1 unit | |
| 2 | High efficiency hot air cabinet | RGL-7000 | 1 unit | |
| 3 | air ventilating and dust removing cabinet | CP-7000 | 1 unit | |
| 4 | electric cabinet | DG-150FD | 1 unit | |
| 5 | peristaltic pump | RD-120B | 1 unit | |
| 6 | Spray gun 6 pcs + gun holder | PQ1 | 1 set | |
| 7 | mixing tank | DJ-120 | 1 unit | |
| 9 | Roller mobile stand | Model 600FD | 1 set | |

Note: 1. The supplier provides the connecting duct between the main and auxiliary machines within the ceiling;

2. The cable and casing between the main and auxiliary machines are provided by the user according to the actual pre-buried condition;

# REFERENCE PHOTO


小门器管锁链
锅内清洗球
加料口
小门清洗球
大门器管锁链
出料口
小门内清洗水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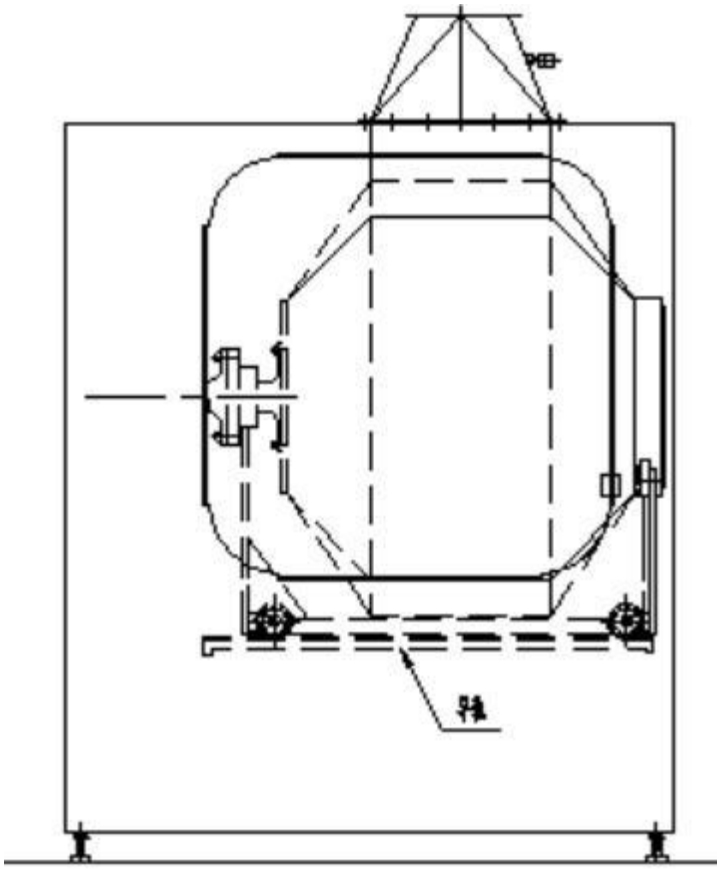

# STANDARD CONFIGURATION DETAILS

| order | Part Name | Specification | branding | note |
|---|---|---|---|---|
| **I. Control cabinets** | | | | |
| 1 | electronic control cabinet | CAB-850 | made in China | |
| 2 | Central Processing Unit CPU | CPU SR60 | SIEMENS | |
| 3 | Backup Power Module | SB BA01 | Panasonic | |
| 4 | button cell | CR1025 | SCHNEIDER | |
| 5 | emergency stop button | ZB2BS542C | SCHNEIDER | |
| 6 | master air compressor (electronics) | EZD100E3050+ EZD-30185 Handle | SCHNEIDER | |
| 7 | PLC Air switch | IC65N-C10-3P | SCHNEIDER | |
| 8 | Mainframe Air Switch | IC65N-C65A-3P | SCHNEIDER | |
| 9 | air intake air vent | IC65N-C10A-3P | | |
| 10 | exhaust air vent | IC65N-C20A-3P | | |
| 11 | Water pump openers | IC65N-C16A-3P | | |
| 12 | thermal relay | LR-D04/LRD14 | SCHNEIDER | |
| 13 | fuse | RT18-32X | MRO | |
| 14 | relay (electronics) | PT270L24 | SCHRACK | |
| 15 | | PT570L24 | | |
| 16 | | PT270T30 | | |
| 17 | Mainframe Inverter | FC51-3kW | DANFOSS | |
| 18 | Hot Air Inverter | FC51-1.1kW | DANFOSS | |
| 19 | Exhaust air inverter | FC51-5.5kW | DANFOSS | |
| 20 | Switching Power Supply 1 | PM-207-5A | SIEMENS | |
| 21 | S7-200 PLC expansion module | EM QR16 | SIEMENS | |
| 22 | | EM AR02 | | |

| order | Part Name | Specification | branding | note |
|---|---|---|---|---|
| 23 | | EM AE08 | | |
| 24 | | EM AQ04 | | |
| 25 | three-hole socket | DZ47X | Drexel | |
| 26 | alternating current contactor | LC1D09 / LC1D12 | SCHNEIDER | |
| 27 | transformers | BK600 | Wenzhou Jiuchuan | |
| 28 | filters | FT110-6 | Fiorte (French town) | |
| 29 | Switching Power Supply 2 | DR-120-24 | MW | |
| 30 | memory card | SD-8G | KINGSTONE | |
| 31 | indicator light | XB2-BVM4LC | SCHNEIDER | |
| 32 | audible and visual alarm | AD16-22SM/R23 | SIEMENS | |
| 33 | printer | HL2560DN | Brother. | |
| 34 | Three-color alarm light | SWTLF-BZ-3 | Q-LIGHIT | |
| **Second, touch screen control box** | | | | |
| 1 | touchscreens | TP1200 | SIEMENS | |
| 2 | key switch | ZB2-BE101C | SCHNEIDER | |
| 3 | audible and visual alarm | AD16-22SM | SIEMENS | |
| 4 | emergency stop switch | ZB2-BE102C | SCHNEIDER | |
| **III. Mainframe** | | | | |
| 1 | Material contact material | SUS316 | ocean of writing (archaic) | |
| 2 | touchscreens | TP1200 | SIEMENS | |
| 3 | Coating Roller | 600L | ocean of writing (archaic) | |
| 4 | Explosion-proof motors | YB3-100L2-4 4kW | Zhejiang Xinling Motor | |
| 5 | speed reducer | SKAF87-YB3-4P | Shun Tian Reducer | |
| 6 | Explosion-proof vision lamp | BAK51 | Huarong Explosion-proof | |

| order | Part Name | Specification | branding | note |
|---|---|---|---|---|
| 7 | temperature sensor | WZPG-31 Pt100 | Zhejiang Aozaki | |
| 8 | Dial Pressure Reducing Valve + Pressure Gauge | lr-d-o-mini-0-1.0mpa | FESTO | |
| 9 | solenoids | 3V210-08-NC | AIRTAC | |
| 10 | | 4V230C-08 | | |
| 11 | Door proximity switches | PL-050 | Taiwan Yangming | |
| 12 | pressure switch | PEV-W-KL-LED-GH | FESTO | |
| 13 | Differential Pressure Transmitter | 268 ±500 Pa | SETRA | |
| 14 | pressure proportional valve | ITV2050-012N | SMC | |
| 15 | ball valves | G1/2 | Wenzhou Yijian Valve Factory | |
| 16 | Pressure Reducing Valve + Gauge | AR2000+1.0Mpa | AIRTAC | |
| 17 | Drainage ball valve | G3/4 | Wenzhou Changyuan | |
| **IV. AHU Air Handling Unit RGL6000** | | | | |
| 1 | Primary Panel Filter | Specification 1020×520×46mm G4 | Feiuet | |
| 2 | Medium Efficiency Bag Filter | Specification 484×484×300mm-P5 F8 | Feiuet | |
| 3 | High Efficiency Filter | Specification 484×484×220mm H13 Stainless steel frame temperature | Feiuet | |
| 4 | differential pressure gauge | 2000-500pa/2000-1Kpa | DWYER | |
| 5 | Steam heat exchanger | 6R-13T-500 DN25 | Shanghai Winmax | |
| 6 | Steam Angle Seat Valves | DN25 | made in China | |
| 7 | Intelligent Positioner | 1500 Series | made in China | |
| 8 | DOP Orifice Check Valve | kka3s-02m/kka3p-01f-1 | SMC | |
| 9 | anemometer | Bi Trusteeship 160-8 | DWYER | |
| 10 | Explosion-proof centrifugal fan | B4-72 4.5A | made in China | |
| 11 | Explosion-proof motors | YB3-90S-4 3.0KW | made in China | |

| order | Part Name | Specification | branding | note |
|---|---|---|---|---|
| **V. Exhaust dust collector CP7000** | | | | |
| 1 | filter bucket | 720×720×17 | ocean of writing (archaic) | |
| 2 | Explosion-proof centrifugal fan | B4-72 4A | made in China | |
| 3 | Explosion-proof motors | YB3-132S1-2 5.5kw | made in China | |
| 4 | Dust-cleaning motor | ybsc71-2-4 0.37kw | Suzhou Wujiang Motor | |
| 5 | Explosion-proof junction box | BHD-51 | Zhejiang Huarong Electric Appliance | |
| 6 | Filter Differential Pressure Gauge | 2000-1KPa | DWYER | |
| **VI. Spray gun and slurry transportation** | | | | |
| 1 | Spray gun assembly | 930-1 | German | |
| 2 | Explosion-proof peristaltic pump | RD120B | ocean of writing (archaic) | |
| 3 | mixing tank | DJ-120 | ocean of writing (archaic) | |
| | pneumatic motor | 2AM-NCC-16 | GAST, USA | |
| | oil mist eliminator | AL2000-02 | SNS | |
| **VII. WIP Cleaning Pump Station QZ-8T** | | | | |
| 1 | Stainless steel multistage pumps | CDLF8-12 4KW | Southern Pumps | |
| 2 | Sanitary pneumatic ball valves | Q681F DN40 | Born Fluid | |
| 3 | Sanitary pneumatic ball valves | Q681F DN15 | Born Fluid | |
| 4 | Pneumatic actuated valves | TBN-083-SR | Boone Pneumatic | |
| 5 | Pneumatic actuated valves | TBN-052-SR | Boone Pneumatic | |
| 6 | solenoids | 3V310-08-NC | AIRTAC | |
| 7 | Rotating spray ball | Φ50.8 | made in China | |
| 8 | Rotating spray ball | d15-360-316lss-g1/8 | Leoin (PRC state-owned | |

**Note: The specifications of the electromechanical components listed in the table are for reference, and the company reserves the right to replace them with brands and specifications not lower than those listed.**


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