

BG-400

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-400 High Efficiency Coating Machine



APPLICATION

1. BG high efficiency coating machine is a special equipment for coating tablets, pills and candies with aqueous and organic films. The equipment is manufactured in accordance with the GMP requirements of the pharmaceutical industry; The entire shell, coating roller (coating pan), heat blower, spraying device and all parts in contact with the drug are made of stainless steel.
2. The whole process is controlled by the microprocessor programmable system and can also be controlled by manual operation. The control system has a variety of applications,

operation status selection, closed-loop control of speed and temperature, open-circuit control of negative pressure in the pot of the coating machine and hot air supply volume, complete control parameter display and working status recording and printing function.

3. All coating operation is carried out in closed state, no dust flying and spraying liquid splashing, is a high quality, efficient, reliable, clean, energy saving, easy to operate in line with SOP operation of the new coating equipment.
4. The PLC control system in Hanyang coating machine contains automatic control and display of all process parameters such as negative pressure, hot air flow, exhaust air flow, speed, temperature, etc. New cleaning button, automatic in-position cleaning (optional), automatic self-discharging device, automatic side door opening and closing (optional), all on the PLC one click to complete. Make the writing and execution of the position operation method (SOP) use digital quantities instead of analog quantities, produce different batches of drugs with the same technical parameters, and strive to achieve zero differences between batches. The stability of drug quality is ensured.

DESCRIPTION

1. Using the new microcomputer PLC module, hot air temperature setting, control and roller speed adjustment and other quantified indicators to guide the operation are completed on the touch key of the computer control panel, and the operation panel is a fully sealed light touch film interface, the host cleaning has no impact, reliable and stable performance, and has programmable functions. The explosion-proof motor drives the drum to rotate clockwise through the cycloidal pin wheel.
2. Negative pressure detection: Add a negative pressure detection point in the upper box of the coating machine, and install 23300-3kpa differential pressure meter produced



Streamline
deflector



Discharge device

by DWYER Company in the operating cabinet. The operator can operate the touch screen according to the process regulations (for example, the negative pressure value is 10Pa) and control the exhaust fan speed to achieve the purpose of controlling the negative pressure in the pot.

3. Streamline guide plate: Under the action of streamline guide plate agitator, the core turns smoothly, exchanges frequently, eliminates the phenomenon of the core falling from height and collision, solves the debris and knock edge, and improves the yield. The narrow surface of the baffle eliminates the adhesion of the dressing on its surface, saves the dressing and improves the quality of the drug.
 4. Temperature detection: the inlet and outlet of the coating drum are equipped with temperature sensors, and the temperature signal input PLC automatically controls the heat exchanger after comparing with the set value, so as to achieve the control of the coating temperature value.
 5. Wind speed detection: Add a wind speed detection point in the heating wind pipeline, and install the 2001AV anemometer produced by DWYER Company in the operating cabinet. The operator can operate the touch screen to control the speed of the hot fan according to the wind speed value specified in the process (8m/s) to meet the requirements of controlling the air supply volume.
 6. Automatic discharge: automatic discharge device, easy to install, quick to use.
-

SPRAY SYSTEM

1. Control of the spray volume: the spray gun of the slurry pipe system has the function of manual slurry adjustment: the main door of the efficient coating machine is equipped with a graduated regulating valve and the speed of the peristaltic pump can adjust the spray volume.
2. Spray gun configuration: Select high-end spray gun with automatic cleaning function. 316L material adopts streamlined structure design, which is conducive to online cleaning and

reducing gas turbulence; Automatic gun cleaning program and manual gun cleaning device are designed, and the gun cleaning time can be completed in 1 second. The design of 0.3MPa firing at the time of firing ensures that the dressing is always opened first and then sprayed in the spray atomization process, and the dressing is closed first and then the atomization circuit is closed when the gun is closed, and the droplet phenomenon in the atomization process is eliminated.

3. Trolley type single-layer mixing tank: with stepless speed regulating pneumatic mixing; The 50L mixing tank is installed on 4 rollers, so it is flexible to move, and it is designed with the fixing bolt of the peristaltic pump, which can be integrated with the peristaltic pump and is easy to use. The machine is all made of stainless steel, the internal and external surfaces are mirror-polished, in line with GMP specifications.

HOT AIR INTAKE SYSTEM

1. After the fan starts operation, the outdoor air continues to enter from the air inlet, and the first coarse filter is carried out on the large and medium particles in the air through the initial effect filter; Then it enters the medium effect filter and filters the air generally. Then filtered by the high efficiency filter, the filtration accuracy reaches the requirements of 100,000 class cleanliness, and finally the filtered air is heated by the heater, through the hot air conveying pipe, into the coating machine drum, and the tablet coating material is heated and dried. Meet new GMP requirements.
2. The fan component adopts centrifugal fan, which has large air volume and low noise during operation.
3. The use of primary, medium and high efficiency three different types of filters with different functions, good air purification effect.
4. The heat exchanger has high thermal efficiency, and in



高效过滤热风机

special cases, it can also be equipped with electric heating heat exchangers, which has strong adaptability.

5. Each filter section is equipped with a quick detachable access door that is both wide and sealed to facilitate internal maintenance or filter replacement when needed. The machine has the advantages of compact structure, fine production, beautiful appearance and reliable operation.

EXHAUST DUST REMOVAL SYSTEM

1. The structure of the filter drum dust collector is composed of the air intake, the box, the filter drum support, the ash cleaning device, the ash bucket, the PLC control system, etc.
2. The use of advanced submerged flow layout and filter cylinder inclined structure, so the dust collector in the working process synchronous cleaning effect is good, the filter cylinder is covered with film treatment, for the sub-micron level of dust above 99.9% purification efficiency, while with low operating resistance, long service life characteristics.
3. The dust gas inlet is equipped with a dust baffle, which has a buffer level wear-resistant effect, and will not make the dust directly tell the impact filter cartridge, thus extending the service life of the filter cartridge.
4. The filter cylinder 15 degrees inclined installation, can make the removal of the filter cylinder more convenient, and the dust collector is not set in the body of the transmission parts, so that the maintenance work is reduced to a minimum, for general dust, the filter cylinder can be used for a long time without replacement, saving the common bag filter need to often change the bag of workers and save a lot of maintenance costs.
5. Working principle: Under the action of the main fan of the system, the dust-containing gas enters the air box at the bottom of the dust collector from the air inlet at the upper part of the dust collector for pre-treatment, and then enters the dust room of the upper box from the bottom; After the fine particle size and small density dust particles enter the filter dust chamber, the dust is adsorbed on the outer surface of the filter material through the

comprehensive effect of Brown diffusion, and the filtered clean gas enters the clean air chamber of the box through the exhaust pipe and is discharged by the air outlet gathered by the fan.

6. As the filtration conditions continue, the dust accumulated on the outer surface of the filter cartridge will accumulate more and more, and the corresponding operating resistance of the equipment will increase, and the resistance will increase with the increase of the thickness of the dust layer on the surface of the filter material. 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 1400-1600Pa, when the limit is exceeded, it should be automatically controlled by the PLC pulse through the fixed resistance or the timing of the instruction for cleaning. The cleaning process of the filter type dust collector is controlled by PLC program to open and close the pulse valve. When the pulse valve is opened, the compressed air in the bubble is sprayed through the pulse valve through the small hole on the spray pipe at a high speed and high pressure jet stream, thus forming an induced defect flow equivalent to 1-2 times the volume of the jet stream, which enters the filter cartridge together, causing an instant positive pressure in the filter cartridge and producing swelling and micro-movement; The dust deposited on the filter material falls off and falls into the ash hopper, and the dust in the ash hopper is discharged through the ash shortage valve. In this way, the cleaning method is not only thorough, but also avoids the secondary adsorption of dust produced by blowing the ash.

ELECTRONIC CONTROL SYSTEM

1. The main core device of the control system PLC selected German Siemens programmable controller; Delta speed converter, microcomputer control temperature control system, and equipped with high-quality photoelectric sensor and thermal sensor. The system works stably, the failure rate is low, the maintenance is convenient, the operation is easy.
2. Control objects
 - ① Main machine (coating machine roller operation) frequency conversion speed regulation

- ② Exhaust fan operation (coating machine drum negative pressure control) frequency conversion speed regulation
- ③ Hot fan operation (hot air volume control) frequency conversion speed regulation
- ④ Shotcrete conveying (peristaltic pump) operation
- ⑤ Dust removal operation of dust collector
- ⑥ Heating system control

3. Function description

Protection function: The thermal relay used can connect the overload signal to the programmable controller and display it on the touch screen, which is convenient for users to find a quick solution to the fault and effectively protect the electrical equipment.

Clock function: The system has a real-time clock, which is displayed on the touch screen and can count the system running time according to needs.

Negative pressure control: Use the inverter to change the speed of the inductor motor to control the negative pressure. With a pointer type negative pressure display meter, the output frequency of the inverter is manually controlled on the touch screen to change the exhaust air volume and maintain the negative pressure in the required range.

Temperature control: There are currently two heating elements: steam and electric heating. According to the difference between the set value and the actual value, the Angle seat valve switch is controlled by PLC to change the amount of steam, so as to ensure the hot air temperature of the system.

Real-time recording function: real-time recording of production data, including temperature, negative pressure, operating instructions, equipment status, running time, etc. The Weihuang needle printer has reliable performance and is convenient to record information and generate reports

4. Implement functions

Can achieve manual control, automatic (program control) function.

(1) Manual control

- Manual control of each actuator on the touch screen, such as host inverter, hot air

inverter, exhaust air inverter, spray solenoid valve, vibration motor, peristaltic pump.

(2) Automatic control

- According to process requirements to realize automatic control of each control object;
- realize the working order of each object according to the process requirements;
- Control the working time of each object according to the process requirements;
- Start and stop multiple control objects at the same time according to process requirements;
- up to 99 cycles according to process requirements;
- control of 9 working steps according to process requirements;
- can be equipped with 9 different process;
- The speed of the host can be adjusted in any way;
- program can automatically maintain the set negative pressure, speed, temperature;
- Hot air exhaust temperature deviation adjustment function;
- Negative pressure can be manually adjusted on the touch screen;

TECHNICAL PARAMETER

MODEL			BG-400
Max.Load Capacity			200-400kg/time
Optimum Installation Size Of Equipment			4000*5500*2500mm
Cylinder Dimension			φ1500mm
Feeding Port Diameter			Φ500mm
Roller Speed			2.0-17r.p.m
Main Motor Power			4kw
Exhaust Cabinet Motor Power/Flow			7.5kw/7419 m ³ /h
Hot Fan Power/Flow Rate			1.5KW/2356 m ³ /h
Hot Air Temperature Control Range			~80°C
Hot Air Purification Efficiency			10 万级
Peristaltic Pump Power			0.55KW
Silicone Tube Wall Is Thick			1.6-2.2mm
Main Engine Volume(L×W×H)/Weight			2100×1800×2230mm/850kg
Dimensions Of Hot Air Cabinet/Weight			1200×1200×2130mm/450kg
Dimensions Of Exhaust Cabinet/Weight			1300×1400×2200mm/550kg
External Condition	Clean Air	Stress	≥0.4Mpa
		Air	2m ³ /min
	Source Of Water	Stress	≥0.15Mpa
		Pipe Diameter	1 1/2"
	Electrically Heated Type	Power Source	36KW (Three-phase five-wire 220V/60HZ)

ELECTRONIC PART LIST(HOST MACHINE)

NO.	NAME	MODEL	MANUFACTURER	REMARK	QTY
Efficient coating machine host					
1	Host material	304-2B Thick:δ3.0	Zhangpu		
2	Spray gun	1.1	Iwata		3
3	Main engine explosion-proof motor	YB100L1-4 (anti-explosion)	Redson	1.1 Kw	1
4	Cycloidal reducer	BWB18-35	Redson	1.1 Kw	1
5	Adjustable core ball bearing	7210	HAERBIN		
6	Deep groove bearing	6160	HAERBIN		
7	Chain	12A-1	SUZHOU	A3	1
8	Sight lamp	Absg	New Dawn Explosion Protection		1
9	Differential pressure gauge	2300-1KPa	DWYER	Main Engine Negative Pressure	1
10	Anemometer	2001AV	DWYER	Wind Speed	1
11	Plate pressure reducing valve	LR-1/4-D-O	AirTAC	Gun Control	4
12	Plate pressure gauge	FMA-50-10-1/4	AirTAC	Gun Control	4
13	Touch screen	SMART	SIEMENS	7-Inch Color	1
14	Scram	ZB2-BE102C	Schneider	Red	1

Electric Control Cabinet (Stainless Steel)

1	Circuit breaker	65N	Schneider	4P 63A	1
2	Circuit breaker	65N	Schneider	C1P 6A	2
3	Ac contactor	LC1E0910M5N	Schneider	220V 9A	1
4	Ac contactor	LC1E2510M5N	Schneider	220V 25A	1
5	Intermediate relay	RXM4LB2P7	Schneider	220V	2
6	Intermediate relay	RXZE1M4C	Schneider	220V	2
7	Thermal Overload Relay	Lre08Kn	Schneider	1-1.6A	4

NO.	NAME	MODEL	MANUFACTURER	REMARK	QTY
8	Frequency Changer	Delta EI Series	Delta	3KW	1
9	Frequency Changer	Delta EI Series	Delta	1.1KW	2
10	7 Inch Color Touch Screen	Smart Series	Siemens		1
11	Programmable Controller	Siemens	Siemens	224XP	1
12	Temperature Control Meter		Guolong Instrument	TCW--32K	2
13	Power Switch	Mingwei	Taiwan Meanwell	D-30BGD	1

ELECTRONIC PART LIST(AUXILIARY ENGINE)

NO.	NAME	MODEL	MANUFACTURER	POWER	QTY.
-----	------	-------	--------------	-------	------

High Efficiency Filter Heat Blower

1	Air Blower	CF (Anti-Explosion)	Shanghai Yingfa Machine Factory		1
2	Hot-Air Motor	YB-90S-4		1.1kw	1
3	Primary Filter	1020×520×46		G4	1
4	Medium Effect Filter	520×620×120		F8	1
5	High Efficiency Filter	520×620×120		H13	1
6	Stainless Steel Radiator	Uzgl4R-11-23	Changzhou		1
7	Electric Heating Tube	Diameter 16×600	Jiangsu Xinghua Chushui Electric	6kw	6
8	Blast Line	Φ250mm	Hanyoo		1

Dust Removal Silencer Exhaust Fan

1	Exhaust Centrifugal Fan	B4-72-4.7 (Anti-Explosion)	Shanghai Should Fa Fan Co., Ltd	3kw	1
2	Coated Filter Cartridge	Polyester Membrane Filtration	Suzhou Feiyou Te		1

Combined Mixing Tank

1	Air Motor	Tj8	Shanghai Pneumatic Complete Set		1
2	Plastic Caster	Diameter 75×32	Sinter		4
3	Peristaltic Pump	BT-100	Baoding River		1



HANYOO

翰洋科技

Add: No.380 Sanqiaogeng, Gaochun District, Nanjing, China

Tel: +86-025-5621 6295

[Http://www.hanyoopm.com](http://www.hanyoopm.com)