Brief introduction for YYL-160 Melt Blown Nonwoven Production Line

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Brief introduction for YYL-160

Melt blown Nonwoven fabric production line

I. Product characteristics, application and production capacity

1. Characters tics and Application

Melt-blown non-woven is a kind of white, soft non-paper non-woven fabric. With PP polypropylene as the main raw material, the fiber diameter is made between a few microns and a dozen microns by Melt-blown technology. Because the fibers are so thin and disordered, it has the characteristic of three-dimensional porosity, large surface area, small aperture, high porosity, flexible structure, efficient modeling and low resistance.

Melt blown nonwoven has a good ability to capture fine particles in the air such as fine dust and bacteria. Melt blown nonwoven is an excellent fiber filter material and is commonly used as a filter component in a variety of medium to high efficiency filters, such as masks, air filters, oil-absorbent cotton and wipes.

Melt blown nonwoven plays the role of isolation and filtration in the mask, protecting the human body from the invasion of dust, bacteria and viruses, reducing a variety of infections, effective protection of human health.

Melt blown non-woven fabric is mainly used for medical and health materials, filtration materials, heat preservation materials, oil absorption materials, battery diaphragm materials, environmental protection materials, clothing materials, wiping materials, etc.

The melt blown fabric from YINGYANG Melt blown Nonwoven production line is tested to be possible to reach below parameters with the correct production know-how and qualified raw material and suitable production environment:
1）PFE 95%　2）BFE 99%

2. Production line characteristics

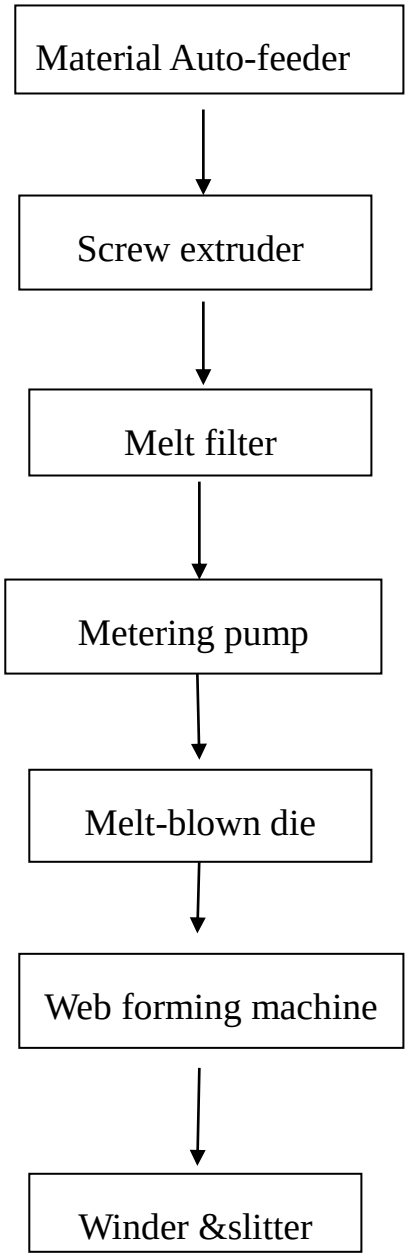
No.	Item	Technical Parameter
1.	Product width	1600mm
2.	Production capacity	1000-1200kg/day (24working hours per day)
3.	Main raw material	Polypropylene chips/granules, high melt index MFR1500 g /10 min
4.	Fiber fineness	Average 2-5um
5.	Product basis weight	18～80g/m2
6.	Production speed	≤30m/min

Melt blown Nonwoven fabric production line

Melt blown Nonwoven fabric

Application example

Ⅱ.Technical process of the production line



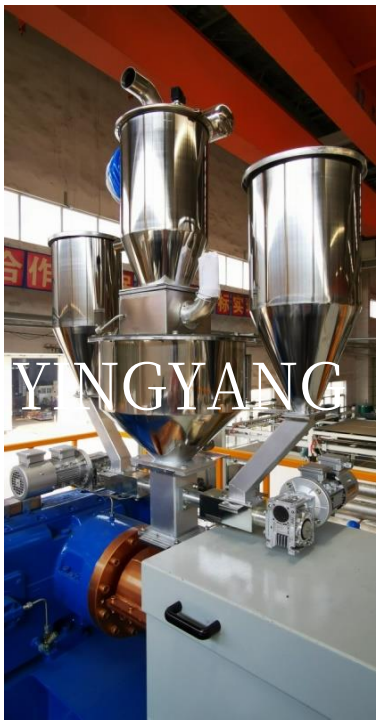
Ⅲ.Raw material specifications

The raw material for spun-bonded nonwoven fabric is PP which specifications is as following:

Item	Unit	Technical index
Melting index	g/10min	1500（+/-50）
Melting point	℃	165
Monofilament fineness	um	2-5

Ⅳ.Main equipment and Technical Charateristics

1] Material Auto-feeder **1 Set**



No.	Item	Technical parameter
1.	Application	The device is mainly to transport polypropylene chips/ granules to the hopper.
2.	Material	The feeding system, in direct contact with the raw materials (except the hoses), is made of stainless steel.
3.	Application of vacuum pump	It uses vacuum pump to suck the main raw material automatically, and the auxiliary materials are fed manually.
4.	Material feeding hopper	Fed by negative pressure, the level of material feeding hopper is controlled automatically. Set up with low material level alarm buzzer protection measures.
5.	Vacuum pump power	3kw
6.	Material feeding capacity	200kg/h
7.	Delivery distance	6m horizontal, 5m vertical

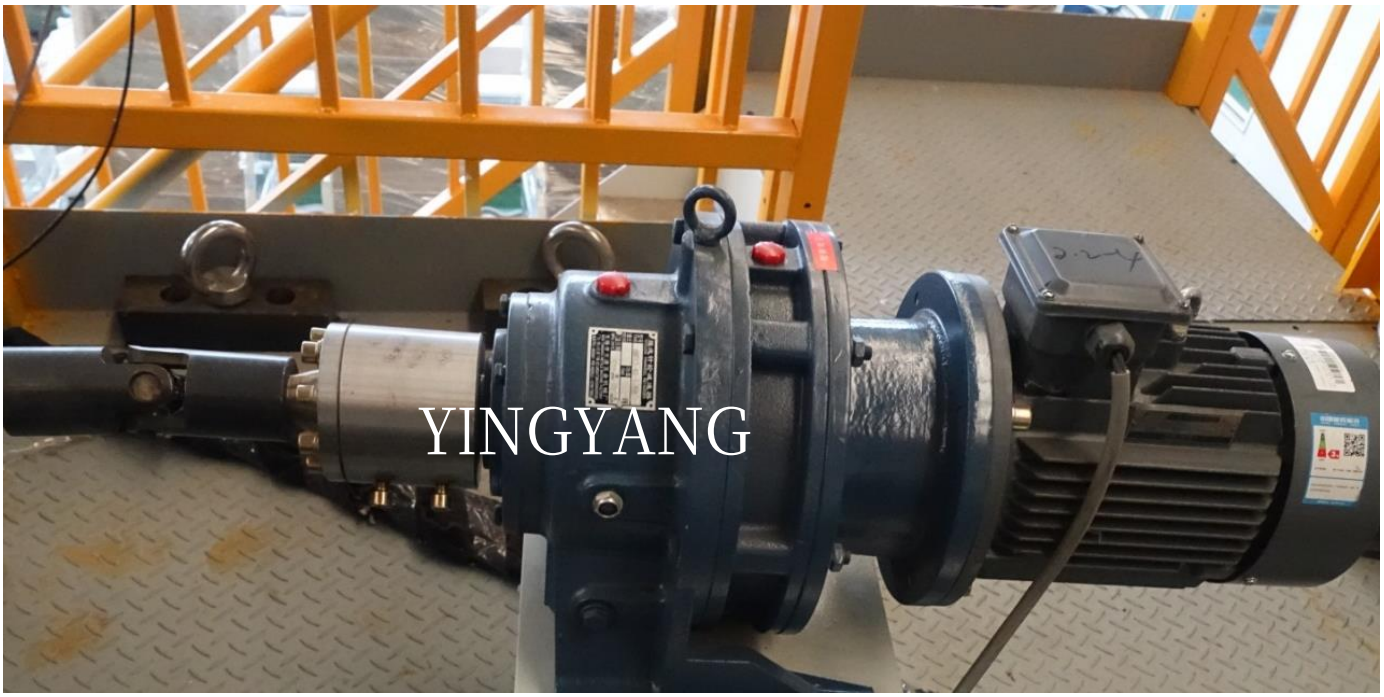
2] Screw extruder **1 set**

No	Item	Technical parameter
1.	Application	Mainly used for extrusion and melting of polypropylene materials, suitable for PP chips/granules.
2.	Screw diameter	ϕ105mm
3.	Length/Diameter	30：1
4.	Sleeve heating section	5sections
5.	Heating type	by ceramic heating loop
6.	Screw speed	20-80r/min
7.	Maximum screw pressure	25MPa
8.	Heating power	45kw
9.	Drive motor power	55kw AC inverter control
10.	Max output capacity	100Kg/h
11.	Equipment composition	Mainly composed of Screw, sleeve, electric heater, platinum thermal resistance, reducer, transmission device, frame, insulation cover, solution temperature detection, discharge head.
12.	Others	Equipped with automatic heating and insulation machine, the main drive adopts ac inverter frequency conversion speed regulation. Pressure closed-loop control, temperature control adopts temperature control meter (with communication function), solid relay, PT100 platinum resistance to form a closed-loop system with high temperature control accuracy.

3] Melt filter		1 Set

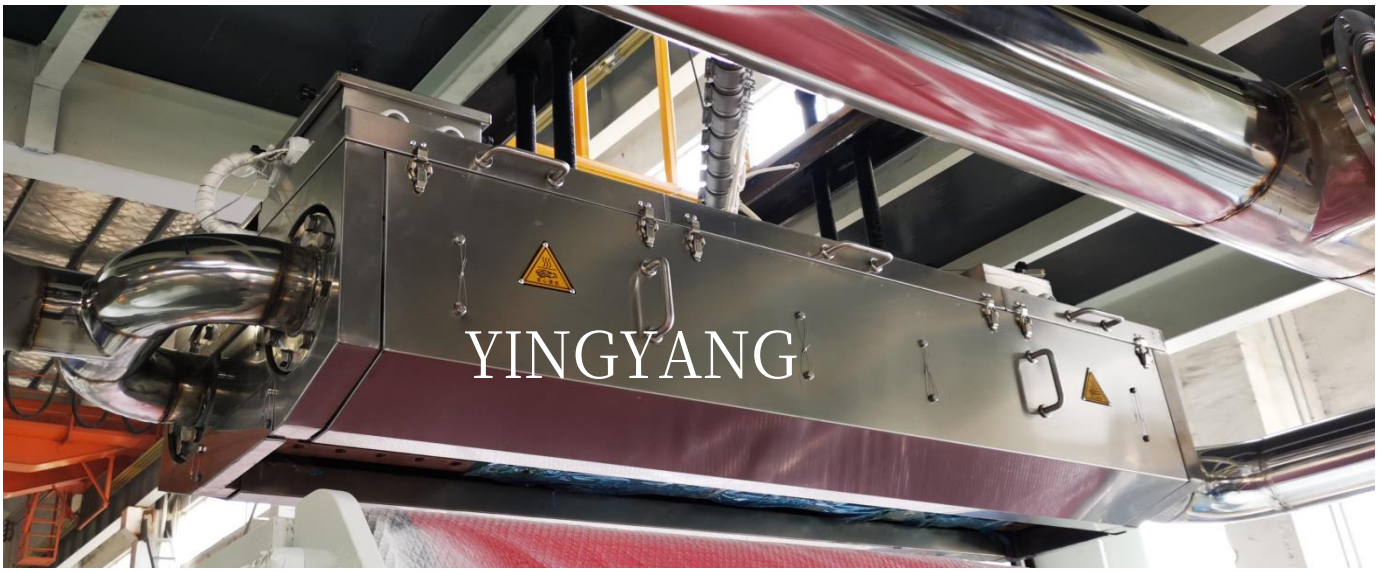
No	Item	Technical parameter
1.	flange	It is directly connected with the extruder, and it is composed of 2 filtration units. The filter can be replaced without stopping.
2.	Application	the equipment will filter the extruded and melt materials from up-stream to filter out impurities in the melt
3.	Heating power	4KW
4.	Heat source	electric heating (changing mesh screen by hydraulic method)
5.	The size of the filter	ø100mm
6.	Melt filter precision	40um
7.	Number of switch board	2
8.	Pump oil motor power	2.2kw
9.	Equipment composition	Mainly composed of switch board, electric heating plate, hydraulic station, thermocouple, pressure sensor, etc. Equipped with automatic heating insulation system and switch board as buttons and indicator light. The temperature control system consists of temperature control meter, solid state relay and thermocouple.
10.	Application of Melt pipe	The pipe is connected between the metering pump and the spinning beam by the melt conveying pipe, with resistance heating. The temperature control closed-loop system is composed of temperature control meter, solid state relay and thermocouple. The pipes are made of stainless steel.

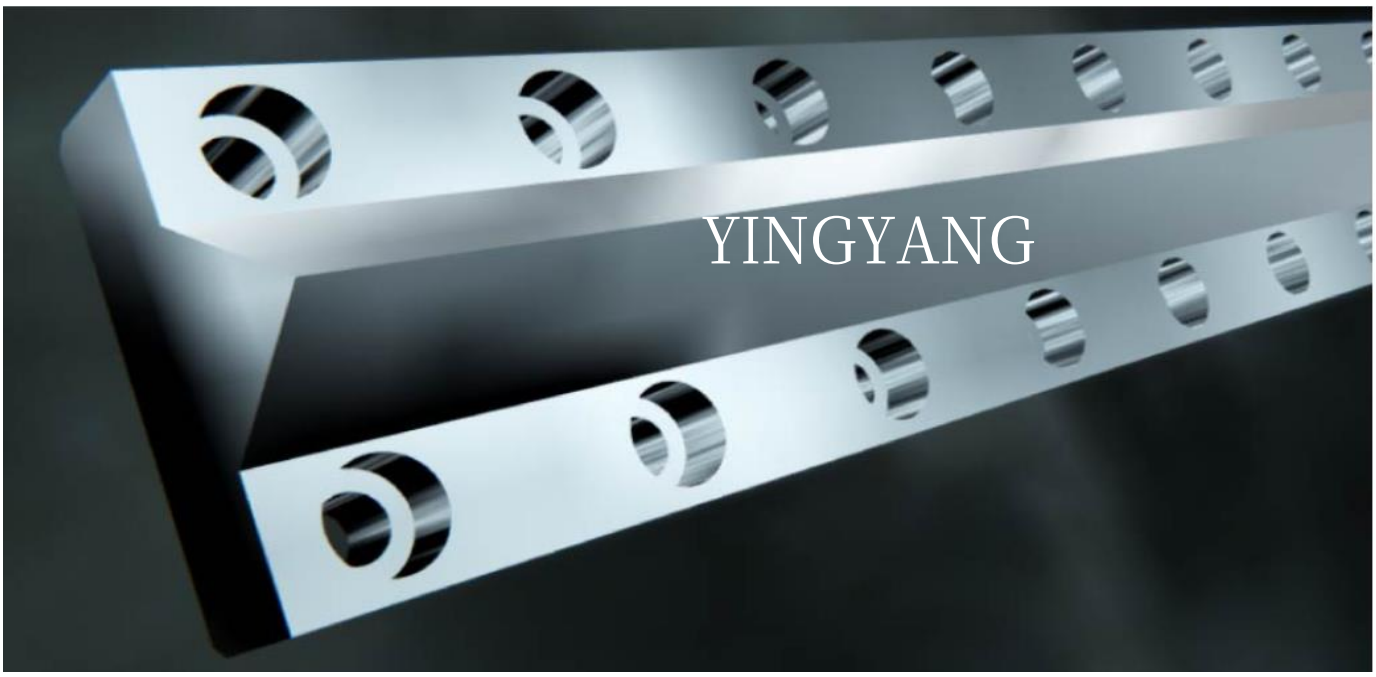
4] Metering pump		**1 Set**



No	Item	Technical Parameter
1.	Application	Mainly used for solution measurement and transportation
2.	Supply volume	100CC
3.	Rotate speed	10-40 RPM
4.	Voltage	3kw
5.	Beam heating power	2kw
6.	Equipment composition:	Metering pump, motor and reducer, electric heating plate, thermocouple, etc. The temperature control system consists of temperature control meter, solid state relay and thermocouple.
7.	Metering pump	Driven by frequency conversion;
		Ensure the melt metering accuracy, the melt pressure is stable, and there is no heavy leakage.

5] Melt blown die & Nozzle **1 Set**





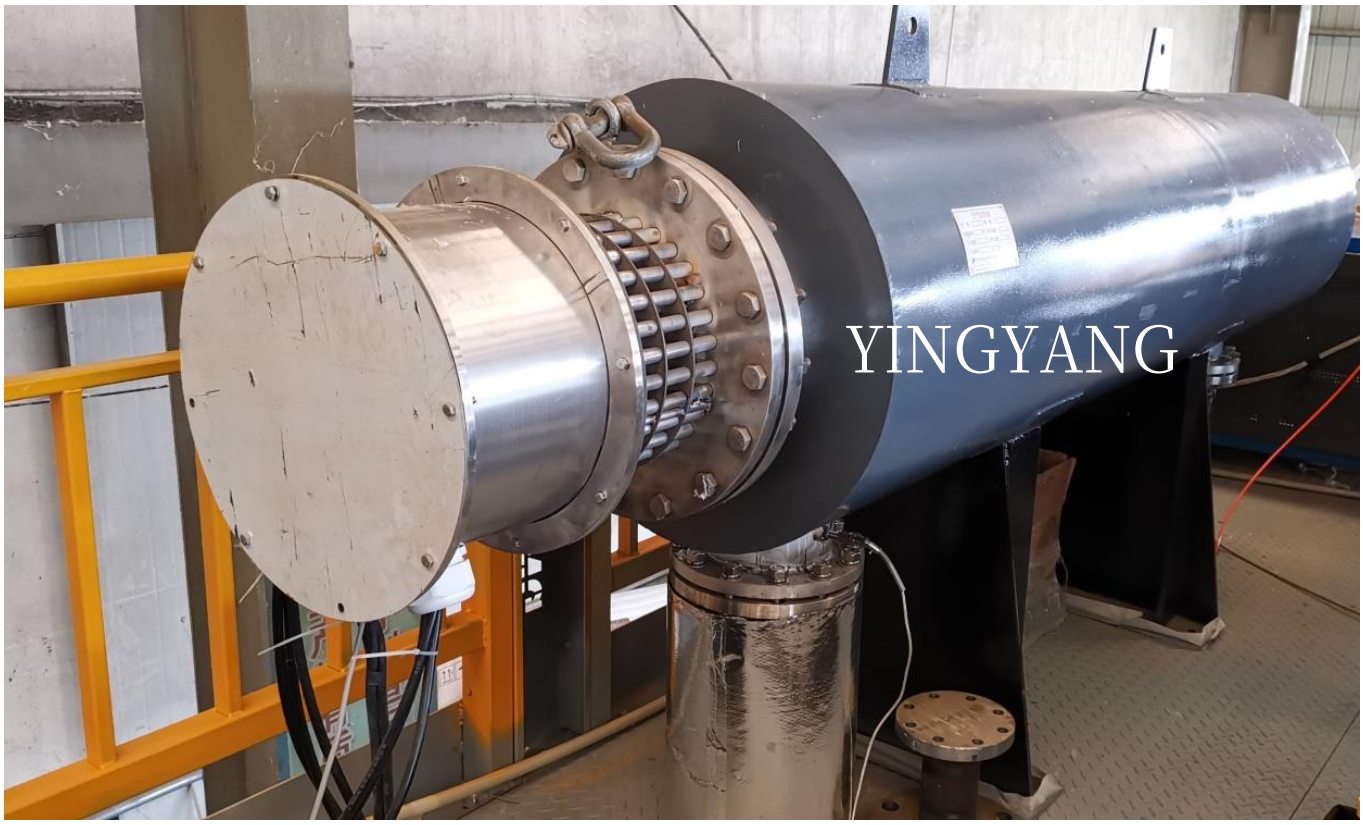
No	Item	Technical Parameter
1.	Die head heating power	45kw
2.	Hole diameter	0.30mm， Hole spacing is 35 holes per inch
3.	Hole number	About 2350
4.	Heater and detector	It can be removed and replaced quickly.
5.	Die head	Divided into 11 heating zones
6.	Temperature control meter	It is used to control temperature in each zone, solid state relay and thermocouple constitute closed-loop temperature control system, with the maximum working temperature of 300 ℃.
7.	Others	The die assembly adopts the quick installation mode.

8.	Others	One spare spinneret/Nozzle

6] High pressure Roots Blower **1 Set**

No	Item	Technical Parameter
1.	Capacity	30M/min
2.	Motor	90kw frequency conversion control
3.	Others	Equipped with filter muffler, check valve, pressure gauge, etc.

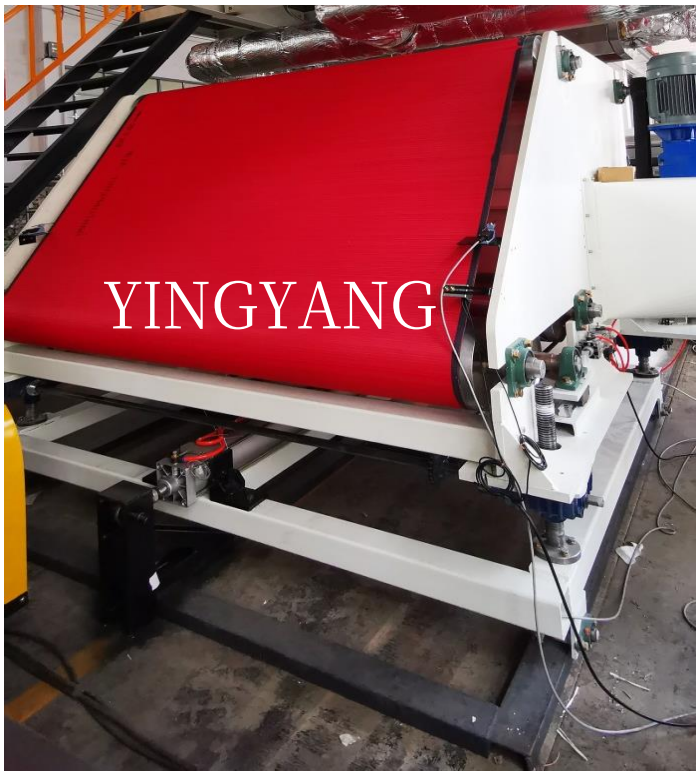
7] Air heater **1 Set**



No	Item	Technical Parameter
1.	Application	The device is used for heating draft air, made of stainless steel.
2.	Max Temperature	320℃， Withstand pressure 2bar.
3.	Heating Power	240kw.
4.	Temperature detector	To protect the heating element when the temperature is too high, and a pipe wall temperature protection to prevent accidental overheating.
5.	Compressed air Pipe	The compressed air pipe from air heating to the die head is stainless steel material. It is equipped with stainless steel expansion pipe joint, 20mm rock wool insulation layer and tin foil cover, flange, seal and on-site installation, and standard materials.
6.	Air heater material	Stainless steel, pressure PN10, surface insulation layer thickness 50mm, stainless steel cover.
7.	Temperature control meter	Used to control the temperature in each area, solid state relay and thermocouple constitute a closed-loop temperature control system, with accurate temperature control.
8.	Gas pipeline	The gas pipeline at the outlet of the heater is equipped with a temperature sensor and a digital temperature control

		meter.

8] Web forming machine	1 Set



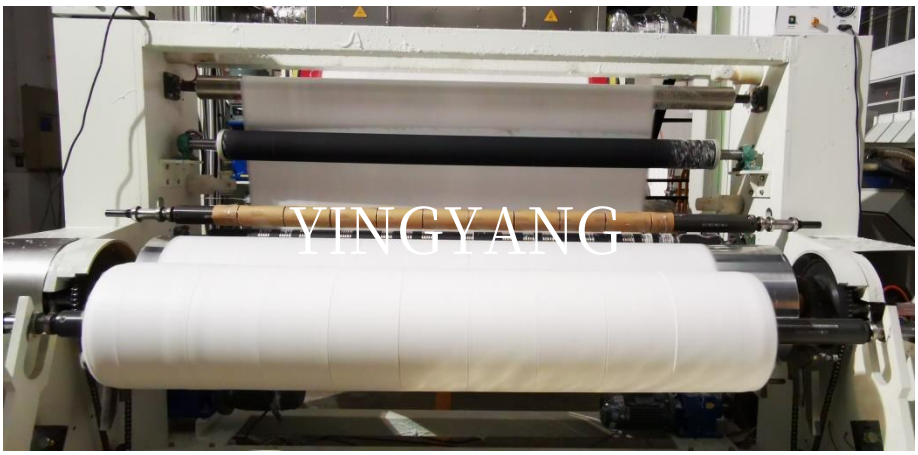
No	Item	Technical Parameter
1.	Blow volume distributing	Cross direction distribution is even, and the machine direction is distributed decreasing gradually from spray nozzle to the exit of web-forming machine.
2.	Delivery conveyor	Polyester conveyor, with automatic deviation rectifier
3.	Speed	≤30m/min
4.	Drive power	7kw
5.	Suction Fan	90kw

9] Electro static charging unit	1set

Working principle and Functions:

It is used to charge the melt blown fabrics with static electricity, which can produce a highly efficient adsorption effect on non-oily small particles of 0.3 micron with the same charge, thus increasing the filtering effect.

10] Winder and Slitter **1 Set**



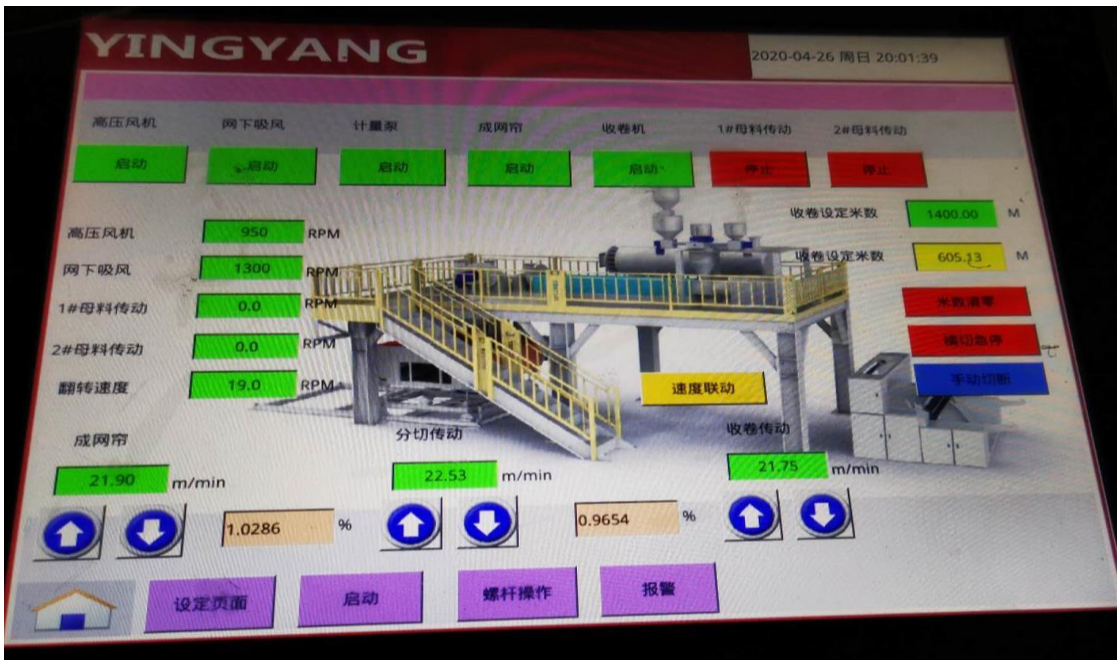
No	Item	Technical Parameter
1.	Operating width	1800mm
2.	Diameter of the maximum roll	ϕ1000mm
3.	Speed	≤30m/min
4.	Min width of slitting	150mm Reference: standard 175mm for 3ply medical mask 9rolls,250mm for N95 masks, flexible to cut in mix size to reduce the waste
5.	Main motor power	7kw

Note: All the Photos and power shown in this document is PROVISIONAL subject to final Order and manufacture.

11] Assistant equipment			
No	Item	Sets	Note
1.	Ultrasonic cleaning machine	1 Set	For spinnerets/nozzles cleaning
2.	Vacuum calciner	1 Set	

3.	Steel platform（Supply by seller）	1Set	On-site installation
4.	Pipeline （Supply by seller）	1 Set	On-site installation

12] Electrical control system 1set



No	Item
1.	The whole production line controlled by PLC human-computer, Interface via touch screen operation. The touch screen displays main technical parameters.
2.	Frequency transformer-Japanese *Nidec* brand
3.	PLC control-Japanese *Mitsubishi* brand
4.	Main electric components-*Siemens* brand

V. List of wearing parts：

No.	Spare parts name	quantity
1.	Spinneret screen	50 Pcs
2.	Filter mesh	5 Pcs
3.	Screw heating ring	6 Pcs
4.	Pt100	3 Pcs
5.	Web forming apron	1 Pc
6.	Spinneret heating tube	10 Pcs
7.	Tetrafluoroethylene (seal)	1 roll
8.	Conventional electrical spare parts Solenoid valve – 2 pieces Relay - 4 pieces Pressure sensor - 2 pieces Circuit breaker -- 2 pieces Reeling encoder - 1 piece	

Ⅵ.Common items

No.	Items	Descriptions and Remarks
1.	Power supply	Depends on order
2.	Power consumption	The installed power capacity of the whole production line is about: 590kw; 240-300kw is practically used.
3.	Workshop Space	More than 15m *8m*7m(L*W*H)
4.	Gross weight of complete line	Approximate 20 tons (exactly to be reconfirmed after loading into containers)
5.	Containers	Approximate 4pcs *40feet HQ (to be reconfirmed before shipment)
6.	Suitable Production Environment	For Stable High Quality Melt blown fabrics Production, it is required a Clean (Or Aseptic) Workshop environment with constant temperature and humidity controlled. Temperature controlled at about 25 ℃ (degrees) Humidity controlled below 47%, relatively Dry.

Ⅶ. Equipment installation and debugging

1. The mechanical and electrical installation for all the machines will be provided by the buyer and technically supervised by Yingyang engineers. The Seller shall be responsible for sending 2 engineers (1 electrician and 1 mechanic) to the Buyer's factory for the service in the period of 25 days based on the full preparation and support from the Buyer, and service cost is Extra charge.
2. The buyer shall prepare the following items to cooperate with the installation and commissioning for start-up：

(1) Provide sufficient-qualified engineers and helpers and qualified electrician for installation, and designate 2-3 competent personnel for machines operation and maintenance, who should attend the whole installation, commissioning and training.

(2) Pre book accommodation/hotel (above 3 star class) for seller personnel in a self-contained unit which includes beds, hot water, air conditioning, network services, cooking facilities. Provide food, transportation, medical insurance for engineers dispatched by the seller.

(3) The equipment is designed to fit into a clean room supplied by customer furnished with fire hydrant and etc. Foundation of workshop should be ready and suitable to seller's machines. Power supply and applicable switch boards.

(4) A separate clean and air conditioned room to put the electrical cabinets.

(5) Supply all the electrical cable and cable trays and all the installation from the main power & main panel to the electrical cabinet room.

(6) Tap water: water pressure at least 0.3mpa, mainly used for calcining furnace and ultrasonic wave, is to clean the spinneret, cleaning frequency, about once a week.

(7) Circulating water: mainly used for cooling screw inlet, reducer cooling and high-pressure fan bearing:

(8) Water tank: 3-5m³ (for cooling water circulation), water pump: 2 inches in diameter, about 20m head of delivery, water temperature: about 20-30℃

(9) Air compressor and all the compressed air ducting and installation.

(10) Thermal Insulation materials and installation.

(11) Complete installation tools and assisted transportation equipment such as hoist/crane/ forklifted/boom lifter for Installation and commissioning.

(12) Sufficient raw material and packing bags for the commissioning.

(13) Lubricant and Oil (Gear oil 220# /100#, Anti-wear hydraulic oil 46#

(14) Other fittings and civil facilities.

(15) Polypropylene chips/granules

(16) Paper tubes and packing bags

All above list items should be prepared well in advance before the engineers set off for installation.

Yingyang Nonwoven Machinery Co. LTD