

EX120/26D Extruder Line

Technical Specifications and Quotation Sheet

A. Main component brands

1. DC motor: Wangpai DC Motor
2. AC motor: Dongyuan inverter motor(used in paying-off control and vector)
3. Inverter: Huichuan vector inverter
4. DC speed regulator: Eurotherm U.K.
5. Temperature controller: RKC Japan
6. PLC: Siemens
7. Industrial interface: 15 inches Kunluntongtai
8. Bearing: NSK, NACHI, ASCHI, KOYO Japan
9. Other electrical appliance: National brands such as Renming

B. Production line parameters

1. Production speed: Max120m/min
2. Tensions of taking-up and paying-off: 20~1500NM
3. Inner diameter of conductor or cable core: $\Phi \sim 35\text{mm}$
4. Finished wire diameter: $\Phi 8 \sim 50\text{mm}$ (c.f. BVN-90 production range: 6~400mm²)
5. The production line center height:1000mm
6. Production line operation direction: right-hand machine, i.e., facing the extruding head, inlet on the left, outlet on the right
7. Total length of production line: no more than 52m

C. Components

1	EX120/26D extruder main machine	One set
2	Double zone deviation micro adjustable crosshead	One set
3	3.5M moveable water trough (hot water tank included)	One set
4	Cable head tractor	One set
5	24m single layer cooling water trough	One set
6	Production line electrical control system	One set
7	Wearing parts and spare parts	One set
Total price		RMB 443,000.00

D. Component descriptions

1. Crosshead vacuum pumping system

Vortex air pump is used to realize the condition of negative pressure, enhancing the quality of the protection shield (air pump type R6, motor power 1.5kw, motor power no load flow 306M³/hr, maximum pressure 8.7KPa/mbar).

2. EX120/26D Extruder main machine

1) Screw

Two screws are equipped. One is BM spiral screw. The feeding part is of new design.

Screw L/D ratio is 26/1, compression ratio for PVC and LDPE is 1/2.85, five-section heating, six-section machine body temperature measurement, cable materials such as LSHF, PVC, LDPE can be produced. The **extrusion volume** for PVC is 380Kg/H, for PE, 290Kg/H, and for LDPE, 260Kg/H. The other is low smoke halogen free special screw with the screw L/D ratio of 26/1 and the compression ratio for LSHF of 1/1.30.

2) Screw barrel material:38CrMoLA

Nitridated surface with hardness no less than HV850;

3) Heating

The six-section machine body heating is of cast aluminum heaters with air guide trough in the inner wall and air inlet trumpet in the lower part. Power for every heater is 2.2x2KW and for each section of heating a thermocouple is equipped. The cooling control is conducted by a 5-section high air pressure centrifugal fan. The model is DF-5, air volume 850M³/H, air pressure 102Pa. The fan motor is of 3-phase, 380V and 550W.

4) RKC Japan temperature controller is used to control the temperature, with the control range of 0~399°C and the control precision of $\pm 2^{\circ}\text{C}$.

5) Machine neck pressure and low temperature alarming devices are installed. Also included in the PLC is the function that is with the coded lock and that prevents the extruder motor from working if the temperature of any section of the machine body is below the set value.

6) Driving

120KW DC motor + PARK590 DC speed regulator control; screw rotational speed: 5~90rpm;

7) Gearbox

Italian style. Gear surface is of hardening treatment and grinding processing. Gearbox is connected to the screws by spline. Bearing brands: NSK, NACHI, ASCHI, KOYO Japan. Compulsory lubrication is achieved by an external gear oil pump with motor. The oil channel is equipped with pressure relay, pressure meter and observation window. The main machine cannot be switched on if the pressure in the oil pipe is below the set value.

8) The bracket of the fixed drying frame of the feeding mouth should be made of steel instead of cast aluminum. Water cooling mode is used in the feeding section.

9) Hopper dryer

Taiwan Shini SHD-200, effective removal of the moisture from the plastics.

10) Vacuum hopper loader

Taiwan Shini SAL-300C

11) Crosshead clip: European style three-piece incline positioning pinching clip, equipped with porous sieve.

3. Big volume type deviation micro adjustable double crosshead

1) Equipped with two outer die bases, one for LSHF and the other for PVC.

2) Right angle **deviation adjustable** double crosshead

Applicable to the production of the thin shield. The thickness of the LSHF shield can be as thin as 0.15~0.20mm.

3) Crosshead material

S136. The nitridated surface is of hardness no less than HV850.

4) Inlet range

The diameter of the crosshead inlet hole is $\Phi 40\text{mm}$.

5) Core shift regulation

Manual micro-regulation (outer die positioning case regulated by the screw)

6) Equipped with the auxiliary equipment heat gun. The crosshead is equipped with by-pass

relief valve.

- 7) Equipped with **extrusion head** positioning and moveable tractor mechanism.
- 8) Equipped with three sets of die core and die shield (big-sized, medium-sized and small-sized) for LSHF and for PVC respectively (altogether 6 sets). Also provided is a set of die drawing in the format of CAD. The concrete specifications of the six sets of dies is determined by the client's product specification.

4. Moveable water trough and hot water tank

- 1) Trough body and water tank material

SUS304 hairline stainless steel plate with a thickness of 2.0mm.

- 2) Trough shape

The trough is of double bowls. The big bowl is of L2.5M X W200mm X H180mm and is covered with sealed lid for efficient blowing. Compressed air is used for the water blowing. The moving volume of the small bowl is 1000mm.

- 3) The hot water tank

The heating is done by the electric heating tube, with a heating power of 2 X 2.5KW and the temperature of the hot water ranges from normal temperature to 90°C. A high temperature circulation water pump of model WM-05 is equipped. The specifications are: power 1/2HP, lift 28M, flux 42L/Min, pump weight 9kg, water temperature +50°C~160°C.

The hot water tank has the ports for the inlet tube, discharging tube and overflowing pipe. The outer surface of the hot water tank must have the alert sign of CAUTION: SCALD!

5. Cable auxiliary “running tractor” holder

The “running tractor” is directly erected on the U shape water trough, using the folding edges of the trough as the rails. This can solve the problem of water intake in the drawing of the cable head when the large-scaled cable is started up.

The tractor is the weld assembly of section steel, with 4 grooved pulleys with bearings. In the middle there are brackets and clips on which the cable head is put.

6. Cooling water trough

- 1) Trough material

SUS304 hairline stainless steel with a thickness of 2.0mm.

- 2) Trough shape

Straight line trough with a length of 24m and U shape intersection with the size of W200mm X H180mm.

- 3) The trough is of immersion type. Nylon guide rollers are installed in the proper position at each section of the trough. The rollers are fixed in the trapezoid trough and their heights are adjustable.
- 4) The outlet place at the end of the water trough is equipped with high efficient water blower. The independent vortex fan, which co-moves with the drawing, delivers the air. **The air pressure, air volume, motor power** (the motor power is no less than 2.2KW)
- 5) Every section of the water trough is equipped with a water outlet (with pipe thread) with the diameter of no less than DN80, which is connected to the pipe through the tee.
- 6) At both ends of the water trough are installed water receivers which are lower than the trough bottom. At the receiver bottom is the water outlet (with pipe thread) with the diameter of no less than DN80.
- 7) Each section of water trough is equipped with a water retaining plate, enhancing the water level and strengthening the cooling.

7. Production line electrical control system

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- 1) Hardware settings
15" Kunluntongtai colorful industrial touch screen+PLC(Siemens 226).
 - 2) Internal closed-loop control for the forward and backward drawing
The forward drawing is the main drawing and the backward is auxiliary. The control is of the mode of speed and tension control, achieving the proportional synchronization of the acceleration and deceleration of the main machine, auxiliary machine and drawing.
 - 3) The control of the taking-up is of the mode of speed and tension control. The wire arranging pitch and the tension value can be set and adjusted on the TD-200 text display on the taking-up rack. Control.
 - 4) The control of the whole production line is of Z4 DC and 590 control system.
 - 5) Procedure control
Real-time collection and display of all technical and control parameters on site. Parameters can also be put into storage, with storing groups of 2-15.
 - 6) All through quality control
Real-time error detection and automatic alert(sound and light alarm light).
 - 7) Online setting and adjustment of the technical parameters.
 - 8) User-friendly interface and easy operational method.
 - 9) On-site monitoring software system.
 - 10) Simulation main picture of the production line(dynamic display of the outer diameter parameters and speed, etc.)
 - 11) Meter counting and tension setting picture.
 - 12) Driving speed regulation running monitoring picture.
 - 13) Error alarm picture.
 - 14) Operation instruction documents.

E. Spare part list

1. Dies accompanying the machine (specifications to be provided by the client)	2 sets for each
2. $\Phi 120/70$ machine body heater	1 piece for each
3. Crosshead heating bar	1 set
4. Thermocouple	2 pieces
5. Re-lay (normal specification)	5 pieces
6. Button (normal specification)	3 pieces
7. Indication light (normal specification)	3 pieces
8. Crosshead withdrawal tool	1 set
9. Screw withdrawal tool	1 set

F. Machine color

All outer appearance colors are in accordance with the RAL-K5 color card Series.

1. The fixed part of paying-off rack, forward drawing, straightening device, extruder main body, extruder auxiliary machine, water trough bracket and paying-off and wire arranging bracket is RAL-5015 azure.
2. The exposed revolving parts (tension pulley, taking-up and paying-off rack portable plate, etc.) and the protection part such as the protection shield are RAL-2007 orange.
3. The stainless steel parts such as the water trough, the extruder screw protection shield

are of plain colors.

4. The electrical parts such as the electrical cabinet, the operation panel, the connector box, the button box and the wire groove, and the feeding dryer are RAL-7038 computer grey.

G. Technical documents

The following documents are to be provided to the client:

1. Production line installment and regulation Manual 1 copy
2. Production line Operation Manual 1 copy
3. Production line overall plain layout drawing(plain and vertical) 1 copy
4. Production line embedded electrical, water and air circuits 1 copy
5. Production line electrical principal drawing and connection drawing 1 copy
6. Explanation of the production line lubrication point drawing, lubricant brand and lubrication interval 1 copy
7. Chinese manual for the production line DC speed regulation device, inverter and PLC 1 set
8. The manual for the caliper and the flame detector as accessories to the production line 1 set
9. Specification list for the main electrical components used in the production line 1 copy
10. The specification and the factory information of the bearing and the synchronizing belt used in the production line 1 copy
11. Production line shipment packing list 1 copy
12. Production line inspection certificate 1 copy
13. Back-up CD of the operating software of the production line 1 set