


*Leading the global wire and cable industry with intelligent manufacturing and new materials.*

## 1、ADVANTAGE

	<p style="text-align: center;"><b>ADVANTAGE</b></p> <ol style="list-style-type: none"> <li>1、 Competitive price</li> <li>2、 No installation, no foundation, take model design including electrical wire 、 water pipe and air pipe . only connected can start to work because already test running before shipment.</li> <li>3、 Local after sales service because shineworld set up aboard after sales office and has 4-5 local engineer.</li> <li>4、 En-joyful buying because professional team</li> </ol>
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## 2、 How to choose model

Cross Section	Material	Extruder Model	Extruder Speed	Coiler Speed	Printer Speed	Line Speed	
1.5-6 mm <sup>2</sup>	PVC	70/80+1246	600-1000	350	500	200	
10mm <sup>2</sup>	LSZH	80+1246					
1.5-10mm <sup>2</sup>		80+1246					
10-35 mm <sup>2</sup>	Copper	80/90+1860					
10-95 mm <sup>2</sup>	Aluminum						
1.5-6 mm <sup>2</sup>	PVC	70/80	600-1000		500	500	
10mm <sup>2</sup> -35mm <sup>2</sup>	LSZH	80					
1.5-10mm <sup>2</sup>		80/100					
10-35 mm <sup>2</sup>	Copper	80/90					
10-95 mm <sup>2</sup>	Aluminum						
10-240 mm <sup>2</sup>		90					
50-630 mm <sup>2</sup>		120					
5X240 mm <sup>2</sup>		120					
5X630 mm <sup>2</sup>		150					300-500

**3、QUOTATION**

SN	DESCRIPTION	QUANTITY	FOB SHANGHAI UNIT PRICE/USD	FOB SHANGHAI AMOUNT/USD
1	100+60 high speed Jacketing line Model: SW100+60	1.00SET	161,150.00	161,150.00
<b>TOTAL:</b>				<b>161,150.00</b>

**REMARK:**

- 1, The detailed specification will be integral part of this quotation.
- 2, Price basis: Price are for delivery FOB shanghai, China according to INCOTERMS 2010. And the exchange rate for USD: RMB is 1:6.60. If the exchange rate is changed over 0.5%, the quotation will be adjusted accordingly even in the validity time.
- 3, Validity of quotation: the quotation is validly within 30 days after issue date.
- 4, Delivery period: the delivery time is 30 days after receipt of your down payment and clarification of all technical and commercial details. The agreed delivery period is subject to the punctual receipt by us of all equipment, documents approvals release and services to be furnished by buyer for the performance of the order.
- 5, The quotation is based china standard material and package.
- 6, The buyer should provide:
  - λ The water pipe, compressed air pipe used in site. And response to connect with the machine corresponding connectors.
  - λ All the Wire and cable between transformers to the electrical cabinets.
  - λ Installation.
- 7, The following are not included in the scope of our supply:
  - λ The preparation of the site with all the necessary foundation work and ceiling openings etc.
  - λ The connection cables from the mains to the switch unit and from this to the various motors and auxiliary units of our equipment.
  - λ The electrical installation including the required safety devices outside the machine and switch unit.
  - λ The connection pipes, gravity feed hoppers etc., between the various units supplied by us.
  - λ Any required frames, platforms, suspension devices, etc., the operation media such as oil, grease etc., as well as raw material for the stating up and operation.
- 8, The parties agree that any claim to compensation for loss of profit as well as for indirect damage and consequential damage, on the basis of whatever legal ground, are excluded. This shall not apply if legal.
- 9, All equipment and technical service technical training are expressly stated in our quotation.
- 10, All supervision of installation & commissioning charge (include visa cost, insurance, round tickets, subsidy worked in the buyer's factory; around 2-3 engineers include 1 project manager, worked around 1 months). But the buyer bears expenses of accommodation, local transportation, food, sim card & Wi-Fi for the seller's engineers for installation commissioning & technical training. Because of COVID-19, these cost will be charged separately.

- 11, all the bank charge is paid by buyer .
- 12, all the options device is not included in the above offer.

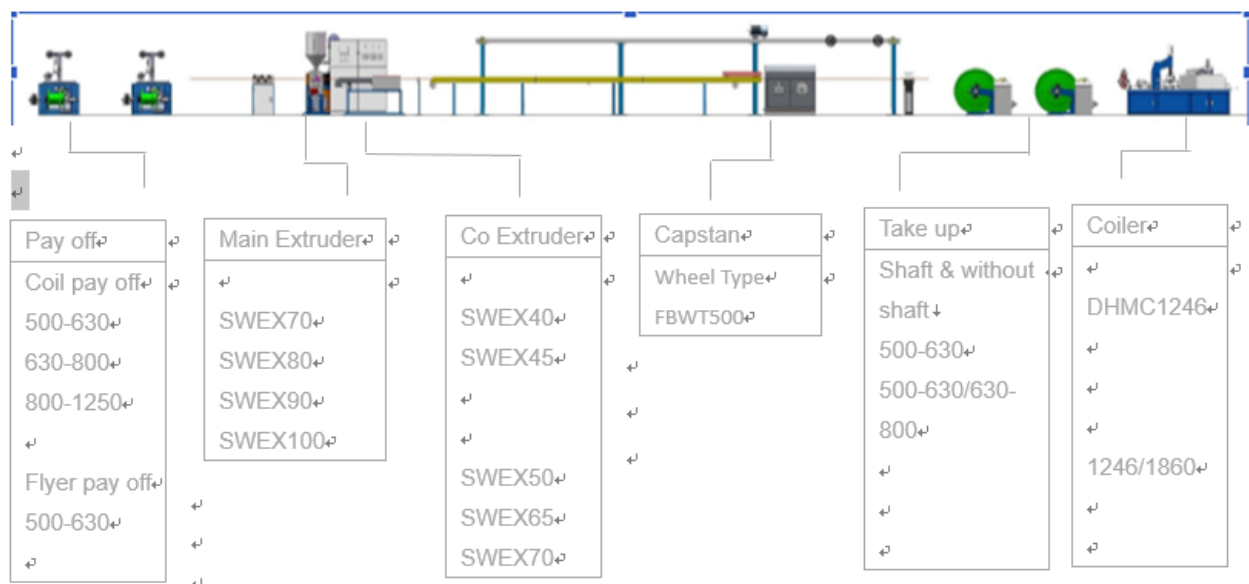
#### 4、SPECIFICATION

### SW 100 +60 high speed wire Jacketing line

#### 4.1. General description

This machine is used for **PVC/PE/XLPE/HFFR** cable high speed insulation extrusion, mainly use for flexible cable/hard wire/building wire/housing wire/power cable. It can product one color fill, two colors stripe/skin insulation cable.

#### 4.2. Product lay out drawing Line direction



#### 4.3、 Main Technical Parameter

4.3.1	Process materials			<b>XLPE</b>		<b>PVC</b>	
4.3.2	Line speed	100m/min					
4.3.3	Screw rotate speed	10-80RPM/min					
4.3.4	Maximum extruding capacity	100x26Dmm extrusion volume:550KG/HR, 60x26D extrusion volume: 80KG/HR					
	<b>Size</b>	<b>Conduct or OD</b>	<b>Thickness mm</b>	<b>Finished OD</b>	<b>XLPE SPEED</b>	<b>LSZH SPEED</b>	<b>PVC SPEED</b>

					m/min		m/min
	3*6mm <sup>2</sup>	17.0	1.5	20.0	60		80
	3*50mm <sup>2</sup>	32.5	1.7	36	50		70
	3*185mm <sup>2</sup>	46	2.5	51.8	30		40
4.3.5	Max output		1 screw for 100*25		400kg	350kg	450kg
			1 screw for 60*25		140kg	70kg	180kg
4.3.6	Motor Power						110kw/ 22kw
4.3.7	Conductor size range		compacted & flexible copper conductor		The O.D range:10mm-70mm		
4.3.8	Cross section area(mm <sup>2</sup> )		Up to 3*185mm <sup>2</sup>	Cross head size		10-70mm	
4.3.9	Finished cable diameter		Output Dia.(mm) Max Φ65mm				
4.3.10	Applicable cable type		Jacketing				
4.3.11	Axis cable height		1000mm				
4.3.12	Voltage		3 phase -5 wires. AC380/415V (±10%),-50/60HZ, according to customer's standard.				

#### 4.4、 Production line specification

SN	Item	Technical data	
4.4.1	Line direction(based on customer's requirements)	A. Left pay off , Right take up or B. Right pay off , Left take up	
4.4.2	Coating Color	machine body	RAL5015
		Rotation parts	RAL2004, orange
		Electrical cabinet	RAL7035
4.4.3	Consumption	Power consumption	150KWA
		Water consumption	300L/min
		Air consumption	Min, 6Bar
4.4.4	Bobbin	Pay off	Take up
	Flange	PN800-1250mm	PN800-1000mm
	Barrel	398-630mm	398-490mm
	Bobbin width	600-900mm	600-750mm
	Traverse width	500-800mm	500-630mm
	Bobbin Bore	127-80mm	127-140mm
	Bobbin Material	Steel	Steel

4.4.5	Lubricant	220# for all gear box	220# for all gear box
4.4.6	Electrical control cabinet	PLC+HMI	PLC+HMI
4.4.7	Operator	Two workers for one line	Two workers for one line
4.4.8	Heating	Heating/cooling zone	6
		Heating power	54kw
4.4.9	Cooling system	Material	SUS 304
		Type	Single layer, Single Spraying
4.4.10	Caterpillar	11KW, frequency motor	
4.4.11	The water trough length	4+16m single layer	
4.4.12	Take up	7.5kw, frequency motor	
4.4.13	Operator	2 Operator	
	Maintenance duration	Every structure of the shafts ,chained wheels and chained piece should add Ca n°3 lubrication, one time per monthBearings of the idler pulley should add Ca n°2 lubrication grease every three months	
4.4.15	Complete set of production-line installation length of the 32-38 meters		

#### 4.5、Electrical Technical Parameter

4.5.1	Making Norm	EN 60204
4.5.2	Safety level	EN954-1
4.5.3	Working voltage	AC380/415V (±10%),-50/60HZ,
4.5.4	Power frequency	50/60HZ ±1%
4.5.5	Voltage fluctuation	-10% +5%
4.5.6	Zero wire	3 phase with neutral ,without earth
4.5.7	Control voltage	24V DC
4.5.8	Solenoid Valve Voltage	24V DC
4.5.9	Lamp Voltage	24V DC
4.5.10	Cabinet inlet	According to customer's standard
4.5.11	Power supply	According to customer's standard
4.5.12	Control	Main switch SIEMENS 3VT type
4.5.13	Driven	SIEMENS, all closed loop control
4.5.14	Environment Temp	10-40℃
4.5.15	Air humidity	DIN 40040 F level
4.5.16	Assemble height	Till 1000mm

4.5.17	Heating Resistance zone insulation instruction	NO			
4.5.18	Electrical control cabinet	Electrical control cabinet			
<b>4.6、 Configuration</b>					
<b>4.6.1、 Main configuration</b>					
No	QTY	Unit	Name	Size	Function
4.6.1.1	2	set	Cantilever PN800~ PN1250mm pay off	with magnetic powder tension	Payoff
4.6.1.2	1	set	Column type pay off (With foundation)	800-1600	Payoff
4.6.1.3	1	set	Butt welder	0.5-2mm	
4.6.1.4	1	set	Butt welder	2-6mm	
4.6.1.5	1	set	1250 Caterpillar	1250Kg	Straighten cable Before coated
4.6.1.6	1	set	High speed extruder	Φ100×25Dmm	Extrude wire
4.6.1.7	1	set	Barrel pressure sensor		
4.6.1.8	1	set	Horizontal aux. Extruder	Φ60x25Dmm	Extrude wire
4.6.1.9	1	set	Fix centering crosshead with fine adjust	Φ10-70mm	
4.6.1.10	1	set	Single-axis laser diameter gauge	0-100mm	
4.6.1.11	1	set	Thermal cycle primary-secondary moving water trough	4m	Cooling wire
4.6.1.12	1	set	Drying system	5.5Kw Blower	Drying system

4.6.1.13	1	set	Single layer spray type water trough	16M	
4.6.1.14	1	set	1600 Caterpillar	1600Kg	Tract Cable
4.6.1.15	1	set	Printer		Print words on the cable
4.6.1.16	1	set	Spark tester	25KV	
4.6.1.17	1	set	Column type pay off (With foundation)	1250-2000	Take-up
4.6.1.18	1	set	Automated electric cabinet	PLC Type	
4.6.1.19	1	set	Stairs	Four steps	Check hopper
4.6.1.20	1	set	Withdrawal tool for screw	100+60	Withdrawal tool easily
4.6.1.21	1	set	Big tool box	1000*500*1200	Tools
4.6.1.22	1	set	PVC/PE screw	Φ100	Extrude cable moulding
4.6.1.23	1	set	PVC/PE screw	Φ60	Extrude cable moulding
4.6.1.24	1	set	XLPE screw	Φ100	Extrude cable moulding
4.6.1.25	1	set	XLPE screw	Φ60	Extrude cable moulding
4.6.1.26	1	set	HFFR screw	Φ100	Extrude cable moulding
4.6.1.27	1	set	HFFR screw	Φ60	Extrude cable moulding

**4.6.2、 Parts list**
**4.6.2.1.Motors and Inverter**



	Motor Type/Power	Inverter Type/Power	Manufacture
Main extruder 100mm	110kw AC	Siemens or Yaskawa	Siemens Beide
extruder 60mm	22KW AC	Siemens or Yaskawa	Siemens Beide
Cooling water trough	27.37KW AC	Siemens or Yaskawa	Siemens Beide
Drying system	4KW AC		Chinese famous brand
1600 Caterpillar	11KWAC	Siemens or Yaskawa	Siemens Beide
Column type pay off (With foundation)	7.5KWAC	Siemens or Yaskawa	Siemens Beide

**4.6.2.2.Other**

	Manufacture		
Gear box	Chinese famous brand		
Main Low-voltage components	Schneider and Chinese famous brand		
PLC (all)	SIEMENS S7-200 smart		
Touch screen	Siemens or MCGS		
Temperature unit	RKC		
Solid relay	Fotek or Chinese famous brand		

**4.7. Specification for the main components (Scope of supply Specification)**
**4.7.1.PN800-1600mm Column type pay off (With foundation)**

	Name of product	Type/None			
4.7.1..1	Speed	Max:100m/min			
4.7.1.2	Bobbin size:	PN800-1600mm			
4.7.1.3	Loading/unloading	BLY120-35-0.75KW with Cycloidal reducer			
4.7.1.4	Cable OD.	7-70mm			
4.7.1.5	Max. loading	2.5T			



4.7.1.6	Tension	10Kg tension and adjustable
Pay-off tension is controlled by mechanical friction and adjusted by hand operation.		
The whole equipment is installed on the iron plate without additional foundation		



#### 4.7.3 Cantilever PN800~PN1250mm pay off

Bobbin size:	PN800- 1250mm
Bobbin lifting cycloid reducer:	BLY120-35-0.75KW
Column moving cycloid reducer:	BWD120-35-0.75
Speed	Max:200m/min
Clamping	Pneumatic
Tension: 10 kg magnetic tension and adjustable	



4.7.5	1250 Caterpillar
Cable dia:	Max: $\phi$ 70mm
Max traction:	1250KG

Traction speed:	100m/min
Tract length of the contact:	1500mm
Caterpillar specification:	20*120*4930mm
Tension control:	20KG magnetic power clutch
Cylinders quantity:	5pairs
Equipment center height:	1000mm

Structure: The traction machine for the pneumatic compression and automatic tensioning traction belt, driven by Z4-11kw DC motor + K87 series of spiral bevel gearbox to achieve, traction speed and the former traction, extruder speed synchronous control, stable and reliable. Traction belt for the two seamless reinforcement within the belt, configure the instantaneous line speed and cumulative length of the display instrument. Traction machine power section with guardrail.



#### 4.7.6 SW 100 high speed Extruder

<b>Screw data</b>	
Diameter	100mm
Length-diameter Ratio:	25: 1

	Screw structure	BM
	Max speed	10-80RPM
	Screw rigidity	reach HV900
	Material	38CrMoAIA, nitrogen treatment; (Nitride depth:0.6)
	Output with PVC	450kg/h $\pm$ 5%
	Output with XLPE	$\leq$ 400KG/H
	suitable extrusion material	PVC, PE, XLPE, HFFR
	Screw roughness:	0.8
	Temperature sensing point:	6 position
	Cooling	By water , 6 high-pressure centrifugal windmills, 6 Barrel each segment, blanking segment water cooling,
	Screw connection	Adopt spline connection
<b>4.7.7</b>	<b>Barrel data</b>	
	N. of heated/cooled zones	6
	Heating power for each zone	4.5KW
	Total heating power	27KW
	Material	38CrMoAIA, nitrogen treatment; (Nitride depth:0.6)
	Temperature adjustment up to	0-399°, $\pm$ 2°; Japan PKC thermometer + relay control;
	Heating system	electric resistances
	Cooling system	6 high-pressure centrifugal windmills, 1 Barrel each segment, blanking segment water cooling,
	Hardness:	HRC60-63 degrees;
	Screw roughness:	0.8
	Barrel pressure sensor:	PT124B-50MPa-M14-370/150, 0-10VDC, with 5 cores, 6 m plug wire, mounting bracket
<b>4.7.8</b>	<b>Electric parameters</b>	
	Driven motor	110KW , Siemens AC motor
	Barrel cooling electric fan	750W/AC380V
	Temperature controller	RKC

<b>4.7.9</b>	<b>Others</b>	
	Gearbox	nodular cast iron
	Gear	Gearbox built up with helical toothed gears in Ni Cr steel, casehardened and ground.
	Gear lubrication	Oil feed forcibly by gear
	Clamps	The machine is composed by a heated clamp having manual closing to be coupled to the crosshead.
	Chuck	<p>a. Type: Three-pcs round clamping, automatically centering, built-in heating rod heating</p> <p>b. Locking direction for anti-clockwise;</p> <p>c. Chuck's operation is very convenient, and the wear-resistant, and greatly enhance conventional screw-connected, difficult to wear rubber drain.</p> <p>d. With high-speed positive and negative wrench, easy to operate.</p> <p>e. Chuck's locking developed on the basis of home's and abroad's similar structure to develop, according</p>
	Cross head:	<p>It adopts the latest three-claw head, built-in heating, and has a fast color stripping function.</p> <p>Crosshead is made of imported S136 heat-resistant anti-corrosion alloy steel. After oxidation treatment, the surface is plated with hard chrome.</p>



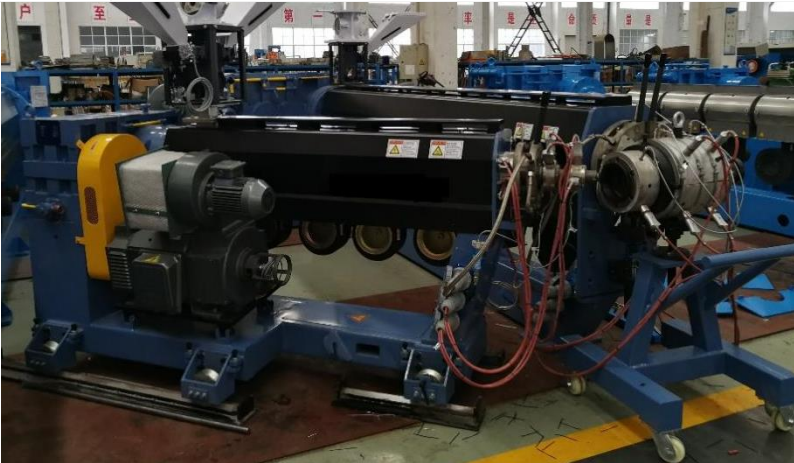

**4.7.10 Hopper & Loading system**

<b>Model No.:</b>	<b>SCM-12/16-D+MS</b>
Dryer capability:	600kg/h
Loading capability	800kg/h
Material	stainless steel container
Voltage specification:	230VAC/50HZ

**4.7.11 60x26D Horizontal aux. Extruder:**

<b>4.7.11.1 Screw data</b>	
Diameter	60mm
Length-diameter Ratio:	25: 1
Screw structure	BM
Max speed	100RPM
Screw rigidity	reach HV940
Material	38CrMoAlA, nitrogen treatment; (Nitride depth:0.5-0.8)
Output with PVC	≥70KG;
Output with PE, XLPE, HFFR	≥60KG;
Screw shape:	BM type

	Screw cylinder:	material: SACM-1, nitrogen treatment, depth of nitridation: 0.5-0.8mm;
	Electric heat of screw cylinder:	adaptable voltage: 380V/50HZ, electric heat of 3 cast aluminum, power: 4x2.8KW.
	Cooling method of screw cylinder:	4 centrifugal fans, power: 380W
<b>4.7.11.2</b>	<b>Barrel data</b>	
	N. of heated/cooled zones	4
	Heating power for each zone	4*2.8KW
	Heating power	AC380V 50Hz
	Total heating power	11.2KW
	Material	SACM-1, nitrogen treatment; (Nitride depth:0.5-0.8)
	Temperature adjustment up to	350 (±1°C) °C
	Heating system	electric resistances
	Cooling method of screw cylinder:	4 centrifugal fans, power: 380W
	Barrel pressure sensor:	PT124B-50MPa-M14-370/150, 0-10VDC, with 5 cores, 6 m plug wire, mounting bracket
<b>4.7.11.3</b>	<b>Electric parameters</b>	
	Driven motor	22 Kw dedicated AC variable frequency motor.
	Temperature controller	RKC
	Others heated zones	2 zones for neck
<b>4.7.11.4</b>	<b>Hopper &amp; Loading (manual)</b>	
	Hopper loader made up of stainless steel plate, placed on the material inlet zone, material is feeding by manual.	
	Reduction gear box: Adopt abrasive hard-tooth-surface bevel wheel, and oil seal adopts the imported product.	
<b>4.7.11.5</b>	<b>Others</b>	

	Lubrication for gearbox: Enforce oil into gear.
	Rising and falling: Motor drive, screw mandrel rises and falls automatically, with travel switch limit, travel height: 100mm.
	Shift motion: 200mm, move mode: linear bearing + line slide rail, rotation angle: 180°.
	Collet shape: Threaded-type double-sided clamping, heating mode: Heating inside electrical bar made of imported material; Voltage: 220V, temperature measuring point: Position 1.
	Hot gun: Connected to crosshead by 90°, electric heating bar inside heating voltage: 220V, power: 800W, temperature measuring point: 1, heating gun power: 2000W, temperature measuring point: 1
	

#### 4.7.12 Crosshead

	Model	
	The main characteristics	Single layer
	Fix and Centering	Manual centering
	Inlet wire range	7.0-65.00mm
	Finished wire range	10.0-70.00mm
	Crosshead: It adopts the latest three-claw head, built-in heating, and has a fast color stripping function.	
	Crosshead is made of imported S136 heat-resistant anti-corrosion alloy steel. After oxidation treatment, the surface is plated with hard chrom	




**4.7.13. Single-axis laser diameter gauge-Proton Brand**

Model	DDM-100
Measurement range	Max. OD 90mm
Recommend measurement range	5-80mm
Measurement precision	+/-0.001
Centering height	1000mm
Advanced features	A. RS232- directly from the caliper B. GLASS LOGIC- Measuring transparent objects
Power requirements:	24VDC
Optional communication protocol:	Modbus RTU

**4.7.14 Ribbon hot printer**


Print type:	Ribbon print
Dia. range	Φ6-100mm;
Max line speed	100m/min
Power	380V, 50Hz
Heating power	0.4Kw
Heating temperature	80-120°C

Center height	1000mm, up-down adjustment
Hot-press printing ribbon printing, clear script, good adhesion, not apt to erase and superior to the ink printing method;	
Meter figures of printing alphabet blocks adopt electric heating and temperature control regulation system is equipped for convenient adjustment, high precision of temperature control and stable printing quality;	



#### 4.7.15 Cooling trough

4m primary moving water trough and tank	
Suitable for wire diameter	Max 70mm
Centering height	1000mm
Material	SUS304 stainless steel
Total length	4m
Moving range	800mm
Cooling way	spray and water immersion, built-in V-type bracket;
Circulating water tank:	ot water booster pump hot water circulation, water tank (double insulation) effective capacity 0.18m3;
Heating power	15kw;
Water temperature control:	the system controls the temperature, ensures the

		constant temperature control from room temperature to 80 degrees, and the water level relay performs water level control;
	Groove size:	U type (high) 140* (wide) 150
	Sink power:	$2*6+0.37=12.37\text{kW}$
	Anti-surge:	low noise, less than 70 decibels, high-speed anti-surge;
		
<b>4.7.16</b>	<b>Drying system</b>	
	Adaptation wire diameter:	Max $\phi$ 70mm
	Air pump:	5.5kw;maximum air volume 450m <sup>3</sup> /h
	Drying method:	using three-stage dehydration, firstly, the energy supplied by compressed air is strongly dehydrated by two square water blowers, and then the positive and negative pressure generated by the vortex air pump blows and sucks the outer surface of the wire to achieve final dehydration.
	Cabinet:	Made of high quality 304 stainless steel with built-in silencer to eliminate noise
	Air filter barrel:	Made of high quality 304 stainless steel, it adopts a unique design to filter the water in the circulating air; the water level is controlled by the liquid level meter and is automatically drained by the water pump.

<b>4.7.17 Single layer fixed water trough</b>		
	Suitable for wire diameter	Max 70mm
	Centering height	1000mm
	Dimension (mm)	U type: (high) 280* (width) 320
	Material	SUS304 stainless steel
	Total length	16m
	Cooling way	spray type, configuration V-type bracket
	Blow type	Multi-head claw-type blow-drying of the blow-drying head, which is placed in the stainless steel box and connected to the water tank.
	Drying type	Dry with vortex fan
<b>4.7.18. 1600 Caterpillar</b>		
	Cable dia:	Max: $\varnothing$ 70mm
	Max traction:	1600KG
	Traction speed:	80m/min
	Tract length of the contact:	1500mm
	Caterpillar specification:	20*120*4930mm
	Motor	11kw AC motor
	Cylinders quantity:	6pairs
	Equipment center height:	1000mm
	Structure: The traction machine for the pneumatic compression and automatic tensioning traction belt, driven by Z4-11kw DC motor + K87 series of spiral bevel gearbox to achieve, traction speed and the former traction, extruder speed synchronous control, stable and reliable. Traction belt for the two seamless reinforcement within the belt, configure the	

instantaneous line speed and cumulative length of the display instrument. Traction machine power section with guardrail.



#### 4.7.21. Spark tester

Model	ST-25A
Dia. range	Max $\Phi 55$ mm;
Voltage:	2.0-25.0KV
Voltage indication error	<5%
Detection sensitivity	<600uA
Detection resolution	0.05s
Max detection speed	150/540m/min(UL/GB)
Tested electrode length:	450MM
Breakdown sensitivity:	0.6mA
Center height:	1000MM (Non-ajustable)
Ignition coil:	oil immersed
Machine base:	foot cup


**4.7.23. PN1000-2000mm Column type take up (With foundation)**

4.7.13.1	Name of product	Type/None
4.7.13.2	Speed	Max:100m/min
4.7.13.3	Bobbin size:	PN1000-2000mm
4.7.13.4	Loading/unloading	BLY120-35-0.75KW with Cycloidal reducer
4.7.13.5	Cable OD.	7-70mm
4.7.13.6	Max. loading	2.5T
4.7.13.7	Motor	7.5KW Siemens AC motor
4.7.13.8	Control	7.5KW inverter
4.7.13.9	The whole equipment is installed on the iron plate without additional foundation	
4.7.13.10	Main electrical panel and suspended control panel are on the machine	
	Take up moves for traversing, driven by AC motor, frequency inverter control, traversing speed follows take-up speed, traverse pitch is step-less.	





#### 4.7.24. Electrical control system

<b>4.7.14.1</b>	<b>Control system overview</b>	
	Control cabinet	Rittal design, painted colors RAL 7035
	Cabinet size	L(3200)*H(2000)*W(500)mm
	Cable inlet	Main power supply cables and all extruder cable entering from the bottom; All other part's control and power cable enter from the top.
	Power supply three phases	AC 380V 50Hz
	Low control power supply	AC 220V 50Hz
	Lamps, buttons, sensors	24 Vdc
<b>4.7.14.2</b>	<b>Auxiliaries circuits brands</b>	
	Motors	SIEMENS Beide brand
	Drivers	SIEMENS or Yaskawa
	PLC + HMI	SIEMENS or MCGS
	From the most recognized international brands: Schneider or Chinese famous brand	Main circuit breaker, Contactors, Auxiliary relays, Safety gates control block, Push buttons (Ø 22 mm), Proximity switches, Limit switches, Terminals, Encoders, Lamps
<b>4.7.14.3</b>	<b>Control Function Description</b>	
	Operation	Manual, Synchronous or automatic mode
	Main PLC	Connect with drivers and HMI by profinet; It takes all the controls and inspections of the whole line, provides strong and complete control capabilities



	Main HMI	HMI for all single part; HMI for all production data; HMI for Alarm message; HMI for control when button broken; HMI for maintaince; HMI for production monitor
	Alarm information	Motor driver fault; Cooling fan overload; Motor fan overload; E-stop alarm; Wire OD. Overflow alarm;
4.7.14.4	PLC Siemens S7-200 smart connected in Profinet with external and internal components as drives, video-keyboard, and remote PLC, or any other.	
4.7.14.5	Safety relays for emergency kept electro-mechanical outside the PLC.	
4.7.14.6	Operator panel, to be fit in a suitable position close to the drawing machine, with all push buttons and lamps needed for the easy and correct use of the line supplied with a HMI Display.	
4.7.14.7	The software used is custom made to suit all needs for an easy use by the operator or by the technician.	
4.7.14.8	Cooling fan is controlled by the temperature control meter to make the temperature curve straight.	
4.7.14.9	The counter receives the pulse signal sent by the meter counter. The ratio of code length to pulse number can be adjusted freely, which can count the length conveniently and accurately. At the same time, it also has the meter prediction function to make the operator more comfortable.	
4.7.14.10	Automatic process control: operated by touch screen and assisted by buttons.	



## 5. SPARE PARTS

SN	Description	Qty.
5.1	Barrel heater for EX100 Barrel heater for EX60 Crosshead heating circle and rod	1Set
5.2	Thermocouple	1pc each model
5.3	Solid relay	1pc each model

5.4	Auxiliary relay	2pcs
5.5	Crosshead wrench	1pc
5.6	Inner hexagon wrench	1set
5.7	Monkey wrench	1pc
5.8	Slot type screwdriver Cross screwdriver	1pc each model
5.9	Tool box	1pc
5.10	Foundation screw and fixed screw	1set
5.11	Honeycomb sample	1pc
5.12	Screwdriver hex socket wrench and other common tools	1set
<b>6、ENGINEERING DOCUMENTS</b>		
6.1	Lay-out drawing in printed and CAD Version	1 set for each
6.2	foundation drawing in printed and CAD Version	1 set for each
6.3	Operation Manual in printed & digital copy	1 set for each
6.4	Sourcing Equipment Operation Manual	1 set for each
6.5	Electric Drawing in Digital and Printed Copy	1 set for each
6.6	Wire Diagram list in Digital	1pc
6.7	Maintenance Plan	1set
6.8	Certification of Test Equipment	1pc

**SHANGHAI SHINEWORLD ENGINEERING CO., LTD.**

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