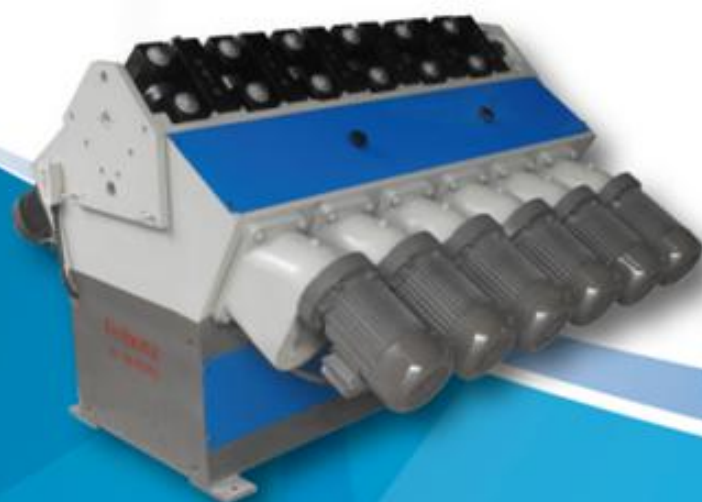


**肇庆市飞虹机电设备有限公司**  
ZHAO QING CITY FEI HONG MACHINERY & ELECTRICAL CO.,LTD

# 飛虹機電



FEIHONG 电热管设备 HEATING MACHINERY

厚德

载福

以信言商

振兴实业

造福社会

COMPANY PHILOSOPHY:

VIRTUE BRINGS FORTUNE

PROFIT RELIES ON INTEGRITY

REVITALIZATION TO INDUSTRY

BENEFITS TO SOCIETY



# Company profile

## History

**Zhaoqing City Feihong Machinery & Electrical Co., Ltd** which developed from Zhaoqing City Changhong Electrical Equipment Factory was founded in 1992. In 2002, it was renamed Zhaoqing City Feihong Machinery & Electrical Co.,Ltd.

Our company specialized in electric-heating-element manufacturing equipment. We have abundant experience in manufacturing heating-element equipment.

Depending on high level of automation, stability, high cost performance and good after sale services, our products have occupied the market firmly.

## RANGE OF APPLICATION

Our products are applicable for mass production of electric-heating-elements for domestic appliances, industrial heaters and hot-runner system. We have the exact machines specially designed for every step of the manufacturing process.

## MARKETING

Today, the performance of our products can match up to the high standards of some very well-known company within the industry. Our products are popular in both domestic and international markets. We have a relatively high reputation within the industry.

As a manufacturing enterprise which has been authorized import & export license, in addition to our self-produced equipment, we also provide various kinds of raw and processed materials, fittings of machines, and technical services for manufacturing electric-heating-elements from all over the world.

## SERVICES

Our company has a team of engineering specialists to design and custom-make the equipment and fixtures . We also have tech-group specialized in after-sale services to provide maintenance.

**We are looking forward to your calls and visits. Welcome to order.**

**Your satisfaction is our greatest motivation.**

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## **A. Tube Making Machine**

### **1. ZG30B Low Carbon Steel High Frequency Welding Assembly**



ZG30 tube forming machine is designed for stainless steel tube and low-carbon steel tube which can be used for specialized production of electric tube. It is composed of four parts, including the device for releasing the reel, device for forming and welding, device for flying shears and device for tubing-collection.

ZG30 tube forming machine can produce the tube of which the maximum diameter is 25.4mm. As for the production of the tube of bigger diameter, you may choose the machines such as ZG-40 and ZG-60.

ZG-30A, an argon arc welding machine with an adjustable speed from 6 to 10 meters per minute, is used for producing the stainless steel welding tube of which the diameter ranges from 6 to 25.4mm and the wall thickness ranges from 0.35 to 2mm.



**MAIN TECHNICAL PARAMETER:**

1. Maximum welding electric current: 275A
2. Driving motor: 380V 50HZ 3KW
3. Air source: 0.6MP
4. Clean compressed air protective gases: argon and hydrogen

**2. ZG30B Low Carbon Steel High Frequency Welding Assembly**



ZG-30B is high frequency welding and joining series for low-carbon steel, which is composed of five parts, including the device for releasing the reel, device for material up-loading, device for forming, welding & joining, device for flying shears and device for tubing-collection. It uses the high frequency power source as its welder and has a turning device and a

cooling system, in which ZG-30B is different from ZG-30A. The speed of this machine is about 70 meters per minute.

**MAIN TECHNICAL PARAMETER:**

- 1.Maximum welding diameter:  $\Phi 25.4\text{mm}$
- 2.Maximum welding thickness: 2mm
- 3.Maximum mains input: 100 KVA
- 4.Operating speed: 70m/min
- 5.Air source: 0.6mpa clean compressed air
- 6.Power source: 380A 50HZ

**3. Roll Cutting Assembly**



Roll  
Cutti

ng Assemble is a set of specialized equipment for producing tube assemble. Its function is to roll and shear stainless steel reels or low-carbon steel reels to certain desired width. Then the reels will be turned into tubes with corresponding specification by forming welding

set. The assembly consists of Releasing Reel Machine, Roll Cutting Machine, Flatting Machine and Collecting Machine. According to different width of purchased steel reels, there are 600 Assemble, 800 Assemble, 1000 Assemble and 1200 Assemble. Assemblies with different width are various in price. Their structures are approximately the same. We can equip Roll Cutting Machine with corresponding hop and spacer sleeve.

#### **4. CT-30 Tube Cutting Machine**



CT-30 Tube Cutting Machine is basically the same with CT-15 Tube Cutting Machine. It is suitable for cutting larger tubes. Principal axis, axle box and elastic chucks are also larger. Motor power is added to 0.75 KW. The limit-position equipment is equipped with guide mechanism to decrease the vibration of cut tubes.

#### **MAIN TECHNICAL PARAMETER:**

1. Motor Power: 380W 50HZ 750W

2. Rotating Speed: 900rpm 1800rpm

3. Max Inner Diameter:  $\Phi 30\text{mm}$

4. Air supply: 0.6Mpa clean compressed air

Cut off the different diameter of the pipe, need to replace the corresponding chuck, as below:



## **5. ZCT-40PLC Full-Auto Cutting Machine**



Full-Auto Cutting Machine is a special equipment for cutting various pipes, including heated pipes. This machine is controlled by PLC, and it shows the operating process through text. Pneumatic mechanism controls the elastic chucks and works together with cutters, cutting tubes through a fixed position of mechanism. Stable function is the merit of the machine. Operation and preventive maintenance is very simple, a man can look after several equipments, the production efficiency is rather high.

### **MAIN TECHNICAL PARAMETER:**

1. Voltage: AC380V $\pm$ 10%/50Hz
2. Air Supply: 5~7KG/cm<sup>2</sup>
3. Motor Power: 0.75KW/1400rpm
4. Suit diameter :  $\Phi$ 6~ $\Phi$ 12 (according to the size of elastic chunks)
5. Product efficiency: 1000pcs per eight hour



## 6. TZ-3B Straightening Machine



Using for regulating of tubes with Minimum straightening length of 450mm and straightening dia. of  $\phi 4 \sim \phi 20\text{mm}$ .

## 7. TZ-12 Straightening Machine



TZ-12 Straightener comprises of 14 straightening rollers, 7 in a group in the shape of a triangle, driven by reduction motor and with an in-

between angle of 90°. Three rollers of the six are adjustable. And since the central distance among the rollers is not long, shorter tubes can also be straightened. Tubes of different diameters require different straightening rollers.

Tube straighten by TZ12B before and after,as below:



### **8.Single Buffing Machine**



This is simple buffing equipment, with the buffing wheel driven by the electrical machine at high speed. Rollers are driven by the reduction gearbox of another electrical machine. We can adjust the size of the

diameter and the axis inclined angle of the rollers with convenience. A dust proof sheet may be added.

### **9.GP-8 Buffing Machine**



Using for polishing process of S/S tubes with Max. processing dia. of  $\Phi 16\text{mm}$ .

## **B. Resistance Winding Machine**

### **1.RS-328B Resistance Winding Machine**



The working theory of RS-328B Resistance-wire Winding Machine is to place the resistance-wire winding drum to the coil holder with a brake gear, guide the resistance wire to a precise rotary tool using a wire

carrier, and coil the wire around the core axle with an adjustable speed rotary device, and produce compact helical coil.

The internal diameter of the coil is determined by the external diameter of the coil axle, which can be altered freely and controlled by coder and electronic counter. The analog quantity of the length of the resistance wire can be set and adjust on the counter to achieve length control. When the wire comes to the preset length, the machine will cut it using the air cylinder or electromagnetic mechanism. The other counter of the machine records and controls the quantities of the helical coils. The frequency converter is for adjusting the rotation speed of the control coil axle.

**MAIN TECHNICAL PARAMETER:**

- 1.The production capacity (8h) : 2500-3000PCS
- 2.Diameter of resistance wire:  $\Phi 0.12\text{-}\Phi 1.4\text{mm}$
- 3.Diameter of core axle:  $\Phi 1.0\text{-}\Phi 10\text{mm}$
- 4.Power source: 220V 500w
- 5.Air supply: 0.6Mpa clean compressed air

## **2. RS-328PLC Resistance Winding Machine**



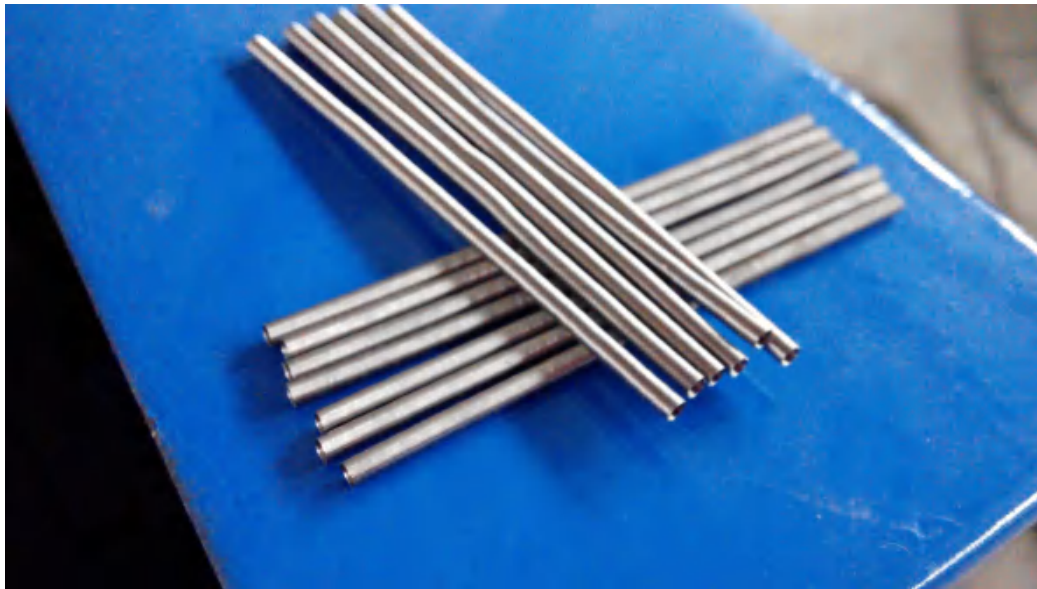
The working theory of RS-328B resistance-wire winding machine for the manufacturing of compact spiral coils is to reel the coil to the payoff with a brake gear, guide the resistance wire to precision spinning by the wire carrier, and twine the wire around the core axle by an adjustable speed rotary device. The inside diameter of the coil is decided by the external diameter of the core axle, which can be altered free and controlled by coder and PLC touch screen. The resistance value needed could be set and amended on the touch screen to achieve resistance control. As long as the wire comes to the preset resistance, it would be cut through the displacement or the electromagnet. The PLC can record and control the quantities of the spiral coils, and the adjust control the rotational speed of the core axle.



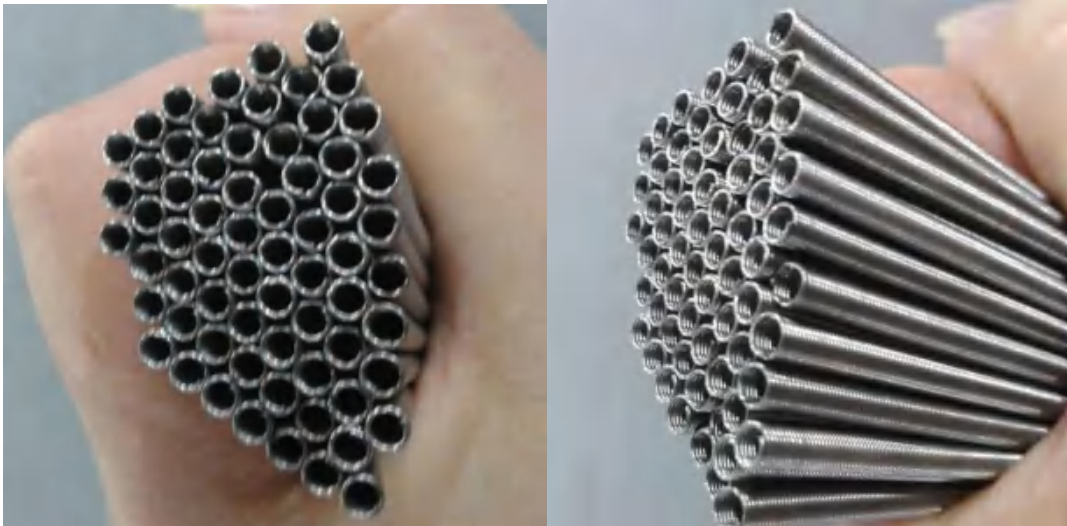
**MAIN TECHNICAL PARAMETER:**

- 1.The production capacity is 2500-3000 PCs/8h.
- 2.Diameter of resistance wire:  $\Phi 0.12$ - $\Phi 1.0$ mm
- 3.Diameter of core axle:  $\Phi 1.0$ - $\Phi 10$ mm
- 4.Power: 220 500W

RS328B & RS328 PLC finished product,as below:



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### **3. DRS-23PLC Resistance Winding Machine**

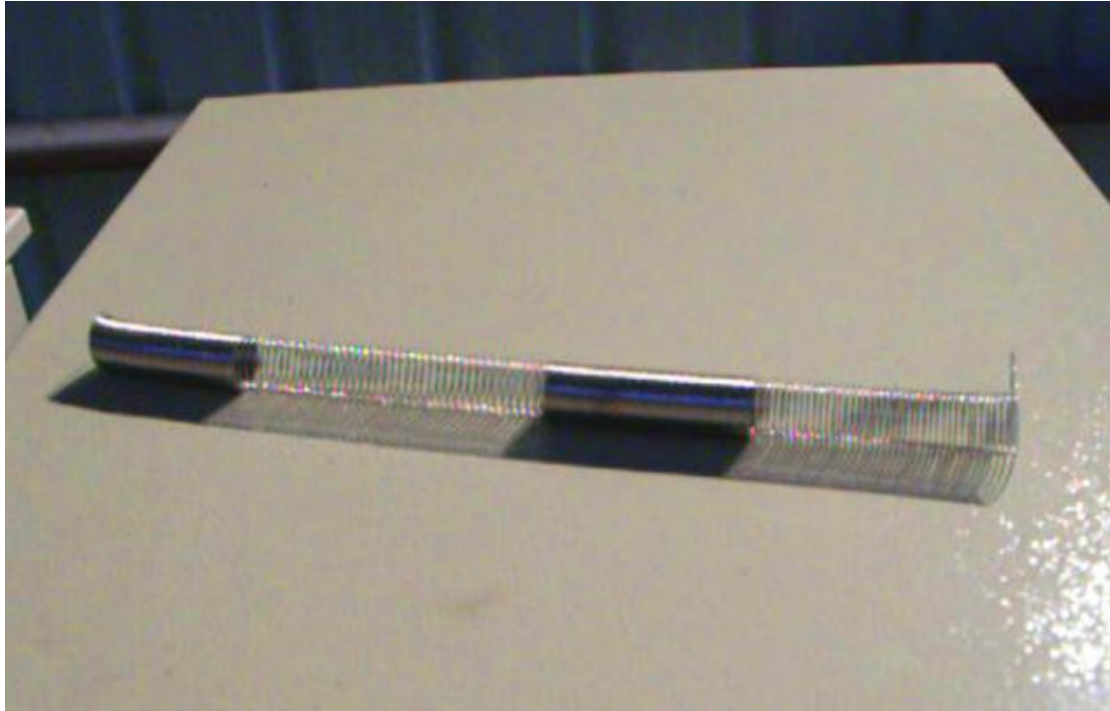


DRS-23PLC Resistance Winding Machine is specially designed for the production of the single-ended outgoing line , and electric heating element of high density, mica sheet, carbon fiber. The main shaft is used for clamping the skeleton of electric heating element, such as magnesium bar, ceramic bar, mica sheet, etc.,and the frequency converter control its speed. Resistance wire around on the wire rack, driven by the stepper motor ball screw move winding displacement, can produce the different pitch intervals arrangement of electric heating element. The controller made of the SBC, works as an integrated controlling system. And it takes accurate control the number of turns, length, slow wind, quick exit and auto reset of pitch intervals arrangement.

**MAIN TECHNICAL PARAMETER:**

1. wind length: 10mm-2000 mm
2. minimum the wire diameter:  $\Phi 0.07\text{mm}$
3. power supply: 200V 50HZ 500W

DRS23 PLC finished product, as below:



**4.DRS-24 PLC Hot Running Heater Winding Machine**





The machine is using PLC plus touch screen control. This machine is designed with reference to imported products, specializing in the production of spinning heating band for manufacturing hot nozzle flat tube. This spinning coil has a very small line width, usually only 0.5mm or even smaller, which makes it difficult to process on other equipments. The machine is using step motor drive, spindle rotating and turning of the winding displacement screw mandrel that can achieve close winding and processing of spiral coil with different thread pitch. The operator inserts a small axial wire into the clamping chuck and make it be clamped, then straightens it with the cylinder and then wires the heating band on the axial wire, until it reaches the preset length and stop auto and is cut by the operator. Max. winding length: 2000mm, Min. mandrel dia: 0.3mm, Min. dia of resistance wire windable: 0.06mm. It can do both single and double coiling.

DRS-24 PLC finished product,as below:





## **5. RS-25 PLC Keeping Ends Coiling Machine**



RS-25PLC Keeping Ends Coiling Machine is a new product researched and developed by our factory for automatic resistance coil winding. This machine can automatically keep the wire ends from coil winding. It doesn't need to pull the wire ends separately when coiling on the frame, which reduces the process and increases efficiency. The machine adopts PLC touch screen and servomotor control. It has stable performance and simple operation. Fully realized automatic preparing, starting, winding, shutdown and taking wire. The new operation of keeping both ends brings out actual man-machine separation. This machine is widely applied to the coiling of heating wire for hair dryers, electric heaters, electric heating tubes, hand dryers and other electric appliances.

Advantages:

- 1)The density adjusting
- 2)Automatically stop if there is insufficient pressure, lack of material, broken wire or stuck wire.
- 3)Process detection, fault diagnosis
- 4)Diameter mandrel can be arbitrarily changed
- 5)Keeping both ends, size adjustable
- 6)Automatically winding, man and machine separated.
- 7)Eight winding modes such as clock-wise rotation, counter clock-wise rotation, fast winding, slow winding, single wire, multiple wire, long wiring and short wiring.

Resistance coiled by RS-25 PLC





## C.MGO Filling Machine

### 1.FM-12 Standard Filling Machine



FM-12 Standard Filling Machine is a double deck direction chain transmission filling machine. The mandrel is relatively immovable. One of the two transmission mechanisms is inserted into the guiding pipe, the other one drives the guiding pipe mechanism to decline rapidly and rise slowly. This construction does not have a limit to the filling length. There is a stuff storing equipment in this machine, it allows filling 100Kg magnesium powder each time. The stuff storing equipment adds magnesium powder automatically into the batcher after it's filled. The most prominent advantage is that the operating station is located in the center of the machine, which makes it much easier to operate. It's a



perfect filling machine for the extra-long parts.

**MAIN TECHNICAL PARAMETER:**

- 1.Filling stations: 12 PCS (6or 8 PCS optional)
- 2.Max diameter of the filling pipe: 25mm
- 3.Max filling length: 6000mm
- 4.Min filling length: 150 mm
- 5.Tap density: more than 2.35g/cm<sup>3</sup>
- 6.Power source: 380W 220V 500W
- 7.Air supply: 0.6MPa clean compressed air

**2.FM24-PLC Filling Machine**



On the basis of the FM24 Standard Filling Machine, this machine introduces PLC, human-machine interface (touch screen), straight line guiding track and revolving clamp assemble. This machine come in two types: 24 stations and 48 stations, with the maximum filling length of 6M,



and maximum filling dia. of  $\Phi 12.7\text{mm}$ . Because of the introduction of OLC and programmed counting assembly, users can easily adjust the length required by filling in the actual length(empty tube length) on the touch screen. This makes it more convenient and accurate than the artificial electro-adjustments, with an extra precision in filling orientation. The spiral nozzle inside the guiding tube and the exerted mandrel (hook) endows it with greater convenience than the previous artificial adjustment machines.

The pneumatic clamp we designed and shorter parts (below 1500mm) can quickly clamp 24 parts in a single clamping process, thus bringing high productivity.

In recent years, we have improved the structure of nozzle structure by applying the three layer tube structure instead of the traditional helix nozzle, which enables a larger flow of MGO and a higher filling efficiency. Whether in terms of helix nozzle or three layer tube structure, FM24-PLC boasts advanced filling equipment at home and abroad.

### 3. X-Type Aluminum Filling Machine



This is a new type of magnesium powder filling machine. The filling workpiece need two sets or three sets of heating wire in one workpiece. It uses the special vibrator structure, to make the production more reasonable.

X-type Aluminum filling machine fill the sample product, as below:



#### 4.FM48-PLC Filling Machine



To enhance producing efficiency, we have manufactured 48-workplace filling equipment. The 48 parts are quickly placed in one machine in two batches and are filled simultaneously, with an efficiency twice of that of the 24 workplace machine. It excels other equipments in terms of room occupancy, the arrangement of operators, equipment cost, etc.

The filling machines models FM24 or FM48 with a filling span of 6000mm have the operating place in the middle part, which is of great importance. The lower part of the machine can be installed in the hole dug underground so that longer electric heating parts can be produced. We offer drawings of pit-based installation, operation and top examining and repairing platform. **FM filling machine finished product, as below**



## 5.TLD-24 Fast Filling Machine



TLD-24 Fast Filling Machine is a stand-alone order mechanism. It works in the same way with the TLQ-24. Both TLD-24 and TLQ24 are of the single-direction mechanism, namely, single-deck guiding pipe. It equips mandrel inside the pipe, which serves to locate the heating wire module. At the top of the pipe, there is a linear cutting binding head weld; it is coupled with the hole inside the pipe. Magnesium powder flow down from the outside of the guiding pipe. Great capacity and accelerative filling speed are the main advantages of this machine, while density deficiency is the chief disadvantage, which usually is around  $2.15\text{g/m}^3$ . The binding head would be easily stuck inside the pipe which leads to the failure of filling if the density is increased. The machine adopts gear motor to drive the rising of the guiding pipe mechanism, which is more

stable comparing with the gasliquid turning mechanism. This machine uses imported relay to control circuit or a control system consist of PLC touch screen.

**MAIN TECHNICAL PARAMETER:**

- 1.Filling stations: 24 PCS
- 2.Max diameter of the filling pipe: 12.7mm
- 3.Max filling length: 1000mm
- 4.Min filling length: 150mm
- 5.Source power: 380W 220V 600W
- 6.Air supply: 0.6MPa clean compressed air

**6.TL-6 Hot Running Heater Filling Machine**



TL-6 filling machine is designed for the gap of the heating tube, which heating wire components and magnesium rod penetrate the empty tube, need to fill the MGO powder. The filling length can be manual adjust, the time of adding powder by relay control, motor eccentric shaft institutions vibrate, when change specification, it need to change the nozzle and cup holder.

**MAIN TECHNICAL PARAMETER:**

1. maximum filling length : 2000mm

2. minimum filling length : 150mm.

**7.TL-12 Single Outlet-Wire Heating Filling Machine**



This machine is specially designed for MGO filling to heating tube of



single outlet-wired. The MGO powder is put in the feed case which is opened by cylinder control. Tubes being filled are fixed by the cup holder at the bottom and the pipe cape on the top, and manual vibration by the motor eccentric vibratory mechanism. The filling length position can be adjusted.

## **D. Auto-Feeder**

### **1. SL-101Auto-Feeder**



The auto-feeding machine will be operated with rolling reducer together, requiring no manual feeding. The machine will automatically process the feeding rolls into the reducer according to the preset time.

## **2. SLC-103 Auto-Feeder With Withstand Test**



The machine is controlled by PLC and will make hi-pot test. The qualified tubes will be automatically sent to the reducing machine to reduce; the unqualified tubes will be selected to the bottom of the machine and waiting to be arranged.

## **E. Roll Reducing Equipment**

### **1. Rolling Mill**



Pressing the roll with porous roll-crushing roller fittings, the roller

machine applies to the manufacture of industrial electric heating tube. And this machine is generally used for the industrial electric heating tube reducing of small-batch、Straightness and surface finish are not strict.

**MAIN TECHNICAL PARAMETER:**

- 1.Maximum reduced-roll diameter:  $\Phi 25\text{mm}$
- 2.Minimum reduced-roll length: 50mm
- 3.Power of motor: 380V 50HZ 4KW

**2. DG 30 Single Hammer Roll Reducing Machine**



DG30 single hammer roll-reducing machine is specially designed for the industrial electric heating tube production of small-batch and multi-specification, it can produce heating tube of single-end lead with high density and double-end outgoing line. It is very convenient to change the moulds. It is ideal equipment to produce industrial heaters

and hot runner heaters.

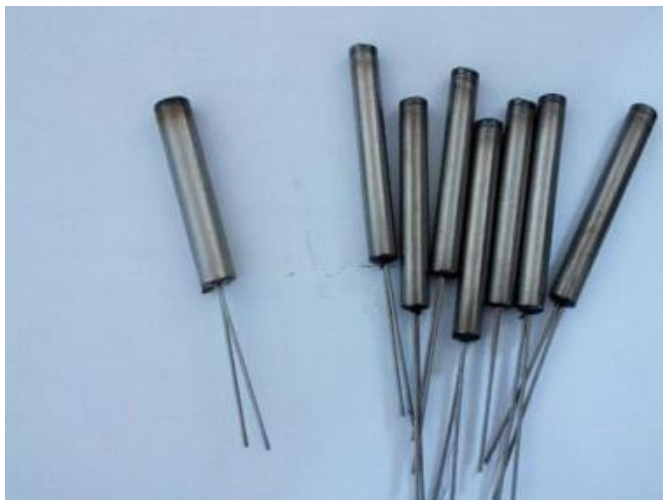
**MAIN TECHNICAL PARAMETER:**

- 1.Maximum reduce diameter:  $\Phi 30\text{mm}$
- 2.Minimum reduce diameter:  $\Phi 1.5\text{mm}$
- 3.Minimum reduce length: 60mm
- 4.Motor power: 380V 50HZ 7.5KW

**Molds for DG30**



DG30 machine finished product, as below:



### 3. DG28 Hammer Roll Reducing Machine



DG28 Hammer Roll Reducing Machine, is a machine specially designed and developed by our company according to the requirement of our customers. The main application of it is to reduce and produce square tubes, rectangular tubes and flat tubes, which filled the gap of square tube, rectangular tube and flat tube reducing equipment.

#### **MAIN TECHNICAL PARAMETER:**

- 1.Maximum reduce-roll diameter:  $\Phi 18\text{mm}$
- 2.Minimum reduced-roll length: 60mm
- 3.Motor power: 380V 50HZ 4KW



#### **4. SG8A Roll-Reducing Machine**



The Roll-reducing machine is composed of eight pairs of rolling wheel at 90°angles. Each unit of rolling spindles is directly driven by geared motor after passing from twin output gearbox and universal joint. Rolls are reduced gradually along a circumference direction to its axle and are done when pulled out from the straightener. Such procedure is widely used in the world currently, through which the rolls are sure to have smooth surface, fine roundness and uniformly stretched heating wires within the component. SG8A Roll-reducing Machine has high production efficiency, which reduces roll at 18m/s. Lubricating device is alternative for the roll while being reduced.

##### **MAIN TECHNICAL PARAMETER:**

1. Rotating speed of Roller: 60rpm
2. Roller dimension: outside diameter  $\phi 98.5$  mm; inside diameter  $\phi 45$  mm; thickness 38 mm
3. Center distance between rollers: 115 mm (with adjustable distance 0.5

mm downward)

4. Motor power (single): 0.75KW

5. Source power: 380V 50HZ 6.3KW

## **5. SG8B Roll-Reducing Machine**



SG8B Roll-reducing Machine is as same as SG8A on its supporting bearing and structure. In order to improve torque output of the geared motor to satisfy needs for reducing large diameter component, the machine adopts specially designed cylindrical twin output gearbox. The motor is directly connected with reduction, which increases unit power to 1.1KW, gross power 9KW, output speed 70rpm and reduction 20m/s.

## 6. SG12A Roll-Reducing Machine



SG12A tube reducing machine is using the high-quality gear motor as its power, which is sent to the gear case through the double spindle. The cross transmission shaft is connected with the roller seat. Using rolling reducing method, tubes after reduced with smooth surface, roundness  $\pm 0.05\text{mm}$ , straightness accuracy less than  $0.5\text{mm}$  within  $1000\text{mm}$ . The roller head structure is universal with SG12B, which can be separated with the machine frame and to be changed as a whole. One motion seat can wear several roller seat assemblies of different standards to achieve quick changing of the standard to fit producing need of different tubes.

Features: steady, high speed, fast mold-changing, low noise

### **MAIN TECHNICAL PARAMETER:**

1. Rotating speed of Roller: 60rpm

2. Roller dimension: outside diameter  $\phi 98.5\text{mm}$  ; inside diameter  $\phi 45\text{mm}$ ; thickness 38mm

3.Center distance between rollers: 115 mm (with adjustable distance 0.5 mm downward)

4.Motor power (single): 1.1KW

5.Source power: 380V 50HZ 9.5KW

## **7.SG12B Roll-Reducing Machine**



SG12B Roll-Reducing Machine is a reducing machine which refer to similar imported equipment, and combined with our national conditions, research and development by Feihong. It is the only one kind of machine which can reduce the circular tubes, the flat tubes and the elliptic tubes in the market at present. Reduce tubes specifications among 3.5mm-45mm. Further more, the machine install the auto marking mechanism, so it can automatically engrave the words on the surface of the workpiece during reduce process.

### **MAIN TECHNICAL PARAMETER:**

1. revolving speed of roller: uniform speed ( 118rpm ) or non-uniform

speed (450rpm)

2. roller dimension : outside diameter $\phi$ 98.5mm 、 inside diameter $\phi$ 45mm 、 thickness 38mm
3. center distance between rollers: 115mm
4. down available: 0.5mm
5. single motor power:1.1kw-2.2kw
6. power supply: 380V 50Hz
7. complete machine power: depend on the number of stations

### **8.SG14B Type Tube Reducing Machine**



The structure of SG14B type tube reducing machine is basically the same with SG8/12B, in order to adapt to rolling into square tube or round tube with big diameter and longer length, the machine divide into fourteen groups to roll, reasonably distribute each group compression, it also adopt larger reduction ratio gearbox. It chooses different speed device



according to different tube to meet all kinds of heating tube production demand.

**MAIN TECHNICAL PARAMETER:**

1. Roll wheel size(mm):  $\phi 98.5 \times \phi 45 \times 38$
2. Speed (m/min) : 5、8、10、13
3. Single motor power(KW):1.1KW
4. Power supply:AC380V、50Hz

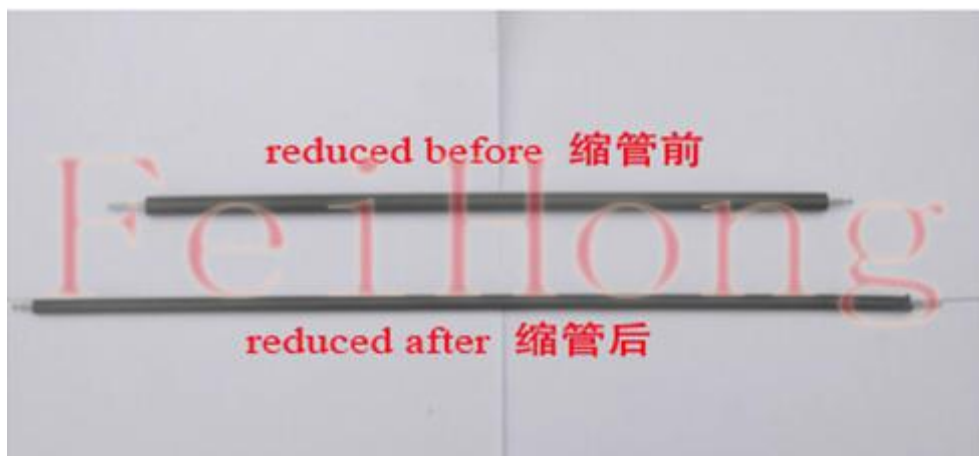
**9. SG8B- II /SG12B- II Big Wheel Tube Reducing Machine**

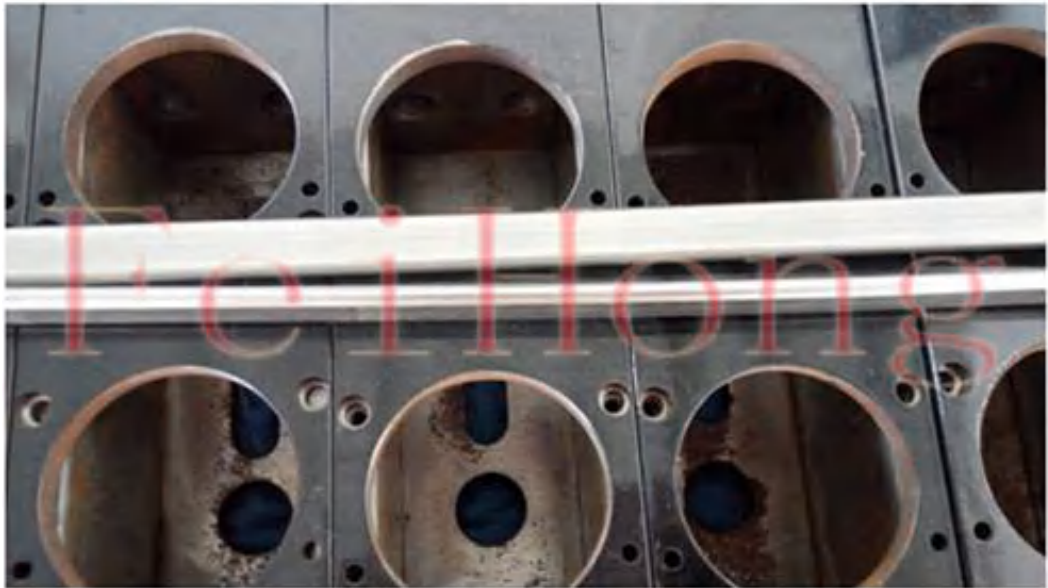
This machine is adapt to rolling heating tube with big diameter or large compression.

**MAIN TECHNICAL PARAMETER:**

- 1.Outer diameter(mm) of roll wheel :  $\phi 118.5\text{mm}$
- 2.Speed (m/min) : 10 m/min
- 3.Single motor power(KW): 1.5KW
- 4.Power supply : AC380V、50Hz

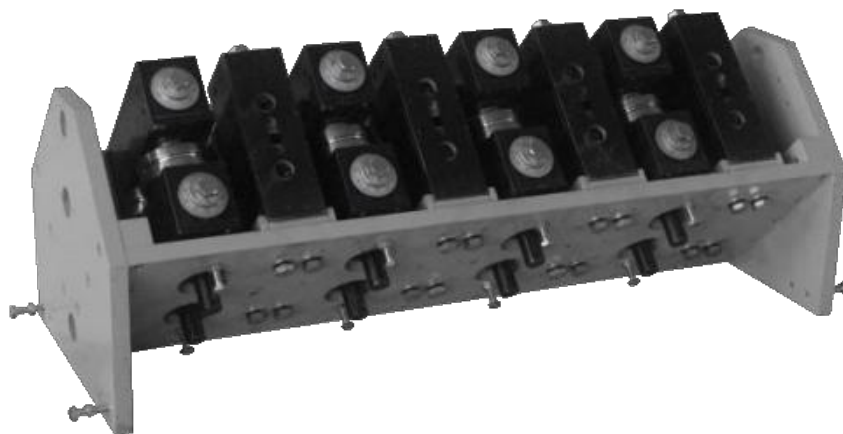
SG reducing machine finished product,as below:



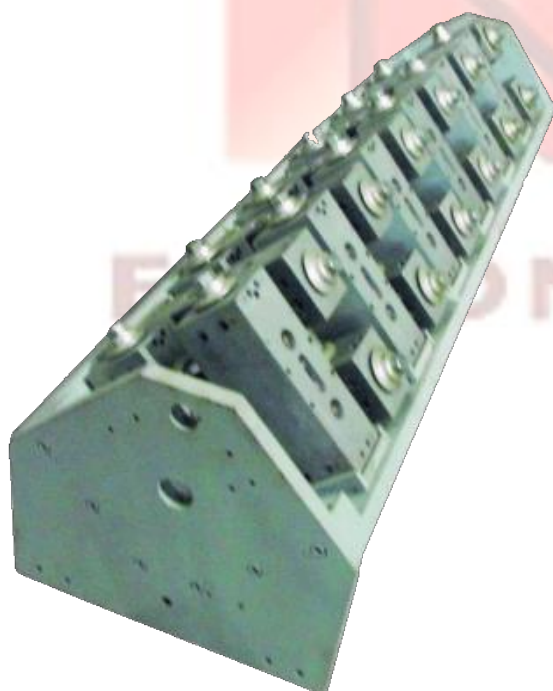


**oblate heater reduced by SG12B/SG14B**

① SG8 Roll Assemble(include rolls)



② SG12 Roll Assemble



③the whole cast iron bady of SG12



④the whole cast iron bady of SG8



⑤hard alloy Rolls(tungsten carbide)



⑥Cr12MoV Rolls



Tips: If need to reduce the different specifications of electric heater tube, you can choose to order a reducing machine and molds of different rolls, or choose to order a reducing machine and different kinds of Roll Assemble.



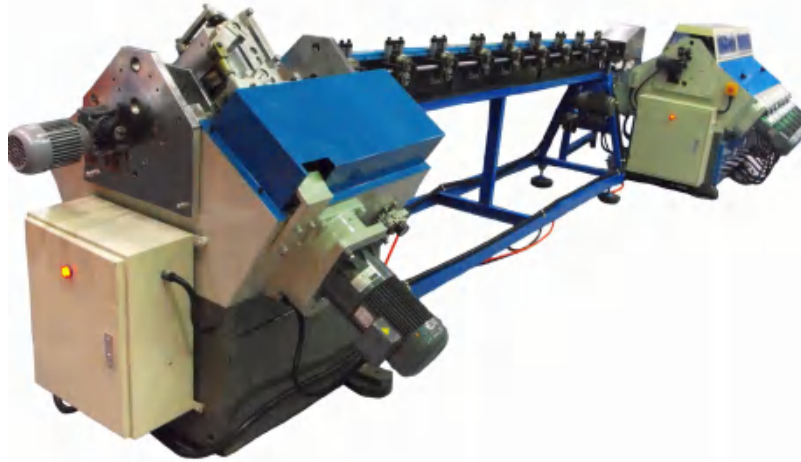
## F. Length Compensation Equipment

### 1.Full-Auto Stretching Machine



This is a full-auto stretching length-fixed equipment controlled by PLC. Because of the density variation of the elements, it will be fifer phenomenon of length, which can be guaranteed to be within $\pm 1\text{mm}$  after stretched by the machine. The machine is auto loading and unloading. The out-of-tolerance parts will be automatically selected.

## **2. Automatic Complement Machine**



Due to the differences of filling density in filling machines, there might be some errors in roll reduction among rolls of the same cut and length. To avoid the rejects, the automatic complement system has been designed to connect with the roll reducing machine, which will automatically figure out the actual length. Meanwhile the PLC finds out the discrepancy between the actual length and the lengths required, so as to convert the length scope of sizing reduction. When the roll is taken into the automatic complement machine, the head and the end of the roll are not reduced in size, while the middle part will be sizing reduced in order to make up for the length required. The sizing reduction is about 0.10 mm. This method will be more effective than the stretching operation and produce less rejects. Besides, the complement machine and the roll reducing machine are connected to work together, which will be procedure-friendly and cost less.

## G. Roll Turning Machine

### 1.CG30B Semi-Automatic Face Lathe



CG30B is propelled hydraulically (The propelling speed is adjustable). Driven by main axle, the turning fittings rotate with high speed. The tube, clamped by cylinder, will return automatically after being turned to pre-setting length. Then, the clamping structure opens automatically. One end of electric heating tube has been hulled and turned by lathe. The turning stroke is fixed relatively after adjustment; the other end is processed similarly with the use of caging device. The efficiency of this machine is very high, the turning time is 3-4s for processing one end, and the output per hour is above 400pcs.

#### **MAIN TECHNICAL PARAMETER:**

- 1.Rotation speed of main axle: 900rpm, 2100rpm
- 2.Maximum turning stroke: 30mm

3.The range of turned roll diameter:  $\Phi 5\text{--}\Phi 16$

4.Power source: 380V 50HZ 0.75KW

5.Air supply: 0.6Mpa clean compressed air

## **2. CG50-PLC Full Auto Double Ends Face Lathe**



CG50-PLC Double End Trim Machine is highly efficient and automatic, allowing finishing length to be adjusted in certain scopes. Tubes put in sequence on the inclined rack by the material taker and then rolled into and get clamped by the collet which is controlled by the pneumatic motor in the preset time, and then rotating cutters are pushed by the pneumatic-hydraulic motor to cut and trim both ends of the tubes. The tubes eventually roll into the collecting shelf and get moved away by workers. This equipment is of overall automation with great production efficiency enabling over 8000 units of output per 8h.

**Remark:** When you order roll turning machine, it is necessary to confirm the diameter and length of the electric heating tube.

## **H. Bend Forming Equipment**

### **1. 90°Single-End Roll Bender**



This is a Hydraulic Roll Bender with 90°bending head angle or other degrees. Due to the small bending head, the machine generates bending at the tight and short end, from one end to the other. It can simultaneously bend 2-3 components.

### **2. 90°Double-End Roll Bender**



This is a Hydraulic Roll Bender with two bending heads (usually

90°). Due to the long bayonets, it performs bending at both two sides. It can bend 2-3 components each time.

### **3.Round Pneumatic Tube Bending Machine**



This bending machine is specially designed for electric cooker rolls. The bending die is driven to revolve by the speed control mechanism. After both ends of the roll are bent by other machines, put one end into the positioning mechanism in punching die. Press the button, and the pneumatic mechanism pushes the forming compacting wheel to coil the roll. When it touches the inductive switch, it turns back and the compacting wheel mechanism is turned on. This tube bending machine produces accurate sizes with low labor intensity and high efficiency. It produces more than 400 pieces per hour. If you change the mould, you can bend other round components in the same way.



**MAIN TECHNICAL PARAMETER:**

- 1.Mould speed: 18 rpm
- 2.Motor power: 280V 55W
- 3.Air supply: 0.6Mpa clean compressed air

Round pneumatic tube bending machine finished product,as below:



#### **4.Auto M-Type Tube Bender**



This is a mechanical type bending equipment. It can bend the tubes to several angles within -180° after manual spacing adjustment. The bending angles are controlled by the inductive switch position. The angle-selection can change the switch. It can be manual feeding to the next bending after bending of one angle.

Auto M-type tube bender recommend to use in heaters smaller than  $\varnothing$  10mm.

## **5. Mechanical U-Type Tube Bender**



This is a mechanical type bending equipment. It is used to product mass of U-type heating tubes , U-type pipes etc. The main features are as follows: firstly, it can produce forming tubes between 3pics and 5pics drive by motor gear, depending on the diameter of fixture and the angle of wending tubes; secondly, it operates simple as auto-controlling by PLC.thirdly, flexible design can suit the manufacturing of varies production and turn the size free.

### **MAIN TECHNICAL PARAMETER:**

- 1.Powder: triphase 380V
- 2.Air supply:50Hz,2.3KW
- 3.Suit diameter:Φ5.0～Φ12.7
- 4.Production efficiency :20000pics per eight hour

5.Size:2500\*1800\*1200

6.Weight:750kg

Mechanical U- type tube bending machine recommend use in heaters smaller than  $\varnothing 12\text{mm}$ .

## **6. U-Type Hydraulic Pipe Bender**



On this machine, the bent tube is impacted by a hydraulic cylinder and propelled at a certain distance by a feeding hydraulic cylinder, after which another hydraulic cylinder will drive the rack-and-pinion mechanism to rotate the mandrel and make the tube 90° or 180° bending. This machine is used for heating components of U type. In addition, it is controlled by PLC and the propelled length is controlled by the signals that the photoelectric switch sends out. What's more, the bending angle can be realized by controlling the process of the oil cylinder. The disadvantage is that the switch should be modulated accurately when you change another component.

U-type hydraulic pipe bending machine can be use in heaters larger than  
Ø 12mm.

U type bending machine finished product



## **7. Mobile M-Type Full-Auto Tube Bender**



Movable M-type Full-auto Bending Machine is using the single bending head equipment. The bending head moves and bends within the full-length range of the tubes. Tubes are put and clamped into the

machine. The bending head bends the tube according to the needed angle of the bending position, and then moves to the other position to bend the other part. The machine is using one step motor and two servomotors to control the auto centering, the bending angle and the bending position adjustment of the bending head. The machine is using PLC touch screen control that will do auto bending after put in bending order and bending section data. It can bend 2~3 elements at a time, and make elements of U-type and plane bended elements of multi-angle combination.

### **8. Multi-Angle CNC Tube Reducing Machine**



Multi-angle CNC Tube Bending Machine is controlled by PLC touch screen man-machine interface system. The machine consists of three step-motor-driving servomechanisms, which are a feeding length control mechanism, a bending-radius control mechanism and a bending angle control mechanism. This machine has three bending fixtures of different



radius, and can bend different arcs with different radius on one tube. The user can input dozens of data at the same time and keep them on file. The data can be selected later to be used to bend different types of tubes. The related graphics will appear for reference so that it will be easy to operate.

**MAIN TECHNICAL PARAMETER:**

- 1.Feature: Simple, Easy, Accurate, Convenient and quick.
- 2.Power: 3 phase 380V



Multi-angle CNC finished product

FEIHONG 飞虹

## 9.Flat Convolution Bending Machine



This machine is composed of three parts:pneumatic single end 900 foot bend, electrical flat convolution shape spiral, handle bend two ends.

### **MAIN TECHNICAL PARAMETER:**

1. suitable diameter (mm):  $\Phi 6$ - $\Phi 8$ (through annealing)
2. Air supply :0.6Mpa clean compressed air
3. Powder supply: AC380V 50HZ

## **10. Hot Running Helix Bending Machine**



This is a machine specially for bending the rolls with flat hot running system into helix-shaped heater. It is also applied to coiling and processing small-diameter tube electric roll heaters. The core shaft is driven by the step motor (the core shaft can be replaced). The core shaft is ingeniously equipped with air-powered clamp splice, which is to clamp the heater tube tightly with the pneumatic mechanism, and coil the heater tube in the direction of the axis. The machine has an automatic stripper mechanism, and is controlled by PLC with high efficiency.

## 11. Full Auto Spiral Tube Bending Machine



This is full-auto equipment. Both sides of the elements are bent for a certain angle at the fixture for bending two sides; then put the elements into the spiral bending fixture for coil bending. The machine is controlled by the step motor, PLC and touching screen. Input parameters like the length, the thread pitch etc. to be bent on the touching screen, the machine will automatically bend the tube according to these parameters. The operation of the machine is simple, accurate and quick.

## **12. Convolution Bending Machine**



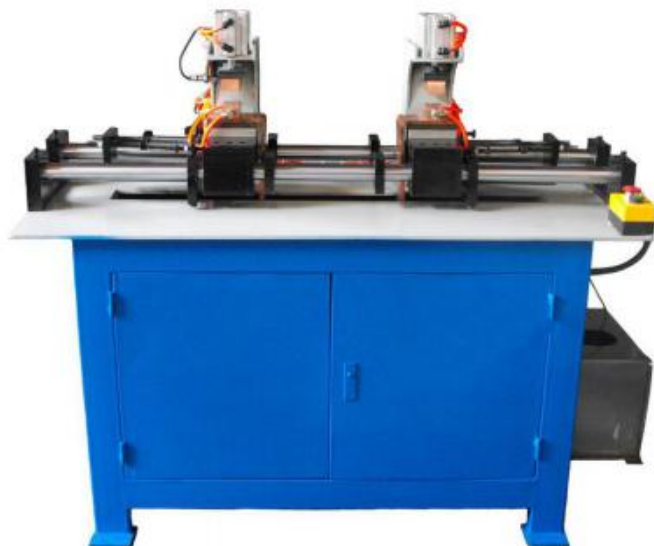
This machine is specially designed for producing convolution-shaped heater tubes. The mould is driven to revolve by speed-reducing electric gear. The mould is driven to hoist or lower by split nuts silk pole mechanism. The air-driven compacting mechanism coils and processes the tubes into pagoda shape, and at the end the air-driven ejector mechanism finishes the stripping step. The whole machine is automatically controlled by electric relay. Shift production (8 h) exceeds 2500 pieces. After bending, the pagoda-shaped heater goes through the oil-pressure machine and achieves the flat shape.

**Convolution Bending Machine finished product, as below:**



# I. Heat Treatment Equipment

## 1. 35 KW Annealing Machine



**35 KW Annealing Machine (Without Cooling)**



**35 KW Annealing Machine (With Shower Cooling)**

This machine adopts a dry-type transformer and is equipped with a pneumatic clamping mechanism. This mechanism can clamp the tube onto the electrodes and make use of low voltage and high-current to



create short-circuit with the metal case to heat and anneal the components, which makes preparations for the further bending and shaping of the components. And this machine consists of a clamping control of delay electrifying, an electrifying timing control and a delay power-off control . So it can avoid producing electric arcs between the components and electrodes that will destroy the surface finish quality of the components. This transformer has a series of tap changing which can change the output voltage according to different demands so as to anneal and process components made of copper, aluminum, stainless steel or iron-clad components.

**MAIN TECHNICAL PARAMETER:**

- 1.Minimum length of annealing: 100 mm
- 2.Maximum length of annealing: 1000 mm
- 3.Power source: 380 V of two-phase, 220V (fan)
- 4.Air supply:0.6 Mpa of clear compressed air
- 5.Maximum power output: 35 KW

## **2. Ammonia Resolving Protecting Web Electrical Furnace**



Electric furnace heating stove is made of heat-resistant stainless steel with electronic ignition device, using silicon carbide as heating element, ammonia resolving or gaseous fission as preservation. The preservation netting is heat-resistant stainless steel, 300mm or 400mm wide and electronic speed-controlled. The machine is thyristor triggering temperature controlled, with a heating power of 80KW and maximum working temperature 1200℃, which makes bright annealing and surface-blackening treatment possible.

## J. Welding Equipment

### 1. Pneumatic Spot Welding Machine



The Spot Welding Machine is used for the welding of resistance wire, with the capacity of 5KVA, power of 380V and pneumatic clean compressed air of 0.6MPa.

### 2. Discharge Spot Welding Machine



The Spot Welding Machine use condensers of large capacity to charge

and discharge for spot welding. It is also used for the large diameter resistance wire welding and leading stick-linked strip spot welding.

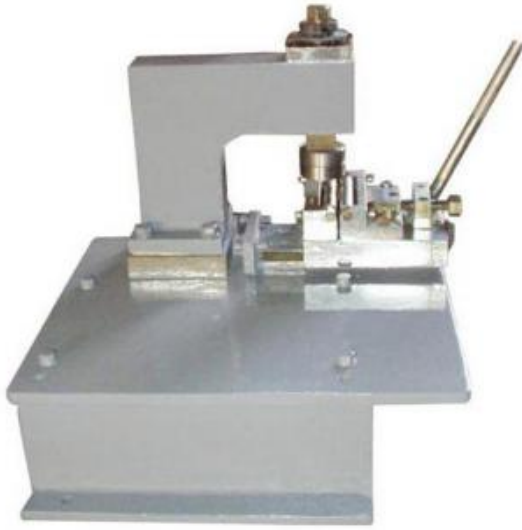
### **3. Auto Rotary Welding Machine (Horizontal)**



The electromagnetic vibration plate device, the swing cylinder and the cylinder-made manipulator are added into the Discharge Spot Welding Machine, and thus Automatic Strip Welding Machine is made. During production, the Automatic Strip Welding Machine makes the welding coin attached to the welding point by vacuum, and then spot welding is carried out with the point to the position slot by the worker's holding electro heater roll. This production method leads to high productivity, PLG-controlled process, as well as exact, convenient and quick and easy welding.

## K. Marking Equipment

### 1. Manual Marking Machine



Manual Marking Machine can be used to push the fixture manually. It makes the tube roll on the marking mould and then stamp marks such as V(voltage) and W(power) on the rollers.

### 2. Air-fuel Marking Machine



Equipped with the marking mould, the air-fuel supercharging press can stamp marks such as the company logo, V (voltage) and W (power) on the axis way of the tube element. The pressure output can reach a maximum of 50KN, which is adjustable through the multiple air source

pressure governor. Compared with other presses, it is faster, safer and cleaner.

### **3. Pneumatic Marking Machine**



Driven by the Pneumatic motor, the rotary marking mould can press the tube on the chum. Then by the cylinder, it rotates around the tube axis, stamping marks like V (voltage) and W (power). The stamping depth can be adjusted by the guide screw device.

### **4.Roll Reducer Auto Marking Mechanism**



Equipped with a set of delicate fixture and PLC control system in the



direction of its exit, the Roll Reducer Marking Machine can print marks like V(voltage) and W(power) on the axis way of the tube. The marking positions can be set and controlled by PLC and touch screen.

## **L. Ultrasonic Cleaning Equipment**

### **1. CS-01 Single Tank Ultrasonic Wave Cleaner**



CS-01 single-tank ultrasonic wave cleaner introduces single stainless steel tank and the built-in ultrasonic vibrating board composed by Hi-Q, low-voltage ceramic energy converter. With the adjustable vibration frequency of 28 KHZ, it is appropriate in the cleaning process for medium mass production of the resistance coils of the electric components.

## **2.CS-03 Tri-tank Ultrasonic Wave Cleaner**



CS-03 ultrasonic cleaner employs nonflammable environment-favored organic solvent in cleaning. The cleaner is specially designed for the better cleansing effect of the components and parts. It is applicable for cleansing the scaling powder and rosin of electric components and breadboard, deoiling and dewaxing of precision hardware components, as well as the cleansing of the optical devices.

### **3. CS-05 Five Tank Ultrasonic Wave Cleaner**



CS-05 ultrasonic wave cleaner is designed for the factories of mass production of electric components. The cleaner is composed of such five tanks as hot spray, ultrasonic rinse, ultrasonic fine purification, cool filtering and air-drying tank, with an inside diameter of 580\*480\*420mm respectively. Composed by Hi-Q, low-voltage ceramic converter, the ultrasonic vibrating board is of 1500KW in horsepower, 28 KHZ in frequency and 6KW in heating horsepower for single tank. We offer for the customers the automatic feeder equipment to take control of the inlet, lifting and shifting of the tanks. The pneumatic and electrical devices could alleviate the labor intensity to a large extent. This machine is applicable for the cleaning of spiral coils and tubes.

## M. Colling Fin Winding Machine

### 1. Sheet Winding Machine



Electric heating tube cooling fin tape winding machine is specially designed for the installation of spinning heating tube. The machine features simple structure and convenient operation.

The machine can be utilized in a certain speed range (265-125r.p.m). The non speed adjustable mechanic stepless transmission is transmitted to the spindle box by the chain. The three-claw chuck in front of the spindle enables the machine to achieve positive inversion, so as to meet the needs of inverting the sheet to the left and the right.

#### **MAIN TECHNICAL PARAMETER:**

1.Width of sheet spindle: 3-15mm

2.Thickness of sheet spindle: 0.1-0.8mm

3.Materials of spindle: annealed stainless steel plate, zinc-coated low carbon plate, aluminum plate, bronze plate, etc.

4.Speed of spindle: 25-125 r.p.m, with no speed adjustable

5.Diameter of spindle:  $\Phi 4$ - $\Phi 20$ mm

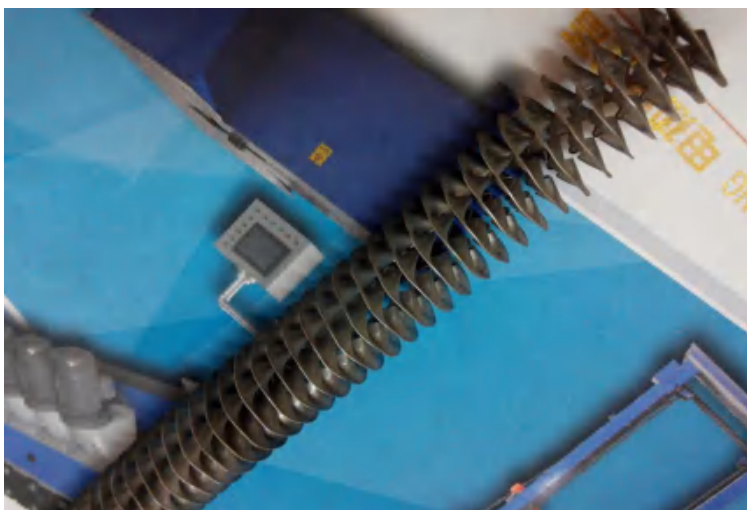
6.Smallest length of spindle: 150mm

7.Largest length of spindle: according to customer request

8.Input power: 380V 50HZ

9.Motor power: 250W

finished product, as below:



## 2. Double Shafts Winding Machine



This machine is used to spiral the cooling fin to heating tube. The machine adopts motor as power, frequency adjust speed and PLC control, it can spiral on the two heating tube at the same time one time.

### **Main technical parameter:**

1. suitable diameter(mm):  $\phi 6 \sim \phi 12$
2. Colling fin: Through annealing
3. Spiral length(mm): 1000
4. Air supply: 0.6MPa clean compressed air
5. Power supply: AC380V、50Hz



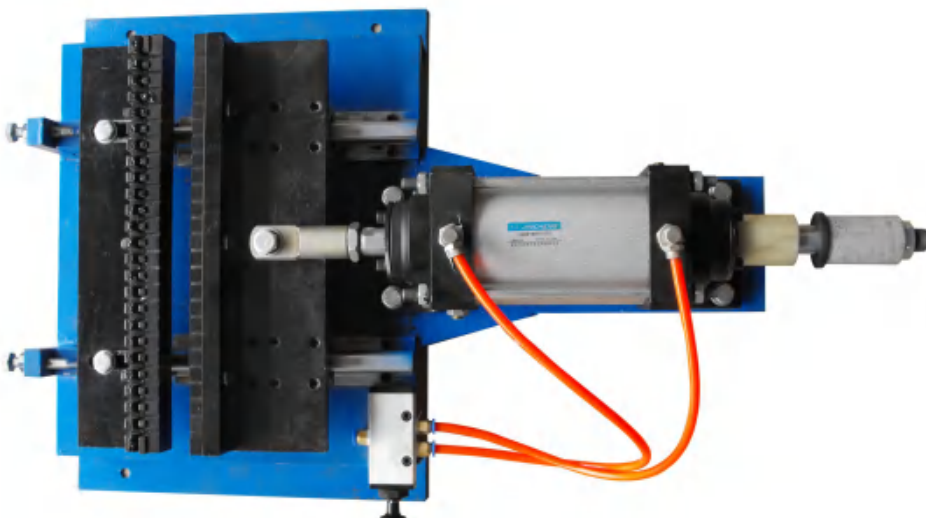
## N. Other Equipments

### 1. Sleeve-Type Hydraulic Press Machine



This machine is designed after the import equipments. The machine is drive by the piston rod of the oil cylinder to shrink press along the direction of the center. Molds are installed on the inner circle that can be quick assembled and disassembled to change for other standards. There is equipped with length stop block at the tail of the machine for adjusting the press position of the elements.

### 2. Pneumatic Horizontal Rubber Bush Installing Machine



Driven by cylinder, the fixture arranges the lead stick and end plug in the

retaining nest, while pressing the foot valve (or produce the electrical button) 12-24 lead sticks will be automatically loaded into end seal plug. This set is labor-saving and highly efficient.

### **3. Rod Screw Rolling Machine**



Rod Screw Rolling Machine leads, by retarding the belt, spinning of the rolled thread installed off-center. It's widely used in the processing of extruded tubes led by the electrical heating parts or the after shape processing of rolled threads. Adjusting wheel-set central distance and replacing thread rolling gear will help make screws of different diameters and of different pitches. Screw thread standard processed by this method (GS-6) has a maximum of screw thread M6 in diameter.

## 4. Accessories Series

### 设备配件

#### Equipment Fittings



填充机配件  
Fittings For Feeder



绕线机配件  
Fittings For Winding Machine



缩管机配件  
Fittings For Roll Reducer

### 电热管配件

#### Heater Fittings



发热丝和管材  
Heating Wire And Tubular Product



封口塞 (塑料和橡胶塞)  
Sealer (Plastic And Rubber Bush)



各类陶瓷  
镁制品  
Various Ceramics  
And Mgo Products



各种焊插片  
Various Welding  
Plug-In Pieces



各种法兰  
Various Flange

## Remark:

1. **MAIN TECHNICAL PARAMETER** for the machines only for your refer, because different customers require different parameter, if you need different parameters, such as motor power, pls contact us, we will cooperate with you.
2. If any machines interested, feel free to contact us for the price, or tell us the machines you are looking for.
3. All our machines are with 1 year warranty.



## **Contact Feihong**



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