

Focus on continuous casting and rolling process

Service in the wire and cable industry

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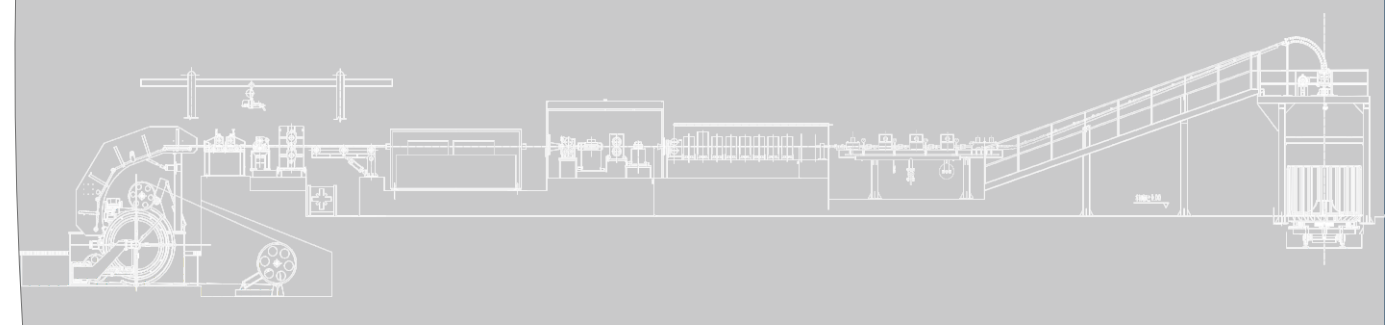
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四川久勋科技有限公司
SICHUAN JIUXUN TECHNOLOGY CO., LTD



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Sichuan Jiuxun Technology Co. LTD

Company Brief Introduction

Sichuan Jiuxun Technology Co., Ltd is located in the heart area of "The land of abundance", Guanghan city, Sichuan Province, China. It is a high–tech enterprise integrating design, research and development, production and sales, as well as engineering services. The company has the mechanical and electrical installation engineering specialized contracting qualification and Professional contracting qualification of environmental protection engineering. Mainly engaged in the research and development and manufacturing of metal smelting equipment, ferrous metal continuous casting and rolling production line, non–ferrous metal continuous casting and rolling production line, environmental protection system, new cable equipment and related spare parts.

The company was established in 2017. Relied on professional design team, the company exerts all energies in the research and development of new products and scientific and technological innovation, successively completed the design and manufacturing of the first set of Metro seamless alloy ground wire rolling mill in China, upgrading and transformation of non–ferrous metal continuous casting and rolling production line for domestic and overseas customers, achieve key spares localization of imported equipment. The company has been highly recognized and widely concerned in the industry due to careful design, sophisticated manufacturing and professional services. The main domestic customers include Jiuquan Iron and Steel (group) Co. Ltd, Jiangsu Hengtong Group, Shandong Xinfu group, Shandong Innovation Metal, Shandong Hongya Conductor Technology Co. Ltd, Bay Environmental Technology (Beijing) Corp, National Laboratory of Chengdu University of Technology, etc. We also sell our equipments and spare parts to more than 10 countries, such as India, Pakistan, Bangladesh, Indonesia, Thailand, Iran, Iraq, Turkey, Russia, Belarus, Ethiopia, Vietnam, Nigeria, Algeria and so on.

Companies adhere to "quality of survival", "efficiency from management" policy, wholeheartedly for the user to provide satisfactory products. The professional installation and after–sales team provides secure and efficient service for the customers.

Company advantages:

- Meets greatly the individual need of customers in mass customization: provide customers with "customized equipment" and "system solutions".
- Familiar with international advanced technologies: have sufficient knowledge and understanding for MORGAN (America), SMS–Meer (Germany), Properzi and DANIEL(Italy) Continuous Casting & Rolling Production Lines.
- Not imitation, but creation: established its own brand (JIUXUN), has independent research in different types of rolling mills, cable equipment and another industrial field equipment.
- The most rigorous process control: a full perfect supervision system includes, customer demand – technical solution confirm and review – drawing design audit – raw material procurement inspection – production and processing control – quality inspection qualified – packaging and delivery – installation and commissioning– after–sales service.
- Experienced R&D and production team: the key members of company's R & D and production departments have at least a dozen years’ relevant working experience in CCR and machinery filed.
- High sense of responsibility from sales and after–sales team: the company's sales and after–sales service staff have more than 10 years relevant industry experience. Be Full of enthusiasm, maximize the satisfaction of customers.

workshop appearance



Qualifications honors and patented technology





CATALOGUE

1. High Efficiency & Energy-saving Shaft Melting Furnace, Tilting Holding Furnace and Premixed Combustion System of Copper Cathode
2. Copper Scrap Refining Furnace (Stationary/Tilting)
3. Pure Oxygen Combustion System
4. Low-oxygen Copper Rod Continuous Casting & Rolling Production Line
5. Aluminum Melting Furnace, Holding Furnace and Refining Equipment
6. Aluminum (Alloy) Rod Continuous Casting & Rolling Production Line
7. Aluminum(alloy) Ingot Casting Machine
8. Cold rolling mill for metal and special cable
9. Spare Parts of Copper /Aluminum Continuous Casting and Rolling Production Line
10. Environment Protection System
11. 16. Rewinding Machines
12. Copper Anode Melting & Casting Line (Joint research, development and undertaking projects with partners)
13. Copper Cathode Electrolytic system (Joint research, development and undertaking projects with partners)
14. Wire Drawing Machine
15. Cooperation Company Products
16. Copper Recycling Production Line
17. Heat Radiator Recycling Production Line
18. Customized Equipment/Turnkey Project

1. High Efficiency & Energy-saving Shaft Melting Furnace, Tilting Holding Furnace and Premixed Combustion System of Copper Cathode



The Complete Shaft Melting Furnace and Holding Furnace System are designed for Copper Cathode Melting according to the international advanced technology and Low Oxygen Copper Rod Production by CCR technology. The furnace uses the clean energy (NG/ LPG) as the fuel, make the cathode plates melted continuously to the low oxygen copper molten. It is the preferred melting equipment matched with CCR Line for producing the low oxygen copper rod and copper strip.

It is composed of shaft melting furnace, charging mechanism, pre-mixed combustion system, multi-stage high-pressure fan (air blower), CO Online Analysis and controlling system, molten launders, variable-capacity tilting holding furnace, electric control system, etc.

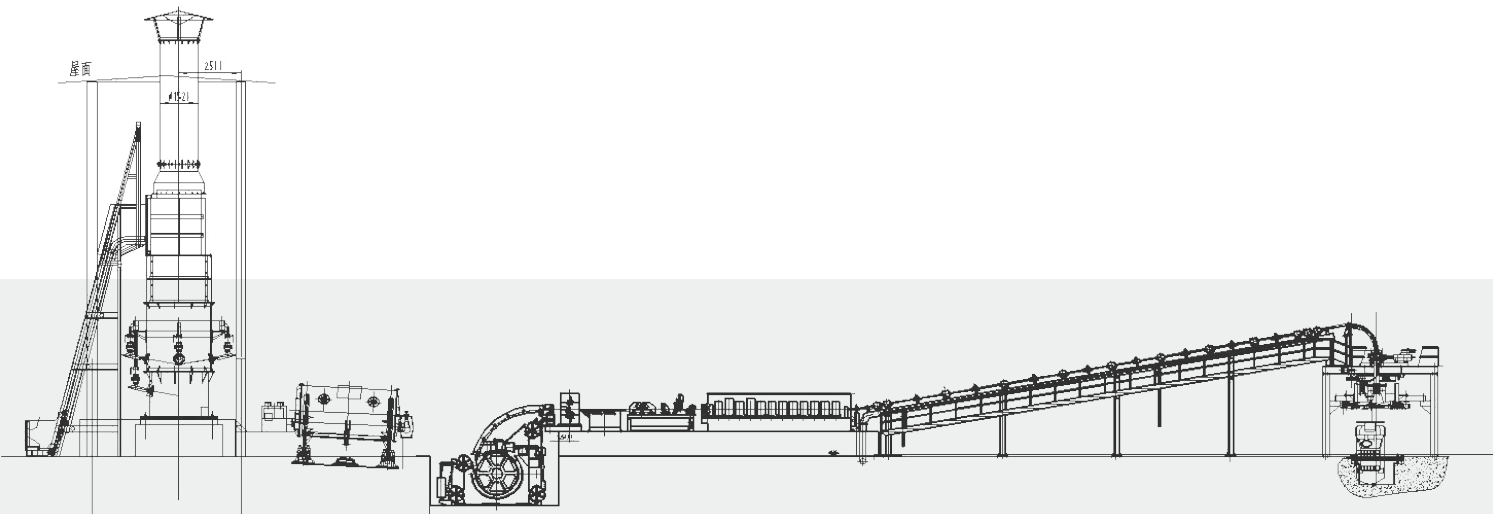
Characteristics of the Furnaces:

- (1) Capacity is flexible, shaft furnace melting rate is from 8t/h to 48t/h, holding furnace is from 8T to 25T.
- (2) From the cold status to be molten, it needs around 2 hours, while stop the furnace only need about 3-5 minutes.
- (3) The raw material can be: cathode plate, copper rod scrap coil, bare copper wire, and internal copper scrap from CCR.
- (4) Setting with the safety device, when the gas pressure is too high or too low, the power or combustion fan failure, the gas can be cut off immediately.
- (5) Reliable premixed combustion system makes the oxygen content of copper molten more stable, easy to control and save the energy.
- (6) The key components adopt the USA brand (shut-off valve for safety control, Air/gas ratio proportional valve and mixer, etc.)



Raw material and Equipment Application.

- (1) The basic raw material is copper cathode, the high-quality copper scrap also can be accepted, the utilization can be 20%-30%. But if the final copper rod will be used for fine wire drawing and electromagnetic wire (high quality enameled wire), we suggest the raw materials should be the copper cathode (LME Grade A)
- (2) If adopt the 100% high quality copper scrap ($cu \geq 96\%$) such as the bare copper rod or wire from cable, it will be equipped with titling refining furnace and anode casting machine produce the Anode or produce the low oxygen copper rod by CCR.



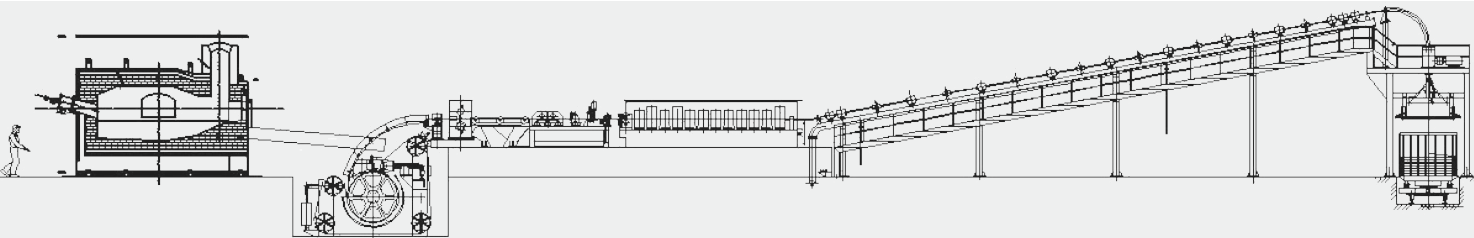
2. Copper Scrap Refining Furnace (Stationary/Tilting)

At present, many countries in the world rely on copper scrap regeneration to meet domestic demand at a large extent, and the recovery and utilization of scrap copper has an important meaning, which makes the copper metal resources expanded, whereas, the copper scrap should be purified by refining furnaces. Therefore, our company can design and manufacture the stationary copper refining furnace and tilting refining furnace according to the different needs of customers.

Stationary Refining Furnace

The Stationary Refining (reverberatory) furnace is widely used for copper scrap smelting. Because of good adaptability to raw materials, it also can be used as anode copper smelting. The refining furnace has low maintenance rate, less equipment input, rapid convergency, and the capacity can be designed as the customers’ need (15T–120T), the refining technology is easier than other technology, so it is still adopted by most users.

No	Item	Parameters	Note
1	Capacity	15T–140T/batch	According to customers' requirements
2	Fuel	NG/LPG/LDO/FO/COAL GAS	Burners depends on the fuel type
3	Raw Materials	100% Copper Scrap	Barley/Berry/Birch/enameled wire /Candy/Clove
4	Charging Method	Manually /forklift/ charging vehicles	According to customers' requirements
5	Burners	2pcs	Domestic independent brand, imported brand can be adopt
6	Combustion System	High Temperature combustion system /Pure Oxygen combustion system	Pure combustion system is only suitable for NG and LPG , can save fuel 40% at least
7	Blower	30KW–95KW	According to the furnace capacity
8	Main Refractory Materials	Mg Al Cr brick/ Spinel Mg Al Cr brick	Refractory Material is one of main factor of Furnace Life
9	Furnace Door	Charging door/slugging door	
10	Hoisting machine	Charging Door Lifting/ Reduction/ slugging door	
11	Oxidation media	Compressed Air	
12	Reduction	Fresh trees/ Natural gas	According to customers' requirements
13	Furnace door cooling	Water cooling	
14	Electric Controlling	Standard Controlling system/ KromSchroder, Germany	According to customers' requirements



Tilting Refining Furnace

- (1) Super adaptability for raw materials, both solid and molten material can be used
- (2) Easily charging, evenly material distributed, fast melting speed
- (3) Reasonable furnace chamber with tilting mechanism, better heat transfer effect and use ratio.
- (4) High degree of mechanization, compressed air for oxidization, NG for de–oxidation
- (5) Reasonable tilt angle is good for Oxidation air spread in the molten, high degree of oxidation
- (6) Effectively reduce black smoke pollution rates
- (7) Copper molten outlet is flexible equipped with casting machine
- (8) High degree of automation, easily and safety for operation and maintenance



No	Item	Parameters	Note
1	Capacity	3T–60T/batch	According to customers' requirements
2	Fuel	NG/LPG/LDO/FO/COAL GAS	Burners maybe different
3	Raw Materials	100% Copper Scrap	Barley/Berry/Birch/enameled wire /Candy/Clove
4	Charging position	Furnace Roof / Furnace Side	Design according to furnace capacity
5	Burners	No of burners according to furnace capacity	Domestic independent brand, imported brand can be adopt
6	Combustion System	High Temperature combustion system /Pure Oxygen combustion system	Pure combustion system is only suitable for NG and LPG, can save fuel 40% at least
7	Blower	According to the furnace capacity	
8	Main Refractory Materials	Mg Al Cr brick/ Spinel Mg Al Cr brick	Refractory Material is one of main factor of Furnace Life
9	Furnace door lifting	Mechanical open/close	
10	Oxidation media by Compressed Air		
11	Reduction by Natural gas		

3. Pure Oxygen Combustion System



Pure oxygen combustion system is a new energy-saving technology developed and designed by our company in combination with the characteristics of industrial furnaces.

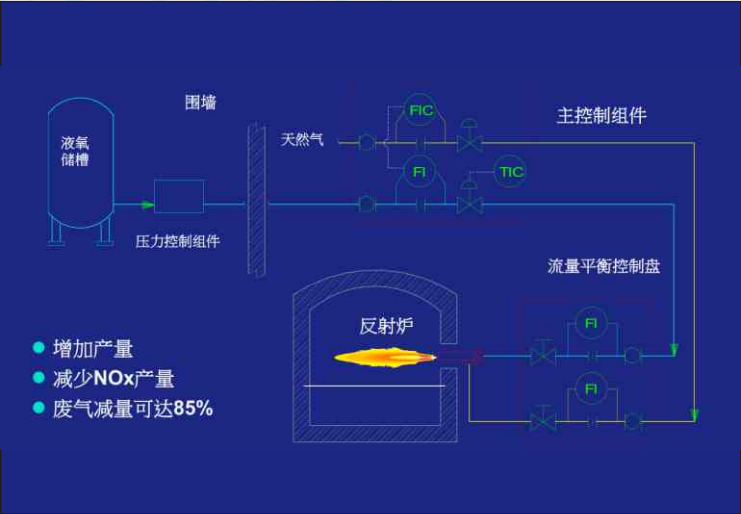
It is composed of burners, fuel decompression regulation system, oxygen decompression regulation system and controlling system. The oxygen and natural gas (NG/LPG) mixed in the spray gun and sprayed into the furnace, then propagate a flame, which transfer the Air-gas system to Oxygen-gas system, and the whole process not involved with nitrogen, so that improve the heat utilization, reduce the environment pollution, improve the economic benefit. At present, this technology has been used for copper scrap refining furnaces, more than 50% natural gas can be saved.



Main Features:

- 1. Special burner and spray gun make the mixed combustion flame more stable, reduce the heat consumption and improve the melting efficiency.
- 2. The total emission of exhaust gas can be reduced nearly 80%, which is greatly reducing the impact of emissions on the environment.
- 3. The natural gas (LPG after vaporization) can be saved more than 50%, and no need the combustion fan, the total investment can be recovery within 5-6 months, the economic efficiency will be greatly improved.
- 4. No need for air preheating system
- 5. The system can be designed on the existing equipment of customer.

Schematic Diagram



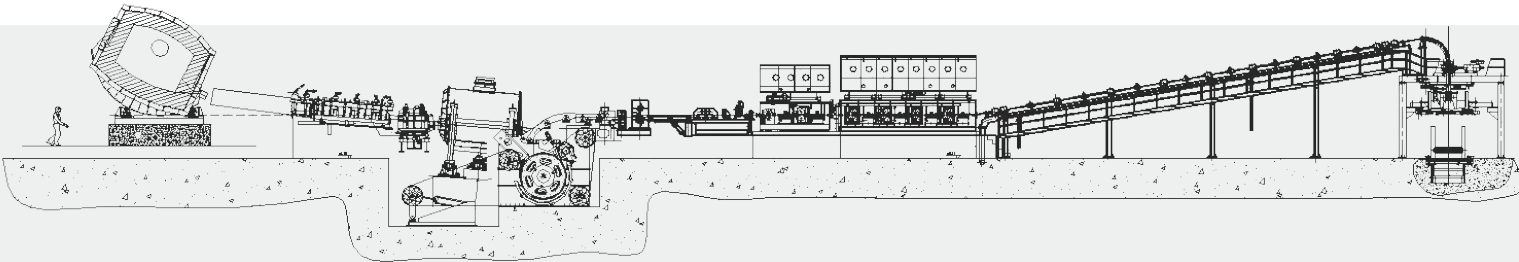
4. Low-oxygen Copper Rod Continuous Casting & Rolling Production Line



At present, the copper plants in the world adopt the CCR lines are: Italian Properzi system (CCR), Southwire system (SCR), Germany SMS–MEER Krupp/Hazelett system (Contirod) and French SECIM system. While our company CCR system have been innovated and upgraded on the basis of respecting and learning the international advanced technology, Our CCR line configuration is more flexible, the operation and maintenance are easier, the production cost and equipment cost are more cheaper, the product quality also is excellent, so it has been more widely used and popularized at home and abroad.

The raw material of this production line can be copper cathode and copper scrap, furnace selection depends on the raw material, fuel and capacity of the customers. The CCR Line min capacity is 5–8t/h, the max line can be 40–45t/h.

The structure of casting machine and rolling mill also can be designed scientifically according to the investment scale, capacity and raw materials of customers. To minimize the customers’ maintenance cost, all materials and components of the equipment are strictly controlled, coupled with precise assembly and standard inspection, we hope to obtain the maximum customer’ s satisfaction.

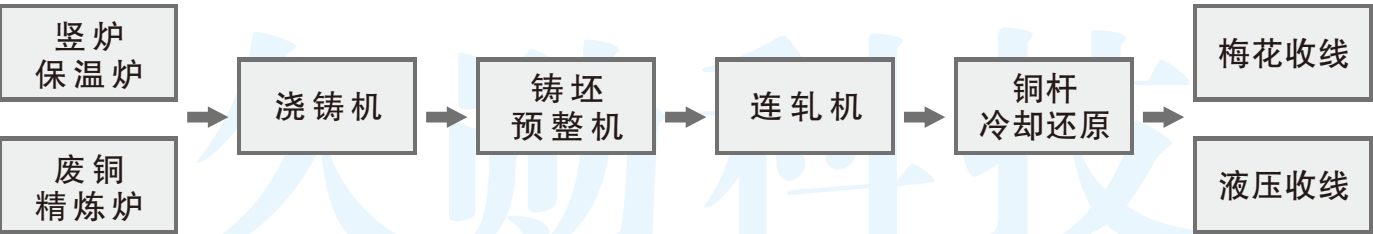


Main Equipment Composition

Copper Melting (refining) furnaces, launders, tundish, continuous casting, upward hauling, casting bar treatment devices (shearer, waste ingots discharger, straightening , edge shaving, brushing machine), continuous rolling mill, emulsion oil system, gearbox lubrication System, copper rod surface cooling and recovery passage, wax coating device, backward hauling mechanism, drop coiler with duel baskets (or hydraulic take-up with compressor), process water cooling system.



Process Flow



Low Oxygen Copper Rod Continuous Casting & Rolling Production Line					
No	Model	Capacity	Sectional Area	Rolling Mill Type	Main Machine Installed Power
1	MRS 1600/8–255/8	5–8t/h	1200mm ²	4+4 Traditional 2 roller+3 roller	400KW
2	MRS 1810/12–255/8	12–16t/h	2330mm ²	4+6+2 Traditional 2 roller+3 roller	660KW/700KW
3	MRS 2100/14–255/8	18–20t/h	3200mm ²	6+6+2 Traditional 2 roller+3 roller	830KW/860KW
4	MRS 3800	20–25t/h	3800mm ²	2+8 Full 2 Roller, oil–film bearing	1550KW
5	MRS 5500	30–35t/h	5429mm ²	1+2+8 Full 2 Roller, oil–film bearing	2000KW
6	MRS 6600	35–40t/h	6580mm ²	1+4+8 Full 2 Roller, oil–film bearing	2800KW
7	MRS 8200	40–45t/h	8200mm ²	1+4+8 Full 2 Roller, oil–film bearing	3200KW

5. Aluminum Melting Furnace, Holding Furnace and Refining Equipment



Our company has been meticulously committed to the R&D of special melting furnaces for a longer time. Rely on strong technical force and innovative design concept, we build our design purpose: energy-saving, reduce fuel consumption,

improve production efficiency and product quality, improve working conditions, reduce environmental pollution, ensure the safe and reliable operation of the equipment and prolong the service life of the equipment. The furnace has obvious advantages, and its investment payback period is generally within 6 – 12 months, especially the Circular Rapid Energy-saving Aluminum Melting Furnace, Shaft Rapid Energy-saving Aluminum Melting Furnace, Aluminum Scrap Melting Furnace, holding furnaces, Automatic Continuous Melting and Holding furnace,

High Efficiency Energy-saving Aluminum Rod Heating Furnace, Silicon Carbon Resistance holding furnace and Thyristor Temperature Controlled Cabinet, Annealing Furnace, Permanent / electromagnetic Stirrer and all kinds of environmental protection system are ideal equipment applied for aluminum profile, aluminum plate (strip, foil), wire and cable, pressure casting, gravity casting, regenerated aluminum and other aluminum processing industries.

In addition, in order to ensure the integrity of the casting and rolling production line, our company also provide high temperature combustion system, Regenerative combustion system, rotating Regenerative air preheater, silicon carbide metal combined air preheater, combustion fan, on-line degassing and filtration device, aluminum molten transfer ladle, etc. Except the above equipment, our company can not only provide the customized designation, manufacturing and construction according to user’ s requirements, but also provide old furnace modify and energy-saving technical transformation, recommend the optimal scheme combined with the technological requirements of customers.



Aluminum (Alloy) Melting & Holding Furnace							
Item	Furnace	Furnace Form	Capacity	Rated Melting Speed	Range of Application	Applicable Fuel	Form of Burner
Melting Furnace	Shaft Energy-saving Aluminum Melting Furnace	Stationary		3t/h-8t/h	Wires and cables, aluminum profile, aluminum sheet(foil), pressure casting and aluminum scrap recycling industry	Diesel oil, inferior oil, heavy oil, coal gas, natural gas, and liquefied petroleum gas	High temperature burner+ Hot-blast boiler furnace
	Shaft Continuous Aluminum Melting Furnace	Stationary with Double Chamber	6T-25T	1t/h-15t/h	Wires and cables, aluminum profile, aluminum sheet(foil), pressure casting		High temperature burner+ Hot-blast boiler furnace
	Equal Diameter / Reducing Diameter Scrap Aluminum Melting Furnace With Double Chamber	Stationary	16T-100T	2t/h-12t/h	Recycled aluminum / aluminum profile industry		High temperature burner +Air preheater
	Circular Fast Energy-saving Aluminum Melting Furnace	Stationary	6T-80T	3t/h-30t/h	Aluminum profile, aluminum sheet(foil), wire & cable and pressure casting industry.		High temperature burner +Air preheater
	Rectangular Regenerative Aluminum Melting Furnace	Stationary/Tilting	12T-35T	4t/h -8t/h	Wires and cables, aluminum profile, aluminum sheet(foil) and pressure casting industry		Regenerative burners
	Zinc Melting Furnace	Stationary	8T-80T		Melting of Zinc and Zinc Alloy		High temperature burner +Air preheater
Holding Furnace	Double Chamber Holding Furnace	Stationary	6T-25T		(Equipped with melting furnace)		High temperature burner
	Circular Holding furnace	Stationary/Tilting	6T-50T		(Equipped with melting furnace)		High temperature burner/ Regenerative burner
	Electric Resistance Holding Furnace	Stationary/Tilting	10T-50T		(Equipped with melting furnace)		Heating by Silicon Carbide Rod



圆形倾动保温炉



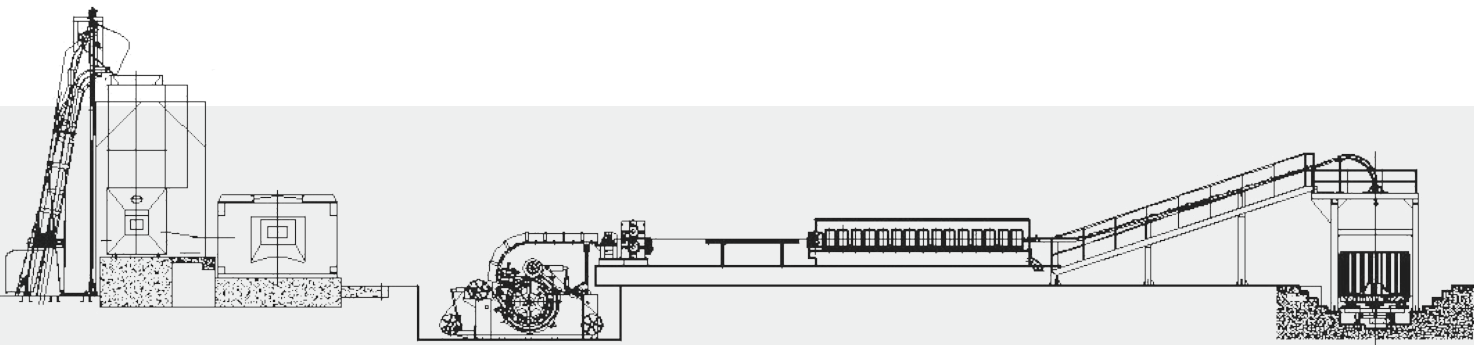
永磁搅拌器



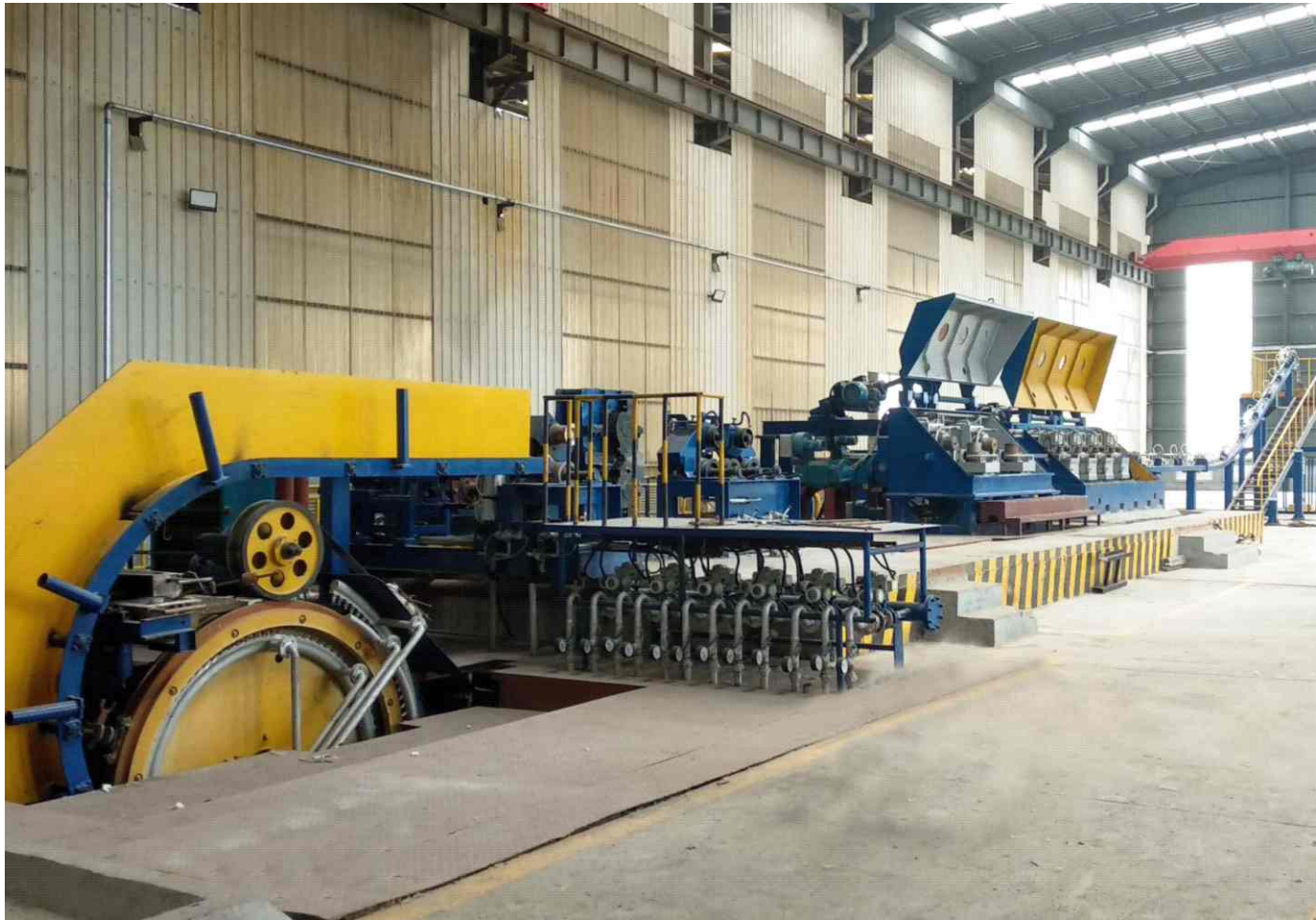
在线除气过滤



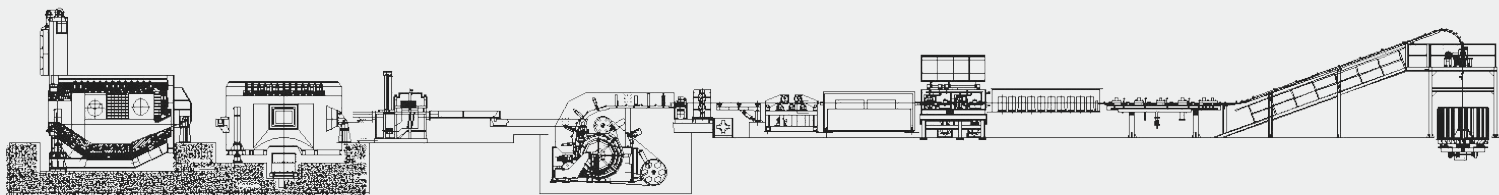
铝（合金）锭坯在线感应加热炉



6.Aluminum (Alloy)Rod Continuous Casting & Rolling Production Line

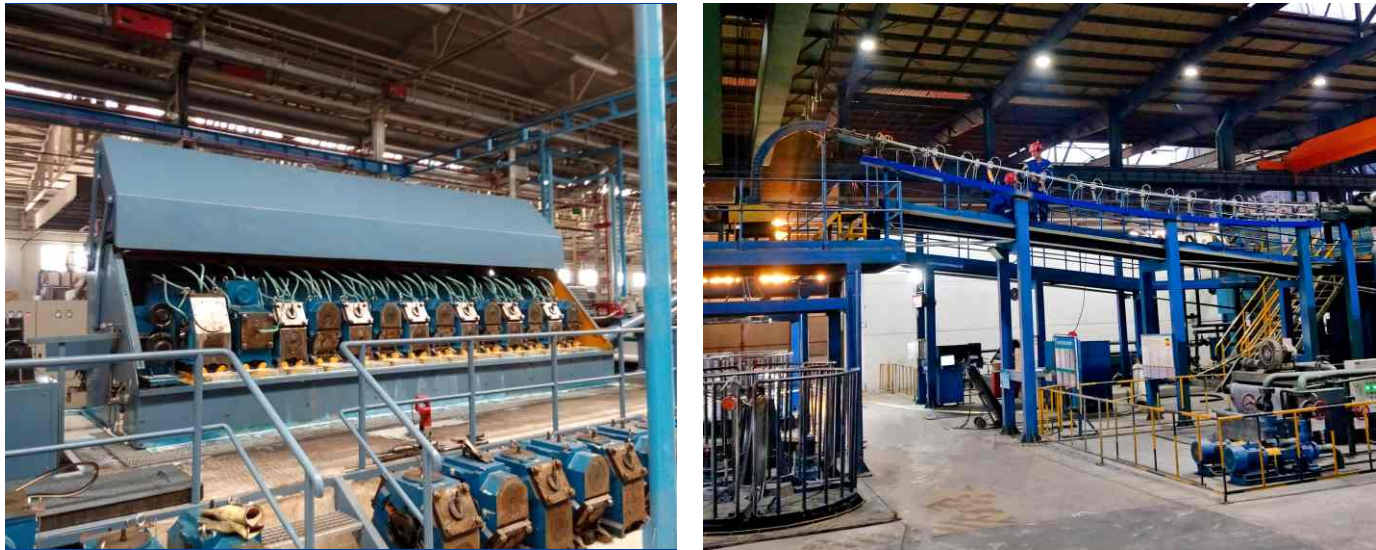


This production line provided by our company is mainly used for producing Round Aluminum and Aluminum Alloy Rod for Electrical Purpose, Extruding Purpose. By changing the configuration of equipment, the line also can produce various cast ingots(billets), Al-Ti-B rod, Steel-shot Aluminum Rod (deoxidizer of steel plants), Zinc (alloy) Rod for welding rod. And the Aluminum Alloy CCR line can produce high strength aluminum alloy rod such as 5154, 6201, 6101, and A356 ingots, which have been obtained the unanimous approval and favorable comment of the domestic and international customers.



Process Flow of Aluminum (Alloy) CCR Line:

Melting → Refining (Alloy proportion, stirrer, slagging, holding) →
On-line degassing& filtration → Horizontal casting → Casting bar →
Casting bar pretreatment (forward pinch roll, shearer, straightening) → Induction heater→
Continuous rolling→ Quenching →Rod Coiling



Aluminum (Alloy) Rod Continuous Casting & Rolling Line							
NO	Model	Application	Specification	Capacity	Sectional Area	Rolling Mill Type	Main Machine Installed Power
1	MRS1600/9.5(12,15) -255/15(13,11)	A2/A4/A6/A8/ EC 1350 8030/8176/6201/6101	9.5mm/12mm/15mm	2.6t/h-6.0t/h	2340mm ²	15 #Traditional 3 roller	400KW-600KW
2	MRS 2500/9.5-255/14		9.5mm/12mm/15mm	3.0t/h-5.5t/h	2340mm ²	2+12 # Traditional 2 roller + 3 roller	600KW -650KW
3	MRS 3200/9.5-255/14		9.5mm/12mm/15mm	3.5t/h-7.5t/h	3200mm ²	6+6+2 # Traditional 2 roller + 3 roller	760KW-800KW
4	MRS 2500/9.5/7.6-255/16		7.6mm/9.5mm/12mm/15mm	3.5t/h-6.0t/h	2400mm ²	2+14 # Traditional 2 roller + 3 roller	600KW -650KW
5	MRS 2300/9.5-3U+10Y	6201/6101/5052/5154 5005A Al Alloy	7.6mm/9.5mm/12mm/15mm	2.0t/h-3.5t/h	1200mm ² /2000mm ²	3+10 #New type 2 roller+ Traditional 3 roller	985KW -1035KW
6	MRS 6500/9.5-12U-M	A2/A4/A6/ A8/ EC 1350 8030/8176/6201/6101	9.5mm/12mm/15mm	10.0t/h-12.0t/h	6500mm ²	11 #Full New Type2 Roller, oil-film bearing, individual motor	2000KW-2200KW
7	MRS 1200/255/13	Zinc(Al Alloy) rod	6mm	1.8t/h-2.0t/h	610mm ²	13 #Traditional 3 roller	350KW-450KW
8	MRS 1400/255/12	Al-Ti-B Alloy Rod	9.5mm/12mm	1.5t/h-2.0t/h	1500mm ²	2+10 # Traditional 2 roller + 3 roller	350KW-450KW
9	MRS 2300/38-255/3-60	Steel Shot Aluminum rod (shot)	Φ38mmX60	3.0t/h-4.0t/h	2300mm ²	3 #Traditional 3 roller	200KW-250KW

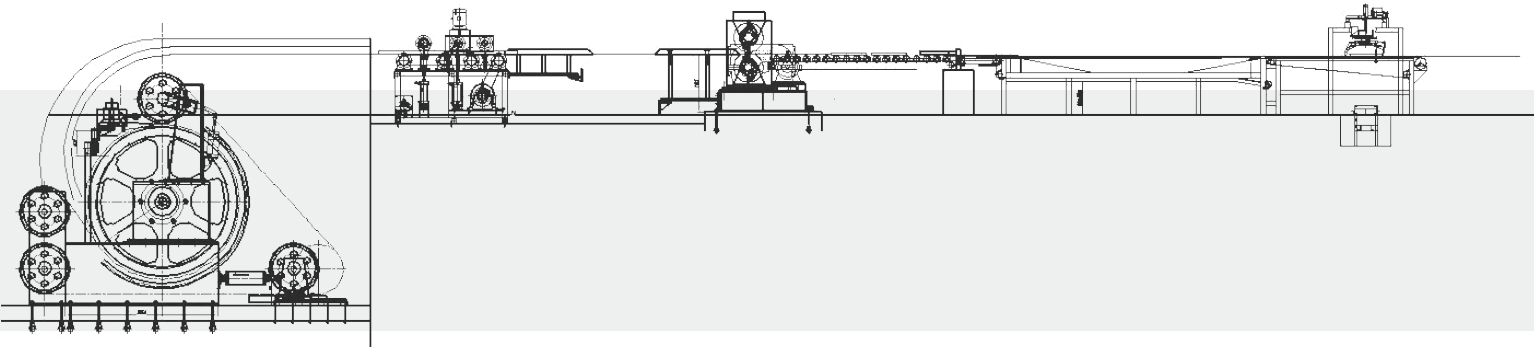
7. Aluminum(alloy) Ingot Casting Machine



This machine adopts wheel belt type continuous casting technology to continuously cast aluminum ingots and aluminum alloy ingots (A356, etc.). The ingot blank enters palletizing conveyor after coercive spraying and cooling to safe temperature, then the ingot blank shall be palletized by mechanical palletizer, also can be palletized and packed by robots.

Process Flow:

Melting(Holding)furnace(with mixer)→Online degassing and filtration→Four-wheel type continuous casting machine→Active straightener→Code marking machine→Hauling machine→Shearer→Cooling device→Roller conveyor→Palletizing→Packing



Main Characteristics:

- (1)Fine and uniform grain structure, stable quality
- (2)High output, high degree of automation and intelligence, safe working environment
- (3)Simple process, small investment, short production procedures, and extremely high cost-effective
- (4)The surface of the ingot is flat and smooth, without casting defects like porosity, slag inclusion, burrs and cracks , etc.
- (5)The ingot can be made into T-shaped or wave-shaped according to customer’ s requirement.
- (6)This is an innovative technology and technic, which has replaced the old technics of horizontal die casting and vertical casting.



Aluminum(Alloy) Ingot Casting Machine		
Machine type	MRS5000	MRS5000
Capacity	≥5t/h	∧8-10t/h
Casting ingot sectional area	5290mm2	5290mm2
Crystallizing wheel dia.	Φ2100mm	Φ3100mm
Speed	150-240mm/s	150-240mm/s
Finished product	A356 等	A356 等
Continuous casting power	11KW (AC, AC frequency conversion)	15KW (AC frequency conversion)
Active straightener power	11KW (AC, AC frequency conversion)	11KW (AC frequency conversion)
Code marking motor power	4 KW (AC, AC frequency conversion)	4 KW (AC frequency conversion)
Hauling motor power	15 KW (AC, AC frequency conversion)	15 KW (AC frequency conversion)
Shearer motor power	90 KW (AC, AC frequency conversion)	90 KW(AC frequency conversion)
Casting ingot shearing length	600-750mm(can be set as per customer's requirement)	600-750mm(can be set as per customer's requirement)
Electric control mode	PLC+ HMI	PLC+ HMI

8. Cold rolling mill for metal and special cable

According to the requirements of customers and market products, our company has developed a series of cold rolling mills used in the wire and cable industry. According to purpose, it can be divided into metal cold rolling mill and cable cold rolling mill; according to machine type, it can be divided into 2-roller cold rolling and 3-roller cold rolling; according to drive mode, it can be divided into integral drive and individual motor drive.

The cable cold rolling mill is a new type machine developed by our company in 2017, it is mainly used for the production of railway seamless alloy links up grounding wires and BTTZ mineral insulated fireproof cables.

Metal cold rolling mill mainly used for the rolling of oxygen free copper(alloy) rod, cold rolling can improve the mechanical property of the castings, and at the same time can compensate for the defects of the castings to a certain extent, thereby reducing the rate of wire breakage.

Metal cold rolling mill is mainly composed of pay-off stand, hydraulic shearer, cold rolling main machine, lubricating oil system, emulsion system, outlet rod guiding device, rod winder and electric control device, etc.



2-roller cold rolling



2-roller cold rolling



3-roller cold rolling



3-roller cold rolling



Rolling mill for links up grounding wire



BTTZ rolling mill

Item	Parameter
Rolling mill type	Oxygen free copper rod cold rolling machine, Copper alloy rod cold rolling machine, other metal(alloy) rod cold rolling machine, Cold rolling machine for high-speed Railway links up grounding line、BTTZ mineral insulated fireproof cable production line, etc
Inlet rod dia.	Φ55mm、Φ35mm、Φ25mm、Φ20mm、Φ17mm、Φ16mm、Φ14.4mm、Φ12.5mm、Φ8mm.etc
Outlet rod dia.	Φ20mm、Φ18mm、Φ17mm、Φ8mm、Φ6mm、Φ5mm、Φ4mm、Φ3mm.etc
Out of roundness of outlet rod dia.	not more than 0.2 or higher accuracy after rolling
Processing pass	2 ~ 16 passes rolling or as per customer's requirement
Rolling speed	Max 3m/s while continuous rolling, max. 5m/s while discontinuous rolling
Roll pass	Oval-round hole pass or triangle-round hole pass
Total compression ratio	2 ~ 10, or as per customer's requirement
Each pass compression ratio	1.15 ~ 1.4 (means, roller pass can be changed)
Total installed power	100kw ~ 500kw
Drive mode	DC integral drive or each rolling stand individual drive, frequency conversion speed regulation or AC servo speed regulation
Operation method	PLC control, touch screen display, can be upgraded to DCS control or internet of things
Rolling type	wo-roller horizontal and vertical alternation or three-roller Y type rolling mill
Nominal roller dia.	Φ200mm(double-groove or multiple-groove)、Φ248mm(double-groove or multiple-groove)、Φ255mm、Φ264mm、Φ300mm、Φ370mm、Φ400mm, etc
No. of rolling stand	2 ~ 16 sets or more
Main motor	90KW~180KW DC main motor each rolling stand motor 11kw ~ 110kw AC frequency conversion motor or AC servo motor
Roller material	Cr12MoV、H13、other imported material, etc
Rolling mill dimension	L*W*H 18m*6m*2.5m (the dimension shall be different with different configuration)
Rolling center height	902.5mm/1250mm (it has difference with different design)

9 . Spare Parts of Copper /Aluminum Continuous Casting and Rolling Production Line

In order to guarantee the CCR lines working smoothly, we will provide all kinds of best quality spare parts, consumables for the customers with the most preferential prices at the fastest speed. Including spare parts of Properzi Line (Italy), Southwire line (USA), SMS–MEER (Germany), Our Own CCR Line and all other Chinese CCR Lines.



10. Environment Protection System

Energy conservation and environmental protection has become a global concern which should be solved urgently. So our company developed the environmental protection system on the bases of technical innovation and equipment improvement while designing and manufacturing all kinds of Copper/ Aluminum Melting Furnace, Refining Furnace, Holding Furnace. The environment protecting system is used for removing mass dust and harmful discharged exhaust gas from the furnace smoke channel, especially the SO2 and CO2 in the melting process, greatly upgrade the enterprise economic benefit and social effect, and achieve the environmental protection function effectively.

We can provide the 3 main type of system: Pulsed Jet Cloth Filtering System, Cyclone & Water Membrane Dust Removal System, Biological–medicine Environmental Protection System. We can design and manufacture the system according to the customer's pollutant, emission standards and industry standards to meet the differentiated needs of customers.

Pulsed Jet Cloth Filtering System

pplication: The dust removal system has a wide range of applications, dust removal efficiency up to 99%, can be used in the occasion of high purification requirements. The product has strong adaptability and can collect all kinds of dust without affecting dust removal efficiency due to specific gravity and resistance of dust. The air volume can be from several cubic meters to several million cubic meters per hour. It is Easy to recycle materials, no any other secondary pollution.

Advantages & Disadvantages: It can be used for Copper/Aluminum Furnace for Low temperature and industrial dust, but the whole system investment is higher, the land occupation is larger, and the cloth bag required a high requirement for the temperature and humidity of industrial flue gas, so the late maintenance costs will be higher.



Yclone & Water Membrane Dust Removal System

Function: Used for the purification for the flue gas of industrial furnaces, the cyclone to move the large particles of dust, then using the multilevel water scrubber to cleaning. The water scrubber tower has special Spray Flux Nozzle, greatly ensures the spray density, so that the furnace exhaust gas will become to tiny water vapor out to the air and reduce the damage to the environment effectively.

Process Flow: Furnace flue gas → heat exchanger (cooling device) →Cyclone → multilevel water scrubber → induced draft fan → vapor-water separation

Advantages & Disadvantages: It can be used for Copper/Aluminum Furnace for high temperature and industrial dust, the whole system investment is economic with excellent dedusting and harmful-gas off effect, and the running cost and maintenance ratio will be very low.

Biological–medicine Environmental Protection System

It is mainly used for the treatment of waste liquid and waste gas produced by biomedicine. The waste liquid and waste gas are burned through the incinerator and the venturi scrubbing tower so that reaches the emission standard and discharge.



11. 16. Rewinding Machines

This product is used for rewinding the Steel Wire/Copper Rod/ Aluminum Rod/ Copper Tape/ Aluminum Tape/ Steel Tape/ Flat Cable, Etc. After rewinding, the coil will become more compacted which is convenient for long distance transportation and container loading. The whole machine is driven by frequency conversion, so it has higher automation and stable operation. We can design and manufacture as per the customer’ s need.



No.	Item	Application	Power	Coil Dia	Material Size	Coiling Speed
1	Vertical Rewinder	Al Rod rewinding	22KW	Φ800 × Φ1600 ×900mm	Φ9.5mm/ Φ12mm	V=2–3m/s
2	Horizontal Rewinder	Al Rod rewinding	(AC)	Φ540 × Φ1400 ×870mm	Φ9.5mm/ Φ12mm	V=2–3m/s
3	Multifunctional Rewinder	Steel rod/ copper rod/ aluminum rod	18.5KW(AC)	Φ400 × Φ800 ×630mm	<Φ13mm	MAX400m/min
4	Customized Rewinder	Copper tape/ aluminum tape/steel tape/ flat cable	22KW(AC)	According to customer’ s requirements		

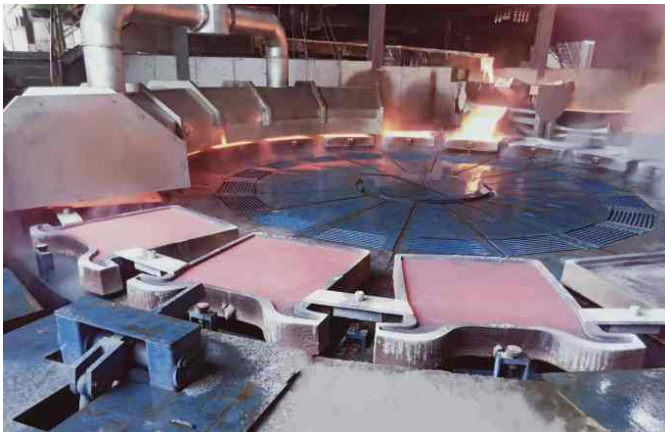
12. Copper Anode Melting & Casting Line (Joint research, development and undertaking projects with partners)



The Copper Anode Plate Disc Casting Machine equipped with melting furnace are used for producing the Anode sheet, the anode sheet size can be specified by the user. According to the configuration, the machine can make manually and automatic quantitative casting, and adopt industry PLC frequency conversion integrated control. The whole system has high degree of automation, smooth operation, and the finished product has no crimping and casting fin.

The process flow:

Qualified Copper Molten → Launder→ Upper Tundish →Lower Tundish→ Disk Casting Machine→ Cooling Device → Anode Jacking Device→ Anode Plates Collecting Device → Finished Product.



Selection Reference of Disc Casting Machine		
NO	Technical Points	Selection Instructions
1	Metal for Casting	The equipment can be used for casting various non-ferrous metals such as copper, lead, etc. If the casting medium has other special characteristics, please fill in the performance parameters.
2	No. of Casting Die	12 dies--28dies can be chosen
3	Casting Technology	Quantitative casting/Non-quantitative casting
4	Casting mode	Single Disc-casting / Duel Disc-casting
5	Driving Position	The gear drive/Center drive
6	Motor Type	Variable frequency motor/Servo motor
7	Others	Other requirements of the user

13. Copper Cathode Electrolytic system (Joint research, development and undertaking projects with partners)



Cathode plate electrolysis system is used for transfer copper anode containing certain impurities into high quality copper cathode plate. Due to the whole process by electrolysis process, we can call it “electrolytic copper” . The final products should be conformity with the standard of GB/T467–1997 (Cu–CATH–1) and (Cu–CATH–2). The whole system is joint designed and manufactured by our company and one Chinese well–known state–owned copper factory, the annual capacity can be from 6,000T to 100,000T, which has advanced technology and lower energy consumption. We can provide the whole project designation and technology service according to the customer’ s requirements.



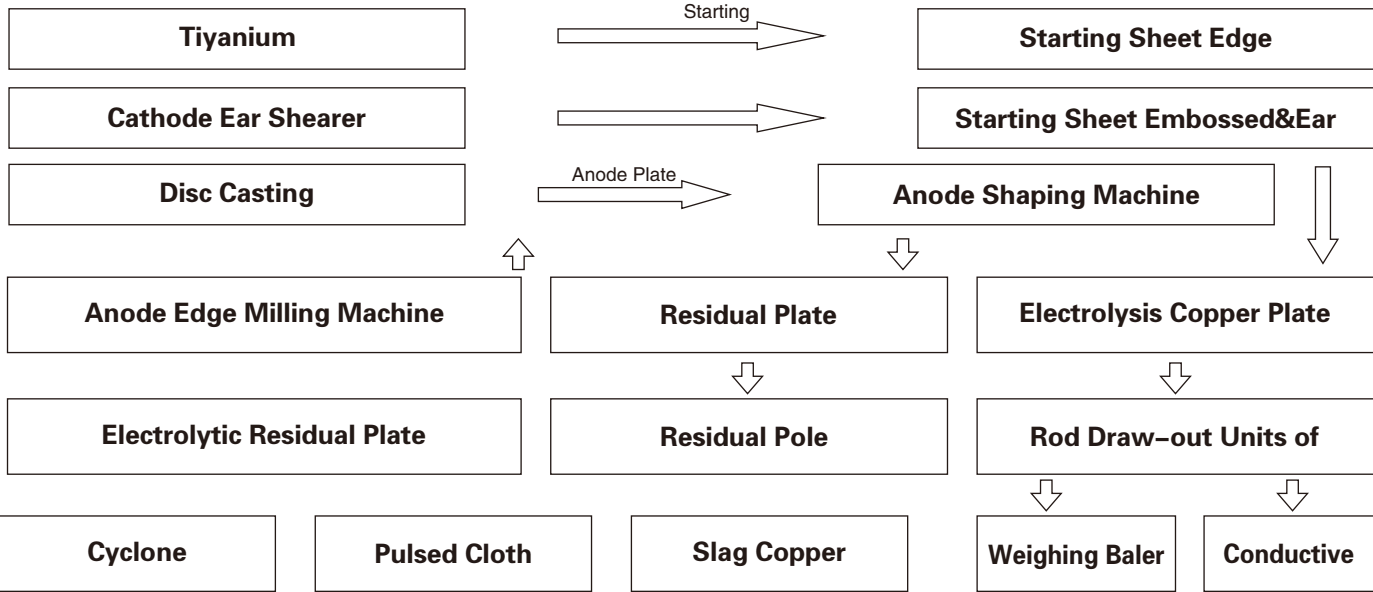
The system composition:

Anode preparation machines, stripping machine, residual cleaning machine, Electrolytic crane and spinner, Cathode grinding machine, Permanent cathode, electrolytic bath, controlling system, Production tank rectifier, de–coppering Circulation electrolytic bath, boiler room, Oil–fired steam boiler, air compressor station, LPG station, LPG mixer, transportation facilities.

Main designing parameters

NO	Technical Points	Parameter
1	High purity copper cathode	Cu≥99.9935%
2	Annual/working days	350d
3	Copper cathode recovery rate	99.80%
4	Residual rate	17%
5	Bath voltage	0.25~0.3V
6	Cathode plate size	1010 × 810mm
7	Weight/piece	≈ 100 kg

Porcess flow diagram



14. Wire Drawing Machine



Copper RBD machines

The slid type copper RBD machine is used for drawing the $\Phi 8\text{mm}$ rod to $\Phi 1.2\text{mm}-\Phi 4\text{mm}$. The drawing drum wheel are coated by tungsten carbide which reinforce the wheel strength and prong the life. The capstan and 12 drum wheels are driven by 2 motors, it is very easy for operation and change the wire drawing dies, effectively reduce the labor intensity and improve production efficiency.

Copper RBD Machine features

- 1. The horizontal and tandem construction, driven by two motors to achieve fast die change;
- 2. High precise helical gears transmission, high efficiency, low noise;
- 3. Transmission part enforced oil supply lubrication system;
- 4. Drawing capstans are in combined structure;
- 5. Emulsion immersed lubrication and cooling can ensure high quality of wires produced;
- 6. With coiler or double take-up to achieve high automation and high efficiency.
- 7. Electrical control: SIEMENS DC drive system, digital communication control.



Technical Parameters

NO	Applicable Material	Technical Parameter		
1	Cu	450-13	450-11	450-9
2	Wire Inlet Dia(mm)	$\Phi 8$	$\Phi 8$	$\Phi 8$
3	Wire Outlet Dia(mm)	$\Phi 1.2-\Phi 4.0$	$\Phi 1.78-\Phi 4.0$	$\Phi 2.0-\Phi 4.0$
4	Max. Mechanical Speed(m/s)	25	23	20
5	Drawing Drum Dia(mm)	$\Phi 450$	$\Phi 450$	$\Phi 450$
6	Max Drawing Dies	13	11	9
7	Size of Drawing Dies(mm)	$\Phi 38*35$	$\Phi 38*35$	$\Phi 38*35$
8	Wire Accumulate(mm)	8m	8m	8m
9	Power of Main Motor(KW)	250	200	160
10	Capstan Motor (KW)	75	55	55
11	Motor of Dual Spooler(KW)	30	30	22
12	Capstan Diameter(mm)	$\Phi 450$	$\Phi 450$	$\Phi 450$
13	Machine Net Weight(kg)	33000	32000	33000
14	Machine Size(L*W*H)	27000*5310*5000	25500*5310*5000	24000*5310*5000

Note: We can also provide other types of copper wire drawing machine, which are well-known brands in China, including Double-head Copper RBD machine, Intermediate Wire Drawing Machine, Fine Wire Drawing, Multi-wire Drawing Machine, Individual Motor Drive Wire Drawing Machine. Welcome the general customers for consultation and discussion.

Slip-type Aluminum Alloy Rod Breakdown Machine

The Slip-type Aluminum Alloy Rod Breakdown Machine is used for drawing the $\Phi 9.5\text{mm}$ aluminum and alloy rod to small size, the take-up can choose single spooler or duel spooler.



Features

- ◆ The drawing blocks rank in a horizontal row, and the cantilevers of all die holders are very short and in equal length.
- ◆ The surface of drawing blocks is coated with tungsten carbide power, which is strong in hardness and wear proof, having long life span.
- ◆ Main drawing machine and dead-block are driven separately, and all the dies can be changed conveniently and easily.
- ◆ Continuous dual take up, automatic reel-change, the automatic reel-change can be done at more than 99% efficiency.
- ◆ Driven by DC motor, the imported PLC and touch Screen (Siemens or Preface), which is convenient for the operator to set and display the parameter on the touch screen.



Technical Parameters

Model	Max. drawing die	Inlet wire dia. (mm)	Outlet wire dia. (mm)	Max. liner speed (m/s)	wire drawing drum dia. (mm)	Main motor(kw)	Total power(kw)
LHD450/9	9	Φ 9.5	Φ 2.8-Φ 5.0	16	450	250	300
LHD450/11	11	Φ 9.5	Φ 2.2-Φ 5.0	22	450	250	300
LHD450/13	13	Φ 9.5	Φ 1.8-Φ 5.0	25	450	250	300

Spare Parts of Drawing Machine/Annedling Unit

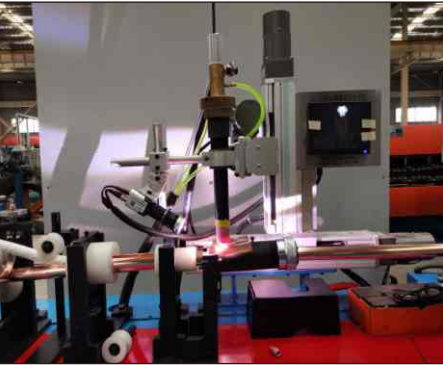


Spare Parts of Drawing Machine/Annedling Unit



15. Cooperation Company Products

Argon-arc Welding Metal Sheath Production Line & Fireproof Cable Production Line			
NO	Model	Equipment	Application
1	DAG5/25	Argon-arc Welding Metal Sheath Production Line	Produce the Radio-frequency Cable & RF Cable Metal Sheath
2	DAG6/20T	Argon-arc Welding Copper Sheath Production Line	Produce the Submarine Optical Cable Copper Sheath
3	DAG10/60	Argon-arc Pipe Welding Production Line	Produce the Metal Sheath for Railway Signal Cables, Flexible Fireproof Cables, Medium-voltage Cables ,High-speed Railway Copper Alloy Links Up Grounding Wire
4	DAG60/180	Argon-arc Pipe Welding Production Line	Produce the Metal Sheath of 110 KV-500KV High-voltage & Ultra High-voltage Crosslinking Power Cable Metallic Sheath
5	ZJ-30X	2-Roller Type Cold Rolling Line for High-speed Railway Links Up Grounding Wire	Produce the High-speed Railway Copper Alloy Links Up Grounding Wire
6	FH-BTTZ	BTTZ Mineral Insulated Fireproof Cable Production Line (Magnesium-oxide Vertical Filled -Copper Sheath Welding-Rolling)	Produce the Mineral Insulated Fireproof Cable



BTTZ mineral insulated cable production line

This equipment is an automatic production line specially designed for the BTTZ mineral insulated cable. It absorbs the successful experience of foreign equipment, combines with the advances in the latest technology and our experience in Argon Arc Welding Pipe Production Line, It can meet the production needs of BTTZ fireproof cable with large length.



Composition

The line is composed of Copper Rod Pay-off, Copper Tape Pay-off, Tape Cutter, Tape Connection, Tape Cleaning, Magnesium oxide filling, Copper Tape Forming, Argon Arc Welding, Vertical Rolling, No.1 Annealer, Cooling Water Trough & Guide Pulley, No.1 horizontal Rolling, No.2 Annealer, Cooling Water Trough & Guide Pulley, No.2 Horizontal Rolling, No.3 Bright Annealing Device, Cooling Water Trough & Guide Pulley, Finish Products Sizing, Auto-Coiling(Take-up), Electric Control System.



The whole production line is collected by computer and PLC, operate from HMI, all the motors are servo motors. Electric control cabinet adopts Rittal cabinet, the main components in the cabinet are imported brand or Sino-foreign joint venture brand. The main welding adopts Lincoln, USA.

The equipment not only designs a set of active forming wheels and positioning devices with high machining precision, good positioning and abrasion resistance on the copper strip forming, which makes the forming stable and the joint reliable, but also uses welding seam monitoring and tracking and tungsten pole height control to make the welding more reliable and easier for workers to operate.

The equipment adopts modern induction heating technology, the equipment specially used for copper induction diathermy, which makes its volume small, efficiency high, saves energy greatly and reduces production cost.

The equipment is equipped with strip splicing machine of argon-arc welding copper strip and a double disc pay-off strip device, which can meet the needs of continuous production. The copper rod splicer can be used to produce fireproof cables of any length.

Main technical parameters of the equipment

1. The external diameter of welded copper sheath: $\phi 42\text{mm}$

The range of allowable copper strip thickness: $0.85\text{--}2.0\text{mm}$; Copper strip width $B=(D-\delta) \cdot \pi$; D is the external diameter of welded copper sheath, δ is copper strip thickness.

2. The external diameter range of finished cable $\phi 6\text{--}\phi 30\text{mm}$

(BTTZ 750V 1*1.52 to 1*4002; 4*12 to 4*252)

(BTTZ 750V 1*1.52 to 1*4002; 4*12 to 4*252)

One production line completes the production of all BTTZ cable specification.

It takes only 5 minutes to replace the cable mold.

3. Adopt the DC High frequency argon welding arc starting, improve work efficiency.

4. (1) 100% duty cycle, max welding current 300A.

(2) Tungsten electrode height control; electric control

(3) Tungsten electrode welding seam monitoring system

5. Adopting stepwise induction heating softening copper pipe, inner wire and sintered magnesia, induction power adopts two sets of high-efficiency power specially used for copper, and there are three sets in total, each group is 100KWA.

6. It has magnesium oxide powder storage hopper and feeding device. At the same time, it has accurate lead-in cable core device and micro-vibration compaction magnesium oxide powder device.

7. It is equipped with 5-disc copper rod pay-off rack, disc pay-off and corresponding copper rod lead-in device

8. It adopts wheel rolling, including front rolling, middle rolling and finished rolling, which have respectively independent motor drive.

9. Adopting coiling take-off.

10. Welding speed: $1\text{--}3\text{m/min}$, finished cable speed: 3m/min to 15m/min .

11. The installed capacity of the equipment is about 1000KVA, and the normal use is less than 200KVA.

12. The water consumption of the equipment is about 8T/h, which can be used to build a special storage tank for circulation water supply.

13. Argon is about $10.2\text{M}^3/\text{h}$, and a bottle of gas can be produced continuously for 24 hours. (Purity is 99.99%)

14. The equipment is about 15m height, 70m long and 6m wide.

15. Equipment color: Appointment according to buyer's requirement.

Direction of operation(pending): Appointment according to buyer's requirement.



16. Copper Recycling Production Line



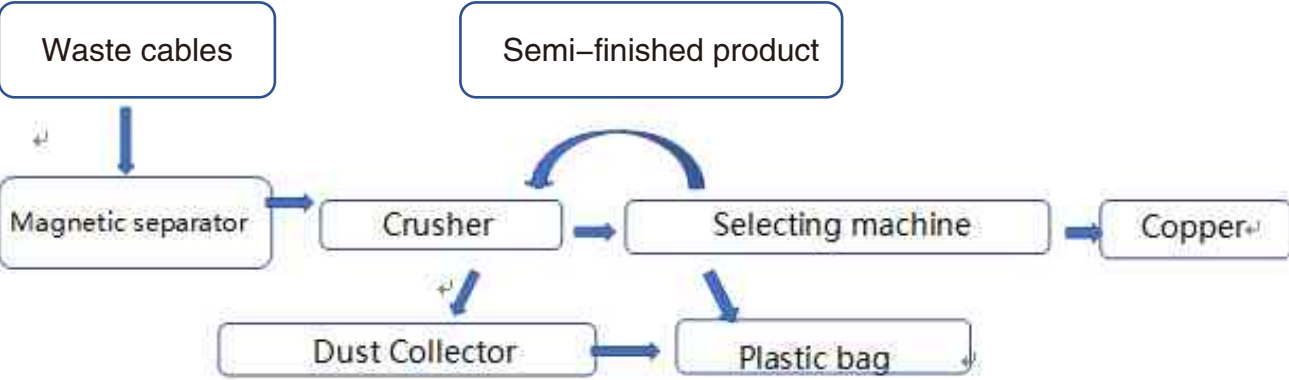
MRS600S/ 800S is a professional line for recycling the copper from the waste wire and cable. The whole production line has unique structure, big process capacity and low power consumption with high separation, the separation conducted by several parts. This equipment has not only improved the purity of copper, but also reduced the pollution to the environment.

Operating principle

Under the action of wind force, the two substances with different densities make the deviation generated by the amplitude movement on the screen with a certain angle so that the copper wire with high density sticks to the screen and moves forward towards the copper outlet, while the plastic skin with low density floats on the copper wire and flows towards the outlet. So as to achieve the purpose of copper plastic separation



Main technical parameters of the equipment



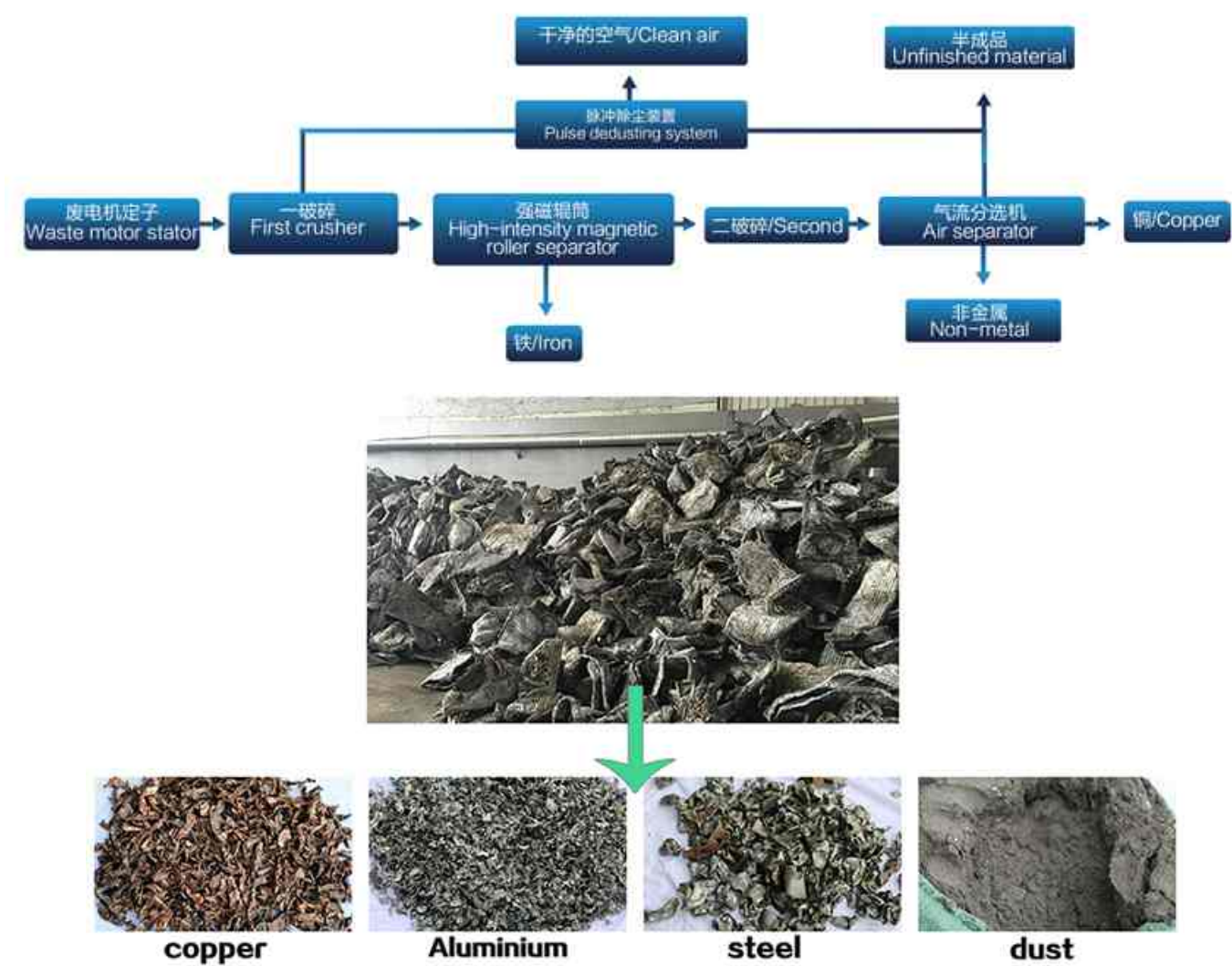
Automatic Copper Recycling Production Line				
NO	Technical Parameters		MRS-600S	MRS-800S
1	Processing diameter		Dia: Φ0.2- Φ30mm	Dia: Φ0.2- Φ30mm
2	Overall dimension (L*W*H)		550*550*225cm	1050*750*250cm
3	Machine weight		3500kg	6400kg
4	Motor voltage		380V/50HZ (According to the customers' need)	
5	Capacity/day	Capacity/day	3000-4000kg	7000-12000kg
		Square wire, such as 4m2, 6m2	700kg/h	12-15t/day (1-1.5t/h)
		Automotive Wire	300-400kg/h	700-900kg/h
		Telephone wire	350-450kg/h	600-800kg/h
			400-500kg/h	700-1000kg/h
		(if match with shredding machine)		
		Miscellaneous wire	200-300kg	600kg/h
6			42.5KW	80KW

17. Heat Radiator Recycling Production Line



MRS-2000A Radiator Recycling Machine will be used for disassembling the waste radiator which are difficult to disassemble manually or the manual disassemble cost is too much high. After the professional processing, it can obtain renewable resources. The whole process is carried out in the negative pressure. The operator should charge the materials and select the large pieces of iron or large diameter screws, shaft material and other hard materials out, then enter the 1st stage roughing crusher and 2nd stage fine crusher in order to make the copper, iron, aluminum fallen off, finally adopt the strong magnetic roller and air separator to separate the Al, Cu, Fe. In the process of crush and sorting, a pulse dust removal system is equipped to solve the problem of dust discharge effectively.





NO	Technical Parameters	
1	Overall dimension (L*W*H)	1750*900*450cm
2	Material Inlet Size	≤80cm
3	Machine weight	17800kg
4	Motor voltage	380V/50Hz(According to the customers' need)
5	Capacity	1500–2000kg/h
6	Motor power	137KW
7	Sorting rate	≥98%

18. Customized Equipment/Turnkey Project

Besides design and manufacture the metal furnace, environmental protection system and continuous casting & rolling line, our company also can customize the equipment as per customer’ s requirement. Since 2017, our company has provided wire drawing machine manufacturers with take-up and pay-off racks and dual-bobbin take-up; equipped with cold rolling production line used to produce BTTZ mineral insulated fireproof cable and take-up coiler for cable factories; provided casting factory and copper processing factory with environmental protection system; designed and provided experimental facilities for some well-known universities.

