

Add

10th Floor,ZhiHui,International Building,FengCheng 10th Rd Xi'an.China.710021

Mobile

86-13991945161

Fax

86-29-62398237

Tel

86-29-62398238

Skype

Zhangshuangbb

Whatsapp

86-13991945161

E-mail

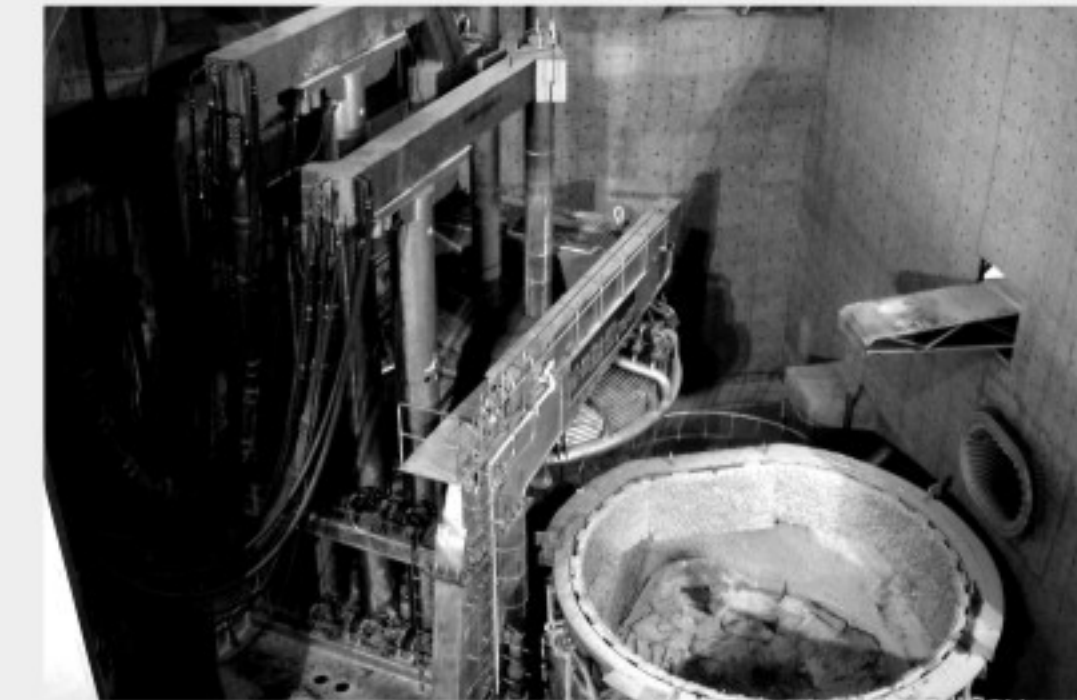
Business@xatyyj.com ; Zshuang@xatyyj.com

Website

www.chinaeaf.com

西安腾冶冶金工程有限责任公司

XI'AN TENGYE METALLURGICAL ENGINEERING CO.,LTD



TENGYE



CHINA



METALLURGICAL ENGINEERING



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03

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01

COMPANY PROFILE

TENGYE
METALLURGICAL
ENGINEERING



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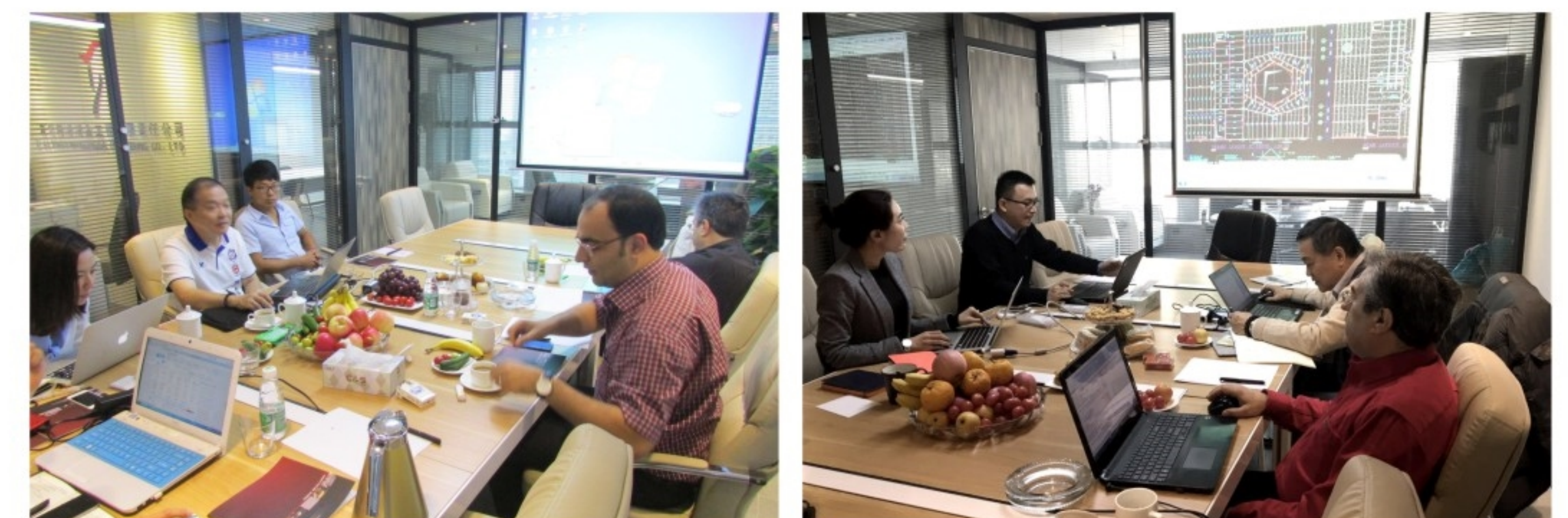
INTRODUCTION

Xi'an Tengye Metallurgical Engineering Co., Ltd. is a general contracting company specialized in EPC metallurgical engineering project which involved in metallurgical equipment designing, technical researching, manufacturing, erection and commissioning.

Our main service is supplying complete equipment of steelmaking line, ferroalloy production line and other metallurgical engineering projects. And main products are EAF, LF, VD/VOD, CCM, Rolling Mill, Submerged Arc Furnaces for Ferroalloy, Induction furnaces, Raw material pre-processing system and product processing system.

Based on the research station we set in Xi'an Metallurgy University, we have co-operation with famous metallurgical doctors who give metallurgical processing technic supports and researching abilities to us. We also have the mature and professional technic team. We have designing performance and independent researching achievements of EAF from 0.5t-100t, LF from 8t-160t, Submerged Arc Furnaces for Ferroalloy from 3200KVA-36000KVA. We keep the policy "Conscientious, Strict, Innovation". Quality is the strongest insurance of a company, so we have the QC department to supervise the complete production line and guarantee the quality.

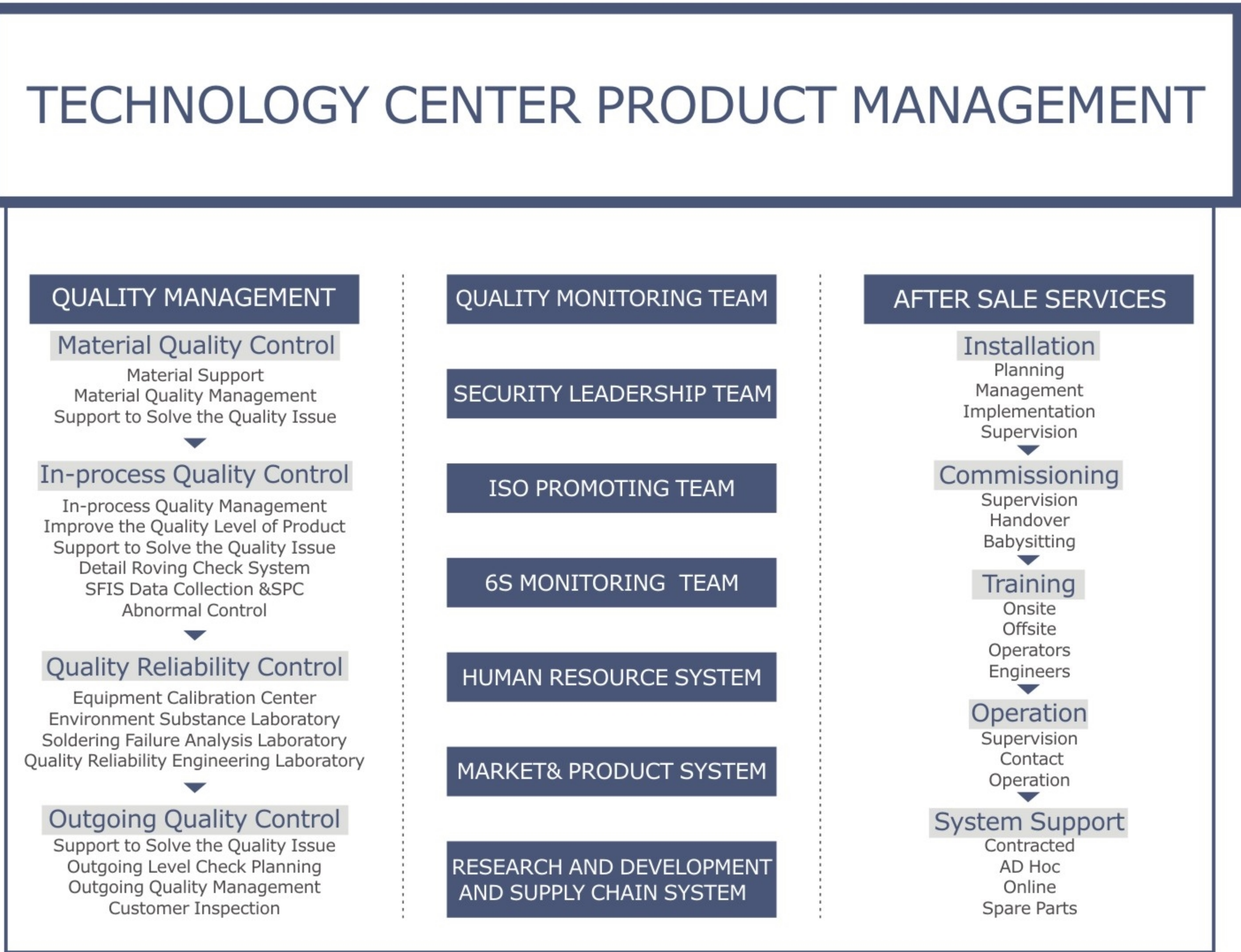
Complying with the global integration trend, we have built good relationship with customers in Iran, Indonesia, Japan, Tajikistan and Vietnam markets and signed cooperation agreements with the experienced metallurgical designing institutions in Mid-east. Make our exquisite projects and push them to the international market, supply the integrated scheme to the steel companies all over the world.



MANAGEMENT MODE

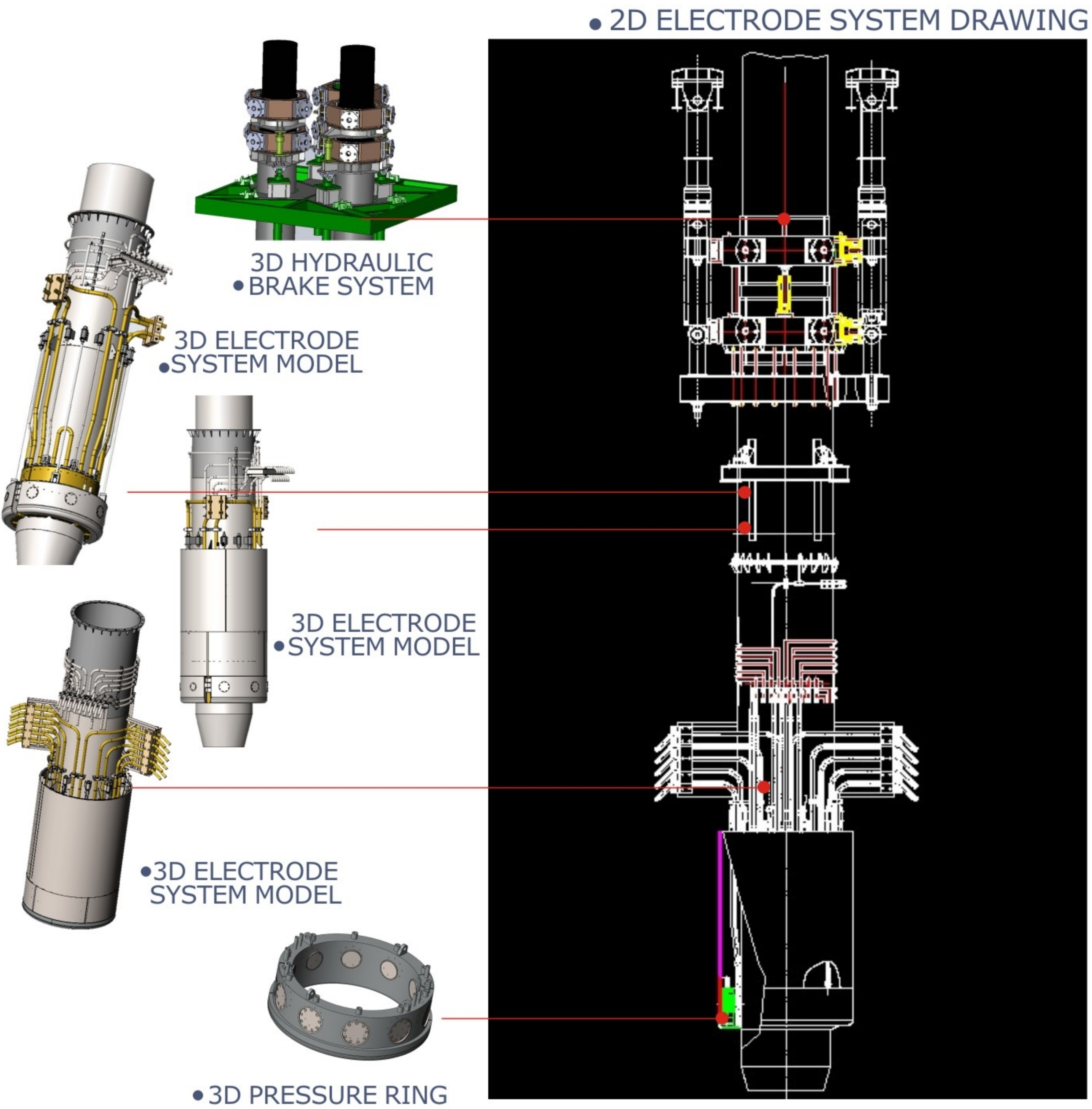
Closely cooperating with you means our engineering team translates your wishes into concrete form, we will extensively plan your plant layout, analyze the interfaces and battery limits as well as the various production stages, equipment, and disciplines, optimize the complex interaction between all investment and process-related factors. This not only reduces interfaces, but also ensures smooth plant integration and short project times.

Our proven procedure will coordinates all activities, guarantees quality, and monitors on-time, on-budget performance. So you always know the exact status of your project because we continually inform you about its progress. Our project management is designed to ensure you are involved in all major decisions. These included in one package are: Project development, Project planning , Project implementation, Project leadership.



ENGINEERING SYSTEM

For each new project, we design the part drawing to complete general layout with 2D first, then transfer it to 3D to check the motion simulation to protect engineering against the mistake on manufacturing and assembly. The view of assembly, product complete model and piping net in the factory can be down on the computer by 3D. It is very convenience and accuracy of operation on site.



MANUFACTURE CAPABILITY



Gantry Boring and Milling Machine



16m Floor Type Boring and Milling Machine



CNC Coordinate Type Cutting Machine



28m CNC Vertical Lathe



28m CNC Floor Type Boring and Milling Machine



Reheating Furnace



64m CNC Double-gantry Moving Boring and Milling Machine

02

PRODUCT

TENGYE
METALLURGICAL
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ELECTRIC ARC FURNACE FOR STEELMAKING

APPLICATION

For smelting carbon steel, high quality carbon steel and various alloy steel. It applies to all steel scrap, hot metal scrap, pelletizing and preheating steel scrap, hot briquetted iron and sponge iron, etc.

FEATURES OF THE EQUIPMENT

Series reactor in main loop improves the system impedance and achieves secondary high-voltage, long-arc and low-current operation with stable arc and high arc power. On-load tap changer is adopted during the operation of the EAF, which comprises left or right operation, rotating lid, top charging and eccentric bottom tapping. The furnace body is of frame-type full water-cooling structure, with detachable upper and lower furnace shells, concentric circular tubular furnace cover in the water-cooling structure, oxygen lance at the furnace door and burner on the furnace wall. The proportional valve controls electrode lifting, rotation of furnace cover and furnace tilting. There are a whole set of PLC, and computer control system and computer screen monitoring system.

AUTOMATION OPERATION

The operation of electric arc furnace is completely automation. The batching and weighing of raw material will be controlled and supervised by industry computer. On the main operation desk, there is online interface to raw material batching, charging, temperature inspection, spectrum, quick composition inspection, ladle weighing, furnace front display and company ERP system. On the furnace front display, the operator can view the information on melting processing to adjust the quality of molten steel. It will achieve the computerizing management on raw material batching and steel melting processing online. It will make powerful guarantee on steel quality and advanced management.



25t HX-EAF



40t-Ultra-High Power EAF



100t-Ultra-High Power EAF

TECHNICAL PARAMETER FOR HX-STEELMAKING EAF				
MODEL	FURNACE SHELL INNER DIAMETER(mm)	CAPACITY(T)	TRANSFORMER PARAMETER	GRAPHITE ELECTRODE DIAMETER(mm)
		RATED/MAX	RATED CAPACITY(MVA)	
HX-0.5	1600	0.5/1.5	0.63	150
HX-1.5	2100	1.5/2.5	1.25	200
HX-3	2600	3/5	2.2	250
HX-5	3200	5/8	3.2	300
HX-10	3500	10/15	5-6.3	350
HX-15	3800	15/20	6.3-8	350
HX-20	4000/4200	20/25	8-12.5	400

TECHNICAL PARAMETER FOR ULTRA-HIGH POWER ELECTRIC ARC FURNACE					
MODEL	FURNACE SHELL INNER DIAMETER(mm)	CAPACITY(T)	TRANSFORMER PARAMETER	ELECTRIC REATOR CAPACITY(KVAr)	GRAPHITE ELECTRODE DIAMETER(mm)
		RATED/MAX	RATED CAPACITY (MVA)		
HX-30	4600/4800	30/45	25-32	7000	450
HX-60	5400	60/70	45-55	9000-11000	500
HX-70	5600	70/80	55-65	11000-13000	500
HX-80	5800	75/85	60-70	12000-14000	500-550
HX-100	6200	100/120	75-85	15000-17000	550-600
HX-120	6400	120/140	90-110	18000-22000	600-650
HX-150	6800	120/170	120-130	24000-25000	650



The Trapping Process of EAF

LADLE REFINING FURNACE(LF FURNACE)

APPLICATION

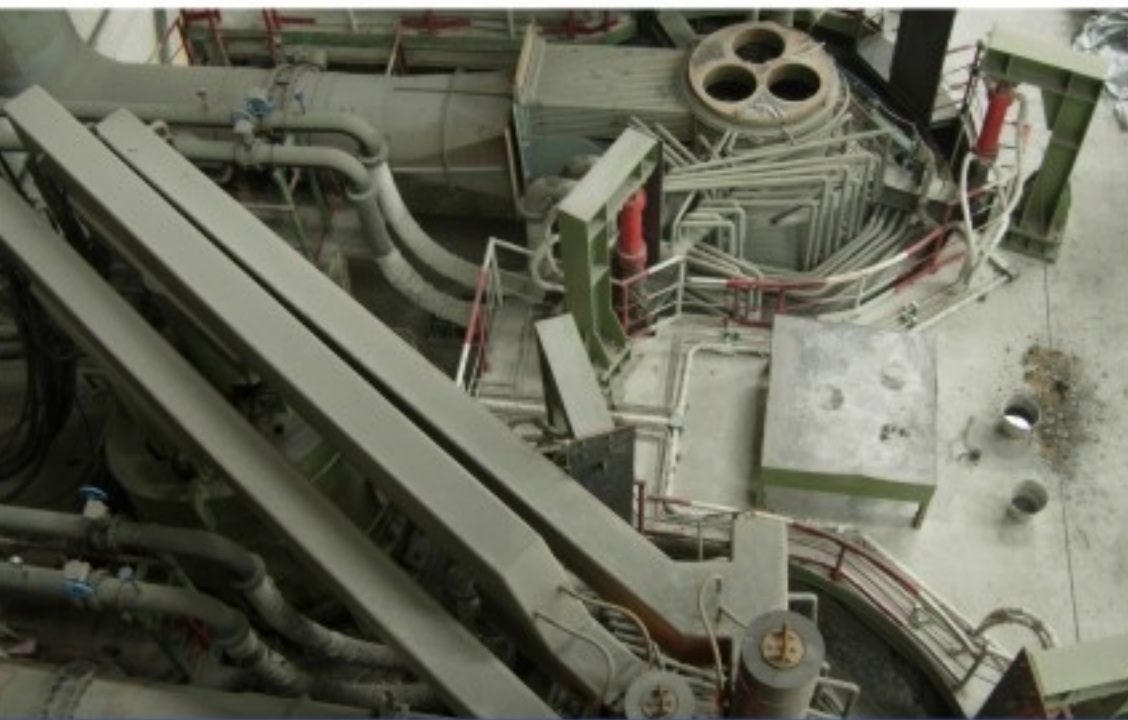
Ladle refining furnace is used for refining molten steel from primary melting furnace (EAF or Converter), can create a slightly positive pressure reducing atmosphere, apply such means as submerged arc heating, argon stirring, white slag refining, alloy composition trimming, wire feeding under the atmosphere to conduct degassing, desulfuration, decontamination for hot metal, and accurately control the ingredients and temperature of molten steel. The equipment also has an effect of buffering and adjusting continuous casting links.

TYPE OF LF FURNACE

Bridge type or the type with independent rack mount and furnace cover; single arm or three-arm; ladle revolving platform or furnace lid rotary type, etc.



40t -Ladle Furnace



120t Double Station Ladle Furnace



95t-The Ladle Pouring

TECHNICAL PARAMETER FOR LADLE REFINING FURNACE						
MODEL	LADLE SHELL INNER DIAMETER(mm)	CAPACITY(T)	TRANSFORMER PARAMETER	HEATING RATE OF MOLTEN STEEL(°c/min)	GRAPHITE ELECTRODE DIAMETER(mm)	CIRCLE DIAMETER OF ELECTRODE CENTER(mm)
		RATED/MAX	RATED CAPACITY (MVA)			
LF-15	2000	15-18	3	≥3	250	460
LF-20	2500	20-30	4	≥3	250	460
LF-30	2700	30-40	6	≥4	300	550
LF-40	2900	40-50	8	≥4	300	550
LF-50	3000	50-60	10	≥4	350	620
LF-60	3150	60-70	12.5	≥4	350	620
LF-70	3200	70-80	13.5	≥4	400	680
LF-80	3300	80-90	14	≥4	400	680
LF-90	3400	90-100	16	≥4	400	680
LF-100	3600	100-115	18	≥4	450	740
LF-130	3700	130-145	20	≥4	450	740
LF-150	3900	150-170	25	≥4	450	740
LF-200	4200	200-220	30	≥4	450	740
LF-250	4400	250-270	35	≥4	500	810



25t-Tilting Ladle Furnace

VD/VOD VACUUM REFINING FURNACE

APPLICATION

VD vacuum refining furnace can conduct vacuum degassing for molten steel, alloy composition trimming and argon stirring in vacuum. VOD vacuum refining furnace carries out oxygen blowing and decarburization, vacuum degassing and alloy composition trimming in vacuum, mainly used for refining ultra-low carbon stainless steel, electric pure iron, etc.

MAIN TYPES

VD / VOD vacuum refining furnace can adopt either single or dual station. Overhead, pit or vehicle-mounted arrangement can be selected for vacuum tank. Unscrewing and vehicle-mounted movement are optional ways for movement of the vacuum tank .

IT CONSISTS OF

Vacuum tank, vacuum tank cover and lifting mechanism of the cover, steel ladle, oxygen lance mechanism, vacuum charging device, temperature measurement and sampling and observation system, oxygen system, argon system, cooling water system, vacuum pump system, etc.



TECHNICAL PARAMETER FOR VD/VOD VACUUM REFINING FURNACE				
RATED CAPACITY (T)	LADLE SHELL INNER DIAMETER(mm)	VACUUM PUMP SUCTION CAPACITY (kg/h)	WORKING VACUUM DEGREE(Pa)	SIZE OF VACUUM TANK(mm)
15	2200	150	65	3800*4100
25	2600	180		4000*4600
30	2700	200		4200*5175
40	2900	250		4800*5300
50	3000	280		5300*5400
60	3150	360		5300*5500
70	3200	380		5400*5600
80	3300	380		5500*5700
90	3400	380		5600*5800
100	3500	400		5600*5800
120	3600	420		6200*6400
150	3900	450		6300*6600



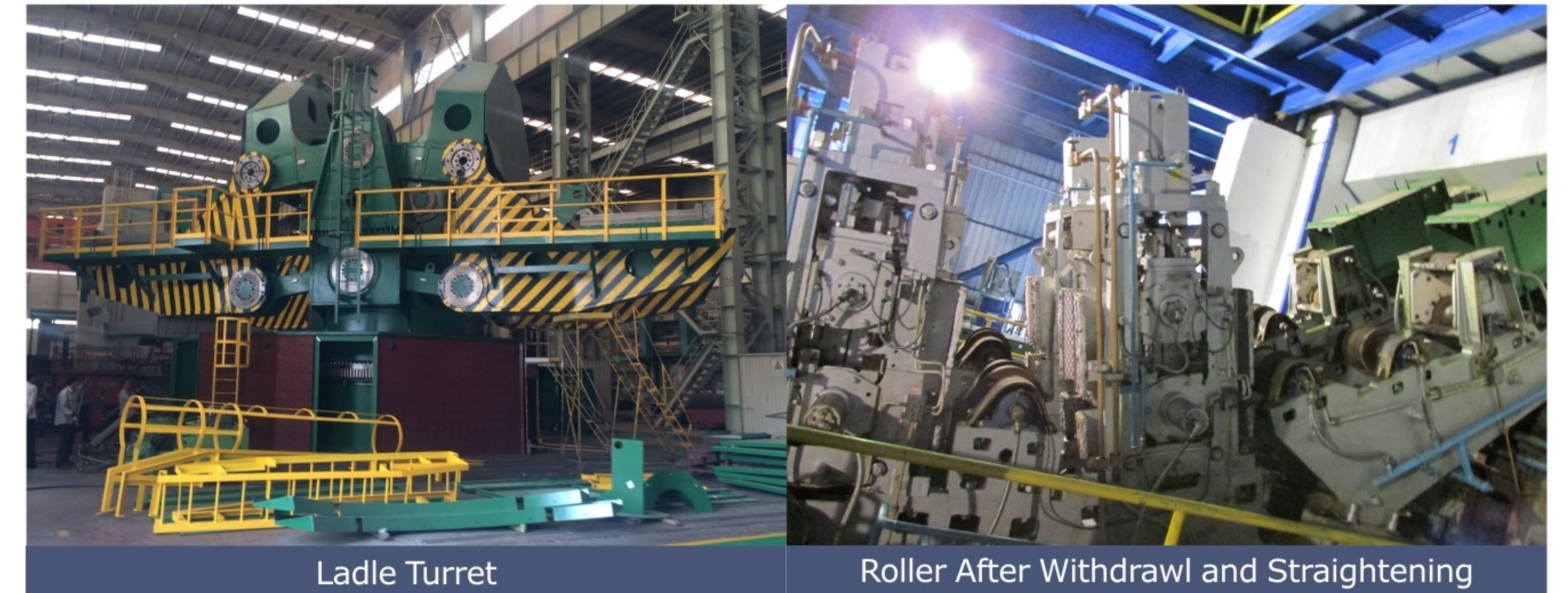
CONTINUOUS CASTING MACHINE

We can design and manufacture the up-to-date billet continuous casting machine in accordance with the user's steelmaking capacity, billet size, steel grades and the user's field conditions. The detailed design mainly includes:

- Equipment foundation and civil works
- Steel structure platform
- Casting radius, Strand number
- Ladle support, Turret, Ladle transfer car, Fixed support, Tundish, Tundish car, Tundish roaster, Mould, Oscillation device, Secondary cooling system, Dummy bar, Dummy bar storage device, Withdrawal straightening machine, Approach roller table, Automatic cutting machine Transmit roller table, Cooling bed, Pusher, Hydraulic system, Computer and PLC system

This type of CCM can be designed as curved and vertical-bend according to the users' requirements. It can cast carbon steel, alloy steel and special steel, such as stainless steel. Automatic hydraulic control, automatic secondary cooling water distribution, compressed air-water cooling system.

TENGYE METALLURGICAL ENGINEERING



Ladle Turret

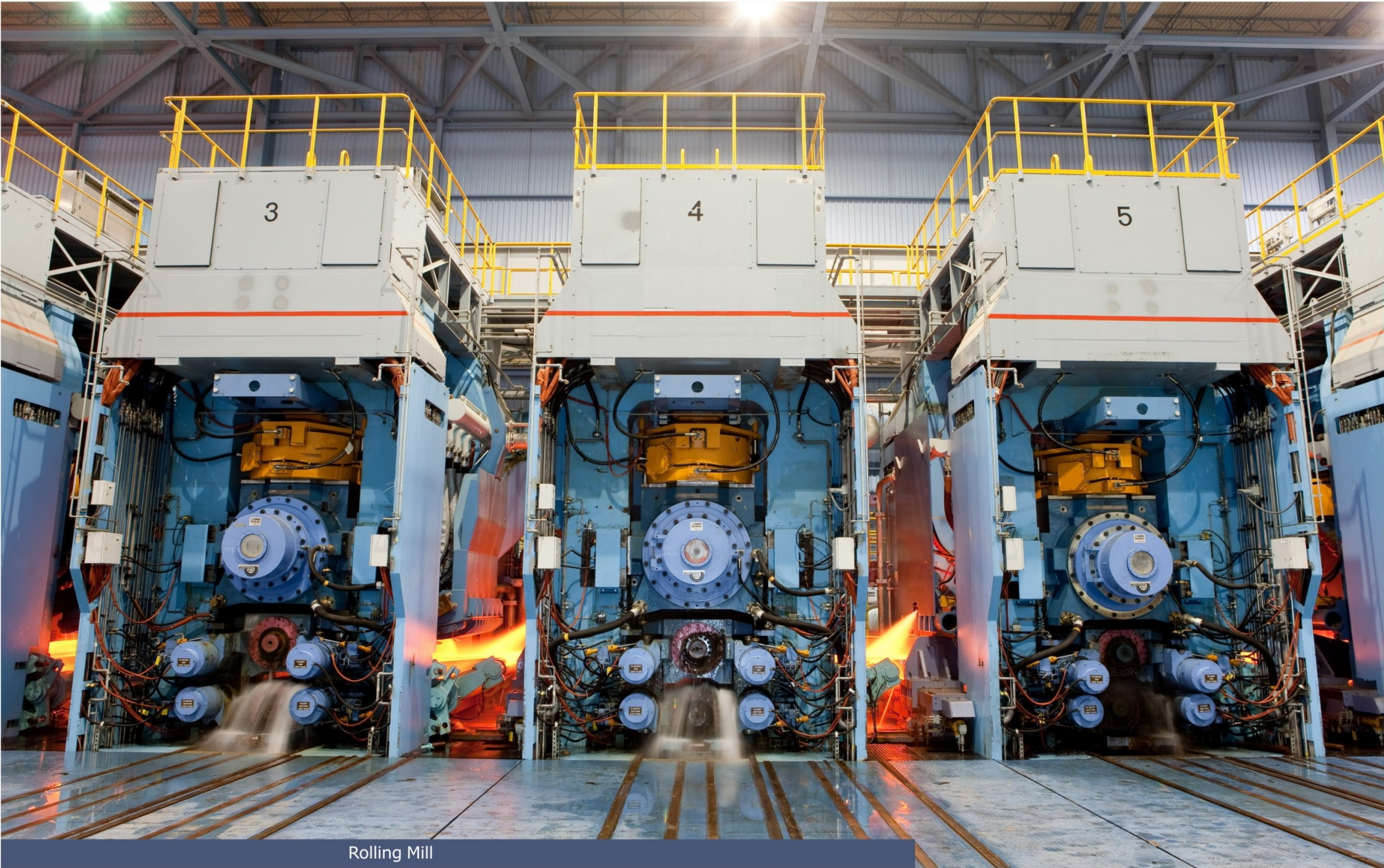
Roller After Withdrawl and Straightening



Withdrawl and Straightening Machine

ROLLING MILL

We design and manufacture a complete line of precision rolling mills. It is used for metal rolling process and refers to complete the whole process of rolling production equipment, including the main equipment, auxiliary equipment, lifting transport equipment and accessory equipment, etc. The rolling mill mainly consists of roller, rolling mill house, bearing package, bearing, workbench, rolling guide, rail chair, roller adjustment device, top roll balance device and roller change device, driving device, cooling bed, finishing facilities with cold shear, bundling system with bar counter and wire tying machines etc.



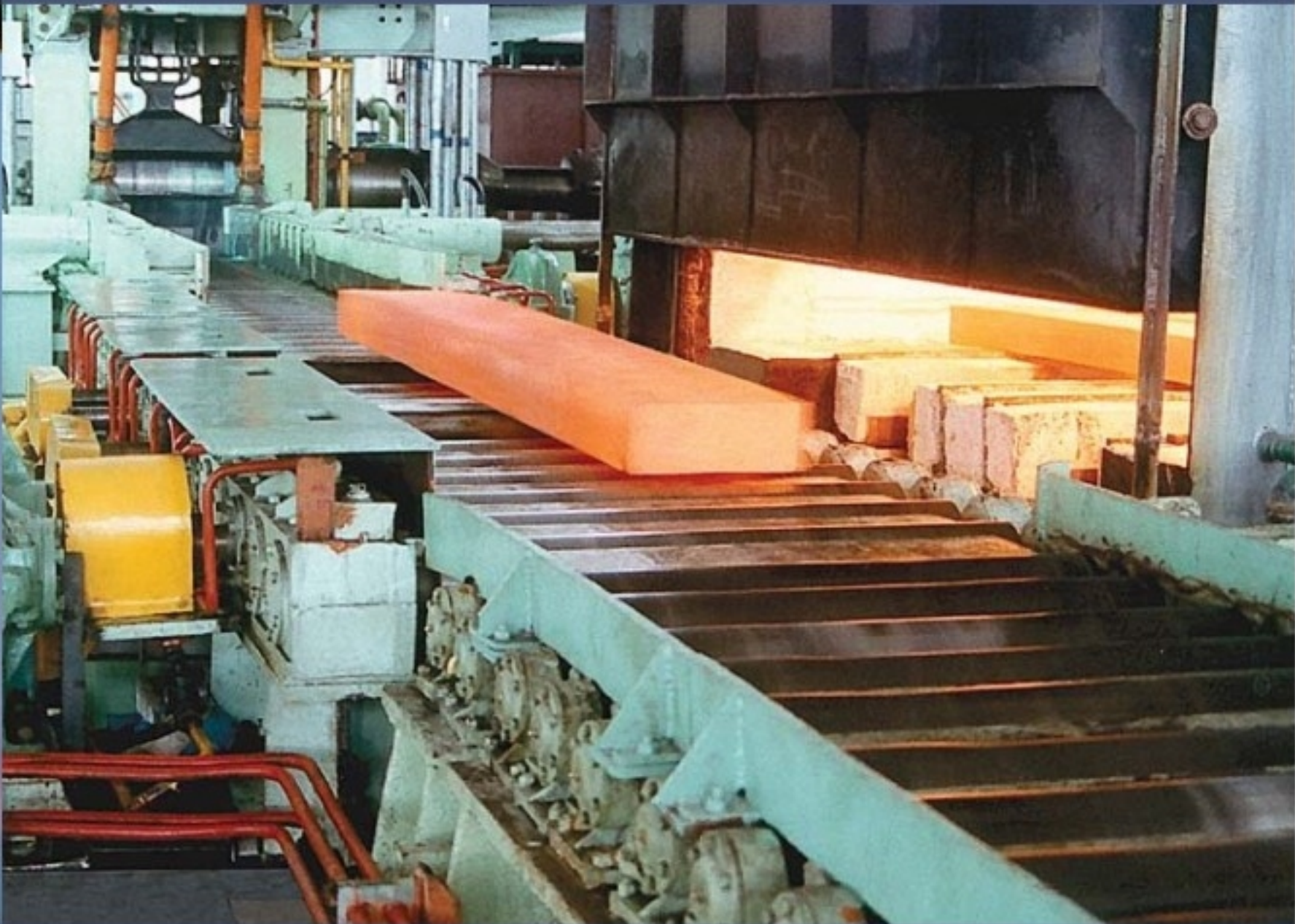
Rolling Mill



Cooling Bed



Transfer System



Reheating Furnace

LOW-VOLTAGE ELECTRICAL AUTOMATION CONTROL SYSTEM

THE ELECTRODE AUTOMATIC PRESSURE RELEASE FUNCTION

Based processes requirements, precisely press and release the electrode can greatly improve the stability, reliability of electric furnace production, reduce electrode fracture rate and ensure the operation of electric furnace safe, high efficiency and stable.

ELECTRODE LIFTING FUNCTION

Based process requirements accurately control electrode operation.

THE FUNCTION OF AUTOMATIC CONTROL FEEDING

Based process requirement, feed the material to furnace timely and quantitatively, the feeding uniformity and stability can ensure continuous and stable operation of electric furnace, to improve the level of automation.

DETECTION AND DISPLAY OF OPERATING PARAMETERS

Electric furnace operating parameters such as: current, voltage, power factor, temperature, pressure and other parameters in real-time detection and control, and a sound alarm, all parameters, status can be displayed on the color display.

AUTOMATIC AND MANUAL SWITCHING FUNCTION

To ensure system reliability, it is equipped with a set of manual control buttons, manual control can be used under any circumstances.

THE OPERATION PARAMETERS OF STORAGE AND PRINTING FUNCTION

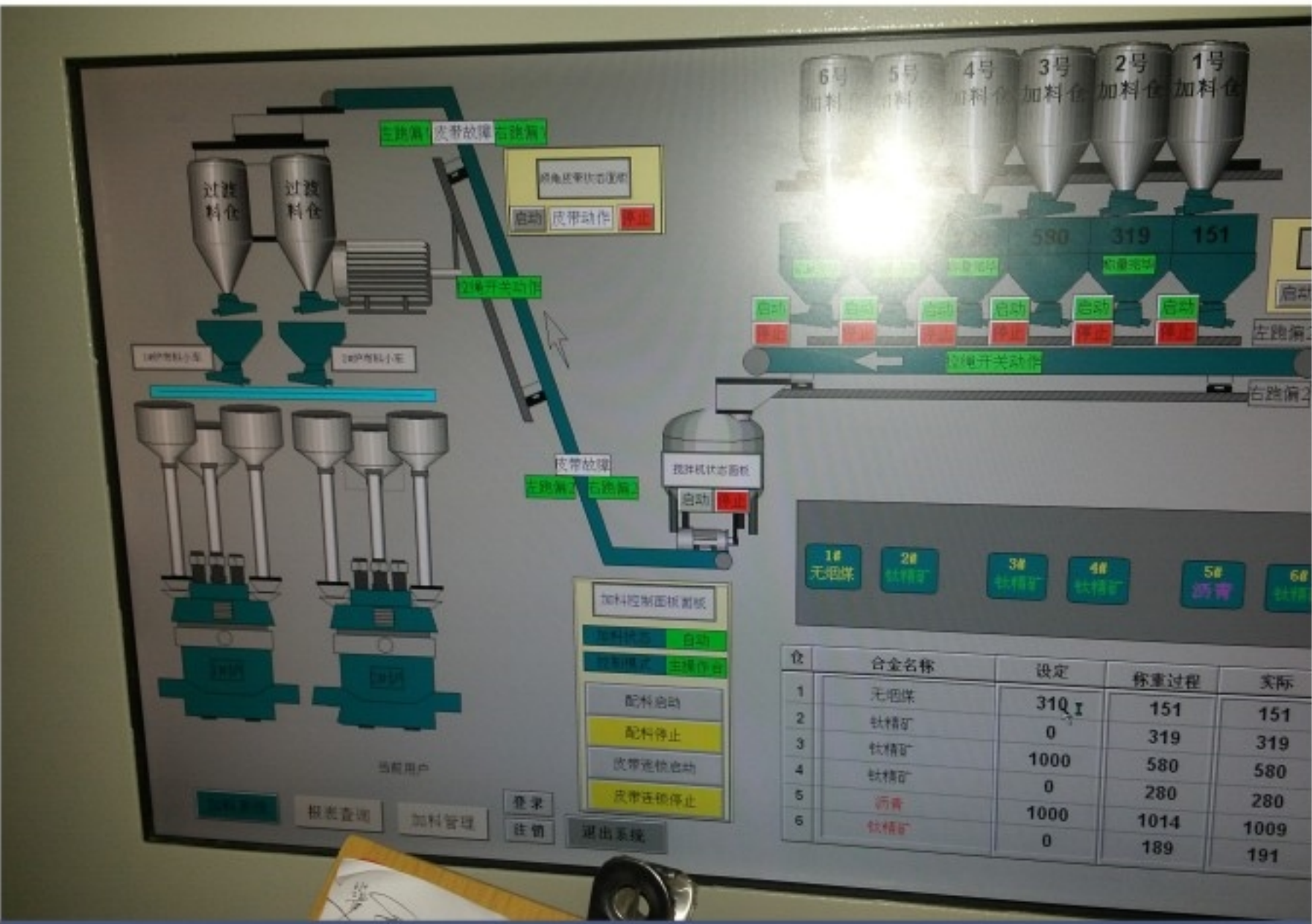
Instant printing and timing print arbitrary choice, operating parameters can be prolonged storage, retrieve, and manage easily.

THE NETWORK FUNCTION

Connected with the LAN network, the parameter of the furnace can be remote monitored, improve the enterprise automation management level.



Material Transmission Electric Control Cabinet



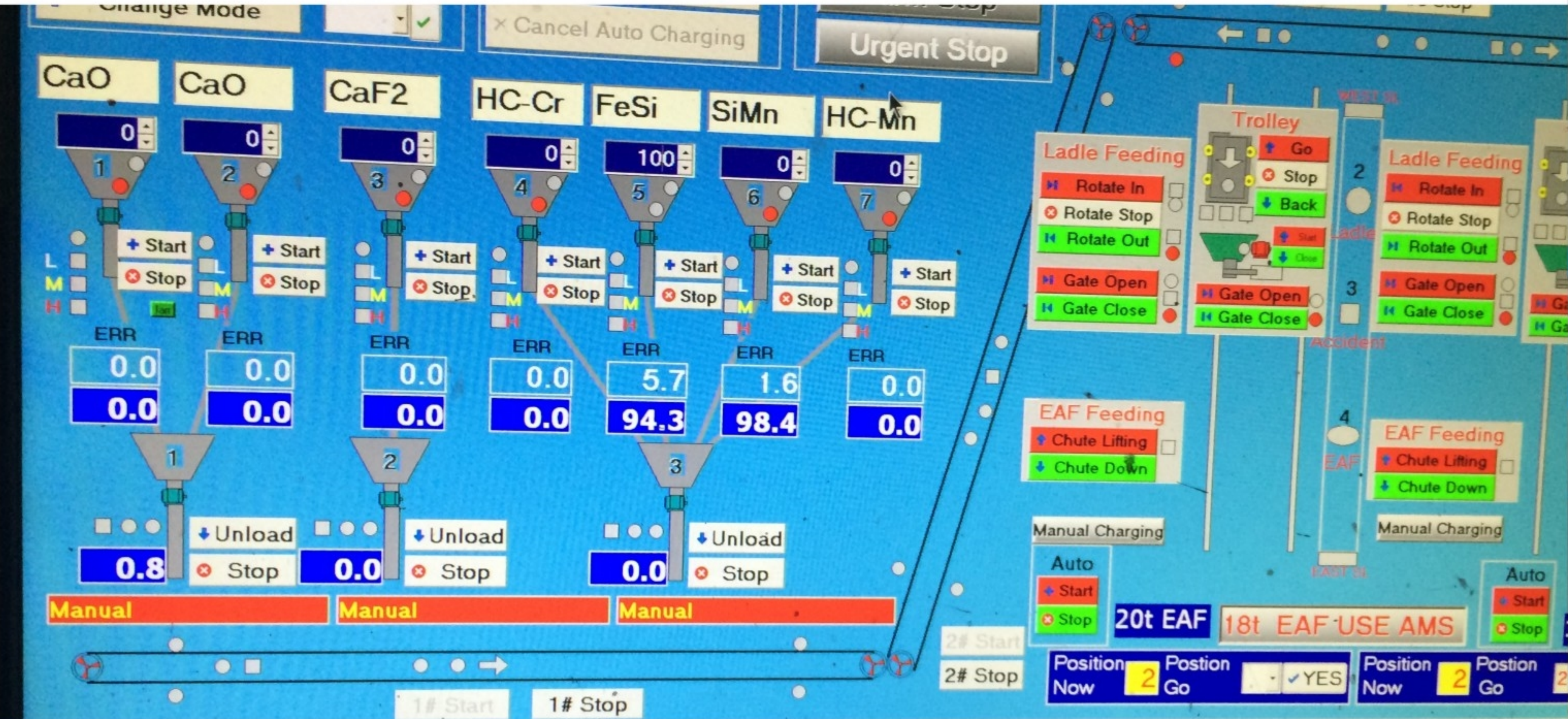
The FerroAlloy SAF Electronic Control Screen



The Electric Operating Table



Data Monitoring

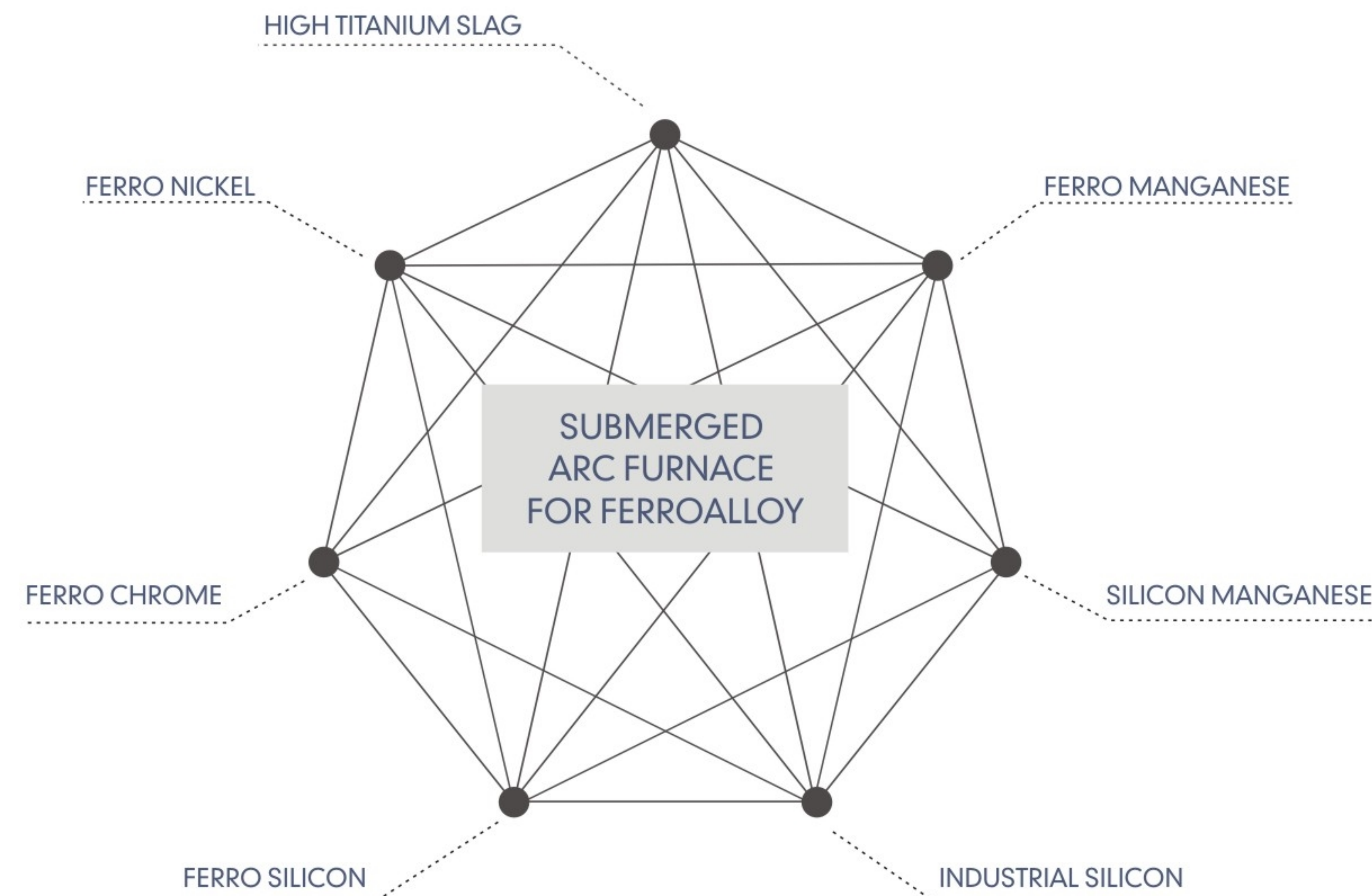


EAF Charge Mixture System Electronic Control Screen



The Fe-Si SAF Electric Control Cabinet

SUBMERGED ARC FURNACE FOR FERRO-ALLOY



APPLICATION

Submerged arc furnace will be mainly applied for reduction of metallurgical ore to produce the FeSi, FeMn, FeCr, Ferrotungsten, SiMn and Titanium slag alloy, which will be the important material for metallurgical and chemical industries.

WORKING CHARACTERISTICS

For submerged arc furnaces, the lining will be made of carbon or magnesia refractory material. The electrode is self-baking. The electrode will be inserted into the charging material.

The material will be molten by arc and current. The charging material will be continuously adding. The tapping will be batch type. It is a continuous operation industry furnace.

DEVELOPMENT DIRECTION

Submerged arc furnace is toward to larger, automatically, sealed, environmental protection and energy saving. As to core components of submerged arc furnace, the structure of the electrode holding system, our technical team also has carried on the technological innovation. With copper tile type top tight hydraulic oil cylinder, copper tile type bellows expansion tank, taper ring, big bolt clamping type, modular control device structure etc. According to the requirements of the various ferroalloy products and metallurgical process, we will select the most appropriate furnace type structure for you.



33000KVA Silicon Furnace



22500KVA 75%FeSi -SAF

30000KVA FeSi Submerged Arc Furnace

DUST COLLECTION SYSTEM

FOR STEEL PLANT

In steel making enterprises, the flue gas from arc furnace is one of the main source of pollution, as the exhausting volume is large, the temperature of flue gas is high and it is fine ash powder with hydrophilic property. It is difficult to collect and filter. Along with the development of process in steel and iron industry with ultra high power, strengthening melting and molten iron, and the environment protection, the flue gas filtering is the key section in steelmaking workshop. According to your workshop layout and local gas exhausting code, you can select our different type of dust collection system, such as "sealed cover/ roof cover" + the fourth flue gas outlet hole + cooler + separately chamber back blowing bag type filter or pulse bag type filter.

FOR SUBMERGED ARC FURNACE

During the alloy melting process in submerged arc furnaces, there is large volume of flue gas with high temperature. Also, the composition of flue gas is very complex. Considering the chemical and physical properties of flue gas, you can select the best one for your project. In recent years, the LCM long bag type pulse filter has been widely applied for submerged arc furnaces. It can be also used for calcium carbide furnace, boiler, limestone kiln, metal mixer and asphalt mixing station to meet the requirement of national emission standard.

FOR RAW MATERIAL AND CRASHING WORKSHOPS

The raw material for melting should be crashed, screened and transported to the furnace. During these productions, certain dust will be caused. In the products workshop, there is same problem of dust from crashing and screening. For example, the particles of titanium ore and slag are very fine, it is easy to make the pollution in the workshop and harm to workers, so should install dust collection system.

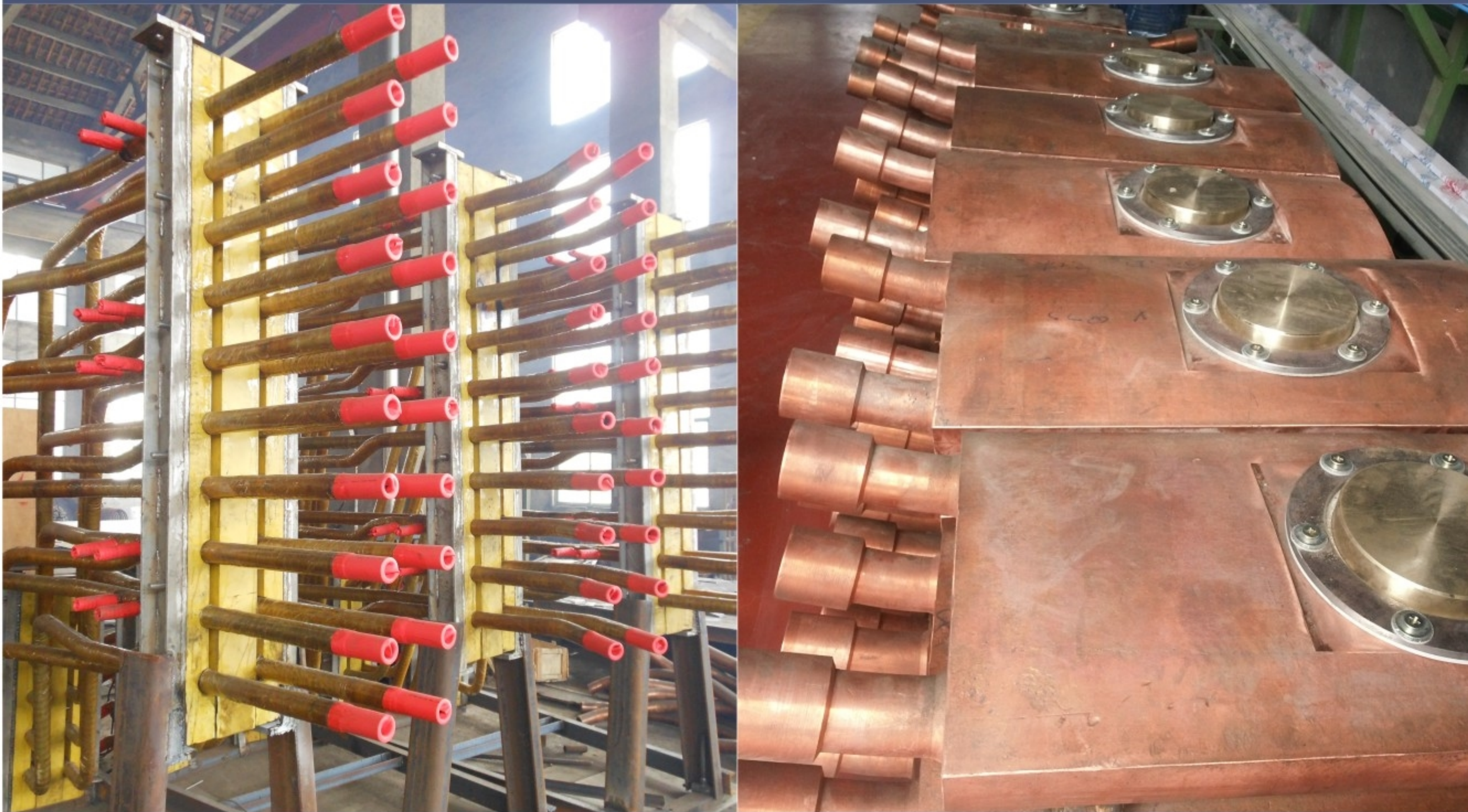


SPARE PARTS FOR SUBMERGED
ARC FURNACE



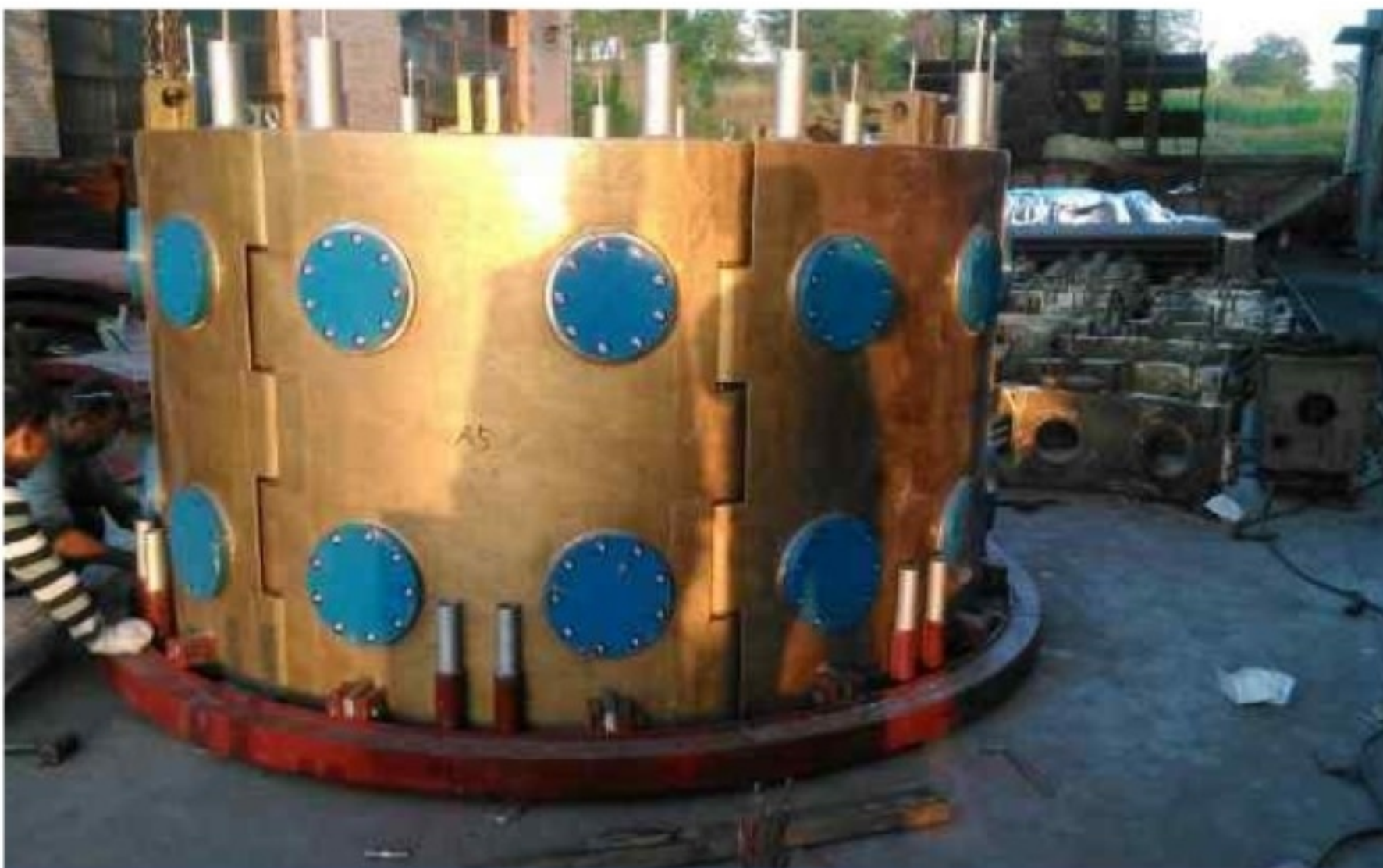
Expansion Pad Type Clamber Pressure Ring

Oil Cylinder for Electrode



Electric Network

Copper Brasses



The Copper Double-deck Pressure Ring



The Holding System After Assemble



Hydraulic Brake for SAF



The Water Cooled Protection Sleeve



The Rotating System



Transformer



The Ladle Car



The Charging System

SPARE PARTS FOR STEELMAKING EQUIPMENT

ELECTRIC HORIZONTAL ARM

The complete water cooling copper-steel compound electric horizontal arm has good property, reasonable structure, low failure rate and easy maintenance to reduce the power compensation and increase the productivity.

TIP HOLDER

It is made of chromium-bronze with good property. It will be forged and machined with water cooling to increase the conductivity and working life against arcing.

ELECTRODE CLAMP

There are two kinds of electrode clamps, such as water cooling or non-water cooling types. It will be made of non-magnetic stainless steel. The isolation area will be coated with ceramic powder under the advanced international processing. It has the reliable performance and long working life to be applied for LF and Arc furnaces.

WATER COOLING CABLE

It is made of high quality oxygen-free copper wire and extruded to connector with good electric conductivity and mechanical strength. As the bending ratio will be small, the arrangement will be compact. As its out lay will be made of flame retardant rubber, it has a long working life.

SOFT COMPENSATOR

It will be made of high quality copper by reliable processing to get excellent performance.

FORGED COPPER SHOE

The shoe will be made of forged cooper T2, machined and heat treated. It will be without any air holes, or slag. It has good electricity and cooling to increase the working life more than 2 times of normally shoe.



03

TYPICAL CASES

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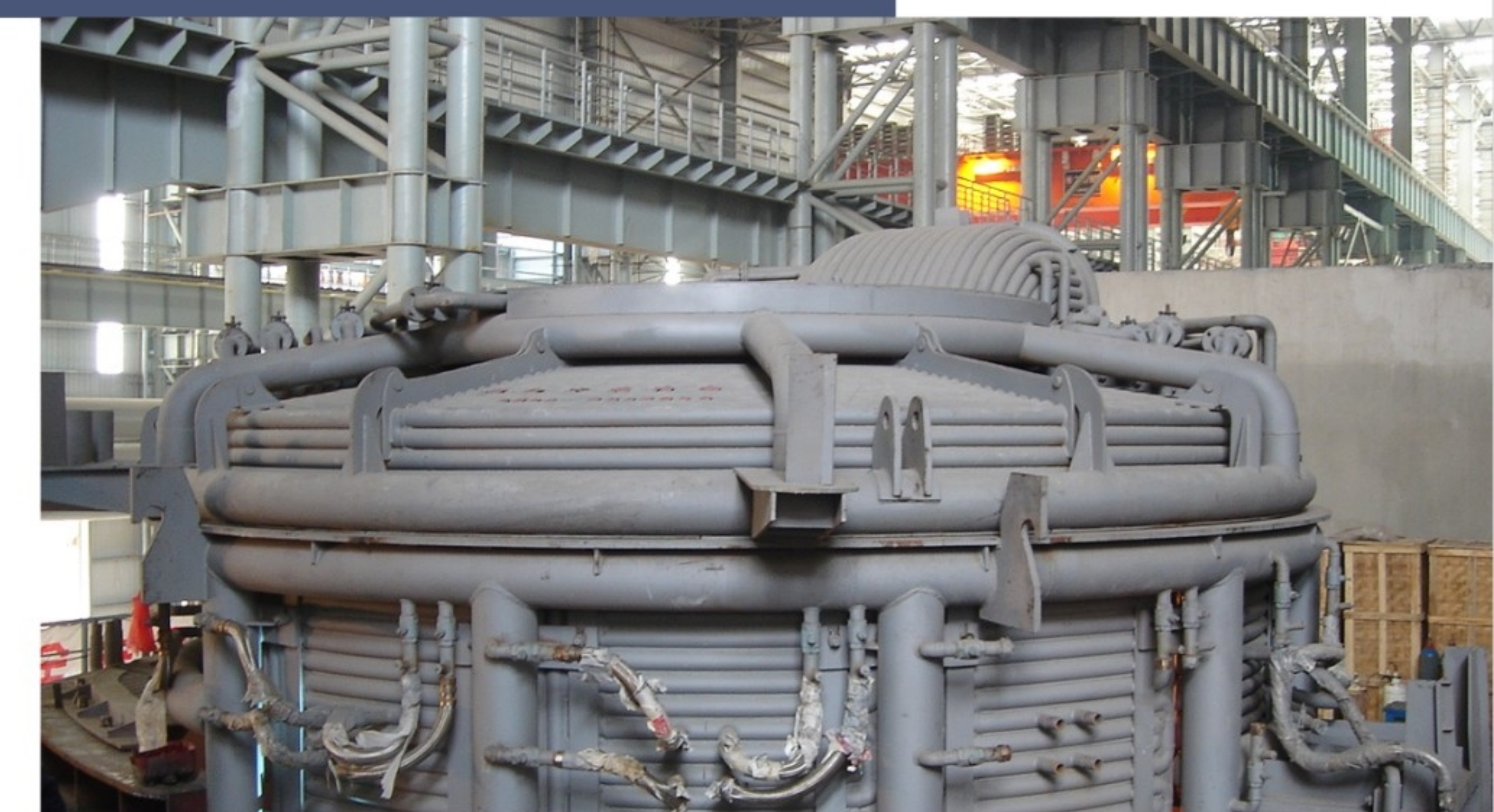
TYPICAL CASES



Reheating Furnace



27000KVA FeSi SAF

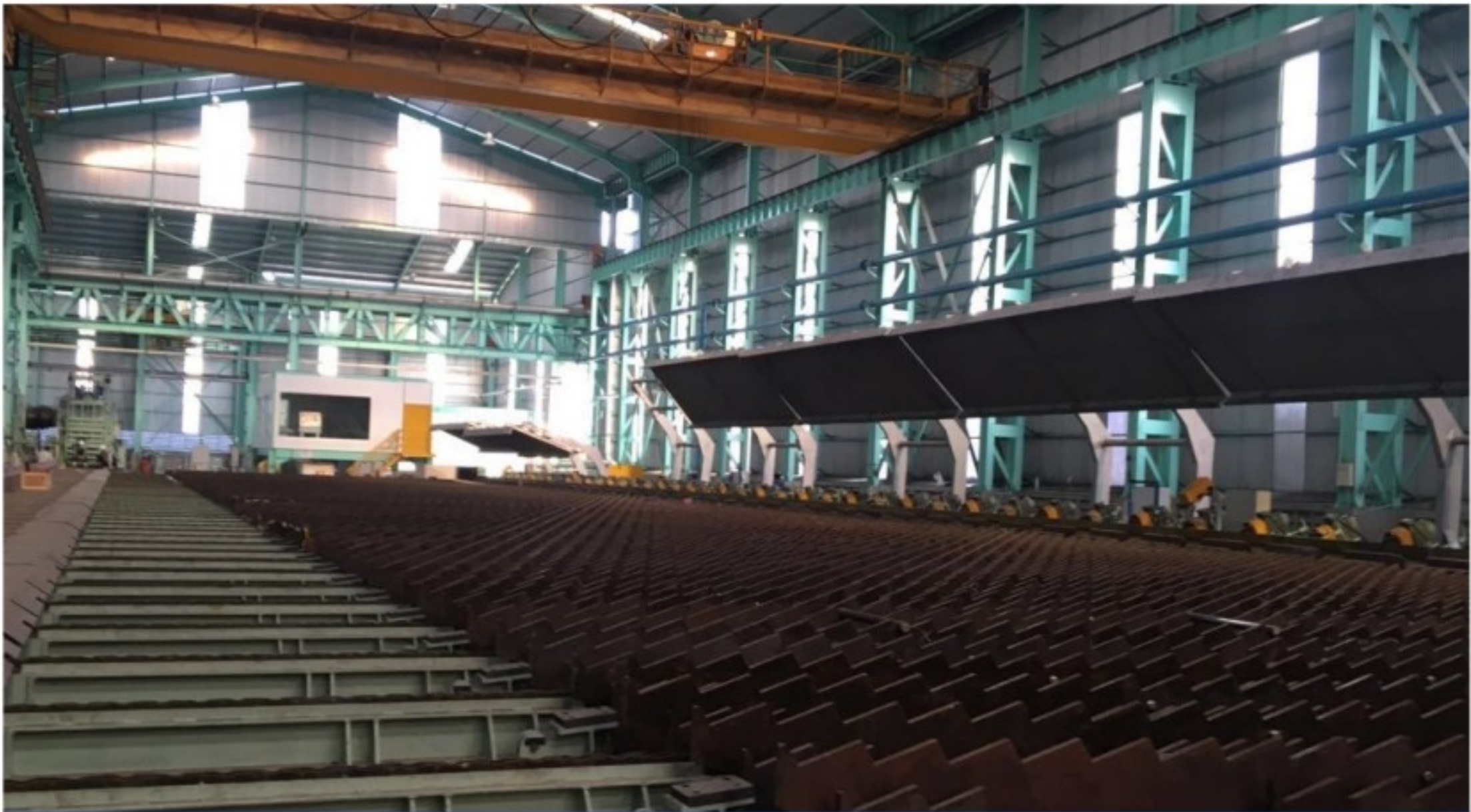


The 80t-Ultra -High Power EAF

TYPICAL CASES



22500KVA Fe-Si SAF



Cooling Bed for Rolling Mill



100t Double Station Ladle Furnace



80t-VD Vacuum Refining Furnace

TENGYE
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33000KVA Silicon Furnace



25t-Tilting Ladle Furnace

TYPICAL CASES



30000KVA FeMn Plant Layout



Finishing Round Bar Transfer and Integrated System

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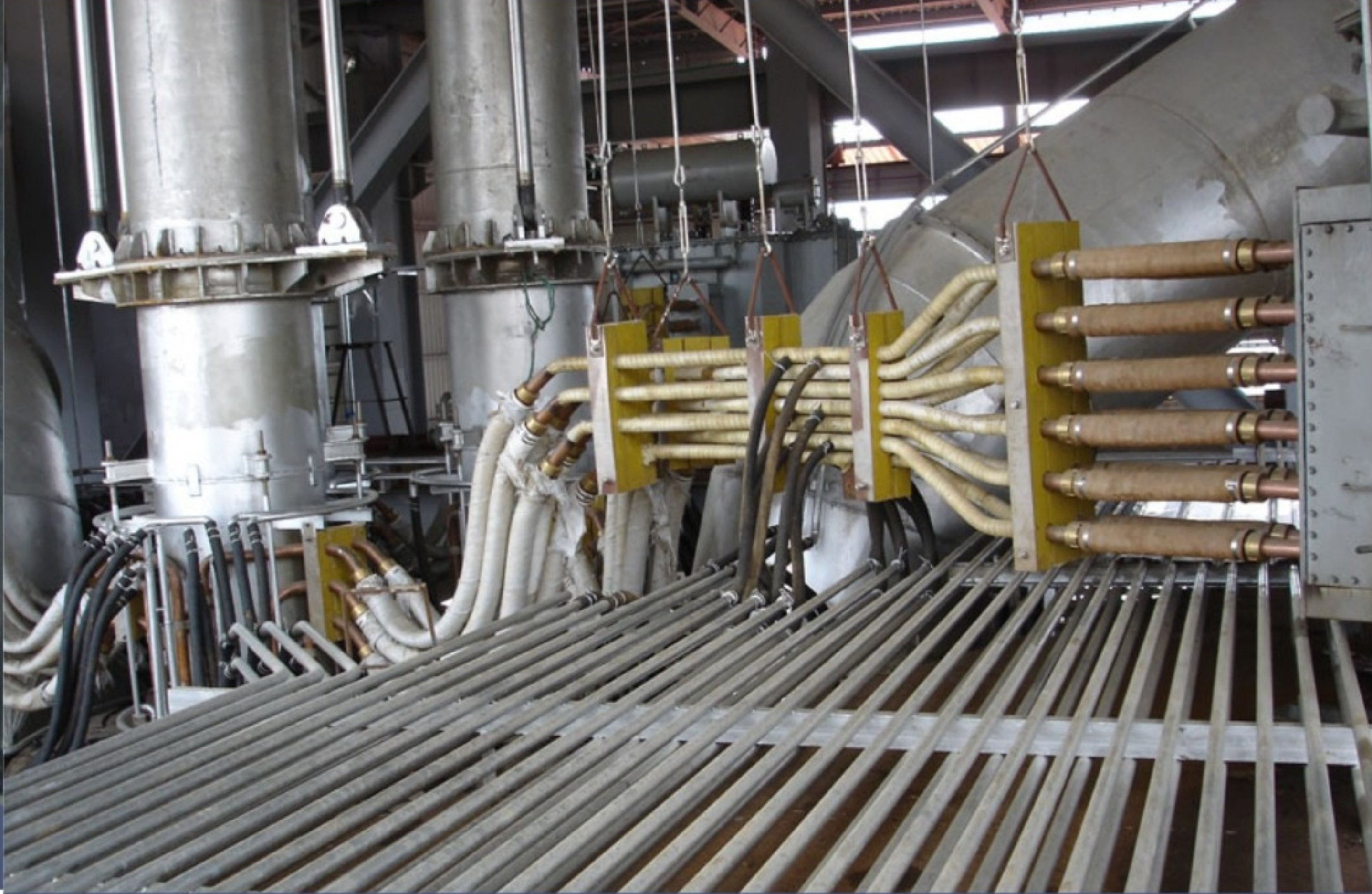
The Belt Convevor Corridor of Feeding System



The Charging System



Product Crashing Workshop of 75%FeSi



The Cooling Water Pipe Row of SAF