SR Furnace

Xi'an Sanrui Electric Furnace Co., Ltd

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Xi'an Sanrui Electric Furnace Co., Ltd

Xi'an Sanrui Electric Furnace Co., Ltd. was founded in 2009 by the retired technical chief engineer of the Technical Section of Xi'an Heavy Electric Furnace Manufacturing Factory, a state-owned enterprise under the Ministry of Metallurgy of China. It is registered in Xi'an, Shaanxi Province, China, with a long history.

It is now a private high-tech enterprise specializing in the research, development, design, manufacturing, sales, installation, commissioning, and technical services of metallurgical equipment, electric furnace steelmaking, and electric heating equipment. Sanruiz is an import and export enterprise that is mainly engaged in manufacturing metallurgical machinery and equipment. The company focuses on the manufacturing and sales of metallurgical machinery and related non-standard equipment.

The company's products are mainly sold to European and Southeast Asian countries and regions. Sanrui has finished the technical transformation and upgrading of equipment for metallurgical, chemical, and cement enterprises. The on-site usage has been generally praised and well-evaluated by customers.

Sanrui's design and development team has an innovative team composed of many domestic metallurgical design experts, well-known technical backbones in the industry, and smelting process expert consultants from steelmaking and ferroalloy enterprises; Sanrui has long-term cooperation with China's First Heavy Industry, Baowu, China Steel, MCC, Danieli, Primetals and other well-known domestic and foreign companies have close exchanges and cooperation. The products developed have the advantages of safety, reliability, stable automatic control system, high efficiency, energy saving, and easy operation and maintenance.

Over the years, the company has continuously innovated, developed, and optimized product design based on absorbing and digesting a large number of domestic and foreign advanced technologies, so that the technological advancement and applicability have been continuously improved. With its rich technical experience and strength, the company provides users with strong technical service guarantees for early process preparation and equipment technical consultation.

We adhere to the business philosophy of "integrity-based, technological innovation, creating high-quality products, service first, and win-win cooperation", and use a scientific, efficient, and pragmatic operation and management mechanism to give full play to the company's talent and technological advantages and keep up with contemporary scientific and technological achievements. Continuous development and innovation provide advanced, safe, and reliable technical equipment to the global market.

With the advent of the era of informatization and industrialization, we have also established a highly efficient sales team and operations team to bring our advanced technology and reliable equipment out of China to the world. Sanrui Electric Furnace is to become a one-stop supplier of global metallurgical equipment.

One-Stop Supplier of Global Metallurgical Equipment

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Sanrui Electric Furnace Company Culture

Enterprise Spirit

Innovative, collaborative, efﬁcient, and pragmatic.

Corporate Purposes

People-oriented, seek development based on quality, service, and credibility; take technological innovation as the guide to create industry-leading products.

Business Philosophy

With the concept of "integrity, innovation, service, and win-win", we always provide every customer with "the most advanced metallurgical equipment, the most reliable product quality, and the best after-sales service", making our eternal philosophy and inspirational become a one-stop supplier of global metallurgical equipment.

Electric Arc Furnace

atmosphere in the electric furnace, which is very beneficial to the smelting of steel with more easily oxidized elements.

Using the high-temperature flue gas of the electric furnace, the raw materials can be preheated through technology and equipment to achieve high efficiency, energy saving, environmental protection and high yield.

Electric Arc Furnace (EAF): Industrial furnaces that use metal or non-metal electrodes to generate arc heating are called electric arc furnaces.

Electric arc furnaces are more flexible for metal smelting than other steelmaking furnaces. It can effectively remove impurities such as sulfur and phosphorus.

The electric arc furnace body is composed of a furnace cover, furnace door, tapping groove, and furnace body. The furnace bottom and furnace walls are constructed with basic or acid refractory materials.

The ton furnace capacity transformer can be divided into ordinary, high-power, and ultra-high-power electric arc furnaces.

EAF steelmaking uses graphite electrodes to feed electrical energy into the electric arc furnaces. The arc between the electrode tip and the charge is used as a heat source for steelmaking.

Electricity is the heat source of the electric furnace, which can adjust the

Electric Arc Furnace

Electric Arc Furnace Parameter

Type	Rated capacity (T)	Max capacity (T)	Furnace shell inner diameter (MM)	Electrode diameter (MM)	Transformer capacity(KVA)
EAF-5T	5	10	3200	300	2500-4300
EAF-10T	10	18	3600	350	5500-8000
EAF-15T	15	24	3800	350	8000-12500
EAF-20T	20	30	4000	400	9000-12500
EAF-25T	25	35	4200	400	12500
EAF-30T	30	45	4400	400	12500-25000
EAF-40T	40	55	4600	450	16000-30000
EAF-45T	45	65	4800	450	16000-40000
EAF-60T	60	85	5400	500	25000-60000
EAF-80T	80	100	6100	500	30000-80000
EAF-100	100	120	6400	550	40000-80000

SR Electric Arc Furnace Characteristic

1. Smelting temperature is flexible to be controlled, and meets different steel grade production needs.

2. High heat efficiency, the atmosphere inside the furnace can be controlled.

3. Can remove the phosphorus, sulfur, oxygen, and other impurities and improve steel quality.

4. Easy to control the chemical composition of steel, stable and high recovery rate of alloys.

5. Equipment is a simple and shorter technological process.

6. Low investment, quick effect and low energy consumption.
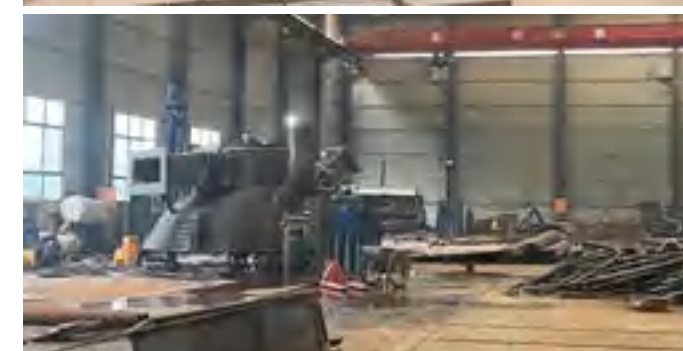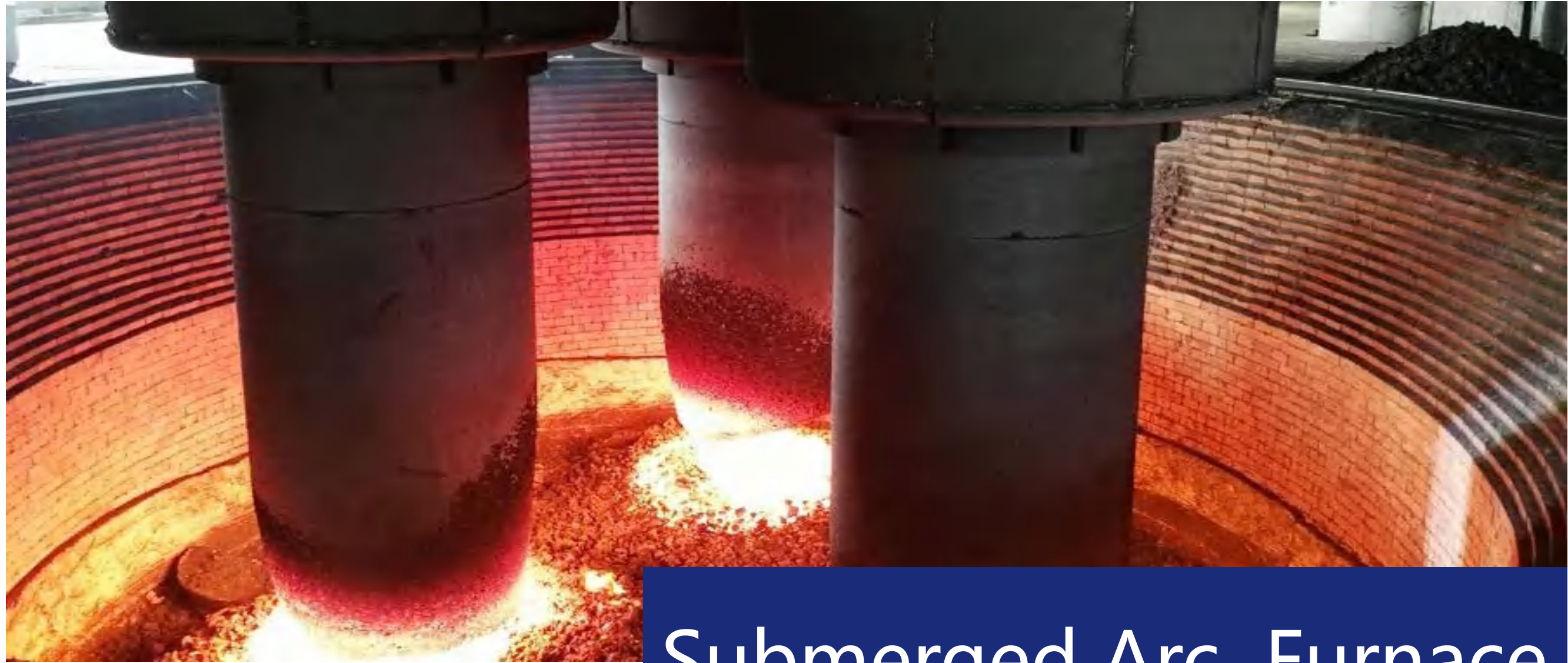
Submerged Arc Furnace

which uses arc energy and current to pass through the material and generate energy due to the resistance of the material to melt the metal.

It is an industrial furnace with continuous operation, continuous feeding and intermittent discharge of metal or slag.

Submerged arc furnaces are developing in the direction of high power and large scale, in order to improve thermal efficiency, increase productivity and meet the process requirements of power intensive smelting.

SAF is mainly used for reducing smelting ores, carbonaceous reducing agents, solvents, etc.

It is mainly suitable for the production of ferromanganese, ferrochromium, silicon-manganese alloy, ferronickel and other ferrous metal alloys.

Mainly consists of furnace shell, furnace cover, furnace lining, short net, water cooling system, smoke exhaust system, dust removal system, electrode shell, electrode pressing and lifting system, loading and unloading system, controller, burn-through device, hydraulic system, submerged arc furnace Transformers and various electrical equipment.

It is an important smelting furnace for the production of industrial raw materials and calcium carbide and other chemical raw materials in the metallurgical industry.

The submerged arc furnace is made of carbon or magnesium refractory material as furnace lining and self-baking electrodes.

Electrodes are inserted into the furnace material for submerged arc operation,

Submerged Arc Furnace

SR Submerged Arc Furnace Paramter

Category	Main raw-material	Final products	Reaction temperature (Celsius Degree)	Power consumption KWh/t
Ferrosilicon furnace (45%) ferrosilicon	Ferrosilicon, scrap iron, coke	Ferrosilicon	1550-1770	2100-5500
Ferrosilicon furnace (75%) ferrosilicon	Ferrosilicon, scrap iron, coke	Ferrosilicon	1550-1770	8000-11000
Ferromanganese furnace	Manganese ore, scrap iron, coke, lime	Ferromanganese	1500-1400	2400-4000
Ferrochrome furnace	Chrome ore, silica, coke	Ferrochrome	1600-1750	3200-6000
Ferrotungsten furnace	Tungsten crystal ore, coke	Ferrotungsten	2400-2900	3000-5000
Silicon chromium furnace	Ferrochrome, silica, coke	Silicon chrome	1600-1750	3500-6500
Silicon manganese furnace	Manganese ore,silica, iron scrap,coke	Silicon manganese	1350-1400	3500-4000
Steelmaking electric furnace	Iron ore, coke	Pig iron	1500-1600	1800-2500
calcium carbide furnace	Limestone, coke	Calcium carbide	1900-2000	2900-3200
Boron carbide furnace	Boron oxide, coke	Boron carbide	1800-2500	

SR Submerged Arc Furnace

Characteristic

Submerged electric arc furnace is a kind of industrial furnace which consumes much power. Full set equipment mainly consists of furnace shell, fume hoods, lining, short net, cooling system, exhaust system, de-dusting system, electrode shell, electrode lifting system, loading and unloading system, electrode holder, arc burner, hydraulic systems, submerged electric arc furnace transformer and various of electrical equipment.

For submerged electric arc furnaces, the lining will be made of carbon or magnesia refractory material. The electrode is s elf-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 a batch type. It is a continuous operation industry furnace.
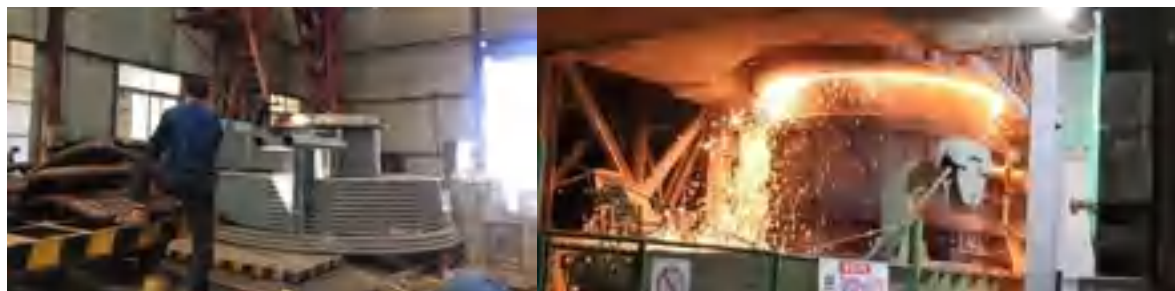
Ladle Refining Furnace

6. Frequency control ladle car

7. Industrial automatic control

8. Network technique

Ladle refining furnace is used to refine the molten steel melted in a primary smelting furnace (converter, medium frequency furnace, medium frequency induction furnace, electric arc furnace, etc.), and has the functions of adjusting molten steel temperature and process buffer. It is known as the soul of the best production line (primary smelting furnace + LF + continuous casting). Refined steel types include ball bearing steel, alloy structural steel, tool steel, spring steel, carbon structural steel, etc.

SR Furnace Adoption of New Technology:

1. Tubular water cooled furnace lid

2. Electrode lifting mechanism (single phase, three phase)

3. Optimize large current system structure (energy-saving type)

4. PLC controller of electrode automatic lifting regulator

5. Automatic control argon blowing system

SR Ladle Refining Furnace Parameter

LadleRated Capacity (ton)	Ladle Diameter (mm)	Transformer Rated Capacity (KVA)	Electrode Diameter (mm)	Electrode distribution circle Diameter (mm)	Molten steel Temperature raising speed (Co/min)
20	2200	3150	200	500	2-3
40	2900	6300	350	650	2-3
60	3100	10000	350	650	2-3.5
70	3200	12500	400	700	2-3.5
100	3400	18000	400	700	2-3.5
150	3900	20000	450	800	2-3.5

SR Ladle Refining Furnace

Characteristic

1. The electrode lifting speed regulation range is large, which can quickly lift the electrode;

2. The non-sensitive area is continuously adjustable, and the size of the nonsensitive area can be adjusted at any time according to the furnace condition; The system has a short response time and high adjustment accuracy;

3. Fast arc stabilization, accurate current regulation, and small power grid impact;

4. Due to the use of PLC photoelectric isolation control, it has a strong anti-electromagnetic interference ability. It is stable and reliable operation and an extremely low failure rate;

5. Using PLC programming, more complex calculations can be carried out, such as three-phase power, current and voltage balance control, and the program modification is very convenient;

6. Low investment, quick effect and low energy consumption.

Vacuum Furnace

The furnace vacuum can reach $133 \times (10^{-2} \sim 10^{-4})$Pa. The heating system in the furnace can be directly heated by resistance furnace wire (such as tungsten wire), or high-frequency induction heating can be used.

The maximum temperature can reach about 3000 ℃)). Mainly used for ceramic firing, vacuum smelting, degassing and annealing of electric vacuum parts, brazing of metal parts, and ceramic-metal sealing.

Vacuum furnaces generally consist of a host machine, a furnace, an electric heating device, a sealed furnace shell, a vacuum system, a power supply system, a temperature control system and a transport vehicle outside the furnace.

The sealed furnace shell is welded with carbon steel or stainless steel, and the joint surfaces of the detachable parts are sealed with vacuum sealing materials.

In order to prevent the furnace shell from deforming after being heated and the sealing material from being heated and deteriorating, the furnace shell is generally cooled by water cooling or air cooling. The furnace is located in a sealed furnace shell.

Depending on the purpose of the furnace, different types of heating elements are installed inside the furnace, such as resistors, induction coils, electrodes, and electron guns.

The vacuum furnace for melting metal is equipped with a crucible, and some are also equipped with automatic pouring devices and manipulators for loading and unloading materials. The vacuum system mainly consists of vacuum pump, vacuum valve and vacuum gauge.

Vacuum Furnace Application

1. High pressure and high flow rate gas quenching vacuum furnace
Mainly used for vacuum heat treatment of hot and cold working die steel, high speed steel, elastic alloy, high temperature alloy, stainless steel, titanium alloy, magnetic materials and other materials.

2. Double chamber high pressure gas quenching vacuum furnace
It is mainly used for high-pressure gas quenching of hot and cold working mold steel, high-speed steel, elastic alloy, high-temperature alloy, stainless steel, titanium alloy, magnetic materials and other materials, as well as vacuum sintering, vacuum brazing and other processes.

3. Double-chamber oil quenching gas-cooled vacuum furnace
Mainly suitable for bright quenching of tool steel, die steel, bearing steel, spring steel and other materials.

4. Vacuum aluminum brazing furnace
Mainly suitable for vacuum welding of automobile radiators, air conditioning evaporators, condensers, intercoolers, radar grid antennas, waveguides and various plate-warped or tube-fin heat exchangers.

5. Vacuum high temperature brazing furnace
Mainly suitable for vacuum brazing of stainless steel, high temperature alloys, cemented carbide, non-ferrous metals and other materials.

SR Vacuum Furnace Characteristic

1. Completely eliminates oxidation and decarburization of the workpiece surface during the heating process, and obtains a clean surface without a deterioration layer.

2. No pollution to the environment and no need for waste treatment.

3. The accuracy of furnace temperature measurement and monitoring is significantly improved. The indicated value of the thermocouple is within ±1.5°C of the furnace temperature. However, the temperature difference between different parts of a large number of workpieces in the furnace is large. If forced circulation of thin gas is used, the temperature difference can still be controlled within the range of ±5°C.

4. High degree of mechanical and electrical integration. On the basis of improved temperature measurement and control accuracy, workpiece movement, air pressure adjustment, power adjustment, etc. can be pre-programmed, and quenching and tempering can be implemented step by step.

5. Energy consumption is significantly lower than salt bath furnace. The modern advanced vacuum furnace heating chamber uses insulating walls and barriers made of high-quality insulation materials, which can highly concentrate the electric heating energy in the heating chamber, resulting in significant energy saving effects.

Induction Furnace

Induction Furnace consists of the medium frequency power supply, capacitor, inductor, pneumatic or electric pusher, etc.

Fully automated equipment includes automatic feeding & unloading unit, automatic temperature control unit.

Induction Heating Furnace is mainly used for heating the metal materials before shear it in forging, extruding, rolling field, and also for metal heat treatment process such as adjusting the quantity, quenching, and tempering, annealing, tempering etc.

The main components of an induction furnace are the inductor, furnace body, power supply, capacitor, and control system.

Under the action of the alternating electromagnetic field in the induction heating furnace, eddy currents are generated inside the material to achieve the effect of heating or melting.

Under the stirring action of this alternating magnetic field, the composition and temperature of the material in the furnace are relatively uniform, the forging heating temperature can reach 1250°C, and the melting temperature can reach 1650°C.

In addition to heating or smelting in the atmosphere, the induction heating furnace can also be heated or smelted in a protective atmosphere such as vacuum and argon, and neon to meet special quality requirements.

Induction Furnace

Induction Furnace Parameter

Item	Technical Data						
Power(KW)	50	100	160	250	500	1000	>1000
Frequency(KHZ)	10~1	10~1	8~1	6~1	2.5~0.5	1~0.5	1~0.5
Dia.(mm)	10~25	10~30	15~40	15~80	50~100	80~100	>100
Heating rate(kg/h)	145	300	444	750	1500	3000	>3000
Power consumption (KW.h/t)	≤360						

Furnace Model	GWT1.0	GWT-2.0	GWT-3.0	GWT-5.0	GWT-10.0	GWT-12.0
Actual Molten Steel (kg)	1000-1300	2000-2800	3000-3800	5000-5500	10000-11500	12000-13500
Melting Time Per Furnace (minutes)	55-75	60-70	60-75	70-95	75-95	80-100

Induction Furnace Characteristic

1. Installation and operation are very convenient.

2. Ultra-small size, lightweight, movable, occupying less than 1 square meter.

3. It is convenient to replace the furnace body with different weights, different materials, and different furnace modes to meet various melting requirements.

4. Heating and heat transfer is good, the temperature is even.

5. The medium-frequency magnetic field has a magnetic stirring effect on the molten metal, which is beneficial to the uniform composition and scum.

6. According to the equipment and the amount of smelting, the melting time of each furnace is 20-30 minutes.
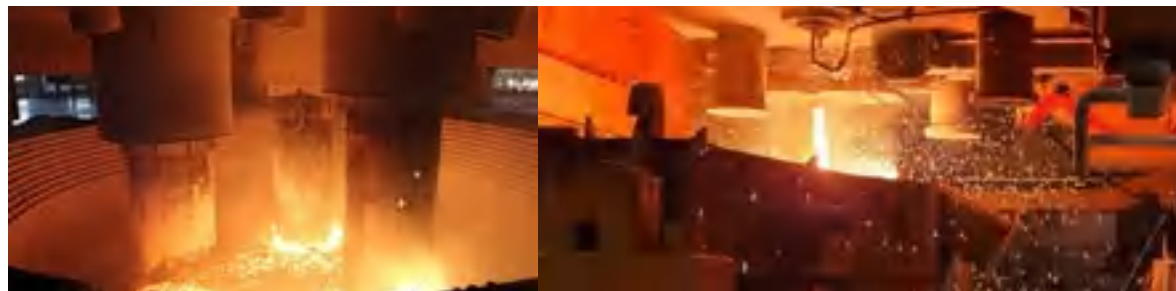
Furnaces Gallery

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Furnaces

Gallery

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technological advantages and keep up with contemporary scientific and technological achievements. Continuous development and innovation provide advanced, safe, and reliable technical equipment to the global market.

SR Furnace is a metallurgical machinery and equipment manufacturer engaged in the research, development, design, manufacturing, sales, installation, commissioning and technical services of metallurgical equipment, electric furnace steelmaking and electric heating equipment.

SR Furnace relies on its rich technical experience and strength to provide users with strong technical service guarantees for early process preparation and equipment technical consultation.

SR Furnace

Furnace Gallery

Integrity-based
Technological Innovation
Create Quality Products
Service First
Win-win Cooperation

**Credibility   Service
Innovation   Win-win**

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