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PRODUCTS
MARKETING MANUAL



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**BAOSTEEL ENGINEERING &
TECHNOLOGY GROUP CO.,LTD.**

SERVE GLOBAL MARKET SHARE CHINESE CREATION



GROUP PROFILE

Brief Introduction to Baosteel Engineering & Technology Group Co., Ltd

Baosteel Engineering & Technology Group Co., Ltd (hereinafter as Baosteel Engineering) is the flagship company established based on absorbing and integrating relevant engineering, IT, Steel Structure, equipment manufacturing business and resources in order to create and gather professional engineering and technology facilitators on top international ranking.

With over 20 A-class aptitudes and engineering managerial authority both at home and abroad issued by the country, Baosteel Engineering holds the industrial capability to integrate engineering consultancy, management implementation, design and manufacturing, operation and maintenance into a complete full-process solution. Baosteel Engineering has established a 5+3+1 business composition structure with its traditional pillar businesses of engineering technology, IT, equipment manufacturing, steel structure and Iron&steel technical service business and in the meantime it put environmental protection, living steel structure and roll businesses as the newly developed businesses and it also share the synergy business platform with the International Business Unit. Baosteel Engineering provides service which cover EPC project, project management and engineering consultancy, engineering design, IT automation, engineering tendering, engineering supervision, equipment design and manufacturing, supply of sets of equipment, erection management, commissioning and trial run, operation and maintenance, production inspection etc., and its business scope was extended from metallurgical industry to environmental protection, transportation, energy, finance, coal chemical, municipality infrastructure construction etc.



CORE VALUE

SINCERITY SYNERGY CREATIVE

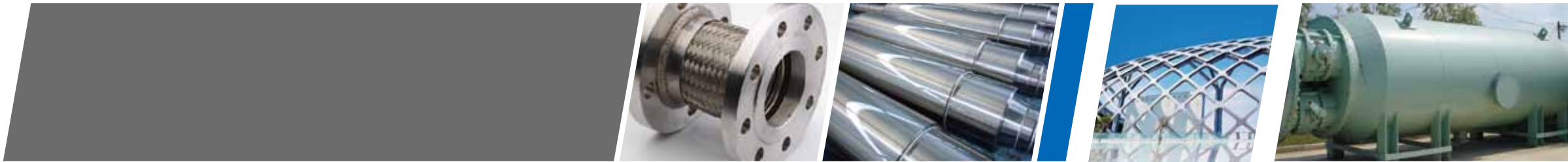
Brief Introduction to International Business Unit:

As the shared synergy business platform with Baosteel Engineering, International Business Unit stands on the high ranking of Baosteel Engineering & Technology Group Co.,Ltd and reflects the basic philosophy of integration and sharing of resources and synergy business development. International Business Unit is in charge of promotion of Baosteel Engineering's international strategy, establishment of overseas sales network and facilitation of product sales of technology, equipment, roll, steel structure, spare parts for overseas engineering projects; in the meantime it shall reflect global perspective and international mentality, develop both industry and financing/investment, combine industry and finance and strive for long term development on the basis of effective risk control and high attention to talent introduction and cultivation.

Under the International Business Unit management division and 4 business divisions are established. Among them, equipment division No.1 and translation company mainly provide equipment import agent and foreign affair translation service for both within Baosteel Group and social customers; equipment division No.2 is in charge of set equipment export and overseas EPC; product trade division is in charge of export of standard product, spare parts and simple parts of domestic advantage.

In the meantime, as the coordination department for establishing overseas sales channel of the company, International Business Unit managed to advance the building work of overseas sales marketing network for the whole Baosteel Engineering Group. So far, it has completed sales network station building of the company in Vietnam, India, Japan, U.S.A., Brazil, Germany, with the scope covering newly rising and mature markets like Southeast Asia, South Asia, Northeast Asia, Europe, North America, South America. It provides strong support for the comprehensive development of Baosteel Engineering's overseas businesses.

CONTENTS



PRODUCTS FOR IRON AND STEEL MAKING AREA

07	Ⓢ Converter Furnace Lip Ⓢ Ingot Mould, Bottom Plate and Heat Cap
08	Ⓢ BF Cast Iron Cooling Stave
09	Ⓢ BF Cast Iron Cooling Stave Accessories
10	Ⓢ Copper Tuyere Ⓢ Copper Cooling Plate
11	Ⓢ BF Copper Cooling Stave
12	◆ BF Throat Armouring and Throat Steel Brick Bell-less Top BF Distribution Chute Lining Plate for BF furnace top
13	BF Hot Stove Chequer Support System
14	Holding Tanker Ladle
15	Cast and Welded Slag Pot Scrap Bucket for EAF
16	Steel Structural Equipment
17	Sintering Machine, Trolley, Side Wall and Grate Bar
18	Belt Conveyor and Conveyor Belt
19	Conveyor Hood
20	Coke Oven Fume Gas Switch Valve BF, Converter, Coke Oven Gas and Dedusting System Valves
21	Metal Bellow and Metal Flexible Hose
22	Heat-resisting and Wear-resisting Parts



PRODUCTS FOR CONTINUOUS CASTING AND ROLLING AREA

24	Ⓢ Continuous Caster Equipments
25/26	Ⓢ Spare Parts for Continuous Caster
27	Electromagnetic Stirring Products Hose Reel
28	Ⓢ Rolling Mill Chock
29	Ⓢ Reducer Roll and retained Mandrel
30	Ⓢ Rolls
31	◆ Quenched Roll
32	Ⓢ Hard Surfacing Roll, Furnace Roll and Radiant Tube
33	Anode Plate
34	Ⓢ Batch Annealing Furnace (BAF) and Components
35	◆ Electro-mechanical Equipments



PRODUCTS FOR AUXILIARY AND GENERAL FACILITIES

37	Ⓢ Sampling System
38	◆ Converter-front Full-automatic Quick Analysis System
39	Lifter and Electromagnet
40/41	Ⓢ Special Vehicles
42	◆ Medium and High Voltage Switch Products
43	◆ Gear Motor
44	Ⓢ Heavy Steel Structure
45	Ⓢ Light Housing and Industrial Door



Remarks: Product Names with Ⓢ refer to Baosteel Engineering Products.
Product Names with ◆ refer to Baosteel Engineering Exclusive Distribution Products.



CONVERTER FURNACE LIP

The converter furnace lip, including water-cooled and non water-cooled, is made of FCD. The performance is better than that of traditional steel structural lip, which refers to features as water-tight, no deformation, easy slag treatment, maintenance free, long service life, etc. The lips can be applied to converters with capacity up to 350 tons. Our product has long and stably been supplied to domestic plants as Baosteel, Shougang Steel, Anshan steel, Xianggang Steel, Wisco, Hebei Steel, etc. and overseas plants as Nippon Steel, Sumitomo, etc.

We can also supply converter furnace lip of different material as like cast steel according to customer's requirements.



INGOT MOULD, BOTTOM PLATE AND HEAT CAP

Our ingot mould, bottom plate and heat cap are made from Baosteel high-quality blast furnace hot metal as raw material, which enjoys high C content and low contents of detrimental impurities such as S and P. The chemical composition are stable, which is good for heat dissipation and demolding. The corresponding service life is long.

The manufacturing shall also be according to DIN and JIS standard based on the customer's requirement. The maximum product weight is 60 ton.

Our products have been exported to the Pacific Steel, Nisshin Steel, JCFC, Asian Steel, OVAKO STEEL AB, Timken, CO., ThyssenKrupp VDM, etc.



**PRODUCTS FOR
IRON AND STEEL
MAKING AREA**

The complete manufacturing technology of our BF cast iron cooling stave is introduced from Nippon Steel. Several know-hows are independently developed and innovated accordingly, such as anti-excursion head fixing technology for cooling tube, ultra-low phosphorous smelting technology, etc. The manufacturing technology for cooling stave applied currently is the 4th generation with double-row bricks, double-row tubes and coiled tube at the corner. The cooling effect is continuously improved. The service life is up to 20 years. We take up worldwide over 60% market share for ultra-large BF with capacity over 5000m³.

Our BF cast iron cooling stave has been exported to Australia, USA, Russia, Italian, India, Brazil, Korea and Finland since the 1st export to Kimitsu in 1994.

For better service to our customers, based on BF project experience for many years, we have supplied mounting accessories to overseas customers, including compensator, high strength bolt and nut, grouting bolt, sealing box, sealing plate, sealing element, ESAFORM, YARNROPE, etc.



Compensator



Grouting bolt



Sealing box



Part of overseas references of BF Cast iron cooling stave

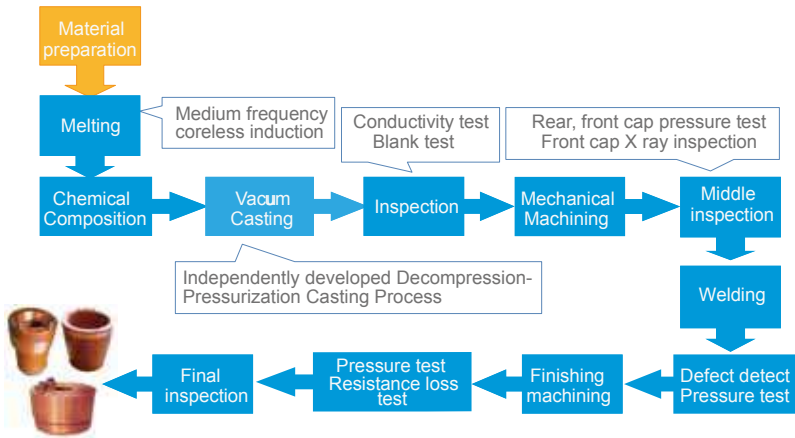
No.	Customer	Capacity (m ³)	Remark
1	NSC Kimitsu 2# BF	2500	Cast in bricks, 4th generation
2	NSC Kimitsu 4# BF	5555	Cast in bricks, 4th generation
3	NSC Oita 2# BF	5774	World largest, Cast in bricks, 4th generation
4	Australia BSL BF	3200	Brick inserted, 3rd generationHot
5	USS GARY 13# BF	2955	Cast in bricks, 4th generation
6	Russia Northern Steel	5580	Cast in bricks, 4th generation
7	Sumitomo Kashima	5400	Cast in bricks, 4th generation
8	Kobe Kakogawa 2#	5400	Cast in bricks, 4th generation
9	Italy TARANTO 4#	4500	Cast in bricks, 4th generation
10	India TATA "H"BF	3200	Cast in bricks, 4th generation
11	Brazil ACOMINAS	1750	Cast in bricks, 4th generation
12	Sumitomo Wakayama	3700	Cast in bricks, 4th generation
13	Korea Hyundai 1# BF	5250	Cast in bricks, 4th generation
14	India VIZAG 3# BF	3200	Cast in bricks, 3rd generation
15	Japan Oita 1# BF	5774	World largest , Cast in bricks, 4th generation
16	Korea Hyundai 2# BF	5250	Cast in bricks, 4th generation
17	India ISSCO 2# BF	2500	Cast in bricks, 4th generation
18	Italy Piombino "H"	3500	Cast in bricks, 4th generation
19	India TATA "I" BF	3200	Cast in bricks, 4th generation
20	Italy Taranto 1# BF	4500	Cast in bricks, 4th generation
21	Finland Ruatarruuki1 2# BF	2000	Brick inserted after casting, 3rd generation
22	Sumitomo Wakayama	5500	Cast in bricks, 4th generation

COPPER TUYERE

In 1992 the 1st Chinese tubular long-life tuyere designed and manufactured by us was successfully applied to Baosteel BF. With continuous improvement, several kinds of tuyeres were developed, such as nitro-carburizing, surfacing, double inlet & outlet, and extrusion cap, etc. The annual production capacity is 1300 tons.

Our tuyere enjoys reasonable structure design, high purity, high electrical conductivity, fine casting, and long service life(actual performance in Baosteel is 9-10 months), etc.

Production process flow:



COPPER COOLING PLATE

Performance index of BF copper cooling plate

Product mix		Element	Mechanical property	Physical property	Inspection item	Scope of application
Single inlet & outlet	2-way cooling plate	Cu+Ag>99.8%	$\sigma_b \geq 180\text{Mpa}$ $\Delta 5 \geq 35\%$ $HB \geq 40$	Conductivity $\geq 85\%$ IACS	X-ray inspection according to ASTM E272-90 Tightness inspection Hydrostatic inspection Pressure loss inspection	Large BF
	4-way cooling plate					
	6-way cooling plate					
Double inlet & outlet	2-way cooling plate					
	6-way cooling plate					



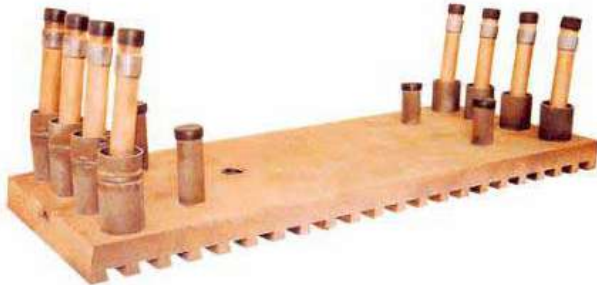
BF COPPER COOLING STAVE

We have successfully developed copper cooling stave in 1998. The current annual production capacity is 1800 ton.

Our copper cooling stave enjoys favorable cooling effect, long service life in BF, light lining, expandable furnace capacity, easy construction, etc. The coolant gallery is double-row holes instead of single hole structure so as to improve the cooling effect, reduce the wall thickness and the investment cost. Our product enjoys deep hole machining technology; unique welding groove structure, water pipe fitting technology and several patent technologies.

Our product has been applied in dozens of large and medium BFs both at home and abroad such as Baosteel, Anshan steel, Bengang Steel, Pangang Group, Ningbo Steel, Baotou Steel, Nanjing Iron and Steel, Laigang Group, and EIL, India.

We have also supplied EAF copper cooling stave to IHI, Nippon Steel, etc.



High-quality cooling stave

Copper cooling Stave	Chinalco Luoyang Copper Co, Ltd TU2 oxygen-free rolled plate chemical elements: Cu $\geq 99.95\%$; P $\leq 0.003\%$ strong rolling force, No.1 press-down thickness in China	Favorable conductivity Leakage-proof ;penetration free No loosened inclusion Long service life
Water channel hole shape design	The cooling channel hole type is double-row (national patent) large surface of heat exchange, favorable cooling effect constant cross sectional area, constant water flow Smooth, reduce water flow resistance and stress concentration	Favorable cooling effect Best hole shape choice
Welding quality of In-out water pipe Plug and Cooling stave	State-of-art equipments and proprietary technology Use USA Miller Multi-functional automatic argon arc welding machine. We have proprietary technologies in welding process, welding parameters, welding material and welding structure.	Zero leakage accident in Lubao for nearly 10 yearso

Main technical parameters

Product mix	Water channel type	Material (Tu2)	Mechanical property	Physical property	Inspection item	Scope of application
convex-platform groove cooling stave	Single-hole	Cu+Ag $\geq 99.95\%$ O $\leq 0.003\%$ S $\leq 0.004\%$ P $\leq 0.002\%$	$\sigma_b \geq 200\text{N/mm}^2$ $\delta 10 \geq 30\%$ HB ≥ 40	conductivity 100 (± 2) %IACS	UT inspection Coloring inspection Hydrostatic pressure inspectionPressure loss inspection	BF shaft Bottom BF waist BF bosh BF hearth Iron notch area
flat-plate groove cooling stave						
bended cooling stave						
iron notch cooling stave	Single hole					

12 ◆ BF THROAT ARMOURING AND THROAT STEEL BRICK

Our throat armouring product is able to serve in 400~500℃ BF and endure frictional wearing and gas flow blasting.

The throat armouring is located at the BF throat, which functions as follows:

1. Prevent the refractory or steel brick inside the furnace from falling due to extraordinary temperature;
2. Prevent the refractory or steel brick inside the furnace from gas flow blasting;
3. Keep smooth the flow of fan housing inside the furnace and guarantee the safe operation of equipments of furnace roof;
4. Slow down the wear-out of refractory or steel brick and increase the service life;
5. Ensure the uniform motion of furnace burden;

We strictly control the raw material chemical composition and the temperature during casting process and developed the temperature control model of heat treatment during process of manufacturing as well. The armouring shall be entirely pre-assembled according to respective drawings so as to guarantee site erection smoothly.

Our quality throat armouring has been successfully applied to large BF of Dragon Steel Corp. in Taiwan, Tata Steel and JSW in India. We also supply JSW with steel brick for throat armouring.



BELL-LESS TOP BF DISTRIBUTION CHUTE

After the improvement on the chute liner, the service life of our Bell-less Top BF distribution chute in Baosteel BF is over 1 year.

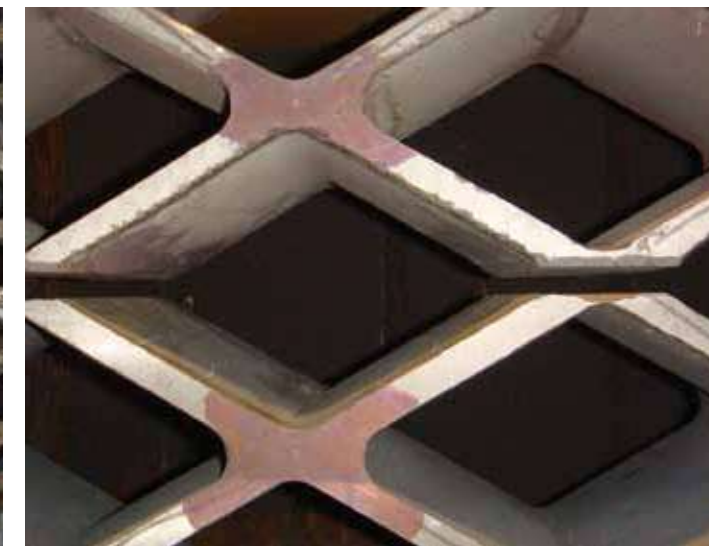
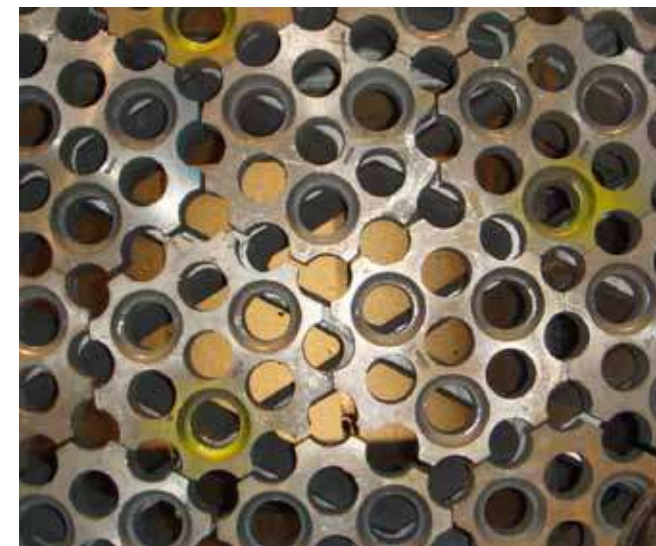


LINING PLATE FOR BF FURNACE TOP

Our lining plate for BF furnace top has been successfully applied in Nisshin Steel, Kobe Steel Kakogawa and Nippon Steel Kimitsu works. The hardness is above HS80.



13 BF HOT STOVE CHEQUER SUPPORT SYSTEM



Our BF Hot Stove Chequer Support System, including Kalugin top combustion, internal combustion, external combustion and Didier type, have been exported to India, Russia, USA, Brazil, France, Italy, Japan, etc.



HOLDING TANKER, LADLE



Holding tanker is applied in metallurgical slag transportation, from loading, tilting, unloading to transportation.

We can supply integrated holding tanker or articulated tanker according to customer's requirements.

Our holding tanker series products from 35-100tons have been applied in Baosteel, Anshan Steel, WISCO, MaSteel, Dalian Special Steel, Xingcheng Steel, etc.



CAST AND WELDED SLAG POT

Welded Slag Pot

The welded slag pot is made of rolled steel plate with special welding technology. The dimension and shape can be designed based on customers' requirements. The slag pot enjoys features as environmental friendly, light weight, long service life, easy maintenance, low maintenance cost, etc.

We have already supplied products of different specifications to Baosteel, Maanshan Steel, Xincheng Special Steel, Northeast Special Steel and Tisco.



Cast Steel Slag Pot

We are able to optimize the process and material and to design the cast steel slag pot based on customers' requirements. The slag pot has been exported to Nippon Steel, Kobe Steel, etc.



SCRAP BUCKET FOR EAF

The scrap bucket for electric arc furnace has long and stably been exported to Nippon Steel Nagoya works.



BF Tapping channel and cover

The BF tapping channel and cover have been exported to Kimitsu works of Nippon Steel, Wakayama works of Sumitomo.



Pulverized coal warehouse



Taphole swing chute

**Converter Fire Door**

Our converter fire door has been exported to all steel works of Nippon Steel.

Tundish

Our continuous casting tundish has been exported to SPK, Japan and Nippon Steel.



Coke oven column



We can supply incorporated facilities for sintering machine, including front & rear star wheel, sintering machine trolley, side wall and grate bar, etc.

Our trolley proper adopts low sulphur, low phosphorous FCD, as well as EAF smelting, furan resin sand casting process to realize its tensile strength $\geq 500\text{Mpa}$, elongation $\geq 10\%$, nodularization rate over 85%, etc.

Our trolley side wall, through high temperature antioxidant material recipe, unique heat treatment process and several stress reduction structures can effectively avoid cracks, deformation from thermal circulation alternating stress so as to curb air leakage of the trolley and reduce spare part cost for our customers.

We have supplied the complete sintering machine to Sumitomo Metal Wakayama Steel Works and grate bars to Nippon Steel and JFE for over 10 years, sintering trolley to Japan, U.K., India, Turkey and Brazil.



Belt Conveyor

The sales turnover for our belt conveyors reached the second place in China since 2006 and our market share has been kept in the top 2 of the industry in recent years. Our products mainly serve large enterprises in China. We are the only manufacturer who obtained the production license of 2.8m-width belt conveyor.

In 2010 we became a qualified supplier for VALE S.A-- the No.1 iron ore supplier of the world. We've supplied large belt conveyor with total length of 3.5km and width of 1800mm & 2200mm. Our conveyors were highly appreciated by VALE and have also been exported to Brazil, France, Japan, Australia, Iceland, Vietnam, Iran, UAE, Indonesia, etc.



CONVEYOR BELT

Conveyor Belt

We can supply heat resistant conveyor belt, flame retarding lamination belt, tear-proof steel cord conveyor belt, long distance steel cord conveyor belt, highly abrasion resistant conveyor belt and other rubber conveyor belt products.

We have supplied all kinds of rubber conveyor belt products for customers in Japan, Brazil and India.

Our EP heat resistant conveyor belt is featured with the following:

1、EP heat resistant conveyor belt is applicable for transport of lump material with temperature of 300℃~ 500℃ and pulverized material with temperature of no more than 300℃ (the belt temperature should be no more than 175℃).

2、EP heat resistant conveyor belt is made of special structure material and through special manufacturing process and it demonstrates high strength and good dimension stability, applicable for transport occasions of big width, long distance, ultra high temperature and big volume transport.

3、It holds excellent abrasion resistance and is particularly suitable for transport of sintered lump ore etc.



CONVEYOR HOOD

Conveyor Hood

We are able to supply the whole series of belt conveyor hood (otherwise called rain cover), including stationary type, curtain type, open type, anti-deviating switch hood and the accessories (including fastener and hinge) and Z-shape steel.

Our hood is compressed in form of small corrugation with 32mm width and 9-10.5mm height so that loading performance is good. The uniform corrugation may guarantee the sealing effect.

Hood made of Baosteel color coated plate enjoys weather-proof and corrosion resistance. Color will not fade within 10 years and the service life is 15+ years. Hood made of TISCO stainless steel may guarantee the life-long service of the belt conveyor.

Our product has been widely applied in industries as metallurgy, cement, port, coal mine, electric power plant, etc since our supply to Baosteel in 1986. Since 2000 our hood has been exported to Japan, Britain, USA, Australia, Brazil, Korea, India, Vietnam, Indonesia, Malaysia, UAE, Mongolia, etc. We have become the largest specialized hood supplier both at home and abroad.



COKE OVEN FUME GAS SWITCH VALVE

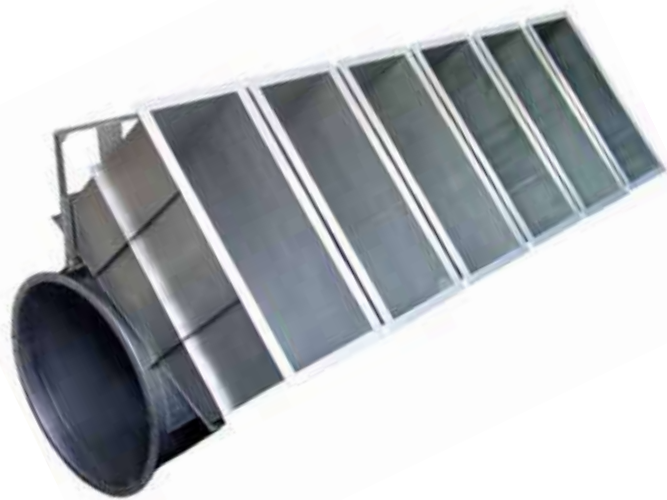
Designated Fume Gas Switch Valve for Coke Oven De-dusting

The designated fume gas switch valve for Coke Oven de-dusting supplied by us is applied in Coke Oven coal loading and coke discharge systems. It adopts the structure of one pipe with multiple valves, and the valve flap is driven by mechanical swing type manipulator with good synchronization, and this adopts the structure of tilted plate with reliable sealing, long life and little maintenance.

We performed complete stress removal treatment for the products, the welding so as to avoid deformation of the products and scaled installation clamps were used to ensure the flatness of the valve manifold suction inlet and the precision of the center distance between suction inlet.

The sealing washer is made of copper wire filled with high temperature carbon fiber and through surface silicon glue processing with performance of corrosion resistance, heat resistance and abrasion resistance. The valve flap is made through complete stamp forming with good strength.

We have already supplied this product to Baosteel, Hangang, TISCO, WISCO etc. and other big scaled steel plants.



BF, CONVERTER, COKE OVEN GAS AND DEDUSTING SYSTEM VALVES

We can supply designated sets of valves for BF gas bag type de-dusting system, BF Top Gas Recovery Turbine Unit system, BF Pulverized Coal Injection system, converter dry type de-dusting system, converter fume gas filtration and gas recovery system etc.



METAL BELLOW AND METAL FLEXIBLE HOSE

We supply all kinds of metal bellow, corrugation expansion joint, flexible metal hose, welded bellow, extraordinary bellow, etc.

The product series of corrugation compensator ranges from $\phi 40$ to $\phi 15000\text{mm}$ (sectional dimension at will). The working pressure ranges from vacuum to 12MPa. The design temperature ranges from -196°C to 900°C (up to 1350°C if insulation is applied).

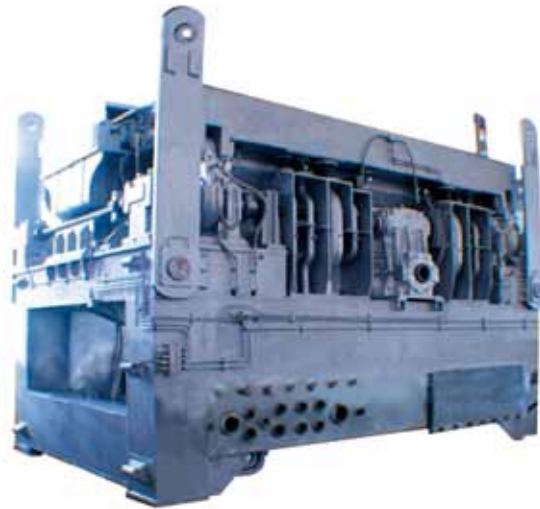
The product mix of metal flexible hose covers 70+ kinds, including converter oxygen blowing hose, continuous caster hose, anti-seismic hose, main drainage pipe, multi-function hose for loading and unloading and composite hose for machines etc.





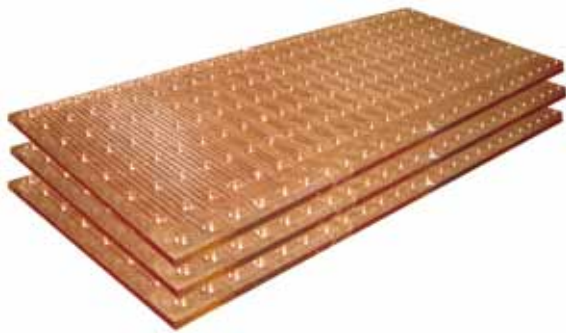
**PRODUCTS FOR
CONTINUOUS CASTING
AND ROLLING AREA**

Baosteel Engineering is renowned for manufacturing of complete set of slab caster, mould, mould oscillator, supporting guide segments, segments as well as all kinds of spare parts which are widely supplied to iron & steel companies both at home and abroad. We have maintained long term relationship with world well known engineering companies like SPCO, SIEMENS-VAI, SMS, DANIELI,etc.



Mould Copper Plates
Baosteel Engineering is equipped with world class electroplating, coating and machining equipments and technologies for mould copper plates.

We can fabricate and repair slab mould, profile mould and thin-slab mold with diversified coatings of Ni, Ni-Fe, Co-Ni, Ni-Co, etc according to customers' requirements. Both split plating and non-split plating (no disassembly of broad copper plate with water tank) can be applied.



Outstanding technology	Advantages
Co-Ni electroplating	Good thermal stability and wearing performances under high temperature. Apply to high speed continuous casting
Ni-Co electroplating	Better Comprehensive performance and lower cost
Ni-Fe electroplating	Lower stress and adjustable hardness
Thermal analysis technology	Unique in China and plays important role in engineering and application technology of mold copper plate.
Thin slab mold copper plate plating and machining	Leading technology in China
Thermal spraying of narrow copper plate	Higher sticky strength between base material and coatings. Higher hardness, good thermal stability coatings and wearing performances under high temperature of coatings



SPARE PARTS FOR CONTINUOUS CASTER

Base Plates Copper

Baosteel Engineering also produces the base plate of mold copper plates with rare earth alloy, silver and copper alloy and chromium zirconium copper by making full use of the performances of high strength and high conductivity of CrZrCu material. The melting and casting were carried out under vacuum conditions and oxidation of CrZrCu material was avoided. The alloy content can be accurately controlled and evenly distributed with good stability. Advanced forging-rolling process and special heat treatments improved the mechanical properties of the alloys. Our customers are Baosteel, WISCO, Chengdu Xiye Casting Inc., Anshan Steel, Benxi Steel, Baotou Steel, TISCO, etc as well as some overseas customers. The annual capacity is 500 tons.

Technical Figures of CrZrCu Material

Grade	Chemical Composition			Mechanical Properties				Conductivity
	Cu	Cr	Zr	σb MPa	σ0.2 Mpa	δ5 %	HB	
CCM-A	≥98.0	0.5-1.5	0.08-0.30	≥400	≥280	≥15	≥110	≥80
CCM-B	≥98.0	0.5-1.5	0.08-0.30	≥350	≥240	≥25	≥100	≥80
CCM-H	≥98.0	0.5-1.5	0.08-0.30	≥420	≥300	≥20	≥120	≥80
UT inspection of plate surface: JIS Z2344								



Continuous Casting Roll and Non-Magnetic Roll

Our Non-magnetic rolls can obtain certain kind of single-phase austenitic steel by optimization of the content of C, Cr, Ni, Mn, Mo, Ti, Al, etc. The advantage is that the roll body metallurgical analysis indicates austenite. It can avoid sticky of residue and in the meantime avoid all kinds of slab surface cracks like longitudinal cracks, transversal cracks and mesh cracks. Therefore, it is able to control slag type defects, apperance defects and internal defects on billets so that the continuously casted stainless steel billet can get higher density, better homogeneous and smooth surface. Thus the overall quality of the billet can be improved.



ELECTROMAGNETIC STIRRING PRODUCTS

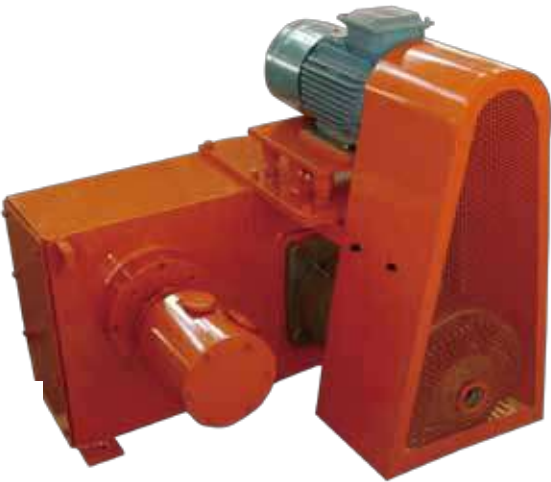
We supply electromagnetic stirring products for continuous caster, including square (round) billet electromagnetic stirrer, slab electromagnetic stirrer, complete set of electromagnetic stirring equipment, smelting furnace electromagnetic stirrer, electromagnetic stirring electrical control system, electromagnetic stirrer cooling water system, etc.



HOSE REEL

We are able to supply cable(hose) reel series products which include:

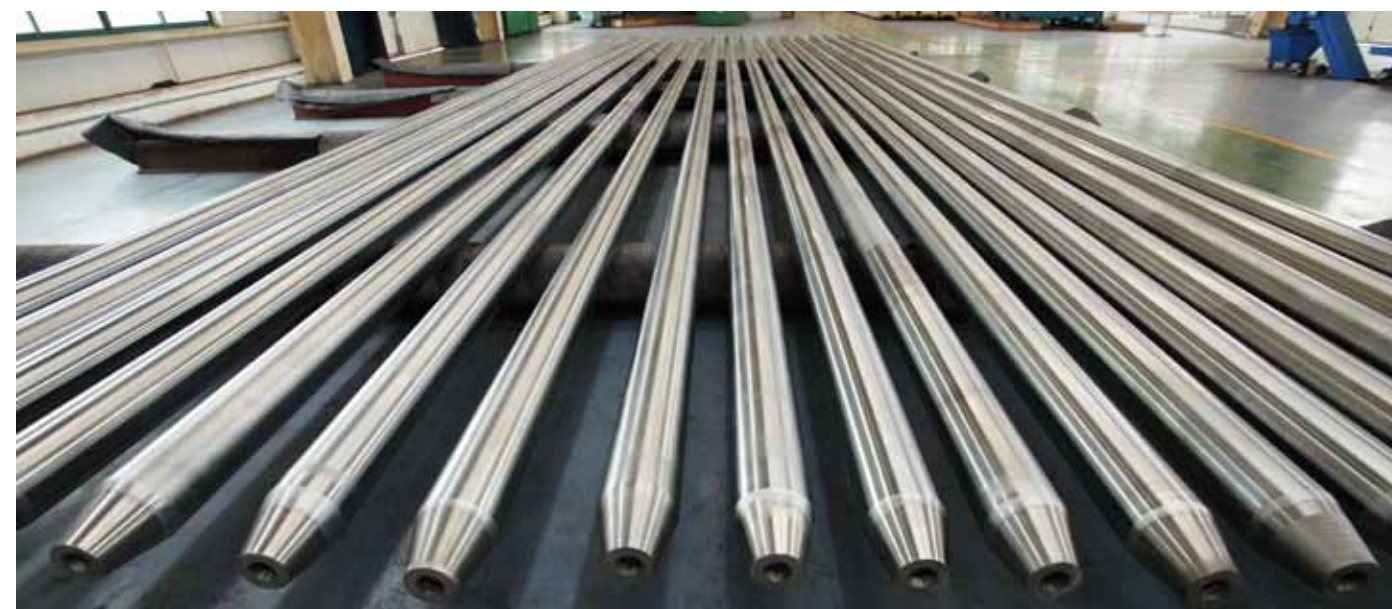
1. Elastic-type cable reel: Slide ring built-in type cable reel, Horizontal ground coiling type cable reel(spring series type), Slide ring externally mounted cable reel, Cantilevered elastic type cable reel, Single arm type elastic cable reel. etc.
2. Motorized cable reel : Torch motor cable reel, Hydraulic-coupled cable reel, Hysteresis type cable reel, Long term stall motorized cable ,etc.
3. Others: Hose reel, Signal cable(conductive slide ring) reel, Counter-Weight type cable reel, Optic fiber cable reel as well as spare parts like central current collector, slide ring, insulation ring, guide cable rack, wheel braket, etc.



We own different flow production lines dedicated to process all kinds of chocks. Based on customer's needs, all kinds of forged steel or cast steel rolling mill chock can be manufactured. We have delivered our products to world renowned companies such as SMS, SIEMENS, VAI, MHI for export on a long-term basis.



Our reducer roll products have been widely applied in steel pipe rolling sizing mill and stretching and reducing equipment. The products are made of alloy FCD material. Hardness range: 52-68HSD. Our supply are on long-term basis to Sumitomo Metal, JFE, USS and European steel plants with good customer feedback.



Baosteel Changzhou Roll Manufacturing Company, one of the subsidiaries of Baosteel Engineering with an annual capacity of 30,000 tons, is the biggest forged roll fabricator in Asia. Our main overseas customers include ArcelorMittal, JFE, POSCO, TATA STEEL, JSW, BhuShan Steel, CMI, ELUMA, BNG, JSL, SAPA, etc.



Products catalogue

- Forged cold work roll
- Forged cold intermediate roll
- Forged medium and small sized back up roll
- Sendzimir work roll
- Sendzimir intermediate roll

Baosteel Engineering is now able to manufacture over 3,000 tons of retained mandrel of diameters ranging 100-400mm and length up to 18m per year. Our products have high dimensional accuracy, high strength, high wearing and fatigue resistance as well as long service life. We are now supplying customers such as Panzihua Steel, Tianjin Pipe Group, WSP Holdings Limited, Anshan Steel Group, Russia TMK, etc.



◆ QUENCHED ROLL

The quenched roll supplied by Baosteel Engineering is kind of patent products. It was made from China GB 45# steel (equivalent to S45C, 1045 or C45) sheet bending and welding, which is a substitute for former forged products, while the cost and fabricating time was reduced to its half. Self developed welding material makes it possible for the welding seam to get consistent hardness with the base metal after quenching. No gas hole and cracks can be detected from the roll surface and body. The maximum diameter of such kind of quench roll is 2200mm.

We use a large power induction heating furnace to quench the roll surface at medium frequency.

Specification of quenching piece:

Diameter: $\phi 200\text{mm}-\phi 2000\text{mm}$,

Length: max 6000mm,

Depth of quenched layer : 5-6mm.



No	Customer/Project	Product	Product Specification
1	Baosteel 5th Cold 1#2# CGL	Online tension rollers, steering rollers, deflector rollers	Coil sheet bending and welding type Quench Roll after texturing and chrome plated: $\phi 800-\phi 1500$
2	POSCO Vietnam/Temper mill	Online tension rollers, steering rollers, deflector rollers	Online tension rollers, steering rollers, deflector rollers
3	Hangang Recoiling line	Online tension rollers, steering rollers, deflector rollers	Coil sheet bending and welding type Quench Roll after texturing and chrome plated: $\phi 1000-\phi 1200$
4	Baosteel CGL	Spare parts tension rollers, steering rollers, deflector rollers	Coil sheet bending and welding type Quench Roll after texturing and chrome plated: $\phi 1500$
5	CGL Baosteel Stainless Steel Branch	Spare parts tension rollers, steering rollers, deflector rollers	Coil sheet bending and welding type Quench Roll after texturing and chrome plated: $\phi 1000-\phi 1200$
6	2nd stage CGL of Guangzhou JFE (auto and home appliances oriented)	Spare parts tension rollers, steering rollers, deflector rollers	Coil sheet bending and welding type Quench Roll after texturing and chrome plated: $\phi 750-\phi 1200$
7	Chuairo Industry Co Ltd / CSVC Vietnam	Tension rollers, deflector rollers	Coil sheet bending and welding type Quench Roll: $\phi 750-\phi 1200$
8	SPCO/Thailand project		Coil sheet bending and welding type Quench Roll after texturing and chrome plated: $\phi 800-\phi 1200$
9	2nd stage CGL of Guangzhou JFE	Spare parts of tension rollers,	Coil sheet bending and welding type Quench Roll after texturing and chrome plated: $\phi 750-\phi 1200$



Baosteel Engineering is equipped with world class Supersonic Spray(JP8000,JP5000) and Plasma Spray(UNICOAT F4,SG100) equipments as well as relative technology, process and ancillary facilities. The performances of anti-corrosion, wearing and heat resistance of thermal coatings are now playing important role in spare parts manufacturing and re-manufacturing in iron & steel industry.

Baosteel Engineering has its special surface technology department which focuses on surface process of thermal spraying, electroplating and build-up welding. Main products include hearth roll, sink roll, stabilizing roll, cold roll process roll, hot roll table roll and laminar cooling roll,etc.

We also supply U type, W type and straight pipe type radiant tubes which were mainly used in cold roll post-processing lines and heavy plate heat treatment furnaces. Our radiant tubes have many references export to overseas countries such as Japan, UK and Germany, etc.



Hearth rolls for CAL/CAPL



Various process rolls



CGL sink rolls and stabilizing rolls



Continuous Annealing Line



Radiant tube

Titanium anode is composed of the inertia titanium matrix and the active coating of noble metal oxidate. We are able to design and manufacture a large variety of anodes which can be applied to different kinds of electrochemical systems and process.

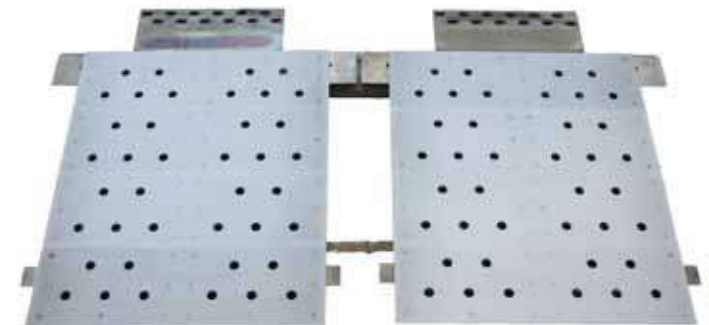
Electro-Galvanizing Line (EGL)

Electro Tin Line (ETL)

Electrolytic pickling, such as pretreatment of zinc steel strip, rinsing of stainless steel plate

Aluminum foil and plate anodising applied in liquid-contact-cells such as aluminum PS coil and plate continuous anodising

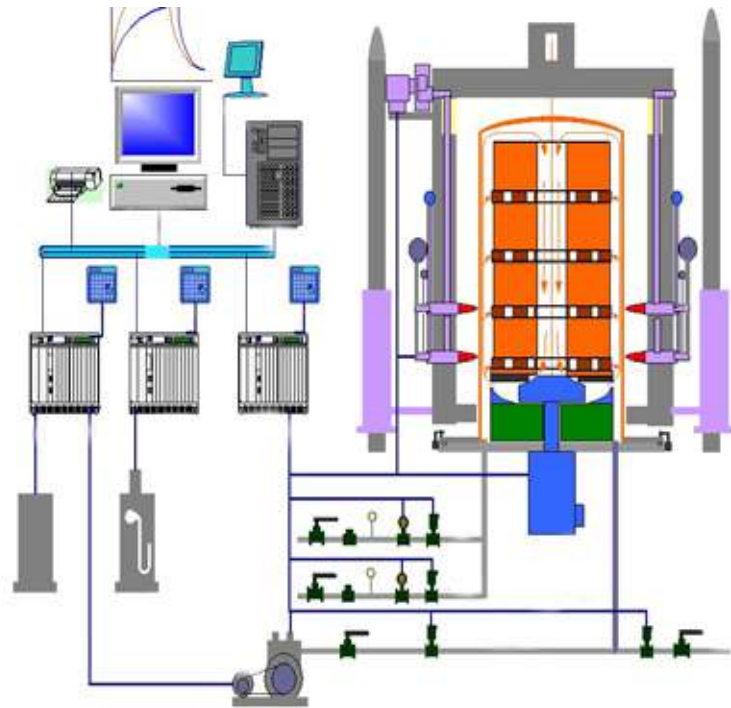
Main customer: Baosteel Group



BATCH ANNEALING FURNACE (BAF) AND COMPONENTS

Batch annealing furnace is of bell type sealing structure and performs annealing treatments of metal products in full hydrogen atmosphere. The annealing treatments include brightening, re-crystallizing annealing, spheroidizing, stress releasing, etc.

Baosteel Engineering is able to supply the overall engineering, equipment and spare parts, wear and tear parts and maintenance services of BAF. Complete set of equipments and spare parts such as covers, base plates are now supplied to Arcelor-mittal, Baosteel, Liuzhou Steel of WISCO, etc.



ELECTRO-MECHANICAL EQUIPMENTS

We are able to supply the following electromechanical equipments

Product series

Cold area products

Steel pipe detection and identification production line
Steel pipe ultraviolet solidification greasing machine
Multifunction mark spraying system
MJP series mark spraying machine
Steel pipe automatic milling head and chamfering line
Billet electric arc centering machine
Steel pipe milling saw
Steel pipe disk saw
Steel pipe automatic shaping bundling line
Automatic steel pipe bundling machine
Steel pipe ultrasonic NDT system

Hot area products

Hot metal mark spraying machine
Hot billet end face marking machine
Hpm hot mark spraying system
Robot hot marking machine
Converter automatic pneumatic slag blocking equipment

Others

Magnetic-lag flexible displacement sensor
Magnetic-lag flexible guided wave detector



Hard Alloy Circular Saw



Numeric Control Profiling Saw for Steel Pipes



Paint Jet Making Machine
for Hot Products



Ultrasonic Nondestructive Testing
System for Seamless Pipes



Automatic Steel Pipe Bundling Machine



UV Coating and Curing Equipment



Robot Type Paint Jet Making
Machine for Hot Products

Ⓢ SAMPLING SYSTEM

Automatic Sampling System for Iron ore/Coal/Flux/Coke/Pellet
Features:
PLC controlled, High degree of automation, reliable operation.

Compact design.

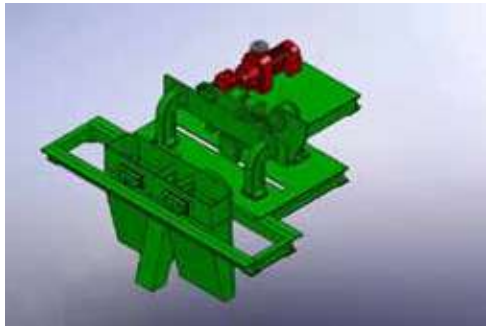
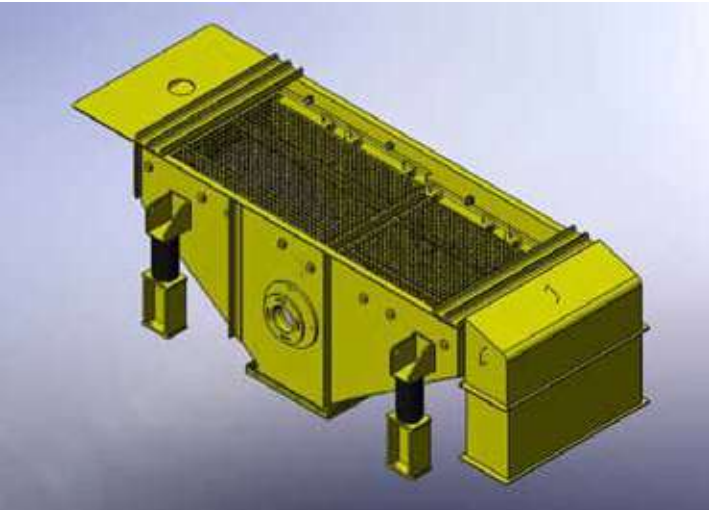
Careful design and selection of materials to effectively prevent the spread of sealing material.

Ensure that under the quantitative sampling mechanism, the sample will not be mixed in the system.

There is no possible contamination of the sample or fragmentation of the sample size due to intensive conveying.

The system is effectively sealed and to large air flow in-between equipments is prevented so as to avoid loss of sample and water.

Smooth material supply is fully considered in the system design so as to avoid blocking or adhesion.



PRODUCTS FOR
AUXILIARY AND
GENERAL FACILITIES

Iron & Steel Industry:

Country	User Name	Material	Start-up Time
China	Baoshan Iron & Steel Co., Ltd.	Iron Ore / Sinter	2007-11
China	Baoshan Iron and Steel Co., Ltd. Luojing Area	Iron Ore / Coal / Flux / Coke	2007-04
China	Baosteel Stainless Steel Co., Ltd.	Sinter	2008-05
China	Baosteel Ningbo Iron & steel Co., Ltd	Sinter / Coke	2007-08
China	Baosteel Meishan Iron & steel Co., Ltd.	Sinter / Coal	2004-06
China	Baosteel Shaoguan Iron & steel Co., Ltd	Sinter	2010-03
China	Anshan Iron & Steel Co., Ltd	Sinter / Pellet	2009-03
China	Wuhan Iron & Steel Co., Ltd	Sinter / Coke	2008-01
China	Taiyuan Iron & Steel Co., Ltd	Sinter / Coal	2009-05
China	Shougang Jingtang Iron & Steel Co., Ltd	Sinter / Flux	2009-04
China	Panxi Iron & Steel Co., Ltd	Coke	2008-05
INDIA	TATA STEEL Co., Ltd	Coal	2006-03
BRAZIL	CSA Co., Ltd	Coke	2011-05

Port & Power Plant:

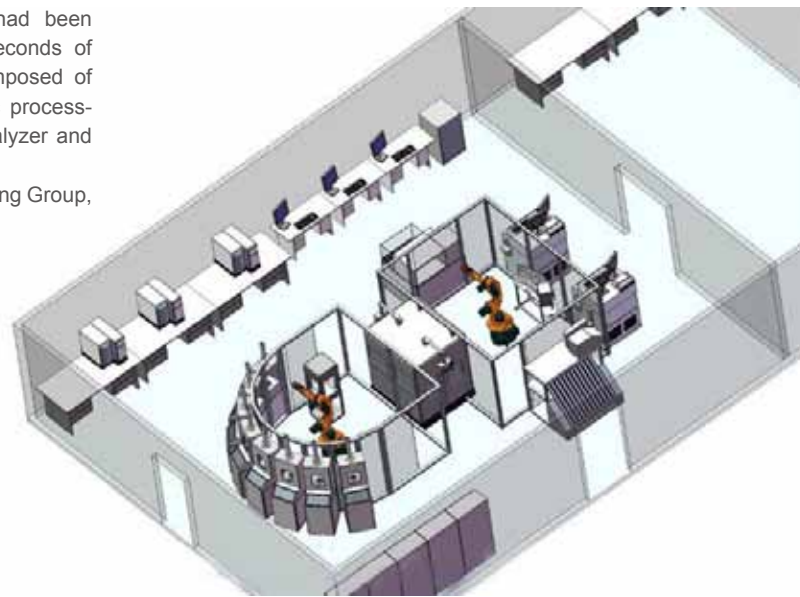
Country	User Name	Material	Start-up Time
China	CIQ*: TaiCang WuGang Port	Iron Ore	2010-01
China	CIQ: BeiLun Port	Iron Ore	2011-05
China	CIQ: Majishan Port	Iron Ore	2011-06
China	CIQ: ZhouShan WuGang Port	Iron Ore	Under Construction
China	CIQ: NingBo Chuanshan Port ZhongZhai Wharf	Iron Ore	Under Construction
Vietnam	HAIPHONG POWER Co., Ltd	Coal	2009-08
Malaysia	MUKAH COAL-FIRED POWER STATION	Coal	2009-04

*CIQ: CHINA ENTRY-EXIT INSPECTION AND QUARANTINE BUREAU

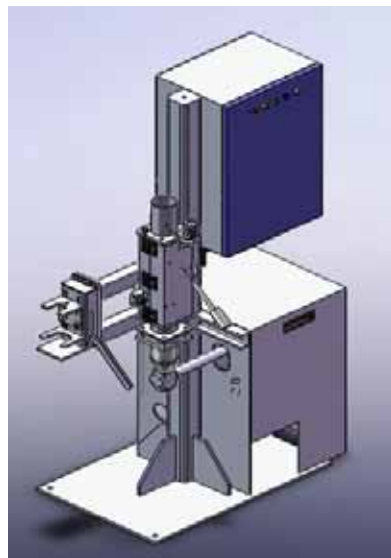
◆ CONVERTER-FRONT FULL-AUTOMATIC QUICK ANALYSIS SYSTEM

Our converter-front full-automatic quick analysis system had been successfully worked out and manufactured in 2003. 90 seconds of analysis speed are cost in our system. Our system is composed of automatic sample delivering-in-wind-tunnel system, automatic processing equipment, automatic handling equipment, automatic analyzer and the software control system.

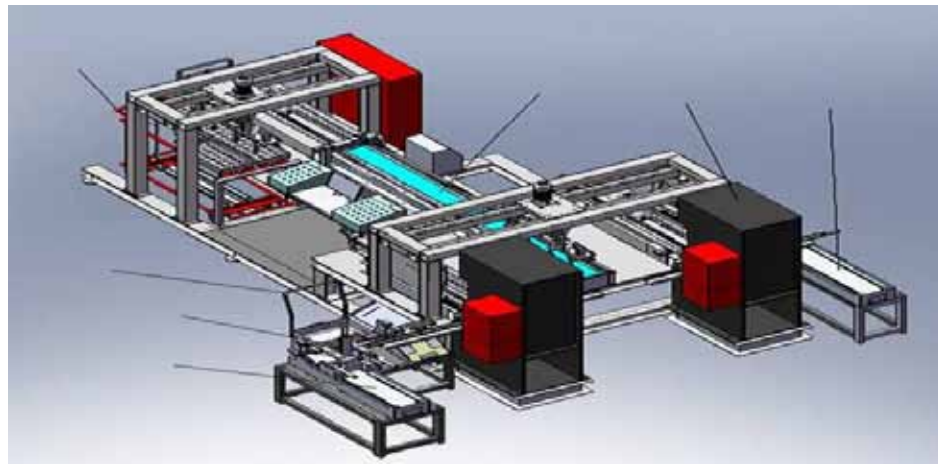
Our system has been applied in Baosteel, Wuhan steel, Shagang Group, Pangang Group, Baotou Steel, Ningbo Steel, etc.



Automatic Sample Delivering-in-wind-tunnel System



Full-automatic Quick Sample Fabrication System for Measurement of Magnetic Property



LIFTER AND ELECTROMAGNET

We are able to supply the following lifting products:

Gravity type slab clamp (10t-----94t)

Electrical-driven slab traverse clamp (30t-----94t)

All types of steel coil clamp (5t-----50t)

Steelmaking molten steel ladle gantry crane (190t-----460t)

Wire rod pickling line (5t---10t)

RH refining steel ladle top lifting frame (320t-----480t)

Plate hook (5t-----480t)

Various electro-magnetic sucker products



1. Self-propelled Platform Hydraulic transporter

It is used for heavy load transportation and widely applied in fields such as ship-building, marine projects, metallurgical industry, large steel structure with single unit load capacity at 900t. Its derivative product is ---non-rail traverser.

2. Module Trailer

For highway transport from 50t to 10,000t. Mainly for transportation of big parts for marine projects, ship-building, bridge construction, power plants, nuclear projects, mining, metallurgic and chemical industry, etc.

3. Container Straddle Carrier

4. Self-unloading Vehicle

Capacity 50-70t for purposes of mining and construction site transport.

5. Road-railer

For high-speed railway construction and wagon traction work

6. Tyre Gantry Crane products

The lifting capacity of the series of tyre gantry crane products is from 50-4000t. For lifting, transportation and assembly of concrete beam of railway and bridge construction.

7. Transport, lifting and support equipment for bridge construction

For lifting, transportation, erection work of precast beam on construction site of high-speed railway and highway. Including girder transport vehicle, bridging machine, tyre gantry crane, rail gantry crane. Maximum lifting weight is 1800t.



Fuelling Vehicle Series
High-altitude Operation Car Series
Particle Material Transport Vehicle Series
Van Vehicle Series
Compression Type Dust Cart Series
Skip Truck Series
Dirt Absorbing Vehicle Series
Watering Cart Series
Low Temperature Storage Tank Vehicle Series



Product series

- VEP medium voltage solid sealing type vacuum circuit breaker
- FEP medium voltage SF6 breaker
- VEC vacuum contactor-fuse combined electrical apparatus
- VG vacuum arc extinguish chamber
- AMS air insulation switch equipment
- GMS gas insulation switch equipment
- Enerswit air insulation looped network cabinet
- Enerswit+ gas insulation looped network cabinet
- GFM SF6 gas insulation switch equipment



We supply the latest fourth generation modularized gear motor and the main advantages are as follows:

1. Modularized design, with less parts, which can fulfill different industries application;
2. The gear adopts high quality low carbon alloy carburizing and quenching, gear grinding and shaping technology. The products possess higher loading capacity and reliable operation and with lower noise and higher efficiency;
3. Integrated high strength casting casing, with higher rigidity and vibration resistance;
4. More meticulous drive ratio grading, which can output precise rotating speed.
5. The product can be mounted at any angles.



Heavy Steel Structure

The heavy steel structure business of Baosteel Engineering covers high-rise buildings, bridges, tower mast, thermal power plants, nuclear power plants, space structure and heavy work shop, equipment steel structure, etc.

We have certification and reviews such as AISC(USA), DIN (Germany) and CWB(Canada), etc and we are the permanent member of AWS(American Welding Society). Up to now we have undertaken over 100 overseas projects and fabricated over 400,000 tons of steel structures correspondingly.

We have built long-term business relationship with world well known companies such as MHI, GE, Foster Wheeler, Butler Company, Siemens and Stone Webster of Canada, etc.

Industrial Doors

The products series include coil door, lifting door, fast coil door, horizontal hinged door and transparent segmented door, etc.

Light Housing

The products series include:

Light-building: operating room for large-scale factory; business building; kiosk of newsstand and bus station; removable assembled container structure building.

Colored steel wall and roof sheets: color coated corrugated sheet; steel floor desk, C-shape and Z-shape light steel bar structure purlin; national patent self development colored tunnel wall sheet for Shanghai world expo 2010

Large span no-girder arch roofing: factory workshop; logistic warehouse; hangar; shopping mall; stadium and large scale exhibition hall

