

NARI
南瑞集团
NARI GROUP CORPORATION

北京国电富通科技发展有限公司
BEIJING GUODIAN FUTONG SCIENCE AND TECHNOLOGY DEVELOPMENT CO.,LTD.



Fly Ash Handling System

GDFT Sharing the world's leading technology with you



Beijing Guodian Futong Science and Technology Development Co., LTD was founded in November 2002, and was registered Fengtai park of Beijing Zhongguancun National Independent Innovation Demonstration Area, with registered capital of 150 million RMB. It is a wholly-owned subsidiary of State Grid Electric Power Research Institute (Nari Group), one of the enterprises directly under the State Grid Corporation. It has an area of about 31,500 square meters for production base, and 5,200 square meters for office space. There are 477(including 151 productive labor dispatch staffs) staffs total in company, of whom are 6 doctors, 79 post graduates, 146 under graduate, 4 senior engineers with professor title, 39 senior engineers, 79 engineers, 53 assistant engineers. It has 9 business departments (Piping and fittings branch,

Mechanical conveying department, Pneumatic conveying department, Water treatment department, Equipment manufacturing center, Sales & Marketing Center, Marketing Department, After-sales service department and Research & Development department) and 6 functional departments (General management department, Party work department, Human resource department, Financial assets department, Development planning department, Materials management department).

Using its substantial high-tech experience, the company mainly focuses on working for the technology research and development, product selling, equipment completion and EPC project for energy efficiency, water conservation, environmental protection, high pressure and high temperature pipefitting, recycling and renewable resources, clean coal technology, distribution automation of power grids etc. Its products have been sold well domestic and entered the International market.

At present, the company has 5 major products, which include: Large Diameter High Temperature and High Pressure Pipefitting, Dry Bottom Ash Handling System for Coal Fired Boiler, Fly Ash Dense Phase Pneumatic Conveying Systems (DTS[®]), Pipe Conveyor System, and Bio-membrance fluidized waste water treatment system. Especially, HT & HP Pipefitting and Dry Bottom Ash Handling System are in the leading position all over the world, not only break the monopoly of foreign Company but also share the first place in domestic market. The company developed and industrialization promoted several products, like Lignite Upgrading and Comprehensive Utilization Technology, Coal Chemical Waste Water Treatment Technology, Organic and Inorganic Hybrid Nanometer RTV Coating Technology, Closed Water Cooling System of DC Converter Valves. All products are initiative domestically and fill the blank in China and reach the international advanced level.

Meanwhile, the company has passed the ISO 9001:2008 quality management systems certificate, ISO 14001:2004 environmental management systems certificate, GB/T 28001-2001 occupational health and safety management systems certificate, and has awarded the manufacture license of special equipment (pressure pipelines and pressure vessels) of People's Republic of China, ASME U stamp for pressure vessels and PP stamp for power pipelines (associated with NB certificate), the state environmental protection project specialized in contracting qualification certificate and B Level environmental engineering (water pollution prevention engineering) specialized in design qualification certificate; AAA financial credit level, and also has the right to import and export products and technologies.

Beijing Guodian Futong Science and Technology Development Co., Ltd. peruses excellence by striving to exceed expectations. The company has devoted itself in innovation, contribution and hard work. The company follows specific principles: Technical innovation, top quality, effective management, sincerity and honesty. The company is striving to develop by vigorous innovations and realize win-win situation by effective cooperation. The company's mission is to realize the self-development of its staff, to provide satisfy and high-tech products for customers, and to do some contribution to a harmonious society.

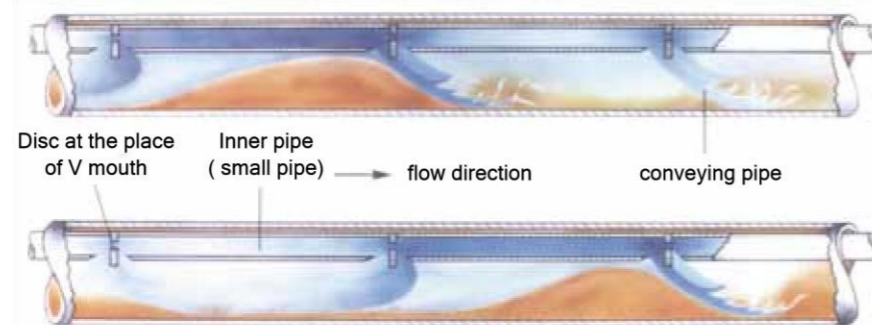
Double-tube-socket Pneumatic Conveying System

Double-tube-socket pneumatic conveying system has been applied in fly ash handing system in more than 50 power plants in Germany, Italy, Poland, Russia, Israel, Indonesia, Holland, British and Denmark until now. This system was introduced to China in early 1990s and was domestically produced by our company based on study and research. Until now, double-tube-socket pneumatic conveying system manufactured by Guodian Futong has been used in more than 150 units of fly ash conveying system of more than 60 power plants. According to the good practical conveying, this system is more stable and advanced than other fly ash conveying system. As a result, it has been widely accepted and used by lots of coal fired boiler power plants.

1 Conveying mechanism of DTS

DTS ash conveying technology, a positive pressure dense phase pneumatic conveying technology, was emerged in 1980s in foreign countries. Its main characteristics include the inner pipe which has smaller diameter is installed on the inner wall of the conveying pipe and to open one "V" mouth on the inner pipe in a certain distance. If there is a block in the conveying pipe, the pressure ahead of the block increases and forces the conveying air to flow into the inner pipe. The compressed air flow into the inner pipe can flow in a high speed out of the V mouth from the downstream of the block, so as to agitate and blow the blocked material (see the picture below) to ensure normal conveying in the pipe.

Technical principle of DTS pneumatic conveying system



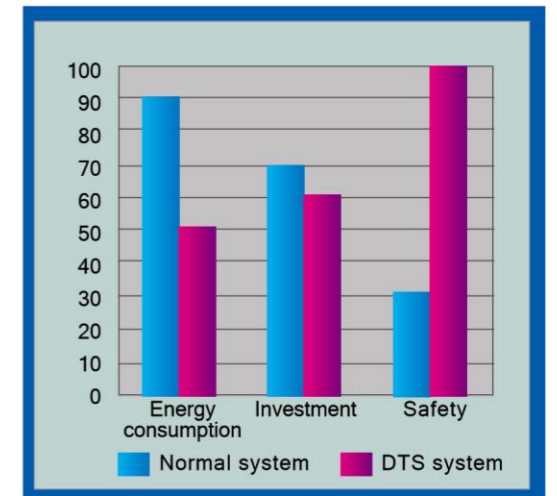
2 Main Technical Characteristics:

- 1 The special structure of double tube socket of the conveying pipe, which is advanced conveying mechanism.
- 2 Conveying under the low positive pressure and in dense phase is highly effective.
- 3 Low conveying speed with low abrasion of the pipe.
- 4 high system capacity, low conveying energy consumption.
- 5 Long distance conveying without blocking, high safety factor of the system. The engineering test conveying distance is 4500m and practical conveying distance is 2200m.
- 6 Operation in UNIT configuration, which is simple, convenient and stable.
- 7 Use auto electric control system with easy operation.
- 8 High adaptability can be used to convey large diameter and large specific gravity materials.



3 Technological and economic indicators

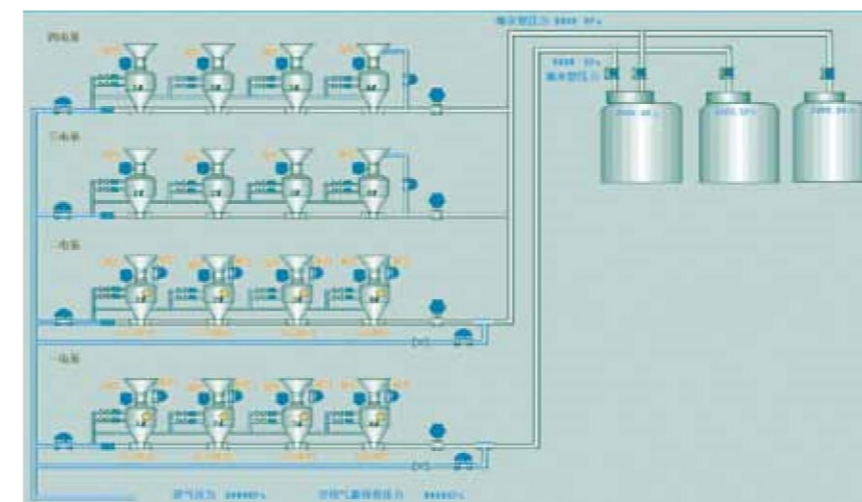
- 1 Dense phase conveying: In the same working condition, the ash air ratio is 30% higher than other conveying system.
- 2 Low velocity conveying: The startup velocity is 2-5m/s.
- 3 The low wearing of pipeline: The service life of ash conveying pipe, which is made of plain carbon steel, is 10 years.
- 4 Low conveying energy consumption: The energy consumption per ton kilometer is no higher than 4kwh.
- 5 Large conveying capacity: In the same working condition, the system conveying capacity is 30% higher than other systems.
- 6 Long conveying distance: Conveying distance can be longer than 2000m.



Technical parameter	DTS conveying system	Normal hopper and pump conveying system
Conveying pressure	< 0.4Mpa	< 0.8Mpa
Conveying distance	> 1000m	< 1000m
Ash air ratio	30% larger than normal hopper pump	
Initial velocity	< 5m/s	~10m/s
Energy consumption	2~4Kwh	9~20Kwh
Abrasion	Little	Heavy
Safety	Little blockage	Easy blockage

4 Features of DTS System configuration

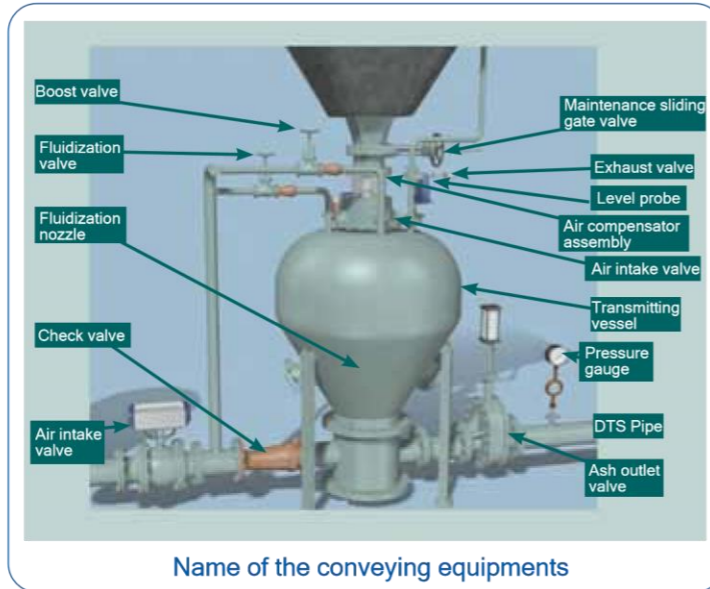
- Typical components include



Mainly includes

- a: subsystem of air compressor
- b: subsystem of transmitting vessels
- c: subsystem of pipelines
- d: subsystem of ash silo collection
- e: subsystem of auto-control system
- f: subsystem of remote monitor

● Working process of pressure conveying vessel
Boost valve, Fluidization valve, Fluidization nozzle, check valve, air intake valve, Maintenance sliding gate valve, Exhaust valve, Lever probe, Air compensator assembly, ash intake valve, Transmitting vessel, Pressure gauge, Double-tube-socket pipe, Ash outlet valve.
Open the exhaust valve and ash inlet valve, and start to load ash into the pressure transmitting vessel → reach the given ash loading time or high level probe alarms, close the ash intake valve and the exhaust valve to stop loading ash → open ash outlet valve and air intake valve to convey the ash → after conveying, close air intake valve and ash outlet valve, restart ash loading.



Name of the conveying equipments

Characteristics: open the ash outlet valve firstly and then the air inlet valve, no pressure holding, so as to decrease the abrasion of the ash outlet valve and pipeline.

5 Research and Development

State Grid Electric Research Institute started the systematic research and development of double tube socket pneumatic conveying technology in the early 1990s. And Beijing Guodian Futong Science and Technology Development Co., LTD (State Grid Electric Power Construction Research Institute) undertook the State Grid Corporation of China's (the former State Power Corporation) key research project: Research and Development of Double-tube-socket Pneumatic Conveying System and Its Domestic Manufacture in December 1999. This project is the annual key technology project of State Grid Corporation of China (the former State Power Corporation) in 1999 and 2000. State Grid (former State Power Company) and the State Economic and Trade Commission jointly organized

In May 2002, by in Beijing union of the double casing the dense phase pneumatic ash system experimental study on scientific research project technical appraisal, and formed the authoritative appraisal Suggestions, which suggests that this research product is independent research and development and suitable for Chinese conditions. Moreover, it is characterized by water saving, energy saving, comprehensive utilization, and significant achievement of environmental protection. It reached internationally advanced level, and has high value in promotion and use.

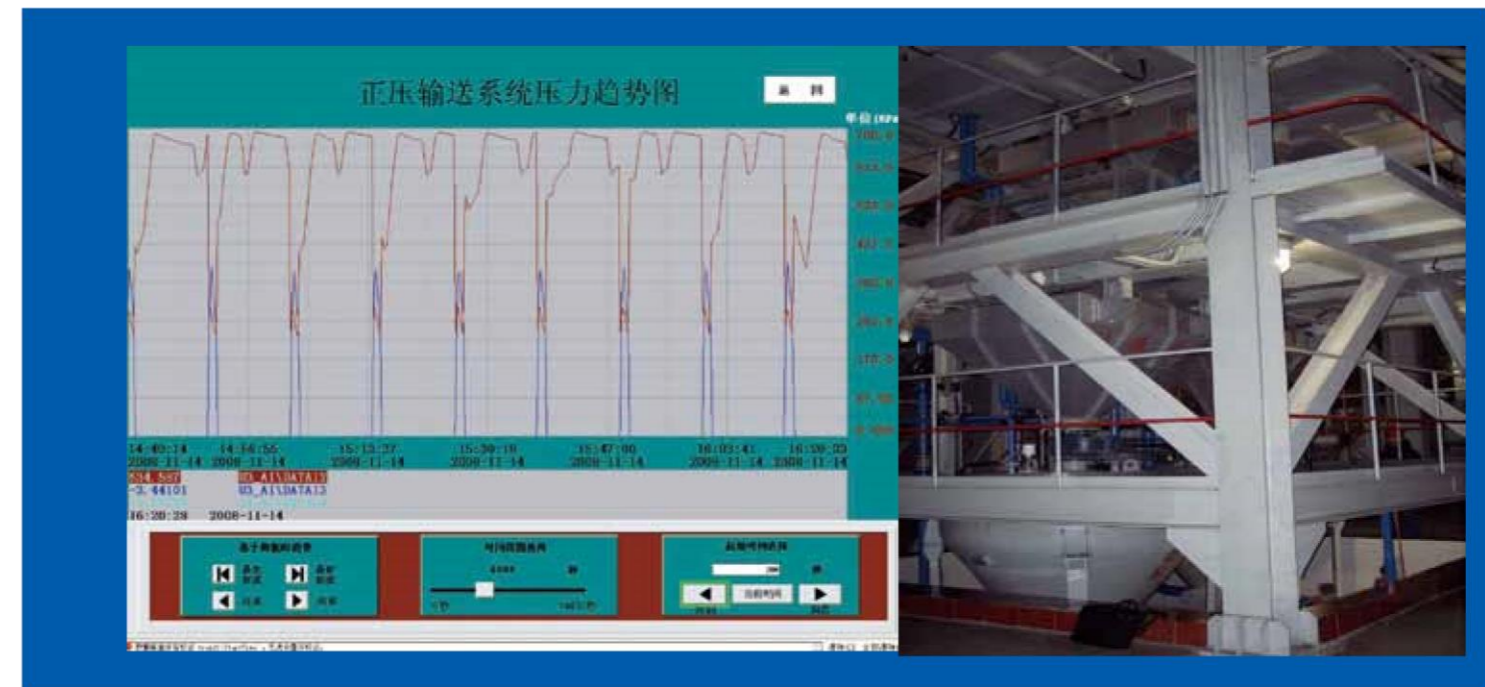


Positive pressure pneumatic bottom ash conveying system

At present, as more and more equipments, such as dry bottom ash conveyor and circulating fluidized bed boiler, etc, have been used in coal fired power stations, the requirement for dry bottom ash conveying is more and more outstanding. It is a new expansion space for pneumatic conveying system which has flexible layout and low costs. Based on theoretical research and site test on various conveying modes and conveying mechanisms, Guodian Futong has known well about conveying characteristics of bottom ash of pulverized coal furnace whose particle size is smaller than 3mm, and established relevant design calculation model. Until now, the system has been used in many power plants with conveying distance of 600m.

Comparison between positive pressure pneumatic bottom ash conveying system and other bottom ash conveying systems

Conveying method	Positive pressure pneumatic bottom ash conveying system	Other bottom ash conveying systems
Conveying distance	Long	Short
Energy consumption	Low	High
Abrasion	Little	Heavy
Economic index	Good	Bad



New ship loading system

The new ship loading system is researched and developed on the double-tube-socket technology for its dense density conveying and not-easy-blockage characteristics. Compared with normal large scale ship loading system and small scale ship loading systems in China, Futong' system combines many links, such as conveying, separating and loading, and has the characteristics of reliable operation, simple layout, low cost of investment and operation, and can realize long distance ship loading. This system can avoid settings of buffer hopper on shore side or trestle, and can improve safety of the equipments on shore side.

Based on different operation condition, Futong can supplied various ship loading systems.

Model	ZTG1	ZTG2
Conveying air amount	≤40m ³ /min	≥40m ³ /min
Conveying distance	> 800m	> 800m
Buffer hopper	NA	NA
Abrasion	LOW	LOW
Head of tide level	≤8M	≤8M
Self compensating	NA	YES

Moreover, based on the requirements of clients, Futong can supply complete sets of direct ship loading system (without separating units) and the ship loading system with buffer hopper on shore. At present, the ship loading systems researched and developed by Guodian Futong, such as ZTG1, ZTG2, have been successfully used in many power plants, such as Huaneng Yuhuan Power Plant, Nantong Power Plant, and Datang Sanbaishan Power Plant. The longest ship loading distance is 1500m with the capacity of 100t/h.



ZTG1 Ship loading system



ZTG2 Ship loading system

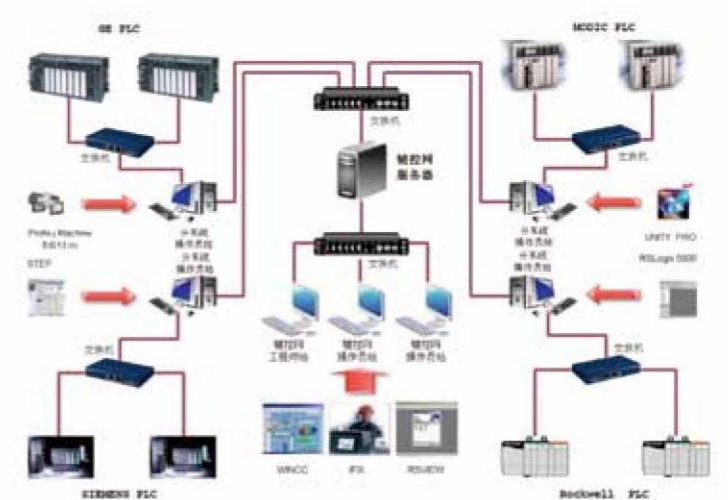
Electric control system of auxiliary equipments of power plants

1 Major functions of electric control system

- Control system can realize auto operation of the equipment, and can manually operate the equipments.
- Use realistic motion picture, to monitor and control the system equipment.
- With a report generation function, can be scheduled or real-time printing.
- With historical trends and real-time trends capabilities, users can refer to relevant historical information.
- With operating instructions record storage.
- With real-time equipment failure alarm and voice alarm function, causing operating personnel attention.
- With the alarm information storage function, can check alarm history records.
- With help information function, to guide users how to use the screen and operate the equipment.
- With the necessary operational information screen, to prevent user errors.

2 Performance characteristics of control system

- Diversity:** Owners can choose control equipments of auxiliary control network, which are manufactured by mainstream manufacturers such as Schneider, Siemens, AB Corporation, GE Company and other companies.
- Security:** Using a variety of redundancy, improve the auxiliary control system reliability and security.
- Scalability:** The monitoring level network use Ethernet communication, monitoring systems can be easily extended.
- Compatibility:** Using the combination of a variety of monitoring screens and a variety of controllers, with high compatibility.
- Open:** Use the international standard communication interface, enhance the openness of the system, can achieve communication with the DCS main control system, allowing users to directly send commands to the PLC-based auxiliary control system in DCS control room.
- Adaptability:** Can be applied to build mode based on PLC or DCS equipment, can also monitor the process that auxiliary control system data built by PLC conveys to DCS host systems.
- Can use our self-developed PC monitoring software for auxiliary equipment, also can use a variety of owners specified PC monitoring software for equipment monitoring.
- The auxiliary control system can realize remote monitor, to achieve remote monitoring and management.
- Can provide necessary parameter information for plant SIS system and MIS system.



Typical layout

Experiment center

Experimental pneumatic conveying test center of State Grid Electric Power Research Institute is the largest and the longest transmission distance powder material pneumatic conveying experimental research base. The center has advanced powder materials testing instruments and methods for gas-solid flow test, with up to 4000 meters transmission distances experimental apparatus, such as double-tube-socket turbulence dense phase pneumatic conveying systems, and vacuum pneumatic conveying systems. It can do the experimental study of pneumatic conveying technology and research and develop new pneumatic conveying technology under the conditions of any length and diameter. High level of technical personnel of the center have been undertaken and completed a number of national key research projects, and have provided experimental basis and technical support for fly ash system of many power plants. We establish friendly exchange relations with home and abroad companies and experts in the same industry. In addition, being the center of fly ash and bottom ash for power plant, it can provide commissioned test, technical information and technical training for many other industries, such as metallurgy, building materials, chemical industry.



Picture of laboratory



Picture of 4000meters double-tube-socket conveying system



Introduction of major equipments

Double-tube-socket

① Working principle

Smaller diameter pipes are installed inside the pipe. After years of theoretical research and engineering practice, we come to a reasonable pipeline configuration. For different diameters, open a specific angle hole in regular spacing on the inner pipe and mount throttle pore plate. So that the air inside pipe can do disordered disturbance to help the blocked material loose convey under the effect of disturbance air.



② Applicable scope

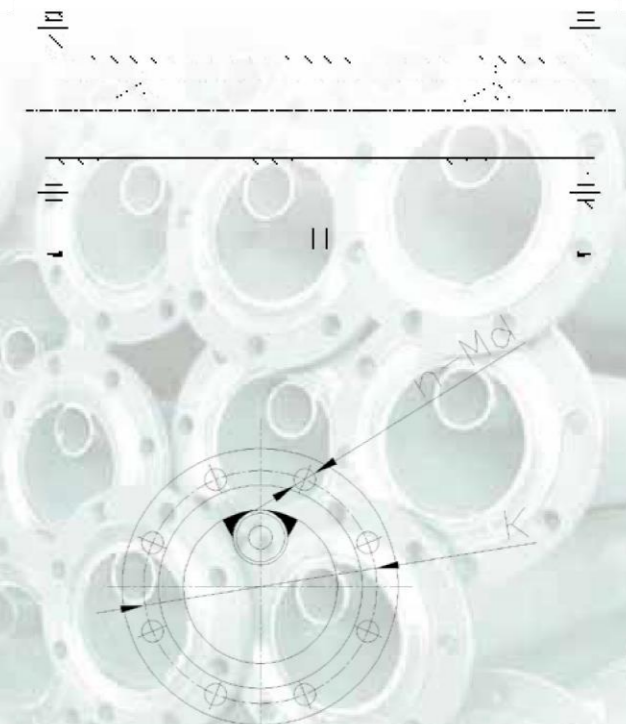
For fly ash handling system in power plant, and for material conveying of petroleum, chemical, building materials, metallurgy, mining, material handling areas.

③ Product features

- 1 Easy and simple to install: Standard length of the double-tube-socket is 6 meters in length, and can be connected by flanges or weld. The double-tube-socket can be cut to suit various installation conditions.
- 2 Low speed and low wear: Because of the special internal structure, it can achieve dense phase conveying of materials with low initial rate to prolonging the service life of pipes.
- 3 Good economic returns: Dense phase low speed conveying results in low air consumption, which can reduce configuration of air compressors so as to reduce power consumption.
- 4 Safety: Double-tube-socket can realize long distance conveying without plugging, in order to ensure stable operation of conveying system.

④ Main parameters

Nominal pressure: 1.0Mpa Medium Temperature: $\leq 400\text{ }^{\circ}\text{C}$
Conveying distance: $\geq 2000\text{m}$ Material density: $\leq 2\text{t/h}$



Installation size and shape diagram of Double-tube-socket (standard section)

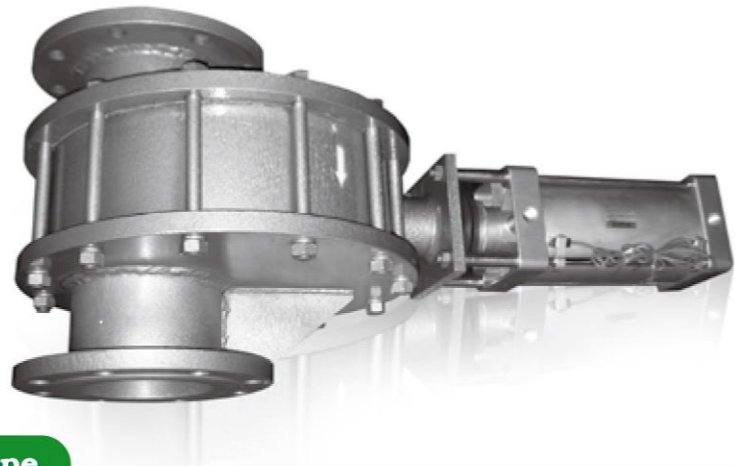
⑤ Parameter selection

Description	DN	H	K	n-Md
FTSTG -01	100	6 M	180	8- \varnothing 18
FTSTG -02	125	6 M	210	8- \varnothing 18
FTSTG -03	150	6 M	240	8- \varnothing 22
FTSTG -04	175	6 M	270	8- \varnothing 22
FTSTG -05	200	6 M	295	8- \varnothing 22
FTSTG -06	225	6 M	325	8- \varnothing 22
FTSTG -07	250	6 M	350	12- \varnothing 22
FTSTG -08	300	6 M	400	12- \varnothing 22

Double disk valve

① Working principle

Valve plate of double disk valve is driven by valve rod in a vertical movement. Spring is installed between the valve plate and seal ring. The spring always forces the valve plate to the seal ring, and allows the valve plate to move up and down in the vertical direction, which helps components of compensation valve expand with heat and contract with cold and prevents particles into the medium between the two sealing surfaces. In the process of opening and closing, the valve plate can do autorotation to make the sealing surface grind and polish. Due to the unique eccentric design, when open it to discharge material, the valve chamber will produce eddy currents, to clean the valve cavity automatically.



② Applicable scope

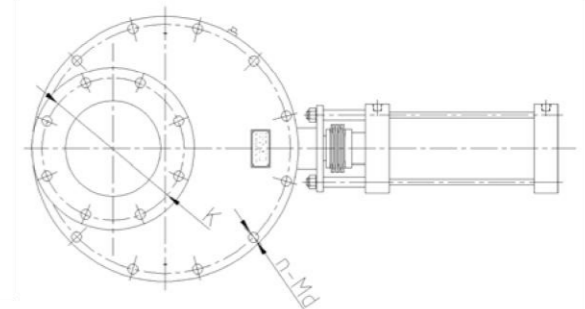
For dry or wet fly ash handling system in power plant, and for material conveying of petroleum, chemical, metallurgy, and mining handling areas.

③ Product features

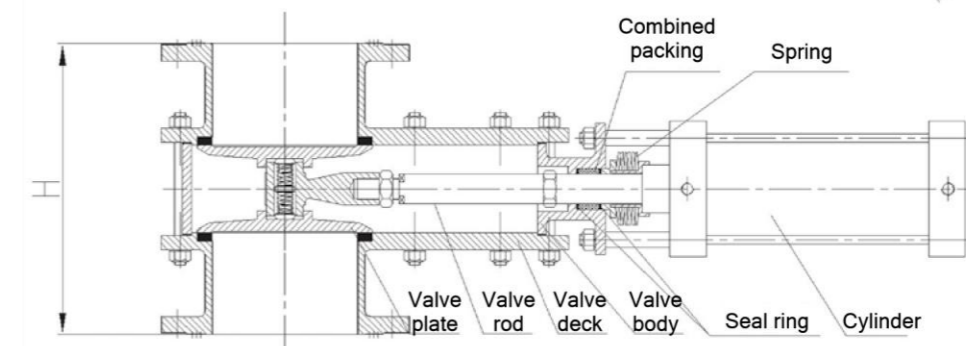
- 1 Long service life: The valve plate is made of wear-resistant materials, so service life is greatly improved.
- 2 Sealing performance: Padding is self-clamping, relying on spring force to compress. When the filling is worn, padding is automatically compressed.
- 3 Applied in a wide range: No direction restriction can be installed in any position, can be used for economizer, ESP, hopper pumps, inlet, outlet, switch, block-discharge, balance of the ash pipe.
- 4 The high overall efficiency: Valve's long life and good sealing performance can greatly reduce the repair and replacement times and improve security and stability of the operating system, reduce labor intensity, and reduce operation and maintenance costs.

④ Main parameters

Nominal pressure: 1.0Mpa Medium Temperature: $\leq 400\text{ }^{\circ}\text{C}$
Strength test: 1.5Mpa Sealing test: 1.1Mpa



Installation size and shape diagram of Dual sliding gate valve



⑤ Parameter selection

Description	DN	H	K	n-Md	Air inlet hole of cylinder
FTSCB -01	65	240	145	4- \varnothing 18	2-G1/4
FTSCB-02	80	260	160	8- \varnothing 18	2-G1/4
FTSCB-03	100	280	180	8- \varnothing 18	2-G1/4
FTSCB-04	125	360	210	8- \varnothing 18	2-G1/4
FTSCB-05	150	380	240	8- \varnothing 22	2-G3/8
FTSCB-06	175	390	270	8- \varnothing 22	2-G3/8
FTSCB-07	200	400	295	8- \varnothing 22	2-G3/8
FTSCB-08	225	420	325	8- \varnothing 22	2-G3/8
FTSCB-09	250	440	350	12- \varnothing 22	2-G3/8
FTSCB-10	300	480	400	12- \varnothing 22	2-G3/8

Disc valve

1 Working principle

Valve plate of disc valve is driven by rotating shaft, making the open and close movement of the valve to be rotary motion. Piston rod of pneumatic actuator is not in direct contact with the media, extending the service life of the actuator. Seal is made from cemented carbide, ceramic

and other wear-resistant materials with good mechanical properties and wear resistance, so as to solve the erosion and short service life problems of the seal caused by material scouring, and thus has a longer life. Its use effects and economic benefits are good for clients. Equipment maintenance and operation adjustment are benefit from it. The security and economical efficiency have been significantly improved.

2 Applicable scope

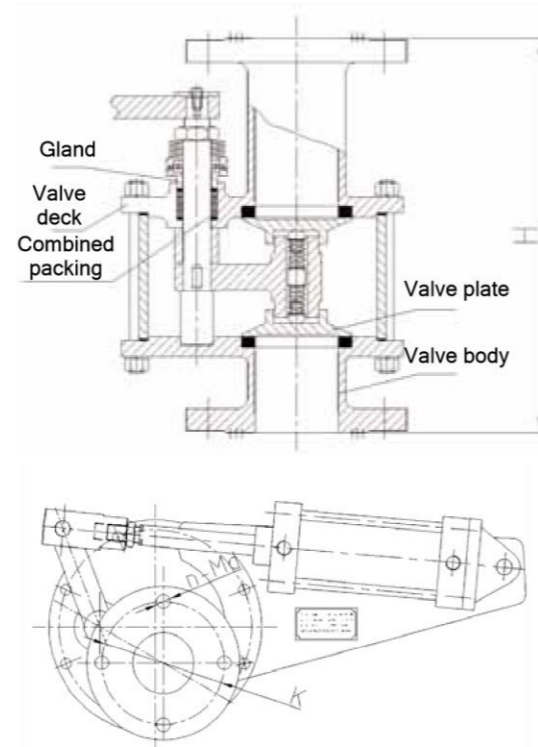
For dry or wet fly ash handling system in power plant, and for material conveying of petroleum, chemical, nonferrous metals, metallurgy, and mining handling areas.

3 Product features

- 1 Less possibility of ash block: No obstruction at the material hole, resulting in the smooth flow. At the same time, the rotation of valve plate, open and close of it, can effectively reduce the deposits inside the valve cavity.
- 2 Long service life: The valve plate is made from wear-resistant materials, greatly improves life service.
- 3 Good sealing performance: The valve plate and valve seat use Ni-based alloy plating process. The more you use, the more smooth sealing is getting. So the sealing is getting better.
- 4 Aerodynamic design is clever: Pneumatic actuator bracket is fixed with valve seat by bracket. The opening and closing torque is low so the pneumatic actuator is stable.

4 Main parameters

Nominal pressure: 1.0Mpa Medium Temperature: $\leq 400\text{ }^{\circ}\text{C}$
Strength test: 1.5Mpa Sealing test: 1.1Mpa



Installation size and shape diagram of Disc valve

5 Parameter selection

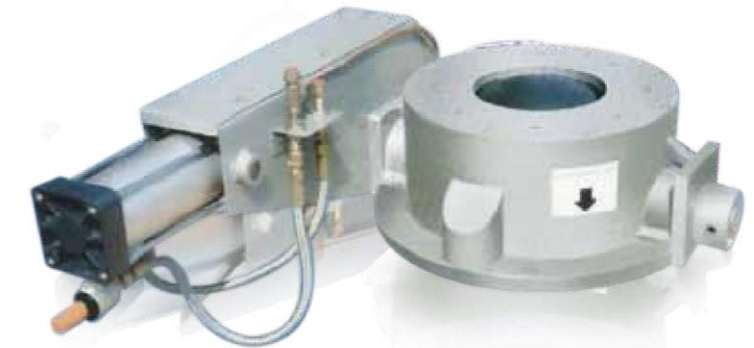
Description	DN	H	K	n-Md	Cylinder
FTYP-01	65	240	145	4- $\varnothing 18$	$\varnothing 100 \times 100$
FTYP-02	80	260	160	8- $\varnothing 18$	$\varnothing 100 \times 106$
FTYP-03	100	280	180	8- $\varnothing 18$	$\varnothing 125 \times 130$
FTYP-04	125	360	210	8- $\varnothing 18$	$\varnothing 125 \times 145$
FTYP-05	150	380	240	8- $\varnothing 22$	$\varnothing 160 \times 190$
FTYP-06	200	400	295	8- $\varnothing 22$	$\varnothing 160 \times 250$

Dome valve

1 Working principle

Dome valve is a special valve that relies on compressed air to achieve the tight seal. It can be applied in the handling system of dust and gas, fly ash of power plant, coal and other abrasive bulk materials.

Using pressurized seal, it can flow still ash column and material flow, while achieving close and sealing. Its body is made from wear-resistant materials.



2 Applicable scope

For fly ash handling system in power plant, and for dust and gas, fly ash of power plant, coal and other abrasive bulk materials conveying of steel, chemicals, nonferrous metals, metallurgy, mining and other handling areas.

3 Product features

- 1 A simple structure: The dome consists of valve body, seal ring and other components. The structure is simple with easy maintenance.
- 2 Long service life: Vaulted valve core of the dome valve spool can pass through the abrasive bulk materials rotatably, while achieving close and tight sealing. Its service life is long with low maintenance.
- 3 Sealing performance: Use pressurized seal.
- 4 Superior performance: Protruding edge of the vaulted valve body can move large particle materials away when it is closed. When it is open, it is complete channel. The vaulted body does not contact flowed material to avoid abrasion.

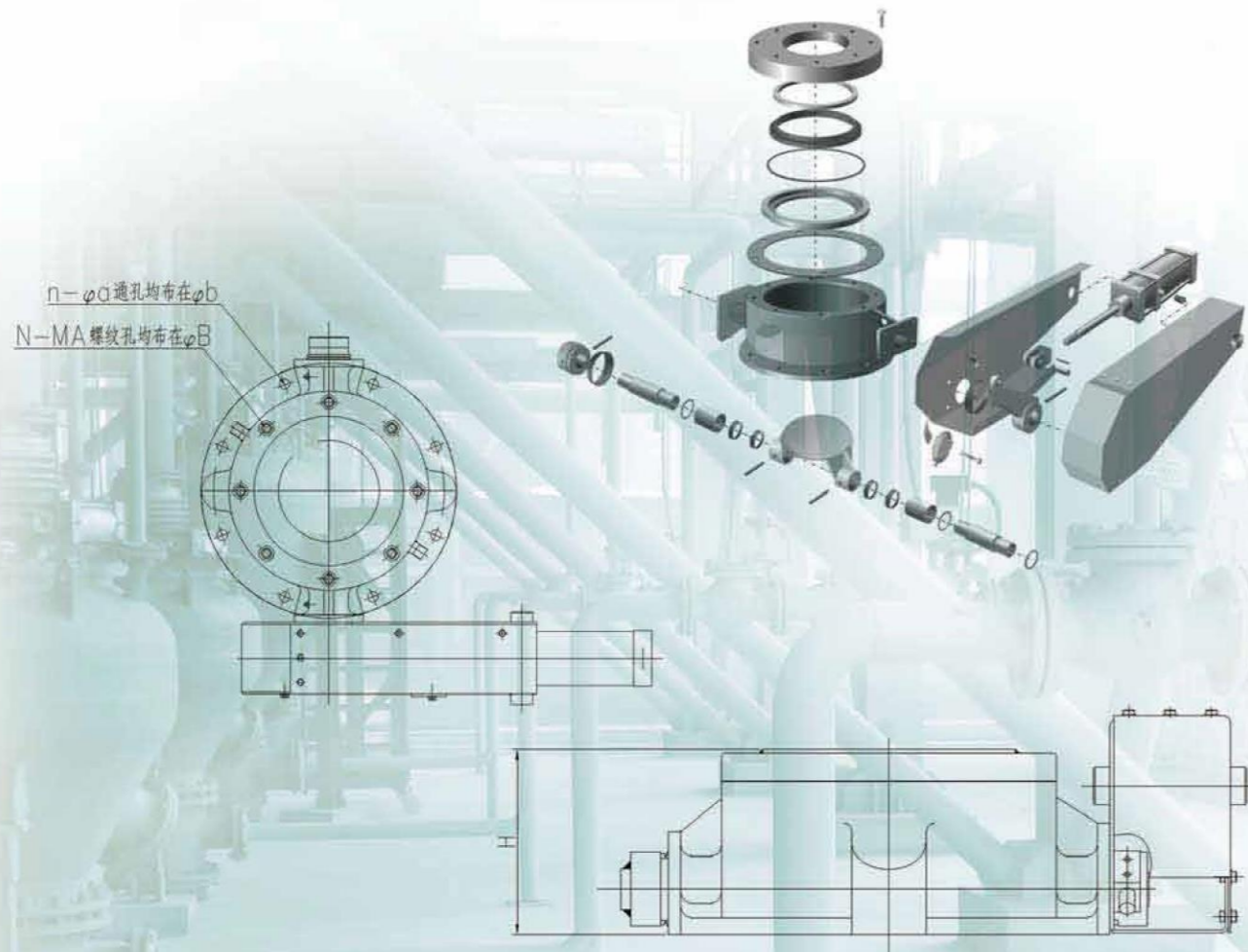
3 Product features

Nominal pressure: 1.0Mpa Medium Temperature: $\leq 250\text{ }^{\circ}\text{C}$

Cylinder working pressure: 0.45Mpa-0.60Mpa

Seal ring inflation pressure: 0.4Mpa-0.6Mpa and higher than delivery pressure 0.17Mpa. The air is clean, dry, free oil dust.

Installation size and shape diagram of Disc valve



5 Parameter selection

Specification (mm)		N	A	B	n	a	b	H	Weight (Kg)
Dome valve	FTYD-80	8	16	160	8	18	160	228	26
	FTYD-100	4	12	200	6	18	300	139	63
	FTYD-150	6	16	284	8	22	390	168	115
	FTYD-200	8	12	315	8	22	470	205	125
	FTYD-300	6	16	410	12	26	630	283	280

Bag filter

1 Working principle

FT-DMC bag filter uses compressed air of pulse back flushing to remove dust adhered on the bag. The filter capacity can be regenerated timely and effectively.

2 Applicable scope

FT-DMC bag filter is suitable to be installed at the top of the silo to collect small dry dust.

3 Product features

- 1 No machinery operation damage, large amount of handling wind
- 2 Long service life of bag, high efficiency of dust collection, long-term stable operation.
- 3 Good appearance, easy installation and maintenance.

FT-DMC bag filter data sheet

Parameters\ type	DMC-100	DMC-120	DMC-140	DMC-160	DMC-180	DMC-200
Handle air volume (m ³ /h)	3984-7281	3984-7281	5790-10485	5790-10485	5790-10485	8050-14490
Filter area (m ²)	100	120	140	160	180	200
The number of bags (Nos) Φ130*2200	108	126	160	180	216(Φ130 *2100)	216
Filtration velocity (m/min)	0.8	0.8	0.8	0.8	0.8	0.8
Resistance (Pa)	≤1200	≤1200	≤1200	≤1200	≤1200	≤1200
Inlet dust concentration (g/Nm ³)	≤200	≤200	≤200	≤200	≤200	≤200
Outlet dust concentration (g/Nm ³)	≤50	≤50	≤50	≤50	≤50	≤50
Number of pulse valves (Nos)	12	14	16	18	18	18
Pulse valve specification	1"	1"	1.5"	1.5"	1.5"	1.5"
Cleaning pressure (MPa)	0.4-0.6	0.4-0.6	0.4-0.6	0.4-0.6	0.4-0.6	0.4-0.6
Cleaning Air Consumption (m ³ /min)	0.38	0.45	0.8	1.2	1.7	1.9
Motor power (kW)	4A, 4kW	4A, 4kW	4.5A, 7.5kW	4.5A, 7.5kW	4.5A, 7.5kW	5A, 15kW

Transmitting vessel

1 Working principle

FT-CB transmitting vessel is a fly ash collection equipment of the pneumatic conveying system. It purges the accumulated materials with the peculiar pressurized fluidization device within the vessel. And with the external airflow, the fly ash can be sent to the transmitting pipe in the mixer.

2 Applicable scope

FT-CB transmitting vessel should be installed under the ESP or the discharging outlet of the ash silo to collect the small dry materials.

3 Product features

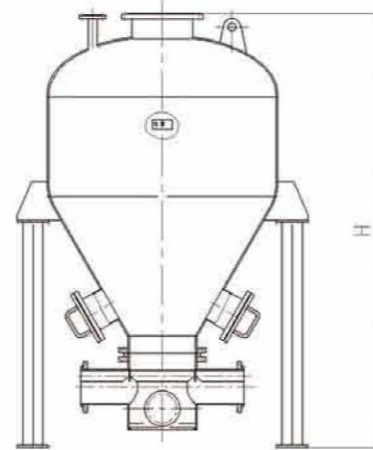
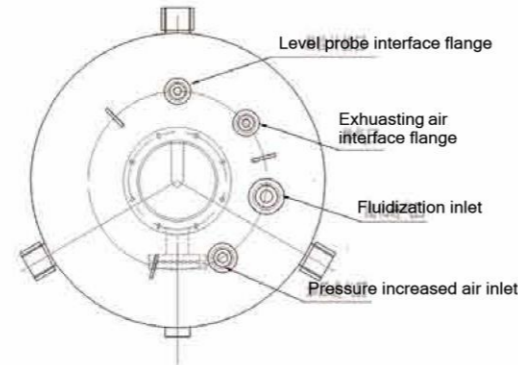
- 1 Peculiar pressurized fluidization device, purging the accumulated materials effectively.
- 2 Long service life, convenient installation and maintenance.

4 Main parameters

Nominal pressure: 1.0MPa Medium temperature: $\leq 400^{\circ}\text{C}$
Structure material: 16MnR

5 Parameter selection

Specification	Volume(m ³)	Height(mm)	Weight(kg)
FTSSG-01	0.2	1150	237
FTSSG-02	0.5	1760	598
FTSSG-03	1.0	2145	888
FTSSG-04	1.5	2330	1060
FTSSG-05	2.0	2675	1177
FTSSG-06	2.5	2700	1346
FTSSG-07	3.0	2930	1414
FTSSG-08	4.0	3100	1669
FTSSG-09	6.0	3420	2457
FTSSG-11	10.0	4280	3255



Installation size and shape diagram of Transmitting vessel



REFERENCE LIST

Overseas Project (7 sets)

NO.	Country	Project	Unit Capacity	Conveying material	System capacity	Conveying distance	New/Retrofit	Contract signed	Completion
1	Indonesia	Paiton Power Plant #1	1×660MW	Ash from ESP	1×22t/h	160m	New	2007.11	Commissioning completed
2	Russia	Troitsk Power Plant	1×600MW	Dry bottom ash	1×40t/h	200m	New	2011.06	Design phase
3	Russia	Troitsk Power Plant	1×600MW	Ash from ESP and economizer	1×120t/h	1300m	New	2011.06	Design phase
4	Philippines	Marley Vance Power Plant of China Power Investment Corporation	2×300MW	Ash from ESP and economizer	2×20t/h	250m	New	2010.07	Supply phase
5	Indonesia	Muyin Power Plant	2×150MW	Ash from ESP	2×10t/h	200m	New	2008.07	2008.11

1. 1000 MW Unit (29 sets)

1	China	Shanghai Waigaoqiao Power Plant (Ultra-supercritical)	2×1000MW	Ash from ESP and second flue	2×87t/h	1200m	New	2006.04	2007.12
2	China	Huaneng Guangdong Haimen Power Plant (Ultra-supercritical)	4×1000MW	Ash from ESP and economizer	2×166t/h	700m	New	2009.04	2011.03 Design phase
3	China	Shanghai Caojing Power Plant (Ultra-supercritical)	2×1000MW	Ash from ESP and second flue	2×80t/h	680m	New	2007.11	2010.01
4	China	Pingdingshan Power Plant of China Power Investment Corporation (Ultra-supercritical)	2×1000MW	Ash from ESP and economizer	2×175t/h	1100m	New	2008.05	2010.12
5	China	Pingdingshan Power Plant of China Power Investment Corporation (Retrofit) (Ultra-supercritical)	2×1000MW	Ash from ESP and economizer	2×175t/h	1100m	Retrofit	2011.03	2011.6
6	China	Guangdong Huilai Power Plant of Guangdong Yudean Group (Ultra-supercritical)	2×1000MW	Ash from ESP and economizer	2×118t/h	500m	New	2008.03	2011.04
7	China	Yuhuan Power Plant of China Huaneng Group (Ultra-supercritical)	2×1000MW	Secondary transmission from silo to shipping dock (including the loading system)	2×65t/h	850m	New	2008.05	2009.05
8	China	Changshu Power Plant of China Power Investment Corporation (Ultra-supercritical)	2×1000MW	Ash from ESP and economizer	2×143t/h	450m	New	2008.10	Design phase
9	China	Phase III of Zhejiang Jiaying Power Plant (Ultra-supercritical)	2×1000MW	Ash from ESP and economizer	2×97t/h	800m	New	2009.12	2011.07
10	China	Jiangsu Qinzhou Power Plant (Ultra-supercritical)	2×1000MW	Secondary transmission from silo and loading	2×65t/h	450m	New	2009.11	Installation phase
11	China	Hubei Puxin of China Resources Company (Ultra-supercritical)	2×1000MW	Ash from ESP and economizer	2×100t/h	450m	New	2010.8	Design phase
12	China	Jinling Power Plant of China Huaneng Group (Ultra-supercritical)	2×1000MW	Secondary transmission from silo to shipping dock (including the loading system)	2×65t/h	950m	New	2010.10	Installation phase
13	China	Cangnan Power Plant of China Resources Company (Ultra-supercritical)	2×1000MW	Ash from ESP and economizer	2×160t/h	400m	New	2010.12	Design phase
14	China	Jianbi of China Guodian Corporation (Ultra-supercritical)	1×1000MW	Ash from ESP and denitrification ash	2×150t/h	1450m	New	2011.02	Installation phase

2. 660MW, 600MW Unit (86 sets)

1	China	Haerbin 3rd Power Plant #3	1×600MW	Ash from ESP, and the first electric field	45t/h	150m	New	2001.06	2001.12
2	China	Phase I of Shandong Liaocheng Power Plant of China Guodian Corporation	2×600MW	Ash from ESP	2×90t/h	800m	New	2003.04	2003.09
3	China	Phase II of Shandong Liaocheng Power Plant of China Guodian Corporation	2×600MW	Ash from ESP and economizer	2×89t/h	430m	New	2006.06	2009.05
4	China	Luneng Shanxi Wangqu Power Plant	2×600MW	Ash from ESP and economizer	2×81t/h	450m	New	2004.09	2006.08
5	China	Phase II of Jiangxi Fengcheng Power Plant (Supercritical)	2×660MW	Ash from ESP and economizer	2×81.5t/h	520m	New	2005.12	2006.12
6	China	Jingmen Power Plant of China Guodian Corporation	2×600MW	Ash from ESP and economizer	2×150t/h	1200m	New	2005.01	2006.12
7	China	Zhongdiantou Neimeng Tongliao Power Plant	1×600MW	Ash from ESP	1×100t/h	600m	New	2005.08	2008.07
8	China	Neimeng Yuanbaoshan Power Plant	1×600MW	Ash from ESP	1×160t/h	320m	New	2005.06	2007.08
9	China	Hunan Xiangtan Power Plant of China Datang Corporation (Supercritical)	2×600MW	Limestone powder	44t/h	380m	New	2005.05	2006.08
10	China	Hunan Xiangtan Power Plant of China Datang Corporation (Supercritical)	2×600MW	Ash from ESP	80t/h	300m	New	2004.01	2006.03
11	China	Henan Kaifeng Jingyuan Power Plant (Supercritical)	2×600MW	Ash from ESP and economizer	2×92t/h	500m	New	2004.05	2008.12
12	China	Phase II of Inner Mongolia Yimin Power Plant of China Huaneng Group	2×600MW	Ash from ESP	2×122t/h	650m	New	2005.06	2007.06
13	China	Phase II of Inner Mongolia Yimin Power Plant of China Huaneng Group	2×600MW	Dry bottom ash	2×38t/h	650m	New	2006.03	2007.06
14	China	Anhui Suzhou Power Plant of China Huadian Corporation (Supercritical)	2×600MW	Ash from ESP and economizer	2×160t/h	500m	New	2005.01	2007.08
15	China	Hunan Liyujiang B Factory of China Resources Company (Supercritical)	2×600MW	Ash from ESP and economizer	2×170t/h	380m	New	2005.06	2007.06
16	China	Guizhou Yindong Power Plant of China Power Investment Corporation (Supercritical)	2×600MW	Ash from ESP and economizer	2×150t/h	930m	New	2006.04	2008.12
17	China	Henan Minquan Power Plant of China Guodian Corporation (Supercritical)	2×600MW	Ash from ESP and economizer	2×120t/h	1300m	New	2006.05	2008.08
18	China	Ash Storeroom System Ship of Guangdong Chaozhou Power Plant	2×600MW	Ash from silo to shipping dock (including the loading system)	65t/h	1500m	New	2005.08	Supply phase

19		Phase I of Wuhu Power Plant of China Huadian Corporation(Ultra-supercritical)	2×660MW	Ash from ESP and economizer	2×187.5t/h	460m	New	2006.01	2008.12
20		Guangdong Shenzhen Heyuan Power Plant(Ultra-supercritical)	2×660MW	Ash from ESP and economizer	2×107t/h	700m	New	2007.01	2008.12
21		Wanneng Hefei Power Plant #5 (Extension)	1×600MW	Ash from ESP and economizer	1×70t/h	500m	New	2006.01	2008.12
22		Anhui Bengbu Power Plant of China Guodian Corporation(Supercritical)	2×600MW	Ash from ESP and economizer	2×129t/h	500m	New	2006.11	2008.05
23		Jilin Jiutai Power Plant of China Huaneng Group	2×600MW	Ash from ESP and economizer	2×90t/h	650m	New	2007.06	2009.10
24		Phase I of Shentou 2nd Power Plant Reconstruction	2×500MW	Ash from ESP	2×90t/h	150m	New	2006.08	2007.08
25		Phase I of Inner Mongolia Yimin Power Plant of China Huaneng Group(Supercritical)	2×500MW	Ash from economizer and air preheater	1×15t/h	600m	New	2004.12	2005.01
26		Phase I of Inner Mongolia Yimin Power Plant of China Huaneng Group(Supercritical)	2×500MW	Dry bottom ash	1×16t/h	600m	New	2004.12	2005.01
27		Phase I of Inner Mongolia Yimin Power Plant of China Huaneng Group(Supercritical)	2×500MW	Ash from ESP, and the first electric field	70t/h	600m	New	2006.03	2006.08
28		Jinzhusan Power Plant of China Datang Corporation	1×600MW	Ash from ESP and economizer	190t/h	500m	New	2007.09	2009.06
29		Hunan Changde Power Plant of China Huadian Corporation(Ultra-supercritical)	2×660MW	Ash from ESP and economizer	2×90t/h	650m	New	2007.10	Design phase
30		Gansu Jingtai Power Plant of China Datang Corporation(Supercritical)	2×660MW	Ash from ESP and economizer	2×78t/h	420m	New	2007.10	2009.10
31		Indonesia Paiton Power Plant #1	1×660MW	Ash from ESP	1×22t/h	160m	New	2007.11	Commissioning completed
32		Xinchangshan Power Plant of China Power Investment Corporation(Ultra-supercritical)	2×660MW	Ash from ESP and economizer	2×150t/h	600m	New	2008.04	2009.12
33		Phase III of Hunan Yueyang Power Plant of China Huaneng Group (Ultra-supercritical)	2×660MW	Ash from ESP and economizer	2×112t/h	400m	New	2008.04	Commissioning phase
34		Phase III of Yimin Power Plant of China Huaneng Group	2×600MW	Ash from ESP and economizer	2×90t/h	900m	New	2008.04	2010.12
35		Phase I of Hunan Huayin Jinzhushan Power Plant (Retrofit)	2×600MW	Ash from economizer	2×10t/h	500m	Retrofit	2008.06	2009.04
36		Phase I of Tongchuan Power Plant of China Huaneng Group (Retrofit)	2×600MW	Ash from ESP and economizer	2×133t/h	600m	Retrofit	2008.09	2008.12
37		Sichuan Fuxi Power Plant of China Power Investment Corporation(Supercritical)	2×600MW	Ash from ESP and economizer	2×190t/h	450m	New	2008.09	Commissioning phase
38		Guangdong Honghaiwan Power Plant ofGuangdong Yuedian Group(Ultra-supercritical)	2×660MW	Ash from ESP and economizer(including the loading system)	2×90t/h	800m	New	2008.10	2011.05
39		Yuanyanghu Power Plant of Shandong Luneng Group(Supercritical)	2×600MW	Ash from ESP and economizer	2×72t/h	400m	New	2009.02	2010.12
40		Anhui Chaohu Power Plant (Retrofit)	2×600MW	Ash from economizer	2×15t/h	150m	Retrofit	2009.09	2010.05
41		Phase II of Yuzhou Power Plant China Datang Corporation(Retrofit)	2×600MW	Ash from economizer and 1st field	2×136t/h	900m	Retrofit	2010.02	2010.04
42		North Union Power Helin Power Plant(Supercritical)	2×660MW	Ash from economizer	2×92t/h	450m	New	2009.09	Design phase
43		Hunan Yiyang Power Plant #4 Economizer(Retrofit)	1×600MW	Ash from economizer	1×35t/h	200m	Retrofit	2010.12	2011.09
44		Hunan Yiyang Power Plant #3 Economizer(Retrofit)	1×600MW	Ash from economizer	1×35t/h	200m	Retrofit	2011.03	2011.09
45		Hunan Yiyang Power Plant 1st Field #3 & #4(Retrofit)	2×600MW	Ash from 1st field	2×126t/h	420m	Retrofit	2011.03	2011.09
46		Russian Troitsk Power Plant	1×600MW	Dry bottom ash	1×40t/h	200m	New	2011.06	Design phase
47		Russian Troitsk Power Plant	1×600MW	Ash from ESP and economizer	1×120t/h	1300m	New	2011.06	Design phase
48		Jiujiang Power Plant of China Guodian Corporation	2×600MW	Ash from ESP and economizer	2×133t/h	380m	New	2011.06	Design phase

3. 300MW Unit (100 sets)

1		Henan Yaomeng Power Plant #4	1×300MW	Coarse ash from the first field	40t/h	50m	New	1997.12	1998.08
2		Qinhuangdao Power Plant #3 & #4	2×300MW	Ash from ESP	2×40t/h	210m	New	2000.12	2001.01
3		Phase III of Qinhuangdao Thermal Power Plant(Extension)	2×300MW	CFB Ash and Economizer	2×80t/h	500m	New	2005.12	2007.03
4		Shandong Weifang Power Plant #1 & #2	2×300MW	Ash from ESP	2×73.9t/h	350m	New	2002.08	2003.03
5		Phase V of Xuanwei Power Plant, Level 2 Conveying Part	2×300MW	Ash from ESP	78t/h	700m	New	2002.01	2002.12
6		Phase VI of Xuanwei Power Plant, Level 2 Conveying Part	2×300MW	Ash from ESP	83t/h	780m	New	2003.05	2003.09
7		Xuanwei Power Plant #7(Retrofit)	1×300MW	Ash from ESP, and the first electric field	90t/h	700m	Retrofit	2006.02	2006.05
8		Xuanwei Power Plant #8(Retrofit)	1×300MW	Ash from ESP, and the first electric field	90t/h	800m	Retrofit	2005.08	2006.02
9		Xuanwei Power Plant #9(Retrofit)	1×300MW	Ash from ESP, and the first electric field	90t/h	900m	Retrofit	2005.01	2005.08
10		Chongqing Baihe Power Plant	2×300MW	Ash from ESP	87.6t/h	300m	New	2003.06	2004.06

11		Henan Yongcheng Power Plant	2×300MW	Ash from ESP and economizer	2×51t/h	1435m	New	2003.04	2004.08
12		Hunan Yiyang Power Plant	2×300MW	Ash from ESP	2×35t/h	200m	New	2003.08	2004.07
13		Gansu Liancheng Power Plant of China Datang Corporation	2×300MW	Ash from ESP and economizer	2×37.5t/h	1050m	New	2003.01	2004.01
14		Jiangsu Jianbi Power Plant #9 & #10	2×300MW	Ash from ESP, and the first electric field	2×40t/h	1800m	New	2003.01	2004.02
15		Xuzhou Power Plant(Extension)	2×300MW	Ash from ESP and economizer	2×60t/h	520m	New	2003.12	2005.01
16		Jiangsu Tianshenggang Power Plant	2×300MW	Ash from ESP and economizer	2×50t/h	1025m	New	2003.12	2005.03
17		Dezhou Power Plant of China Huaneng Group #1 & #2	2×300MW	Ash from ESP and economizer	2×50t/h	1300m	New	2004.01	2004.07
18		Dezhou Power Plant of China Huaneng Group #3 & #4	2×300MW	Ash from ESP and economizer	2×50t/h	500m	New	2006.01	2006.01
19		Henan Xinxiang Power Plant	2×300MW	Ash from ESP	2×66t/h	900m	New	2004.01	2005.01
20		Guizhou Dalong Power Plant of China Huadian Corporation	2×300MW	Ash from ESP	2×55t/h	312m	New	2004.08	2006.02
21		Weihai Power Plant of China Huaneng Group	2×300MW	Ash from ESP(including the loading system)	2×65t/h	900m	New	2004.07	2005.03
22		Haerbin Thermal Power Plant of China Huadian Corporation	2×300MW	Ash from ESP	2×90t/h	360m	New	2004.10	2006.01
23		Hubei Yangluo Power Plant of China Huaneng Group #2	1×300MW	Ash from ESP, and the first electric field	1×75t/h	350m	New	2005.05	2005.06
24		Hubei Yangluo Power Plant of China Huaneng Group #3 & #4	2×300MW	Ash from ESP, and the first electric field	1×75t/h	350m	New	2007.06	2007.09
25		Phase I of Yueyang Power Plant of China Huaneng Group	2×365MW	Ash from ESP	2×80t/h	860m	New	2005.04	2005.08
26		Guangdong Meixian Heshuyuan Power Plant	2×300MW	Ash from ESP and economizer	2×110t/h	1450m	New	2006.12	2008.08
27		Jiangsu Nantong Power Plant of China Huaneng Group	2×350MW	Ash from silo to shipping dock (including the loading system)	1×80t/h	240m	New	2007.03	2008.06
28		Jiangsu Nantong Power Plant of China Huaneng Group	2×350MW	Ash from silo to shipping dock (including the loading system)	1×80t/h	240m	New	2010.11	2011.04
29		Jiangxi Fenyi Power Plant of China Power Investment Corporation	1×330MW	Ash from ESP and economizer	1×126t/h	600m	New	2007.04	2008.12
30		Baqiao Power Plant of China Datang Corporation	2×300MW	Ash from ESP	2×96t/h	400m	New	2007.07	2008.12
31		Dalian Power Plant of China Huaneng Group	4×350MW	Dry bottom ash	4×16t/h	600m	New	2007.07	2007.10
32		Weihe Power Plant of China Datang Corporation	2×300MW	Ash from ESP and economizer	2×96t/h	350m	New	2007.08	2009.05
33		Sanmenxia Power Plant of China Datang Corporation(Retrofit)	2×300MW	Ash from ESP and economizer	2×82t/h	850m	Retrofit	2007.08	2007.12
34		Shougang Jingtang Zibe Power Plant	2×300MW	Ash from ESP	2×22t/h	950m	New	2007.11	2010.03
35		Liaoyuan Power Plant of China Datang Corporation	2×300MW	Ash from ESP and economizer	2×50t/h	500m	New	2007.12	2008.03
36		Phase I of Yuzhou Power Plant of China Datang Corporation #1(Retrofit)	1×350MW	Ash from ESP	1×65t/h	700m	Retrofit	2008.02	2008.04
37		Matou Power Plant of China Datang Corporation #9 & #10	2×300MW	Ash from ESP and economizer	2×60t/h	400m	New	2008.04	2010.01
38		Siping Power Plant of China Power Investment Corporation	2×300MW	Ash from ESP and economizer	2×83t/h	200m	New	2008.03	2011.01
39		Songhuajiang Power Plant of China Power Investment Corporation	2×300MW	Ash from ESP and economizer	2×68t/h	240m	New	2008.03	2011.03
40		Phase I of Yuzhou Power Plant of China Datang Corporation #2(Retrofit)	1×350MW	Ash from ESP	1×76t/h	700m	Retrofit	2008.09	2008.11
41		Xinjiang Wusu Thermal Power Plant of China Power Investment Corporation #1 & #2	2×330MW	Ash from ESP	2×45t/h	450m	New	2009.04	2011.07
42		Phase I of Qingdao Power Plant of China Huadian Corporation #1 & #2(Retrofit)	2×300MW	Ash from ESP and economizer	2×62t/h	900m	Retrofit	2009.01	2009.07
43		Dalian Ganjingzi Power Plant of China Power Investment Corporation #1 & #2	2×300MW	Ash from ESP and economizer denitrification ash	2×50t/h	685m	New	2009.03	2010.12
44		Ningxia Linhe Power Plant of China Power Investment Corporation (Ultra-supercritical)	3×350MW	Ash from ESP and Economizer	2×45t/h	350m	New	2009.10	2011.07
45		Shijiazhuang Liangcun Power Plant #1 & #2	2×300MW	Ash from ESP	2×85t/h	230m	New	2009.10	Commissioning phase
46		Jilin Baishan Power Plant of China Huaneng Group	2×330MW	Dry desulfuration and ash from deduster	2×156t/h	450m	New	2009.11	Commissioning phase
47		Changshu Power Plant of China Power Investment Corporation	2×300MW	Ash from ESP	2×65t/h	1200m	New	2010.03	2010.12
48		Shanxi Houma Power Plant of China Power Investment Corporation	2×300MW	Ash from ESP	2×100t/h	450m	New	2010.05	Design phase
49		Philippines Marley Vance Power Plant of China Power Investment Corporation	2×300MW	Ash from ESP and economizer	2×20t/h	250m	New	2010.07	Supply phase
50		Phase I of Zhaoqing Thermal Power Plant of China Guodian Corporation	2×350MW	Ash from ESP and bag filter	2×60t/h	1700m	New	2010.12	Design phase
51		Phase III of Guangdong Meixian Heshuyuan Power Plant	2×300MW	Ash from ESP and air pre heater	2×110t/h	1700m	New	2011.02	Design phase
52		Tashendian Power Plant of China Huaneng Group	2×300MW	Ash silo equipment			New	2011.03	Supply phase
53		Zhenjiang 1st Power Plant of Guangdong Yudean Group #1(Retrofit)	1×330MW	Ash from 1st Field	40t/h	750m	Retrofit	2011.11	Design phase

4. 300MW Unit and smaller ones (77 sets)

1		Hubei Hanchuan Power Plant #1 & #2	1x200MW	Coarse ash separation	1x30t/h	200m	New	1996.12	1997.05
2		Douhe Power Plant #5 & #6 & #7 & #8	4x200MW	Ash from ESP	4x56t/h	520m	New	2002.08	2003.03
3		Shanxi Pingwang Power Plant of China Datang Corporation	2x200MW	Ash from ESP and economizer	2x25t/h	423m	New	2002.04	2003.01
4		Xuzhou Power Plant #6	1x200MW	Ash from ESP	1x51t/h	800m	New	2004.03	2004.01
5		Xuzhou Power Plant #7	1x200MW	Ash from ESP	1x51t/h	850m	New	2006.12	2007.05
6		Baotou 2nd Power Plant	2x200MW	Desulfurization ash	2x24t/h	300m	New	2003.02	2004.12
7		Neimenggu Menghuatai Thermal Power Plant	2x200MW	Ash from ESP and economizer	2x55t/h	300m	New	2004.07	2005.09
8		Shijingshan Thermal Power Plant #3	1x200MW	Ash from ESP	1x60t/h	1000m	New	2003.05	2003.11
9		Shijingshan Thermal Power Plant #1	1x200MW	Ash from ESP	1x60t/h	1000m	New	2004.05	2005.01
10		Shijingshan Thermal Power Plant #4	1x200MW	Ash from ESP	1x60t/h	1000m	New	2005.06	2006.01
11		Shijingshan Thermal Power Plant #2	1x200MW	Ash from ESP	1x60t/h	1000m	New	2006.01	2006.06
12		Shuangyashan Thermal Power Plant of China Datang Corporation	2x200MW	Ash from ESP	2x75t/h	450m	New	2005.01	2007.12
13		Henan Zhengdong Thermal Power Plant	2x200MW	Ash from ESP	2x60t/h	1960m	New	2004.01	2007.10
14		Shaoguan Power Plant of Guangdong Yudean Group	2x200MW	Ash from ESP and economizer	2x50t/h	950m	New	2005.08	2008.06
15		Henan Kaifeng Power Plant #1	1x135MW	Ash from ESP	1x27t/h	205m	New	2002.03	2002.12
16		Henan Kaifeng Power Plant #2	1x135MW	Ash from ESP	27t/h	205m	New	2004.08	2005.05
17		Henan Luoyang Xinan Thermal Power Plant	2x135MW	CFB ash	2x27t/h	260m	New	2002.01	2002.12
18		Xuzhou Power Plant #4	1x135MW	Ash from ESP	35t/h	800m	New	2002.12	2003.05
19		Henan Pushan Power Plant of China Power Investment Corporation	2x125MW	Ash from ESP and Economizer	2x24t/h	500m	New	2002.05	2002.12
20		Kunming Power Plant of China Huadian Corporation	2x100MW	Ash from ESP	2x50t/h	550m	New	2005.05	2006.02
21		Taiyuan 2nd Thermal Power Plant	3x50MW	Ash from ESP	20t/h	1450m	New	2003.12	2006.06
22		Tianjin Junliangcheng Power Plant	2x50MW	Ash from ESP	31t/h	200m	New	2004.08	2005.03
23		Tianjin Junliangcheng Power Plant	2x50MW	Limestone powder	7t/h	400m	New	2004.08	2005.08
24		Hebei Weishui Power Plant of China Datang Corporation	2x50MW	Ash from ESP	2x28.2t/h	100m	New	2003.03	2003.11
25		Dalian Xizui Thermal Power Plant of China Huadian Corporation	3x50MW	Ash from ESP	3x20t/h	200m	New	2004.08	2005.07
26		Shanxi Houma Power Plant	2x50MW	CFB ash	2x15t/h	150m	New	2001.09	2002.01
27		Shougang Self-Backup Power Plant	1x50MW	Coarse ash from the first field	10t/h	180m	New	1995.12	1996.06
28		Dahua Dagushan Power Plant	3x50MW	Ash from ESP	3x20t/h	400m	New	2007.08	2009.03
29		Phase I of Hebei Zhengding Thermal Power Plant	3x12MW	CFB ash	1x15t/h	200m	New	2001.02	2001.08
30		Phase II of Hebei Zhengding Thermal Power Plant	1x25MW	CFB ash	1x10t/h	100m	New	2003.05	2004.01
31		Hebei Matou Power Plant Co., Ltd.	4x200MW	Ash from ESP and economizer	4x50t/h	950m	New	2007.12	2010.04
32		Jilin Longhua Power Plant #14	1x200MW	Ash from ESP	1x50t/h	320m	New	2007.09	2008.10
33		Fula'erji Power Plant of China Huadian Corporation #6	1x200MW	Ash from ESP	1x45t/h	200m	New	2005.11	2006.07
34		Fula'erji Power Plant of China Huadian Corporation #4 & #5	2x200MW	Ash from ESP	2x45t/h	400m	New	2008.01	2008.06
35		Indonesian Muyin Power Plant	2x150MW	Ash from ESP	2x10t/h	200m	New	2008.07	2008.11
36		Hebei Qinhuangdao Power Plant #1 & #2(Retrofit)	2x200MW	Ash from ESP	2x39t/h	710m	Retrofit	2009.06	2009.10
37		Neimenggu Keshiketeng Power Plant	7x470t	Ash from ESP	7x60t/h	730m	New	2009.08	Commissioning phase
38		Hailaer Power Plant of China Huaneng Group	2x100MW	Economizer	2x15t/h	200m	New	2010.05	2010.09
39		Suzhou Thermal Power Plant of China Guodian Corporation(Retrofit)	1x100MW	Ash from 1st field	1x40t/h	400m	Retrofit	2010.09	Commissioning phase
40		Yueyang Baling Shihua Ash Handlind System	1x125MW	Ash from ESP	1x36t/h	156m	New	2011.07	Design phase

5. Steel Industry (19 sets)

1		Liuzhou Steel Company No. 2 Blast Furnace Dusting Ash		Blast furnace dusting ash	10t/h	400m	New	2007.10	Installation and commissioning phase
2		360# Sintering Precipitation Dust of Liuzhou Steel Company		Handpiece sintering precipitation dust	39.3t/h	300m	New	2007.03	2008.03
3		2#750 Blast Furnace Dusting Ash of Wulai Steel Company		Blast furnace dusting ash	8t/h	280m	New	2007.06	2007.06
4		4#750 Blast Furnace Dusting Ash of Wulai Steel Company		Blast furnace dusting ash	8t/h	100m	New	2008.03	2008.10
5		2#1880 Blast Furnace Dusting Ash of structure steel of Laiwu Steel Company		Blast furnace dusting ash	10t/h	150m	New	2008.03	2009.02
6		Flouser Powder Pneumatic Conveying of Hainan Steel Company		Flouser powder	30t/h	230m	New	2007.05	Installation and commissioning
7		Shandong Rizhao Steel Company		Pulverized coal	45t/h	450m	New	2007.11	2008.07
8		Shandong Rizhao Steel Company		Pulverized coal	45t/h	1000m	New	2010.02	Commissioning completed
9		Shandong Haihua Group Company		Pulverized limestone	30/h	280m	New	2008.02	2009.03
10		Pulverized Limestone Conveying of Shandong Haihua Group Company		Pulverized limestone	30t/h	1100m	New	2008.02	2009.08
11		Pulverized Coal Conveying of Shandong Haihua Group Company		Pulverized coal	20t/h	600m	New	2008.02	2011.07
12		400m2 Sintering Machine Pneumatic Conveying of Jinan Steel Company		Tail, final product, burden	15t/h	280m	New	2008.07	2009.08
13		1,200,000 Tons/Year Oxidation Pellets Pneumatic Ash Conveying System Assorted with 3# Blast Furnace of Lai Steel Yin Shan		Oxidation pellets	25t/h	120m	New	2009.02	2011.05
14		3# Sintering Machine Dust Pneumatic Ash Conveying System Assorted with Lai Steel Yin Shan		Sintering dust ash	20t/h	120m	New	2009.02	2011.08
15		2x360m2 Sintering Machine Pneumatic Conveying of Chongqing Steel		Head, tail, final product, burden	16t/h	120m	New	2009.07	2010.10
16		Pulverized Limestone Pneumatic Conveying System of Weifang Steel Company		Pulverized limestone	50t/h	600m	New	2009.03	2009.09
17		320m2 Sintering Project Dense Phase Pressurized Ash Conveying System of Sichuan Dazhou Steel Plant		Head, tail, final product, burden	26t/h	370m	New	2009.10	2010.10
18		Pellets Ash Conveying System of Anyang		Pellets ash	3t/h	230m	New	2010.03	2011.05
19		Blast Furnace Ash Conveying System of Anyang		Blast furnace ash	30t/h	20m	New	2011.10	Design phase





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