Brief Introduction of some Projects of Schorch Electric Co., Ltd

Introduction of Hebei Jingye Group

Hebei Jingye Group is a large group of companies mainly engaged in steel and iron, and also in hotel, real estate and trade. The main products are rebar, medium thick plate and hot coiled plate. With nearly 22,500 employees and total assets of 22.5 billion yuan, the Group has formed a scale of 12 million tons each of iron and steel, and is the largest rebar production base in the world. In 2014, the Group achieved sales revenue of 56.7 billion yuan, ranking 238th among the top 500 enterprises in China, and has been listed among the top 500 enterprises in China for 9 consecutive years and among the top 100 enterprises in Hebei Province for 11 consecutive years.

Jingye Group has successfully developed high value-added products such as ship plates, bridge plates, boiler plates, pressure vessel plates and anti-seismic rebar. At present, it has obtained the certifications of China Classification Society, EU CE, nine national classification societies, boiler plate series and pressure vessel plate series, and the rebar products (HRB400) and low-alloy high-strength medium-thickness steel plate (Q345B-E) have been recognized by CHINA IRON & STEEL ASSOCIATION for the physical quality of metallurgical products (Golden Cup Award), and the products are sold well in China and exported to more than 30 countries and regions. Our products are sold well in China and exported to more than 30 countries and regions, and participated in the construction of the Three Gorges Project, the China Pavilion at the World Expo, the South-North Water Diversion Project, the Shangri-La Hotel in Qinhuangdao and other key projects.

The Jingye Group always puts environmental protection, energy conservation and emission reduction in the first place, and has invested more than 2 billion yuan in energy conservation and emission reduction, as well as circular economy, recycling all the gas, steam, slag and industrial water, realizing the simultaneous development of economic and environmental benefits.

Project Name: Overrall Frequency Conversion Transformation of a Steel Plant in Jingye Group

Project Background:

This project is an overall transformation of a steel plant in Jingye Metallurgical Plan. According to the content of the agreement, it is necessary to complete the frequency conversion transformation of several major pre-furnace de-dusting fans, ore chute de-dusting fans, auxiliary combustion fans and sintering main extraction fans in the metallurgical process. It has the characteristics of heavy transformation task and tight project implementation time. After the completion of the project, it is expected that the monthly electricity cost can be saved up to millions RMB of volume.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Hebei Jingye /Dedusting fan before 7# furnace	10	1000	800	1	Dedusting fan before furnace	Metallurgy	
Hebei Jingye /Dedusting fan before 8# furnace	10	1000	800	1	Dedusting fan before furnace	Metallurgy	
Hebei Jingye /New dedusting fan of 8# furnace	10	1000	800	1	Dedusting fan before furnace	Metallurgy	
Hebei Jingye /Dedusting fan of 1# furnace	10	1600	1400	1	Dedusting fan before furnace	Metallurgy	
Hebei Jingye /Dedusting fan before 9# furnace	10	1750	1400	1	Dedusting fan before furnace	Metallurgy	
Hebei Jingye /Dedusting fan before 10# furnace	10	1750	1400	1	Dedusting fan before furnace	Metallurgy	
Hebei Jingye /1#2#combustion fans of 9# frunace	10	500	450	1	Combustion fan	Metallurgy	One converter for two motors
Hebei Jingye /1#2#combustion fans of 10# frunace	10	500	450	1	Combustion fan	Metallurgy	One converter for two motors

Hebei Jingye / Dedusting fans of 9# frunace ore chute	10	1000	800	1	Dedusting fan of frunace ore chute	Metallurgy	
Hebei Jingye / Dedusting fans of 10# frunace ore chute	10	1000	800	1	Dedusting fan of frunace ore chute	Metallurgy	
Hebei Jingye / Dedusting fans of 11# frunace ore chute	10	1250	1120	1	Dedusting fan of frunace ore chute	Metallurgy	
Hebei Jingye / Dedusting fans of 9# frunace ore chute	10	1250	1120	1	Dedusting fan of frunace ore chute	Metallurgy	
Hebei Jingye / Dedusting fans before 14# frunace	10	1750	1400	1	Dedusting fan before furnace	Metallurgy	
Hebei Jingye / Dedusting fans before 15# frunace	10	1750	1400	1	Dedusting fan before furnace	Metallurgy	
Hebei Jingye / Dedusting fans before 16# frunace	10	1750	1400	1	Dedusting fan before furnace	Metallurgy	
Hebei Jingye /1#2#combustion fans of 14# frunace	10	710	560	2	Combustion fan	Metallurgy	One converter for two motors
Hebei Jingye /1#2#combustion fans of 15# frunace	10	710	560	2	Combustion fan	Metallurgy	One converter for two motors
Hebei Jingye /1#2#combustion fans of 16# frunace	10	710	560	2	Combustion fan	Metallurgy	One converter for two motors
Hebei Jingye /Coal injection main exhaust fan for 3# ironmaking	10	1120	900	2	Coal injection and smoke exhaust fan	Metallurgy	
Hebei Jingye /1-7# upper tower pumps for 3# ironmaking	10	710	560	7	Upper tower pump	Metallurgy	
Hebei Jingye /1-	10	1000	800	8	Atmospheric	Metallurgy	

9# atmospheric pressure pumps for 3# ironmaking					pressure pump		

Project Name: 2×260t Sintering Ultra Low Emission Project of Jingye Group

Project Background:

The 2x260t sintering ultra low emission project of Jingye Group is the latest environmental protection project of the Group, which aims to achieve ultra low emission and improve the environmental impact of Jingye Group sintering process through technology transformation and sintering equipment upgrade. The technical transformation and equipment upgrade implemented by the project can effectively improve the quality of sintering products and reduce the pollution in the sintering process.

Firstly, the project adopts advanced technical transformation, including improving sintering furnace structure, optimizing the sintering furnace operating conditions, enhancing the thermal efficiency and safety technology of sintering furnace, and adopting advanced emission control system to meet the requirements of ultra low emission.

Secondly, the project also adopts advanced equipment upgrades, including replacing the sintering furnace temperature control system, temperature compensation system and sintering process control system, so as to improve the operation efficiency of the sintering furnace and effectively restrain the emission of pollutants in sintering process.

Finally, the project also adopts a series of effective management measures, including perfecting the supervision and inspection mechanism, strengthening the environmental protection awareness and standardizing the project construction,etc,to ensure the smooth implementation of the project and the continuous improvement of the environmental effect.

With the successful operation of the project, the environmental impact in the sintering process has been greatly reduced, ensuring that users can obtain a higher economic return while protecting the environment at the same time.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Hebei Jingye /260 sintering desulfurization booster fan	10	6000	4300	2	Desulfurization booster fan	Metallurgy	
Hebei Jingye /261 main sintering exhaust fan	10	5400	4900	4	Main sintering exhaust fan	Metallurgy	

Project Name: 6×220t Gas Power Generation Ultra Low Emission Project of Jingye Group

Project Background:

The Jingye Group 6 x 220t Gas Power Generation Ultra Low Emission Project is a new project dedicated to applying gas power generation technology for ultra low emissions. It aims to reduce the emissions of gas power plants to the lowest level through advanced combustion technology and emission control equipment, so as to achieve the highest emission efficiency and meet the requirements of environmental protection.

Combining with the most advanced technology and adopts the international leading low emission level, this project can effectively reduce the pollution of gas-fired power plants, effectively reduce the damage to the environment, effectively improve the air quality, and achieve the purpose of energy saving and emission reduction.

In addition, the project also adopts the latest emission control system to minimize emissions and improve the sustainability of gas power generation, and ensure the safe operation of gas power plants.
In conclusion, the project aims to minimize the pollution of gas power generation by adopting advanced technology and equipment, so as to achieve the purpose of energy saving and emission reduction, thereby protecting the environment, improving air quality and achieving sustainable development.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Jingye Jiaosuan Co., Ltd	10	1250	1000	12	Boiler flue gas induced draft fan	Power generation	
Jingye Jiaosuan Co., Ltd	10	2400	1800	2	Double super power feed pump	Power generation	One converter for two motors

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Project Name: 1×220t Gas Power Generation Ultra Low Emission Project of Jingye Group

Project Background:

The 1×220t Gas Power Generation Project with Ultra Low Emission of Jingye Group is a brand new power generation technology adopted by the Group to meet the current energy demand and reduce environmental pollution. The project aims to to minimize environmental pollution in China and promote its green development by using highly efficient and low-emission gas power generation technology.

The project adopts 1×220t gas power generation technology,through technical improvement and design optimization, achieve ultra low emission,effectively control the emission of harmful pollutants such as sulfur dioxide, nitrogen oxides, particulate matter, etc., and meet the national emission standards. In addition, the project adopts intelligent control system to realize automatic control and monitoring of generator, so as to ensure the stability of power generation efficiency and emission standard, while reducing operating costs.

Ultimately, the project will provide more energy and environmental protection for China in a cleaner, safer and more efficient way, and make positive contributions to the social development of China.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Jingye Jiaosuan Co., Ltd	10	1250	1000	2	Double super power generation induced draft fan	Power generation	
Jingye Jiaosuan Co., Ltd	10	450	380	2	Double super power generation feeder draft fan	Power generation	

Project Name: Frequency Conversion Transformation Project of No. B Blast Furnace of Jingye Group

Project Background:

The Jingye Group No. B furnace frequency conversion transformation project is a major technical transformation project recently implemented by the Group, aiming to improve the production efficiency and product quality of No.B furnace,improve the power utilization efficiency and reduce the production cost.

This project mainly involves the frequency conversion transformation, including drive, control and speed regulation system, so as to improve the production efficiency,energy saving, power utilization efficiency, and

also the operating environment of furnace, making it safer, more economical and more environmentally friendly.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Hebei Jingye/ No. B blast furnace	10	1400	1120	1	Combustion fan	Metallurgy	One converter for two motors
	10	2250	1800	1	Ore trough dust removal	Metallurgy	
	10	3750	3000	1	Pre-furnace dedusting	Metallurgy	

Project Name: Frequency Conversion Transformation Project of No. C Blast Furnace of Jingye Group

Project Background:

The Project is a challenging project aiming at improving the energy utilization efficiency and production efficiency of No. C blast furnace of Jingsheng Group. The No.C blast furnace is a kind of a traditional solid fuel heating equipment, and it's basic technical parameters are as follows: furnace volume: 20m^3; furnace top pressure: 0.8MPa; furnace chamber pressure: 0.13MPa; furnace chamber temperature: 1400℃; coal powder fuel mass: 250kg/h; flue gas flow: 400m^3/h.

For this traditional blast furnace, the transformation of frequency conversion technology can realize energy saving and emission reduction of the blast furnace, effectively improve the production efficiency and greatly reduce the production cost. After the transformation, its renewable energy utilization rate will be increased to more than 90%, fuel consumption will be reduced by more than 20%, and flue gas emission will be reduced by more than 30%, contributing to the cause of green environment protection. In addition, it can significantly improve the stability of the blast furnace, greatly enhance the production efficiency and reduce the uncertainty in production.

In a word, the transformation project will bring significant improvement to the business performance of Jingsheng Group and contribute to the social environment protection, which is a meaningful and worthy project to be promoted.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Hebei Jingye/ No. C blast furnace	10	1250	1000	1	Combustion fan	Metallurgy	One converter for two motors
	10	1125	900	1	Coke dedusting fan	Metallurgy	
	10	2500	2000	2	Pre-furnace de-dusting fan	Metallurgy	
	10	1000	800	1	Cast iron machine dedusting fan	Metallurgy	
	10	1250	1000	1	Mine silo de-dusting fan	Metallurgy	

Project Name: Frequency Conversion Transformation of Pellets of Jingye South District

Project Background:

According to statistics, the pellet process in Jingye South's steelmaking area has caused serious energy consumption overruns due to the lack of frequency conversion technology application, resulting in an economic loss of 20 million RMB per year. Therefore, this project is to apply the frequency conversion technology to the pellet process renovation project to solve the energy consumption problem, effectively reduce energy consumption, reduce economic loss, and finally improve the production efficiency and quality of steel making in Jingye South.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Jingye south district/ Pelletizing	10	350	280	1	1# ambient cooling fan	Pelletizing	
	10	445	355	1	2# ambient cooling fan		
	10	625	500	1	3# ambient cooling fan		
	10	350	280	1	Dedusting fan for finished products		
	10	2000	1600	1	Environmental dedusting fan		

Project Name: Sintering Frequency Conversion Transformation of Jingye South District

Project Background:

The project adheres to the purpose of "energy saving and emission reduction, improving sintering quality and sintering efficiency". It aims to increase sintering efficiency, improve sintering quality, reduce sintering energy consumption, save sintering cost and improve working environment by adopting frequency conversion technology.

For this project, we conducted a lot of field research and data analysis on sintering energy consumption, production efficiency, sintering quality and working environment, and obtained the following results:
1.High energy consumption and low efficiency of sintering, with an average output of only 8.9 tons per hour;
2.The quality of sintering is unstable, with a passing rate of only 94.5% in the sampling inspection;
3.The sintering environment is harsh, with high temperatures and excessive noise.

Based on the above analysis, we take corresponding measures to renovate the sintering to achieve energy saving and emission reduction, improve the quality of sintering, increase the efficiency of sintering and improve the working environment.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Jingye south district/ Sintering	10	445	355	1	2# particle dedusting fan	Sintering	
	10	250	200	1	Dedusting fan for automobile transportation		

	10	1565	1250	1	Phase II tail dedusting fan		
	10	500	400	2	Fuel dedusting fan		
	10	790	630	1	2# dedusting fan for mixing		
	10	445	355	1	1# particle dedusting fan		
	10	1565	1250	1	Phase Ⅰ tail dedusting fan		
	10	790	630	1	1# dedusting fan for mixing		
	10	625	500	1	Dedusting for finished products		

Project Name: Frequency Conversion Transformation Project of No. A Blast Furnace of Jingye Group

Project Background:

In recent years, with the increasing awareness of environmental protection, the steel industry is facing more and more stringent environmental protection requirements, and the traditional frequency conversion transformation technology can no longer meet the increasing environmental protection requirements. For the No.A blast furnace, we plan to adopt the frequency conversion transformation technology to meet the environmental protection requirements and improve the efficiency of the blast furnace.

In this frequency conversion transformation project, we studied and analyzed various frequency conversion technologies and determined to adopt the latest frequency conversion technology to meet the environmental protection requirements. It effectively reduces the emission of blast furnace pollutants, achieves the purpose of energy saving and emission reduction, and contributes to the improvement of environmental quality. At the same time, it improves the production efficiency of blast furnace, improve the reliability and stability of equipment, improve the quality of products, effectively extend the service life of equipment, reduce production costs and improve the economic benefits of the enterprise.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Hebei Jingye/ No. A blast furnace	10	445	355	1	1# slag flushing pump	Metallurgy	One converter for two motors
	10	445	355	1	2# slag flushing pump		
	10	445	355	1	1# slag flushing pump on tower		One converter for two motors
	10	445	355	1	2# slag flushing pump on tower		

Introduction of Wu'an Dingfeng Thermoelectricity Co., Ltd

Wu'an Dingfeng Thermoelectricity Co., Ltd. was founded on August 29, 2000, with the legal registered address of No. 589 South Ring Road, Wuan, Handan, Hebei Province; it is fully committed to owning, operating and maintaining thermal power plants, producing, supplying and selling electrical and thermal energy, developing, producing and selling waste products related to thermal power production, selling electricity services, installing mechanical and electrical equipment, contract energy management, research and development of energy saving and environmental protection technology promotion and application etc. It's a limited liability company by nature of unit (a sole proprietorship invested or controlled by non-natural persons), with registered capital of 286 million RMB.

Project Name: Transformation Project of Wu'an Dingfeng Thermoelectricity

Project Background:

Due to the low thermal efficiency and serious pollution of traditional coal boilers, Wu'an Dingfeng Thermoelectricity decided to push forward with the transformation project to transform the traditional coal boilers into more advanced gas boilers, in order to improve the efficiency of the thermal power plant, reduce pollution and provide support for the sustainable development.

This transformation project mainly includes site environmental improvement, gas boiler transformation, desulphurization equipment transformation, dust removal equipment transformation, electrical control system transformation, safety protection system transformation, etc. After the transformation, it is expected to save about 74,000 tons of fuel per year and reduce carbon dioxide emissions by about 228,000 tons in annual power generation.In addition, the transformed thermal power plant will greatly improve efficiency, reduce maintenance costs,and provide a more powerful support for the sustainable development.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Wu'an Dingfeng Thermoelectricity in Handan city	10	2800	2500	1	Boiler feed pump	Power generation	One converter for two motors

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Introduction of Guizhou Kaier Ruijin Metallurgical Material Industry Co., Ltd

Guizhou Kaier Ruijin Metallurgical Material Industry Co., Ltd, founded in 2018, is located in Guiyang City, Guizhou Province, and is an enterprise mainly engaged in general equipment manufacturing.

Project Name: Frequency Conversion Transformation Project of Blast Furnace

Project Background:

The frequency conversion transformation project of blast furnace of Kaier Ruijin Metallurgical Materials Industry Co., Ltd. in Guizhou is a major transformation project launched by the company to solve the problem of low production efficiency with increasingly updated blast furnace process technology. The project will use the latest frequency conversion technology to greatly improve the performance of the blast furnace computer control system for optimal production efficiency.

Since its establishment, Guizhou Kaier Ruijin Metallurgical Materials Industry Co., Ltd. has been committed to the R&D and production of high-quality metal materials and products, but the performance of the blast furnace computer control system has always been far from the set standards;
This frequency conversion transformation project adopts the latest international frequency conversion technology, which can effectively improve the performance of the blast furnace computer control system, so as to achieve the best production efficiency;

Kaier Ruijin Metallurgical Materials Industry Co., Ltd. has invested a lot of manpower and material resources and finally complete the project successfully, to realize a great improvement in the production efficiency of the blast furnace, thus stimulating the development of the company. According to the actual technical transformation, the frequency conversion transformation project can finally increase the production efficiency of the blast furnace by 30%.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Guizhou Kaier Ruijin Metallurgical Material Industry	10	4000	3200	1	Main sintering exhaust fan	Metallurgy	
Guizhou Kaier Ruijin Metallurgical	10	5400	4000	1	Blast furnace blower	Metallurgy	

Material Industry							

Introduction of Anhui Weida Environment Protection Technology Co., Ltd

Anhui Weida Environment Protection Technology Co., Ltd (with stock code 835501, referred as Weida Environment Protection) is a high–tech environment protection engineering company established in 2010 by integrating the excellent resources of industrial flue gas and dustremoval of previous Anhui Weida Purification Equipment Co., Ltd. The company is registered in address of Hanshan Lintou Industrial Park, Ma'anshan City, Anhui Province, and he headquarters of the company is located at Fortune Plaza, No. 278, Shuixi Road, Luyang District ,Hefei City with a registered capital of 34.08 million Yuan (R.M.B) . It is a NEEQ-registered enterprise and has a good corporation credit and rich financial channel .

The company provides professional integrated solutions for dust removal, desulfurization and denitrification of industrial flue gas, including system design, complete equipment supply, engineering construction, operation and commissioning, maintenance and management of environmental protection services EPC project general contracting and environmental management franchise general contracting in BOT mode.

Project Name: Ultra-low Flue Gas Emission Project of Blast Furnace

Project background:

In recent years, many national and local policies have proposed to "strengthen the source control, strengthen the fine desulfurization of blast furnace gas and coke oven gas ", Schorch Electric Co., Ltd. (referred as Schorch) actively responded to the national environmental protection policy, laid out the source treatment direction in advance, introduced and absorbed the advanced technologies at home and abroad, and provided customers with subcontracting services such as fine gas treatment, which greatly reduced the land occupation of environmental protection system, effectively eliminated one-time construction investment and operation cost, reduced the pressure of end treatment, and saved the end treatment facilities through flexible combination process. Schorch always insists on innovation-driven development and is committed to providing customers with system solutions and value-added services. The implementation of the blast furnace flue gas desulfurization project marks a classic case of hot-blast furnace flue gas desulfurization of Schorch.

This project combines the advantages of high-standard design, scientific selection of equipment , professional assembly and pragmatic operation, which can better promote sincere cooperation in many fields and in depth, so as to achieve complementary advantages, seek common development, win-win cooperation and become a benchmark project leading the application of steel industry.

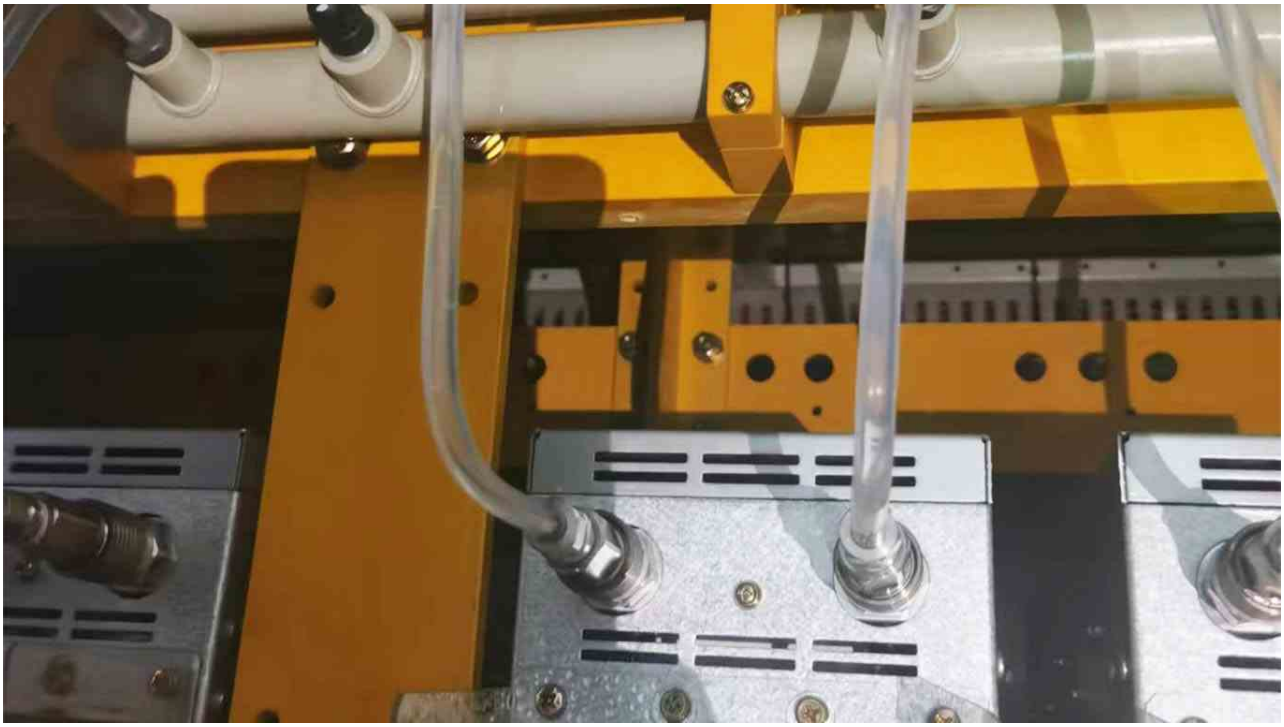
List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Anhui Weida Environment Protection	10	660	530	3	Desulfurization of blast furnace and hot blast furnace	Metallurgy	
	10	840	710	1		Metallurgy	

Project Name: 2×300 Sintering Ultra-low Emission Project

Project background:

For better protection of the environment and improvement of air quality, several sets of flue gas desulfurization and denitrification devices were built for the sintering machine of the company, and SDA semi-dry desulfurization and dust removal+medium and low temperature SCR denitration technology was adopted in the purification process. The flue gas of sintering machine first goes through electric dedusting, and then goes through SDA semi-dry desulfurization process to remove sulfur dioxide and particulate matter in flue gas, and then goes through medium and low temperature SCR denitration process at to remove nitrogen oxides in flue gas. The gas volume of the company's sintering machine is 78×104 M3/H, with temperature of 100~200 ℃, the NOX is 280-330 MG/NM3, the maximum SO2 concentration is 1500MG/NM3, and the dust concentration is 60MG/NM3. After purification by denitration process, the emission concentration of flue gas reaches 10mg/nm3NOx ≤ 50mg/nm3 and SO2 ≤35MG/NM3. It meets the special emission limit requirements in Emission Standard of Air Pollutants for Sintering and Pelletizing Industry.



List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Fujian Longking Environmental Protection Engineering Technology Co., Ltd	10	8000	7700	1	Desulfurization and demineralization main extraction fan	Environmental protection	Water cooling frequency converter
Anhui Weida Environment Protection	10	8000	7700	1	Desulfurization and demineralization main extraction fan	Environmental protection	Water cooling frequency converter

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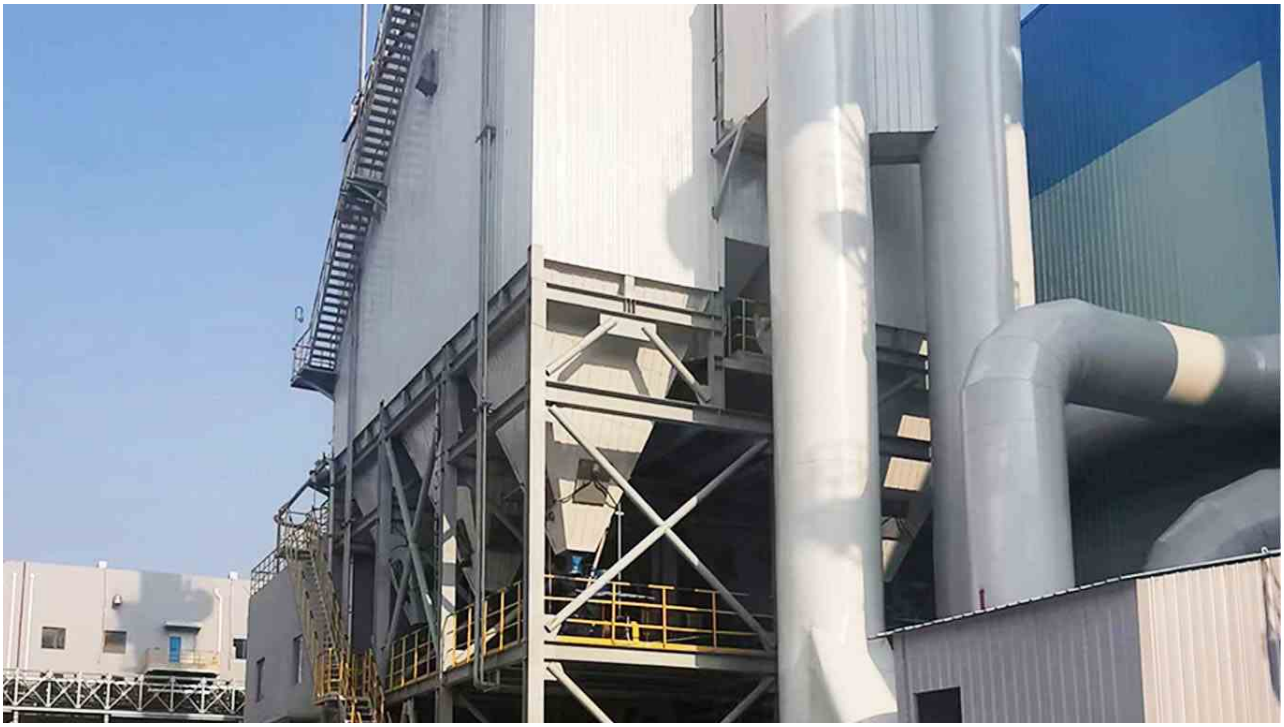
Project Name: Flue Gas Ultra-low Emission Project for White Ash Kiln

Project background:

Party A has 6 existing coke ovens, the first phase of which is TJL4350D 2*72-hole 4.2M tamping coke oven with a capacity of 1.2 million tons/year. The first phase is equipped with 1 set of desulfurization, denitrification and dust removal device. It is required that NOX≤150 MG/NM3, SO2≤30 MG/NM3 and dust concentration≤15 MG/NM3 in the purified flue gas.



List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Anhui Weida Environment Protection	10	1600	1250	1	White ash kiln desulfurization fan	Environmental protection	

Introduction of Tianjin Huaye Design Institute

Handan North China Metallurgical Construction Engineering Design Co. Ltd. is a comprehensive Grade A design unit, established in Handan by the former Ministry of Metallurgical Industry in 1976. In order to expand the development scale, the Tianjin branch of Huaye Engineering Design Institute was established in Tianjin in 2010. It is a modern science and technology enterprise mainly engaged in metallurgical and electric power design, with 200 employees, including 20 senior engineers of professor-level, 45 senior engineers, 61 engineers and 47 registered engineers of various types.

Since 1980, Huaye Design Institute has entered the field of small and medium-sized thermal (Coal-fired power) power design. Over the past 20 years, it has completed cogeneration projects (including urban centralized thermal power plants, enterprise owned thermal power plants, coal mine pithead thermal power plants), coal gangue power plants, gas steam combined cycle power plants, garbage (domestic garbage, paper garbage) power plants, biomass power plants, high (coke) furnace gas power plant, cement plant coking plant waste heat power plant, TRT waste pressure power generation project and so on more than 300 designs, only in Shandong province has completed all kinds of thermal power plant (station) design more than 100, the cumulative design of 75t / h - 480t / h circulating fluidized bed boiler more than 300 sets. The company also actively explores the market field and undertakes EPC projects.

Project Name: Waste Heat Power Generation Cycle Reconstruction Project

Project background:

With the rapid development of China's economy and urbanization, a large amount of waste heat emitted from urban construction and industrial development has caused energy waste and environmental pollution. Therefore, utilizing the technology of waste heat power generation and its cycle transformation project to improve energy utilization efficiency and environmental protection has become an important content for China's economic development.

According to the energy structure adjustment and development plan of China, by 2015, the national installed capacity of renewable energy power generation should reach 26 million kilowatts; by 2020, the national installed capacity of renewable energy power generation should reach 45 million kilowatts, and the proportion of waste heat power generation in the total installed capacity should reach 20%. The waste heat power generation and its cycle transformation project should become an important measure to improve energy structure, save energy and protect the environment.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Tianjin Huaye Design Institute	10	2200	2000	2	Waste heat power generation cycle fan	Power generation	

Introduction of Henan Maike Metallurgy Machinery Co., Ltd

Jiaozuo Maike Metallurgical Machinery Co., Ltd., located in the south section of Shanyang Road, Jiaozuo City, Henan Province, was established in July, 2003 with a registered capital of 50 million yuan, covering an area of nearly 133,350 square meters, of which the garden-like factory area is about 80,000 square meters, with 320 employees. the company is a private enterprise with EPC capability of manufacturing complete sets of metal smelting equipment, integrating R&D, design, production and sales, engineering installation, operation training and after-sales service. The leading products of the enterprise are four categories, mainly including complete sets of metal smelting equipment such as belt sintering system, complete sets of continuous casting system, environmental protection equipment (desulfurization, denitrification, wet electric dust removal equipment), pellet equipment, etc., with a manufacturing capacity of 20,000 tons per year.

Project Background:

With the growth of steel output, the output and quality of iron-bearing furnace materials have been developed rapidly. Iron ore sintering is a typical industrial process with high energy consumption, high consumables and high pollution. The energy consumption of iron ore sintering is reported to account for about 6-10% or more of the total energy consumption of iron and steel enterprises. Sintering ore is one of the main iron-bearing charges of blast furnaces, accounting for about 75% of the blast furnace charge structure. 75~80% of the total energy consumption of sintering process is fossil fuels, such as coke powder and anthracite. The use of fossil fuels generates large amounts of greenhouse gases such as CO2, SOx, NOx and dioxins, which are major sources of air pollution in the steel industry.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Henan Maike Metallurgy Machinery Co., Ltd.	10	4000	3200	4	Sintering circulation fan	Metallurgy	
Henan Maike Metallurgy Machinery Co., Ltd.	10	3600	2900	3	Sintering circulation fan		
Henan Maike Metallurgy Machinery Co., Ltd.	10	450	380	2	Sintering circulation fan		

Introduction of Inner Mongolia Sonding Environmental Protection and Energy Saving Co., Ltd

Inner Mongolia Sonding Environmental Protection and Energy Saving Co., Ltd. is an enterprise specializing in the production and development of environmental protection and energy-saving high-tech products. The company has professional contract qualification of environmental protection engineering and safety production license, and is a national high-tech enterprise, a third-level enterprise of safety production standardization, and the research and development center of Inner Mongolia Autonomous Region. The plastic plate dust collector is a high-end product in the field of dust purification, with a service life of more than 10 years. It can effectively capture dusts above 0.1 microns, and the dust capture efficiency for dusts above 1 micron is as high as 99.999%, and the emission is less than 1mg/m^3, realizing near-zero emission in the real sense. Sonding is the first entity enterprise in China to introduce plastic burner dust collection technology and to have the design, manufacture and integration of plastic burner dust collection, and is also the pioneer of plastic burner dust collection technology expansion, innovation and application in many fields in China. The company adopts the fourth generation of plastic burner plate and German original imported pulse solenoid valve for dust removal equipment. Plastic burner plate de-dusting projects are all over the country, covering steel, mining, non-ferrous, rare earth, tobacco, cement, chemical, electric power, coal, food, pharmaceutical, automotive spraying and other industrial fields.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Inner Mongolia Sonding Environmental Protection and Energy Saving Co., Ltd	10	1125	900	1	Rolling mill dedusting fan	Environmental protection	
Inner Mongolia Sonding	10	1250	1000	5	Rolling mill		

Environmental Protection and Energy Saving Co., Ltd					dedusting fan		
Inner Mongolia Sonding Environmental Protection and Energy Saving Co., Ltd	10	1400	1120	1	Rolling mill dedusting fan		

Introduction of Guangxi Guifeng Special Steel Co., Ltd

Guangxi Guifeng Special Steel Co., Ltd. was established on November 14th, 2002, with its registered place in Lingfeng Industrial Park, Hezhou City, and its legal representative is Xu Changjin. The business scope of the company includes general projects: steel and iron smelting; Ferroalloy smelting; Black metal casting; Rolling of steel; Manufacturing of basic chemical raw materials (excluding manufacturing of licensed chemicals such as hazardous chemicals); Manufacturing of metal materials; Sales of building steel products; Sales of metal materials; Sales of high-quality special steel materials.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Guangxi Guifeng Special Steel Co., Ltd.	10	1750	1400	3	Primary and secondary	Metallurgy	One converter for two motors

					de-dusting fans		

Introduction of Hebei Jinxi Group

Jinxi Group (Hebei Jinxi Iron and Steel Group) was founded in 1986 and approved by Hebei Administration for Industry and Commerce in December, 2009, with headquarter in Beijing. It now owns nearly 100 domestic and foreign holding companies, including 4 national high-tech enterprises and 3 listed companies, and its annual sales revenue exceeds 100 billion yuan. It is a large enterprise group integrating steel, non-steel and financial sectors. It has been ranked among the top 500 Chinese enterprises for 19 consecutive years, and ranked 176th among the top 500 Chinese enterprises, 48th among the top 500 private enterprises in China, 278th among the top 500 listed companies in China, 76th among the top 500 manufacturing enterprises in China and 25th among the top 500 private manufacturing enterprises in China in 2021. Jinxi was awarded the title of "National May Day Labor Award" and "National Civilized Unit"; The Board of Directors of the Group was selected as one of the "Top 50 Best Boards of Directors in China".

Project Name: Frequency Conversion Transformation for 1~4# Sintering main Extractor Fan of Hebei Jinxi Iron and Steel Group

Project Background:

Due to the national clean energy plan, steelmaking enterprises are required to implement energy saving and emission reduction, and the sintering main extractor fan is one of the largest energy consuming equipment in steelmaking enterprises. Therefore, it is important to carry out frequency conversion transformation to achieve energy saving and emission reduction. Therefore, in compliance with the requirements of the national clean energy plan, the frequency conversion project for Jinxi Iron and Steel 1-4# sintering main extractor fan came into being, aiming at optimizing the energy efficiency of the sintering main extractor fan through frequency conversion technology to achieve the purpose of energy saving and emission reduction.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion	Load (kW)	Qty（unit）	Load type	Industry	Remarks

		capacity(kVA)					
Hebei Jinxi Iron and Steel Group/1# sintering main extractor fan	6	9600	7100	1	Main extractor fan	Metallurgy	
Hebei Jinxi Iron and Steel Group/2# sintering main extractor fan	6	6300	5000	2	Main extractor fan	Metallurgy	
Hebei Jinxi Iron and Steel Group/3# sintering main extractor fan	6	4500	3800	1	Main extractor fan	Metallurgy	
Hebei Jinxi Iron and Steel Group/4# sintering main extractor fan	6	6300	5000	2	Main extractor fan	Metallurgy	

Introduction of Guangdong Jingye Iron and Steel Industry Co., Ltd

Guangdong Jingye Iron and Steel Industrial Co., Ltd. belongs to Jingye Group, one of the top 500 enterprises in China, which is a multinational group with steel as its main business and also engaged in steel deep processing, additive manufacturing 3D printing, international trade, tourism and hotel. It ranked166th among the top 500 enterprises in China in 2020, with 31,000 employees. Guangdong Jingye Iron and Steel (formerly Guangdong Tai Du Steel) was incorporated on December 18, 2006, located in Di Du Town, Airport Economic Development Zone, Jieyang City, Guangdong Province, covering an area of more than 666000 square meters. The company has convenient water and land transportation, 23 KM from Jieyang Station of Guangmeishan Railway, located in the Rong River Golden Waterway. The development of the company is in line with the national industrial policy of steel development, with complete ironmaking and steelmaking licenses. It is a full-process iron and steel enterprise integrating two specialized iron and steel freight terminals with 5000-ton berths, a blast furnace, a sintering machine, a converter (rotary furnace), a five-machine and five-stream continuous casting machine, an 18-frame rolling production line and supporting facilities.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Guangdong Jingye Iron and Steel Industry Co., Ltd.	10	4440	3500	1	Main extractor fan	Metallurgy	
	10	700	560	1	Dedusting of underground mine chutes	Metallurgy	
	10	3125	2500	1	Cooling fan	Metallurgy	
	10	700	550	1	End of machine dedusting	Metallurgy	
	10	395	315	1	Dedusting for mixing	Metallurgy	
	10	445	355	1	Dedusting for mine chute	Metallurgy	
	10	790	630	1	Pre-furnace dedusting	Metallurgy	
	10	420	355	1	Hot water pump	Metallurgy	
	10	500	400	1	Main exhauster for coal injection	Metallurgy	
	10	1565	1250	1	Primary fan	Metallurgy	
	10	2500	2000	1	Old secondary fan	Metallurgy	

	10	1400	1120	1	New secondary fan	Metallurgy	

Introduction of Jing-Tang Iron and Steel United Co., Ltd. of Shougang Group

On October 22, 2005, Shougang Jingtang Company was founded; the first phase of the project, with a total investment of 67.7 billion RMB and a designed annual production capacity of 8.98 million tons of iron, 9.7 million tons of steel and 9.13 million tons of steel materials, started construction on March 12, 2007. On June 26, 2010, the first phase of the project was fully completed and put into operation. The second phase of the one-step project was officially launched on August 21, 2015 and will be fully put into operation on August 1, 2019. The company is designed to produce 13.47 million tons of iron, 13.7 million tons of steel and 13.406 million tons of steel materials annually.

Project Name: Frequency Conversion Transformation for Oxygen Compressor of Jing-Tang Iron and Steel Group

Project Background:

The group has two oxygen compressors, which are widely used in the production process, but its energy efficiency is very low and there is a lot of energy waste. In order to improve the energy utilization rate of the equipment and enhance the production efficiency, Jing-Tang Iron and Steel decided to carry out a frequency conversion transformation of these oxygen compressors.

Project Objectives:

1.To improve the energy utilization of the oxygen compressors and reduce energy waste through frequency conversion;

2.To improve the operating efficiency of the oxygen compressors and shorten the production cycle;

3.To improve the control accuracy of the oxygen compressors to better meet the production requirements;

4.To reduce the noise pollution of the oxygen compressors and improve the working environment.

Project Scope:

1.Overhaul the oxygen compressors to ensure the machine is in good condition;

2.Install the frequency converter and filter;

3.Install the pressure transmitter and temperature sensor;

4.Commission the frequency converter to make it perfectly integrated with the control system;

5.Test the operation effect of the oxygen compressor to ensure the expected result.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
JingTang Iron and Steel	10	565	450	1	Compressor	Oxygen production	
	10	1400	1120	3	Compressor	Oxygen production	

Introduction of Yongchang Steel Co., Ltd. of Yunnan Yonggang Steel Group

Yongchang Steel Co., Ltd. of Yunnan Yonggang Steel Group was established on January 10, 2014, with a registered capital of RMB 300,000,000. The engaged industries is ferrous metal smelting and rolling processing industry, and the business scope contains: iron making, steel making, casting, rolling steel; iron ore, metal materials purchase and sale, etc.

Project Name: Frequency Conversion Transformation for Blast Furnace of Yongchang Iron and Steel Group

Project Background:

With the continuous development of industrialization, informatization and modernization of China's construction, the traditional plant processing methods are increasingly lagging behind the current production requirements and are bound to undergo a comprehensive transformation and upgrade. Yongchang, as a steel company with metallurgical industry as its core, is in a better position in the current market competition. However, due to the aging and disrepair of the early production equipment, low operating efficiency, high energy consumption level and safety problems; this is the best opportunity to make a new upgrade of the traditional production method.

Therefore, Yongchang Group decided to upgrade all of its metallurgical equipment using frequency conversion technology. This method uses digitalization, intelligence, energy saving and reduction of exhaust gases as well as energy consumption to implement internal process optimization in the plant. In addition: the method will also significantly reduce the amount of waste and reduce the potential for personnel usage.

In short: not only will the overall production efficiency increase significantly, but also the equipment that has been in disrepair will be completely reborn!

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Yunnan Yongchang Steel	10	6000	4700	1	125 Main exhaust fan	Metallurgy	
	10	445	355	1	125Main exhaust fan 2#	Metallurgy	
	10	395	315	1	125 Main exhaust fan3#	Metallurgy	
	10	395	315	1	125 Main exhaust fan 4#	Metallurgy	
	10	500	400	1	Shaft furnace 2#combustion	Metallurgy	
	10	1125	900	1	Shaft furnace 2# cold air	Metallurgy	
	10	1250	1000	1	1350 Blast furnace ore chute	Metallurgy	
	10	710	560	1	1350 Blast furnace ore chute	Metallurgy	One converter

							for two motors

Introduction of Beijing saiboyu science and technology development Co., Ltd

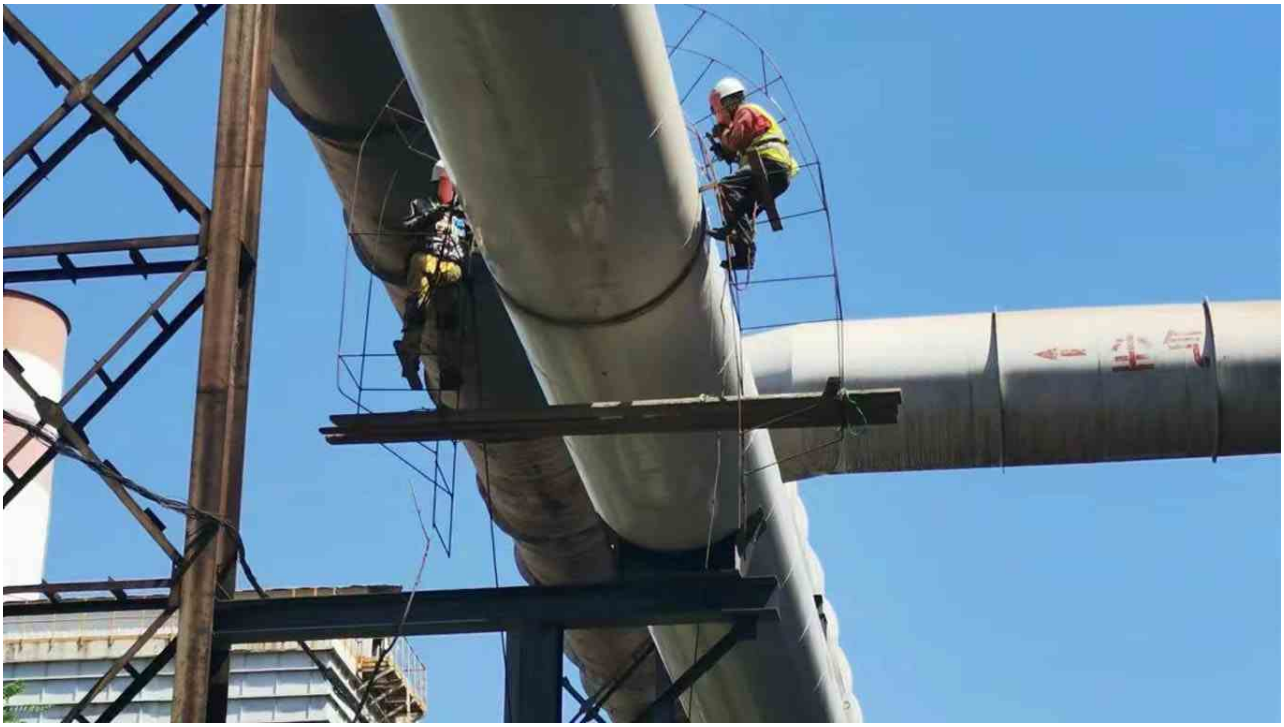
Beijing Saiboyu Technology Development Co., Ltd. focuses on desulfurization, denitrification and dust removal projects for rolling steel heating furnace, ironmaking hot blast furnace, white ash kiln, blast furnace gas generator set, coke oven, sintering machine, etc. as well as fine desulfurization of blast furnace gas and dust removal projects of rolling line plastic burner plate, and has 27 rolling steel heating furnace desulfurization and denitrification and dust removal performance; 9 blast furnace ironmaking hot blast furnace desulfurization and dust removal performance; And 7 blast furnace gas fine desulfurization performance as of 2021. In the field of SDS desulfurization and denitrification, dust removal for steel rolling heating furnace and iron-making blast furnace, it's the enterprise with the most operating performance and the longest operating time.

The company has owned 5 patents for the desulfurization and denitrification control system of rolling steel heating furnace and ironmaking hot blast furnace; 3 patents for the heat exchange and warming system of the first domestic set of rolling steel heating furnace desulfurization and denitrification system, and 4 patents for desulfurization and denitrification equipment. At this stage, all the heat exchange and warming system technologies applied in domestic rolling steel heating furnace desulfurization and SCR denitrification are the extension of the company's patented technologies for the first set of domestic rolling steel heating furnace desulfurization and denitrification system heat exchange and warming system in 2019.

Project Name: Ultra-low Emission Project for Steel Rolling Mill Heating Furnace Flue Gas

Project Background:

In the new period of "14th Five-Year Plan", China's air pollution control has entered a new stage of development. The coordinated control of fine particles and ozone control has been written into the 14th Five-Year Plan; The coordinated treatment of VOC and NOx has been continuously promoted; The ultra-low emission transformation of non-electric industries has been steadily carried out; The air pollutant emission standards has been continuously tightened; The non-conventional pollutants have gradually attracted attention; The end- treatment of flue gas treatment has begun to shift to source emission reduction and process control; And the air pollution treatment industry has gone to a step further.



List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks	
Beijing Saiboyu Technology Development Co., Ltd.	10	625	500	4	Heater induced draft fan	Metallurgy		Ultra-low Emission Project for Steel Rolling Mill Heating Furnace Flue Gas
	10	500	400	2	Heater induced draft fan	Metallurgy		
	10	315	250	2	Heater induced draft fan	Metallurgy		

Introduction of Jiangsu Tandge Environmental Engineering Co., Ltd

Jiangsu Tandge Environmental Engineering Co., Ltd. (hereinafter referred to as Tandge) is a high-tech enterprise based on scientific research, committed to the development and achievement transformation of practical technologies for energy conservation and environmental protection, and determined to develop globally. The company is a "high-tech enterprise in Jiangsu Province", specializing in the design, manufacture and installation of various types of environmental protection machinery, environmental protection engineering, thermal energy, and thermal engineering, with a construction area of nearly 30000 square meters. It is mainly engaged in the design, production and installation of various types of large-scale and high-efficiency electric dust collector, bag dust collector, electric bag composite dust collector, complete sets of waste heat recovery products of industrial furnace (kiln) and complete sets of ion desulfurization products. The company has professional environmental protection general contracting qualification, and has built

"Engineering Technology Research Center for Industrial Furnace Flue Gas Treatment and Waste Heat Utilization" and "Jiangsu Province Enterprise Academician Workstation".

At present, Tandge has more than 500 technical, design, manufacturing and management personnel of all kinds, with a registered capital of 100 million yuan, a 20,000㎡ processing base and a 3,000㎡ R&D laboratory in Yancheng Hi-Tech Park. It is a rare high-tech enterprise with a large comprehensive design, production and scientific research base among its peers in China. So far, the company has been the first among Chinese peer technology enterprises in terms of talent scale, application performance, technical innovation achievements and brand awareness.

Project Name: Ultra-low Emission Project of Blast Furnace and Hot Blast Burnace Flue Gas

Project Background:

The heater flue gas from heating furnace enters the integration system of sodium-based (NaHCO3) dry desulfurization (sodium-based dry process) and dust removal. The flue gas is led out from the original induced draft fan outlet, and a flue gas heat exchanger is set for soot heat exchange by using the heated high-temperature flue gas. And the hot flue gas after heat exchange will be mixed with air smoke to increase the smoke temperature to meet the reaction temperature requirements of desulfurization and denitrification, and then after the SDS desulfurization and dust removal device, led back to the original fume discharge, respectively, the construction of 2 sets of soot desulfurization device; flue gas firstly enters the sodium-based dry desulfurization reactor, in the sodium-based dry desulfurization. The reactor is sprayed with sodium bicarbonate ultrafine powder, which decomposes highly active sodium carbonate and carbon dioxide under the action of high temperature flue gas, and the active Na2CO3 makes full contact with SO2 and other acidic media in the flue gas for chemical reaction and is absorbed and purified.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Jiangsu Tandge Environmental Engineering Co., Ltd.	10	660	530	3	Desulfurization fan of ironmaking hot blast furnace	Metallurgy	

	10	840	710	2	Desulfurization fan of ironmaking hot blast furnace	Metallurgy	

Project Name: Frequency Conversion Transformation Project of Induced Draft Fan and Forced Draft Fan of 1250 Hot Coil Heating Furnace

Project Background:

The hot coil heating furnace of a steelmaking plant has been suffering from the problem of insufficient function of the induced draft fan and the blower, which has seriously affected the production efficiency. Therefore, the plant decided to adopt frequency conversion technology to modify the induced draft fan and blower to solve the above problems. Frequency converter, as a new type of energy-saving equipment, has numerous advantages as follow:

1. Using PID speed regulation can adjust the current size in real time to match the work requirements;

2. With low noise characteristics;

3. The use of SVPWM waveform can make the efficiency of the induced draft fan and blower to be greatly improved;

4. Reduce power consumption under the premise of ensuring the normal operation of each component.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Jiangsu Tandge Environmental Engineering Co., Ltd.	10	1190	1000	3	Induced draft fan and forced draft fan of 1250 hot coil heating furnace	Metallurgy	
	10	1600	1250	2		Metallurgy	
	10	1850	1400	1		Metallurgy	

Introduction of China City Environment Protection Engineering Limited Company

China City Environment Protection Engineering Limited Company (hereinafter abbreviated as CCEPC) belongs to MCC5 Group, one of the top 500 companies in the world. It is a national environment protection high and new technology enterprises held by WISDRI Engineering & Research Incorporation Limited, which has been established in 2000 in a national innovation demonstration zone --Wuhan East Lake Hi-tech Development Zone.

Since its establishment, CCEPC has insisted on design and R&D as the basis, high-tech and independent intellectual property as the core, and excellent management ability as the backing, and become the provider and implementer of system solutions for energy-saving and environmental protection facilities. In the five main business fields of clean and efficient utilization of energy, sewage sludge treatment, solid waste treatment, waste gas treatment and environmental remediation, the company has provided many customers with technical research, consultation, design, complete equipment supply, general contract construction, project operation and management, investment and financing, BT and BOT services for environmental protection and resource recycling projects.

Project Name: Gas Power Generation Project of Blast Furnace Gas Recovery and Utilization of 1×135MW Power Generation Project in Liuzhou Steel Grop

Project Background:

The gas power generation project of blast furnace gas recovery and utilization 1×135MW power generation project in Liuzhou Steel Group, has a construction scale of 1×440t/h ultra-high temperature sub-critical primary intermediate reheat gas boiler +1×135MW ultra-high temperature sub-critical primary intermediate reheat condensing steam turbine +1×150MW generator and its supporting auxiliary facilities, with a maximum output of 150MW and an overall thermal efficiency of 41.5%.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
CCEPC	10	2250	1800	2	Feed pump	Power generation	One converter for two motors
	10	1250	1000	2	Induced draft fan	Power generation	
	10	450	280	2	Blower	Power generation	

Introduction of China Electronics Universal Construction Engineering(Beijing) CO.,LTD

China Electronics Universal Construction Engineering(Beijing) CO.,LTD. is a state-level high-tech enterprise recognized by the state and a Zhongguancun high-tech enterprise recognized by Beijing Zhongguancun Management Committee; it is a engineering company long term commitment to installation engineering of high-tech manufacturing mechanical and electrical, and design, construction, procurement of new energy generation projects (wind, photovoltaic, biomass) .

China Electronics Tonghui (Shaanxi) New Energy Technology Co., Ltd. is one of the wholly-owned subsidiaries of the company. It has the qualification of Level 3 General Contractor of Electric Power Engineering Construction and Level 4 License of Installed (Repair and Test) Electric Power Facilities.

The company's business mainly involves the following industries: electronics, medicine, chemical industry, general manufacturing, commercial and civil construction, new energy and other industries. Since its establishment, the company has undertaken a number of domestic and international high-quality projects, achieved brilliant results, created a large number of high-quality projects, which have been affirmed by the owners, and also accumulated rich experience, with the ability to provide customers with value-added services.

Project Name: Phase III Refining Frequency Conversion Project of Certain Plant

Project Background:

1. the current situation of ironmaking dust removal fan in the phase III of an oil refinery: using constant frequency speed control technology, the iron dust emission reaches 450kg per hour, which does not meet the environmental requirements.

2. the advantages of frequency conversion technology: the use of variable frequency speed control technology can better meet the environmental requirements and can greatly reduce iron dust emissions, which is expected to reduce iron dust emissions to 180kg per hour.

3. the significance of the frequency conversion transformation project: after the transformation is completed, it can not only save energy and reduce maintenance costs, but also effectively improve the factory environment and achieve compliance with national environmental pollution control standards.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
CEUC	10	700	560	1	Ironmaking dedusting fan	Metallurgy	Phase III refining

Introduction of Nanjing Recolem Environmental Technology Co., Ltd

Nanjing Revcolem Environmental Technology Co., Ltd. was established in 2011, is a 321 talents enterprise in Nanjing, won the title of National High-tech Enterprise, Small and Medium-sized Technology Enterprise, and Private Science and Technology Enterprise in Jiangsu Province. The business scope of the company includes: technology development, technical consulting, technical services, technology transfer in the field of energy conservation and environmental protection; sales of energy-saving products; design and construction of energy conservation and environmental protection projects; inspection and testing technical services; and engineering project management.

Project Name: Frequency Conversion Transformation Project of Slag Micro Powder

The slag micronized powder frequency conversion transformation project of Nanjing Recolem Environmental Protection Technology Co., Ltd. , is a sustainable development project aimed at optimizing the production process of slag micronized powder.It aims to improve the production efficiency of slag micronized powder, energy saving and emission reduction, as well as the purpose of improving the quality of the production environment through the adoption of frequency conversion technology. The project first requires the implementation of frequency conversion work, which is used to control the rotational speed of the slag micronized powder and the operating efficiency of the motor to maximize its operating efficiency and energy saving and emission reduction. In addition, a professional air purification system will be installed to effectively eliminate harmful gases generated during the production of slag powder, as well as to reduce noise pollution and improve the quality of the production environment. After the frequency conversion, the project has finally achieved the goal of energy saving and emission reduction and production environment improvement, saving about 25% of power consumption; the installation of air purification system has reduced harmful gas emission by 80%, and noise pollution has also been significantly reduced from the original 85dB to 45dB, improving the quality of production environment.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Nanjing Revcolem Environmental Technology Co., Ltd.	10	2800	2240	1	Milling machine	Cement	Slag micro powder
	10	2000	1600	1	Powder exhaust fan	Cement	
	10	1125	900	1	Dedusting fan	Cement	

Introduction of Zhejiang Xizi United Engineering Co., Ltd

Zhejiang Xizi United Engineering Co., Ltd. is a service-oriented enterprise under Hangzhou Boiler Group Co., Ltd., which specializes in the engineering design and general contracting business of domestic and foreign thermal power, waste heat power generation, gas steam combined cycle, waste power generation, biomass power generation, blast furnace gas power generation and other projects. The company was established in 2005, with a registered capital of 127 million RMB, and has a wholly owned subsidiary of Zhejiang Xizi United Equipment Complete Co. The company is committed to the development of energy saving and emission reduction, new energy, resources and environment technologies. The company is qualified to design Grade B of national electric power industry and Grade B of national environmental engineering design, and has 29 national patents. The company fully relies on the comprehensive advantages of Xizi United Holdings and Hangzhou Boiler Group to actively develop technical consulting, design and EPC turnkey business model.

Project Name: 50MW Ultra-high Temperature and Ultra-high Pressure Gas Power Generation Project of Wulanhaote Iron and Steel Plant

Project Background:

The project is located in Wulanhaote Iron and Steel Plant, No. 29 Xinqiao West Street, and contains a set of 175t/h ultra-high temperature and ultra-high pressure with primary reheat combustion blast furnace and converter gas boiler and supporting auxiliary engines; a set of 50MW high temperature and high pressure with primary reheat steam turbine and supporting auxiliary engines; a set of 55MW steam turbine generator set and supporting auxiliary engines, public auxiliary facilities and others. The annual power generation can be 396×106kWh/a by using the rich blast furnace gas in the plant, and the annual power supply capacity is 366×106kWh/a. The project adopts "Low nitrogen combustion + selective catalytic reduction denitrification (SCR) + dry desulfurization + bag filter" to control the ultra-low emissions of nitrogen oxides, sulfur dioxide and particulate matter. The project covers an area of 99800m2, with a total investment of 211.971 million RMB, of which 22.82 million RMB is invested in environmental protection, accounting for 10.77% of the total investment, and it will be official put into operation in March 2023.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Zhejiang Xizi United Engineering Co., Ltd.	10	1750	1400	2	Induced draft fan	Power generation	Power generation in Wulanhaote Iron and Steel Plant
	10	375	300	2	Blower		
	10	2250	1800	2	Feed pump		

Introduction of Shanxi Shengdawei Technology Co., Ltd

Shanxi Shengdawei Technology is located in Wenshui Economic Development Zone, Shanxi Province, with superior geographical location, convenient transportation and abundant resources. With a registered capital of 36.5 million yuan, the company has three carbon black production lines capable of producing new materials and two multifunctional carbon black production lines, and our annual output is 100,000 tons. After years of efforts, the company's products are all conform to GB3778-2011 standard, as well as the industry standard of special industries. The company has passed the ISO9001 management system certification for quality, environment and occupational health and safety, passed the certification of municipal enterprise technology center in 2018, passed the certification of high-tech enterprise, passed the evaluation of Shanxi Province Specialized and New Enterprise in 2019, and passed the Shanxi Province Specialized and New "Little Giant" Enterprise and Provincial Enterprise Technology Center Certification in 2020.

Project Name: Frequency Conversion Transformation Project of Induced Draft Fan in a Chemical plant

Project Background:

The chemical plant is a large enterprise engaged in the production of petroleum products, and the current energy consumption reaches 1000KW per hour, in order to improve the efficiency of energy use and alleviate energy waste, the plant plans to carry out a frequency conversion of the induced draft draft fan. The transformation project lasted for 3 months, during which a total of 2 induced draft fans were renovated, with the max. output power reaching 710 KW and the min.output power 560 KW. After the transformation, the energy saving rate is as high as 30%, and the reliability of the induced draft fans of the plant is improved, energy consumption is reduced, and the economic benefits are remarkable.

List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Shanxi Shengdawei Technology	10	700	560	1	Induced draft fan	Chemicals	
	10	840	710	1			

Introduction of Shandong Jiuyang Group

Shandong Jiuyang Group Co., Ltd. is a large whole industry chain steel combine integrating coking, metallurgy, cultural tourism and intelligent manufacturing. It is one of the enterprises in the Laitai inland high-quality steel production base in Shandong's high-quality steel development plan, and is also the construction base of new material industry of industrial mould steel in the high-quality steel development plan of Shandong Province. The company's production line is advanced in technology and complete in products, including two coke ovens (2X5.5), five blast furnaces (2X1650, 1X1250, 2X420), two converters (2X120), four rolling lines (one strip, one bar, two wire rod), four sintering machines and 7,377 employees, forming 1.1 million tons of coking, 5 million tons of pig iron, 3 million tons of steel, more than 3 million tons of crude benzene and coal tar. The company's leading products are hot-rolled strip steel, high-speed wire rod and high-quality bars. The company is the largest production base of medium and wide strip steel in Shandong Province, the largest production base of standard parts materials in Shandong Province, and the largest production base of steel materials for pre-stressed pipe piles in Shandong Province. It has been awarded as "High Quality Brand of China Strip Steel Plant" and "High Quality Steel Plant Brand of China Industrial Wire Rod Industry".

Project Name: Frequency Conversion and Environmental Protection Transformation Project of Jiuyang Steel

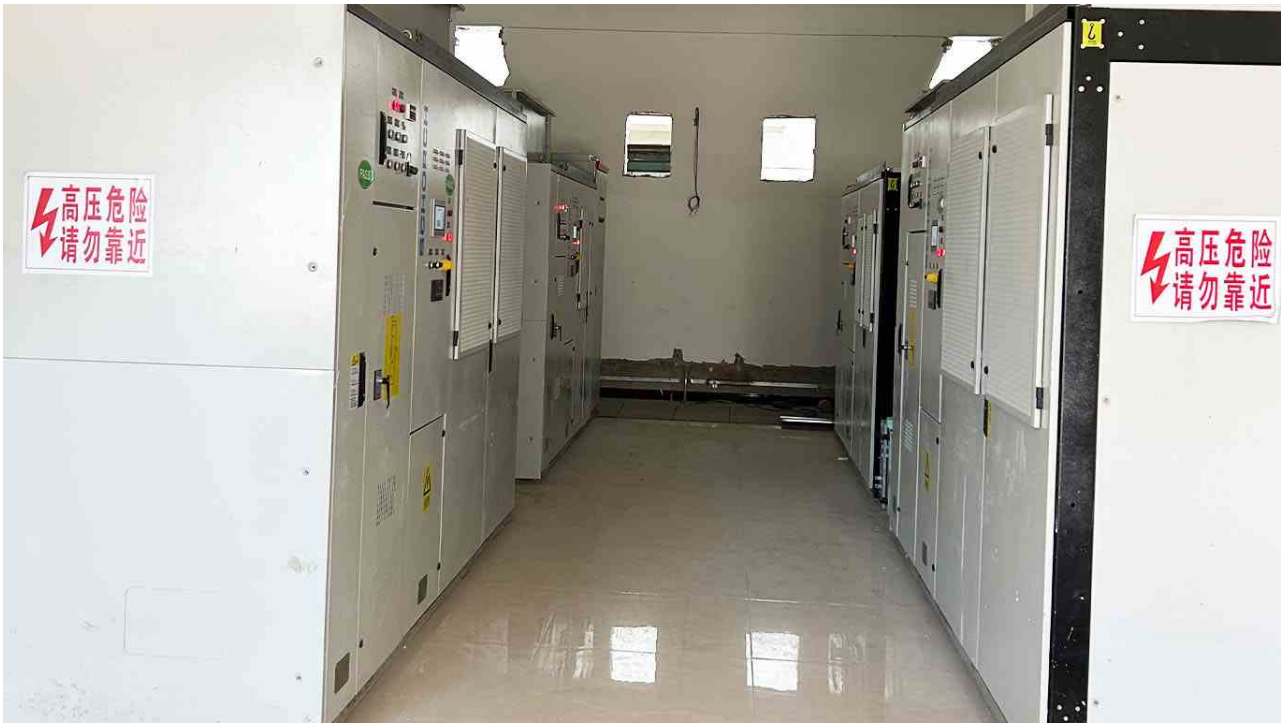
Project Background:

With the development of industry, environmental protection issues are increasingly prominent, and promoting environmental protection transformation has become more important. In order to solve the environmental pollution problem and improve the energy utilization efficiency, we decided to use Jiuyang Steel frequency conversion and environmental protection transformation for a certain project.

First of all, before the project transformation, we made a thorough investigation of the original state of the project and found that its energy consumption level was high, the exhaust pollution exceeded the standard, and the product quality was below the standard.

Jiuyang Steel frequency conversion transformation can effectively improve the running efficiency of the equipments, reduce energy consumption, implement intelligent control, make the equipments run more stable, improve product quality, and reduce pollutant emissions by improving the emission equipments, thus improving the environmental quality.

After repeated research and analysis, we found that the frequency conversion and environmental protection transformation can bring significant economic benefits to the project, reduce energy consumption by 20%, increase product pass rate by 15%, reduce pollutant emissions by more than 10%, and achieve the purpose of environmental protection transformation.



List of Equipment:

Name of user/Project	Voltage(kV)	Frequency conversion capacity(kVA)	Load (kW)	Qty（unit）	Load type	Industry	Remarks
Jiuyang Steel	10	9000	7100	1	Phase IV sintering extractor fan	Metallurgy	
	10	7500	6000	1	Phase III		

					sintering extractor fan	Metallurgy	
	10	700	560	2	Phase IV finished dedusting fan	Metallurgy	
	10	790	630	2	Phase III finished dedusting fan	Metallurgy	
	10	2500	2000	1	1# Secondary dedusting fan	Metallurgy	
	10	2500	2000	1	2#Secondary dedusting fan	Metallurgy	
	10	2800	2240	1	3# New secondary dedusting fan	Metallurgy	
	10	2800	2240	1	4# New secondary dedusting fan	Metallurgy	
	10	2500	2000	1	1#OG Fan	Metallurgy	
	10	2500	2000	1	2#OG Fan	Metallurgy	
	10	2800	2240	1	3#OG Fan	Metallurgy	
	10	2800	2240	1	1# Triple dedusting fan	Metallurgy	
	10	2800	2240	1	2# Triple dedusting fan	Metallurgy	
	10	565	450	1	Slag span dedusting motor	Metallurgy	
	10	565	450	1	Slag span dedusting motor	Metallurgy	
	10	1000	800	1	Refining furnace dedusting motor	Metallurgy	
	10	890	710	1	Nanhe sleeve kiln dedusting motor	Metallurgy	