



Embrace the mission Lead the future

Beijing Shougang Company Limited
Sustainability Report 2023

About This Report

Esteemed readers,

The 2023 Shougang Co. Sustainability Report adheres to the principles of objectivity, standardization, transparency, and comprehensiveness. It systematically discloses Beijing Shougang Co., Ltd.'s commitments, management, measures, and achievements in social responsibility, environmental protection, and corporate governance in 2023.

Beijing Shougang Co., Ltd

April 2024

Reporting Period

This report covers the period from January 1, 2023 to December 31, 2023 (referred to as the "Reporting Period"), with some of the information retroactive to previous years and including the first quarter of 2024.

Report Scope

This report covers Beijing Shougang Co., Ltd. and affiliated branches and subsidiaries. Hereinafter "Beijing Shougang Co., Ltd." in the report is also referred to as "Shougang Co.", "the company" or "we" for ease of expression and reading.

The main products manufacturers of Shougang Co.: Shougang Qian'an Iron & Steel Co., Ltd. (*Qiangang Co.*), Shougang Jingtang United Iron & Steel Co., Ltd. (*Jingtang Co.*), Beijing Shougang Cold Rolling Co., Ltd. (*Cold-R Co.*), and Shougang Zhixin Qian'an Electromagnetic Materials Co., Ltd. (*Zhixin Co.*).

Note: The Qianshun Base refers to the integrated production organization with research and development system formed by Qiangang Co. (located in Qian-an, Hebei province) and Cold-R Co. (located in Shunyi District, Beijing).

Data Sources and Reliability Assurance

The information and data disclosed in this report originate from the company's documents and statistical data, and have been verified by relevant departments. The company guarantees that the contents of this report are free from any false records or misleading statements and takes responsibility for the authenticity, accuracy, and completeness of the contents.

Preparation Basis

- Guidelines for Preparation of China Corporate Social Responsibility Report (CASS-ESG5.0) issued by the Chinese Academy of Social Sciences
- Guidelines No. 1 for Self-Discipline Supervision to Listed Companies- Normative Operation of Main Board Listed Companies issued by Shenzhen Stock Exchange
- The Sustainability Reporting Standards (GRI Standards) issued by the Global Sustainability Standards Board
- The United Nations 2030 Sustainable Development Goals (SDGs)

Text Language

This report is available in both Chinese and English. If there is any discrepancy between the two languages, please refer to the Chinese version.

Report Acquisition

The electronic version of this report can be downloaded from the column on the official website of Shougang Co. (<http://www.sggf.com.cn/>).

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Message From Chairman



邱银富

Chairman of Beijing Shougang Co., Ltd.

The 2023 is the first year to fully implement the spirit of the 20th CPC National Congress, and the key year for Shougang Co. to implement the "Fourteenth Five-Year Plan". Shougang Co. actively integrates the ESG concept into the whole process of corporate strategic decision-making and operation and production, continuously optimizes the management and control system for high-quality and sustainable development, builds a solid foundation for corporate governance; The company actively responds to climate change, consolidates the foundation of green and low-carbon development, and adheres to the innovation-driven strategy; The company builds a solid foundation for technology leadership; We further promote the strengthening of the enterprise with talents, consolidate the foundation of human resources; We implement a dual prevention mechanism to build a solid foundation for intrinsic safety; We adhere to the responsible management for the stable industrial chain.

Solid foundation for corporate governance. We continuously optimize the management and control system, comprehensively promoting the corporate governance system construction and improving governance capabilities, which are the cornerstones of high quality development of enterprises. During the reporting period, the company formed a modern governance system characterized by scientific standards, effective checks and balances, ensuring the efficiency and compliance for information disclosure and the operation of shareholders' general meeting, board of directors and supervisory committee. We have established an ESG management structure composed of the Director Board, special committees of the Director Board, and ESG working groups, and improved its foundation. It has innovatively established the business management model of "three compliant repositories", established a complete compliance management system, and became the first enterprise in the steel industry to pass the ISO 37301 compliance system certification.

Make concerted efforts to deepen the foundation of green and low-carbon. Actively carrying out actions to address climate change and implementing green manufacturing and low-carbon routes are the top priorities for the sustainable development of enterprises. During the reporting period, the company actively practiced the ideal of green development, further promoted ultra-low emission control, continued to maintain its leading edge in the industry, passed the review of A-level enterprises in environmental performance, implementing the national dual-carbon strategy, officially released the low-carbon action plan, improved the construction and functional development of the LCA data collection platform and carbon emission management platform, and comprehensively applied

the advantages of low-carbon technologies, and strove to build integrated iron and steel low-carbon product line, so as to continuously improve the competitiveness of products. At the same time, the company continued to focus on environmental management such as energy efficiency improvement, pollution control, clean transportation, and water resource management.

Serious studying, deep thinking, and building a foundation for technological leadership. Innovation is the core driving force of enterprise development. The company has always insisted on promoting technological innovation as the company's first competitiveness, making the "key variable" technological innovation the "largest increment" to promote the company's high-quality development and moving towards a world-class enterprise, and leading the "four manufacturing" with technological innovation to create a comparative competitive advantage. During the reporting period, the company first launched electrical steel products to fill the market gap in the field of medium frequency and low no-load current transformers, the first trial production of pipeline steel for HCNG (Hydrogen enriched with compressed natural gas) met the quality design requirements, the ultra-high strength alloy steel for high-end sawing broke through the bottleneck of production technology, the world's first 100% ultra-thin specification and high magnetic induction oriented electrical steel specialized production line was built by independently integrating a new generation of annular furnace, and the second phase of the lighthouse factory of the Cold-R Co. was launched as scheduled to realize the deepening application of intelligent manufacturing scenarios.

Be solid, step by step, to consolidate the foundation of human resources. Talent is an important force for the sustainable development of enterprises. The company adheres to the goal and ideal that talent is the first development force, and on the basis of respecting talents, paying attention to talents, and developing talents, the company continues to optimize the construction and development system of talent team, establishes a career development system for the career of high-potential talents, and builds a "four horizontal and three vertical" training system for all employees. During the reporting period, the company strengthened the incentives of key core talents, implemented medium and long-term incentives mechanism such as enterprise annuities, equity incentives, and employee stock ownership of Zhixin EM, and cultivated a fertile soil for attracting and retaining talents.

Check erroneous ideas at the outset and build a solid foundation for intrinsic safety. Safety is the red line and bottom line of enterprise development, we adhere to the safety culture as the guide, safety

standardization construction as the main line, taking the "dual control" mechanism as the core, and priority to the essential safety management as the focus, comprehensively promote the modernization of the safety production control system, improve the ability to prevent and resolve safety risks, and strive to promote high-quality development and high-level safety benign interaction. During the reporting period, we made every effort to promote the strategy of "mechanized personnel replacement, automation reduces manpower, and intelligent unmanned" and other scientific and technological safety assistance strategies, took the lead in implementing the construction of an online monitoring and early warning system for safety risks, comprehensively improved the intelligent management and control capabilities of safety risks, and built a solid safety foundation for high-quality development and guarded the draw the line of safety.

Go hand in hand to build a steady supply chain. The security and stability of the supply chain is an important guarantee for the sustainable development of enterprises. The company attaches great importance to supply chain due diligence management, promotes the construction of green supply chain, and creates a responsible supply chain. During the reporting period, the company carried out ESG training for suppliers to enhance the awareness of social responsibility, actively promoted the construction of green supply chain, carried out life cycle assessment of key suppliers' products, scientifically and orderly promoted centralized procurement, established an information-based centralized procurement system, and created an integrated supply chain system platform that is "sunny, transparent, safe and efficient". At the same time, we insist on co-creation and co-construction with customers, build a smart marketing service platform, implement a new model of online and offline integrated marketing services, strengthen the closed-loop management of customer demands, improve customer experience and satisfaction, and establish a three-level service guarantee system to ensure the stable supply of products and effectively help downstream enterprises to smooth operation.

Forge ahead with even greater resolve, adversity makes one stronger. The company will fully implement the new development concept, invigorated full of vigour, adhere to the modern governance, green and low-carbon, science and technology to strengthen the enterprise, talent to strengthen the enterprise, intrinsic safety, upstream and downstream co-creation and co-construction, committed to delivering innovation, Shougang Co. will be built into a steel listed company with global competitiveness and influence.



About Us

Beijing Shougang Co., Ltd. was listed on Shenzhen Stock Exchange in December 1999 (Stock Code: 000959), controlled by Shougang Group, a Fortune Global 500 enterprise.

Shougang Co. owns Shougang Qian'an Iron & Steel Co., Ltd.(Qiangang Co.), Shougang Jingtang United Iron & Steel Co., Ltd. (Jingtang Co.), and controls Beijing Shougang Cold Rolling Co., Ltd. (Cold-R Co.), Shougang Zhixin Qian'an Electromagnetic Materials Co., Ltd. (Zhixin Co.), and other steel entities, with coking, ironmaking, steelmaking, rolling, heat treatment and other complete production lines. We have a complete series of hot-rolled and cold-rolled flat products with complete varieties and specifications, providing customers with high-quality products such as electrical steel, automotive sheet, tinplate, pipeline steel, and household appliance sheet, as well as value-added services such as early vender involvement(EVI).

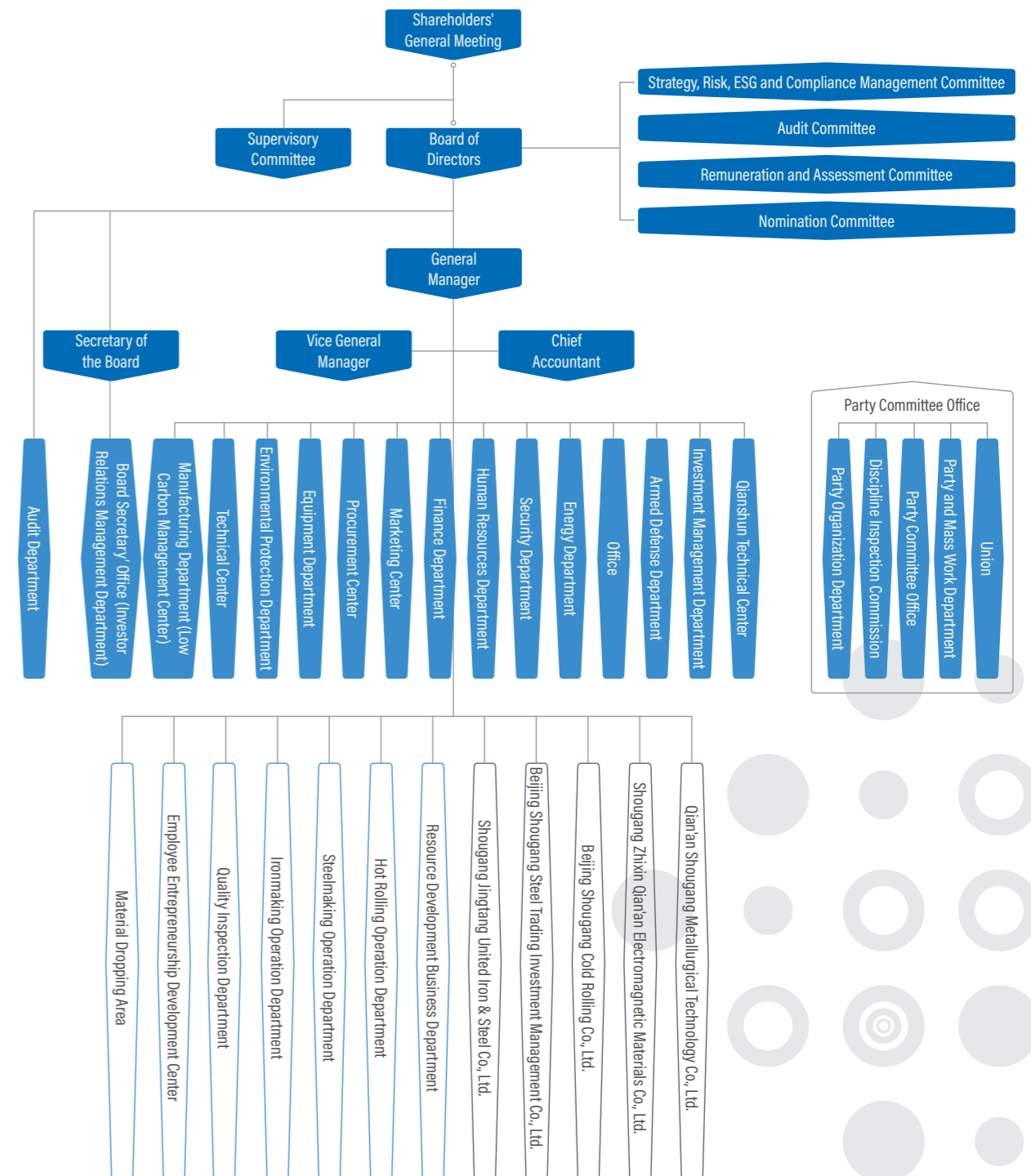
Development strategy

With the strategic focus of promoting and implementing the development goals of the iron and steel industry with strong profitability, strong innovation ability, excellent asset quality, excellent operation efficiency, energy conservation and environmental protection, we will firmly promote the strategy of "green manufacturing, intelligent manufacturing, high-quality manufacturing, lean manufacturing, and precise service", adhere to the two-wheel drive of "capital + operation", and promote the deepening of reform and high-quality development of enterprises. Adhere to the development direction of "quality + service", continue to promote the development of high-end products focusing on electrical steel, automotive steel and tinplate (tin-free plate), continuously improve the service level and operation efficiency of steel material manufacturing, form a number of customer clusters with internationally competitive strategic product, **and strive to build a steel listed company with global competitiveness and influence.**



- Company mission**: people-oriented, strengthen enterprise to serve the country
- Company vision**: to build a steel listed company with global competitiveness and influence
- Core values**: Integrity, Collaboration, Innovation, Sharing
- Customer concept**: customer first, integrity first, meticulous, innovative

Organizational Structure



Company History



1999.12
Successfully listed on Shenzhen Stock Exchange, becoming the first listed company in China to introduce strategic investors, the first listed company to issue shares through a combination of online and offline distribution, and the first listed company to conduct public roadshows.

2007.01
Qiangang Co. Phase II project was completed and put into operation.

2004

2004.10
Qiangang Co. Phase 1 project was put into operation.

2005

2005.11
Completed the stock-reform.

2008

2008.08
Beijing Shougang Cold Rolling Co., Ltd. was established.

2009

2009.12
Jingtang Co. Phase 1 first stage project was fully completed and put into operation.

2018.03
Shougang Zhixin Qian'an Electromagnetic Materials Co., Ltd. was established.

2018

2010

2010.10-2014.04
The mainstream process facilities located in Shijingshan District, Beijing, were shut down and transferred to Qiangang Co.



2015

2015.04
Acquired 51% equity of Jingtang Co.

2020

2020.06
Acquired 51% equity of Beijing Shougang Steel Trading Investment Management Co. Ltd. (Steel Trading) through asset exchange.

2021

2021.07
Acquired 19.1823% equity of Jingtang Co.

2022

2022.03
Acquired 49% equity of the Steel Trading.



Honors in **ESG**

- ★ "Sharing Ultra-Low Emission Technology Project" won the Securities Daily "2023 ESG Innovation Practice Case of Listed Companies" award
- ★ Awarded as "AAA Class ESG Enterprise in China's steel industry"
- ★ Rated as "A-level enterprise in environmental performance"
- ★ Awarded the "Steel benchmark enterprise for green development"
- ★ National Water Efficiency Leading Enterprise and Demonstration Enterprise of Industrial Wastewater Recycling and Utilization
- ★ Awarded the honorary title of "Advanced Group in Organizing and Promoting the Three-Year Action of Energy Efficiency Benchmarking for the Iron and Steel industry Ultimate Energy Efficiency Project in 2023"
- ★ Qiangang Co. No.7 air compressor station was awarded as "Class A Energy Efficiency Compressed Air Station".
- ★ Jingtang Co.'s "combustion-heat-electricity-water-salt" five-effect integrated high-efficiency recycling system won the 11th Mother River Award for Green Projects
- ★ Jingtang Co. was awarded as pilot demonstration unit for the construction of carbon management system in Hebei Province
- ★ Zhixin Co. was honored as "Science and Technology Reform Action Demonstration Enterprise"
- ★ Zhixin Co. won the 2023 Hebei Provincial Green Factory
- ★ Cold-R Co. was awarded as an excellent nature protection supporter
- ★ Passed the carbon certification of the International Certification Body (SGS)
- ★ Multiple products were awarded as "Green Design Products"
- ★ Awarded as "National Advanced Metallurgical Greening Unit"
- ★ Passed the occupational health and safety system and HSE management system certification of Classification Society
- ★ "Best Service Provider Award" by BMW Brilliance
- ★ "Genuine Partner Award" by Great Wall Motors
- ★ "Quality Excellence Partner Award" by NIO
- ★ Shougang-BMW Joint Studio was awarded the Beijing Industrial (National Defense) Trade Union Innovation Studio Alliance
- ★ Quality Inspection Department's Chemical Analysis Laboratory was honored with the "2023 National May Day Women's Model Post"
- ★ Xu Fang was awarded the "National May Day Labor Medal" and "National May Day Women's Model Post"
- ★ Huang Fuxiang won the "2023 Capital Labor Medal"
- ★ Rong Yanming was awarded the "Great Craftsman of Beijing"
- ★ Xu Houjun and Zhang Weizhong were awarded the "National Craftsmen in the Machinery and Metallurgical Building Materials Industry"

Figures for **2023**

3 shareholders' general meetings

10 meetings of board of directors

8 meetings of supervisory committee

Information disclosure 33 times

Information disclosure accuracy rate: 100%

Publicly disclosed 155 documents

Audit coverage rate: 100%

100% synchronous operational rate for environmental protection equipments

100% compliance rate in pollutant discharge

Total investment in environmental protection in the past 5 years: 4,701 million yuan

Clean transportation ratio reached 89.46%

General industrial solid waste recycling rate 100%

Hazardous waste recycling rate: 99.25%

The greening rate of the factory area: 100%

6 debut products

Signing rate of labor contracts: 100%

Social insurance coverage rate: 100%

Proposals response rate: 100%

Training coverage: 100%

Incidence rate of occupational diseases: 0%

The coverage rate of safety training for employees and related parties: 100%

Online procurement proportion: 100%

2 patents were awarded the Excellent Prize of the 24th China Patent Award

Won 21 provincial and ministerial level scientific and technological awards

Focus 1



Green Pioneers

—Environmental Protection and Low Carbon Lead Sustainable Development

Our environmental protection level continues to maintain the leading position in steel industry

Shougang Co.'s ultra-low emission management continues to maintain its leading position in steel industry. Completed 70 key tasks such as advanced treatment of sintering machine, hot-air stove, heating furnace, and end treatment of generator set, and successfully passed the review of A-level enterprise in environmental performance.

Expand knowledge

"A" is the highest level in environmental performance rating. A-level enterprises in environmental performance adopt independent arrangement-production in accordance with environmental control requirements during the emergency response period of heavy pollution weather.

Low-carbon action

With the goal of building a leading force in low-carbon technology in the future, Shougang Co. released the "Shougang Co., Ltd. Low-carbon Action Plan" through extensive research on the carbon reduction path of the steel industry at home and abroad. We will continue to promote LCA research, and improve the construction and function development of LCA data collection platform and carbon emission management platform. The company and its subsidiaries completed the EPD release of hot-rolled sheet and steel strip products, cold-rolled steel sheet and steel strip, hot-dip zinc-aluminum-magnesium(low aluminum) alloy coated steel sheet and strip products. The company has passed the carbon certification of the International Certification Body (SGS), and the first batch of "double carbon" best practice energy efficiency benchmarking demonstration plant cultivation enterprises are on the list, and won the title of "National Advanced Unit of Metallurgical Greening". Oriented electrical steel, pipeline steel, non-oriented electrical steel for new energy vehicles, hot-rolled high-strength steel sheet and steel strip for automobiles and other products were awarded as "Green Design Products List".

Shougang Co. Low-carbon Action Plan

By 2025

Our total carbon dioxide emissions will peak, and some products will have the ability to reduce carbon emissions by **60%**.

By 2030

The company's low-carbon product lines will have the ability to reduce carbon dioxide emission intensity per tonne of steel by **30%** compared with 2020

By 2035

Total carbon dioxide emissions will decreased by **30%** with their peak

From 2050 to 2060

We will strive to achieve the goal of **carbon neutrality**

Low-carbon technology practices

In the blast furnace/ basic oxygen converter process, the application of high-proportion pellets in blast furnace and low-carbon technology in large-proportion scrap in converter have been carried out, and it has achieved mass production capacity of comprehensive carbon emission reduction of 40% or more for automotive steel products.

Advancing ultimate energy efficiency

The coking process energy efficiency is better than the benchmark value, and the blast furnace and converter processes reached the energy efficiency benchmark value in stages. Air Compressor Station No. 7 has become the first first-class energy efficiency standard air compressor station in steel industry.



Focus 2

首钢高性能取向硅钢项目全流程贯通热试成功



Technology Leader
— Persisting in Technological Innovation and Wining Market Recognition

Shougang Co., Jingtang Co., Zhixin Co. and Cold-R Co. are all high-tech enterprises. In terms of technological innovation adheres to the benefit-oriented and demand-oriented, relying on the "one research institute and multiple R&D centers" R & D system, deepening the technical research projects, optimizing the expert workstations, and building a solid platform for external cooperation. Incubation and efficiency creation of new products, new technologies and new processes are accelerating.

New product R&D

We realized the debut of 6 new products, including 15SQF1250 oriented electrical steel, ESW1021 non-oriented electrical steel, and 980TBF high-strength automotive steel. Among them, 15SQF1250 is a new product of medium frequency oriented electrical steel for the future, which provides key core materials for the new DC convergence technology of new energy power generation such as wind power and PV, to meet the requirements of large capacity, high energy efficiency, high safety and low noise under complex working conditions in the electric power industry; High-strength and low iron loss non-oriented electrical steel ESW1021 contributes to the high-quality development of high-speed motor industry; Hot-dip galvanized high-strength steel 980TBF meets the demands of the automotive industry for higher strength and better forming properties of body structure parts. We focus on solving bottlenecks in the steel industry, and continue to promote "import substitution" with 26 localization projects, resulting in the supply of 80,000 tonnes.

Breakthroughs in key process technologies

The company initiated the process and equipment technology for cold continuous rolling of high-grade electrical steel using a 6 stands 6 highs rolling mill, realizing breakthroughs in the continuous rolling of non-oriented electrical steel for new energy automobile drive motors and oriented electrical steel for energy-efficient transformers, with 96% of the products having a lateral thickness difference less than or equal to 5 μm, which is a leading level in the world; The company initiated the multi-mode continuous cast-rolling process of hot rolled ultra-thin and high-strength steel strip, realizing the efficient endless production of 980MPa grade products with 1.1mm thickness, enhancing the rolling efficiency of thin-specification and high-strength strip and improving the flexibility of production organization.

Patent licensing

The company obtained 685 patents licenses, including 229 invention patents. The "A Method and Device for Determining the Transmission Torque of Cold Rolling Mills" and "A Non-Oriented Electrical Steel and Its Preparation Method & Application" patents of Zhixin Co. were awarded the 24th China Patent Award of Excellence, and the patent "A Method of Manufacturing Low Temperature High Magnetic Susceptibility Silicon Steel with Excellent Bottom Layer" was awarded the 1st Hebei Provincial Patent Award of Excellence.

Standard formulatin

We participated in the formulation and release of 21 international, national, industry and group standards.

Science and Technology Award

The company has won 21 science and technology awards above the provincial and ministerial levels, and 8 provincial management innovation awards. Among them, "Key Technologies and Applications for Manufacturing Dual Phase Steel with Enhanced Formability" and other 6 projects won the first prize of Metallurgical Science and Technology Award, "New High-Performance Weather Resistant Bridge Steel And Application Key Technology" won the first prize of Hebei Provincial Science and Technology Award, "Product Development and Operation Management of High-end Electrical Steel for Steel Enterprises to Build Global Competitiveness" won the first prize of the Enterprise Management Modernization Innovation Achievements.



Focus 3



Safety Escort

— Building Solid Safety Dams and Continuously Reducing Hidden Dangers

Since 2023, Shougang has always followed the spirit of General Secretary Xi Jinping's important instructions on production safety, adhered to the guidance of safety culture, standardized and guided the construction of safety standardization, moved the gate forward with the construction of "dual control" mechanism as the core, focused on essential safety management, improved production efficiency and reduced risks, comprehensively promoted the modernization of safety production control system and ability, and improved the ability to prevent and resolve safety risks. Build a safety embankment with higher positions, higher standards, stricter requirements, and boosting high-quality development of Shougang Co.

New achievements have been achieved in the implementation of the main responsibility

Adhere to the integrated management and control of goals, indicators and responsibilities, the company has clarified 95 control indicators, formulated 442 work measures, refined 792 work tasks, formed 26 evaluation standards, established an evaluation mechanism, and promoted the implementation of annual key work.

New breakthroughs have been made in the construction of the "dual control" mechanism

367 large risk points such as the temperature of the hot stove top were included in the scope of monitoring, so as to realize the automatic early warning of larger risks. The company has developed the automatic identification model of 8 monitoring screens, such as initial fire identification and liquid oxygen loading and unloading, so as to effectively improve the intelligent management and control.

New situation have been created by intrinsic safety management

Focusing on bottlenecks such as gas, fire protection, and limited space, through a series of technical measures such as mechanized personnel replacement, automation reduces manpower, and intelligent unmanned, 371 essential safety management breakthroughs were deeply promoted, and the total safety risk value was reduced by 10% year-on-year.

In 2023, the safety management of Shougang Co. showed a new atmosphere, the essential safety management number of projects was the largest in the history, the concept of essential safety management for all employees was more solid, a number of high-risk operation projects were tackled, a number of efficiency improvement and risk reduction achievements were achieved, a batch of advanced experience that can be replicated and promoted was formed, 76 national patents were declared, and the project "Exploration and Application of the Construction of Essential Safety Management System for Metallurgical Enterprises Based on Lean Management Thinking" developed by independent innovation won the second prize of safety science and technology progress of China Safety Production Association.

From November 14th to 15th, 2023, the inaugural meeting of the Metallurgical Member Safety Alliance of Hebei Emergency Management Research Association and the launching ceremony of the first activity of the Metallurgical Professional Salon were held in Shougang Co. The company, as the first rotating director unit of the safety alliance, actively targeted the new positioning of the country, the new requirements of laws and regulations, the new situation of the industry, and the new expectations of members, comprehensively promoted mutual learning of safety management experience, mutual integration and exchange of safety culture, and strived to build a new pattern of win-win situation between the construction of safety alliance and the safety development of enterprises.





01 Governance: Strengthening the Foundation of Governance

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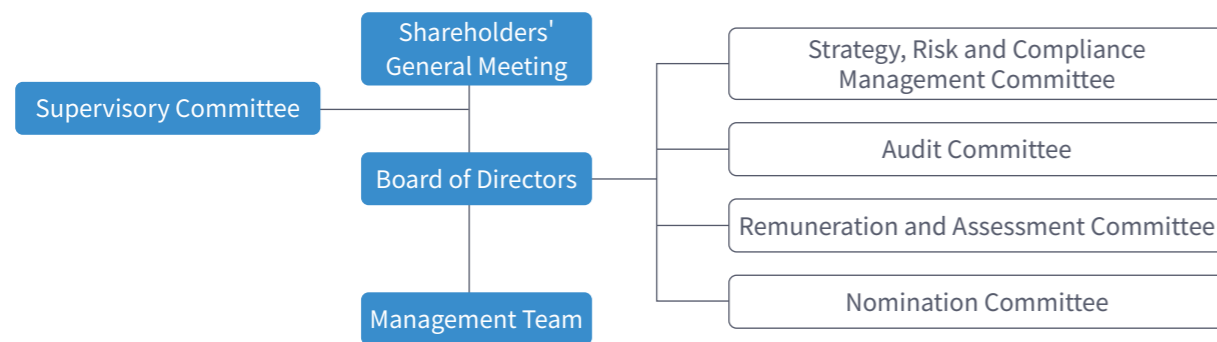


Corporate Governance

Good corporate governance mechanism is the key to long-term, stable and sustainable development of a company. Shougang Co. has established a standardized and orderly corporate governance structure in accordance with the requirements of relevant laws, regulations, rules, and normative documents such as the *Company Law of the People's Republic of China*, the *Securities Law of the People's Republic of China*, the *Code of Corporate Governance for Listed Companies*, and *Listing Rules of Shenzhen Stock Exchange*. We have also formed a modern governance system characterized by scientific standards, effective checks and balances, ensuring the efficiency and compliance for information disclosure and the operation of shareholders' general meeting, board of directors and supervisory committee.

Governance Structure

The Shareholders' general meeting, board of directors, supervisory committee, and management of Shougang Co. all fulfill their responsibilities, highly coordinate, and fulfill their duties diligently.



Governance Structure

Shareholders' general meeting.The shareholders' general meeting is convened and held in strict accordance with the *Articles of Association*, the *Rules of Procedure for General Meetings* and relevant regulations. All shareholders, especially small and medium shareholders, have equal rights and fully exercise their voting rights. In 2023, 3 shareholders' general meetings were held, and 18 proposals were passed after deliberation.

Board of directors. The company is committed to improving the diversity of the board of directors. The directors possess rich knowledge and experience in various fields such as law, technology, finance, and management, who are diverse in terms of professional skills, industry experience, age, gender and seniority.

The company is committed to improving the independence of board decision-making and governance. The nomination and election of independent directors are in accordance with relevant laws, regulations and the *Articles of Association*, and there is no company relationship affecting its independence. Independent directors, based on their professional expertise, issue the opinions on major matters such as periodic reporting, profit distribution, change of directors, related party transactions. The Audit Committee and the Remuneration and Assessment Committee are consist of independent directors entirely.

Shougang Co. held **10** meetings of board of directors

47 proposals were passed after deliberation

The board of directors has **8** directors

of which, **4** independent directors

Note: For more details about the changes in the board of directors during the reporting period, please refer to the Beijing Shougang Company Limited Annual Report 2023.

8 meetings of supervisory committee were held

30 proposals were passed after deliberation

The supervisory committee has **5** supervisors

of which, **2** employee supervisors

2 female supervisors

The board of directors has established four specialized committees: the Strategy, Risk, ESG and Compliance Management Committee, the Audit Committee, the Remuneration and Assessment Committee and Nomination Committee. With a highly responsible attitude to shareholders, each committee exerts its own professional advantages in strategic development, major investment, financial audit, executive compensation and performance appraisal, etc., providing strong support for the scientific decision-making of the Board of directors.

Supervisory Committee.The supervisory committee is responsible for supervising the company's financial condition, major matters, and the legal compliance of directors and senior executives, and providing independent opinions and suggestions, to safeguard the legitimate rights and interests of the company, shareholders and creditors, and guarantee the healthy development of the company.

Institutional System

Shougang Co. continued to deepen standardized operations and strengthen scientific corporate governance, periodical carrying out system formulation and revision, system evaluation and system special inspection, and continuing to improve the subordinate unit management system. In 2023, the company has formulated 20 systems such as *Management Evaluation System for Personnel Sent Abroad to Equity Participation and Controlling Enterprises*, *ESG Work Management System*, and revised 72 systems such as *Independent Director System*, *Rules of Procedure of the Board of Directors*, *Information Disclosure Management System* and *External Strategic Cooperation Agreement Management System*, and carried out the special lecture training of the system management and subsidiary system construction; as of the end of 2023, the company has a total of 495 systems, of which 491 are formulated and implemented by the company and 4 are forwarded to the government and regulatory agencies. For the core management process, the company continues to carry out system evaluation and inspect the implementation of rules and regulations; At the same time, special inspections of the system will be carried out to promote the standardized operation of the system.

ESG Management

Shougang Co. is committed to becoming a scientific and technological pioneer of environmental protection in the global steel industry, a demonstrator of ultra-low emission, a pacesetter of low-carbon development, a promoter of industrial synergy, a leader in the construction of ecological civilization, and a builder of a better society.

ESG Management Structure

The company has systematically planned ESG management and established an ESG management structure consisting of the Board of Directors, the Strategy, Risk, ESG and Compliance Management Committee of the Board of Directors and the ESG Working Group. Among them, the board of directors, as the top decision-making body for ESG management, considers and approves the company's ESG objectives and plans, and the issuance of ESG reports, etc. The Strategy, Risk, ESG and Compliance Management Committee of the Board of Directors provides decision-making and consulting support for the Board of Directors in ESG management, and researches and proposes matters such as the company's ESG objectives and plans, and the ESG reports, etc. The ESG Working Group is the executive body of the ESG management; The ESG Working Group is the executive body of the ESG management work, headed by the general manager of the company and composed of members including the leadership team of the company, and is responsible for the overall coordination and implementation of the ESG management work.



Stakeholder Communication

Shougang Co. has strengthened its communication with stakeholders such as the government, regulatory bodies, investors, customers, employees and communities, and has established various channels for daily and special communication with each stakeholder in order to comprehensively understand the demands and expectations of stakeholders to realize common development.

Stakeholders	Topics	Communication and Response
Shareholders and Investors	<ul style="list-style-type: none"> Corporate governance ESG management Anti-corruption Compliance management Risk management Business ethics Climate change response 	<ul style="list-style-type: none"> General shareholders meeting / extraordinary general shareholders meeting Performance briefing On-site investigation Investor communication (Interactive Easy Platform, etc.) Information disclosure Compliance with laws and regulations
Employees	<ul style="list-style-type: none"> Diversity and equal opportunities Employee compensation and benefits Employee care and satisfaction Employee career development and training Occupational health management Work Safety management 	<ul style="list-style-type: none"> Employee representative conference Various employee activities Meetings and training Employee performance assessment Shougang Sincere Friend app Help for employees in need Employee satisfaction survey
Customers	<ul style="list-style-type: none"> Product quality management Information security and privacy protection Quality service and complaint handling Responsible marketing Technological innovation Green products Intelligent Manufacturing 	<ul style="list-style-type: none"> Customer satisfaction survey Customer on-site representative Green production R&D innovation Joint laboratory, innovation studio alliance
Suppliers	<ul style="list-style-type: none"> Risk prevention and control Compliance management Sunshine procurement 	<ul style="list-style-type: none"> Supplier qualification audit Industry benchmarking Exchange and visit Conflict mineral claim Commitment letter Fair competition and elimination of commercial bribery
Government and regulatory agencies	<ul style="list-style-type: none"> Serving national major strategies Environmental management system Energy management Water resource management Wastewater discharge Exhaust gas emission Waste disposal Biodiversity 	<ul style="list-style-type: none"> Daily communication and reporting On-site surveys Information disclosure Compliance with laws, regulations, and policy learning Acceptance of regulatory inspections
Community organizations, non-governmental organizations	<ul style="list-style-type: none"> Public welfare activities 	<ul style="list-style-type: none"> Public welfare activities Information disclosure
Industry partners, industry associations, and research institutions	<ul style="list-style-type: none"> Technological innovation Industry development and win-win cooperation 	<ul style="list-style-type: none"> Industry communication Seminars and forums Joint laboratories and expert workstation
Media	<ul style="list-style-type: none"> Information disclosure 	<ul style="list-style-type: none"> Strengthen communication and exchanges with the media Timely disclosure of important information, news Acceptance of media interviews

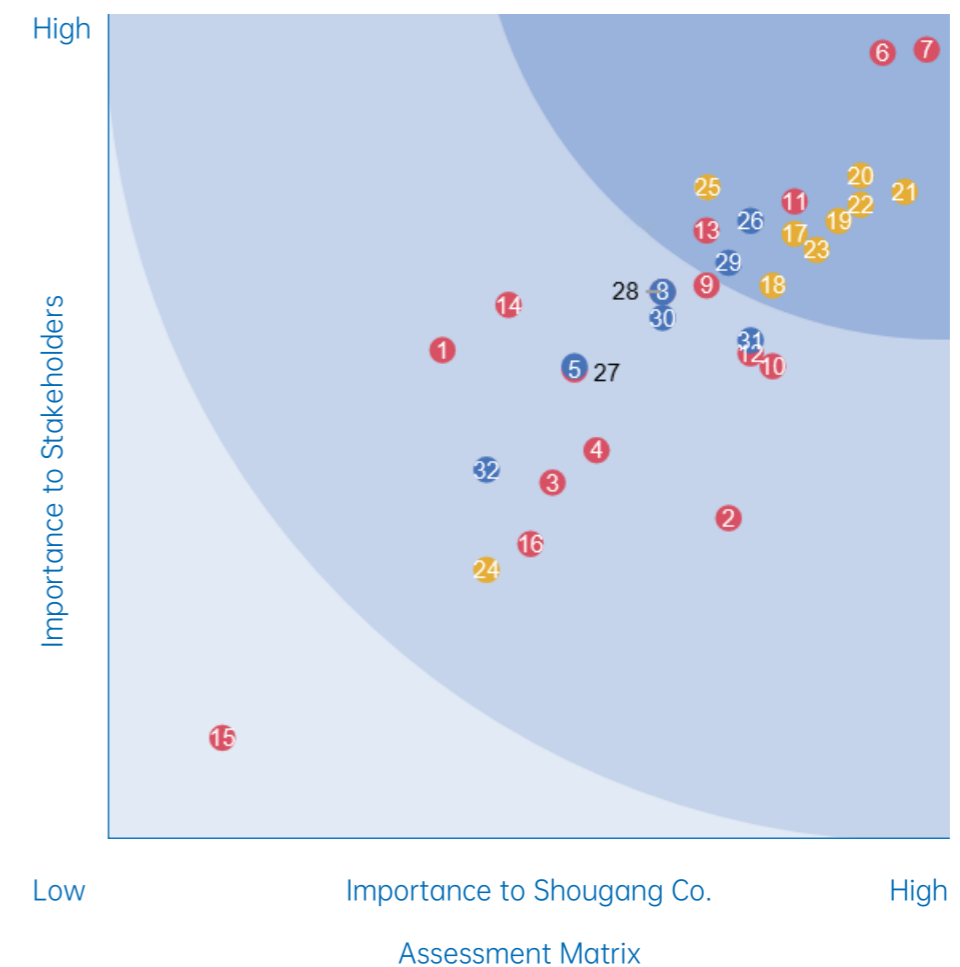
Material Issues Analysis

In 2023, Shougang Co. continued to work on the identification of ESG material issues, as well as the assessment and screening of the issues. The management and practice performance of the 14 material issues identified are disclosed and responded to accordingly in this report.

Issues identification: Based on the comparative analysis of macro policies, industry policy trends and regulatory requirements, ESG development practices of peers, as well as the company's business and development objectives, 32 substantive issues of significance or impact to the company and stakeholders were identified.

Issues assessment: The actual and potential impact of these issues on Shougang Co. were assessed through online questionnaires and on-site research with key stakeholders. A total of 905 valid questionnaires were collected.

Issues screening: Based on the issues evaluation results, a substantive issues analysis matrix is constructed to obtain the ranking results of high and low importance of issues, and the report focuses on disclosing the issues with high importance. 14 highly important issues are screened in 2023, including 8 environmental issues, 4 social issues and 2 governance issues.



Material Issues List		
Classification	No.	Issue
Society	6	Work safety management
	7	Product quality management
	11	Technological innovation
	13	Responsible supply chain
	17	Environmental management system
Environment	18	Energy management
	19	Water resource management
	20	Waste water discharge
	21	Exhaust gas emission
	22	Waste disposal
	23	Climate change response
	25	Green products
Governance	26	Corporate governance
	29	Anti-corruption
	26	Corporate governance
	27	ESG management

1	Diversity and equal opportunities	2	Employee compensation and benefits	3	Employee care and satisfaction
4	Employee career development and training	5	Occupational health management	6	Work safety management
7	Product quality management	8	Information security and privacy protection	9	Quality service and complaint handling
10	Responsible marketing	11	Technological innovation	12	Intelligent Manufacturing
13	Responsible supply chain	14	Industry development and win-win cooperation	15	Public welfare activities
16	Serving national major strategies	17	Environmental management system	18	Energy management
19	Water resource management	20	Waste water discharge	21	Exhaust gas emission
22	Waste disposal	23	Green products	24	Biodiversity
25	Climate change response	26	Corporate governance	27	ESG management
28	Business ethics	29	Anti-corruption	30	Compliance management
31	Risk management	32	Information disclosure		

Case: ESG training meeting

In order to enhance employees' knowledge and understanding of ESG and strengthen ESG management and practice, Shougang Co. organized and held an ESG training meeting on June 30, 2023, released the ESG work promotion plan, which was attended by more than 100 persons, including relevant leaders of the company, heads of relevant departments and professional managers.

At the meeting, experts made a thematic training report on "ESG Megatrend and Best Practices in Iron and Steel Industry under the Dual Carbon Goal" focusing on the status quo of ESG development in the iron and steel industry and the practices of excellent enterprises, which helped the employees to better understand and recognize the importance of ESG to the sustainable development of enterprises, and learn about the ESG practices of excellent enterprises. Com;any issued the *ESG Work Promotion Program of Shougang Co.* to systematically sort out ESG work, further clarify the management responsibilities of each specialized department, and ensure the implementation of ESG work.



ESG Management Improvement

Shougang Co. continues to strengthen its ESG management by formulating ESG work systems, managing ESG risks, participating in the development of ESG standards, conducting ESG training and ESG management of suppliers.

ESG work systems. The company has formulated the *ESG Work Promotion Program of Shougang Co.* and the *ESG Work Management System*, revised the *Work Regulations of the Strategy, Risk, ESG and Compliance Management Committee of the Board of Directors*, and clarified the responsibilities of ESG management work of the specialized committees and departments.

Participate in standards formulation of ESG. The company participated in the formulation and release of the two group standards "*Environmental, Social and Governance (ESG) of Iron and Steel Enterprises Part 1 Information Disclosure*" and "*Environmental, Social and Governance (ESG) of Iron and Steel Enterprises Part 2 Evaluation Requirements*", which deepened the company's understanding of ESG, raised the level of attention paid by iron and steel enterprises to ESG management, and facilitated the iron and steel industry in enhancing its ability to develop in a sustainable manner.

Implement ESG training. The company actively participates in ESG management training and seminars organized by industry associations and ESG professional institutions, covering ESG management, carbon emission rights, information disclosure, etc.; It has organized many online and offline ESG-related trainings on information disclosure, compliance management, dual-carbon planning routes, etc., with a cumulative total of more than 13,000 attendees.

ESG management of suppliers. The company attaches great importance to suppliers' performance in environmental, social and governance (ESG) aspects. It promotes suppliers to better manage their environmental, social and governance impacts by incorporating ESG factors in their management systems, signing commitment letters, promoting suppliers to establishment of social responsibility management systems, and organizing and conducting ESG training for suppliers.

ESG Honors

- "Sharing Ultra-Low Emission Technology Project" was selected as "2023 ESG Innovation Practice Case of Listed Companies" by Securities Daily
- Awarded as "AAA Class ESG Enterprise in China's steel industry"



Integrity Ecology

Shougang Co. conducts business cooperation with a professional, honest, and integrity attitude, strictly adhering to the highest standards of business ethics to ensure integrity in operations. We respect the principles of market competition and actively promote and maintain a fair and free market competition environment. We firmly oppose unfair competition, monopoly, and money laundering, and carry out comprehensive management in areas such as anti-monopoly and anti-money laundering. We attach importance to and continuously cultivate an integrity corporate culture, firmly resisting any form of corruption, and are committed to creating a healthy business ecosystem. In 2023, the company did not receive any penalties related to business ethics.

The company continues to strengthen the construction of integrity, build and constantly improve the "personal prevention, technical prevention, systematic prevention+culture" integrity risk prevention system, continue to tighten the fence of the system. According to the work requirements of the higher authorities, combined with the actual situation, the company has formulated and issued the *Anti-corruption and Integrity Education and Training System, Management System of Position Rotation for Personnel with Business Disposal Rights, Measures for Testing the Knowledge of Clean Government Laws and Regulations for the Pre-service of the Leadership, Management System of Party Members' Accountability for Disciplinary violations, System of Handling Employee Irregularities* and other rules and regulations, which are strictly enforced in the daily business management of the enterprise and improved in a timely manner to provide a fundamental guideline. In 2023, the proportion of operations that have undergone corruption risk assessment was 100%.

Reporting channels:

The company has established a "four-in-one" letter reporting channels, including letters, visits, online and telephone, strictly enforcing the *Rules for Supervision and Discipline of Discipline Inspection Organs of CPC*, and seriously investigating and handling clues to problems, and maintaining a strict keynote at all times.

Case: Establish the the concept of integrity and carry out integrity activities

The company carries out a rich variety of integrity activities to cultivate a new style of clean era, and firmly "officer and clean integration, diligence and integrity as one" concept of integrity. We organized the fourth integrity culture month activities, by carrying out the collection of clean brand name and LOGO, speech contest, calligraphy and painting exhibition, film advocating cleanliness, signing a commitment, learning forum, clean knowledge contest and other 8 activities, collect all kinds of calligraphy works more than 350 pieces, clean brand LOGO 28, to participate in the preliminary round of the knowledge contest and the number of people in the speech contest of more than 4,000 persons. So as to guide party members, cadres and the majority of workers, family members to cultivate themselves, integrity and family, to promote comprehensive anti-corruption building foundation.



The company compiled and printed *Discipline and Violation Warning Case Collection*, selected 28 cases, divided into four chapters such as the spirit of the eight provisions of the Central Committee and the chapter of the crime, with a profound analysis, an in-depth explanation of the underlying reasons behind the case. We organize the party branches of the sector to study, enhance the party members and cadres respect for the law and discipline,



The company organizes and carries out many activities for families to assist integrity, constantly strengthens the integrity concept, encouraging families playing an important role in the education of fight against corruption and advocating cleanliness, and jointly constructs a line of defense for families and enterprises to resist corruption. We organize and convene the annual conference on integrity co-construction, representatives of owner units and business collaborators exchange speeches on the practices and suggestions of integrity co-construction work, and all business collaborators fill out the questionnaire on Shougang Co.'s integrity co-construction, continuously strengthen the cooperation and co-construction between Shougang Co. and related parties in the field of integrity, and promote the establishment of integrity, honest and win-win cooperative relationship.



We in-depth study and implement the Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era. The company incorporates anti-corruption education and training, insisting on the inclusion of the relevant contents of integrity study in the theoretical study group of the Party committee and the meeting of the basic Party committee secretaries, organizing and carrying out the activities of integrity education, legal education, etc., realizing the full coverage of the Party members' leading personnel and the personnel in the positions of business disposal, and the training of the total number of employees reached more than 10,000, accounting for more than 50% of the total number of employees. The company organizes and carries out key external personnel integrity education training courses, each unit in charge, key external-related positions with business disposal rights and

party members and cadres of more than 80 persons to participate in, through lectures, on-site teaching, video learning, group seminars, integrity testing, writing experience, etc., to comprehensively enhance the awareness of party members and cadres of integrity, to create a clean cadre. Jingtang Co. carried out "Integrity Class" education and training for 33 sessions, amounting to more than 2,700 persons, designing different education and training programs according to different groups of people, setting up more than 10 training topics, opening high-quality courses. The company has given 6 lectures on Party rules and discipline and minor corruption in the rotational training class for grass-roots leaders, and carried out disciplinary education in the model training classes for party members, team leaders, and grass-roots managers of tinsplate plant, so as to make the discipline and rules clear.

Shougang Co. has deeply carried out the work of co-construction for integrity with business partners. In terms of supplier access, it requires the signing of the *Commitment Letter of the Code of Conduct for Business Partners*, and sends the *Notice Letter of co-construction for integrity* to suppliers on important holidays every year, so as to jointly build a clean cooperation relationship with business partners.



Risk Management

Shougang Co. takes compliance with laws, regulations and social norms as a prerequisite for sustainable development of the enterprise, fully implements the construction of the rule of law and builds a compliance management system. The company has established a standardized and effective risk management and internal control system, and continuously improves its risk prevention capability to ensure the safe and sound operation of the company.

Compliance Management

Shougang Co. firmly establishes the awareness of whole-process compliance management, regards legal compliance operation as the fundamental for the survival and development of the enterprise, and continuously improves the ability of compliance operation. According to the internal compliance management system standards, Shougang Co. has defined compliance policies and objectives, improved the compliance management organizational structure and responsibilities, comprehensively reviewed the compliance risk database, formulated compliance operation and guarantee mechanisms, and evaluation and improvement management systems, and established a complete compliance management system with "strengthening internal control, preventing risks and promoting compliance".

In April 2023, Shougang Co. passed the certification of compliance management system GB/T 35770-2022/ISO 37301:2021 standard. We are the first enterprise in the domestic iron and steel industry passed the certification of compliance management system. In 2023, the company did not incur any major non-compliant incidents such as legal sanctions, regulatory penalties, significant property losses, and reputation damage.

Governing the company in according with law and regulations to ensure compliant operation in all aspects, and fulfill compliance obligations

Enhancing responsibility to ensure compliance for everyone, and foster a compliance culture



Advancing prevention and control to ensure compliance in all time, and standardize management

Pursuing excellence and continuous improvement to build corporate brand

Case: Audit 100% coverage

Audit scope covers **100%** of the total assets in the consolidated statements

In 2023, the company adhered to the guidance of Xi Jinping's Thought of Socialism with Chinese Characteristics for the New Era, implemented the spirit of General Secretary Xi's important speech in the twentieth Central Audit Committee, taking promoting business operations in accordance with laws and regulations as management concept, closely around the key tasks of the company highlight key points, serving the overall situation, preventing the risks, solving the difficulties, and strictly implementing the risk assessment work.

All departments and subsidiaries of Shougang Co. carry out risk self-inspection in accordance with the principle of comprehensiveness, and the Audit Department evaluates the key business areas of the company in accordance with the principle of materiality, including procurement management, investment management, inventory management, sales management, outsourcing, financial management, and social responsibility; The evaluation of key areas of subsidiaries includes governance structure management, procurement management, sales management, money and capital management, contract management, inventory management, outsourcing, legal affairs management, and engineering project management.

During the reporting period, the audit scope covers 100% of the total assets in the consolidated statements. There were no corruption issues, no penalties related to business ethics.

Compliance Management System Certification

Passed the standard Certification of Compliance Management System GB/T 35770-2022/ISO 37301:2021

'Innovation and Practice of "Four-in-One" Procurement Whole Process Compliance Management of Iron & Steel Enterprises' won First Prize of Metallurgical Enterprise Management Modernization Innovation Achievements.



Compliance management system. The company continues to strengthen the construction of compliance system and has established an organizational structure for compliance management consisting of the Board of Directors, the Compliance Working Group, the Office of the Secretary of the Board of Directors, as well as various business departments and supervisory departments; The company has innovatively established the business management model of "Three Compliance Databases ", forming a compliance management system with the basic compliance management system as the core, supported by special management measures and management guidelines in key areas, providing institutional support for compliance management. The company has formed a systematic and standardized compliance guideline system by compiling special compliance management guidelines and organizing regular compliance management system reviews to continuously improve the compliance management system.

Organizational Structure

Decision-making level: Board of Directors, the highest responsible organization of the company's compliance management system, carries out compliance work. With the purpose of ensuring the company's compliance operation, it carries out top-level design and solves the problem of power allocation in compliance management work.

Management level: Compliance Working Group, the promotion management organization of compliance management system, is responsible for allocating sufficient resources to establish, develop, implement, evaluate, maintain and improve the compliance management system.

Execution level: Board Secretary Office is the comprehensive department of compliance management; Departments of Business are the main responsible department of the compliance management system and the implementation organization of specific work; Audit Department and Discipline Inspection Commission is the supervision department of compliance management.

Compliance operation mechanism. The company has established a compliance risk identification and evaluation mechanism based on business units and specialties, and implemented compliance risk classification control and management; The company carries out identification and evaluation of laws and regulations and compliance obligations, and establishes company level three file libraries including *Laws and Regulations Library*, *Compliance Obligations Library* and *Compliance Risk Library* to ensure that the company always follows the requirements of the latest regulations; The company organizes the departments in charge of key areas to formulate special compliance programs and explore typical practices, and at the same time strengthens the construction of compliance systems in subordinate units; The company establishes a legal information system and a dynamic feedback and reporting mechanism for compliance issues.

Compliance management supervision. The company has established a three-tier supervision mechanism of self-inspection by the department in charge of compliance, special inspection by the comprehensive department of compliance management, and supervision and inspection by the supervisory department, which is organically integrated with the company's management related to risk control and internal control to realize strengthening of internal control, preventing risks and promoting compliance.

Fostering compliance culture. The company continuously improves the breadth and depth of compliance publicity through propaganda months, knowledge quizzes, special compliance training, rule of law auditorium training, focused dissemination by We Media, and the signing of the "Compliance Commitment" by all employees, etc. Meanwhile, the company actively participates in compliance management training organized by the industry associations, and encourages compliance administrators to obtain qualification certificates, so as to create a strong compliance atmosphere of "everyone always complies with everything" and make every employee a practitioner of compliance management and a promoter of compliance construction. In 2023, the company carried out activities such as legal institutions and enterprises co-construction, "Civil Code Propaganda Month", Constitution Propaganda Week, and online compliance knowledge quiz, etc., to enhance the concept of the rule of law for the employees, strengthen the awareness of compliance, and create a strong atmosphere of learning the law, understanding the law, and abiding by the law.



Constitution, Civil Code Publicity



Special Compliance Training

Case: Propaganda and implementation of the compliance system

On November 1, 2023, Shougang Co. held a conference to promote the compliance system, with a total of more than 100 persons attending the conference, including members of the leadership team of the company and its holding subsidiaries, as well as persons in charge of relevant departments.



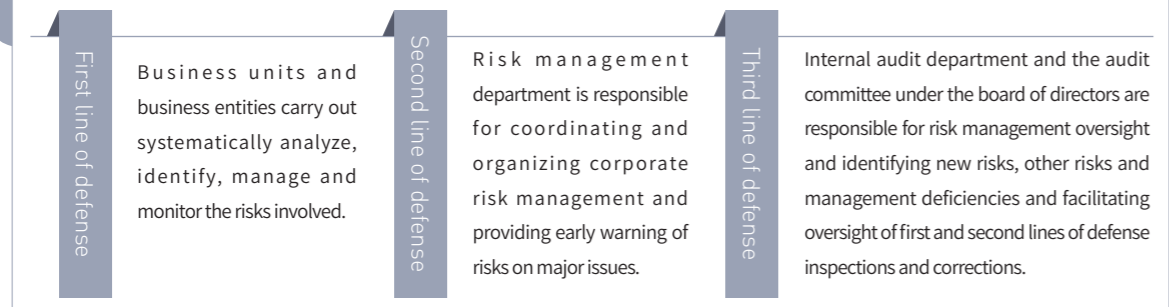
This conference focused on corporate governance and information disclosure, under the regulatory requirements of the registration system, according to the actual situation of the company, combined with market cases, the company's revised *Subsidiary Management System*, *Information Disclosure Management System*, whose key content were interpreted, and the compliance requirements of corporate governance, information management and subsidiary management were put forward. The conference was of great significance in enhancing employees' compliance awareness, strengthening employees' system learning, and improving the level of information management.

Risk Management

Shougang Co. has established a strict, standardized, comprehensive, and effective risk control systems, promoted the construction of risk special governance and risk warning indicator systems, and continuously optimized and improved the internal control system construction. Thereby, the effective integration of risk control and compliance systems is ensured.

The company has formed a risk control system consisting of risk control management system, risk control manual, and risk control evaluation manual, formulating the *Risk Management System*, and the *Risk Control Manual*. Risk management is carried out according to the procedure of "Risk assessment, Strategy formulation and implementation, Process management and supervision, and Risk reporting". In 2023, the company continued to improve the internal control measures, comprehensively revised the risk control management system and risk control manual, systematically promoted major risk control special projects, and continuously improved the risk management system.

The three lines of defense for risk management



Risk early warning. The company has established a risk warning and control system, built a four-level risk framework, and formed a list of operational and market risks; The company has established a risk early warning tracking and reporting mechanism, sorting out and summarizing the experience of risk early warning implementation, to realize the automatic collection and calculation of risk indicator, indexed monitoring and early warning, control and tracking, so as to discover potential risks in a timely manner, comprehensively enhancing the level of comprehensive risk management, and strengthening the awareness of risk prevention of the whole staff.

Risk reporting and special management. The company issues annual risk management reports by special work on risk control as a carrier; it continues to promote special risk governance and conducts periodic risk management inspections of its subordinate organizations.

Tax Management

Compliance with tax laws is the most basic social responsibility of enterprises. The company has established a comprehensive tax management system and an effective tax risk assessment and evaluation mechanism, providing pre-warning, in-process control, and post-assessment of tax risks. The company regulates the entire process management of tax-related accounting, declaration, monitoring, evaluation, forecasting, and reporting. By formulating tax management measures, enhancing training and learning, and improving invoice management, we strengthen tax management foundation, thereby strengthening enterprise tax risk management and actively preventing tax risks.

The company has formulated standards and norms for the declaration and management of various taxes, and all tax operations are carried out in accordance with the laws and regulations, and the relevant tax management systems include: *Measures for Tax Administration, Measures for Invoice Administration, Measures for Stamp Duty Administration, Measures for the Administration of Deduction of Asset Losses before Enterprise Income Tax, Measures for the Administration of Special Additional Deductions for Individual Income Tax, Measures for the Administration of Deductions for Research and Development Expenses before Taxation.*

Investor Relations

Uploaded **288** documents

Publicly disclosed **155** documents

133 reporting documents

The **100%** accuracy rate of information disclosure

Information disclosure is an important channel for investors and the public to understand the company and obtain information on the company's production and operation, as well as the basis of communication between the two sides. Shougang Co. attaches great importance to the work of information disclosure, and strictly fulfills the obligation of information disclosure followed by the requirements of *Rules for Listing on the Shenzhen Stock Exchange* and *Information Disclosure Management System*, to ensure that information disclosure is timely and fair, and that the disclosure is true, accurate and complete.

In 2023, the company completed information disclosure through the information disclosure system of the Shenzhen Stock Exchange for 33 times and uploaded 288 documents, of which 155 were publicly disclosed and 133 were filed. Information disclosure for the whole year was timely and complete, with an accuracy rate of 100%.

The company attaches great importance to communication with investors, always insists on actively communicating with investors in a sincere and responsible manner, and continuously optimizes the investor communication mechanism, ensuring investors' right to know, right to participate, right to express, and right of supervision.

Through holding performance briefing sessions, investor interactive platform replies, and investor hotlines, the company shares its operating results to investors and answers questions on issues of general concern to investors. In 2023, the company organized and held a total of 3 performance briefing sessions to present the company's operating results to all investors for the year 2022 and the first quarter of 2023, the half-year of 2023, and the third quarter of 2023; The company released 6 records of investor activities and responded to 635 questions interactively to guarantee the rights of minority shareholders to know about the company's production and operation, and effectively safeguarded the legitimate rights and interests of minority shareholders.

635 questions were responded interactively



2023 Shougang Automotive Steel High-end Technology Forum

Through the investment strategy meeting, teleconference, on-site research, increasing the degree of openness, investors deeply understand the value of the company. In 2023, the company participated in 7 securities investment banking strategy meetings, organized 2 teleconferences, received 2 investor visits and exchanges, organized investors to the company on-site research, and exchanged information with more than a hundred analysts and investors on the company's performance and development prospects.

Through holding multiple development forum, investors had an in-depth understanding of the company's development plan. In 2023, the organization held 2023 (the second) High-end Magnetic New Materials Development Forum, to present the company's electrical steel development prospects to more than 160 customers and investors; The company invited media journalists, investors to participate in the 2023 Shougang Automotive Steel High-end Technology Forum, so that investors can understand the research and development progress of low-carbon automotive sheet products and the plan of the low-carbon action more fully.

Case: Convene the high quality development strategic seminar

On April 19, 2023, Shougang Co. convened a seminar on the high-quality development strategy of the company at Shougang Qian'an Conference Center, inviting independent directors, representatives of securities dealers and analysts to attend. The independent directors and representatives respectively put forward valuable professional suggestions on the following aspects of promoting the company's high-quality development, such as green and low-carbon development, resource integration and development, overseas market layout, implementation of incentive mechanism, creation of New Growth Poles and subdomain splitting.





02 Environmental Protection: Playing a Demonstration Effect

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Shougang Co. is committed to eco-friendly practices, pivotal for high-quality corporate development. We embrace green development, enhance low-carbon management, and integrate ESG principles thoroughly into strategic decisions and operations. Our consistently efforts have earned us a "A-level" environmental performance rating. We've also launched a comprehensive low-carbon action plan. The company is honored as one of the inaugural "Dual Carbon" Best Practice Energy Efficiency Benchmarking and Cultivation Enterprises in the steel sector and stands as the first in Hebei Province to manage hazardous wastes via a direct approach. We have received numerous accolades, including the "Advanced Group in Organizing and Promoting the Three-Year Action for Iron and Steel Ultimate Energy Efficiency Project", "National Advanced Metallurgical Greening Unit", "Benchmarking Green Development Enterprise", and "Provincial Energy Conservation Enterprise for 2023". Furthermore, we are recognized as a "2023 Provincial Water-Saving Benchmark Enterprise". Zhixin Co. has been named the 2023 Hebei Provincial Green Factory. Our products, such as oriented electrical steel, pipeline steel, non-oriented electrical steel for new energy vehicles, hot-rolled high-strength steel sheets and strips for automobiles, and cold-rolled high-strength steel sheets and strips for automobiles, have been awarded "Green Design Products".

Environmental Management

Management Structure and Certification

Shougang Co. strictly complies with relevant national environmental management laws and regulations, establishes a comprehensive environmental management system, and continuously improves management systems and methods. During the reporting period, the company has formulated regulations such as the *Environmental Protection Management Measures*. According to the requirements of the *Environmental Management System GB/T24001-2004*, the company passed the ISO 14001 environmental management system certification, and the certification ratio reached 100%. We also invited third-party organizations to conduct annual audits of environmental management systems, so as to improve the level of environmental management.

Shougang Steel's environmental management system consists of three tiers:

The first level is the Environmental Protection Leadership Group. It is responsible for the company's comprehensive environmental management work, studying major environmental issues with in the company, making decisions, coordinating and solving important environmental problems.

The second level is the Environmental Protection Department. It is responsible for developing and enhancing the company's environmental management system, structure and goals. Additionally, this department oversees the monitoring, inspection, and evaluation of the company's environmental management effectiveness. This department coordinates efforts at enhancing the performance of each subsidiary, thus ensuring their compliance with legal requirements when conducting environmental impact assessments on construction projects.

The third level is the Environmental Protection Departments of each subsidiary, responsible for the construction management, and monitoring of the localized environmental protection system.



Relevant certification certificates

Investment and Performance

Environmental protection investment

838 million yuan

100%

Synchronous operational rate for environmental protection equipments

100%

Compliance rate in pollutant discharge

Shougang Co. has further pushed forward pollution prevention and control, built a number of key environmental protection upgrading projects, further reduced pollutant emissions, and implemented intelligent upgrading of environmental protection management. The company has established an intelligent environmental control system, integrating two platforms to monitor organized and unorganized pollution sources meticulously. We have installed Total Suspended Particles (TSP) monitoring facilities across production and material transportation processes, set up air quality monitoring stations at strategic locations such as main factory roads and workshop entrances, and developed distributed control systems (DCS). These measures ensure real-time surveillance and efficient management of all monitoring points, provide comprehensive control over unorganized emissions, and significantly enhance our environmental protection management's effectiveness.

During this period, Shougang Co. invested 838 million yuan in environmental protection, initiating several pivotal environmental improvement projects. These efforts have led to a notable reduction in pollutant emissions and a substantial enhancement of the ecological environment surrounding the plant. In 2023, we achieved a 100% synchronous operational rate for environmental protection equipment, a 100% compliance rate in pollutant discharge, ensuring total emissions met permit requirements, and occurred no significant environmental or social security issues.

Key environmental protection projects of the company as follows:

Key environmental protection projects	Investment (RMB10,000)	Effect
No.2 Sintering Plant Optimization and Upgrading Project of Desulfurization and Denitrification System	9,450	NO _x & SO ₂ emission concentration meeting design standards requirements
No.3 Sintering Plant Particulate Emissions Denitrification Upgrade and FGD ash Retrofit Project	4,300	NO _x emission concentration meeting design standards requirements
Qiangang Co. BF No.2 Hot Stove Desulphurization and Upgrading Project	5,400	SO ₂ emission concentration meeting design standards requirements
Qiangang Co. Environmental Protection Improvement Project (BF No.2 Hot Stove Desulphurization and Upgrading Project)	4,310	Washing machine put into operation, meeting relevant requirements
Sintering Plant Old System Environmental Improvement Project for Finished Product Warehouse Dust Removal System Improvement	1,287	Meeting design standards requirements
No.1 Steelmaking Plant Sleeve Kiln Raw Material workshop Unloading and Loading Mode Optimization Project	2,058	Meeting design standards requirements
Project to Dust Hoods in the Ladle Slag Flipping Area and Ladle-to-Ladle or Return Positions	1,200	Achieving design goals
Project to Add Desulfurization Facilities to the Heating Furnace in the Hot Rolling Department	5,896	Meeting design standards requirements
Project to Add Denitrification Facilities to the Heating Furnace in the Hot Rolling Department	3,499	Meeting design standards requirements
Hot Rolling Department No.2 Hot Rolling Shop Main Rolling Line Dedusting System Upgrading and Reconstruction Project	1,408	Meeting design standards requirements
Department of Energy Generating Units Add Denitrification Project	1,689	Meeting design standards requirements
Procurement Center Solid Waste and Environmental Quality Improvement Project	6,318	Meeting design standards requirements
Jingtang Co. Industrial Furnace Smoke Exhaust System Upgrading Project	496	Meeting design standards requirements
Zhixin Co. DCL Unit Denitrification Modification Project for Achieving standards of Environment Protecting	1,200	Meeting standards requirements

Environmental Publicity and Training

The company strengthened environmental protection publicity and education, actively carried out environmental protection training to enhance environmental protection awareness, and the coverage rate of environmental protection training was 100%. During the reporting period, the company cooperated with the University of Science and Technology Beijing and other research institutes and organizations to carry out knowledge dissemination activities for 18 times, and participated in legal education for 3 times in conjunction with the "6th Five-Year" World Environment Day. Targeting A-level performance standard of Hebei Province and other documents, the company compiled environmental protection training textbooks and organized 12 environmental protection trainings covering 800 persons for environmental protection personnel of each process, laying a foundation for personnel at all levels to master the policy and apply the technologies.



Case: Shougang Co. launches Law Publicity Activities on Environment Day

June 5, 2023 was the 52nd World Environment Day, in order to deeply publicize and implement Xi Jinping's thought of ecological civilization, and guide the workers to consciously fulfill the responsibility of ecological environmental protection, Shougang Co. organized and carried out the activities of environmental protection and law-enforcement propaganda on the Environment Day, and a total of more than 80 representatives of the workers of each unit participated in the activities and signed the "environmental protection and compliance with the law commitment". The company encouraged employees to practise the green development ideal of Shougang Co. with practical actions by posting publicity posters and banners, distributing environmental protection brochures, on-site preaching of environmental protection laws and regulations and other forms, and the company popularized environmental protection knowledge and general knowledge of green life to the staff, advocated the ideal of simple and moderate, green and low-carbon, civilized and healthy life, and created a good atmosphere of "everyone cares about the ecological environment, and everyone participates in environmental protection".



Pollution Management

Shougang Co. is dedicated to achieve the ambitious goal of establishing a "first-class environment." We continually enhance our environmental protection responsibility system and rigorously advance the pollution control of waste gases, wastewater, and residues to improve our environmental footprint. On August 15, 2023, during the "National Ecological Day Hebei Activity," Jingtang Co.'s "Reducing 1580 m³ Blast Furnace and Heating Furnace Gas Consumption" project was recognized as a special achievement. Additionally, the "Reducing the 2250 mm Hot Rolling Mill Public and Auxiliary Areas for per tonne of Steel Power Consumption" project, along with seven other projects, received the First Prize for Excellent Achievements in Improvement and Innovation in the field of Energy Conservation and Emission Reduction in Hebei Province. These accolades underscore our commitment to environmental stewardship and our ongoing efforts to enhance energy efficiency and reduce emissions.

Jingtang Co. practices the mission of green development, and actively integrates into the regional ecological construction. The focus of environmental protection management has been shifting from pollution control to environmental quality improvement. We implement precise, scientific pollution and legal pollution control, making waste gas, waste water, pollution control from the "design plan" to the "construction plan". Since 2018, Jingtang Co. has invested more than 4 billion yuan in deep environmental governance, and actively promoted the implementation of ultra-low emission transformation for the entire steel process. Sintering and pelletizing processes are both employed CFB-FGD desulfurization process, coke oven flue gas employed de-Nox technology of SCR method+CMB. We fully implement uncontrollable emission management, build the world's largest single span pellet yard enclosed greenhouse (all material yards such as pellet yard, coal yard, and iron ore yard are fully enclosed), and have implemented many environmental improvement projects successively, to promote the continuous reduction of pollutant emissions per tonne of steel, building the ultra low emission systems based on the new generation of steel processes

Shougang Co. has witnessed a consistent decrease in comprehensive energy consumption per tonne of steel over consecutive years. In 2023, this figure fell by 1.73% year-on-year. During the same time, our sulfur dioxide (SO₂) and nitrogen oxides (NO_x) emissions stood at 2,075 tonnes and 4,022 tonnes, respectively, significantly below the limits set by regulations.

Case: Qiangang Co. No.2 blast furnace won the "Champion Furnace"

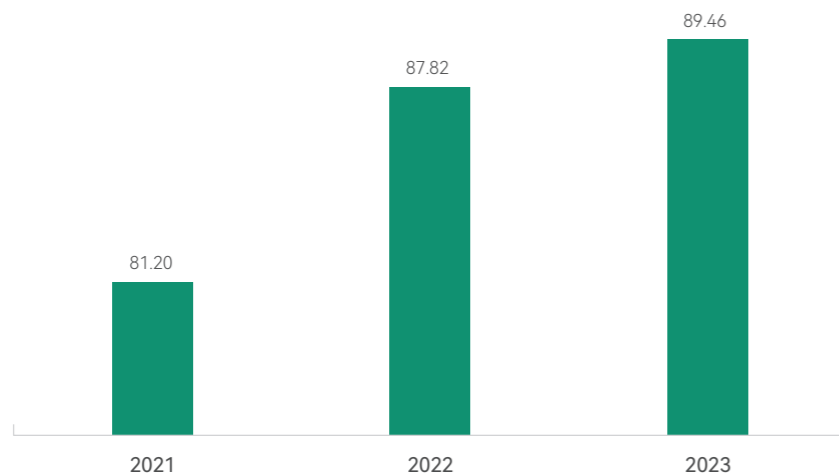
The No.2 blast furnace of Qiangang Co. is designed to produce 2.2 million tonnes of hot metal annually; it adopts advanced technologies at home and abroad, such as the soft water closed circulating system and industrial purified water circulating system, fully static adjustable axial fan, fully dry bag gas removal system, TRT, pulverized coal injection system, and hot stove combustion preheating air. Over the years, the factory has continued to make great efforts to improve its green manufacturing capability, and is committed to becoming a demonstration blast furnace of "energy conservation and environmentally friendly, clean and efficient", on the basis of giving full play to the functions of the existing energy conservation and environmental protection facilities, strengthening the use of new environmentally friendly and energy conservation new technologies, making every effort to improve energy conservation and environmental protection capabilities, optimizing and meeting the standards, and continuing to make efforts to build a green, high-efficiency, low-consumption blast furnace.



Clean Transportation

Shougang Co. introduces advanced logistics management, rational planning and implementation of transferring and storage, as well as loading and unloading, lifting, distribution, information processing and other logistics activities, so as to reduce the impact of logistics on the environment. Meanwhile, Shougang has continued to deepen the reform, accelerated the development of green and clean energy, implemented the replacement with new energy vehicles, and realized a continuous increase in the proportion of clean transportation.

In 2023, the company's clean transportation reached 89.46%. All raw materials and fuels entering the plant of Qiangang Co. are transported by clean transportation. Jingtang Co. makes full use of the advantage of being near the sea, and all raw materials and fuels such as coal and iron ore are transported by vessels and train, and raw materials are transferred through closed belt corridors. All transfer stations and receiving points are sealed with advanced double-layer sealing technology, dust collection hoods and dust removal systems are set up.



The clean transportation ratio continues to rise[%]

Waste Disposal

Shougang Co. follows the general principle of "reducing the total amount of solid waste and improving the efficiency of comprehensive utilization", and carries out source reduction control and specialized management of waste. Through the source, process, end and comprehensive utilization, all solid secondary resources are recovered and efficiently utilized to realize reduction, resourcefulness, productization, and maximize the benefits, so as to achieve the solid waste "not leaving the factory". Jingtang Co. has been awarded the title of "Industrial Resources Comprehensive Utilization Base" by the Ministry of Industry and Information Technology and the title of "Waste-free Factory" at the provincial level, in cooperation with the University of Science and Technology Beijing, developed "a solid waste-based concrete production and application technology for solid waste-based cementitious materials with multi-solid waste synergy", which was selected as Beijing's innovative green technology recommendation catalog.

In 2023, Shougang Co. categorized its general industrial solid waste into six types: granulating slag, steel slag, dust and sludge, iron scale, resistant material, and cold rolling sludge. The company produced a total of 12.6692 million tonnes of such waste. Out of this, 2.5795 million tonnes were redirected back into production processes, 8.4053 million tonnes were managed through cooperative disposal efforts, and 1.6233 million tonnes were utilized in societal applications, achieving a 100% recycling rate. This comprehensive approach to waste management emphasizes Shougang Co.'s commitment to sustainability and its effective strategy in minimizing environmental impact through the efficient reuse and recycling of industrial waste.

The dangerous waste is disposed through environmental protection companies with treatment qualification, and the disposal is strictly monitored to ensure that it will not inflow into the society, while the storage of dangerous waste is strictly managed. In 2023, the amount of dangerous waste generated was 381,900 tonnes, and the amount of recycling was 379,000 tonnes, with the proportion of recycling reaching 99.25%.

Case: 100% recycling of steel slag and dust sludge

The company has established a complete production line for the treatment of desulfurization slag and steel slag, realizing the maximum recycling of desulfurization slag and steel slag. For the dust sludge with low alkali metal content and secondary resources such as iron scale, they are directly utilized in sintering. For the dust sludge with higher alkali metal content, in order to realize the recycling of iron and zinc, the company has processed a total of 126,800 tonnes of zinc-containing dust sludge with the help of external rotary kiln, and the processed kiln slag is used as iron-containing resources to be utilized in the plant again.



Packaging Material Use and Management

Shougang Co. has formulated the *Packaging Quality and Packaging Materials Management System* and *Steel Product Quality Labeling Management System* to manage the production bases according to the business needs of packaging quality and packaging materials management, on the basis of which the bases have established the *On-site Management Measures for Process Materials and Packaging Auxiliary Materials*, *Management Measures for Labeling and Traceability*, *Procurement Standards for Packaging Auxiliary Materials* and *Specifications for Product Labeling* and other systems.

The company advocates green packaging, promotes eco-friendly, reduced and recyclable packaging, and uses recyclable packaging materials.

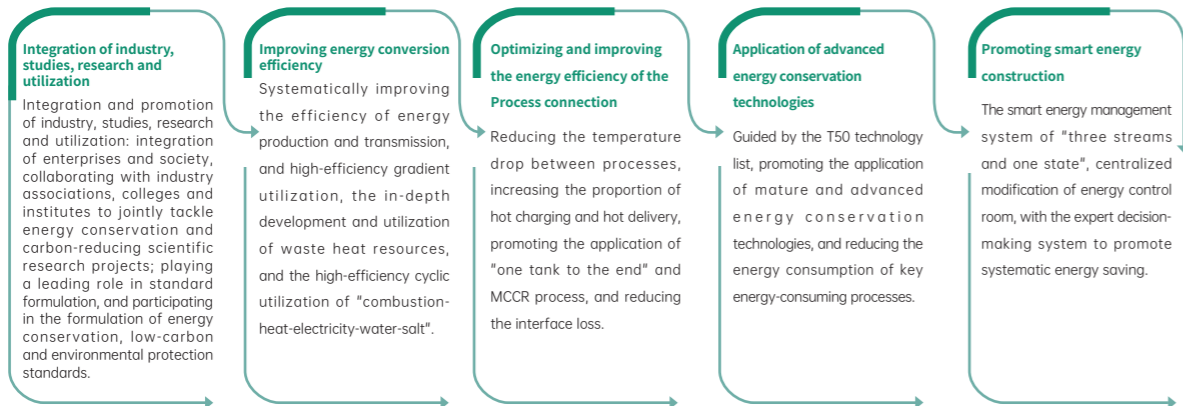
The company insists on the use of eco-friendly materials for product packaging, strict control of prohibited/restricted substances, rust-proof paper, industrial plastic film, plastic plate and other materials used are in line with ROHS, SGS and other requirements; The company gradually carries out the work of thinning, replacing and simplifying packaging materials, and uses more environmentally friendly materials to reduce usage of packaging materials under the condition of ensuring the quality of product packaging; By strengthening quality control and order structure optimization, we reduce the proportion of small weight coils, improve the utilization efficiency of packaging materials, and reduce the amount of packaging materials; We gradually expand the recycling types and recycling amounts of packaging materials in their own processing and distribution system, and improve the reuse rate.

Ultimate Energy Efficiency

Shougang Co. implements the *Three-Year Action Program for Energy Efficiency Benchmarking in the Iron and Steel Industry*, carries out in-depth research on energy conservation and consumption reduction in processes, takes the opportunity to create the first batch of "dual-carbon" Best Practice Energy Efficiency Benchmarking Demonstration Plants of the Iron and Steel Industry as an opportunity to benchmark against the national energy efficiency benchmarking in the processes, and actively builds the ultimate energy efficiency operation system, as a strategic tool for realizing the goal of "dual-carbon", to promote the improvement of energy efficiency of the whole process. The company was awarded the honorary title of "Advanced Group in Organizing and Promoting the Three-Year Action of Energy Efficiency Benchmarking for the Iron and Steel Industry Ultimate Energy Efficiency Project in 2023".

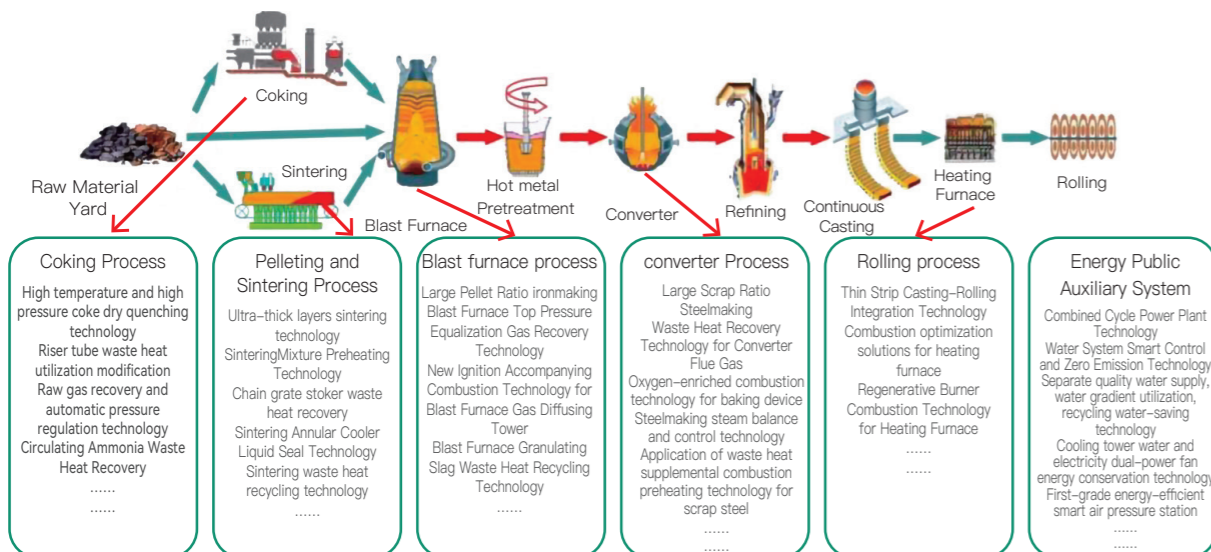


Advancing ultimate energy efficiency in depth

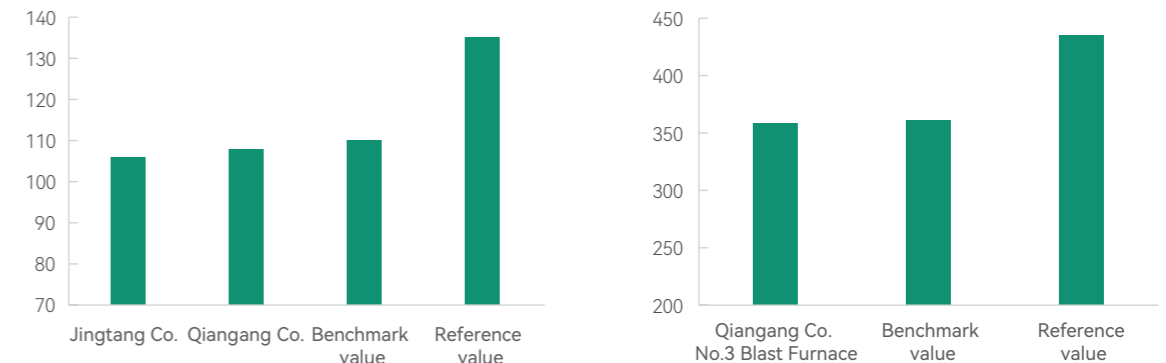


Application of Energy Conservation Technologies

Shougang Co. takes the T50 technology list issued by China Iron and Steel Industry Association as a guide, promotes the application of mature and advanced energy conservation technologies, and carries out special actions for energy conservation and consumption reduction in key processes, so as to improve the efficiency of energy utilization and reduce the emission of pollutants.



In 2023, Qiangang Co. and Jingtang Co. carried out a total of 51 energy conservation and consumption reduction projects for each process, challenging the ultimate energy efficiency of the processes and realizing energy conservation and carbon emission reduction. The energy efficiency of each steel production process of the company continued to set new records, the energy consumption of coking process was better than the benchmark value, and the energy consumption of No. 3 blast furnace and converter process reached the benchmark value in stages. In the national key large-scale energy-consuming ironmaking and steelmaking production equipment energy conservation and consumption benchmarking competition, Qiangang Co.No. 2 Blast Furnace, Jingtang Co.No. 1 Sinter and No. 5 Converter won the "Champion Furnace"; No. 8 Sinter and Qiangang Co. No. 5 converter and Jingtang Co. No. 1 Blast Furnace were honored with the title of "Winning Furnace". Qiangang Co. No.3 blast furnace put into operation the blast air dehumidification project, and in the rainy season, the moisture content of the blast hot air was stabilized from 16g/m³ to 10g/m³, which can effectively reduce the CO₂ emission by 15,836 tonnes/year.



Coking process energy consumption reached the benchmark value (kg standard coal/tonne)

Energy consumption of selected blast furnace processes reached benchmark values (kg standard coal/tonne)

The self-generation rate of secondary energy

48.56%

An increase of 2.13% year-on-year

The efficiency of power transmission 58%

Improvement of Energy Efficiency

Shougang Co. deepened the recycling of complementary energy resources, improved energy utilization efficiency and reduced pollutant emissions through the introduction of clean energy and environmental protection technologies, and continued to carry out technological research and development on solid waste allocation and addition, furnace top gas recycling process and oil purification and recycling. During the reporting period, the company's energy recovery and conversion utilization efficiency was significantly improved, with the self-generation rate of secondary energy reaching 48.56%, an increase of 2.13% year-on-year.

Qiangang Co. No.7 air compressor station was identified by authoritative third-party testing organization, and the efficiency of power transmission reached 58%, exceeding the 55% standard line for first level energy efficiency, listing the first air compressor station in the national iron and steel industry that complies with the first-class energy efficiency standard. Three combined cycle power plant(CCPP) were built, and the 150MW CCPP became the state certified

Case: Qiangang Co. No.7 air compressor station was awarded "Class A Energy Efficiency Compressed Air Station"

Qiangang Co. No.7 air compressor station adopts high-efficiency centrifugal air compressor and energy conservation rotary drum type compression heat dryer to realize zero air consumption, and the energy consumption per 1,000 cubic meter of wind is reduced by 0.81kWh, with an annual energy conservation of 1,430,000kWh.



After identification by third-party testing organization, the actual power transmission efficiency of air compressor reached 58%, which is more than 55% of the standard line of Class A energy efficiency. Shougang Co. was awarded as "Class A Energy Efficiency Compressed Air Station" by China General Machinery Industry Association, and became the first air compressor station in the iron and steel industry in China that meets the Class A energy efficiency standard.

Jingtang Co. secondary energy self-generation rate

50.08%

Exceeding 50% for the first

voluntary emission reduction project (CCER) of Chinese iron and steel enterprises, with remarkable energy conservation and carbon emission reduction demonstration effect. The waste heat of blast furnace slag flushing water is fully recovered and utilized for heating in the heating season and preheating of industrial waste heat boiler desalination water in the non-heating season.

Jingtang Co. continues to strengthen the technology R&D of complementary energy depth recovery and comprehensive utilization, promotes the energy gradient utilization, secondary energy self-generation rate of 50.08%, exceeding 50% for the first time, the energy utilization efficiency to a new level, per tonnes of steel converter gas recovery reached a record high of 120m³/t. By utilizing the waste heat of the plant and exchanging energy for resources, Jingtang Co. has built a seawater desalination project with a daily output of 95,000 tonnes, and researched and developed the technology of "hydroelectricity symbiosis" and "thermal film coupling" to form the world's first "combustion-heat-electricity-water-salt" five-effect integrated high-efficiency recycling system, which realizes the deep utilization of low-temperature waste heat. In 2023, the project won the 11th Mother River Award for Green Projects.



Jingtang Co., a subsidiary of Shougang Co., has significantly enhanced its sustainability by implementing various innovative projects. These include the advanced utilization of waste heat from multiple heating furnaces in hot rolling and plate lines, the introduction of new sintering waste heat power generation systems, and the application of vacuum phase transition technology for reclaiming waste heat from blast furnace slag flushing water. Through these initiatives, Jingtang Co. has increased its annual steam output by 235,600 tonnes and its power generation capacity by 200 million kWh, leading to a reduction of approximately 220,000 tonnes in CO₂ emissions annually. Addressing the issue of substantial heat loss associated with traditional insulation materials, Jingtang Co. has embraced composite insulation layer technology, significantly reducing heat loss compared to traditional insulation materials.

Increased annual steam output by

235,600 tonnes

Power generation capacity

200 million kWh

CO₂ emissions reduction of

220,000 tonnes annually



Improvement of Ironmaking-steelmaking Connection Energy Efficiency

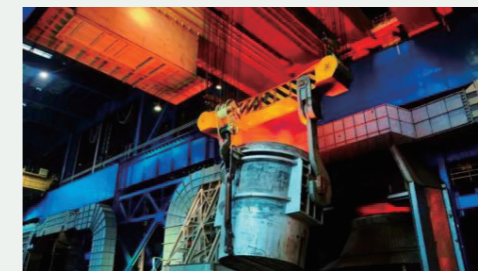
Shougang Co. strictly control the "2 temperatures values", the hot metal temperature drop from ironmaking to steelmaking continues to reduce, and the proportion of hot charging and hot delivery billet is steadily increasing. The temperature drop of hot metal in Qiangang Co. is 96.5°C, including 89.8°C in November, which is a new record; the rate of hot charging and hot delivery has increased from 46% in 2019 to 73.5% in 2023, and the rate of hot charging and hot delivery in Jingtang Co. has increased from 41% in 2019 to 60.2% in 2023.



The company hot charging and hot delivery rate continuously rising (%)

Case: Qiangang Co. hot metal temperature controlling realized "6&9" target

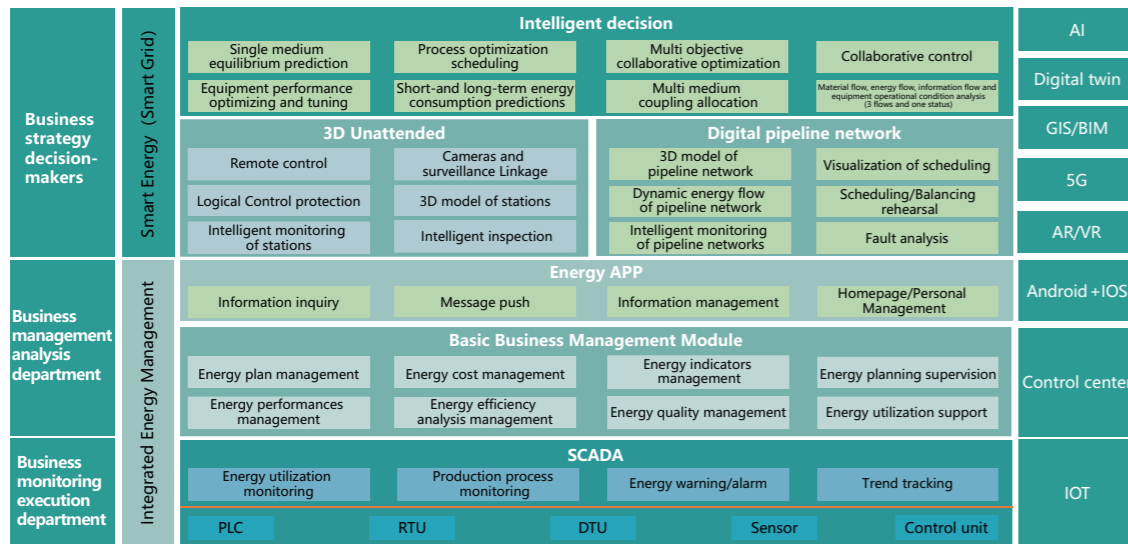
The turnover rate of torpedo car of Qiangang Co. is 6.3 times/day, and the temperature drop of hot metal is 89.8°C, which realizes the target of "6&9" of hot metal temperature control and reaches the leading level in the industry. Shougang Co. has been focusing on hot metal temperature drop repeatedly carried out technical innovation to drive the overall innovation, with the "critical step" through the ultimate energy efficiency, solving ultra-low cost of difficulties and pain points, empowered the enterprise green low-carbon development. Since 2020, the hot metal temperature drop has declined for four consecutive times, with a drop of 42%; the turnover rate of torpedo cars has risen for four consecutive times, with an increase of about 125%, and CO₂ emissions can be effectively reduced by 40,200 tonnes/year.



Building Smart Energy

Shougang Co. continuously improves the level of intelligent and digitalized management and control of energy management, further improves the level of collaborative management, accelerates the construction of smart energy, and promotes the refined management of energy in an all-round way.

Qiangang Co. is promoting the application of "Energy flows, Manufacturing flow, Value Stream and device status" smart energy management system, and completed the air separation centralized control station construction, company has realized the main substation unmanned, as well as is accelerating and advance the construction of gas centralized control station, power system remote control automation system, to promote the realization of the energy medium pipeline network and power generation and supply system centralized control. By adopting an advanced expert decision-making system, Jingtang Co. establishes a balanced prediction to construct a transmission and distribution model in advance, a single-system cost-optimization model and a multi-media synergistic optimization model to guide the production and realize the system's energy conservation. Relying on the construction of the "Lighthouse Factory" project, Cold-R Co. has set up a digital energy management system, and developed functions such as online energy consumption monitoring, intelligent scheduling of electric power, and energy analysis cockpit.



Smart Energy Management System

Water Resource Management

Water Resources Protection

Shougang Co. actively promotes the protection of water sources, and in accordance with the *Water Law of the People's Republic of China, the Law of the People's Republic of China on Prevention and Control of Water Pollution* and other laws and regulations, and in combination with the actual situation of the enterprise, Shougang Co. has formulated the *System for the Protection of Water Sources*, standardized the management of water sources, and safeguarded the security of the water supply for the company's production and life.

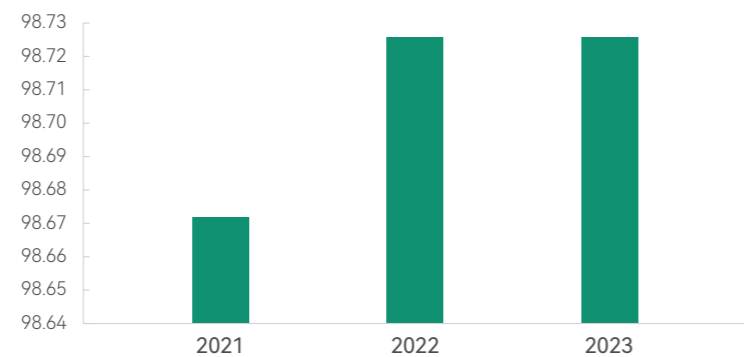
Water Resources Utilization

The company adheres to the water-saving ideal of "less use of fresh water, full treatment and reduce wastewater discharge", insists on reasonable development, efficient utilization, comprehensive treatment and scientific management of water resources, and improves the water efficiency year by year to meet the standard of leading value of intergrating factory. It has successively won the Provincial Water-saving Demonstration Enterprise, the National Water Efficiency Leading Enterprise, the Provincial Water-saving Benchmark Enterprise, and has been identified by the Ministry of Industry and Information Technology as the Demonstration Enterprise of Industrial Wastewater Recycling.

During the reporting period, the company, as a National Water Efficiency Leading Enterprise and Demonstration Enterprise of Industrial Wastewater Recycling, was invited to participate in the 18th World Water Resources Conference organized by the Ministry of Water Resources of the People's Republic of China and the International Water Resources Institute. The company demonstrated the technologies of "industrial recycled water and wastewater gradient utilization", "special wastewater from cold rolling area, coking area and other areas in-depth treatment and zero discharge" and "low-cost and stable utilization of highly saline water", etc.

The company will continue to devote itself to the R&D and application of industrial water resources utilization technologies and actively promote the application of water saving and reduction emission technologies.

In 2023, the water reuse rate was maintained at 98.73%.



Water reuse rate remained high (%)

Case: Qiangang Co. was honored as a provincial water-saving benchmark enterprise for the year 2023

In December 2023, Hebei Province Department of Industry and Information Technology issued the *Notice of Hebei Province Water Resources Department on the Creation of Water-saving Enterprises (Parks) in 2023*, and Qiangang Co. was honored with the title of "Provincial Water-saving Enterprises in 2023" and "Provincial Water-saving Benchmark Enterprises in 2023".

Qiangang Co. firmly insists on "manufacturing + service" strategy, in the field of water resources utilization, the company has been adhering to the ideal of "less use of fresh water, full treatment and reduce wastewater discharge" and the pursuit of the ultimate "zero discharge", insisting on the rational development, efficient utilization, comprehensive management and scientific management of water resources, and has achieved remarkable results in water-saving.

In terms of water-saving management, the company implements source reduction, cascade utilization, and the application of new technologies.

- Adopting the technologies of coke dry quenching for power generation, dry dedusting of blast furnace gas and converter gas to save water, save energy and generate more power, coke dry quenching for power generation reduces CO₂ emission by about 550,000 tonnes per year, and dry dedusting of converter gas saves one-third of water;
- The application of heating furnace vaporization technology and closed loop water system saves water up to 90%;
- Construction of comprehensive circulating water pumping station, realizing serial utilization of the circulating water, with a water recycling utilization rate of 99%;
- Adopting zero-discharge technology for highly saline water, desalinating the concentrated water of reverse osmosis, improving the utilization rate of water resources, and realizing the "zero" discharge of highly saline water, of which "Blast Furnace Slag Flushing Water Quality Stabilizing Technology" has won the national patent;
- Implementation of zero discharge technology for coking wastewater, adopting "Fenton oxidation + flocculation and precipitation + multi-media + electrodialysis + ultrafiltration + reverse osmosis" water treatment process to realize near-zero discharge of coking wastewater.

In terms of water management, the process management of water consumption index is implemented.

- Establishment of water metering system and control center to realize the comprehensive management and control of water system;
- Development of energy secondary management system to realize the consumption daily closing daily settlement;
- Timely and accurately grasp the consumption status of the water system, and provide early warning of water consumption;
- Develop water quality control standards for circulating water system, and promote the economic operation of water system;
- Informatization management of water quality testing data to improve the efficiency and accuracy of the water system analysis, and refined management of water quality to promote both water-saving and cost reduction.

Through the above measures, the water utilization efficiency of Qiangang Co. increased year by year, and the total water use and water consumption index decreased year by year; The water reuse rate is 99%, reaching the domestic advanced level.



Wastewater Discharge

Shougang Co. pursues very low emission, Qiangang Co. establishes comprehensive sewage treatment station and reclaimed water deep treatment station, and the wastewater from the production process is recycled; Jingtang Co. establishes comprehensive sewage treatment station, and hooks up comprehensive sewage effluent with desalinated demineralized water to produce recycled water for recycling, so as to realize the resource utilization of wastewater. In 2023, the company discharged a total of 373,700 tonnes of wastewater, which were significantly lower than the permitted emissions.



Low-carbon Development

Climate Risk and Opportunity Identification

Climate change is a global issue of community with a shared future of mankind and is a major challenge for sustainable development. The steel industry is crucial for achieving carbon peak and carbon neutrality in society. Shougang Co. actively responds to climate change and continuously standardizes the management of climate governance. Based on national laws and regulations and relevant requirements, Shougang Co. has formulated systems such as *Climate Governance Management System* in combination with the actual situation of the company.

Shougang Co. actively identifies climate change risks and opportunities, combines its own advantages and the development stage and characteristics of the industry, actively integrates into China's "dual carbon" strategic layout, vigorously promotes energy conservation and carbon reduction work, and continuously promotes the green and low-carbon development of the company.

Risk identification and influence

Risk Category		Risk Parameter	Potential Influence
Physical Risk	Acute risk	The severity and frequency of extreme weather events (such as typhoons, floods, etc.) increase	Jingtang Co. is located on the coast of Bohai Sea and experiences 1-2 severe typhoons and extreme weather events each year. Especially in recent years, there has been a sudden increase in global extreme weather events, which may lead to impairment or loss of physical assets, as well as other potential economic losses.
Transformation Risk	Policy, Laws and regulations	Policy constraints, carbon pricing mechanism and costs	With the implementation of energy-conservation and emission reduction policies in the steel industry, as well as the implementation of environmental and carbon-related laws and regulations, the company will face rising carbon prices and carbon compliance costs, restrictions on coal use, and other energy transition policies, which will lead to corresponding increases in investment and operating costs, affecting profit.
		Carbon Tariff	The European Union Commission announced the launch of the world's first "Carbon Border Adjustment Mechanism" plan, imposing tax on imported carbon containing products including steel and cement, which will restrain the company's exports of certain products and affect profit.
	Technology and cost	Low-carbon technology transformation	In response to China's 30-60 Decarbonization Goal and to achieve the company's "dual carbon" goals, significant investments will be required in the future for the research and development or application of low-carbon steelmaking technologies. The research and development process involves uncertainties.
		Transformation cost	During the low-carbon transformation process, the company will increase the use of renewable energy, new energy, and other energy conservation and environmental protection technologies. The application and investment in low-carbon steelmaking technologies will lead to an increase in the company's research and development costs and the risk of value loss of existing fixed assets.
	Market	Increasing demand for green and low-carbon products	With the deep adjustment period of domestic steel markets and the promotion of the green and low-carbon development trend throughout the industry chain, the market demand for green and low-carbon steel products will significantly increase. The industry competition will become more intense, and if the greenization progress is too slow, it may lead to a decrease in the company's market share.
		Rising raw material costs	Prices of energy and other resources will increase due to the impact of climate change, which will in turn affect the procurement costs of fuel and raw materials, resulting in increased costs and other risks.
Reputation	Concerns of stakeholders regarding climate change measures	Investors and other stakeholders, as well as the public, will pay more attention to the company's response to climate change measures, and may even consider it a key factor in evaluating the company's performance. This could potentially pose reputation risks to the company, and resources need to be invested to strengthen carbon management in order to meet their expectations.	

Climate change is shaping and transforming the models of social and economic development, presenting distinct opportunities for the sustainable growth of businesses. Upon analyzing the market and industry landscape, in alignment with our company's unique traits and strategic outlook, we have pinpointed the following opportunities:

Product Service: We are dedicated to the innovation and development of green products, such as non-oriented electrical steel designed for new energy vehicles and high-performance oriented electrical steel, catering to the growing market and consumer demand for low-carbon goods and services.

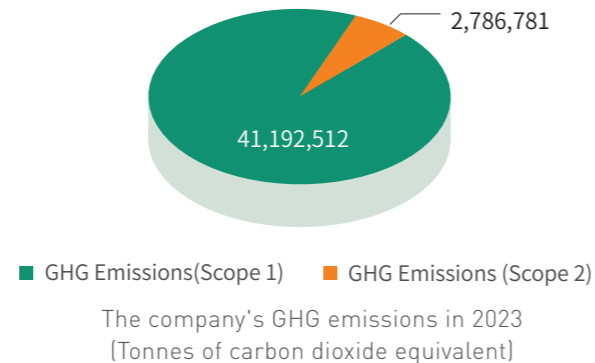
Energy Efficiency: By continuously refining our process technologies, fully leveraging waste heat and energy, researching and applying cutting-edge energy-conservation technologies, and employing big data and intelligent systems, we aim to construct an efficient smart energy management framework. This will enhance our resource and energy utilization, advance our efforts in energy conservation and carbon emission reduction, and minimize operational costs.

Energy Sources: We are committed to increasing the utilization of clean and low-carbon energy sources, transitioning away from traditional high-carbon options. This includes expanding our photovoltaic power generation capabilities and augmenting the share of green electricity procured from external providers.

Carbon Management and Trading: Establishing a robust carbon emission management platform is another focal area. By improving our carbon emission assessment system and actively engaging in carbon credit trading, we are intensifying our carbon management practices.

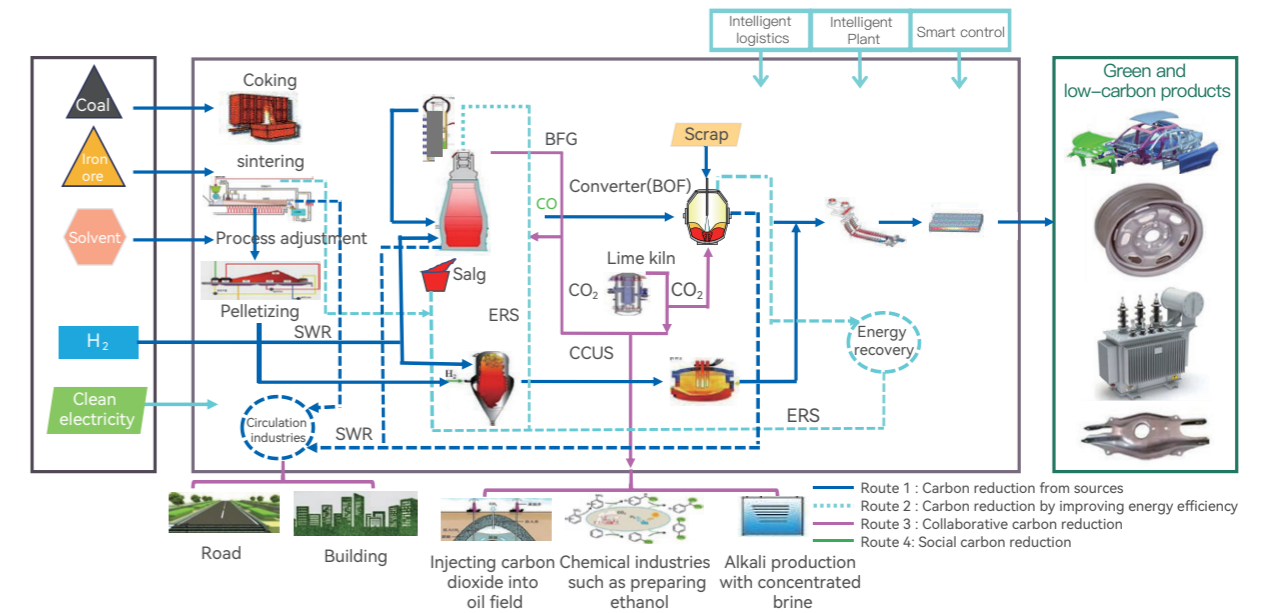
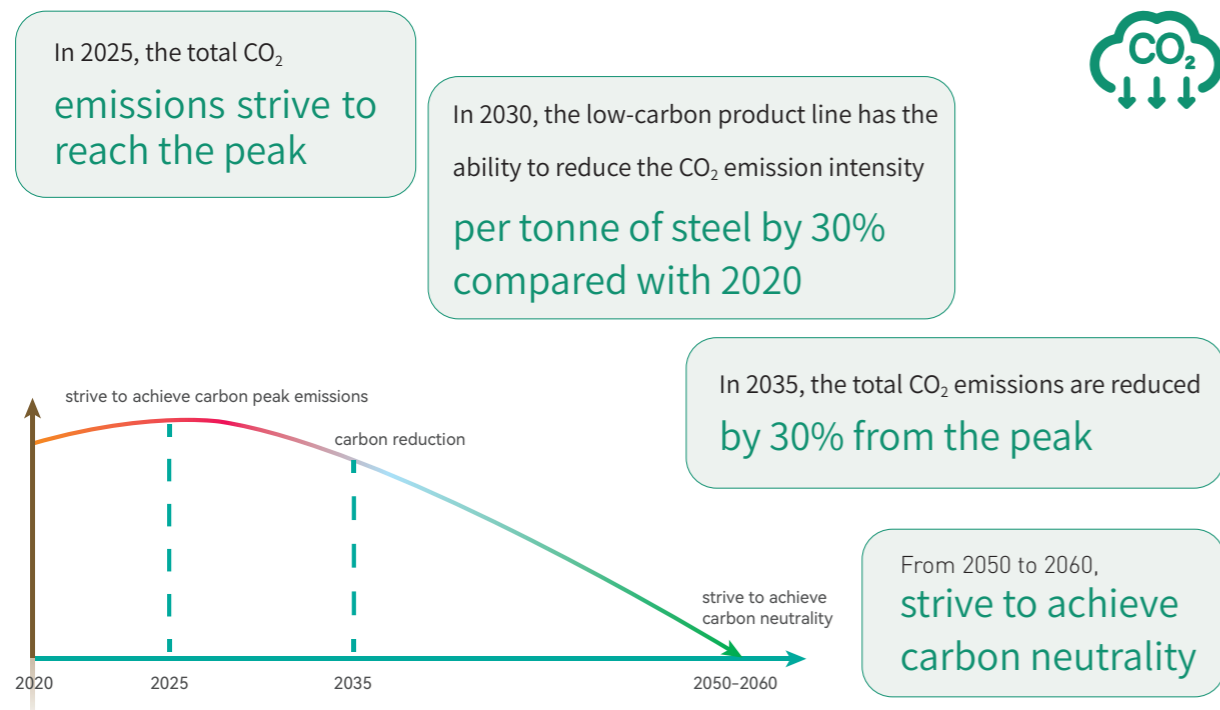
GHG Emissions

Our commitment to green manufacturing has been unwavering. We have invested in the research and development of durable, high-strength, lightweight, and highly corrosion-resistant green and low-carbon products. Through the innovation of low-carbon technologies and the active exploration and utilization of renewable energy sources, we have comprehensively advanced our energy conservation and carbon reduction initiatives.



Low-Carbon Strategy

Shougang Co. formally released the low-carbon action plan in July 2023, specifying the low-carbon strategic objectives and implementation path. The company takes comprehensive green transformation as the goal, green, low-carbon and efficient utilization of energy resources as the key, technological innovation as the driving force, and creates an integrated factory "low-carbon product line" as the near-term direction, plans to introduce electric furnace steelmaking as the near- to medium-term direction, and promotes carbon reduction with the large-scale application of green hydrogen and green electricity as the carrier. With the medium- long-term planning direction of promoting carbon reduction through the large-scale application of green hydrogen and green electricity, the company will strive to optimize the production structure, process structure, energy structure, logistics and transportation structure, further strengthen the responsibility of SOEs, and unswervingly take the road of green, low-carbon and high-quality development.



Shougang Co. carbon reduction technology route

Route 1: Carbon reduction from sources

- Develop low-carbon smelting furnace burden
- Develop efficient utilization technologies for recycled steel materials
- Develop efficient recycling technologies for secondary resources
- Promote low-carbon metallurgical technology innovation orderly



Route 2: Carbon reduction by improving energy efficiency

- Construct the ultimate energy efficiency operation system
- Promote electrification of energy utilization
- Develop and apply clean energy
- Construct an smart energy management and control system

Route 3: Collaborative carbon reduction

- Industry chains synergize to reduce carbon emissions
- Develop waste resourceization and productization technologies
- Research and development of CO₂ capture and resource utilization technology
- R&D and application steel and chemical co-generation technologies



Route 4: Social carbon reduction

- Establish product life cycle control system
- Develop high-performance and long-service performance low-carbon products.
- Promote synergistic carbon reduction in downstream industries
- Construct green and low-carbon development concepts and models

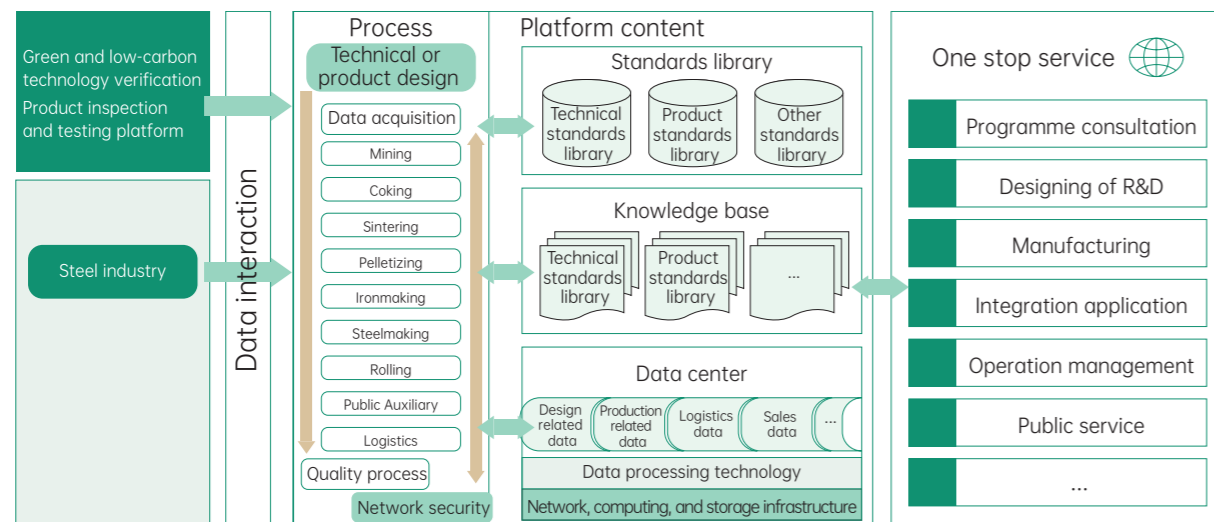
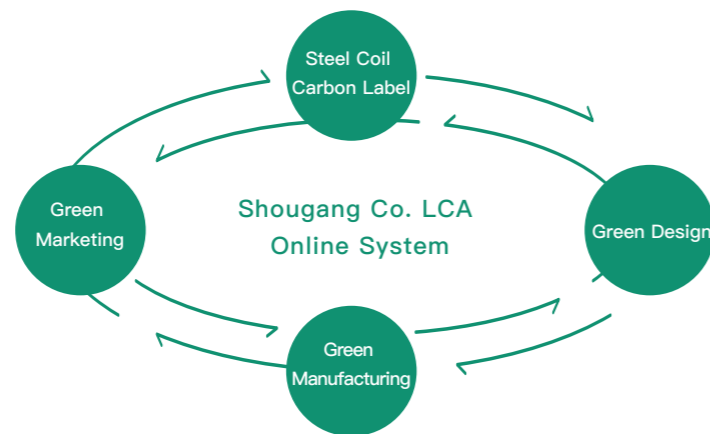
Green and Low-carbon Practice

Shougang Co. attaches importance to the sustainable development of the industrial chain from the perspective of the whole life cycle, and has set up the Green Manufacturing Committee, which consists of six specialized groups: Green Supply Chain, Solid Waste Resource Recycling, Energy Conservation Management, Environmental Protection Enhancement, Low-Carbon Management, and Green Park. With the goal of promoting the green development of the whole process of iron and steel manufacturing and the whole life cycle of products, the committee focuses on promoting the green supply chain, recycling of solid waste resources, energy conservation, environmental protection, low carbon, and the construction of green parks, boosting and supporting the company's high-quality development, promoting the harmonious progress of upstream and downstream industries, reducing carbon emissions, and contributing to the implementation of the "dual-carbon" goal and the mitigation of global climate change.

Carbon Management & LCA

Shougang Co. actively promoted low-carbon management, improved the construction of carbon data management informationization platform, basically completed the construction of the company's carbon management platform, and was shortlisted as a pilot demonstration unit for the construction of carbon management system in Hebei Province. The company has deepened the research on LCA system, adhered to the ideal of green development in product R&D and design, and established a complete product life cycle evaluation system and data collection platform based on the methodology of full life cycle evaluation. The company actively promotes the implementation of the Low Carbon Action Plan, and focuses on building a special line of low carbon products to meet the carbon reduction needs of key customers.

Promoting and implementing the low carbon technology validation program for the iron and steel industry of MIIT. During the reporting period, we completed the installation of all hardware equipment and software development, and passed the on-site technology validation audit by MIIT audit experts and the acceptance of the technical review team 's technology acceptance. We have formed a green low-carbon technology library and a low-carbon technology validation program to provide one-stop services of carbon peak emissions and carbon neutrality for iron and steel enterprises.



Carrying out EPD release and organizational carbon certification. In January 2023, EPDs of hot-rolled steel sheets and strips of Qiangang Co. and Jingtang Co. were officially released on the EPD platform of the iron and steel industry, and in December 2023, EPDs of hot-dip zinc-aluminum-magnesium(low aluminum) alloy coated steel sheets and strips of Jingtang Co. and steel sheets and strips of Cold-R Co. were officially released. Organizing each base to carry out organizational carbon certification work, we successively completed the signing of certification agreement, on-site emission source investigation, data collection, data accounting, external audit, rectification of problematic items, etc. In June 2023, the company received GHG verification certificates from SGS regarding each base.



Carbon emissions reduction: **140** kg per tonne of iron

The oxygen enrichment rate of the blast furnaces exceeds **8%**

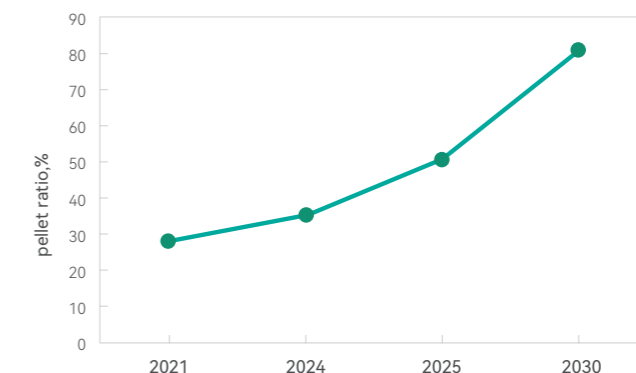
Blast furnace pellet ratio **55%**

Establish Low-carbon Ironmaking Process

Jingtang Co. has established a 10-million-tonne low-carbon ironmaking process, reducing carbon emissions by 140kg per tonne of iron, with a considerable amount of carbon emission reduction based on a production capacity of 13.5 million tonnes.

High oxygen enrichment ironmaking. The company builds the largest single unit of pressure swing adsorption oxygen production equipment (4*15000Nm³/h) in China, and researches and develops the composite oxygen supply technology for blast furnace with the core of variable pressure adsorption oxygen production and deep cooling oxygen production, which creates a new mode of composite oxygen supply for large blast furnace in the industry. At present, the oxygen enrichment rate of the three blast furnaces exceeds 8% and reaches up to 8.50%, which is at the leading level in the oxygen enrichment of the blast furnaces above 4000m³ and strongly promotes the improvement of production and reduction of consumption.

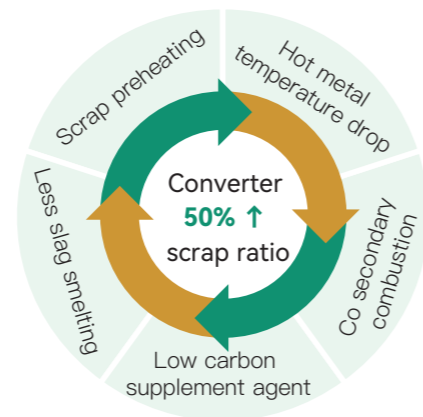
Large proportion pellet ironmaking technology in extra large Blast Furnace. The three blast furnaces of Jingtang Co. with 55% pellet ore are running stably, and the carbon emissions can be reduced by 80kg per tonne of iron. No.1 Blast Furnace Utilization Coefficient and Coke Ratio are ranked the first among blast furnaces of the same level in China, which not only achieves high efficiency, but also realizes low consumption.



Blast furnace pellet ratio enhancement plan

Steelmaking "3-De" (decarbonization, dephosphorization, desulfurization) process. Utilizing the advantages of the converter duplex melting process of the all "3-De" clean steel production platform, the company has developed efficient clean steel steelmaking technologies for converter, refining and continuous casting by improving heat utilization efficiency through the development of efficient heat supplementation of converter, secondary combustion and other technologies, lowering the tapping temperature of the converter, and at the same time, realizing the stable control of nitrogen, sulphur, phosphorus and residual elements.

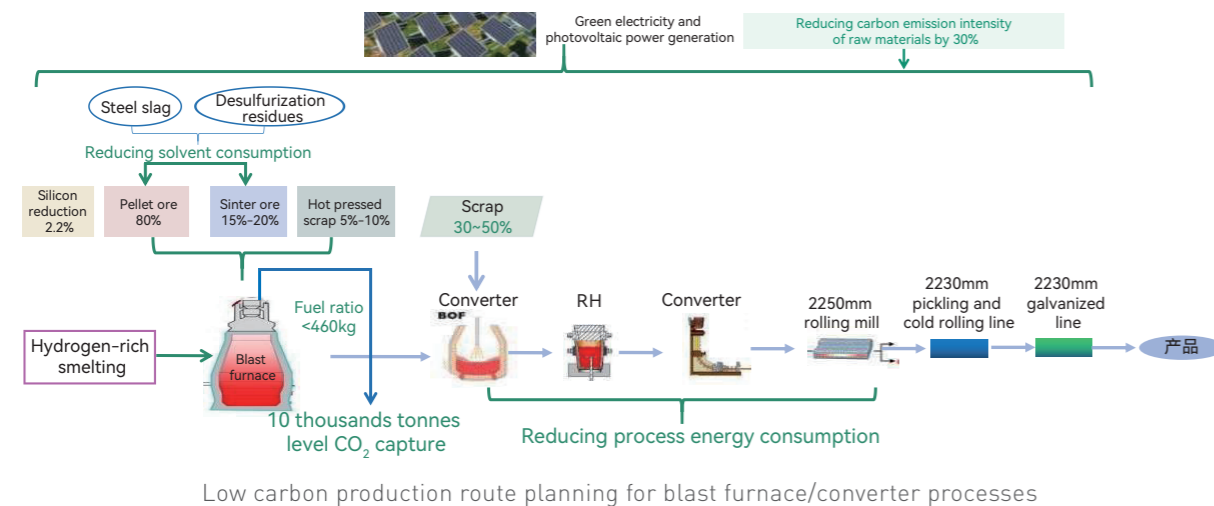
High scrap ratio steelmaking: Giving full play to the advantages of the converter process, we have organized several large scrap ratio tests for automotive sheet, pickled sheet, household appliance sheet and hot rolled sheet products, and the scrap ratio of the converter process can be steadily increased to 50%, realizing continuous production of multi-furnace continuous casting, and possessing the capability of production of products that can reduce carbon emission by more than 40%. In July 2023, the steelmaking process successfully carried out experiments on carbon reduction products with higher scrap ratio, and the scrap ratio of single process of converter was increased to 50%.



R&D of Low-carbon Technology

Shougang Co. continues to conduct in-depth research and development of low-carbon process technology, strengthens key and breakthrough low-carbon technology research, vigorously promotes the application of advanced and applicable green and low-carbon technology, and strengthens the core position of technological innovation in the low-carbon development of the enterprise and the role of "the largest increment".

The company comprehensively utilizing low-carbon technology and low-carbon resource advantages, and focuses on creating a special line of low-carbon products for intergrating factory, reducing the intensity of carbon emissions per unit of product by 30% to 50%, and at the same time, it has the ability to meet the higher carbon reduction requirements of key customers in advance.



Reduction route of rotary kiln "granular coal injecting + fan on the wrong side": Developed the reduction route of rotary kiln "granular coal injecting + fan on the wrong side", and the metallization rate of kiln slag was increased from 60% to 90%;

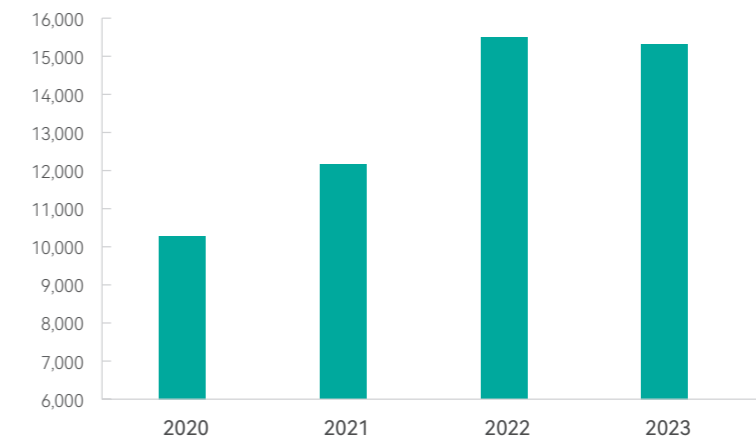
Oxygen-rich combustion carbon capture technology for metallurgical furnaces: Promoting the research of oxygen-rich combustion carbon capture technology for metallurgical furnaces, and realizing the combustion test under 40% oxygen-rich ratio for the first time in the industry.

Low-carbon sintering process technology: sintering thick material layer + composite steam injection + flue gas circulation coupling energy conservation carbon reduction technology, sintering process energy consumption reduced by more than 11%, carbon emissions reduced by more than 9%.

Carbon dioxide capture and utilization technology: cooperating with University of Science and Technology Beijing, the company has developed the technology of lime kiln CO₂ capture and its application in steelmaking converter process, and established a demonstration unit of 50,000 tonnes of lime kiln carbon capture unit and its application in 300t converter in Jingtang Co., and the purity of CO₂ after capture has reached 99.8%, which is higher than the industry standard of 99%.

Develop New Energy Sources

The company actively promote the utilization of clean energy, Qiangang Co., Cold-R Co. and other sectors according to local conditions, scientific layout, actively develop and utilize renewable energy, built a series of rooftop distributed photovoltaic power generation facilities, in particular, the Cold-R Co. built the then Beijing's largest distributed photovoltaic power generation demonstration project, with an installed capacity of 8.34MW. Qiangang Co. built the first large-scale green energy demonstration project in Qian'an area, energy-conservation and carbon reduction demonstration effect is obvious, the two units to further making full use of the available rooftop resources in the factory, and actively plan the construction of the second phase of photovoltaic power generation projects. 2023 PV power generation of 15,320MWh, for the enterprise to win more social benefits and environmental protection benefits.



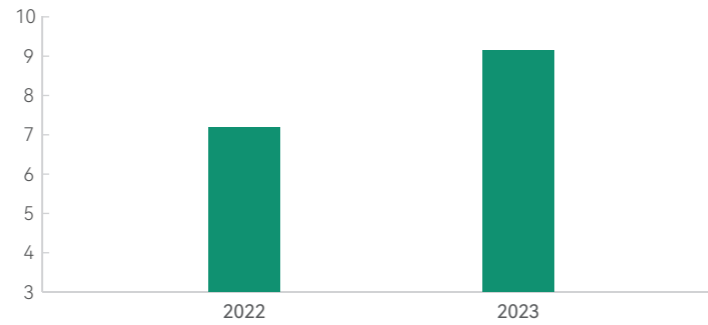
Shougang Co.'s photovoltaic power generation has continued to increase in recent years (MWh)

Case: Qiangang Co. Photovoltaic Power Generation Project to start construction

In September 2023, the construction of 35.6MW distributed photovoltaic power generation project of Qiangang Co. was launched, which was mainly divided into two parts: combined with the high-end heat treatment project of Zhixin Co. to build BIPV mode distributed photovoltaic power generation project, with a planned installed capacity of 5.6MW, an average annual generating capacity of about 6.22 million kWh, and a 25-year generating capacity of about 155.71 million kWh; to open the whole area of Qiangang Co. to develop distributed photovoltaic power generation projects using a combination of BIPV and BAPV modes, with a planned installed capacity of 30MW, an average annual power generation capacity of about 32.8 million kWh, and a 25-year power generation capacity of about 821.02 million kWh.



The company actively carried out market-based green power trading, with 916 million kWh of market-based green power traded in 2023, an increase of 27.4% from 2022. In addition, the company actively promoted the procurement of green certificates. During the reporting period, Qiangang Co. procured 45,000 green certificates and Jingtang Co. procured 60,000 green certificates.



Green power transactions in the last two years (100 million kWh)

Green Products

Shougang Co. is dedicated to develop high strength lightweight, long-life, and highly corrosion-resistant green products, and continues to enhance the green and low-carbon competitiveness of its products. It has developed a number of green and low-carbon products such as high-efficiency electrical steel, automotive lightweight high-strength steel, high-strength steel for household appliances, and long-life hot-dip zinc-aluminum-magnesium(low aluminum) alloy coated steel sheet for household appliance, etc., which promotes the synergistic reduction of carbon emissions of the downstream industries such as automobiles, machinery, household appliances, and constructions, and assists the downstream market achieving green upgrading.

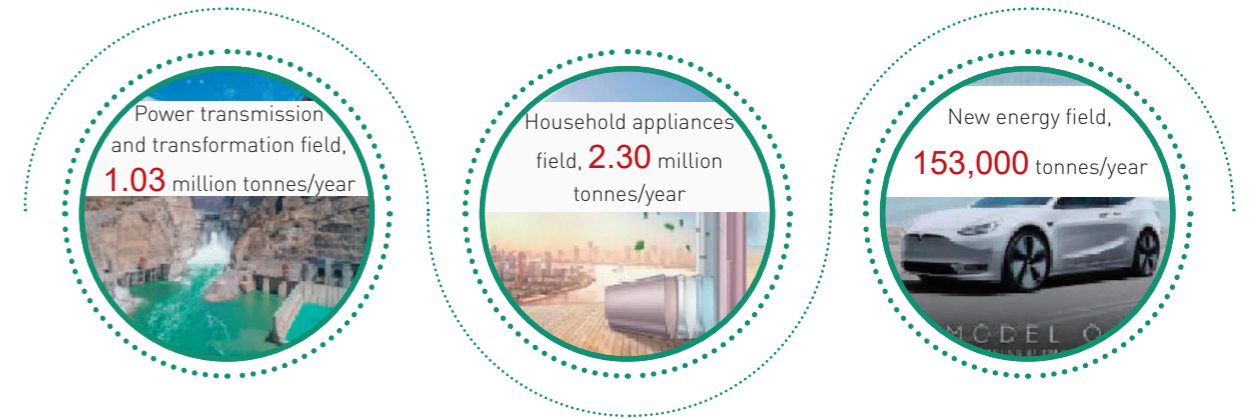
Cold Rolled Automotive Sheet

Low-carbon automotive sheet was successfully released, compared with the conventional process products to reduce carbon emission by more than 30%. Through high-strength thinning and optimized material selection, it can achieve overall body-in-white weight reduction of about 10%, calculated on the basis of body-in-white weight of 450kg, it can reduce weight by 45kg.



Electrical Steel

the company's electrical steel products help the industrial chain achieving energy conservation and carbon emission reduction, annual power savings of 3.5 billion kWh for the three major areas of home appliances, new energy and transformers, assisting downstream enterprises reducing CO₂ emissions of 4 million tonnes / year.



Specialized Electrical Steel for New Energy Vehicles

The company closely follows the development trend of new energy vehicles with long endurance, strong power and light weight, adheres to the product oriented of "high-end and efficient, green and environmentally friendly", and continuously promotes the iterative upgrading of soft magnetic materials for new energy vehicles, and has developed more than 20 types of special electrical steel products for new energy vehicles in 6 series, of which 6 products have made their global debut.

In 2023, the specialized production line of electrical steel for new energy vehicle adopted the world's first six-stand rolling mill, which increased the level of transverse thickness difference control by 20%. ESW1021 products, which was launched in September 2023, were designed to meet the future needs of high power, high speed and high efficiency of electric motors, solving the problem of high alloy and high magnetic induction, and improving the manufacturability of processed products and the performance of new energy vehicles in all aspects with extremely low iron loss and ultra-high magnetic induction. Non-oriented electrical steel products for new energy vehicles were awarded as "Green Design Products", and can reduce CO₂ emissions by about 2.08 million tonnes per year.



High Magnetic Susceptibility Oriented Electrical Steel

As the world's fourth enterprises of can produce 100% low-temperature high magnetic induction oriented electrical steel , the company has an annual output of 300,000 tonnes of high-performance oriented electrical steel



The first high-performance oriented electrical steel production line in China has been completed and put into operation



production capacity, formed a high magnetic induction, refinement of magnetic domains, low noise, bottomless, low excitation, intermediate frequency six series of more than 60 products, to achieve the global debut of four products. Among them, the market share of 0.20mm thick and below thin specification high magnetic induction oriented electrical steel has been the first in China for six consecutive years, and we continue to build an advantageous product cluster with high efficiency and low iron loss.

On April 19, 2023, high-performance oriented electrical steel production line was put into production in Zhixin Electromagnetism, with a new capacity of 90,000 tonnes of high-performance oriented electrical steel, which, after being applied to energy-efficient transformers, is expected to save 490 million kWh of electricity annually and reduce CO₂ emission by 480,000 tonnes.

In September, the high-performance oriented electrical steel products used in converter transformers for UHV DC project passed the expert evaluation, and the series of products reached the international leading level of the same kind of products, realizing the full coverage of UHV AC and DC applications; the oriented electrical steel was awarded the "green design products".

New capacity of **90,000** tonnes of high-performance oriented electrical steel

Expected to save **490** million kWh of electricity annually

CO₂ emission reduction: **480,000** tonnes

Biodiversity

Emphasizing Biodiversity

Shougang Co. fully understands the importance of biodiversity to the company, strictly complies with national and local laws and regulations, and continues to pay attention to the harmonious development of the factory environment and the surrounding ecological environment. During the project design phase, biodiversity conservation and land use assessment are carried out in accordance with relevant requirements. During the project operation phase, the surrounding ecological environment is continuously monitored. Active measures are also taken to protect biodiversity, reduce the impact of production and operation on the ecological environment, avoid disturbance to wildlife habitats, and prevent soil erosion and deforestation.



Jingtang Co. and Qiangang Co. continued to strengthen the greening of their factories, selecting suitable plant species according to soil and climate conditions while paying attention to the diversity of factories area, and setting up a new image of iron and steel enterprises building forest-like factories. By the end of 2023, the greening area of Jingtang Co.'s factories reached 6 million square meters, with 100% greening rate and 49% greening coverage, while Qiangang Co.'s factories had a greening area of about 1,215,000 square meters, with 8 key landscapes, more than 30,000 trees of more than 70 species, and over 1.5 million shrubs of more than 110 species, with a greening coverage rate of 46.6%, and 100% of the available green space greened, forming a green natural landscape of "flowers in three seasons, evergreen in four seasons" and "forest in the factory, factory in the forest". As the pace of the construction of "forest-style factory" continues to follow, the factory inhabited by magpies, pheasants, hares, white wagtails and other state-protected animals. Cold-R Co. has been actively rescuing wild animals, and during the reporting period, it was awarded as an excellent nature protection supporter by Beijing Wildlife Rescue Center.

Case: Mass production of advanced hydrogen-doped pipeline steel

Shougang Co. developed and produced advanced hydrogen-doped pipeline steel which is successfully applied to Baotou - Linhe gas pipeline project after being processed into steel pipes by the user, becoming the first mass production enterprise achieving of hydrogen-doped pipeline steel in China, laying the foundation for China's long-distance, high-pressure hydrogen transportation pipeline project applications. Natural gas hydrogen-doped pipeline project between the Baotou-Linhe is the first high pressure, high steel grade, long distance, large diameter hydrogen-doped pipeline project in China, with pipeline length of about 235km and design pressure of 6.3MPa, which can provide support for adjusting the energy structure of the areas along the route and realize "carbon peak" and "carbon neutrality". In the project, Huayou Steel Pipe used plates produced by Shougang Co. to manufacture Φ457 × 8.8mm X52MS spiral welded pipe. The company developed and produced high grade hydrogen-doped transportation pipeline steel, which met the requirement of 10% hydrogen doping ratio of the project design, and was in the leading position in China.





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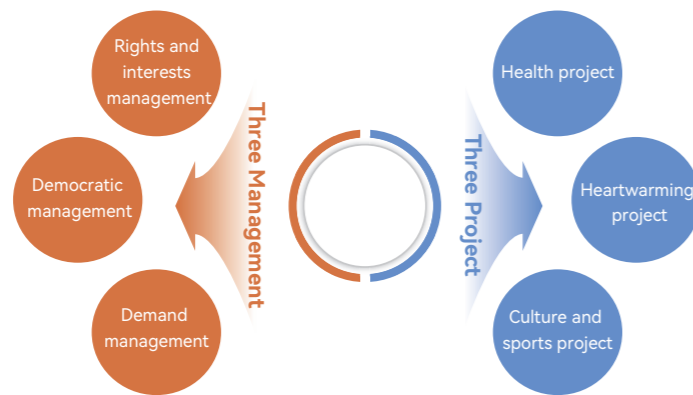
Society: Creating a Better Life Together (S)

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Employee Protection

Talent is the first resource. Talent is a strong guarantee for Shougang Co. to realize the development vision of "becoming a listed steel company with world competitiveness and influence". The company maintains the legitimate rights and interests of employees with rights and interests management, democratic management and demand management, establishes a perfect and scientific salary and benefit system; cares for the physical and mental health of employees with health project, heartwarming project, culture and sports project, continuously improves the working and living environment of the employees, attaches importance to the all-around development of the employees, and endeavors to promote the realization of the employees' personal value and the implementation of the enterprise's sustainable development at the same time.



Rights and Interests Management and Protection

The labor contract signing rate
100%

The collective agreement coverage rate
100%

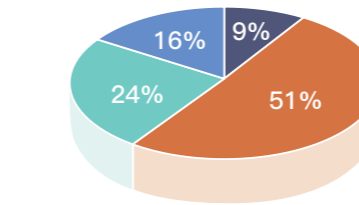
Regarding Human Rights

Shougang Co. strictly follows the requirements of the *Constitution of the People's Republic of China*, *Labor Law of the People's Republic of China* and other relevant laws and regulations, respects human rights and equality, formulated Management System of Labor Contracts and other management rules, continuously improves the human resource management system, consciously resists any disregard and infringement of human rights, and insists on treating employees for different nationalities, ethnicities, ethnicity, beliefs and cultural backgrounds equally. We insist on creating an equal, inclusive and diversified employment environment and safeguarding the legitimate rights and interests of every employee.

As of December 31, 2023, the total number of employees in Shougang Co. is 18,226, the labor contract signing rate is 100%, and the collective agreement coverage rate is 100%.

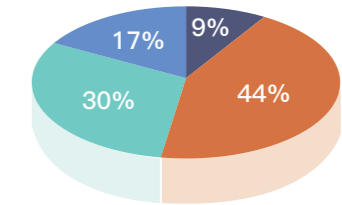
Shougang Co. strictly protects the privacy of its employees. We strengthen monitoring in the recruitment, employment, and promotion processes, establish channels for employees to appeal to senior management, and eliminate the use of child labor, forced labor, harassment, bullying, intimidation, and other illegal behaviors, resolutely safeguarding employees' human rights. We have formulated management rules and measures such as the *Prohibition of Child Labor Regulations and Child Labor Remediation Control Procedures*, *Standards for the Protection of Female Workers and Minor Workers*, *Standards for the Prohibition of Discrimination, Harassment, and Abuse*, and *Standards for the Prohibition of Forced Labor* to ensure fair and equal treatment of all employees, measures without direct or indirect discrimination against employees in Labour practices, and measures to provide protection and advancement opportunities for vulnerable groups. In 2023, the company did not have any illegal or irregular employment incidents.

Employee Structure



■ 30 years old or younger ■ 30-40 years old
■ 40-50 years old ■ 50 years old or older

Employee age structure



■ Master's degree or above ■ Bachelor's degree
■ Associate's degree ■ Vocational secondary and below

Employee education level structure

Salary and Benefits

The salary distribution system of Shougang Co. is committed to establishing a sound mechanism for determining and increasing salaries that is compatible with the labor market and linked to the efficiency of the enterprise, and continuously optimizing and improving the salary system by promoting the linkage of salary distribution with job value, competence and performance. There was a smooth performance feedback and complaint system.

Salary System

Salary

Post salary system, annual pension system in a variety of flexible forms, post salary, position salary, merit pay, double pay at the end of the year, equity incentives, science and technology awards, management innovation awards, lean improvement awards, advanced evaluation, three-star awards, etc.

Allowances and subsidies

Academic allowance, position allowance, housing allowance, transportation allowance, communication allowance, patent allowance, relocation subsidy, settlement subsidy, working meal subsidy, high-temperature subsidy, highly skilled talents subsidy, etc.

Welfare

Basic benefits stipulated by law: We pay pension, unemployment, work injury, medical care and maternity insurance for our employees in strict accordance with the regulations, as well as housing provident fund, with 100% employee coverage.

Benefits other than those stipulated by law: Corporate benefits are in various forms, including but not limited to: holiday benefits, birthday benefits, enterprise annuity, supplementary pension for retirees, group accident insurance, reimbursement of heating costs, working meals, staff dormitories, shuttle buses and so on.

Insurances

7 insurances and 2 funds, health checkups, high-end bachelor apartments, couples' apartments, commuter shuttle bus, heating expense reimbursement, gym, basketball gym, badminton gym, table tennis gym, staff restaurant, community market, kindergarten.

Vacations

Weekends day-off, paid vacation, statutory holidays, family visit leave, convalescent leave, maternity leave, marriage leave, breastfeeding leave, etc.

In 2023, total number of female employees that were entitled to parental leave was 1,904.

Democratic Management

Shougang Co. actively promoted the grass-roots democratic management, continuously improved the grass-roots democratic management system in the basic form of Staff Congress, revised the *Regulations of Staff Congress*, listened to the opinions of employees beforehand, and accepted supervision of employees afterward, and ensured the employees' right to know and participation to the maximum extent. During the reporting period, 2 staff congresses were held, of which 10 proposals were made by staff representatives, with a 100% response rate to the proposals, and the *Implementing Rules for Enterprise Pension of Beijing Shougang Co.* was considered and passed; 4 joint meeting of the heads of staff congresses was held.

The company listens to the voices of employees through online and offline communication channels to ensure that the most concerned, urgent and difficult issues of the employees are promptly fed back and solved. To strengthen the openness of factory affairs, the company has set up the "Factory Affairs Open Column" and the "Party Affairs Open Column", and each operation area and team will disclose to the employees all the matters involving the employees' immediate interests, such as the distribution of rewards, the selection of the best, and the daily management; We disclose operation and production, party spirit and honesty, labor and personnel, cadre selection and so on. The company guarantees the employees' right to know, right to participate, express and supervise in the management of the enterprise, and builds a harmonious labor relationship with the employees.



Demand Management

Shougang Co. is based on "doing practical things and solving difficult problems" for the staff, and has fully completed the work of protecting the staff's transportation, meals, accommodation and administrative offices. Adhering to the service workers as the center, the company strengthens the management of the needs of workers, and solves the most concerned, urgent and difficult problems of workers. The company held quarterly staff demand meetings, collected a total of 302 staff demands, and coordinated the settlement of 35 company-level staff demands, such as female labor insurance and children's education, to ensure that 100% of the staff demands were 100% answered.

Case: "Happiness Jingtang" generally benefits employee and warming service

Pilot Application of Employee Healthy Stations in Jingtang Co.: Pilot work of Happiness Operation Department was carried out in the Steelmaking Operation Department and the Energy and Environment Department. Relying on 127 workers' individual households, 180 Warming Stations, and 3 Workers' Homes, the company guaranteed happy work and comfortable rest for employees, and 15 employees' individual households were named by Beijing Municipality.

Sending warmth during festivals, providing refreshing coolness during summer and assisting difficult employees: During the New Year and Spring Festival, leaders visited 1,090 representatives of model workers and needy employees, and during the Spring Festival, condolences were sent to employees on the job, with a condolence amount of 514,000 yuan. During the summer, 100,000 kilograms of watermelons were delivered to the employees. Carried out the "Donate Love 2023" fund-raising activities, the employees of the participated in the donation of 10,493 persons, the total amount of donations RMB446,000 yuan. Applied for RMB168,400 yuan for 25 employees who suffered family property losses due to the rainstorm. Provided 9 cases of special protection assistance, amounting to RMB 1,182,100 yuan. Handled 141 applications for assistance from Beijing Warmth Fund, Shougang Fund for the Needy and Jingtang Assistance, amounting to 1.4024 million yuan. Handled 1,173 cases of employees' mutual assistance insurance, with claims amounting to RMB2.1417 million yuan. The summer custodian program for employees' children solved the worries of 126 families.

Organize employee recuperation: Established two new rest and recuperation routes in 2023 to meet the diversified needs of the employees, and Complete recuperate organizational work for 1,045 Jingtang employees and 272 coking plant employees.

Paying attention to the mental health of all employees: The company has organized and completed two training courses for resident lecturers, 6 sessions of "one-to-one" mental quality improvement, 4 sessions of "Happiness in Jingtang" caring for the workers and other activities, and served more than 13,000 workers in total. Jingtang Co. was awarded the title of "Excellent Demonstration Unit of Employee Psychological Care Service".

Health Project

The company adheres to Xi Jinping's thought of socialism with Chinese characteristics in the new era and General Secretary Xi Jinping's series of important speeches on people's health as the guidance, comprehensively implements the spirit of the report of the 20th CPC National Congress on "Promoting the construction of a healthy China", and actively implements the strategy of healthy China, establishing the concept of happy work and healthy life, implementing the new way of healthy and scientific life for the health plan, optimizing the health environment to promote the construction of "Healthy Shougang Co.". By health management action, it guides the workers to establish scientific health concept, improves the health literacy of the workers, enhances the workers' sense of obtaining, happiness and security, and provides health guarantee for Shougang Co. to construct high-quality development foundation.

Case: Employees enjoying health and happiness

Vigorously creating a healthy corporate culture: establish the concept of happy work and healthy life, and lead to build a healthy brand. Strengthen publicity to create a strong healthy cultural atmosphere. Give full play to the role of the New Media Association, strengthen the publicity of "Healthy Shougang Co.", and publicize health concept, knowledge, activities, initiatives and results in a variety of forms, such as through the intranet, official accounts and video accounts.

The Healthy Employee Physical Fitness Advancement Program: The company organizes physical testing for employees, and set up physical fitness progression plans based on scores of 65, 70, 75, 78, 80 and above. We also carry out targeted physical exercise to promote employees to improve their physical fitness.

Formulating a scientific fitness plan: Combined with the *Measures for the Implementation of Shougang Co.'s Employee Health Care Plan* and the *Notice on the Implementation of the 2023 Employee Health Care Plan*, each unit organizes employees to make good use of the health places. Adhering to the principle of "miniaturization, diversification and popularization", fitness activities, such as "Eight Trigrams Boxing", "Tai Chi Chuan", "Ninth Set of Radio Gymnastics", etc., are carried out in two time slots, from 10:00 to 10:15 in the morning and from 15:00 to 15:15 in the afternoon every day so that employees can easily exercise for ten minutes, work happily for a whole day and live a healthy life for a whole life.

Carrying out health checkups for all employees: Carrying out health checkups for all employees: Every year, the company organizes and carries out health checkups for all employees, and forms four levels of health checkup reports for the company, grassroots organizations (departments and offices of the authorities), operation areas (sections), and working teams, and analyzes and interprets the data of the health checkups and the recommendations of the doctors, so as to achieve the goal that each higher level can keep track of the health status of the lower levels to find out the problems of early prevention and early intervention.

Creating a "Healthy Home": Health management is closely integrated with the construction of small homes for workers, and around the goal of creating a "Healthy Home", the company purchases learning video courseware for workers' families on health knowledge popularization, disease prevention, healthy diet, scientific exercise, etc., and holds health knowledge lectures at the grass-roots level; the company regularly carries out various forms of health knowledge promotion and education activities such as health lectures, expert consultations, and video teaching.

Giving full play to the role of Cultural and Sports Association: the company regularly carries out recreational and sports activities, stimulates fitness enthusiasm, and makes more employees join the ranks of fitness exercise, communicate with each other in fitness and exercise activities, learn from each other, and go to the fitness and exercise in a more scientific and healthier way.



Heartwarming Project

Adhering to the people-oriented principles, the company effectively solved the practical difficulties of employees. The company conveyed greetings to 124 needy employees, distribution of more than 300,000 yuan of hardship grants; for 138 employees to meet the conditions of mutual aid insurance claims for special assistance, the distribution of nearly 200,000 yuan; organized a survey of low-income families, for 15 employees declared low-income help condolences of 45,000 yuan; saluted 230 model workers and technical backbones, 135 expatriate executives, chief technical experts and retired cadres; organized a door-to-door survey of flood disaster relief, and declared Shougang's relief fund of 57,000 yuan for 6 severely affected families. The company organized summer hosting classes for 151 employees to solve their worries; organized staff rest and recuperation activities for a total of 706 employees and their families. The company actively contacted with Qian'an Municipal Hospital of Traditional Chinese Medicine to organize and carry out the activity of "Winter Disease Dog Days plaster" in the factory, with a total of 356 employees and their families participating.



We deeply create the characteristic team "Family" culture, and held the "Best Employee Individual Family" evaluation display and "Employee Individual Family" construction achievements sharing meeting. We selected 10 "Best Individual Family", 20 "Excellent Individual Family", 20 "Outstanding Individual Family", 6 "Individual Family", and constantly improve the connotation and soft power in individual family construction, to enhance the sense of ownership for the employees, stimulating their enthusiasm, initiative and creativity, allowing them to learn and progress in the process of the evaluation display.



Shougang Co. is committed to safeguarding the rights of female employees fundamentally, and paying attention to the vital interests of female employees. Taking into account the characteristics of female employees, we have carried out activities such as the "Quality Enhancement Project for Female Employees", "Female Employees Building Up Their Career" and "Female Employee Job Innovation", which have improved the competitiveness of female workers and employees. The company has purchased an insurance for each female employee against special diseases, and has done a great deal of work in the area of labor protection for female employees.

Case: Heroine make new contributions & care for women employees

Select and set up typical female workers to stimulate motivation for struggle: Selected 15 March 8 Red-banner pacesetter in Jingtang CO., 10 female workers were selected as Shougang Women's Pacesetters; three groups won Caofeidian Advanced Women Workers Collectives, and three members won Caofeidian Advanced Female Employees. The company held an advanced commendation meeting of "Charming Women's Day - Harmonious Jingtang Family" celebrating "International Women's Day", and organized Jingtang story female workers special, female workers nail art, yoga activities, online prize quiz, etc. Through a series of work, the majority of female workers have been inspired to learn from and catch up with the advanced models.

Carry out the work of female workers and organize marriage and friendship: The company held the "Shougang Co. Youth Together" and youth exchanges and dating activities, and jointly organized the "Looking for the most beautiful you" single youth dating activities with the Jiayuan dating platform, and jointly organized the "Steel City, Youth on the Same Road" youth carnival with the Caofeidian Education Bureau. More than 130 employees participated in the activities. The company provided opportunities for single youth to expand the social circle.

Promoting the 5+N Psychological Care Action Plan, in 2023, the company organized and carried out the "Employee Happiness" assessment, formed 7,985 assessment reports, held three report interpretation sessions, and organized 15 team counselling and one-on-one interviews with 100 employees. To promote psychological care into working teams and truly integrate psychology into the daily management of working teams, 3,487 employees filled out self-help assessment questionnaires on their psychological conditions by scanning the QR code, which improved employees' ability to cope with psychological stress and was very meaningful to the good management of working teams.

We continue to deepen the construction of the psychological care service system for workers and train a team with professional skills. 6 people participated in the training of administrators of employee soul station organized by the Beijing Municipal Federation of Trade Unions, 7 persons participated in the training of employee psychological crisis identification and intervention, 2 persons participated in the training of employee psychological guidance techniques, and 2 persons participated in the training of employee internal psychological trainers, all of which were successfully completed and certificated.

Case: "Harmonious Team" system construction

Promote the "Harmonious Team" training system intermediate courses, in 2023, a total of 514 sessions were organized, 8,299 people attended, received effective feedback on the courses



from 7,175 persons. The feedback showed that the satisfaction of the three intermediate courses is 9.72, 9.67 and 9.62 respectively, and the percentage of those who think it is very helpful to their work and life is 71.29%, 67.18% and 65.62% respectively. A two-day intermediate training on "Harmonious Leadership" was organized for a total of 120 participants to enhance the comprehensive ability of the management of each unit, pay attention to the growth of employees, cultivate a positive mindset, improve work enthusiasm, and promote the healthy and high-quality development of Shougang Co. The "Harmonious Team" Training System Advanced Course Pilot Team Training project was awarded the Outstanding Psychological Service Promotion Project by the Beijing Federation of Trade Unions (for the third consecutive year). The company was awarded the "Excellent Organization Unit" for the outstanding performance in organizing the professional skills training for employee psychological care instructors of National Employee Health Promotion Project.

Shougang Co. held a special lecture on "Psychological Care for Harmony" in 2023, in which 10 employees from the grassroots told about touching stories based on their own experiences. These cases are real and vivid, sincere, and further cohesion of the staff's emotions, to improve the staff's mental health literacy, build a happy enterprise, and promote high-quality development, providing a powerful kinetic energy.

Culture and Sports Project

The company is closely focused on the construction of enterprise culture, and actively creates conditions to carry out colorful cultural and sports activities. A total of 196 well-designed, diversified, rich in carriers and enjoyable cultural and sports activities were organized to build a stage for the majority of employees to exercise and display their abilities, among whom the Basketball League was opened for online live broadcasting, which was watched online by more than 5,500 people and gained more than 140,000 likes.



2023 National Employee Healthy Sports Exhibition Race and the Third Employee Healthy Games of National New District Economic Development Zone Hi-Tech Zone



2023 "Shougang Sports Cup" Shougang staff basketball game



The Sixth National Metallurgical Employees' Race Shougang Sub-Match and "Jingtang Cup" 2023 Shougang Employees' Badminton Games

The company has put into a Staff Bookstore, which has become the main place for employees to read and improve their cultural literacy, and has taken the development of "Bookish ShougangCo." as the source of cultural construction.



2023 Shougang Staff Table Tennis Game

Talent Development

Shougang Co. firmly establishes the concept that talents are the first resource, and increases the introduction of talents, strengthens the talent training, use, incentives and competition mechanism, and strives to build a perfect talent system, and strengthens the advantageous support of talent resources.

Attracting Talents

The company continues to deepen the implementation of the "excellent training plan" recruitment project and actively introduces outstanding graduates. Through the innovation of system and mechanism, the company continuously selects middle and high-level professional and technical talents to provide strong human resources support for the company's high-quality development, and in 2023, the company employed 247 new employees. Among them, the company selectively hired 220 university graduates.

Career Development

The company adheres to the strategy of strengthening the enterprise with talents, provides employees with rich career development opportunities and smooth promotion channels, and broadens their horizons, accumulates experience and cultivates composite talents through the rotation program. The company continuously strengthens the construction of three talent teams, namely, business management talents, professional and technical talents, and skillful operation talents, and makes the growth channels of talent teams' grades unimpeded. In addition, the company continuously improves the talent career evaluation and promotion system, implements the management of full work performance accumulation system, and guides all kinds of talents to realize promotion and growth through accumulation little by little by mean of mechanism reform. At the same time, it strengthens the training and development of technology leading talents, cultivates and creates a number of expert teams, and promotes the construction of strategic talent force echelon.

14 "Star of

Shougang Co."

47 "Excellent

Star of Shougang Co."

43 "Hope Star

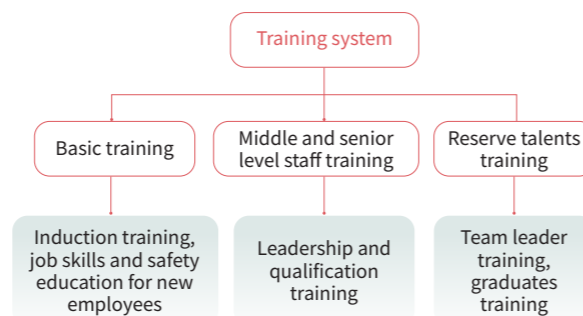
of Shougang Co."

The company strengthens the whole life cycle management of employees' career, and continues to promote the "Voyage" program. In 2023, 28 "Voyage" program training objects were rotated and exchanged for learning, which effectively improved the speed of employees' success, ratio and retention degree. The company pushed forward the labor organization and management mode of "Big Positions, Big Job Categories", and a number of compound talents emerged. For example, there were 337 "Star" employees in the Hot Rolling Department, 176 "all-round duty workers" in the Energy Department, and 63 "all-through talents" in the Cold-R Co.

In 2023, the company implemented the "Race" mechanism to optimize the "first resource" of talents. 30 persons were recruited to new positions in open competition, effectively promoting the matching of personnel. The company improved the talent evaluation system, strictly selected and appointed, incorporated talent management into the Party building evaluation system, and combined with the construction of the company's job system and the structure of technical talents in various occupational fields, continuously improved the talent assessment and evaluation mechanism, enhanced the accuracy and objectivity of the evaluation results, and incentivized 7,095 persons to be promoted. The company organized the eighth "Shougang Co. Three Stars" selection, which resulted in the selection of 14 "Star of Shougang Co.", 47 "Excellent Star of Shougang Co." and 43 "Hope Star of Shougang Co.". The company always cares about the growth of its employees, takes various measures to build a platform for their growth, constantly finds and cultivates reserve talents, and promotes the common development of the employees and the company.

Employee Training

Continuous growth of employees is the prerequisite and key to realize sustainable development of enterprise. Shougang Co. attaches great importance to talent cultivation, oriented to the career development path of talents, and effectively builds a "four horizontal and three vertical" training system for employees: horizontally through the four major sequences of personnel in business management, professional and technical, skill operation, and collaborative units, and vertically covering three major trainings: job foundation, ability enhancement, and expansion training. Shougang Co. focuses on cultivating a number of composite management talents, leading scientific and technological talents, and artisanal skill talents, so as to realize the common growth of employees and the company.



The company promotes talent enhancing .On the basis of promoting mature projects such as "Cyan" Training Program, "Deep Blue Training Camp" training program, Team Leader Training, Leading Cadre Lecture, Professor's Forum, Skill Competition, etc., the company designs, develops and promotes a number of training programs around different professional fields by relying on the projects.

Shougang Co. continues to select model workers, craftsmen, advanced selection and commendation, and selected the 3rd Shougang craftsmen (4 persons), Shougang Co. Craftsmen (5persons). The company's electrical steel rolling field of innovation leader Xu Houjun was nominated for the "Chinese Good People List" candidates, Jingtang Co., Hot Rolling Operations Department Xu Fang won the "National May Day Woman Pacesetter" honorary title. At the same time, the company organizes highly skilled personnel to participate in skill competitions at all levels, and carries out employee skill training and other activities, and encourages employees to continuously improve their skills by building a platform for skill enhancement. In 2023, Qu Erlong, Xing Feng and Sun Yongjun were awarded the title of "National Iron and Steel Industry Skilled Worker". The company carried out the seventh phase of the "Master Craftsman" program, and selected 50 gold-medal craftsmen, silver-medal craftsmen, bronze-medal craftsmen and the best operators.

The employee training coverage rate

100%

The total duration of employee training

1,867,841 hours

The per capital duration of employee

training 104.19 hours

Case: Shougang Co. held 2023 "Future Craftsman" youth training camp

In order to reasonably excavate, develop and cultivate the company's strategic high-skilled reserve talent team, to create a complete skill talent pipeline team and talent supply chain, to meet the demand for high-quality development of artisanal and high-quality skilled personnel, the company transferred 45 young technical backbones in the form of full-time training for two and a half months. After 11 weeks of high intensive training, the trainees of the youth training class successfully completed all the training courses of the six teaching modules, and the ideological pattern, volitional quality and quality and ability have been fully exercised to achieve a good training effect.



Case: Jingtang Co. built 4 skills training bases



Jingtang Co. builds "one system, multiple bases" practice-oriented, application-oriented, innovative comprehensive training system, through the construction of virtual simulation training system, the layout of multiple types of training bases, multi-dimensional integration of the establishment of personnel training system to meet the needs of skilled personnel skills training. With the core of strengthening the quality ability of employees at work and the standard of skill level improvement and technical

competition requirements, four company-level practical training bases for overhead cranes, welders, electricians and fitters were established respectively, as well as departmental-level practical training bases for steelmaking and railroad transportation.

In 2023, the training bases organized a total of more than 2,000 person times training and skill competitions, and all kinds of technical and skilled personnel further sorted out the use of large-scale, automated and intelligent equipment on site and operation methods, and the ability to drive the equipment was steadily improved.

Healthy and Safety

Work Safety Management

Shougang Co. deeply learns and implements the spirit of General Secretary Xi Jinping's important discussions and instructions on production safety, adheres to the principle of "safety first, put people and life above everything else", establish the safety production committee, strengthen the responsibility system for safety production, promote standardized safety production procedure, and create safe and stable working environment. During the reporting period, the accumulated investment in production safety amounted to RMB 167 million, no major or above production safety accidents occurred, and the injury rate of one million working hours was 0.

Health and Safety Management System

Shougang Co. has set short-term and medium- and long-term production safety management objectives that are in line with the development of the company, and works strictly in accordance with the ISO 45001 Occupational Health and Safety System. In 2023, Shougang Co. has organized internal experts to carry out internal audits of the system once, and hired a professional organization to carry out external audits of the system once, so as to continually improve the level of safety management through self-checking, self-correction and to build a long-term mechanism for occupational health and safety management.

In 2023, The company passed the occupational health and safety system and HSE management system certification of Classification Society.



In order to enhance the level of enterprise safety management, the company set up a safety standardization management committee, establish and improve the safety standardization management system, realize the safety management systematic, job operation standardization, safeization of equipment and facility design, the working environment customization. Each unit with reference to the national safety production standardization level 1 standard to establish and maintain the operation of the safety standardization management system, Qiangang Co. rolling unit and Jingtang Co. ironmaking unit, sinter-pellet unit, rolling unit (tinplate department) passed the first level of national safety production standardization certification in 2023. We further consolidated the safety foundation management, standardized the safety production behavior, improved the safety production conditions, and built a solid safety cornerstone for enterprise development.

Intrinsic Safety Management

Shougang Co. takes intrinsic safety management as the key, continuously improves the ability to prevent and resolve safety risks, and comprehensively pushes forward the modernization of the production safety governance system and governance capacity. In 2023, we focused on gas, fire, limited space and other difficult, bottleneck problems, in-depth promotion of intrinsic safety management research, the implementation of the furnace and kiln flue CO concentration and ignition device interlocking effectively control the risk of combustion and explosion, in order to use high-flammability materials instead of low-flammability to reduce the risk of fire, the mechanization and automation of the transformation of eliminating the personnel of high-risk operations and other measures were applied, to achieve a number of enhancement of the effectiveness of reducing the risk, forming advanced experiences that can be replicated and popularized. Moreover, 76 national patents were declared, and the pressure interlock between the independently designed and applied gas electric butterfly valve and line-blind valve were vigorously promoted in the metallurgical industry in Tangshan City and included in the revision of national standards and norms.



The project "Exploration and Application of the Construction of Intrinsic Safety Management System for Metallurgical Enterprises Based on Lean Management Thinking" won the Second Prize of Safety Science and Technology Progress of China Safety Production Association.

Dual-Prevention Mechanism Construction

Shougang Co. continues to promote the construction of dual-prevention mechanism for risk classification control and hidden danger investigation and governance. In 2023, we completed the re-identification of risks and formulation of control measures for each unit, with a cumulative total of 26,090 risks identified and 30,437 control measures formulated; through the implementation of the 2023 Work Safety Special Remediation Program and other measures, we deeply promoted the effectiveness of hidden danger investigation and treatment to effectively resolve various types of hidden dangers and dissolve potential safety risks.

Shougang Co.'s safety risk control and hazard investigation and management measures in 2023	
Implement rectification measures around special project	On the basis of systematically carrying out various types of special safety management work, it has focused on promoting special management of fire safety, with a total of 925 fire safety hazards investigated and managed, and promoted 192 new technologies, such as mobile foam fire extinguishing devices and thermal imaging fire electrical monitoring systems.
Implementing priority areas	The hidden dangers are analyzed by the "dual-control" system through big data statistics, focusing on the larger risks and frequent hidden dangers, and prioritize elimination methods and alternative methods, so as to reduce the frequency of the occurrence of safety hidden dangers. Meanwhile, the company carries out bottom-up and anatomical investigation around the changes in the criteria for determining major hidden accidents, supplements and improves the task lists for the inspection of major hidden accidents in production and management positions, incorporates them into the daily control of the dual-control system, and establishes a long-term mechanism to realize the "full self-inspection and others checked to zero"
Enhancing on-site operation supervision	The company's Cold Rolling Department realized automatic threading operation for heavy coils by production organization adjustment, equipment and automation renovation and upgrading, reducing the threading operation from a monthly average of 8 times to 4 times, and lowering the risk value from 210 to 42, which effectively reduced the risk of operation personnel.
Focusing on source governance of hidden dangers	The company mainly concentrated on typical and frequent hidden dangers source hazards for controlling, dug deep into the causes of typical hidden dangers. The company continues to promote the "energy isolation" protection project to ensure safety, organizing production, equipment and other professional essential safety expert team, based on national norms and industry standards, compiling the "Energy Isolation Guidance Manual", to further clarify the various energy isolation protection standards, and to ensure the on site safety production.

Construction of Smart Safety Enterprise

The company takes the dual prevention control system as the basis, improves the intelligent level of safety supervision of equipment and facilities and the behavior of operators, carries out real-time monitoring and multi-level warning of safety risks through the informatization platform, improves the ability of dynamic control of safety production, and guarantees the escort for high-quality development.

Expanding the intelligent monitoring function of personnel behavior: the company optimizes 24-hour video monitoring in 2,929 workplaces, and organizes the installation of AI image automatic identification on 300 cameras, which automatically identifies 8 kinds of behaviors, such as smoke, boundary intrusion, and wearing of labor protection equipment. Risk analysis and control reminders of typical violations are conducted in 5 aspects, including personnel passage, safety stand, hoisting operation, safety belt use, and labor protection wear, urging all units to strengthen management, learn from each other, educate workers to comply with regulations, and put an end to violation of rules and regulations.

Strengthening the monitoring and early warning of production safety risks: the company has included 367 risk points above the larger ones, such as the temperature of the hot stove top, into the scope of information-based monitoring, realizing automatic early warning of risks above the larger ones and automatic generation of information on hidden dangers.

Strengthening daily safety management: the company has organized and improved the functions of automatic control and big data analysis in four modules, including safety evaluation. It has optimized the modules of safety activities and construction technology reform, and added the modules of occupational health, related parties and major risks, so that all safety professional work is included in the control of the platform.

Related Party Safety Management

The company integrates related parties into internal unified coordination and management, builds a "community" mechanism for related party safety management with systematic thinking, comprehensively standardizes the safety management business, and effectively prevents interested parties safety risks by means of safety qualification audit, safety training, and regular safety evaluation. In 2023, we established a grid management of interested

The rate of detection of occupational disease hazards **100%**

Occupational health checkup rate **100%**

Training pass rate **100%**

personnel exposed to hazardous substances to carry out occupational health protection knowledge education and training, to ensure that the training pass rate of 100%. The company consolidates the basic management of occupational health through the construction of occupational health and safety management system, continuously improves the working environment and conditions with the philosophy of intrinsic safety management, and protects the physical and mental health of the employees and interested parties. Through mechanization to replace personnel operations, automation transformation to reduce the time of exposure to hazardous substances, and invoking new materials to reduce the concentration of hazardous substances, the company will realize noise reduction in 3 places, temperature reduction in 3 places, dust reduction in 4 places, and replacement of chemical exposure in 1 place. During the reporting period, no cases of occupational diseases were found in the company.

Safety Management of the Fire Control

Shougang Co. is oriented to consolidate the foundation of fire fighting in a comprehensive manner. The content of the basic file is streamlined and optimized, with 27 items cancelled and 9 items merged; three management systems for key fire safety areas and other management systems are revised, as well as one management method for micro-fire stations, to ensure that there is a system for fire fighting; fire fighting professional skills training activities are organized to enhance the practical ability of fire fighting. In 2023, there were more than 750 training sessions and more than 17,000 person-times.

The company carries out comprehensive special rectification with the purpose of eliminating fire hazards. The company carries out special rectification of six systems, including indoor fire hydrant, fire emergency lighting and evacuation instruction system, automatic fire alarm system, etc. It also carries out six special researches on electric vehicles, photovoltaic power generation, oil storage places, etc., and formulates management and control measures for the problems, so as to reduce the risk of on-site fire protection; We carry out the promotion of new facilities, according to the line-type temperature-sensitive fire detectors, mobile foam fire extinguishing devices, thermal imaging fire electrical monitoring system and other fire facilities test effectiveness, in the hot rolling, steelmaking, ironmaking and other areas to promote fire detection and early-warning system, to achieve timely warning of fire, control in advance.

Shougang Co. has taken the strengthening of prevention and control capability as the key to comprehensive research and development of new technologies. The company continues to promote the application of "Smart Fire", added six fire facilities warning function, research and development of fire hydrant positioning APP, deepen the application of full coverage of video monitoring, independent research and development of the early stage of the fire automatic identification model, through the intelligent and effective operation to enhance the level of intrinsic safety management.

Case: Establishment of fire emergency joint mechanism to build a safe company together

In 2023, the company established cross-sectoral cooperation, cross-regional synergy and social firefighting and emergency response linkage mechanism, established firefighting and rescue linkage mechanism with upstream enterprises, clarified the linkage and disposal process, realized resource sharing, and set up a horizontally synergistic and efficiently operated emergency response and rescue system. Taking the implementation of gas protection station and micro fire station duties as a leader, the company has formulated and implemented training and linkage drill plans to effectively improve the level of emergency linkage skills. Grasping fire safety to build safe enterprise, the company went deep into the community to carry out popularization of fire knowledge, participate in the community fire emergency plan process combing, and effectively promote the development of fire public welfare undertakings.



parties "one enterprise one file", organized interested parties units to regularly participate in the company's work conference on production safety, and signed "one-to-one" help responsibility certificates with 70 regional interested parties in 48 operation areas of the company. Through the help program, the company promotes the independent improvement of the interested parties, continuously strengthens the foundation of safety management, improves the management level of the interested parties, and realizes the common development with the company.

Occupational Health Management

Shougang Co. always starts from the perspective of employees' occupational health, strictly abides by the *Law of the People's Republic of China on Prevention and Treatment of Occupational Diseases* and other regulations and standards, organizes and formulates annual occupational disease prevention and treatment plans and implementation programs, specifies the control measures such as regular testing, daily monitoring, and evaluation of high toxicity, and ensures that the rate of detection of occupational disease hazards reaches 100%; Based on the testing data, the company organizes occupational health checkups for personnel exposed to hazardous substances, ensuring that the rate of checkups reaches 100%; Organize the main persons in charge, occupational health management personnel,

Emergency Safety Management

The company strengthens coordination and linkage, and improves operational capabilities. Through emergency resource investigation, accident risk identification and assessment, it identifies the type of emergency disposal on-site, and establishes a comprehensive plan, special plan, and on-site disposal program at three levels of plan management; It actively establishes and improves the whole process control mechanism of physical training, standard assessment and rehearsal, and establishes a fire-fighting and rescue linkage mechanism with adjacent units to realize the synergistic linkage of personnel, materials and information, and builds a horizontally coordinated and highly efficient emergency rescue system.

The company actively builds a professional emergency rescue team and regularly carries out employee emergency training and drills. In 2023, a total of 5,539 emergency drills at all levels were organized, 105 cross-regional collaborative linkage drills were organized, and 598 emergency response cards were updated and perfected; the company utilized the practical training base of the gas protection station, and organized hands-on and experiential training for relevant parties, and 22 targeted emergency drills were organized.



Safety month activities.

Safety Culture Construction

The company always adheres to the safety culture as a leading, and constructs the long-term mechanism of enterprise safety production. In 2023, the company issued the *Safety Culture Construction Program* and established the evaluation standards for the annual audit of safety culture, which evaluated the overall safety culture construction of each unit through 43 scoring clauses.

The company integrates the safety family culture with the high-risk pre-work meeting, and carries out cultural activities such as "safety month", "family-enterprise linkage", and "one family" of the related parties, to build a firm defense line of workers' safety production awareness and transform the "soft power" of safety culture into "hard support" to promote safety management.

Strengthening employee safety education and training is an important guarantee for the sustainable development of enterprises. Various forms of safety education activities were carried out to enhance employees' safety awareness and emergency response capability, focusing on various aspects such as safety awareness, hidden danger investigation and safe operation skills.

The safety training totaled

928,362 hours

225,891 participants

The coverage rate of safety training

100%

Shougang Co. launches safety education and training program in 2023

Conducting training to improve job risk management and control capabilities	The company has been doing accurate training and expanding the forms and channels of training. Focusing on the enhancement of job risk management and control ability, 2,648 training points have been identified, 629 safety regulations have been fully utilized by team instructors, 322 times of hands-on training for key positions have been promoted on a pilot basis, 1,254 courses have been formed by developing and utilizing the online education and training system, and 50,169 times of order-type on-line training have been carried out.
Conducting training to improve the ability to investigate fire safety hazards	Focusing on the quality of the professional team to enhance the ability to use "standards + practice verification" training mode, to enhance the fire professional system management ability to detect hidden problems, there were a total of 10 training sessions throughout the year, more than 720 person-times.
Conducting safety awareness training activities	Innovative ways and means of training, for the maintenance of key projects, high-risk operation content and the existence of cross-operation mutual influence of the point, to carry out perception training activities; make full use of the gas protection station training base, the organization of internal personnel and related parties to carry out hands-on training, through the simulation of the operation, the perception of the operation risk, and to further improve the actual operation of the ability and level.
Conducting related party training	To consolidate the related parties' hardware management of work equipment and personnel education and training. In 2023, the organization organized education and training for long-term related parties, and issued 6,940 "one person, one card" for qualified education and training; guide the related parties' standardized management of work equipment with training, and standardized the unified standard of 9,773 sets of work equipment, such as electric welding machines.
Developing a secure online education and training system	The company independently developed the safety online education and training system, presented the learning content in various forms such as video, audio, text, etc., and improved 3 major categories and 15 system functions. In 2023, each unit uploaded a total of 1,043 training courseware, generated 1,167 training programs, and completed the training for 26,523 person-times.

Case: Shougang Co. "Safety Month" activities in 2023

Shougang Co. took "everyone talks about safety, everyone knows emergency" as the theme of the safety month, and carried out a series of work such as warning education, cultural propaganda, thematic training, emergency drills and so on. Shougang has organized various activities such as safety-themed calligraphy, comparing painting and artwork, safety quiz competitions and safety micro-videos to create a safe production atmosphere. Taking "Work Safety Month" as an opportunity, it has organized 749 fire safety duties, fire-fighting operations and other fire-fighting education and training sessions, with 16,678 participants, distributed 5,000 fire-fighting publicity materials, and conducted fire-fighting knowledge contests.

The company comprehensively promotes the "six-one" activities of Safety Production Month; replaces 104 safety culture slogans and puts up 30 posters; organizes 4 special trainings; carries out the culture of "Safe Home", compliance verification, and cross-operating department exchanges and seminars, enhancing the awareness of major hidden dangers prevention and improved the ability of the staff to detect hidden dangers; it has also organized various kinds of activities such as family members visiting the plant, updating family photos, and participation of family representatives in the weekly safety meeting, so as to create a strong safety culture atmosphere.



Honors:

- Qiangang Co. won the "Advanced Unit of Emergency Management and Production Safety" of Hebei Emergency Management and Production Safety Association, one first prize and three second prizes of the Third Emergency Management and Safety Science and Technology Achievement Award, and the Outstanding Organization Prize of 2023 Safety Production Emergency Rescue Skills and Physical Fitness Competition of Qian' an Emergency Management Bureau;
- Jingtang Co. was honored as "Advanced Unit of Emergency Management and Safe Production" by Hebei Emergency Management and Safe Production Association, "Pioneer Unit of Publicity for Work Injury Prevention in Hebei Province" by Hebei Department of Human Resources and Equipment Security and Hebei Department of Emergency Management, and "Winning Unit of Shougang's 'Youth Safety Cup' Competition in 2023";
- Cold-R Co. won the third prize of Beijing Shunyi District Limited Space Competition;
- Zhixin Co. was awarded the honorary title of Provincial Healthy Enterprise in Hebei Province.

Quality Assurance

Quality Management System

Shougang Co. adheres to the quality management ideal of "dedicated to excellent products, pursuing customer satisfaction", strengthens the quality responsibility system structure, establishing and effectively operated ISO 9001 quality management system and carrying out laboratory management system certification to deepen the quality improvement action; We strengthened total quality management, actively practiced "quality is life", increased the investment in quality and technological innovation, and adhered to the pursuit of product quality.

Strengthening Quality Management

Quality Process Management

Shougang Co. adheres to standard leadership, carries out benchmarking management, continuously optimizes product acceptance standards between processes, formulates product standards for different processes and varieties, and continuously improves the product yield rate. In 2023, The company has introduced 27 quality-related enterprise standards. The company adheres to systematic promotion, establishes and gradually improves the centralized consistent quality management mode driven by the dual-wheel drive of "full-service + intelligent control", strengthens the quality process control, takes "consistent quality management enhancement" as the breakthrough point, and pushes forward the quality management from the perspective of the whole situation.

The company continues to adhere to the "Double Ten" research, aiming at the whole process of quality bottlenecks and customer focus issues, continue to carry out process technology research, manufacturing challenges, quality research and a series of quality improvement activities, to ensure product quality under control. In 2023, the company set up 21 "Double Ten" projects, involving order fulfillment rate, quality pass rate and other 33 indicators, through the implementation of the project to improve the level of management indicators. At the same time, the company also took "Listed Supervision Projects" as a means to improve the quality management level.

Case: High level of quality inspection helps the company to continuously improve product quality

The Quality Inspection Department takes technological innovation as the basis and actively promotes management innovation. Through continuous organization and implementation of laboratory accreditation system construction, quality inspection department of the company has won the "Ability Verification Quality Award" twice. after a number of replacement reviews, method optimization, quality inspection department accreditation capabilities including steel and alloys, ores and minerals, metal materials and metal products, 26 categories, 109 testing items, 130 testing standards (of which 12 ASTM standards). The LIMS information system reform organized and implemented is integrated with the Laboratory Management 17025 guidelines, realizing the online management of "people, equipment, raw materials, methods and environment". Inspection data information was integrated into the company's data center, becoming a powerful part of the digitalization of the company's steel product manufacturing process.

Meanwhile, through the high-quality project management, the X fluorescence analysis rate of alkali metals in the blast furnace was increased by 70%, which effectively supported the reduction of alkali metals in the blast furnace; the success rate of visual recognition in the loading unit of the automatic inspection system for hot rolled coils was optimized by 10%, which greatly improved the efficiency of processing and inspection of coils and the level of quality control, and assisted in the reduction of inventories; and the analysis rate of EBSD for dual phase automobile sheets was increased by 20%, which helped to continuously improve the product quality of the automobile sheets.



Quality Inspection Department's Chemical Analysis Laboratory was honored with the "2023 National May Day Women's Model Post"

Strengthening Supervision and Assessment

The company has established a comprehensive system for product quality rewards and punishments, which includes mechanisms for inspection management, customer complaint handling, problem listing and oversight, and professional assessment management. Implementation of inspections and supervision occurs at all levels, with weekly self-inspections by each unit and joint inspections by specialized departments. Through careful analysis and resolution of customer complaints, the company has enhanced customer satisfaction. In 2023, the company conducted 49 internal inspections and a total of 672 items.

The company has established a perfect quality assessment index system, formulated annual quality objectives, and implemented performance assessment according to the completion of monthly indicators; the company has formulated detailed quality accident assessment and management methods for quality problems on the production line, and refined different accident levels and corresponding assessment methods. In order to motivate employees to innovate and promote the continuous progress of quality, the bottleneck quality problems are tackled in the form of "Listing supervision", and corresponding incentive mechanisms have been set up.

Case: Shougang Co. "Board" management to create quality benchmarks

The company's "weekly board meeting" management mode adheres to the problem-oriented, focusing on the whole process quality key indicators, covering the "Double Ten" project, quality inspection, key indicators, major work, market and customer focus on the five major parts of a more targeted, goal-oriented and clearer.

Through the weekly board meeting systematically solved 7 bottlenecks such as positive and negative tolerance control of slabs, high-strength steel coil, silicon steel straightening cutting edge quality improvement. Weekly board meeting is an exposure and supervisory platform for the company to focus on quality improvement, product promotion, customer service and other work, which has strengthened the foundation of consistent quality management and supported the company's "Manufacturing + Service" level enhancement.



Product Safety Management

The company actively practices the ideal of sustainable development, emphasizes the sustainable design of product life cycle, and is committed to providing customers with safe and high-quality products. Strengthening product self-inspection and self-control, according to the characteristics of the industry products, in response to the customer's RoHS/REACH and other environmentally hazardous substances control requirements. In accordance with the requirements of the Measures for the Administration of Hazardous Substances, the company implements process supervision and outsourced testing in terms of raw materials, processes and packing. The company passes the directive requirements of customers and related parties to the upstream suppliers step by step; and organizes qualified third parties to conduct tests and submitting test reports for all kinds of products. At the same time, according to the list of high-risk substances, we constantly synchronize the third-party testing and updating, in order to meet the market and customer needs.

Quality Culture Construction



The company focuses on improving product quality, takes "Quality Month" as an opportunity, organizes regular quality expert lectures and builds a quality culture around the general requirement of "implementing the strategy of strengthening the quality of the country and promoting the improvement of quality and efficiency". At the same time, the company carries out quality improvement exchanges, customer visits, quality inspections, collection of golden ideas, quality essays and other activities, organizes all staff participating in the quality improvement work, and strengthens the awareness of quality culture among staff. In 2023, 1,569 visits were made to customers on product quality. In order to recognize the advanced and set an example, we selected annual quality leaning advanced units 9, advanced individuals 138.

Case: Shougang Co. carried out upstream and downstream process youth quality improvement action

In September, Shougang Co.'s hot rolling mill and cold rolling mill communist youth league jointly carried out the "Cold rolling mill and hot rolling mill linkage to improve the quality for 100 days" exchange activities for young workers. The "pursuit of excellence and create high-quality products" Youth Workers Collaboration Group was formed to build a bridge for upstream and downstream workers to work together to improve the quality by taking meeting with the individual needs of customers as a standard, making good cooperation between upstream and downstream processes, strengthening process control, and providing strong support for the quality of products.



Case: Shougang Co. honored with "Quality Excellence Partner Award" by NIO

In 2023, the company was awarded the "Quality Excellence Partner Award" by NIO, making it the only steel company to receive this award, which represents NIO's high level of recognition for its partners.

Adhering to the ideal of "Manufacturing + Service", the company has worked closely with the NIO team to optimize the production process, provided all-round technical support and advice, and initiated the certification of a number of steel grades, thus contributing to the brand value and market competitiveness of NIO.

In the future, the company will continue to deepen the strategic cooperation with customers, linking customer value with high quality in depth, responding quickly to customer needs with better service, and contributing to intelligent green mobility together with customers.



Customer Service

Shougang Co. fully implements the idea of "Manufacturing + Service", insists on customer-oriented, craftsmanship and intelligent products to meet the needs of customers, and focuses on improving customer experience and satisfaction. The company deepens the application of intelligent marketing service platform, innovates marketing service system, strengthens customer relationship management, carries out customer visits and exchanges on a regular basis, insists on walking in step with the times, and continues to establish a user ecosystem service system characterized by "open sharing, interconnection, and value creation", realizing win-win cooperation with customers.

Improving Service System

Building Customer Service Management Organization

In order to strengthen customer relationship management and realize the overall efficient management of customer service, we integrate customer service resources and establish a new service platform. The new platform focuses on market and customer to carry out accurate service management, and set up a regional customer service team. The customer relationship management functions include customer information management, customer demand-complaint-objection management, customer activity management and satisfaction management, etc., to ensure that the service needs of the customers are accurately identified and delivered inward, to realize closed-loop management and effectively guarantee the service quality.

Establishing Customer Service Management System

The company attaches great importance to customer service and continues to optimize the service process and improve the service level. At the same time, we continue to perfect and improve the customer service system. The company has formulated the *Steel Product Customer Information Management System*, *Steel Product User Satisfaction Management System*, *Steel Product Quality Objection Management System* and so on, in order to standardize the behavior of the customer service, improve the quality of the customer service, and to ensure the establishment of a long term, stable, and mutually trusting cooperative relationship between the enterprise and the customers.

Case: Shougang Co. adheres to the concept of "Manufacturing + Service", and provides accurate service to help users reduce costs and increase efficiency

Aiming at customer demand, precise and fine service quality, Shougang Co. adheres to the awareness of "manufacturing + service", adhering to the concept of "customer-oriented", the company's production, marketing and research team gives full play to the product advantages, based on the needs of customers to reduce costs and increase efficiency, and vigorously promote the use of hot-dip zinc-aluminum-magnesium(low aluminum) alloy coated steel sheet and strip in the various models of customer, customized for customers with the best cost-effective material selection program. Shougang Co. has lean products, precise service and sincere responsibility, and continues to promote the effective enhancement of product power and service power to help customers to move steadily to the future.



Strengthening Strategic Cooperative Relations

Customer demand is the driving force of the company's development and the basis for sustainable development. We have always practiced the ideal of "Manufacturing + Service", continuously improving our competitiveness around quality, cost, delivery, R&D and service, and exploring efficient, integrated and synergistic cooperation modes with our customers in the four areas of communication expansion, R&D certification, technology cost reduction and service enhancement. At the same time, the company deeply participates in the EVI of strategic customers, actively promotes the implementation of localization projects, demonstrates the company's technical service strength, and provides Shougang Co. solutions for customers' localized production and technical cost reduction, which realizes a win-win cooperation between the two sides. In addition, the senior leaders of the companies visit each other on a regular basis to establish a good and long-term cooperative relationship.

With a high sense of mission and responsibility, Shougang Co. took multiple measures and efficiently coordinated to ensure the stability and safety of the supply chain, and effectively helped the downstream enterprises to have stable and smooth production. During the reporting period, Shougang Co. received 1.25 million tonnes of emergency orders, and through efficient internal coordination, it delivered 1.19 million tonnes of products on time, with a delivery rate of 95.2%, and received 23 thank-you letters and 5 silk flags from downstream users, and received 21 awards, including "Best Partner Award" by BYD, "Quality Excellence Partner Award" by NIO, "Best Service Provider Award" by BMW Brilliance, "Outstanding Supplier" by CIMC, "Excellent Assistance Award" by GAC Group, "Outstanding Contribution Award" by TBEA, the Great Wall Motors Company's highest honor "Genuine Partner Award", "Excellent Partner Award" by Haier Group, "Outstanding Cooperation Award" by Bondi Pipeline, "Annual Strategic Cooperation Unit Award" by CSCEC etc.



Improving Service Quality

Strengthening Customer Communication

The company increases visits and exchanges, innovates the form of activities, and carries out all-round and multi-dimensional customer communication and interaction. 2023, it carried out customer visits and exchanges for 3,758 times, of which 1,200 visits were made to high-value users, and carried out technical exchanges for 1,860 times, and participated in industry forums, and the promotion of products of leading enterprises in the industry. To strengthen customer interaction, the company successfully held technology forums for automotive sheets, medium-thick plates, coated sheets, ultra-high-strength steel of MCCR production line, etc., carried out "Shougang Day" in BYD, Chery and Honda and other OEMs, and organized a summary meeting of technical exchanges.

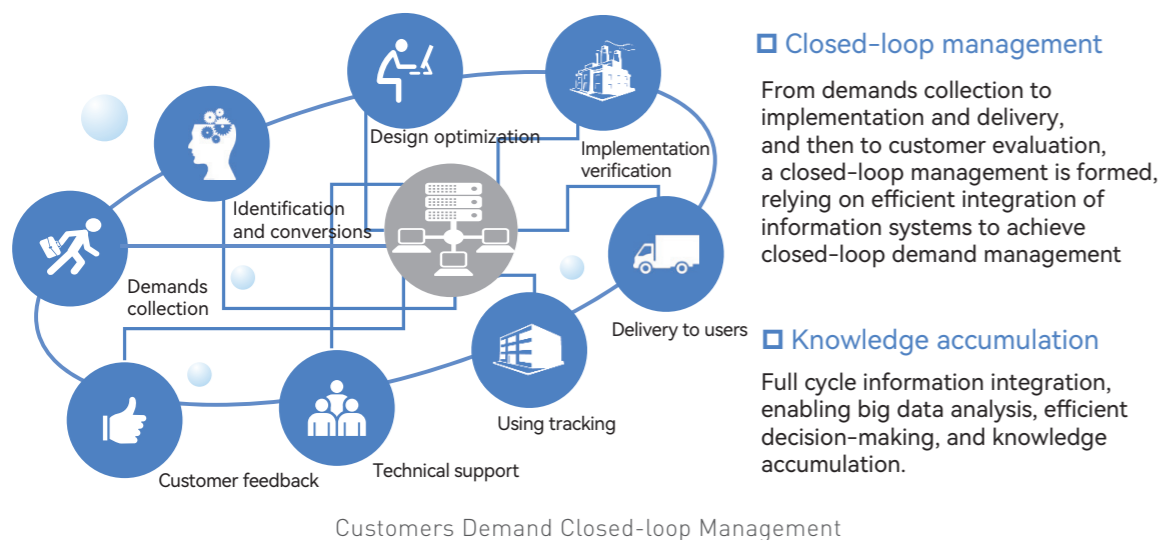
Protecting Customer Privacy

The company attaches great importance to the protection of customers' rights and interests. We provide professional services from the perspective of customers' needs and enhance security and privacy protection of customers' information. The company has nominated a customer representative to be in charge of the management of customers' information files. We have formulated *Information Security Strategy Management System* and *Information Security Organization Management System*. In addition, the company has set up a network security operation center to strengthen the integrated management of network security technology and operation, and to realize the dynamic closed-loop management of IT assets, vulnerabilities, and security events. At the same time, we organized network security races and other activities to strengthen employee awareness of network security, customer information protection and other publicity and popularization education, and effectively improved customer information security protection.

Responding to Customer Demands

The company has established an effective customer feedback mechanism and a closed-loop feedback process, formulated the "Steel Product Quality Objection Management System" and "Steel Product Quality Objection Management Measures", clarified the objection management standards, strengthened the management of steel product quality objections, and enhanced customer satisfaction.

The company establishes a unified and centralized platform for customer demands, moves forward the path of acquiring demands and improves the way of collecting demands. It makes full use of weekly meetings, monthly meetings, product promotion meetings and other platforms to provide timely feedback on client issues and demands, and shares service data according to business needs to achieve information synchronization. We promote timely response to customer needs, focus on customer experience, and continuously improve the synergy mechanism of "List of Issues - Listing Supervision - Solving a problem", so that we continue to improve the quality of service and effectively solve the actual needs of customers.



The transformation of digital marketing services leads to the improvement of customer satisfaction. The company actively constructed an integrated management platform for production and marketing, formed a centralized, unified, fast-responding and efficiently operated marketing network with Shougang Co.'s marketing center as the core and a combination of production bases and processing centers, and continued to build a one-stop customer intelligent marketing service platform to better meet customer needs, improve service efficiency and quality, and establish a long-term and win-win cooperation with customers. In 2023, the company's comprehensive customer satisfaction score was 98.8.

Case: Shougang Co. establishes customer feedback mechanism and closed-loop management

The company continues to establish a feedback closed-loop mechanism to continuously increase customers' trust and satisfaction. In 2023, the company organized a customer satisfaction questionnaire survey on the quality and service of Shougang's products. In the survey, CNPC Jurong Steel Pipe Co., Ltd. put forward the demand for improving the inclusions control of one of steel products during the survey. The company's sales staff verified the problem with the customer, the service team responded efficiently and quickly, and the technical service personnel tracked problems and formulated corrective measures. At the same time, the company made a return visit to the client for the demand, and the customer feedback was very satisfactory. In the linkage service with CNPC Jurong Steel Pipe, the company proactively helped the customer to solve the problems, ensure that the actual needs of the customer to respond to the customer's trust and satisfaction, and increase the company's "stickiness" with the customer.

Developing the Win-win Cooperation

The company adheres to the idea of "Intelligence, Service, Win-Win", practices responsible marketing and promotion, and uniformly designs and optimizes the company's product manuals. Shougang Co. always maintains the awareness of compliance in the whole process of business development and contract management, and ensures the provision of accurate and comprehensive information in market development, customer sales and product packaging management to protect the rights and interests of customers. At the same time, the company regularly conducts compliance marketing training for its employees and stipulates that all promotional content and forms must be reviewed for compliance and appropriateness, and that exaggerated or false activity content is strictly prohibited, in an effort to portray a responsible brand image. During the reporting period, the company did not experience any negative incidents arising from its products or services.

Case: The company was honored with the Excellence Cooperation Award of Chery Automobile

Shougang Co. was awarded as "Excellent Cooperation Award" by Chery Automobile for the year of 2023, which is a high affirmation of Chery Automobile for the continuous deepening of the cooperation between the two parties and Shougang Co.'s excellent supply performance.



At present, the two sides are carrying out in-depth cooperation around the development of low-carbon and green steel materials and the provision of solutions for vehicle materials, so as to provide Chery Automobile with more "Shougang Wisdom" and "Shougang Solutions" for its high-quality development.

Case: The company won the Excellent Supplier of GAC Honda

At GAC Honda's annual supplier meeting in 2023, GAC Honda awarded Shougang Co. with "GAC Honda's Excellent Supplier in 2023", fully recognizing Shougang Co.'s outstanding performance in "Quality, Cost, Delivery, R&D, and Service" and other aspects.



The service team of Shougang Co. will, as always, take customers' needs as its own responsibility, make the same efforts with customers, create and share with customers, continuously promote the research and development of technologically advanced products, take customers' satisfaction as the only criterion to test its work, and return customers' trust and support with better products and services to help customers go steady and make great progress.

Supply Chain Management

Supply chain security and stability is an important foundation and guarantee for sustainable development of enterprises. Shougang Co. attaches great importance to business cooperation with suppliers, continuously optimizes the supplier management system, strengthens ESG management of supply chain, practices sunshine purchase, actively empowers suppliers, promotes the construction of green supply chain and builds a responsible supply chain.

Supplier ESG Management

The company strictly abides by national laws and regulations and actively pays attention to the performance of its suppliers in terms of labor situation, environmental protection, production safety and privacy protection, etc. By publishing the *Code of Business Conduct of Beijing Shougang Co.* on the official website and publicizing the *Commitment on Code of Conduct of Business Partners* in a variety of ways, Shougang Co. informs the relevant parties of the necessity of observing and fulfilling the social responsibilities in terms of human rights, business ethics and environmental protection.



Supplier ESG Assessment

In accordance with relevant management systems and methods, the company carries out supplier access, auditing, evaluation, graded management, etc., and conducts on-site inspections when necessary to identify the environmental and social risks in each link of the supply chain. In 2023, a total of 29 supplier audits were completed, and 394 new suppliers were admitted. Currently, there are a total of 3,246 suppliers, all of which are mainland suppliers. During the reporting period, the company evaluated a total of 1,915 suppliers, of which 26.48% were Class A suppliers, 36.34% were Class B suppliers and 36.71% were Class C suppliers.



Stabilizing Supply Chain Security

The company is the only platform for the development and integration of steel and upstream iron ore resources industry in China of Shougang Group, the controlling shareholder, and the supply of iron ore, coke and coal resources for production is secure. In terms of iron ore, Shougang Group owns Shuichang Iron Mine and Kingshan Iron Mine with an annual production capacity of 4 million tonnes of iron concentrate in China, and controls Peruvian iron ore with an annual capacity of 20 million tonnes of iron concentrate abroad. Macheng Iron Mine under construction has high reserves, low cost, environmental protection and efficient transportation, with an annual production capacity of 7 million tonnes of iron concentrate. After it is put into production, the company's iron ore resource support capacity will be further improved. As for coke, the coke of Qiangang Co. is mainly supplied by Qian'an Zhonghua Coal Chemical Co., Ltd., a joint venture between Shougang Co. and Kailuan Co., the coke of Jingtang Co. is supplied by Tangshan Shougang Jingtang Xishan Coking Co., Ltd., a joint venture between Jingtang Co. and Shanxi Coking Coal, and the supply of coke resources is guaranteed. In terms of coal, the company has signed long-term cooperation agreement with large state-owned coal groups. Shougang Fushan Resources Group Co., Ltd., a shareholder of Shougang Group, also provides some high-quality coking coal resources to the company, and the coal supply guarantee is strong.

Empowering Suppliers

Shougang Co. has passed on the ideal of social responsibility in environmental protection, safety, health and anti-corruption to its suppliers by organizing supplier training activities from time to time; and strengthened the ability of partner enterprises in the supply chain to perform in good faith and take the initiative to assume social responsibility by communicating through on-site thematic seminars, suppliers' conferences, daily technical exchanges, and cleanliness promotion. During the reporting period, the company carried out 439 training exchanges on supplier quality management, low-carbon development and technical seminars, involving 519 suppliers.

The company organized suppliers to hold a seminar on carbon reduction management. On August 17, 2023, the company organized suppliers in the fields of alloy, activated carbon, solvent, etc. to hold the "Shougang Supply Chain Partners Carbon Reduction Management Seminar". We introduced the policy background and Shougang Co.'s carbon reduction plan to the suppliers, so that the suppliers fully realized that low-carbon development would be the road that every enterprise must go through, and the enterprise that carries out the "low-carbon" management work as early as possible will occupy the first opportunity in the future market.

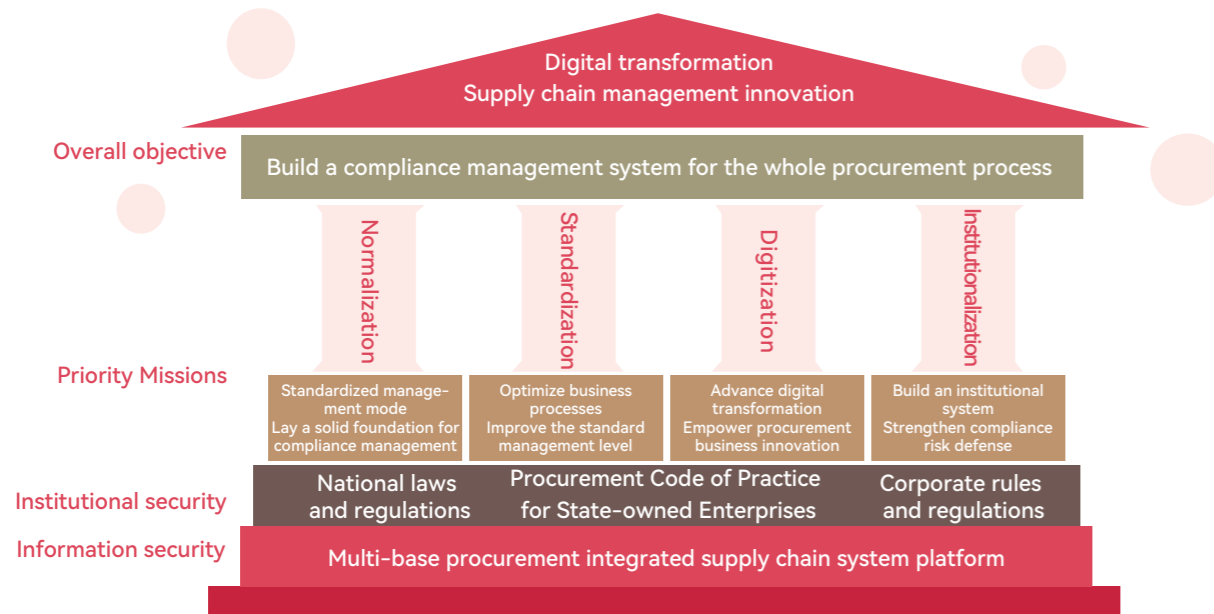
During the reporting period, the company has gone to Shanxi, Ningxia and Inner Mongolia to carry out low-carbon research, promotion and training for key suppliers. Through face-to-face communication of carbon reduction, popularization of carbon reduction basic professional knowledge, and enhancement of suppliers' carbon reduction awareness.



Sunshine Purchase

Shougang Co. promoted centralized procurement in a scientific and orderly manner and established an information-based centralized procurement system. During the reporting period, the company's supply chain collaboration platform, bidding and procurement platform and shopping mall were formally put into operation, and the company was successfully selected as a pilot unit of the new version of the "Code of Practice for Procurement by State-owned Enterprises".

In order to promote the digital transformation of enterprise procurement and supply chain management innovation under the new situation, and enhance the core competitiveness of the enterprise, Shougang Co. takes the promotion of "Procurement Code of Practice for State-Owned Enterprises" as an opportunity, and builds up a normalized, standardized, digitized and institutionalized compliance management mode of the whole process of procurement, which can provide good business support and management system guarantee for the centralized procurement management of trans-region and multi-base.



Framework diagram for the "four-in-one" procurement process

By building a "normalized, standardized, digitized and institutionalized" compliance management system for the whole procurement process, and creating an integrated supply chain system platform that is "sunshine, transparent, safe and efficient", the company's procurement process has been made electronic and open and transparent. At the same time, the company will strengthen multi-dimensional control, actively promote integrity building with suppliers, realize sunshine procurement, and improve procurement quality and efficiency.

In 2023, the number of online orders of the company was 31,638, and online purchases accounted for 100%.



Case: Shougang Co. was selected as a Pilot Unit for the New Version of the "Code of Practice for Procurement of State-Owned Enterprises" Standard

At the 2nd China Government and Enterprise Procurement Digital Supply Chain Ecological Summit themed "Link - Integration - Evolution", Shougang Co. was selected as a pilot unit for the new version of the Standardized Code of Practice for Procurement of State-owned Enterprises (SOEs), together with China Aerospace Science and Technology Group (CASTG), China Shipbuilding Group (CSSG), and China Rongtong Group (CRG).




Green Supply Chain

Green supply chain becomes the future development direction. Shougang Co. adheres to the concept of green manufacturing and low-carbon development, and actively promotes the construction of green supply chain. The company carries out Life Cycle Assessment (LCA) on the products of key suppliers. In order to understand upstream suppliers' understanding of LCA, process technology flow and carbon reduction technology innovation, the company organized a full life cycle questionnaire for key suppliers' products. Carbon footprint analysis was carried out for the whole life cycle process of suppliers' products from raw material, production processes, logistics, energy input, solid waste recycling and other processes. Based on the evaluation of the whole life cycle of the supplier's products, we analyzed the main reasons for carbon emissions, provided the suppliers with thoughts for carbon reduction, and guided the suppliers to develop low-carbon products.

Basic questionnaire form


A preliminary understanding of 22 issues in 9 categories, including supplier carbon emission accounting, carbon reduction planning, existing carbon reduction methods, recycling, and willingness to reduce carbon.



Basic questionnaire form

Energy data sheet


Understanding the consumption of raw materials and energy media, the output of main products and by-products, and the technological process in detail, and calculating carbon emissions according to the data filled in.



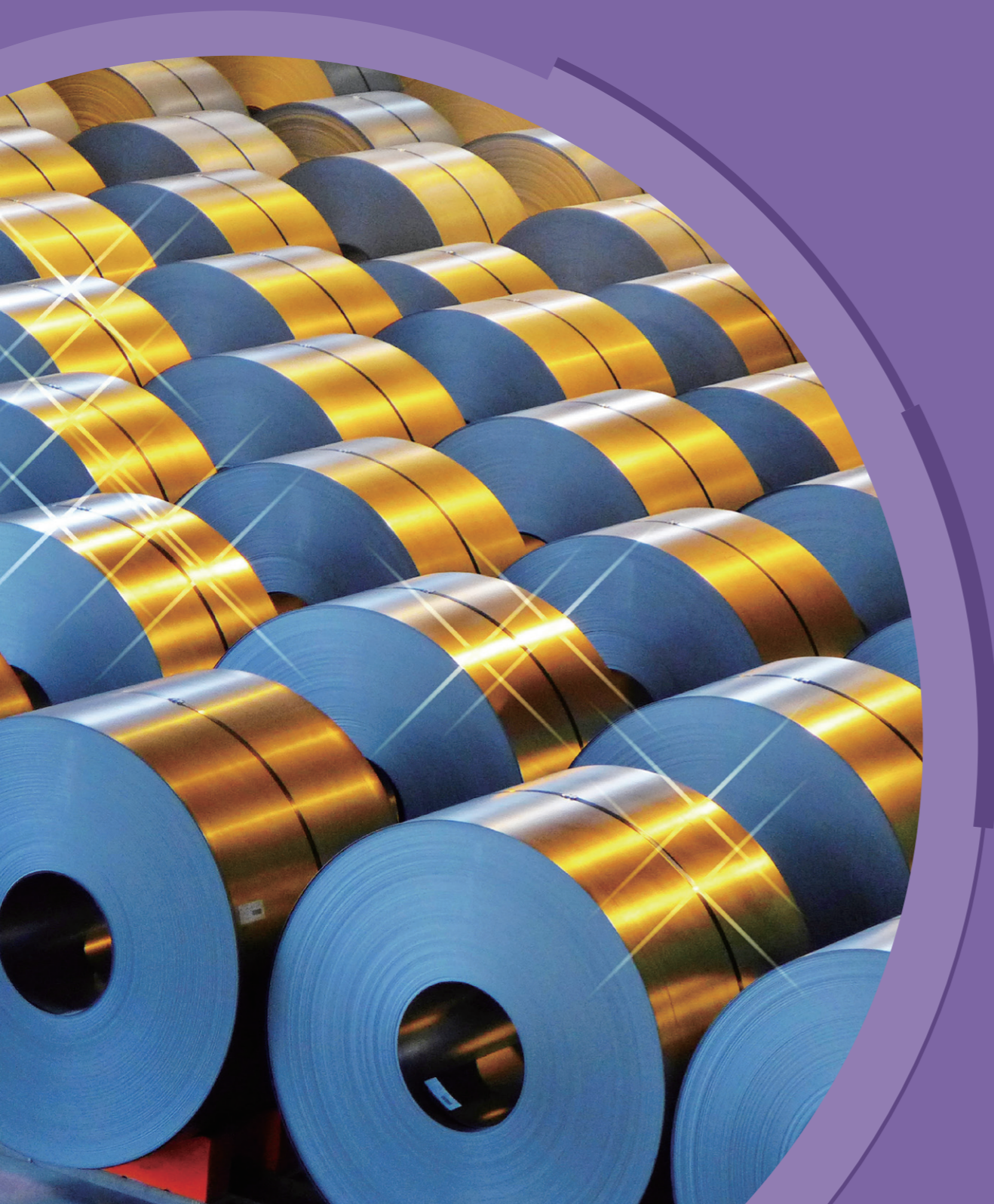
Energy data sheet

Green electricity+special table for transportation

Focusing on the power consumption of key suppliers, the current situation of power greening, and the direction of transportation optimization.



Green electricity+special table for transportation



04 Value: Demonstrating Mission and Responsibility

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National Strategic Projects Participation

Shougang Co. has always taking the responsibility for serving the national strategy, assisting the great power with scientific and technological innovation, and contributing more power to the national strategy, the national economy and people's livelihood, and realizing the high level of scientific and technological self-reliance and self-improvement.

Electrical steel

It has been used in Wu Dong De Hydropower Station, the key project of "West-East Power Transmission", the first set of intelligent transformer substation of high-speed railway, and Baihetan Hydropower Station of Three Gorges, which has the largest total installed capacity in the world under construction, etc.



Baihetan Hydropower Station Wudongde Hydropower Station The first set of intelligent transformer substation of high-speed railway

High-end bridge steel Q500qE

Exclusive supply of the world's first dual-purpose combined road and railway cable-stayed bridge with high and low towers, Wuhu Yangtze River Bridge, and the world's tallest bridge, Beipanjiang River Bridge



Wuhu Yangtze River Bridge Beipanjiang River Bridge

Marine steel

It is used in the Blue Whale 1 Drilling Rig



Blue Whale 1 Drilling Rig

High Strength Ship Plates

Exclusive supply of domestically produced world's largest bulk carrier "New Generation Super Large 400,000 Tonnes Ore Ship"



New Generation Super Large 400,000 Tonnes Ore Ship

High-strength weld steel Q460GJZ25

It is used for the first time in the Xiongan New Area high-speed railway station project



Xiongan New Area High-speed Railway Station Project

Case: High-end oriented electrical steel to support the "Belt and Road Initiative" key projects

Zhixin Co.'s high-end oriented electrical steel products have been successfully applied in the key projects of "Belt and Road Initiative". In 2023, the company's high-end oriented electrical steel products have been successfully applied in the key projects of "Belt and Road Initiative", such as the upgrading of 230kV transformer substation in Ananda, Bazaar, Kursi and Madunaja of Bangladesh, and 550kV switching station in Myla of Pakistan, etc., by virtue of the outstanding product performance and high-quality customer service. It is another time that the company's electrical steel products have achieved significant achievements in the international key cooperation projects, which has made a great contribution to the support of the national "Belt and Road Initiative" and the benefit countries and people along the routes.



Case: High-strength ship plate applied to 5500 tonnes double jib variable amplitude crane ship project

Jingtang Co.'s high-strength ship plate is applied to the hull structure and part of the stress structure of "5500-tonnes Jib Variable Amplitude Crane Ship Project".

The 5500-tonnes Jib Variable Amplitude Crane Ship Project is the most advanced technology and the largest project of its kind in China so far. The crane ship is a non-self-propelled double Jib variable amplitude large crane ship with multi-layer deckhouse, which can meet the construction requirements of the Yangtze River Estuary, Pearl River Estuary, Zhoushan Islands and Bohai Bay and other major near-coastal waters, and has a broad market application prospect. It is located in the engineering construction field flagship ship new benchmark, representing the green, intelligent development trend and direction of offshore engineering vessels.



Research and Development Innovations

Shougang Co. adheres to the innovation drive, focuses on the world's cutting-edge process and technologies, strengthens independent research, independent innovation, independent integration, drives comprehensive innovation with technological innovation, and pushes technological innovation to become the first competitiveness of the company.

Invested **5.022** billion yuan in R&D

R&D investment ratio **4.41%**



Shougang Co., Jingtang Co., Cold-R Co. and Zhixin Co. honored as "High-tech Enterprises" Zhixin Co. was honored as "Science and Technology Reform Action Demonstration Enterprise" by the State-owned Assets Supervision and Administration Commission of the State Council, "Technology Innovation Demonstration Enterprise of Hebei Province", and "Science and Technology Leader Enterprise of Hebei Province".

Research and Development System

The company continues to improve and perfect the open technological innovation system, deepen the technical research projects, optimize the expert workstations, strengthen the external cooperation platform, and strengthen the ability of "Technological Innovation + R&D". Relying on the R&D system of "one research institute and several research centers", the company effectively integrates the scientific research power of the society and upstream and downstream enterprises by strengthening the collaborative research of process R&D, production line design and equipment manufacturing, and synchronously promoting process innovation and equipment innovation across specialties and units. The company carries out high-level external cooperative research to make up for shortcomings, solve key strategic new steel materials problems, and make breakthroughs in new products, new technologies and new process innovations.

The company continuously allocates innovation resources, improves incentive mechanism, focuses on scientific and technological talents, and improves and revises various systems such as scientific and technological project management, expert workstation construction, transformation of scientific and technological achievements, proprietary technology, patent three-year action plan, standard formulation and management, scientific and technological confidentiality and other system. Meanwhile, the company formulates technological innovation planning, actively researches and develops major scientific and technological projects, and the level of scientific and technological achievements continues to progress. In terms of scientific research management, the company has formulated scientific and technological project management methods and other systems, strengthened the forward-looking, strategic and systematic layout of innovation and R&D, continued to promote the management of scientific and technological projects in the whole life cycle of all elements, and strengthened the project process management.

The company continues to increase R&D investment and promote new product development. In 2023, the company invested 5.022 billion yuan in R&D, with R&D investment ratio reaching 4.41%.

Innovative Talents

The company strengthens the cultivation and development of scientific and technological leading talents, establishes evaluation mechanism, fault-tolerance mechanism and incentive mechanism matching with technological innovation, and continues to carry out a series of work around creating an innovative atmosphere, providing innovative conditions and optimizing innovative mechanisms, and vigorously cultivates innovative talents. The company enhances the staff's innovation consciousness by creating staff innovation studios, carrying out "innovation studio evaluation and display", "innovation lecture hall" activities, exchange and learning with benchmark enterprises, organizing youth innovation activities and innovation salon, etc., so as to create a strong atmosphere of innovation. In 2023, the company appointed 4 "chief scientists" and 22 "chief technical experts".

Percentage of R&D personnel

13.61%

Among them, the proportion of personnel with master's degree or above

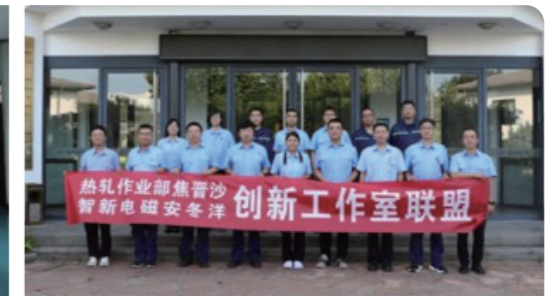
28.21%

Increase by **5.94%** y-o-y

The company builds bridges and ties for co-construction and sharing, and explore new horizons for innovation alliance. We create staff innovation studio, actively organize and carry out the activities of creating staff innovation studio, carry out studio star rating, drive the enthusiasm of the majority of employees to learn and master modern scientific knowledge and high technology; build innovation practice platform, with the youth innovation workstation as a carrier, to encourage the youth technical backbone to take the initiative to unveil and solve the problem, driven to carry out scientific and technological innovation and research.



Youth workstation project research seminar



Innovation Studio alliance



Innovation studio:

- Dong Lijie Innovation Studio, Chen Wanzhong Innovation Studio and Zhang Weizhong Innovation Studio were honored as "National Machinery, Metallurgy and Building Materials Industry Model Employee Innovation Studios".
- Li Chunyuan Innovation Studio, Jing Xiaoxing Innovation Studio, and Qi Chunyu Innovation Studio were honored as the first batch of industrial-level Employee Innovation Studios in Beijing.

Employee technological innovation achievements:

- Guo Shubai, from Shougang Co.'s Steelmaking Operations Department, with his "Bekenbach Annular Sleeve Kiln High-Efficiency and High-Quality Production Technology Development", was awarded the Metallurgical Science and Technology Award Front-line Worker Prize of China Iron and Steel Association, Chinese Society of Metals.
- Awarded **3** special prizes, **8** first prizes, **14** second prizes, and **43** third prizes for technological innovation achievements of workers in the national machinery, metallurgy, and building materials industry in 2023.
- Awarded **1** first prize and **2** second prizes of Capital Workers' Independent Innovation Achievements.

Shougang Co. and Zhixin Co. are awarded

"National Intellectual Property Advantageous Enterprises"

In 2023, Shougang Co. applied for **1,219** patents and

Authorized **685** patents,

including **229** invention patents.

Intellectual Property Rights Protection

Shougang Co. attaches great importance to the protection and management of intellectual property rights, and has set up an intellectual property management leading group, and continues to improve the intellectual property rights work system and management system. The company has formulated and continuously revised the *Patent Management System*, *Technical Secrets Management Measures* and other related management systems, standardized the whole process management from patent excavation, application, maintenance to apply, and actively supported and promoted the formation of high-level scientific and technological achievements from the perspectives of organization and planning. We formulate the *Patent Management Work Plan 2023*, organize and carry out patent protection for key production lines, and carry out patent protection from the aspects of product manufacturing, control methods and related processes and equipments, etc. We open up the patent prequalification channel, accelerate the authorization of key patents, and form a technology protection barrier. At the same time, the company organizes multi-level training on patent-related knowledge, and strengthens the popularization training on patent knowledge for site technicians to avoid the risk of intellectual property infringement.



- Two patents of "A Method and Device for Determining the Transmission Torque of Cold Rolling Mills" and "A Non-Oriented Electrical Steel and Its Preparation Method and Application" were awarded the Excellent Prize of the 24th China Patent Award.
- The patent of "A Low-temperature High Magnetic Susceptibility Oriented Silicon Steel Manufacturing Method with Excellent Bottom Layer" won the Excellent Prize of the First Hebei Provincial Patent Award.
- The patents of "Strip Steel Coiling Temperature Control Method, Device and Strip Steel Processing System" were successively authorized by Korean National Patent Office, Japanese National Patent Office and American National Patent Office respectively.



Innovation Achievements

The company continues to focus on the "Advanced equipment for the country," "First launching products," "Original technology," focusing on key, difficult and new problems, set up a research project team, and concentrate on making up for the shortboard issues of development, solving the problem of "key strategic new iron and steel materials". In 2023, the company undertook 4 national projects and 2 provincial projects.



Debut products:

- 6 new products, including oriented electrical steel 15SQF1250, non-orientation electrical steel ESW1021, and high-strength automotive steel 980TBF

6 debut products,

Debut processes

- Global Debut Process: the process and equipment technology for cold continuous rolling of high-grade electrical steel using a 6 stands 6 highs rolling mill
- Domestic Debut Process: multi-mode continuous rolling process for hot rolled ultra-thin and high-strength steel strips

2 debut processes,

1 set of debut equipment

Debut Equipment

- Multi-functional on-line multi-point detection of casting machine roller gap

The world's first production line

- Specializing in 100% thin gauge, high magnetic susceptibility oriented electrical steel.

Technological innovation	
Iron-making	Continuous development of low-carbon emission furnace burden structure, self-designed device and the first completion of biomass hydrogen-rich micro-powder 100-tonnes continuous injecting industrial test. Promote the research on carbon capture technology of oxygen-enriched combustion in metallurgical furnaces and kilns, and obtain the flue gas with high concentration (>70%) of CO ₂ for the first time in the industry, and realize the experiment of combustion under 40% oxygen-enriched ratio for the first time in the industry.
Steel-making	Independent-developed multi-functional online multi-point continuous casting machine roller gap measurement accuracy of ± 0.5mm
Hot rolling	Development of new energy high-grade silicon steel sheet differential control technology Independent-developed a set of intelligent and precise control models for hot rolling, with F1 stand rolling force prediction accuracy of 95.5% and quality loss reduced by more than 59%.
Cold rolling	The pioneering six-stands rolling series technology, reaching the international leading level Independent integration of a new generation of electric steel circular furnace, the pioneering decarburization and annealing high-speed uninterrupted coiling technology, hot straightening and temper mill online laser scribing technology, etc., to break the foreign technology blockade.

In 2023, the company won 21 of science and technology awards at the provincial and ministerial levels. It won 17 metallurgical science and technology awards, including 6 first-class awards, 3 second-class awards and 8 third-class awards; and 4 provincial science and technology progress awards, including 1 first-class award, 1 second-class award and 2 third-class awards.



Key Technologies and Applications for Manufacturing Dual Phase Steel with Enhanced Formability
First prize of Metallurgical Science and Technology Award



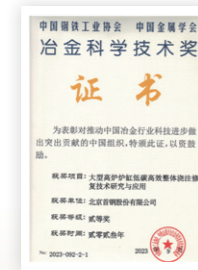
Multi-production process synergistic optimization of ironmaking and steelmaking processes and system energy efficiency improvement technology
First prize of Metallurgical Science and Technology Award



Development and application of key technology for efficient manufacturing of ultra-clean and highly homogenized thick slabs
First prize of Metallurgical Science and Technology Award



Integration of key technologies for carbon reduction emission in large-scale sintering machine based on carbon and oxygen reconstruction
Second prize of Metallurgical Science and Technology Award



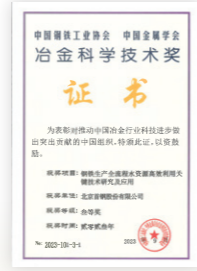
Research and application of low-carbon and high-efficiency monolithic pouring repair technology for large blast furnace hearth
Second prize of Metallurgical Science and Technology Award



Continuous casting and rolling cooperative integration scheduling and dispatching technology research and application
Third prize of Metallurgical Science and Technology Award



Development of a complete technology for the efficient and high-quality production of Beckenbach annular sleeve kilns
Third prize of Metallurgical Science and Technology Award



Research and application of key technologies for efficient utilization of water resources in the entire process of iron and steel production
Third prize of Metallurgical Science and Technology Award

Case: MCCR multi-mode fully continuous casting and rolling integrated technology integration and innovation

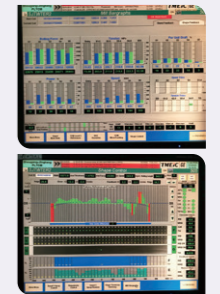
In the context of the "dual-carbon" strategy, thin slab continuous casting and rolling as a representative of the near net shape continuous casting technology, is one of the main directions of the optimization and reconstruction of the steel manufacturing process, is an important way to achieve low carbon emissions, high efficiency, low-cost production of high-strength thin gauge of sheet/coil. In recent years, the endless rolling technology of hot rolled wide strip steel has been continuously developed, but there are still problems such as poor production flexibility, narrow product coverage and unstable quality control.



The company integrates international and domestic advantageous resources, adopts independent innovation and integrated innovation to develop the new third-generation thin slab continuous casting and rolling technology (MCCR), which solves many problems, such as flexible and stable production of multiple varieties and gauges, high efficiency and low cost production of ultra-clean steel, high casting speed and high steel flux in thin slab continuous casting, shape control of long roll-change cycle, surface quality and performance consistency, etc. The company has been authorized 34 invention patents, formulated 1 group standard and published 17 papers. In the past three years, the project has reduced carbon emissions by 595,000 tonnes, led the development of near net shapecasting technology, and made important contributions to the low-carbon and green development of ironmaking and steelmaking processes. The China Society for Metals organized the evaluation of the project, and the 11 judges unanimously agreed that the project has reached the international leading level.

Case: R&D and application of key technologies for high-efficiency and high-precision rolling of ultra-high-tensile steel

Relying on the 2230mm cold rolling mill of Jingtang Co., the company has independently developed high-end cold rolling production process and equipment technology for ultra-high-tensile steel products in response to a series of bottlenecks in the industry, such as difficulties in cold rolling of ultra-high-tensile steel, poor stability, low efficiency, and poor quality, and has realized the localization and intellectualization of the core technology and process control model of ultra-high-tensile steel high-precision cold rolling, which promotes independent innovation and upgrading of the iron and steel industry. The project has been authorized 26 invention patents. The results of the project have been applied to the products of many leading automobile companies. The results of the project have been accepted by China Iron and Steel Industry Association and assessed to be at the international advanced level, among which the high-efficiency and stable rolling technology of ultra-high-tensile steel has reached the international leading level.



Case: High-performance oriented electrical steel special line successfully put into production

On April 19, 2023, Zhixin Co. high-performance oriented electrical steel line was successfully put into operation. The key equipment of the production line, annular furnace, was 100% independently integrated, independently installing and independently commissioning, with the equipment localization rate up to more than 95%, and the operating efficiency of the facility was increased by more than 30% compared with the original design of the foreign party, creating the best operating level of the same kind of unit in China; Through continuous research, comprehensive optimization, decarburization and annealing line process speed set a new record, production efficiency increased by more than 27%; Hot straightening and temper mill process speed breakthrough bottleneck, production efficiency increased by 15%. The new production line provides strong support for Shougang Co.'s electrical steel product innovation, research and development, and upgrading and iteration. The company's 15SQF1250 and 23SQGD085LS oriented electrical steel products debuted simultaneously. The new products quickly attracted widespread attention by virtue of their advanced design concepts and excellent comprehensive performance, meeting customers' individualized needs, leading the industry's development trend, and injecting new kinetic energy into the transformation of China's energy structure and the advancement of the "dual-carbon" goal.



On September 2, 2023, the company's high-performance oriented electrical steel products applied to UHV DC converter transformer passed the technical appraisal, the series of products to reach the international leading level of similar products, marking the Shougang Co. oriented electrical steel products will be more widely used in the "Advanced equipment for the country".

Intelligent Manufacture

Shougang Co. actively promotes digital and intelligent transformation, and carries out research and development around intelligent factory construction, big data application, and development of intelligent testing equipment,

The digitalization rate of equipments exceeds **90%**

51 "one-button production control" processes have been achieved

Application of **203** sets of "industrial robots"

Application of **26** RPA process robots

15 unmanned intelligent storage areas have been built

accelerating the automation, digitization, networking and intelligent reform of key business processes, establishing a new pattern of digital transformation and intelligent manufacturing with "operation automation, equipment intelligence, management and control digitization, decision-making intelligence and service platform", striving to become a benchmark for enterprise digital transformation.

In accordance with the development path of intelligent manufacturing from individual parts to production line and then to the overall situation, the company focuses on promoting remote "one-button" production control at the level of operation automation; At the level of equipment intelligence, we accelerate the evolution from single-point "intelligent equipment" to "intelligent unit" and "intelligent factory"; At the level of control digitization, collaborate to realize the digital transformation of "manufacturing system", "supply chain system" and "operation system"; Accelerating the application of big data model and business knowledge accumulation iteration at the level of decision-making intelligence, and gradually transform from manual decision-making to intelligent decision-making.

Promoting the application of intelligent equipment

Shougang Co. actively promotes the application and research and development of industrial robots, application scenario from a single point of application to the cluster deployment, adherence to the "mature promotion + independent research and development" dual-line drive strategy in the implementation of the path. Shougang Co. has developed new application scenarios such as strip steel surface grinding robot, steel coil labeling and adhesive tape multi-purpose robot, sintering pallet wheel online lubrication robot, ladle hot-spray-mending robot, etc., and added 25 sets of new industrial intelligent robots throughout the year.

Deepen on-site remote centralized control

Shougang Co. focuses on building "one-button" automatic control mode, perfecting production process control model, realizing process management change and technical capability enhancement, and building regional remote centralized control center. Jingtang Co. realizes the one-button production after adding hot metal into converter, and realizes 100% centralized rolling operation and centralized control. Qiangang Co. has transformed the public and auxiliary procedure such as oxygen production, gas production and dust removal in ironmaking into remote centralized control according to the process, which has improved the control efficiency and control scope.

Optimizing job plan scheduling

Jingtang Co. researched and developed models of logistics balance, operation priority, stacking position recommendation, overhead crane allocation, etc., and realized intelligent scheduling of 11 types of operations in slab warehouse. Qiangang Co. realized dynamic tracking of ladles and dynamic scheduling of overhead cranes in the whole process of steelmaking production, and automatic scheduling of hot rolling pickling line, leveling and straightening operation. Cold-R Co.'s intelligent scheduling was put into operation on line, analyzing a large amount of historical data and real-time data through deep learning and data mining technology to predict the demand for materials and energy consumption.

Improving quality process capabilities

Shougang Co. carries out in-depth system application optimization based on data application and business modeling, improves automatic determination, disposal and analysis capability of process and whole-process quality, and realizes whole-process tracking and analysis of steel defects and scars, performance correlation modeling, and automatic determination of the surface quality of hot-rolled automobile outer sheets. The company actively promotes the application of intelligent equipment, and has independently researched and developed functions for automatic control and analysis and optimization of the production process, such as automatic judgment of ladle cleanliness and forecast of rolling force in hot rolling.

Realizing integrated logistics control

The intelligent logistics management and control platform of Jingtang Co. was launched, and the technologies such as 5G, Internet of Things and artificial intelligence were applied to establish a full-scene logistics scheduling model, and all manual dispatching and manual scheduling were cancelled, so that the logistics efficiency in-plant increased by 15% on average. completed the unmanned transformation of cold rolled products, hot rolled products, five storage areas of 42 overhead cranes of unmanned warehousing system; 5 sets of yard stacking and reclaiming machine to start the trial operation of the unmanned. Qiangang Co. realized the visualized tracking of hot metal by using logistics tracking and positioning and transportation ironmaking and steelmaking process connection model technology.

Lighthouse Factory Digital Transformation

Aiming at world-class enterprises, Cold-R Co. started the construction of lighthouse factories and digital transformation work, completed the first phase of the project with 55 use case optimization iterations, the level of automation and intelligence of the production line has been significantly improved, the operation efficiency of warehousing and logistics continues to be optimized, the quality of products and customer service continues to improve, and the level of fine management has been steadily improved; 25 use cases for the second phase launched as anticipated, achieving in-depth application in intelligent manufacturing scenarios.

The company attaches great importance to data and privacy security, has established a comprehensive information security system as well as corresponding management measures, and continuously improves its technical capabilities in the field of information security to protect the confidentiality, integrity and availability of information systems, equipment and data, and to adhere to the security bottom line in all aspects.

The company increases the cultivation of digital professional and technical talents, comprehensively improves the data-driven awareness of employees, periodical organizes data analysis races, encourages and drives more professionals to dig deeper in the data, and cultivates composite talents who are both knowledgeable in their professions and proficient in the application of data.



Data Analysis Race Results Presentation Event



In 2023,

- "Intelligent Manufacturing Benchmarking Enterprise"
- Selected as a Typical Case of Artificial Intelligence Industry Empowerment in Beijing in 2023
- "Shougang Co. empowers intelligent manufacturing with digital workforce" selected as one of the Top 10 Typical Scenarios of National Enterprise Digitalization Application in 2023
- "Dynamic Business Management for Steel Marketing Supply Chain" and "Shougang Co. Logistics Integrated Management and Control Platform" are selected as typical scenarios of digital transformation in the steel industry in 2023.
- "Integrated Safety Intelligent Management and Control to face the entire process of steel production" has been selected as a typical application scenario of intelligent manufacturing solutions and digital transformation in the iron and steel industry in 2023.



Project	Award
Product Development and Operation Management of High-end Electrical Steel for Steel Enterprises to Build Global Competitiveness	First Prize of the Thirtieth National Enterprise Management Modernization Innovation Achievements
Construction and Enhancement of Core Competitiveness of Electrical Steel Based on Industry Chain Synergy	First Prize of Innovation Achievements of Modernization of Metallurgical Enterprise Management in 2023
"Empowering Intelligence with Digitalization" Big Data Application Boosts Intelligent Decision-Making and Management of Enterprises	First Prize of Innovation Achievements of Modernization of Metallurgical Enterprise Management in 2023
The Practice of Digital Transformation of Customer Service Management of Steel Enterprises	Second Prize of Beijing Enterprise Management Modernization Innovation Achievements
Construction and Implementation of Intelligent Evaluation System for Equipment Management of Steel Enterprises	Third Prize of Innovation Achievements of Modernization of Metallurgical Enterprise Management in 2023



Research and Application of Casting-Rolling Cooperative Integrated Scheduling and Dispatching Technology
Third-class Prize of Metallurgical Science and Technology Award



Construction and Application of Intelligent Logistics Control Platform of Steel Enterprises
Outstanding Award of the Iron and Steel Industry Track of the 3rd Intelligent Manufacturing Innovation Competition



Intelligent Control of the Whole Process of Steel Quality Based on Data Modeling Technology
The third intelligent manufacturing innovation Competition iron and steel industry track excellence award

Case: Cold-R Co. builds a lighthouse factory

Lighthouse Factory integrates industrial internet, cloud computing, big data, 5G and other new technologies of the fourth industrial revolution, which can effectively promote the improvement of production efficiency and the energy conservation and emission reduction, and drive change of operation and management mode, representing the highest level of intelligent manufacturing and digitalization in the global manufacturing field.

In 2021, the Cold-R Co. started construction of lighthouse factory and digital transformation, aiming at world-class enterprises. By the end of 2022, the first phase of lighthouse factory of 11 sub-projects and 55 use cases were put into operation. The automation and intelligence level of production line were significantly improved, the operation efficiency of warehousing and logistics was continuously optimized, and the product quality and customer service were continuously improved. In 2023, Cold-R Co. continued to optimize the use cases of the first phase on the basis of the first phase, rapidly promoted the construction of the second phase project, and developed 25 use cases such as intelligent production scheduling, intelligent inspection and testing, and intelligent control.

Case: Intelligent control of hot metal transportation of Qiangang Co.

Hot metal dispatching is the core content of coordinating the production organization of ironmaking and steelmaking. Due to the high work intensity, the required control information, complex business process, production volatility and other reasons, it is the difficulty in the informationization work of many steel mills.



Through the establishment of the torpedo car tracking system, Qiangang Co. uses the logistics tracking and positioning technology to complete the real-time collection of the data of the transportation process of hot metal, realizing the visual tracking of the locomotive and the torpedo car, and the whole life cycle of the torpedo car is digitized and visualized. After the system was launched, the hot metal temperature dropped by 89.8°C in November, setting a new historical record. The turnover rate of the torpedo car was 6.3 times per day, fulfilling the hot metal temperature control target and reaching the leading level of the industry.

- **Transportation:** it can grasp the dynamic of blast furnace and the transship station to accept the hot metal, and dispatch the locomotive in advance to realize the efficient turnover of torpedo car;
- **Production scheduling:** using the visual interface to timely and accurately issue instructions to ensure the efficient and safe connection between ironmaking and steelmaking;
- **Production plan:** according to the running trajectory of torpedo car, optimize the transship in advance to effectively reduce the hot metal temperature drop.

Case: Comprehensive intelligent security control of Jingtang Co.

Building safety production science management system as the goal, Jingtang Co. uses the digital transformation of thinking, applies 5G, GIS map, machine vision, big data analysis and other cutting-edge technology, relying on the company security professional expert team, and builds the first first-class comprehensive intelligent management control platform for enterprise safety in China. This platform faces all employees, covers all links, digitalizes business processes and intelligently manages the site.



Security comprehensive intelligent control platform based on "1 + N" (a control center, namely security integrated intelligent control platform, multiple system coordination) design mode, the formation of six level 1 elements, 24 secondary elements, 187 level 3 functions, safety standardization, occupational health and safety management system and the depth of the whole link. The project was selected the Recommended Catalogue of Intelligent Manufacturing Solutions in the Steel Industry [2023] issued by China Iron and Steel Association, and was highly recognized and praised by the national, provincial and municipal emergency management departments.

Case: Smart logistics control of Jingtang Co.

Based on the construction of a unified transportation resource management system, with the goal of minimizing logistics cost, and based on the micro-service architecture for intelligent manufacturing, Jingtang Co. has independently developed and built an integrated logistics control platform with production process linkage, transportation resources balance and logistics operation coordination. The integrated logistics management and control platform, for the first time in the industry, has realized the full amount, whole process, dynamic and accurate tracking and information closed-loop of equipment, personnel, vehicles and goods, and set up a model of intelligent logistics management and control in the steel industry.

After the launch of the platform, the application effects are remarkable. Instead of manual dispatch and manual scheduling, intelligent control of logistics integration and fine management of the whole process are realized, including automatic preparation of transportation plans, intelligent allocation of transportation cars, intelligent scheduling of transportation vehicles, intelligent planning of transportation routes, automatic collection of transportation results, and automatic evaluation of transportation services. The average response time of the system transportation demand is 10.09 seconds, the waybill distribution accuracy is 93.6%, and the overall logistics efficiency is improved by 15.0%.

- Realizing data integration and resource intensive management
- Realizing the reasonable and dynamic matching of transportation capacity resources and transportation plan
- Realizing the efficient coordination between logistics and warehousing operations



Industry Collaboration

The company adheres to the ideal of intelligent manufacturing, service and win-win, plays the leading role of technological innovation, and actively builds a high-quality industrial chain community. The company is an important member unit of China Iron and Steel Association, China Metal Society, Beijing Metal Society and other social organizations, and constantly expands the depth and breadth of industry participation and communication.

Standard Guidance

With "inspection leading", "low-carbon leading", "intelligent leading" and "scientific and technological achievements transformation standards", Shougang Co. constantly improves the company's standardization construction, promotes the pilotage role of standardized management in enterprises, and leads formulating new standard for the development of the steel industry. By the end of 2023, the company has led or participated in issuing 125 group standards, industry standards, local standards, national standards and international standards. In 2023, the company participated in the formulation and issuing of 21 international, national, industry, and group standards, of which 6 took the lead.



International standard:

Has led or participated in issuing **1** international standard

National standards:

Has led or participated in issuing **20** national standards

Led or participated in issuing **2** national standards in 2023

Industry standard:

Has led or participated in issuing **42** industry standards

Led or participated in issuing **1** industry standard in 2023

Local standard:

Has led or participated in issuing **2** local standards

Group standard:

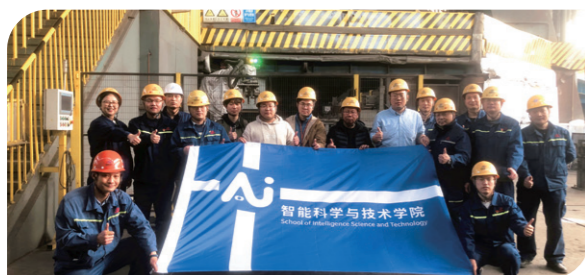
Has led or participated in issuing **60** group standards

Led or participated in issuing **18** group standards in 2023

Industry-university-research-application Platform

The company actively promotes the integrated development of industry, university, research and application, strengthens the in-depth cooperation with universities, research institutions and upstream and downstream enterprises, continues to strengthen the overall, basic and forward-looking process technology research, and gives full play to the collaborative innovation role of the joint research and development platform.

Cooperate with universities. The company strengthens the cooperation with University of Science and Technology Beijing, Northeastern University, Tsinghua University and other scientific research institutes, promotes the deep integration of universities and enterprises, establishes joint research centers, joint laboratories and expert workstations on relevant research content, and fully integrates technical resources. Through project promotion, technical exchange, systematic teaching, exchange and discussion of the "unveiling the list" special competition, the synergistic effect is formed, excellent technical innovation team is cultivated, the rapid transformation of research results is promoted, and the deep integration of education chain, innovation chain and industrial chain is realized. In 2023, the company has successively established expert workstations in the field of energy and environment, Wang Xinhua expert workstations and other cutting-edge talent training bases.



"Take the lead" special race exchange and discussion



Expert workstation in the field of energy and environment



Expert workstation

Work with the downstream clients. The company and its partners jointly build cross-industry, cross-regional and cross-enterprise joint laboratories and innovation studio alliance, hold product technology forum and "Shougang Day" technical exchange activities, set up joint projects, continuously deepen technical cooperation and promote key projects. Through technological innovation, collaborative and process breakthrough, realize all-round and multi-angle early intervention, efficient communication, mutual benefit and win-win, and jointly provide solutions for the problem of "key strategic new steel and steel materials" that restricts the development of the industrial chain.



Innovation Studio Alliance with Shandong Guanzhou



Alliance with BMW Brilliance Innovation Studio



Alliance with China Oil Steel Pipe Innovation Studio



Alliance with Geely Auto Innovation Studio



BYD Shougang Day activities



- 9 joint research and development platforms with upstream and downstream enterprises and scientific research institutes
- 14 expert workstations
- Shougang-BMW Joint Studio was awarded the Beijing Industrial (National Defense) Trade Union Innovation Studio Alliance



Industry Communication

The company actively participates in or hosts various industry associations lecture and professional forums, builds a communication platform, conducts in-depth discussions on strategic, overall and forward-looking major issues of the industry, provides services and communication and cooperation opportunities for industrial chain enterprises, and helps the transformation and upgrading of the industry.

Case: 2023 Shougang Plate Product Development Seminar

In order to jointly promote the coordinated and integrated development of the upstream and downstream industries of the company's plate products, jointly deepen the collaborative innovation mechanism of "industry, university, research and application", and jointly explore new development opportunities under the situation of green and low-carbon economy, on November 9, 2023 Shougang Co. Plate Product Development Seminar was held in Suzhou.

More than 350 industry experts and partners, including China Iron & Steel Industry Association, China Association of the Shipbuilding Industry, Iron & Steel Research Institute, Hefei General Machinery Research Institute, Three Gorges Construction, Beijing Survey and Design Institute, East China Survey and Design Institute, PetroChina, SINOPEC, China Railway Bridge Bureau, China Railway Bridge, Zhenhua Heavy Industry, CIMC Tongchuang, etc., attended this meeting.

During the communication process, we discussed the cutting-edge technology and market trend of the plate, as well as how to deal with the future challenges and opportunities, which provided new ideals and power for the future development of the plate products, jointly promote the progress of the plate technology, and promote the green, low-carbon and high-quality development of the industry.



Case: National industrial waste water recycling site exchange meeting and industrial water-saving standards, technology promotion and exchange activities

On October 26, 2023, the national industrial waste water recycling and utilization on-site exchange meeting and industrial water-saving standards and technology promotion and exchange activities were held in Shougang Co. The conference was held simultaneously through the "online + offline", and more than 2,000 representatives from the industrial wastewater recycling pilot industry parks, related industry associations and scientific research institutes attended the conference.

This activity is an important measure to accelerate the recycling of industrial wastewater, aims to further promote the *Industrial Water Efficiency Improvement Action Plan, Implementation Plan for Industrial Wastewater Recycling*, strengthen leading of industrial wastewater recycling pilot demonstration, play a role of standard and technical equipment promoting industrial water efficiency, improve industrial water efficiency.

As one of the pilot enterprises, Shougang Co. shared the "iron and steel industry efficient water and industrial wastewater recycling pilot experience", introduced the ideal and practice of water system management, water saving technology application, shared experience and measures of water recycling and water efficiency improvement, and introduced the next step work target to optimize the allocation of water resources and promote the intelligent water control.



Case: 2023 Ocean Development Caofeidian Forum

On October 26, 2023, the "2023 Ocean Development Caofeidian Forum" was held in Caofeidian, Tangshan, Hebei Province, co-sponsored by the Marine Industry Branch of China Ocean Engineering Consulting Association and the People's Government of Caofeidian District, Tangshan City, Hebei Province, and undertaken by Jingtang Co. and other units. The theme of the forum is "Strengthening the protection and restoration of Marine ecology, promoting the high-quality development of Marine industry", and studying the protection and restoration of Marine ecology will be of great significance to promoting the high-quality development of Marine industry.



The Caofeidian Forum for Marine Development aims at scientifically develop and utilize the ocean and promote the coordinated development of the Beijing-Tianjin-Hebei region. It had successfully held several "Caofeidian Forum for Marine Development" and positioned the forum as a permanent international forum. Caofeidian Marine development in 2023 continued to use the advantages of high-end think-tank, industry leader, organize experts and scholars, Marine enterprises around Marine industry high-end, Marine industry clustering, Marine industry greening and Marine industry Intelligent to conduct thematic discussions and communication, further enhance and promote the common development of the Beijing-Tianjin-Hebei region in the field of Marine.

Public Welfare Actions

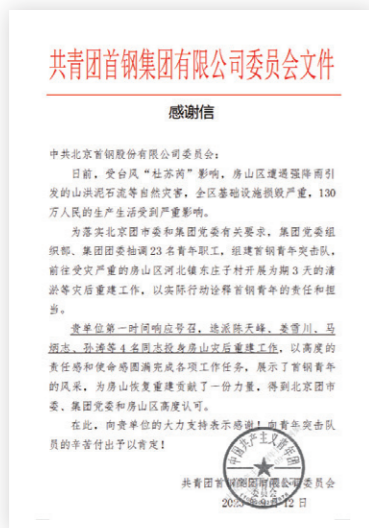
Youth Volunteer Service

Organized the second session of "Top Ten Most Beautiful Youth Volunteers" and "Excellent Youth Volunteers". For ten consecutive years, we have carried out the "Learn from Lei Feng" volunteer service month activity to practice the tasks of social responsibility and service center.



"Learn from Lei Feng" activities entering the the community
---- electrical appliances maintenance

Selected and sent outstanding young people to ensure major volunteer services, organized young people to participate in the World Youth Development Forum, Service Trade Fair, Post-disaster reconstruction of Beijing Fangshan District, global launch ceremony of Shougang Oriented Electrical Steel, Shougang Vocational Skills Race and other volunteer services, and received a special "letter of thanks" from the Youth League Committee of the Group. At the same time, it provides volunteer services for the Innovation Alliance of Beijing Industrial Trade Union, July 1 Commendation conference and other major activities



Organized and carried out the theme of "strive for youth". It tells the story of youth struggle who actively participate in the construction of production line, process research, technological research, and innovative practice.

Total volunteer service time:
10,019 hours
Average service time per person: **3.2** hours

Rural Revitalization

The company has actively fulfilled its social responsibilities, expanded the achievements of poverty alleviation, implemented poverty alleviation through consumption, and helped rural revitalization. Actively participated in the book donation activity of "Good Books with Growth" in Beijing, donated 2,000 books to Xinjiang Uygur Autonomous Region, and helped the establishment of the first undergraduate university in Hetian.

The company purchased agricultural products such as potatoes from Yangyuan County, Zhangjiakou City, Hebei Province, its counterpart in poverty alleviation areas, as well as jujubes, raisins and other sets of poverty alleviation products from Xinjiang Uygur Autonomous Region, with a total amount of 3.7088 million yuan and a population of 24,435 people helped.



Urban Integration

The company starting from the life cycle of product manufacturing, continues to promote the efficient recycling of resources, and has formed a new development mode of enterprise internal circulation, regional industrial cooperation, and urban and enterprise integration.

In winter, waste heat from the blast furnace slag flushing water of Qiangang Co. provides heating for the plant, neighboring residential areas, schools, and hospitals. The heating area reaches more than 1.1 million square meters, covering over 9,000 households. This can save 31,500 tonnes of standard coal, reduce CO₂ emissions by 78,600 tonnes, and SO₂ emissions by 477 tonnes.

In other seasons, the recovery of waste heat from blast furnace slag flushing water, instead of the original heating steam, is used for converter vaporization cooling devices, hot rolling heating furnace vaporization cooling, production of demineralized water for generator set boilers, and other energy recycling initiatives.

Key Performance Indicators Form

Economic Indicators	Units	2021	2022	2023
Operating revenue	RMB 1,000	134,034,486	118,142,184	113,761,444
Profit before tax	RMB 1,000	9,799,499	1,793,114	900,320
Net profit	RMB 1,000	8,326,531	1,509,415	753,805
Total tax	RMB 1,000	5,559,206	3,053,651	2,728,941

Environmental Indicators	Units	2021	2022	2023
Environmental investment	RMB million	548	1,122	838
Total investment in environmental protection in the past 5 years	RMB million	5,831	6,245	4,701
Environmental pollution incidents	Item	0	0	0
Environmental fines during the reporting period	RMB 1,000	0	0	0
Environment training coverage	%	100	100	100
Environmental protection performance evaluation (The highest grade: A)		A	A	A
The proportion of operations certified by the environmental management system	%	100	100	100
The proportion of operations certified by the energy management system	%	100	100	100
Energy consumption	Tonne standard coal	13,676,223	13,842,868	13,898,235
Electricity consumption	million kWh	14,918	15,131	14,748
Self-provided clean energy generation capacity (photovoltaic power generation)	MW	13.69	13.69	13.70
Annual generation of Self-provided clean energy (photovoltaic power generation)	MWh	12,160	15,500	15,320
Purchased green electricity	million kWh	— ¹	719	916
Annual fresh water consumption	1,000 tonnes	63,189	66,968	68,787
Amount of water recycled	1,000 tonnes	3,936,410	4,330,867	4,601,360
Water recycled rate	%	98.67	98.73	98.73
Particulate matter (PM) emissions	Tonne	5,715	4,908	5,398
Sulfur dioxides (SO ₂) emissions	Tonne	2,121	2,212	2,075
Nitrogen oxides (NO _x) emissions	Tonne	5,208	5,226	4,022
Total wastewater discharge	Tonne	215,192	434,709	373,743

1. Note: Shougang Co. has been trading green electricity since 2022, so there is no such data in 2021.

Environmental Indicators	Units	2021	2022	2023
Business impact of water-related events	RMB 1,000	0	0	0
Waste generation	1,000 tonnes	12,477	12,384	13,051
General waste generation	1,000 tonnes	12,027	11,921	12,669
General waste recycled	1,000 tonnes	12,027	11,921	12,669
Hazardous waste generation	1,000 tonnes	450	463	382
Hazardous waste recycled	1,000 tonnes	439	453	379
Total amount of packaging materials used in finished products	Tonne	84,195	85,400	87,664
Total amount of reusable packaging materials used in finished products	Tonne	81,095	82,330	84,514
Comprehensive utilization rate of solid waste	%	99	99	100
Comprehensive utilization rate of steel slag	%	100	100	100
Comprehensive utilization rate of dust	%	100	100	100
GHG emissions (Scope 1)	tCO ₂ e	38,615,904	38,542,164	41,192,512
GHG emissions (Scope 2)	tCO ₂ e	4,179,058	3,936,676	2,786,781
GHG emissions (Scope 1 & 2)	tCO ₂ e	42,794,962	42,478,839	43,979,293

Social Indicators	Units	2021	2022	2023
Number of discrimination and harassment incidents	Item	0	0	0
Training ratio of employees for anti discrimination and opposition to human rights violations	%	100	100	100
Number of incidents of child labor, forced labor, and human trafficking	Item	0	0	0
Total number of employees	Person	17,846	18,608	18,226
Number of employees aged 30 or younger	Person	2,098	1,836	1,656
Number of employees aged 30-40	Person	9,741	9,759	9,244
Number of employees aged 40-50	Person	3,426	3,944	4,452
Number of employees aged 50 or older	Person	2,581	3,069	2,874
Number of male employees	Person	16,024	16,675	16,322
Number of female employees	Person	1,822	1,933	1,904
Proportion of male employees	%	89.79	89.61	90.64
Proportion of female employees	%	10.21	10.39	9.36

Social Indicators	Units	2021	2022	2023
Number of employees with master degree or above	Person	1,549	1,497	1,631
Number of employees with bachelor degree	Person	7,165	7,895	7,935
Number of associate employees	Person	5,821	5,809	5,573
Number of employees at vocational schools and below	Person	3,311	3,407	3,087
Number of labor dispatched employees	Person	0	0	0
Number of part-time employees	Person	0	0	0
Number of ethnic minority employees	Person	848	856	901
Proportion of ethnic minority employees	%	4.75	4.60	4.86
Proportion of employees belonging to vulnerable groups	%	11.55	11.53	11.25
Employee quit rate	%	0.73	0.70	1.23
Quit rate of male employees	%	0.90	0.81	1.15
Quit rate of female employees	%	1.05	0.92	0.35
Quit rate of employees under 30 years old	%	2.14	1.87	2.58
Quit rate of employees aged 30-40	%	2.44	1.61	0.74
Quit rate of employees aged 40-50	%	0.09	0.17	0.12
Quit rate of employees 50 years old or older	%	0.15	0.48	0.35
Signing rate of labor contracts	%	100	100	100
Proportion of employees covered by collective agreements	%	100	100	100
Percentage of employees who regularly receive performance and career development examines	%	100	100	100
Social insurance coverage	%	100	100	100
Return to work rate of female employees that took parental leave	%	— ¹	100	91.79
Retention rates of female employees that took parental leave	%	— ¹	100	100
Vocational training input	RMB 1,000	19,458	12,908	21,041
Training coverage	%	100	100	100
Total training hours	Hour	1,260,719	1,316,073	1,867,841
Per capita training hours	Hour	71	71	104
Physical examination coverage	%	100	100	100

1. Note: the parental leave policy in Beijing and Hebei regions was promulgated and implemented in 2022, so there is no relevant data for 2021.

Social Indicators	Units	2021	2022	2023
Occupational disease frequency	%	0	0	0
Number of newly added occupational diseases	Person	0	0	0
Total investment in work safety	RMB million	154	137	167
Number of work safety accidents	NOS	2	0	0
Number of work-related deaths	Person	0	0	0
Work injury rate	%	0	0	0
Working days lost	Day	210	0	0
Number of safety training	Person-times	173,189	193,985	225,891
Safety training hours	Hour	648,412	801,222	928,362
Safety risk prevention training coverage	%	100	100	100
Percentage of products that need to be withdrawn and recalled for safety and health reasons	%	0	0	0
Customer satisfaction	Score	98.45	98.62	98.76
Total number of suppliers	NOS	3,445	3,558	3,246
Proportion of suppliers in mainland China	%	100	100	100
Total number of procurement orders on bidding procurement platform	Item	29,335	28,869	31,638
Proportion of procurement orders on bidding procurement platform	%	98.68	98.99	100
Number of ESG training activities for suppliers	Time	0	165	439
Total ESG training hours for suppliers	Hour	0	165	487
R&D investments	RMB 1,000	5,321,487	5,386,071	5,022,122
Proportion of R&D investment to operating revenue	%	3.97	4.56	4.41
Number of R&D staff	Person	2,295	2,342	2,481
Proportion of R&D staff	%	12.86	12.59	13.61
Number of valid patents	PCS	2,308	2,955	3,570
Number of patents applied	PCS	685	894	1,219
Number of patents granted	PCS	450	654	685
Number of innovation patents granted	PCS	182	166	229

Governance Indicators	Units	2021	2022	2023
Proportion of independent directors	%	56	56	50
Number of board meetings	Time	12	11	10
Attendance rate of directors	%	100	100	100
Number of meetings of Audit Committee	Time	2	2	2
Number of meetings of Remuneration and Assessment Committee	Time	2	1	1
Proportion of female employees in management	%	16.27	16.52	16.98
Share-proportion of senior executives	%	0.032	0.029	0.0057
Stock pledge ratio	%	0	0	0
Number of compliance training participants	Person	4,389	8,768	12,598
Compliance training coverage	%	25	47	69
Total time of compliance training	Hour	9,556	19,156	28,954

Content Index

GRI Content Index

Statement of use	Shougang Co. has reported the information cited in this GRI content index for the period January 1st to December 31st, 2023 with reference to the GRI Standards.
GRI 1 used	GRI 1: Foundation 2021

	Disclosure	Location	
GRI 2: General Disclosures 2021	2-1	Organizational details	About Us
	2-2	Entities included in the organization's sustainability reporting	About This Report
	2-3	Reporting period, frequency and contact point	About This Report
	2-4	Restatements of information	About This Report
	2-5	External assurance	—
	2-6	Activities, value chain and other business relationships	About Us, Supply Chain Management, Industry Collaboration
	2-7	Employees	Employee Protection
	2-8	Workers who are not employees	Health and Safety, Supply Chain Management, Industry Collaboration
	2-9	Governance structure and composition	Corporate Governance
	2-10	Nomination and selection of the highest governance body	Corporate Governance
	2-11	Chair of the highest governance body	Corporate Governance
	2-12	Role of the highest governance body in overseeing the management of impacts	Corporate Governance, ESG Management
	2-13	Delegation of responsibility for managing impacts	Corporate Governance
	2-14	Role of the highest governance body in sustainability reporting	ESG Management
	2-15	Conflicts of interest	Integrity Ecology
	2-16	Communication of critical concerns	ESG Management
	2-17	Collective knowledge of the highest governance body	ESG Management
	2-18	Evaluation of the performance of the highest governance body	—
	2-19	Remuneration policies	Employee Protection
	2-20	Process to determine remuneration	Employee Protection
	2-22	Statement on sustainable development strategy	Message From Chairman
	2-23	Policy commitments	Integrity Ecology, Employee Protection
	2-24	Embedding policy commitments	Integrity Ecology, Industry Collaboration
	2-25	Processes to remediate negative impacts	Integrity Ecology
	2-26	Mechanisms for seeking advice and raising concerns	ESG Management, Employee Protection
	2-27	Compliance with laws and regulations	Each chapter
	2-28	Membership associations	Industry Collaboration
	2-29	Approach to stakeholder engagement	ESG Management
	2-30	Collective bargaining agreements	Employee Protection

	Disclosure	Location	
GRI 3: Material Topics 2021	3-1	Process to determine material topics	ESG Management
	3-2	List of material topics	ESG Management
	3-3	Management of material topics	ESG Management
GRI 201: Economic Performance 2016	201-1	Direct economic value generated and distributed	Key Performance Indicators Form, Annual Report
	201-2	Financial implications and other risks and opportunities due to climate change	Low-carbon Development
	201-3	Defined benefit plan obligations and other retirement plans	Employee Protection
	201-4	Financial assistance received from government	Annual Report
GRI 203: Indirect Economic Impacts 2016	203-1	Infrastructure investments and services supported	National Strategic Projects Participation, Public Welfare Actions
	203-2	Significant indirect economic impacts	Public Welfare Actions
GRI 204: Procurement Practices 2016	204-1	Proportion of spending on local suppliers	Key Performance Indicators Form
GRI 205: Anti-corruption 2016	205-1	Operations assessed for risks related to corruption	Integrity Ecology
	205-2	Communication and training about anti-corruption policies and procedures	Integrity Ecology
	205-3	Confirmed incidents of corruption and actions taken	Integrity Ecology
GRI 206: Anti-competitive Behavior 2016	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	Integrity Ecology
GRI 207: Tax 2019	207-1	Approach to tax	Risk Management
	207-2	Tax governance, control, and risk management	Risk Management
	207-3	Stakeholder engagement and management of concerns related to tax	Risk Management
	207-4	Country-by-country reporting	—
GRI 301: Materials 2016	301-1	Materials used by weight or volume	—
	301-2	Recycled input materials used	—
	301-3	Reclaimed products and their packaging materials	Key Performance Indicators Form
GRI 302: Energy 2016	302-1	Energy consumption within the organization	Key Performance Indicators Form
	302-2	Energy consumption outside of the organization	—
	302-3	Energy intensity	Key Performance Indicators Form
	302-4	Reduction of energy consumption	Ultimate Energy Efficiency
	302-5	Reductions in energy requirements of products and services	Ultimate Energy Efficiency
GRI 303: Water and Effluents 2018	303-1	Interactions with water as a shared resource	Water Resource Management
	303-2	Management of water discharge-related impacts	Water Resource Management
	303-3	Water withdrawal	Water Resource Management
	303-4	Water discharge	Water Resource Management
	303-5	Water consumption	Water Resource Management
GRI 304: Biodiversity 2016	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Biodiversity
	304-2	Significant impacts of activities, products and services on biodiversity	Biodiversity
	304-3	Habitats protected or restored	Biodiversity

	Disclosure	Location	
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	Low-carbon Development
	305-2	Energy indirect (Scope 2) GHG emissions	Low-carbon Development
	305-3	Other indirect (Scope 3) GHG emissions	—
	305-4	GHG emissions intensity	Key Performance Indicators Form
	305-5	Reduction of GHG emissions	Low-carbon Development
	305-6	Emissions of ozone-depleting substances (ODS)	The company's production and operation activities do not generate ODS
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	Environmental Management
GRI 306: Waste 2020	306-1	Waste generation and significant waste-related impacts	Environmental Management
	306-2	Management of significant waste-related impacts	Environmental Management
	306-3	Waste generated	Environmental Management
	306-4	Waste diverted from disposal	Environmental Management
	306-5	Waste directed to disposal	Environmental Management
GRI 308: Supplier Environmental Assessment 2016	308-1	New suppliers that were screened using environmental criteria	Supply Chain Management
	308-2	Negative environmental impacts in the supply chain and actions taken	Supply Chain Management
GRI 401: Employment 2016	401-1	New employee hires and employee turnover	Key Performance Indicators Form
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Employee Protection
	401-3	Parental leave	Key Performance Indicators Form
GRI 403: Occupational Health and Safety 2018	403-1	Occupational health and safety management system	Health and Safety
	403-2	Hazard identification, risk assessment, and incident investigation	Health and Safety
	403-3	Occupational health services	Health and Safety
	403-4	Worker participation, consultation, and communication on occupational health and safety	Health and Safety
	403-5	Worker training on occupational health and safety	Health and Safety
	403-6	Promotion of worker health	Health and Safety
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Health and Safety
	403-8	Workers covered by an occupational health and safety management system	Health and Safety
	403-9	Work-related injuries	Key Performance Indicators Form
	403-10	Work-related ill health	Health and Safety
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	Talent Development
	404-2	Programs for upgrading employee skills and transition assistance programs	Talent Development
	404-3	Percentage of employees receiving regular performance and career development reviews	Talent Development
GRI 405: Diversity and Equal Opportunity 2016	405-1	Diversity of governance bodies and employees	Corporate Governance, Employee Protection
GRI 406: Non-discrimination 2016	406-1	Incidents of discrimination and corrective actions taken	Employee Protection
GRI 407: Freedom of Association and Collective Bargaining 2016	407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Employee Protection

Disclosure		Location	
GRI 408: Child Labor 2016	408-1	Operations and suppliers at significant risk for incidents of child labor	Employee Protection
GRI 409: Forced or Compulsory Labor 2016	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Employee Protection
GRI 410: Security Practices 2016	410-1	Security personnel trained in human rights policies or procedures	—
GRI 413: Local Communities 2016	413-1	Operations with local community engagement, impact assessments, and development programs	Public Welfare Actions, Urban Integration
	413-2	Operations with significant actual and potential negative impacts on local communities	The company has not identified any operations that have actual or potential significant negative impacts on the local community
GRI 414: Supplier Social Assessment 2016	414-1	New suppliers that were screened using social criteria	Supply Chain Management
	414-2	Negative social impacts in the supply chain and actions taken	Supply Chain Management
GRI 416: Customer Health and Safety 2016	416-1	Assessment of the health and safety impacts of product and service categories	Quality Assurance
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	Quality Assurance
GRI 417: Marketing and Labeling 2016	417-1	Requirements for product and service information and labeling	Customer Service
	417-2	Incidents of non-compliance concerning product and service information and labeling	Customer Service
	417-3	Incidents of non-compliance concerning marketing communications	Customer Service
GRI 418: Customer Privacy 2016	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	Customer Service

304-4, 411-1, 415-1	The core business of the company has little relevance or importance to this index information, therefore they will not be disclosed
2-21, 202-1, 202-2, 405-2	Due to information confidentiality requirements, they will not be disclosed to the public temporarily

SDGs Index

SDGs	Brief introduction	Location
1	No Poverty: End poverty in all its forms everywhere.	Public Welfare Actions
3	Good Health and Well-being: Ensure healthy lives and promote well-being for all at all ages.	Employee Protection
4	Quality Education: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.	Public Welfare Actions
5	Gender Equality: Achieve gender equality and empower all women and girls.	Employee Protection
6	Clean Water and Sanitation: Ensure availability and sustainable management of water and sanitation for all.	Water Resource Management, Environmental Management
7	Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable and modern energy for all.	Ultimate Energy Efficiency, Low-carbon Development, Green Products
8	Decent Work and Economic Growth: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.	Employee Protection
9	Industry, Innovation and Infrastructure: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	Intelligent Manufacturing

SDGs	Brief introduction	Location
10	Reduced Inequalities: Reduce inequality within and among countries.	Employee Protection
11	Sustainable Cities and Communities: Make cities and human settlements inclusive, safe, resilient and sustainable.	Urban Integration
12	Responsible Consumption and Production: Ensure sustainable consumption and production patterns.	Quality Assurance, Green Products
13	Climate Action: Take urgent action to combat climate change and its impacts.	Low-carbon Development, Supply Chain Management
14	Life Below Water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.	Biodiversity
15	Life on Land: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.	Biodiversity
16	Peace, Justice and Strong Institutions: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.	Integrity Ecology
17	Partnerships for the Goals: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.	Industry Collaboration

Feedback Form

Dear readers,

Thank you for taking the time to read the 2023 Shougang Co. Sustainability Report! We attach great importance to and look forward to hearing your feedback on this report. Your opinions and suggestions are an important basis for us to continue to promote sustainable development management and practice. We would appreciate it if you provide valuable comments and suggestions by completing relevant questions in the feedback form, and please send it back to us in the following way:

Board Secretary Office of Beijing Shougang Co., Ltd.

Contact Add: No. 99 Shijingshan Road, Shijingshan District, Beijing, PRC

Tel: 010-88293727

E-mail: sggf@sgqg.com

Postcode: 100043

Fax: 010-88292055

1. Which type of stakeholder do you belong to?

- Shareholders and investors Company management Employees Customers
 Suppliers Government and regulatory agencies Community organizations, non-governmental organizations Industry partners, industry associations, and research institutions
 Media Other (please specify)

2. Please comment on the response and disclosure of this report to the concerns of stakeholders:

- Great Good General Poor Very poor

3. Please comment on the clarity, accuracy, and completeness of the information, indicators, and data disclosed in this report:

- Great Good General Poor Very poor

4. Please comment on the readability of this report:

- Great Good General Poor Very poor

5. Please make a comprehensive evaluation of this report:

- Great Good General Poor Very poor

Open Questions:

1. What suggestions do you have for Shougang Co.'s work related to sustainable development work and report release?
2. What deficiencies do you think exist in this report?
3. What else sustainable development information do you think needs to be disclosed in this report?

Beijing Shougang Company Limited

Sustainability Report 2023

