



2022 Environmental Social and Governance Report

Shanghai Electric Group Company Limited

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Notes for Report Preparation



Overview

Shanghai Electric Group Company Limited ("Shanghai Electric", "Group", "Company" and "we") began to prepare and disclose its Environmental, Social and Governance ("ESG") report since 2016, and issued the report on an annual basis. This is the Seventh ESG report of our Group, truthfully revealing the Group's performance of its responsibility to shareholders, customers, partners, employees, environment, communities and other important stakeholders. And it shows the Group's performance in environment, society and governance.



Basis of Preparation

This report is mainly prepared with reference to the Guidelines No. 1 for the Self-regulation of Listed Companies on the Shanghai Stock Exchange — Standardized Operation and the Environmental, Social and Governance Reporting Guide of The Stock Exchange of Hong Kong Limited, and partially refers to the GRI Standards 2021 of Global Reporting Initiative, aiming to disclose information on environmental, social and governance performance of the corporate for relevant parties and shareholders. The content of this report is determined according to a set of established procedures, including identifying and ranking important stakeholders and ESG issues, collecting relevant data of the report, and reviewing quantitative data in the report.



Scope and Boundary of the Report

The policies and data provided in this report cover the Group's headquarter, internal divisions, branches, wholly-owned subsidiaries and holding companies, and the environmental data includes the important production-oriented subsidiaries of the Group. The data disclosure is from January 1, 2022 to December 31, 2022. Unless otherwise specified, the currency mentioned in the report is RMB, and the density data is based on revenue data in 2022 annual report of Shanghai Electric.



Source of Data and Guarantee for Reliability

The data and cases in this report mainly come from the Group's statistical reports and related documents. The report has not been verified by a third party. Please refer to the Board's statement for assurance on the reliability of the data sources in this report.



Confirmation and Approval

This report was confirmed by the management of the Company, and then approved by the Board on March 29, 2023.



List of Companies Mentioned in the Text of this Report

Full Name	Short Name
Shanghai Electric Group Co., Ltd. Central Academe	Central Academe
Shanghai Electric Wind Power Group Co., Ltd.	Electric Wind Power Group
Shanghai Mitsubishi Elevator Co., Ltd.	Shanghai Mitsubishi Elevator
Shanghai Electric Power Transmission & Distribution Group Co., Ltd.	Shanghai Electric Power Transmission & Distribution Group
Shanghai Electric Nuclear Power Group Co., Ltd.,	Shanghai Electric Nuclear Power
Shanghai Electric Power Generation Group	Shanghai Electric Power Generation
Shanghai Electric Power Generation Equipment Co., Ltd. Turbine Plant	Shanghai Electric Turbine Plant
Shanghai Electric Thales Transport Automation Control System Co., Ltd.	Shanghai Electric Thales
Shanghai Electric Group Shanghai Electric Machinery Co., Ltd.	Shanghai Electric Machinery
Shanghai Electric New Energy Development Co., Ltd.	Shanghai Electric New Energy Development
Shanghai Hydrogen Age Technology Co., Ltd.	Hydrogen Age
Shanghai Shendiantong Rail Transit Technology Co., Ltd.	Shendiantong
Shanghai Electric Guokong Global Engineering Co., Ltd.	Global Engineering
Shanghai Electric Digital Eco-Tech Co., Ltd.	Shanghai Electric Digital Eco-Tech
Shanxi Ruiguang Thermal Power Co., Ltd.	Ruiguang Thermal Power
Shanghai Shendian Green Power Technology Development Co., Ltd.	Green Power Technology

Chairman's Statement

The year 2022 was of extraordinary significance in the development history of Shanghai Electric. It marks the 120th anniversary of the founding of Shanghai Electric, a crucial year to be an intersection for implementing the "14th Five Year Plan" strategy, as well as a year to secure a decisive victory in innovative development, transformation and upgrading.



Leng Weiqing

Secretary of Party Committee
Board Chairman, CEO

Over the past year, Shanghai Electric has clarified its strategic objectives and put into practice its management reforms. Our industrial layout has opened up a new curtain, the development mode of changing from external scale expansion to internal efficiency growth has basically reached a consensus, and the concept of driving high-quality development by scientific and technological innovation has basically formed a pattern. Our industries have been steadily improving over the past year and have made many hard-earned achievements.

We have made every effort to promote the layout of new industries, and under the guidance of China's "3060" dual-carbon goals, we have comprehensively laid out new tracks, leveraging the advantages of the combination of traditional and new energy sources, actively building a new "all-round" power system, giving play to the advantages of the integration of energy equipment and industrial equipment, and actively creating a "three-dimensional" zero-carbon industrial park overall solution. We have been actively embracing the trend of green development, the wave of technological revolution and the new development ecology, comprehensively promoting transformation and upgrading, accelerating the realization of industrial foundation reconstruction and industrial landscape remodeling, and fully exploring the road of high-end, intelligent and green development of Shanghai Electric.

We insist on focusing on technology and talents, creating a research and development system with clear boundaries and distinct hierarchies, and building an open, collaborative, agile, and efficient research and development ecosystem of Shanghai Electric, opening up a new mechanism for attracting talents and providing solid talent support for the healthy development of the industry. We have brought in more external resources, vigorously promoted win-win cooperation, integrated the advantages of all parties, and empowered technological innovation. Our investments and efforts are bringing high-quality innovative results. Shanghai Electric has focused on developing a number of "hard-core technologies" such as floating offshore wind turbines, advanced nuclear power equipment, new energy storage systems, industrial gas turbines, and high-end industrial basic components, providing energy, vessel,

large aircraft, and automobile users with more resilient, safer, and more reliable integrated solutions, effectively ensuring the safety of the industrial chain and supply chain.

We have improved the Group's three-tier management and control system, built a foundation for the stable, healthy and orderly development of Shanghai Electric, and promoted the transformation from management to governance. The Group's headquarters focuses on setting direction, reinvigorating resources, creating ecology, emphasized key issues and controlling risks, establishing an efficient management and control model, forming an industrial development ecology with clear paths and establishing an open and collaborative innovation ecology. The industrial group becomes a leader by focusing on industrial development, strengthens corporate governance to increase benefits, lays the foundation for sustainable development towards the future, and ensures that risks can be controlled and the bottom line kept. Enterprises innovate products and services, build core competitiveness and strive to form cost advantages under the leadership of technology.

2023 is the first year to comprehensively study and implement the spirit of the 20th National Congress of the Communist Party of China. In the face of a period of strategic opportunities, all cadres and employees of Shanghai Electric will embrace changes, shoulder responsibilities, actively plan, maintain that equipment is the first main business, science and technology is the first productivity, and talents are the premier resources, and innovation is the primary driving force, emphasise internal synergy and expand cooperation externally, constantly create new value scenarios and growth space, create a win-win development ecology for cooperation, and take one step at a time to translate the "blueprint" into "reality". We will improve our profitability and core competitiveness to achieve the organic unity of serving the national strategy and safeguarding the interests of all shareholders, to take the road of transformation and upgrading of the manufacturing industry led by Chinese path to modernization, and to make every effort to promote China's "zero carbon" social construction and high-quality development of the power industry.

President's Statement

In 2022, we celebrated the 120th anniversary of Shanghai Electric. With the first roar of Shanghai Dalong Machinery Factory in 1902, Shanghai Electric opened an immortal chapter of following the Chinese industry to forge ahead. After the 120-year development, Shanghai Electric has made headways fearlessly with enterprise and fortitude.

Today, Shanghai Electric adheres to the general keynote of "seeking progress while maintaining stability, upholding integrity and innovation, and unswervingly pursuing the road of high-quality development". Starting from the heart, we will relentlessly pursue the corporate vision of "a world-class equipment enterprise group leading industrial development".



Liu Ping

Through deeply coupling tradition and innovation, we will become a leader in the future of industry. With a history of 120 years, we have forged an indomitable electrical spirit. In corporate governance, we inherit the precious spiritual genes of the Chinese nation, draw on the rich nourishment of the times, carry forward the red tradition, always keep a disciplined mind, constantly consolidate the foundation of corporate development, standardize the comprehensive construction of internal management systems such as risk control, business ethics, and information disclosure, and guarantee the compliant corporate development. In industrial development, we pursue a high degree of integration of new and traditional energy sources that complement each other in the new era. On the basis of giving full play to the advantages of traditional energy equipment such as nuclear power, gas power and coal power, we have vigorously developed "multi-energy complementary" new equipment and new technologies such as "wind, solar, hydrogen and storage", and "source-network-load-storage", and so on, and strived to promote the acceleration of the conversion of new and old kinetic energy.

With openness and inclusiveness running through the whole process, we are a practitioner of win-win cooperation. We well recognise that the vigorous development of Shanghai Electric in the past 120 years cannot be separated from the full support of customers, capital, government, business partners, and friends from all walks of life, and more importantly cannot be separated from the hard work of all the people in Shanghai Electric. We adhere to quality commitments, strictly control product quality, and continuously improve service capabilities. We seize development opportunities, coordinate overall advantages, and work together with all parties to seek common development. We optimize supply chain management, upgrade dynamic regulatory mechanisms, and deliver the concept of sustainable development. We strengthen communication, attach importance to the

needs of investors, and actively expand effective communication channels. We fully protect the rights and interests of employees, build a customized talent training system, and create a warm and upward working atmosphere.

We always undertake responsibilities and commitments to be the intellectual creator of a better life. Bearing in mind the social mission entrusted to us by the state, we fully serve the "dual-carbon" goals, comprehensively lay out a new low-carbon track and are committed to becoming a pacesetter in achieving the "dual-carbon" goals. We strictly control emissions and pollution, actively create a green office environment, continuously improve the level of green manufacturing, and achieve refined management of safety and environmental work. We strive to make goodwill go further, actively engage in public welfare, gather forces for good, and practice social responsibility and brighten a better life through rural assistance, charitable donations, foreign assistance, ecological construction, education and advocacy.

In the coming year, we will be more committed to the path of high-quality development, and continue to inject inexhaustible new momentum of development into the next 120 years with a spirit of excellence and perseverance. We will live up to our mission, live up to the times, uphold the concept of "openness, coordination, and win-win cooperation", gather all partners, comprehensively build alliances, jointly discuss green and low-carbon, and create a better future.

Deputy Secretary of Party Committee

President

NEVER STOP MOVING: BUILDING ON THE 120-YEAR-LONG LEGACY AND WORKING TOGETHER FOR A BETTER FUTURE

The year 2022 marks the 120th anniversary of the founding of Shanghai Electric. Looking back on the 120-year development process, Shanghai Electric has created numerous inspiring achievements with the contributions made by its employees generation after generation. With a great ideal of revitalizing national industry, Shanghai Electric, an enterprise of national importance, has bravely forged ahead despite difficulties and challenges, and harvested fruitful results through efforts and devotions of all its employees. Looking ahead, as an enterprise with a history of over 120 years, Shanghai Electric will be as dynamic as a startup, and we will continue to strive to join hands with creators to make our own future.



Path of Shanghai Electric

We have created more than 100 Chinese and world firsts and contributed Chinese power to the world.

We have adhered to independent innovation, completed numerous technological breakthroughs, and polished the business card of China's intelligent manufacturing in the international market.

We will stay true to our original aspiration and continue to move forward towards a digital and sustainable new energy transformation under the guidance of the "dual-carbon" goals.



Forging Ahead along a Great Journey

We are committed to pursuing and constantly upgrading. In the annual ring engraved by history, all people of Shanghai Electric have jointly woven a splendid color map with the time sequence as the longitude and the struggle deeds as the latitude.

1902

New Birth

A pioneer in the national machine industry

The origin of Shanghai Electric can be traced back to 1902. Shanghai Dalong Machinery Factory is the earliest large-scale enterprise of Shanghai Electric, and also the bud of Shanghai modern machine industry.

1950s-1980s

Growth

A vanguard at the forefront of technological power

- 1955: Successful pilot production of China's first 6,000 kW steam turbine
- 1958: World's first 12,000 kW double water inter cooling turbo-generator was created
- 1961: China's first 10,000t hydraulic machinery produced
- 1989: China's first nuclear power generator was successfully developed, ending a history of no nuclear power in China

1990s-2000s

Climbing Higher

Shaping new advantages of open cooperation

- 1987: Shanghai Mitsubishi Elevator Co., Ltd., a China-controlled Sino-Japanese joint venture, was established
- 1994: Shanghai Electric and Westinghouse Electric established the largest joint venture in China's power generation industry
- 2006: Successfully manufactured China's first 1,000 MW ultra-supercritical turbine generator

2010s-till present

Innovation and Transformation

On the road to green and low-carbon transformation

- 2011: Shanghai Electric independently developed the core equipment of nuclear island for world's first AP1000 reactor
- 2018: Shanghai Electric delivered the world's first Hualong No.1 reactor internals for Fuqing 5 and undertook the 950 MW CSP-PV Project in Dubai, the largest project of its kind in the world
- 2020: Shanghai Electric received the world's first award for industrial intelligence, "Zhanlu Award" for Growth Driver
- 2021: World's first Generation-IV Nuclear Reactor, a major national demonstration project, connected to the grid; Shanghai Electric's 11MW direct-driven off shore wind turbine, No. 1 in Asia, rolled off production line
- 2022: Shanghai Electric comprehensively planned for its layout in the "4+1+X" new track



Leveraging Cultural Cohesion, Leading the Future

Shanghai Electric has a profound historical heritage and corporate culture. In the course of more than a century of development, successive Chinese leaders have personally visited Shanghai Electric, giving it cordial encouragement and important spiritual guidance, which has had a profound impact on the formation of Shanghai Electric's corporate spirit and culture.

In 2022, centering on the 120th anniversary of the Company's celebration and the strategic development needs of the new era, Shanghai Electric ignited creative sparks, launched a blockbuster logo for its celebration and a film for promoting its spirit, officially published the Shanghai Industrial Chronicle Machinery Industry Volume, and through a new round of survey sorting and opinion collection, newly released its corporate culture and philosophy system, striving to lead all its employees to review its history while revitalizing the new brand image, and continuously improving the core value and cultural influence of the brand.



Shanghai Electric Spirit
Promotional Film – The Power
of Inheritance



Design Concept of Shanghai Electric's 120th Anniversary Celebration Logo

"∞" not only represents the rotational power of "dual wheel drive", but also symbolizes Shanghai Electric's determination to achieve high-quality and sustainable development, open collaboration, win-win cooperation, and transform from a limited energy source of traditional thermal power to an unlimited new energy source in the future;

Green represents low-carbon, high-quality, and sustainable; Blue represents technology empowerment, intelligence, and service orientation.

Mission

Empower global industry, Make life smarter

- Based on high-end equipment industry, we focus on energy equipment, industrial equipment and integration services to promote the high-quality development of Chinese and global industries with technological empowerment.
- We provide not only leading high-end equipment, technologies and services, but also green, low-carbon and smart solutions that meet diverse needs, in order to make life smarter.

Vision

To become a world-class equipment group leading the industrial development

- To be a maker of important instruments of the state: We focus on high-end equipment as our main responsibilities and main business, undertake the important task of national industry development and concentrate efforts on high-quality development.
- To be a leader of technological innovation: We lead the trend of industrial innovation with science and technology to achieve industrial intelligence and service industrialization.
- To be a practitioner of green and low-carbon development: We firmly implement the dual-carbon goals and promote green and low-carbon development across the industry.
- To be a creator of smarter life: We create green and sustainable value for a better life of humankind with smart solutions.

Core Values

Strive for excellence, seek value innovation, pursue win-win cooperation and put customer success first

- Strive for excellence: We promote engineering culture and craftsmen's spirit, and advocate dedication, down-to-earth attitude, rigorousness and constant improvement.
- Seek value innovation: We encourage valuable innovation and advocate the use of technology and innovation to empower high-quality, green and sustainable development.
- Pursue win-win cooperation: We maintain an open mind, advocate collaborative development and win-win cooperation with all stakeholders, and attach great importance to the continuous improvement of employees' happiness.
- Put customer success first: We keep customer-oriented, and encourage to gain insight into customer needs, solve customer problems, and achieve customer value.

Spiritual Spectrum

- We have given play to the spirit of innovation, spirit of perfection, spirit of shouldering, spirit of undertaking, spirit of ant and spirit of Li Bin. Generation after generation, the spirits of Shanghai Electric have been passed down, leading the people of Shanghai Electric to write glorious chapters and open up new dimension.

Shanghai Electric with a History of 120 Years Is in Its Heyday

Over the past 120 years, Shanghai Electric has forged ahead despite difficulties and adversities. In the business field, we have integrated the achievements of industry and creators to jointly promote industrial transformation and upgrading. As the world's leading provider of industrial grade green intelligent system solutions, Shanghai Electric has clearly proposed a new overall strategic plan of "4+1+X" for the "14th Five Year Plan", using hard core technology "X" to support the development direction of the "4+1" new track, promoting high-quality industrial development in China and the world, and creating green and sustainable value for a better life for mankind.

Shanghai Electric Brand Concept

Sharing the Earth with Nature

Jointly building a society with all mankind

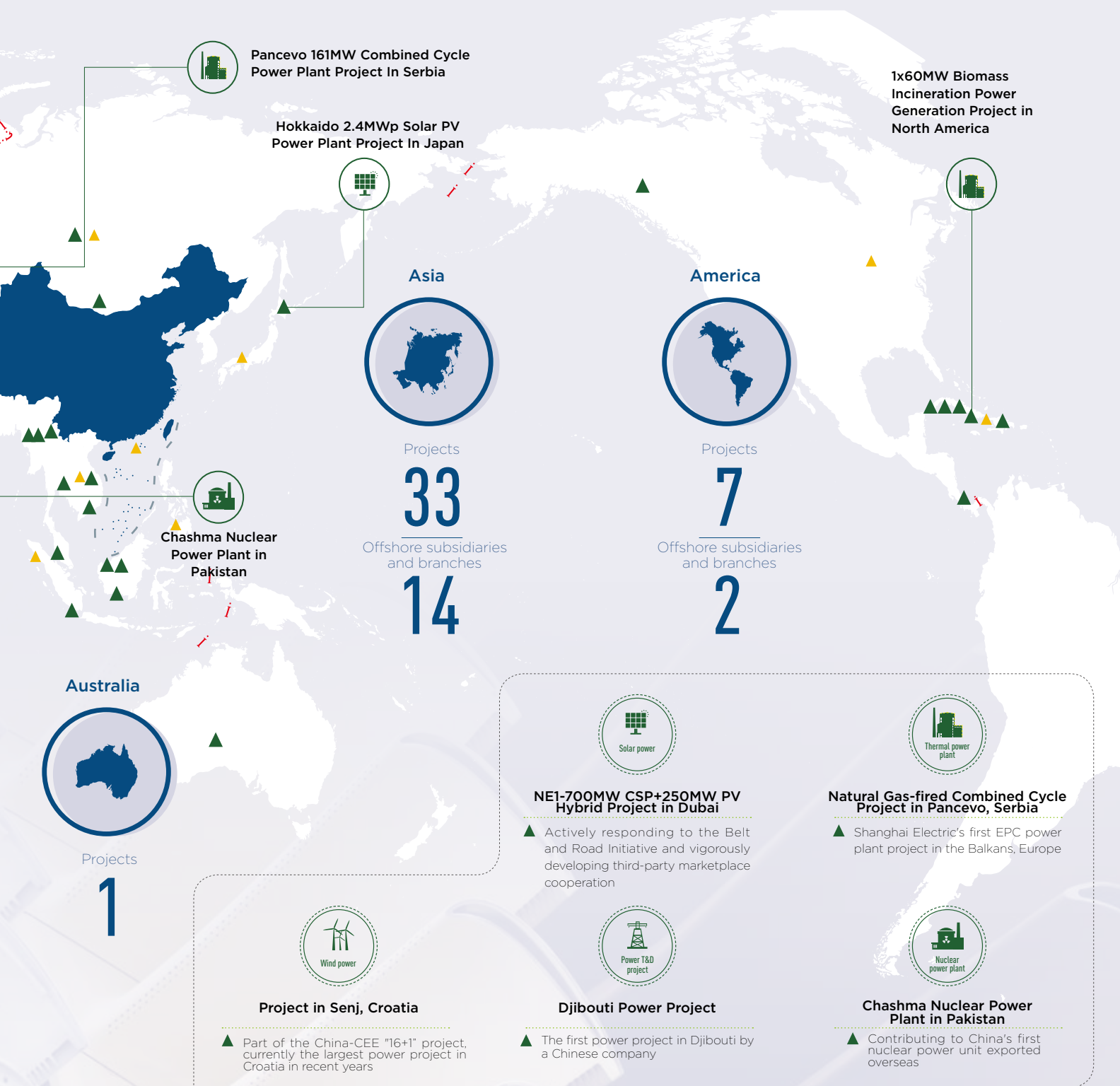
Creating a bright future with creators

As a world-class comprehensive high-end equipment brand and the cradle of China's power industry, Shanghai Electric has created many Chinese and world firsts and won the China Industry Award, with a brand value of RMB 161.739 billion, ranking first in China's machinery industry.

We are committed to providing global customers with intelligent equipment and system solutions for energy efficiency improvement, low-carbon energy substitution, and resource recycling. The long-term system operation and collaborative development have forged the ability of Shanghai Electric to develop, manufacture, and operate multiple sectors in a collaborative manner. For each business, we have the advantages of strategic linkage, technical linkage, market linkage, manufacturing linkage, supply chain linkage, and talent linkage. According to different application scenarios and combined with the advantages of Shanghai Electric, the Group has formed multiple system integration solutions for customers, providing comprehensive products and services to customers.

Adhering to the concept of "openness, collaboration, and win-win cooperation", Shanghai Electric, together with over 70 world-class enterprises, cooperates with global customers, partners, employees, and other creators to empower global industrial innovation and steadily pursue a path of green and sustainable development.





In the future, Shanghai Electric will continue to uphold equipment confidence, industry confidence, manufacturing confidence, and cultural confidence, further focus on our main responsibilities and business, reshape our core competitiveness through technological innovation, actively promote industrial restructuring, plan for our layout of in the new track, and complement the old and new growth drivers, strive to become a pacesetter in achieving the "dual-carbon" goals, a leader in new energy equipment, and a main force in the localization of high-end equipment, and adhere to offsetting external uncertainties with the certainty of high-quality development, and continue to write a new chapter in the sustainable development of "China Smart Manufacturing"!



FORGING AHEAD WITH ENTERPRISE:

SEIZING OPPORTUNITIES ASSOCIATED WITH THE CARBON PEAKING AND CARBON NEUTRALITY GOALS AND BUILDING A GREEN HOMELAND TOGETHER

Achieving the "Carbon Peaking and Carbon Neutrality Goals" is an extensive and profound transformation, and building a zero carbon society is a shared value and aim for mankind. Shanghai Electric, a world-class comprehensive and high-end equipment manufacturer, is committed to fully serving the national "dual carbon" goals, giving play to the three core competitive advantages of "ultimate manufacturing capability, integration service capability and talent competitiveness", actively constructing the three interconnected platforms of "core equipment, integrated systems, and industrial capital", providing three main carbon reduction paths of "energy efficiency increase, energy alternative, and resource circulation", and creating a "comprehensive" new power system and a "three-dimensional" overall solution for zero carbon industrial parks, and striving to be the leader in achieving the Carbon Peaking and Carbon Neutrality Goals and assist industry customers in achieving green and low-carbon transformation and development.

Responding to Climate Change

Governance and Strategy

Shanghai Electric has incorporated climate change related risks into the scope of risk management. The top decision-making body for climate change matters at Shanghai Electric is the Board of Directors, and the management body for climate change matters is the ESG Management Committee. Each year, members of the ESG Management Committee report directly to the Board of Directors on the implementation results of climate change work.

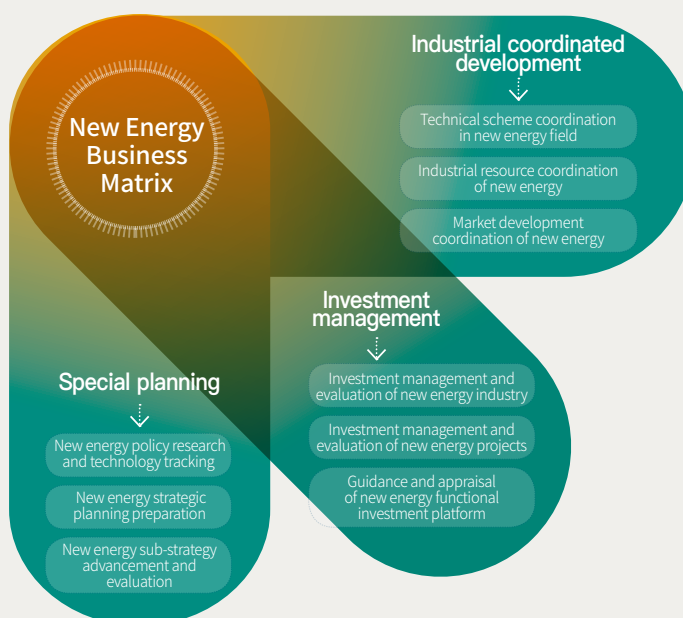
Based on the investigation and research results of significant issues, we have convened interviews with all responsible departments related to climate to identify, determine, and evaluate significant risks and opportunities. The discussion results are confirmed by the ESG Management Committee. We develop goals and countermeasures based on the assessment of climate change risks and opportunities, and conduct education and training. At the same time, we monitor, evaluate, and review the progress of policies, management, performance, and related goals related to climate change issues.

Risks and Opportunities

After China proposed the two goals of "hitting peak emissions by 2030 and carbon neutrality by 2060", the report of the 20th National Congress of the Communist Party of China pointed out that it is necessary to accelerate the green transformation of development mode, continuously optimize the industrial spatial layout, improve the regulation and control of total energy consumption and intensity, and accelerate the R&D, promotion and application of advanced technologies for energy conservation and carbon reduction. Faced with the industrial trend that the energy supply structure will be deeply adjusted, energy utilization methods will be deeply changed, energy technology and equipment will be leapfrogged and upgraded, and at the same time acceleration and deep integration of the digital economy and the real economy, Shanghai Electric, under the pressure of unprecedented opportunities and changes, insists on driving development by scientific and technological innovation, focuses on joint innovation, collaborative innovation and open innovation with all parties, and firmly seizes major opportunities such as carbon peak and carbon neutrality and the construction of new national arenas, etc. At the same time, we continue to pay attention to early warning information related to extreme weather, and through a series of layout and practice, further improve the adaptability and stability of equipment operation. Based on the results of our climate change risk and opportunity identification and assessment, we combined our strengths to promote green transformation, turning challenges into development momentum and actively embracing a "zero carbon" future.

Establishment of the New Energy Development Department

Under the guidance of China's "3060" Carbon Peaking and Carbon Neutrality Goals, Shanghai Electric has rolled out the layout of emerging energy focusing on "wind, solar, storage, and hydrogen" and so on, and established the New Energy Development Department to be responsible for coordinating the Group's new energy strategic deployment, including special planning, investment management, and industrial coordinated development of new energy.



Energy storage



In the field of energy storage, Shanghai Electric further agglomerates and improves the development strength of the Group's energy storage industry, expands and enriches the segmented application scenarios of each energy storage technology, and cooperates to create more valuable energy storage system solutions for customers. In the fields of pumped storage, molten salt energy storage, compressed air energy storage, and flywheel energy storage, Shanghai Electric relies on the existing industrial foundation of nuclear power, boilers, steam turbines, and generators to expand its energy storage business, effectively integrating traditional manufacturing advantages with emerging energy storage businesses, and forming a benign development pattern of a huge market for "new energy storage".

Hydrogen energy



In the field of hydrogen energy, Shanghai Electric focuses on breakthroughs in key core equipment in the four major links of "production, storage, processing, and utilization", contributing to overcoming the bottleneck issue of large-scale and low-cost development of the hydrogen energy industry. Shanghai Electric works with industry partners to jointly create a public platform for industrial measurement and testing services across the entire industrial chain, lifecycle, and traceability chain of hydrogen storage equipment, focus on tackling the "bottleneck" core technology and equipment, fully exploits its integration advantages across the two major industries of electricity and chemical industry, promotes the large-scale development of renewable energy utilization and raw material energy utilization, and explores economically feasible implementation paths for achieving "deep carbon reduction" in the energy and industrial fields.

Wind energy



In the field of wind power, Shanghai Electric achieved nearly 1.5GW of offshore wind power hoisting in 2022, accounting for more than 25% of the total newly increased offshore wind hoisting in China. Shanghai Electric continues to promote the development strategy of "leading overall solutions under technology leadership", consolidating and improving the construction of two core competitiveness: "technology research and development" and "agile organization". It also vigorously promotes the deep integration of "digital design and intelligent manufacturing", and strives towards the established strategic goal of "No. 1 offshore and No. 3 onshore".

Solar energy



In the field of solar energy, Shanghai Electric actively follows the trend of "keeping pace with the development of centralized and distributed photovoltaic industry", closely focusing on the manufacturing core links of advanced photovoltaic cells and modules, and establishing open cooperation alliances with enterprises having industry chain advantages. Combining the Group's existing basic advantages in pan-semiconductor intelligent manufacturing and the comprehensive market advantages of "photovoltaic+" integrated solutions, with institutional and mechanism innovation as the guarantee, Shanghai Electric promotes the construction of the Group's core value in the photovoltaic equipment industry chain.

On this basis, Shanghai Electric has established Shanghai Electric New Energy Development Co., Ltd. and Shanghai Electric Hydrogen Equipment Era Technology Co., Ltd., to further implement the Group's "14th Five-Year Plan" strategy, accelerate the layout of green and low-carbon new tracks, and cultivate and strengthen new drivers of green and low-carbon development.



Shanghai Electric New Energy Development Company Established to Create a Zero-Carbon Benchmarking Paradigm

On 15 July, Shanghai Electric New Energy Development Co., Ltd. was inaugurated in Shanghai. Shanghai Electric Group announced its new energy strategy at the ceremony and inked contracts online with 5 partners on new energy development, and with more than ten financial institutions and industrial organizations on strategic collaboration on finance ecosystem for the new energy industry.

It is established by Shanghai Electric Group and its subsidiary Wind Power Group with a joint investment of RMB 3 billion. Its vision is to be the most integrated, innovative, and life-cycle service provider for new energy integrated development. With a global perspective, the company will strive to gain a firm foothold in China by building a life-cycle service platform for new energy projects with "wind-solar-storage-thermal-hydrogen" multi-energy complementation and "generation-grid-load-storage" integration. The platform will provide a vital path for the high-quality development of the Group's new energy business through a comprehensive solution with "system optimization, simplified equipment and an intelligent control system" as its core. Shanghai Electric will embrace openness, innovation and win-win cooperation, put emphasis on the dual drive from industry intelligentization and service industrialization, as well as the collaborative development of Energy Internet and Industrial Internet, work with government-owned parks, customers, investors, technology partners and financial institutions to empower global industrial development, and contribute to the better life of all humankind.



Hydrogen Age Officially Unveiled! Shanghai Electric Frequently Took Actions in the Hydrogen Energy Industry

On 8 December, the launching ceremony of Shanghai Electric hydrogen generation equipment and the unveiling ceremony of Shanghai Hydrogen Age Technology Co., Ltd. were held in Shanghai. Bai Tinghui, Secretary of the Party Committee and Head of Shanghai Municipal State-owned Assets Supervision and Administration Commission, and Chen Huawen, Deputy Party Secretary and Head of Minhang District, attended the event. Leng Weiqing, Secretary of the Party Committee and Chairman of Shanghai Electric Group, made a speech.

The unveiled Hydrogen Age represents an important step of Shanghai Electric to realize the "4+1+X" strategy. Based on technological development of PEM and alkaline water electrolysis, the new company will provide advanced, reliable, customizable hydrogen generation product and energy system solutions.

At the ceremony, two hydrogen generation products were launched, namely the "alkaline water electrolysis equipment", which features high electrolysis efficiency, long service life, and low operation cost, and "PEM water electrolysis equipment", which features high electric current density, low energy consumption, and rapid dynamic response. The two products adopt modular design to meet the need to generate hydrogen in a large-scale, integrated, green way, ranking the national top currently.

The two new products further consolidate the foundation of Shanghai Electric on a new track, and enhance its confidence and determination to push ahead with the hydrogen power strategy. Shanghai Electric will pull full efforts in such aspects as technological R&D and system integration of hydrogen power, accurately and rapidly enter the market, gradually build core competence of the entire hydrogen energy industrial chain, and offer high-end green hydrogen generation equipment and comprehensive system solutions to global clients.



"1234" Ten Action Systems

Shanghai Electric will, aiming to achieve a carbon emission peak by 2030, face two scenario solutions, and build four platforms along three paths.



01

Ensuring that the Carbon Peaking Goal Will Be Realized by 2030

02

System Solutions for "Two Major Application Scenarios"

New Power System

Shanghai Electric's first combined thermal storage and frequency modulation project, the Dapu Power Plant Project, uses domestic ultra-supercritical coal-fired units with a total installed capacity of 1,200 MW. The project installs and builds an energy storage system with a capacity of 18MW/9MWh on the side of coal-fired generator sets, greatly reducing response time, improving comprehensive performance indicators of frequency modulation, and complementing the full range of energy storage.

Zero Carbon Industrial Park

As a leader of the "zero carbon park" solution, the industrial manufacturing park built by Shanghai Electric in Shantou is an "energy Internet plus" project integrating wind, solar and storage, and the first "zero carbon park" certification unit in China, providing practical support for the use of high proportion of renewable energy.

03

"Three Paths" Used to Implement Low Carbon Development

Energy Alternative

Shanghai Electric adheres to the combination of "safe carbon reduction" and "deep decarbonization", vigorously carries out the multi-point layout of "wind-solar-storage-thermal-hydrogen" multi-energy complementation and "generation-grid-load-storage" integration business, increases the capacity of new energy consumption, and promotes the transformation of using new energy alternative fossil fuels to build a new power system with new energy as the main body. In the field of traditional thermal power, the main equipment systems provided by Shanghai Electric continuously refresh the world's lowest coal consumption indicators. The latest coal consumption for million kilowatts of ultra-supercritical power generation has reached a new world record of 249.6 g/kWh.

Energy Efficiency Increase

In the field of driving business, we rely on our core equipment advantages to provide systematic energy efficiency increase transformation services for industries such as electric power, metallurgy, petrochemical, and building materials; In the field of rail transit, we have greatly improved the efficiency of rail transit use; In the field of smart buildings, Shanghai Mitsubishi Elevator, a subsidiary of Shanghai Electric, has developed a smart elevator energy feedback device, which will reduce the "carbon footprint" during each lifting process; In the field of new energy vehicles, we provide whole-industry chain services, including low-carbon industrial plant design, lithium battery and vehicle assembly intelligent production lines, and new energy vehicle thermal management systems, to assist in the process of "low-carbon transportation".

Resource Circulation

Shanghai Electric has the core process design and system equipment capabilities for flue gas treatment, water treatment, and solid waste treatment, providing systematic solutions for the recycling development of industrial parks. In addition, Shanghai Electric has effectively combined carbon dioxide capture technology with green hydrogen energy, actively promoting the implementation of demonstration projects such as carbon dioxide hydrogenation to methanol, providing a feasible implementation path for achieving the green utilization of raw material energy and the "deep carbon reduction" process.

04

Building "Four Platforms" Power Support

Dual Carbon Strategy Platform

Establishing a "dual carbon" strategic center at the group level, with top-level planning and design of the group's "dual carbon" strategy and path for the next 5-10 years, providing support for group decision-making.

Carbon Technology Platform

Based on the capabilities of two major system solutions, Shanghai Electric provides customers with carbon consulting, carbon accounting, carbon trading, carbon certification, and carbon asset management services, empowering industry customers.

Industrial Innovation Platform

Industrial Driven Industrial Innovation Center, "Wind-Solar-Optimal-Storage" Industrial Innovation Center, "Wind and Solar Greening" Industrial Innovation Center, etc.

Industrial Capital Platform

Activating the "industry, academia, research, investment, and incubation" innovation ecological chain with the "industrial capital" platform, effectively utilizing external innovation and entrepreneurship resources, and forming an internal and external collaborative linkage mechanism.

Implementation of Multi-dimensional Application Scenarios

Shanghai Electric actively implements the "dual carbon" goal and mission. In the new situation of zero carbon technology integration and innovation, Shanghai Electric continues to explore and rely on technological innovation to drive the realization of high-quality development. In the process of innovative practice, Shanghai Electric has achieved many phased achievements.



Nuclear

On 25 March 2022, Unit 6 of Fuqing Nuclear Power Plant, the second unit of the Hualong One demonstration project, a project participated by Shanghai Electric and a domestically designed third-generation nuclear reactor in China, completed a 168 hour trial operation and was qualified for commercial operation. With this, China's third-generation nuclear power "Hualong No.1" demonstration project has been fully completed and put into operation, marking China's nuclear power technology level and comprehensive strength among the world's first-ranking lineups, effectively supporting China's leap from a large nuclear power country to a nuclear power powerhouse. As the main supplier of overseas first reactor equipment for "Hualong No.1", Shanghai Electric has provided multiple key equipment such as reactor internals and steam turbine generator units. The project unit generates nearly 10 billion kilowatt hours of electricity annually, meeting the annual production and electricity demand of 1 million local people, equivalent to reducing 3.12 million tons of standard coal and 8.16 million tons of carbon dioxide emissions annually.



Wind

Shanghai Electric has closely followed the development direction of green power under the national dual carbon framework and actively laid out onshore wind power projects in the desert Gobi. The CNNC Heiyazi Wind Farm, located 37 kilometers southwest of Yumen City, Gansu Province, is equipped with 25 units of W2100C-126-85 electric and gas wind power. It is the first grid parity project in China and was awarded the 2020 CEC 5A grade project. The available hours of this project have exceeded the 4,200-hour mark, and the annual power generation has reached 210 million kilowatt hours. In addition, the BG wind power heating supporting 50 MW wind power project located in the westernmost desert area of Alashan League in Inner Mongolia Autonomous Region has installed and stably operated 24 electrical wind power SEC2100-135-90 units.

Solar

The Dubai solar power generation project undertaken by Shanghai Electric is expected to set multiple new world records, including the most advanced application technology and the highest height of the heat collection tower, after its completion. As a typical example of a green project under the "the Belt and Road" initiative, this project is also a landmark project in the transformation of Shanghai Electric from traditional thermal power to new energy. It covers an area of 44 square kilometers, which is equivalent to more than 6,000 football fields. It is currently the world's largest solar thermal project with the largest installed capacity, the largest investment scale, and the largest heat storage capacity of molten salt tanks. The project construction adheres to the concept of green environmental protection. After completion, it can reduce carbon emissions by 1.6 million tons per year, provide 24-hour continuous and stable solar energy, and bring green energy to 320,000 households.



The Shanghai Electric Smart Energy Demonstration Project in Shantou is currently the largest smart energy project in Guangdong Province, and also the first industrial park level demonstration project for Shanghai Electric Wind Power Group. It features the integration of wind, PV, storage, charging and intelligence into an integrated "energy Internet plus". The wind power generation systems and photovoltaic power generation systems covering the entire roof of the park can enable the park to capture considerable power generation and efficiently utilize it efficient in situ, thereby improving the proportion of renewable energy and energy efficiency management level in the park. The carbon dioxide equivalent greenhouse gas generated within the production and operation scope of the park is 100% carbon neutrality through energy substitution measures such as smart wind turbines, roof photovoltaic, energy storage and peak shaving. According to the feasibility study report, the annual power generation of this project is 55.72 million kilowatt hours, with a self-generation and self-use ratio of about 36%. It can reduce carbon dioxide emissions by 13,000 tonnes per year.



Storage

In the field of energy storage, Shanghai Electric has the comprehensive ability to design system-level energy storage power plants. The containerized vanadium battery system products range from 5kW stack to 25kW stack, and then to the technologically advanced 50kW high-power stack. All core technologies have been declared as exclusive patents of Shanghai Electric, and independent intellectual property rights have been formed. Shanghai Electric has initially formed a collaborative and independent lithium battery equipment industry chain ecosystem with mutual synergy in the lithium energy storage products of energy terminals and lithium battery production line equipment of industrial terminals. Shanghai Electric has built a plant with an annual production capacity of 5GWh in Nantong, and its products have been applied to the first grid side shared energy storage project in China, including the Qinghai Golmud 32MW/64MWh project, and the Tibet PV storage power supply side 12.5MW/20MWh project.



The national experimental demonstration project for air energy storage and China's first salt cavern compressed air energy storage power station have been successfully connected to the grid and put into operation in Jintan, Jiangsu. In the construction of the world's first non-supplementary combustion compressed air energy storage power station project, Shanghai Electric provided three sets of core equipment – high-power motors for driving 30MW compressors, providing a continuous stream of compression energy for the power station. This project is the only national demonstration project and the first commercial power plant project in the field of compressed air energy storage in China, which uses a new energy storage technology. It is estimated that after the Jintan salt cavern compressed air energy storage project is put into operation, 30,000 tons of standard coal can be saved and 60,800 tons of carbon dioxide emissions can be reduced throughout the year, which is a major practical breakthrough in building a new power system and helping to achieve the goals of "carbon peaking and carbon neutrality".



Jointly Exploring a Green Future

At present, how to achieve the national "double carbon" goal has become the core issue of high-quality economic development in the new era. Shanghai Electric keeps pace, focuses on low-carbon and digital transformation of the industry, and drives development with scientific and technological innovation. At the same time, Shanghai Electric actively takes practical measures to root the Carbon Peaking and Carbon Neutrality Goals and low-carbon development concept in the hearts of all its employees. Together with everyone, we will explore and pursue a "green" path towards the future.



Focusing on the Study of "Double Carbon Goals" Special Theme



On 6 December, Shanghai Electric held the learning expansion meeting of the theoretical learning center group of the Party Committee and the electric lecture hall to focus on "carbon peak, carbon neutrality" and carried out thematic learning activities. Leng Weiqing, Secretary of the Party Committee and Chairman of Shanghai Electric, presided over and exchanged learning experiences. Liu Ping, Deputy Secretary of the Party Committee and President of Shanghai Electric, and Cai Xiaoqing, Chairman of the Supervisory Committee, participated in the study.

At the meeting, Li Zheng, Dean of the Institute of Climate Change and Sustainable Development of Tsinghua University and Secretary General of the World University Climate Change Alliance, made a coaching report entitled Climate Change and Carbon Peak and Carbon Neutrality. Through the analysis of the basic concept of "Carbon Peaking and Carbon Neutrality Goals" and its relationship with climate change, and the explanation of the importance of achieving the Carbon Peaking and Carbon Neutrality Goals in China, and the prospects for future carbon emission paths, he conveyed the significant significance of green and low-carbon transformation.



有一些数据
以为很遥远
但其实就在身边



只有一个地球
世我们#只有一个地球



2022年6月5日是世界环境日。今年的主题是“只有一个地球”，呼吁人们亟需通过改变政策和自身选择来推动变革，以可持续的方式与自然和谐共生。

地球是我们唯一的家园。我们必须保护其有限的资源。



Column on "Carbon for the Future"

The column "Carbon for the Future" on the WeChat official account of Shanghai Electric emerged in the context of the national "Double Carbon" strategy. The column tells the story of Shanghai Electric's efforts to become a green low-carbon practitioner and a smart creator of a better life from the business perspective and the humanistic perspective. At present, this column has published themed articles and activities related to carbon reduction, such as "Practicing Double Carbon, Walking Together on the Way of Public Welfare" and "Zero Carbon Walker", with an aim to encourage and lead more people to embark on this unprecedented "Double Carbon" journey and explore a better future with more people.



The Multi-energy Storage Industrial Development Forum

In May 2022, as the first event of Shanghai Electric's series of "Double Carbon Goals" themed sessions, the multi-energy storage industrial development forum themed "Create Future By Fulfilling Carbon Peaking and Carbon Neutrality Goals With Internet Tools" was convened online, attracting over 5,000 participants to view online and receiving widespread attention and unanimous praise.

Technical experts and professionals in the subdivided field of energy storage of Shanghai Electric analyzed the technical characteristics, application prospects of different energy storage methods, such as lithium battery energy storage, sodium ion batteries, flywheel energy storage, pumped storage, liquid flow batteries, compressed air energy storage, solar-thermal energy storage, molten salt heat storage, and diversified energy storage synergy, and specific measures for industrial breakthroughs at the forum. Starting from this diversified energy storage industry development forum, Shanghai Electric's "dual carbon" themed salon series activities will continue to be carried out, so as to deeply explore the "dual carbon" talents and innovative technologies inside and outside the Group, fully connect with market customers and partners, further stimulate the vitality of "openness and innovation" talents, build a "collaborative and symbiotic" industrial ecosystem, and consolidate the development consensus of "co-creation and sharing", and contribute to the promotion of innovation-driven high-quality development of the Group.

2022 Highlights



Environmental Performance Indicators

ENVIRONMENTAL PERFORMANCE INDICATORS	2020	2021	2022
Total investment in environmental protection (RMB'0000)	12,650.54	12,162.85	10,786.04
Greenhouse gas emission density (tons of CO ₂ equivalent / RMB'00000000 operating revenue)	278.50	221.96	195.04
Hazardous waste (tons/ RMB'00000000 operating revenue)	2.5	2.5	2.5
Water consumption density (tons/ RMB'0000 operating revenue)	0.5131	0.5401	0.5196

Social Performance Indicators

SOCIAL PERFORMANCE INDICATORS	2020	2021	2022
Total number of employees	39,312	39,015	41,739
Employment contract execution rate	100%	100%	100%
Social insurance coverage rate	100%	100%	100%
The trade union membership rate	100%	100%	100%
Proportion of female management personnel (classified by function)	25.7%	34.55%	42.0%
Employees' medical examination coverage rate	100%	100%	100%
Total investment in employee training (RMB '0000)	8,770	10,150	10,455
Employee training coverage rate	100%	98.1%	98.56%
Training time per capita (days)	3.6	3.2	3.0
Employee turnover rate	2.2%	3.9%	3.5%
The number of working days lost due to work-related injuries	2,730	6,265	4,305
New cases of occupational disease	0	0	0
Charitable donations (RMB'0000)	922	1,279	138.7

2022 Top Ten News

01

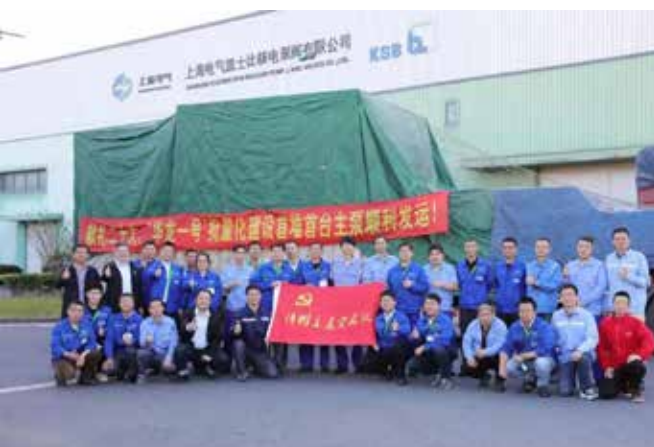
General Secretary Xi Jinping Inspected Shanxi Ruiguang Demonstration Project

In January 2022, Chinese President Xi Jinping, also general secretary of the Communist Party of China Central Committee and chairman of the Central Military Commission, made a special trip to Shanxi Ruiguang Thermal Power Co., Ltd. for investigation and survey.

As one of the major heat suppliers for Taiyuan City and Jinzhong City, Ruiguang Thermal Power uses electromechanical equipment and auxiliary furnaces produced by Shanghai Electric in its two 300MW cogeneration units. Since 2020, the plant has adopted the flexible operation of low-pressure cylinders and cylinder cutting transform plan provided by Shanghai Electric. So far, the renovated unit has entered its second winter, running safely and stably.

The flexibility-oriented upgrade solution implemented on Ruiguang Thermal Power's No.2 unit is a symbolic case of thermal plant upgrade by Shanghai Electric, which fully shows its technological strength and characteristics.





02 Assisting Hualong No.1 in Going Global and Achieving China's Strategy of Becoming a Nuclear Power Powerhouse

Shanghai Electric deeply participated in the Hualong No.1 demonstration project, and contributed to building a nuclear industry powerhouse. On 4 March 2022, local time, Unit 3 of the Karachi (K-3) nuclear power plant in Pakistan, the world's fourth Hualong No.1 Reactor, was connected to the grid. Shanghai Electric is the supplier of the nuclear island and the conventional island's main equipment for the Hualong No.1 overseas demonstration project. With this, all four units of the Hualong No.1 demonstration project are connected to the grid. On 25 March 2022, Unit 6 of Fuqing Nuclear Power Plant, the second unit of the Hualong No.1 demonstration project, a project whose construction was participated by Shanghai Electric and a domestically designed third-generation nuclear reactor in China, completed a 168 hour trial operation and was qualified for commercial operation. With this, China's third-generation nuclear power "Hualong No.1" demonstration project has been fully completed and put into operation.

03 Release of the Layout for "14th Five-Year" Strategic Plan

On 8 February 2022, the 2022 Shanghai Electric First Cadre Conference was held at the training base with a theme of "With a history of 120 years, Shanghai Electric has turned Blueprint into a new chapter; Let's overcome difficulties, innovate and develop, and take practical actions to welcome the successful convening of the 20th National Congress of the Communist Party of China". The conference released the Group's "14th Five Year Plan" development strategy.

Leng Weiqing, Secretary of the Party Committee and Chairman of Shanghai Electric, emphasized, "This year is a crucial year for Shanghai Electric to seize new tracks, strengthen new momentums, and promote the implementation of the 14th Five Year Plan strategy. Let's, under the strong leadership of the Municipal Party Committee and Government, stand at a new starting point, refresh ourselves and start again, and welcome the successful convening of the 20th National Congress of the Communist Party of China and the celebration of the 120th anniversary of the Group with practical actions of high-quality development."



04 Joint Venture Green Power Technology Inaugurated

In January 2022, Shanghai Shendian Green Power Technology Development Co., Ltd. was inaugurated and the signing ceremony of power generation system renovation project was held. Green Power Technology is held by Shenergy Group, and jointly funded by Shenergy Group and Shanghai Electric. Focusing on the three goals of "promoting high-quality development of coal-fired power, creating a new state-owned brand and strengthening the energy equipment industry", Green Power Technology, which is a result from a win-win cooperation between Shanghai Electric and Shenergy, will be engaged in the promotion of high-temperature subcritical technology. It will give full play to Shanghai Electric's advantages in industrial manufacturing and Shenergy Group's proprietary technology integration and innovation, and Shanghai's scientific and technological advantages in energy utilization, and actively cooperate with five major central enterprises in power generation, such as SPIC, and Huaneng to create the "Shanghai standards", build the "Shanghai brand", and continuously amplify the spillover effect of "Shanghai solutions", so as to serve the technological upgrading and green transformation of coal-fired power enterprises in China.





05

Shanghai Electric Ranked Top50 China's Most Valuable Brands for the 6th Consecutive Year

On 26 July 2022, World Brand Lab held the 19th World Brand Summit in Beijing, and released the 2022 "China's 500 Most Valuable Brands" list, in which Shanghai Electric topped the machinery industry category again and joined the Top 50 companies with a brand value of RMB 161.739 billion. As a world-class high-end equipment manufacturer, Shanghai Electric has invested more resources in its main responsibilities and businesses with unwavering confidence in equipment, industry, manufacturing, and corporate culture. By regenerating key competitive edges with through technological innovation, Shanghai Electric has accelerated both industrial restructuring and the entry into new markets to make old and new growth drivers work effectively side by side, and to offset external uncertainties with high-quality development with the goal of becoming a new benchmark of "Chinese Intelligent Manufacturers".

06

Mastering the Spirit of the 20th National Congress of the Communist Party of China by Learning

On 11 November 2022, Shanghai Electric held a meeting to study and implement the spirit of the 20th National Congress of the Communist Party of China. Professor Mei Lihong, Vice President of the Party School of the Shanghai Municipal Committee of the Communist Party of China, gave a special guidance report titled Political Declaration and Action Plan for the New Era and New Journey – Interpretation of the Spirit of the 20th National Congress of the Communist Party of China, systematically and deeply explaining the spirit of the 20th National Congress of the Communist Party of China. The meeting pointed out that learning, promoting and implementing the spirit of the 20th National Congress of the Communist Party of China is the primary political task for the current and future periods.



07

Participation in the Construction of Shanghai's Largest Centralized Photovoltaic Project by Shanghai Electric

In September 2022, the 128MW Fishery and Photovoltaic Complementary Power Generation Project in West Town of Chongming Port, contracted by Shanghai Electric, officially began construction. After completion, the project will become the largest centralized photovoltaic project in Shanghai, with an average annual power generation of about 140 million kilowatt hours. It can save about 43,400 tonnes of standard coal per year and reduce carbon dioxide emissions by about 108,300 tonnes. This will significantly increase the proportion of clean energy in the Chongming region and help Chongming build a "beautiful countryside" and a world-class ecological island.

The project will achieve dual benefits of electricity production and fishery aquaculture through efficient and composite utilization of land, focusing on creating a modern green fishery demonstration zone and a complementary ecological aquaculture science and education base that integrates ecology, intelligence, and standardization.



08

Shanghai Electric Broke the Global Record for the Largest Wind Turbine Diameter Unit Connected to the Grid

In September 2022, the new generation semi-direct drive unit EW8.5-230 of the Shanghai Electric Wind Power Poseidon Platform was successfully connected to the grid with one click. With a 230-meter diameter, its rotor is the largest among those of hoisted wind turbine units in the world.

The EW8.5-230 unit has been independently designed by Shanghai Electric Wind Power Group Co., Ltd. for pneumatic and structural purposes. Paired with the LeapX control system, it reduces the operating load of the whole turbine and is intelligently interconnected with the self-developed and designed wind and cloud platform, continuously improving the unit availability and wind farm profitability.

As a leader in offshore wind power generation in China, Shanghai Electric will continue to explore and forge ahead under the guidance of the Carbon Peaking and Carbon Neutrality Goals, and provide more and better products and comprehensive solutions.



10

National Science and Technology Major Project, Shidaowan High Temperature Gas Cooled Reactor Nuclear Power Plant in Stable Operation

The demonstration project of Huaneng Shidaowan High Temperature Gas Cooled Reactor Nuclear Power Plant, the world's first spherical bed modular high temperature gas cooled reactor nuclear power plant with Shanghai Electric participating in construction, was successfully connected to the grid for the first time at the end of 2021. In 2022, all indicators of the demonstration project unit were normal, and the reactor, steam turbine generator, and related system equipment operated stably. This is the world's first grid connected fourth generation high-temperature gas-cooled reactor nuclear power project, marking China becoming one of the few countries in the world to master the fourth generation nuclear energy technology.

Shanghai Electric was one of the major participants in Shidaowan project, a high-temperature gas-cooled reactor demonstration project that kicked off construction in 2012, and responsible for supplying multiple key facilities of the nuclear island and conventional island. After more than a decade of hardwork, Shanghai Electric has independently achieved a number of technological breakthroughs that address global and industrial problems, ensuring that 93.4% of all engineering equipment has been made in China.

09

Phase II of Zhejiang Petroleum & Chemical Thermal Desalination Project Participated by Shanghai Electric Put Into Operation

In February 2022, the No.8 unit of Phase II of Zhejiang Petroleum & Chemical Thermal Desalination Project has finished the commissioning process, meaning that all eight units of the project have been fully commissioned with a total per-day processing capacity of 200,000 tons. It marks the largest thermal desalination project in China undertaken by Shanghai Electric after the Phase I whose capacity reaches 105,000 tons per day. As of the present, Shanghai Electric has built up the largest thermal desalination system in China jointly with Zhejiang Petroleum & Chemical, which has been put into operation with a capacity of 305,000 tons per day.



Honors and Awards

China Electric Power Quality Engineering Award

NO.	NAME OF PROJECT AWARDED	NAME OF ENTITY AWARDED	GRADE AWARDED
1	Ningxia Weigang New Energy Co., Ltd.'s 200MW PV Composite Project, located in Shapotou District	Shanghai Electric Environmental Protection Group	2022 China Electric Power Quality Engineering Award (General Contracting & Design)
2	99MW (Phase I and Phase II) Wind Power Generation Project in Laojunmiao Wind District, Puleihai, Mulei County		2022 China Electric Power Quality Engineering Award (General Contracting)

Award for Technological Innovation Achievements of Employees in the National Machinery, Metallurgy, and Building Materials Industry

NO.	NAME OF PROJECT AWARDED	NAME OF ENTITY AWARDED	GRADE AWARDED
1	Intelligent Digital Rail Transit (iDRT) System and Demonstration Application	Shanghai Electric Group Intelligent Transportation Technology Co., Ltd.	Special Prize
2	Research and development and productization of building machine rooms and parallel seismic and noise reduction projects	Shanghai Mitsubishi Elevator	The 1 st Prize
3	6MW wind turbine aerial transformer replacement tooling	Shanghai Electric Wind Power Group	The 2 nd Prize
4	Complete set of technology for multi-chamber horizontal nickel ore oxygen pressure leaching system	Shanghai Boiler Works Co., Ltd.	The 2 nd Prize
5	Cutting tools and process optimization for air cooling holes in gas turbine wheel discs	Shanghai Electric Turbine Plant	The 3 rd Prize
6	Key technologies and applications of water quality and quantity sensors based on village and town sewage operation	Shanghai Electric Digital Eco-Tech Co., Ltd.	The 3 rd Prize
7	Reducing the phenomenon of blade profile over cutting caused by asynchrony through the application of activity tips in single drive equipment	Wuxi Turbine Blade Co., Ltd.	The 3 rd Prize

Shanghai Key Product Research Achievements in Quality

NO.	NAME OF PROJECT AWARDED	NAME OF ENTITY AWARDED	GRADE AWARDED
1	Quality improvement of Hualong One's first 1,300MW water-hydrogen-cooled nuclear power generator	Shanghai Electric Power Generation Equipment Co., Ltd. Generator Plant	The 2nd prize of Shanghai Key Product Awards for Breakthroughs in Quality
2	Efficiency and reliability enhancement of waste power generation steam turbines	Shanghai Electric Turbine Plant	The 3rd prize of Shanghai Key Product Awards for Breakthroughs in Quality
3	New million-grade high-efficiency ultra-critical tower boiler	Shanghai Boiler Works Co., Ltd.	The 3rd prize of Shanghai Key Product Awards for Breakthroughs in Quality
4	Quality improvement of 6MW offshore medium and low wind speed wind turbines	Shanghai Electric Wind Power Group	The 3rd prize of Shanghai Key Product Awards for Breakthroughs in Quality

NO.	GRADE AWARDED	NAME OF ENTITY AWARDED
1	2022 Shanghai Excellent Organization Awards for Breakthroughs in Quality	Shanghai Electric Group Company Limited

Quality Technology Award of Shanghai Association for Quality

NO.	NAME OF PROJECT AWARDED	NAME OF ENTITY AWARDED	GRADE AWARDED
1	Innovative application of technology for improving the quality of partial load operation of gas turbines	Shanghai Electric Gas Turbine Co., Ltd.	Excellent Award for Comprehensive Quality Innovation Achievements

Green Production

NO.	NAME OF ENTITY AWARDED	GRADE AWARDED
1	Siemens Circuit Protection Systems Ltd.	4-star Green Factory from the Ministry of Industry and Information Technology of China
2	Siemens High Voltage Switchgear Co., Ltd., Shanghai	4-star Green Factory from the Ministry of Industry and Information Technology of China
3	Shanghai Electric Power-Electronics Co., Ltd.	4-star Green Factory from the Ministry of Industry and Information Technology of China
4	Mitsubishi Electric Shanghai Electric Elevator Co., Ltd.	4-star Green Factory from the Ministry of Industry and Information Technology of China
5	Siemens Circuit Protection Systems Ltd.	Green Design Product from the Ministry of Industry and Information Technology of China

Shanghai Youth Organization Awards

NO.	AWARD-WINNING GROUP/INDIVIDUAL/PROJECT NAME	NAME OF ENTITY AWARDED	GRADE AWARDED
1	Youth Team for Product R&D	Shanghai Electric Group Intelligent Transportation Technology Co., Ltd.	2021 Shanghai Youth May 4th Medal (Collective)
2	Youth Team for Nuclear Main Pump Project	Shanghai Electric KSB Nuclear Pumps and Valves Co., Ltd.	2021 Shanghai Youth May 4th Medal (Collective)
3	General Branch Committee of the Communist Youth League Technical Center	Shanghai Electric Machinery Co., Ltd.	2021 Typical Representative Selection in Shanghai Grass-roots League Organizations (Youth League Committee)
4	Communist Youth League General Branch Committee	Shanghai Electric Wind Power Group	2021 Typical Representative Selection in Shanghai Grass-roots League Organizations (Youth League Committee)
5	Wu Gai	Shanghai Electric Wind Power Group	2021 Youth Management Talent of Shanghai Municipal State-owned Assets Supervision and Administration Commission
6	Zhang Xiao	Shanghai Mitsubishi Elevator	2021 Youth Technical Talent of Shanghai Municipal State-owned Assets Supervision and Administration Commission
7	Technology Development Center Team	Mitsubishi Electric Shanghai Electric Elevator Co., Ltd.	2021 Youth Civilization Unit of Shanghai Municipal State-owned Assets Supervision and Administration Commission
8	Department of Economic Operations	Shanghai Electric Wind Power Group	2021 Youth Civilization Unit of Shanghai Municipal State-owned Assets Supervision and Administration Commission
9	Nantong Project Design Team	Shanghai Electric Environmental Protection Group	2021 Youth Civilization Unit of Shanghai Municipal State-owned Assets Supervision and Administration Commission
10	Intelligent Equipment Product Room	Central Academe	2021 Youth Civilization Unit of Shanghai Municipal State-owned Assets Supervision and Administration Commission
11	Order Department Sales Office	Shanghai Boiler Works Co., Ltd.	2021 Youth Civilization Unit of Shanghai Municipal State-owned Assets Supervision and Administration Commission
12	Young Commando for C Project Installation and Debugging	Shanghai Electric Power Generation	2021 Youth Commando of Shanghai Municipal State-owned Assets Supervision and Administration Commission
13	Young Commando for Dubai Phase V Project	Shanghai Electric Power Generation	2021 Youth Commando of Shanghai Municipal State-owned Assets Supervision and Administration Commission
14	R&D Team for first 50 megawatt level air-cooled condenser in China of Generator Plant	Shanghai Electric Power Generation	2021 Youth Commando of Shanghai Municipal State-owned Assets Supervision and Administration Commission
15	Commando for Handling the Progress of Taipingling Project	Shanghai Electric Nuclear Power Group	2021 Youth Commando of Shanghai Municipal State-owned Assets Supervision and Administration Commission
16	Young Commando for Yangpu District "One Network Unified Management" Technical Service Project Team	Shanghai Electric Automation Group	2021 Youth Commando of Shanghai Municipal State-owned Assets Supervision and Administration Commission



01 Jointly Building a Solid Foundation for Development

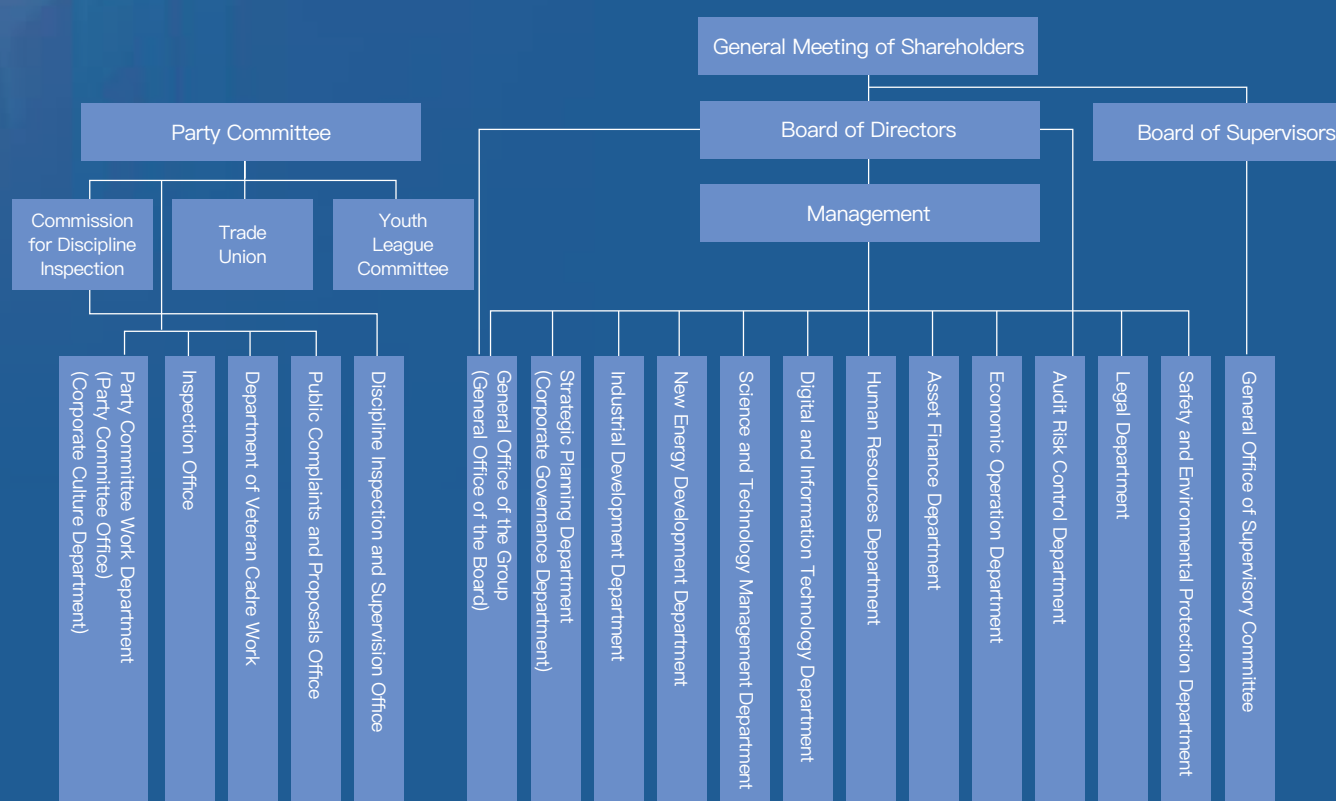
Shanghai Electric believes a complete governance structure, strict risk control and smooth communication channels are fundamental to the steady development of a company. We advocate righteousness and integrity, uphold Party leadership, and strengthen Party building. While reinforcing compliance management, we work to improve information transparency, increase communication with and response to stakeholders and constantly sharpen the Company's competitive edges.

Compliant Operation, Self-discipline and Integrity

We exercise strict self-discipline and management, and operate in compliance with legal and regulatory requirements to bolster the foundation for high-quality development.

Organizational Structure

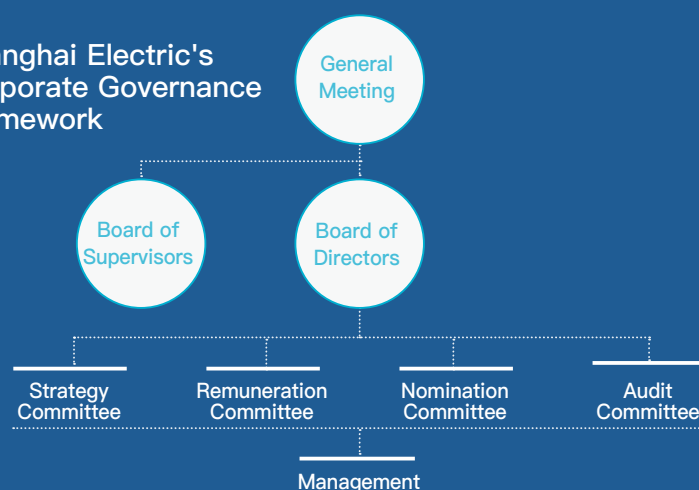
Shanghai Electric has established a functional framework with clear division of labor and full coordination and management relationships with the Group's industrial line, branches and subsidiaries, and practiced its responsibility as a state-owned enterprise from the aspects of operation compliance, transparency and guidance. On the basis of maintaining stability, our functional framework has been steadily optimized with the needs of industrial transformation and intelligent development of the Group.



Corporate Governance

Shanghai Electric strictly implemented the laws and regulations on corporate governance of listed companies, such as the Company Law, Securities Law, and Guidelines on Corporate Governance for Listed Companies, improved and built the corporate governance framework composed of the general meeting, the Board of Directors, the Supervisory Committee and the management, and set up the strategy committee, remuneration committee, nomination committee, audit committee and other governance bodies under the Board of Directors, so as to ensure the compliance and transparency of the Company's operation.

Shanghai Electric's Corporate Governance Framework



Currently, Shanghai Electric has 8 members of the Board of Directors, including 3 executive directors, 2 non-executive directors and 3 independent non-executive directors. They have different professional backgrounds, and boast expertise and experience in areas like corporate management, technological development, strategic investment and HR management. The Board of Directors is responsible for formulating the Group's overall development strategies, monitoring its financial performance, maintaining effective supervision over the management, safeguarding shareholders' long-term interests, and aligning the Group's business objectives and development direction with economic and market environments to achieve sustainable and high-quality development.

Directors of Shanghai Electric

*Including 3 female directors



The Supervisory Committee, as the supervision body of the Company, is responsible for overseeing the Company's operations, financial status and the performance of directors and senior management personnel, and making recommendations. As of the end of 2022, the Supervisory Committee of Shanghai Electric had 3 supervisors and assumed due responsibilities through division of labor and cooperation. For more detailed information on the Board of Directors and Supervisory Committee of the Company, please refer to the 2022 annual report of Shanghai Electric.

In 2022, Shanghai Electric held 36 meetings of the Board, general meetings and meetings of various specialized committees, including 1 annual general meeting, 3 extraordinary general meetings and 2 class meeting of shareholders, which considered and approved 16 proposals in total; held 14 meetings of Board, 14 audit committee meetings, 1 strategic committee meeting, and 1 nomination committee meeting, which considered 101 proposals in total.

As of the end of 2022, there were 11 senior management personnel in the management team of Shanghai Electric headquarters, and female senior management personnel accounted for 36%.

To further define the rights of the Board of Directors and management, make sure the Board of Directors plays a major role in strategy development, decision making and risk prevention,

ensure the management to exercise their rights and perform their duties according to law, and strengthen operation, implementation and management, Shanghai Electric formulated the Measures for the Management of Authorization by the Board of Directors in compliance with its current Articles of Association and the requirements of the State-owned Asset Supervision and Administration Commission of the State Council on the building of boards of directors as part of the three-year action of state-owned enterprise reform. Besides, in accordance with the documents including the Guidelines for Articles of Association of Chinese Listed Companies (Revised in January 2022), Shanghai Stock Exchange Stock Listing Rules (Revised in January 2022) and Work Guidelines for the Investor Relations Management of Listed Companies (Released in April 2022) and the Company's reality, Shanghai Electric revised relevant contents in the Articles of Association and its annexes including the Rules of Procedure for the General Meeting of Shareholders and Rules of Procedure for the Board of Directors, and developed and released the Management Policy for the Company's Investor Relations.

In the coming years, Shanghai Electric will work consistently to optimize information disclosure, standardize operation and take compliance building steps forward. Also, we will further clarify the boundaries of business, operate cautiously and take a combination of measures to secure the steady development of the Group.

Clean Hands

Shanghai Electric consistently adheres to the principle of honesty and integrity in business operation, adopts a zero-tolerance policy for any violations against business ethics and anti-corruption regulations, and strictly abides by the laws and regulations applicable to the Group in the places where it operates and the highest standards of business ethics. The Group formulated the Shanghai Electric Group's Implementation Opinions on Building a Mechanism That Can't Corrupt, Don't Dare Corrupt, and Don't Want to Corrupt, and Promoting the Construction of an Honest and Clean Management Team, which requires party members and cadres to respect for law and discipline, strictly protect the "red line" of discipline and the "bottom line" of law and always preserve the political character of integrity.

The Group formulated the Operational Procedures (Guidance) for Dual Responsibilities for One Leadership Position, and continuously implemented the Measures for Prevention of Conflicts of Interest in Operation and Management Activities of State-owned Enterprises. We emphasized addressing weak links in building a clean leading body, linked the task of "Dual Responsibilities for One Leadership Position" with the assessment as an important basis for assessment, selection and appointment of cadres, and appraisal for advanced or excellent staff, and kept improving the credibility of the selection and appointment of cadres, so as to ensure the effective assumption of their responsibility for Party conduct improvement and integrity building. We also emphasized the involvement of the Discipline Inspection Committee of each directly affiliated enterprises in corporate operation and management, strengthening the control over enterprises outside Shanghai or China and newly joined (or established) enterprises, creating the integrity files for leaders and personnel in important positions of the enterprises, carrying out special inspections, and strengthening the communication and cooperation between Discipline Inspection Committees at all levels with relevant functional departments for problem solution, so as to enhance the capability to prevent and control integrity risks.

In order to promote integrity, step up the fight against corruption and prevent the spread of corrupt practices, the Group has established various reporting channels, including telephone reporting and on-site reporting, to obtain clues from internal and external parties. Also, to ensure smooth reporting channels and protect reporters' legitimate rights, the Group, in line with the several opinions of the General Office of the Central Commission for Discipline Inspection of the Communist Party of China on standardizing discipline inspection and supervision and letters and visits in accordance with disciplines and laws, identified responsibilities for dereliction and neglect of duty in which, for example, investigation and treatment of cases were impeded due to leaks of letters and visits, the accuser was retaliated against, or adverse effects and serious consequences resulted from delayed treatment of important letters and visits or emergency incidents, and dealt with them seriously in accordance with Party and political discipline, so as to advocate righteousness and integrity.

In 2022, Shanghai Electric pressed ahead with the building of a sound working style and the creation of a clean and upright corporate environment through activities themed integrity education and meetings on clean governance.

During the reporting period, there were no corruption lawsuits within the Company.





Shanghai Electric's Month of Party Conduct Improvement and Integrity Building

In 2022, Shanghai Electric launched activities in the Month of Party Conduct Improvement and Integrity Building, themed "Seeking Steady Progress while Pursuing Integrity and Innovation to Advance the Group's High-Quality Development and Embrace the 20th National Congress of the CPC", to strengthen the publicity and education on Party constitution, rules and disciplines among employees at different levels and of different types. In particular, the special training on honest practice held for management and personnel in key positions basically covered all the targets of supervision at the primary level. The activities saw over 5,000 participants, including members of the Company's leadership, middle management and personnel in key positions, and proved effective in educating personnel in important positions about incorruptibility and integrity in both the width of coverage and depth of penetration.

Shanghai Electric's Thematic Meeting on Party Conduct Improvement and Integrity Building

On July 26, Shanghai Electric held the 2022 Meeting on Party Conduct Improvement and Integrity Building themed "Strengthening Rectification in a Down-to-Earth Spirit, Tightening Management to Secure Development and Advancing the Steady and Sustainable Development of Shanghai Electric through High-Quality Party Conduct Improvement and Integrity Building". Leng Weiqing, Party Committee Secretary and Board Chairman of Shanghai Electric, attended and addressed the conference, and Cai Xiaoqing, Chairman of the Supervisory Committee, was present as well. Wang Chenhao, Party Committee member and Discipline Inspection Committee Secretary of the Group and supervision commissioner dispatched by Shanghai Supervisory Commission to the Group, delivered a report on Party conduct improvement and integrity building. Fu Min, Discipline Inspection Committee member and chief auditor of the Group, gave a report on audit and risk control. The conference conveyed the guiding principles of the important speech by Xi Jinping at the 40th collective learning meeting of the Political Bureau of the Central Committee of the CPC, reviewed the efforts of the Group in Party conduct improvement and integrity building over the past year, analyzed existing problems, and deployed work to further Party conduct improvement and integrity building. The conference noted that the atmosphere for improving Party conduct and building integrity was stronger across the Group and the efforts produced good results on the whole. However, it added, we must be aware of the problems existing in the work on Party conduct improvement and integrity building, admit the weaknesses in our work, analyze the reasons and take steps to rectify them, so as to deepen the full and strict governance over the Party across the Group and remain committed to high-quality development.

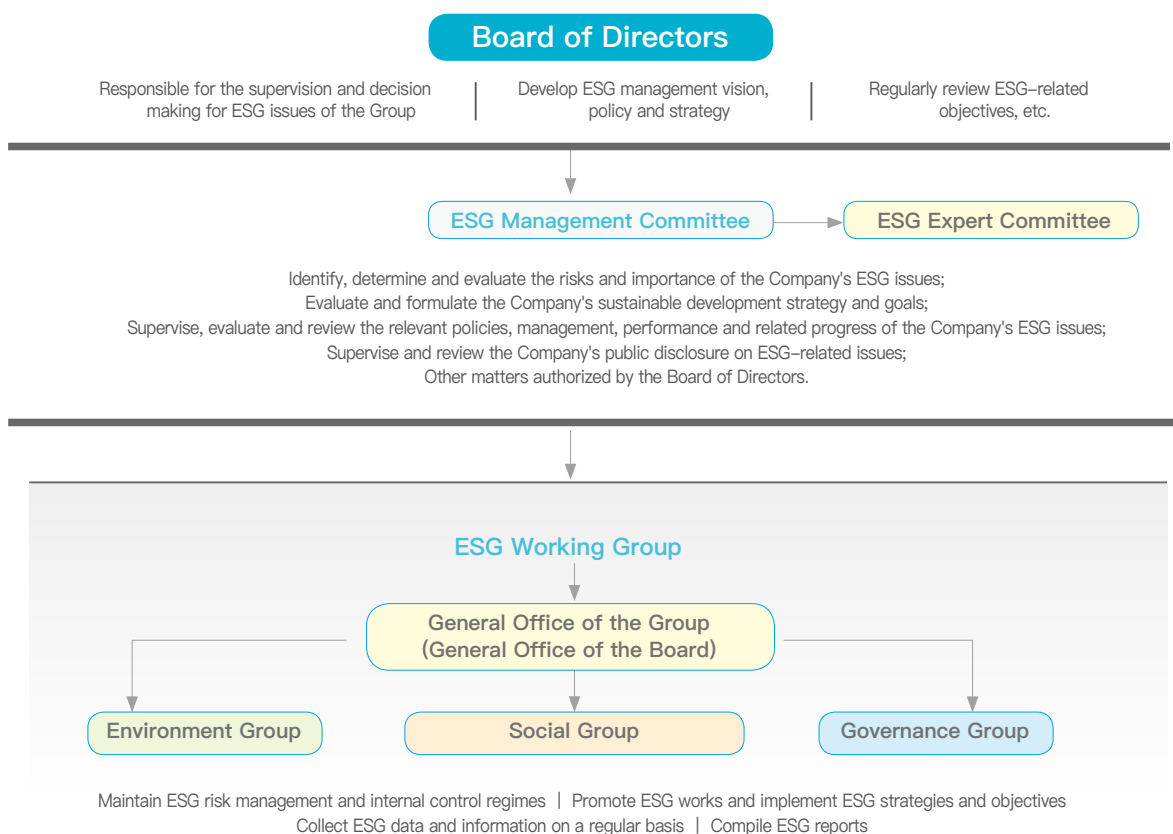
Clearly Defined Responsibilities and Effective Communication

We further optimize the ESG system, improve modern and green governance and work with stakeholders to create sustainable values.

ESG Governance

Shanghai Electric actively practices the concept of sustainable development, integrates the concept into its strategic goal and brand philosophy, and implements it throughout daily management and operations. We have complied with the Environmental, Social and Governance Reporting Guide to fully implement the Group's ESG governance, improved our ESG system and capability building, incorporated ESG responsibility in our organizational structure, and put in place a special ESG framework. We have built a comprehensive and rigorous governance model from top-level design to primary-level implementation, to further drive the steady and sustainable development of the Group.

Our ESG governance structure is composed of the Board of Directors, the ESG Management Committee and the ESG Working Group from top to bottom. Among them, the ESG Management Committee governs the ESG Expert Committee. The ESG Working Group is composed of three sub-working groups which are composed of relevant functional departments and are responsible for contact and communication with relevant departments of the subsidiaries.



Statements by the Board of Directors

The Board of Directors of Shanghai Electric has performed its duty to supervise the Group's ESG related matters. The Board of Directors has regularly reviewed the establishment and implementation of ESG objectives and the effectiveness of ESG risk management and internal control systems. For details, please refer to the section "Strengthening Supervision to Prevent Risks" and sub-sections "Stakeholder Engagement" and "Analysis of Major Issues". Also, the Board of Directors promises to be responsible for the authenticity, accuracy and completeness of the Report.

Shanghai electric carried out various work to improve the effectiveness of ESG management, and regularly summarized experience to seek directions for further improvements.

Shanghai Electric's ESG Management Committee Meeting

On January 11, 2023, Shanghai Electric held an ESG Management Committee meeting, with participants including Liu Ping, Party Committee Deputy Secretary and President of the Group, Zhu Zhaokai, Party Committee Deputy Secretary of the Group and Chairman of Shanghai Electromechanical Trade Union, Yang Hong, Vice President of the Group and several other members of the Board of Directors, ESG Management Committee and ESG Working Group. The meeting summarized the ESG work at Shanghai Electric in 2022 and adopted the proposal about improving ESG management. The meeting noted that ESG management is a systematic project that requires coordinated planning and implementation from top to bottom across the Group. Sound ESG management is an effective approach to improving corporate governance and achieving high-quality development. In 2022, Shanghai Electric made some headway in ESG work, which was recognized by rating agencies and the market. In the long run, Shanghai Electric should align ESG management with its development plan and philosophy, and incorporate the strategic top-level design in the setting of various objectives. Also, the meeting noted that Shanghai Electric should combine strategic objectives with performance assessment to better link ESG development with remuneration assessment.



Shanghai Electric's ESG Training

In November 2022, Shanghai Electric organized training themed "Corporate ESG Practice and Brand Empowerment" for the strategy, brand and marketing lines of the Group and affiliated enterprises, with the aim to help affiliated enterprises identify the areas where ESG applies, including strategy, brand and marketing, and make ESG empower enterprise development.

Focused on the strategic path to ESG and sustainability, product innovation and technological environment, ESG communication and brand influence, the training guided frontline enterprises to conceive the sustainability strategy from the ESG perspective, and helped enterprises recognize that the sustainability strategy, by nature, is a process in which the business landscape is reshaped through creating social values and resolving business problems. Meanwhile, the meeting inspired enterprises to address social issues by leveraging unique product properties and the power of technologies and focusing on "innovation, green, responsibility and development", and to seize new opportunities arising from green development through effective ESG communication.

In 2022, thanks to continued ESG efforts, the Company's MSCI ESG rating improved from "BBB" to "A". Moreover, the Company was successively honored the "Best ESG Practice of the Year" by jiemian.com, "Top 500 ESG Chinese Enterprises" by finance.sina.com.cn, "2022 Leader of the Zero-Carbon Future" by jiemian.com, "2022 Outstanding Enterprise in the Year of Sustainability" by Ernst & Young, "Local State-Owned Enterprises CSR Vanguard 100 Index", "NewFortune Best IR Hong Kong Listed Company", "Forbes China Sustainable Development Industrial Enterprises Top 50" and some other ESG related awards.



Stakeholder Engagement

In recent years, Shanghai Electric has vigorously fostered new drivers of growth in replace of old ones, with the aim to become a leader in new energy equipment. Our commitment to moving into a new industrial lane has been supported by our partners. We value communication with stakeholders, try to understand their demands through diverse channels, and act to provide reasonable response. In doing so, we hope to strengthen our ties with them and promote openness and sharing together.

Also, we hope that this ESG report will provide a more complete response to the issues that stakeholders are concerned about and disseminate our concept about sustainability and social responsibility values.

STAKEHOLDER GROUP	COMMUNICATION CHANNEL/FEEDBACK METHOD	KEY ISSUES OF CONCERN
Investors	– General meeting of shareholders	– Industry trends and policies – Governance structure – Technology and innovation – Product safety and health – Economic impact – Legal compliance – International trade situation
	– Performance briefing	
	– Roadshow activities	
	– Investor research activities	
	– Investor factory visit	
	– Investor summit	
	– Shanghai Stock Exchange (SSE) E-Interaction	
	– Investor hotline	
	– Company announcement	
	– WeChat public account	
	– Facebook homepage	
	– Bimonthly Shanghai Electric News	
	– Investor relations e-mail box of Shanghai Electric	
Employees	– Employee training	– Occupational health and safety – Employee benefits and compensation – Sustainable development strategy – Employee rights and interests
	– Employee activity	
	– Employee satisfaction survey	
	– Forum	

STAKEHOLDER GROUP	COMMUNICATION CHANNEL/FEEDBACK METHOD	KEY ISSUES OF CONCERN
Partners (including suppliers and contractors)	– On-site review	<ul style="list-style-type: none"> – Product safety and health – Renewable energy – Response to climate change
	– Supplier assessment	
	– Technical training	
	– Online communication	
Customers	– Customer satisfaction survey	<ul style="list-style-type: none"> – Product quality and aftersales maintenance – Customer privacy information protection – Product safety and health
	– Customer complaint handling	
	– Brand promotion	
Communities	– Community charity activities – Exhaust	<ul style="list-style-type: none"> – Exhaust emissions – Biodiversity in the place of operation – Charity and donations
	– Regular visits	
Media	– Press release/information announcement	<ul style="list-style-type: none"> – Sustainable development strategy – Product quality and aftersales maintenance – Governance structure
	– Interview	
	– Results press briefing	
Regulatory Authorities	– Press release/ information announcement	<ul style="list-style-type: none"> – Renewable energy – Industry trends and policies – Legal compliance
	– Regular communication	
NGO or non-profit organizations	– Regular communication	<ul style="list-style-type: none"> – Charity and donations – Community development support
	– Community charity activities	
Colleges and universities	– Scientific research exchange and cooperation	<ul style="list-style-type: none"> – Waste water disposal – Exhaust emissions – Product quality and aftersales maintenance
	– Recruitment activities	
End-users of products	– Brand Promotion	<ul style="list-style-type: none"> – Product quality and aftersales maintenance – Legal compliance
	– Press release/ information announcement	
Scholars	– Scientific research exchange and cooperation	<ul style="list-style-type: none"> – Technology and innovation – Waste water disposal – Exhaust emissions
Grantees	– Community charity activities	<ul style="list-style-type: none"> – Charity and donations – Community development support
	– Regular visits	

Shanghai Electric: I Want to Tell You

In 2022, Shanghai Electric invited stakeholders including employees, partners, investors and customers to chat about "Shanghai Electric". Through the special communication activity, Shanghai Electric heard the voices of various stakeholders, and made them a major force driving it forward to better live up to their trust and expectation.

上海电气
我想对你说
——高逸林董事长寄语——



Care

Employees: Shanghai Electric provides complete facilities and a sound working atmosphere for its employees. Leveraging the spirit of model workers and craftsmanship, Shanghai Electric encourages employees to pursue their dreams of becoming excellent engineers or great national craftsmen and developing more safe, reliable, smart and efficient products.



Trust

Customers: Shanghai Electric's products are technologically leading, safe and reliable. Shanghai Electric constantly introduces new technologies, pursues perfection in manufacturing, and has a team in pursuit of excellence. It's a trustworthy partner.



Acknowledgement

Investors: Focusing on green, low-carbon and intelligent manufacturing, Shanghai Electric is among the best performers in the industry. Meanwhile, Shanghai Electric seizes new opportunities of the time, and is a quality company with a promising future.



Cooperation

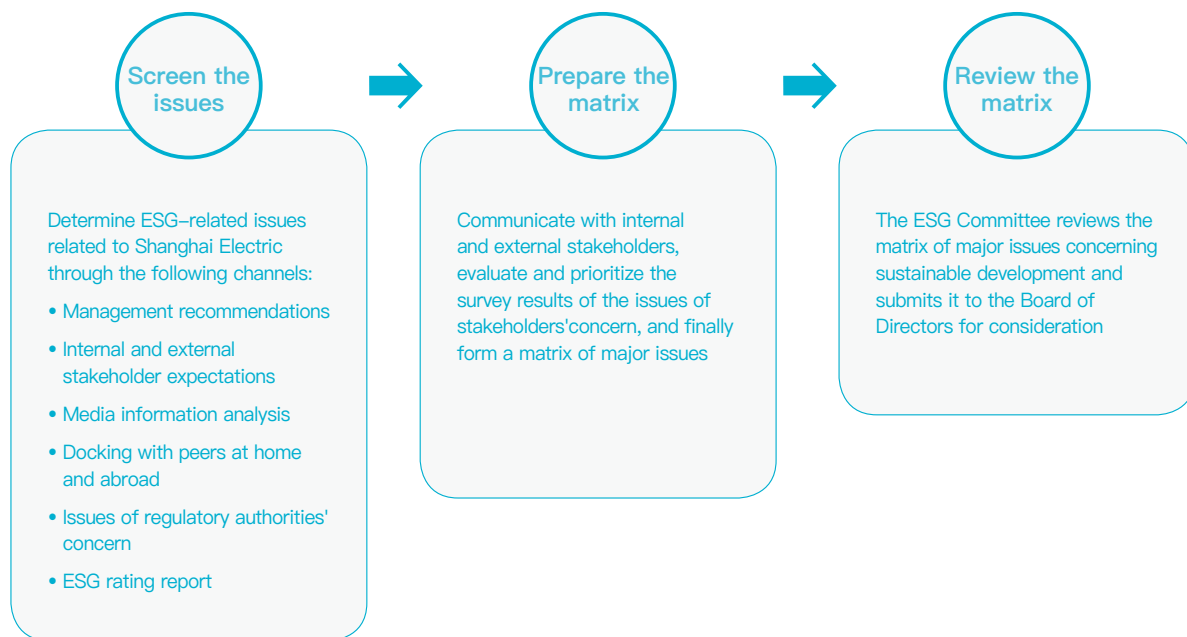
Partners: Shanghai Electric is reliable, efficient and patriotic. It has cooperated with many colleges and trained many high-quality technical talents for China.



Analysis of Major Issues

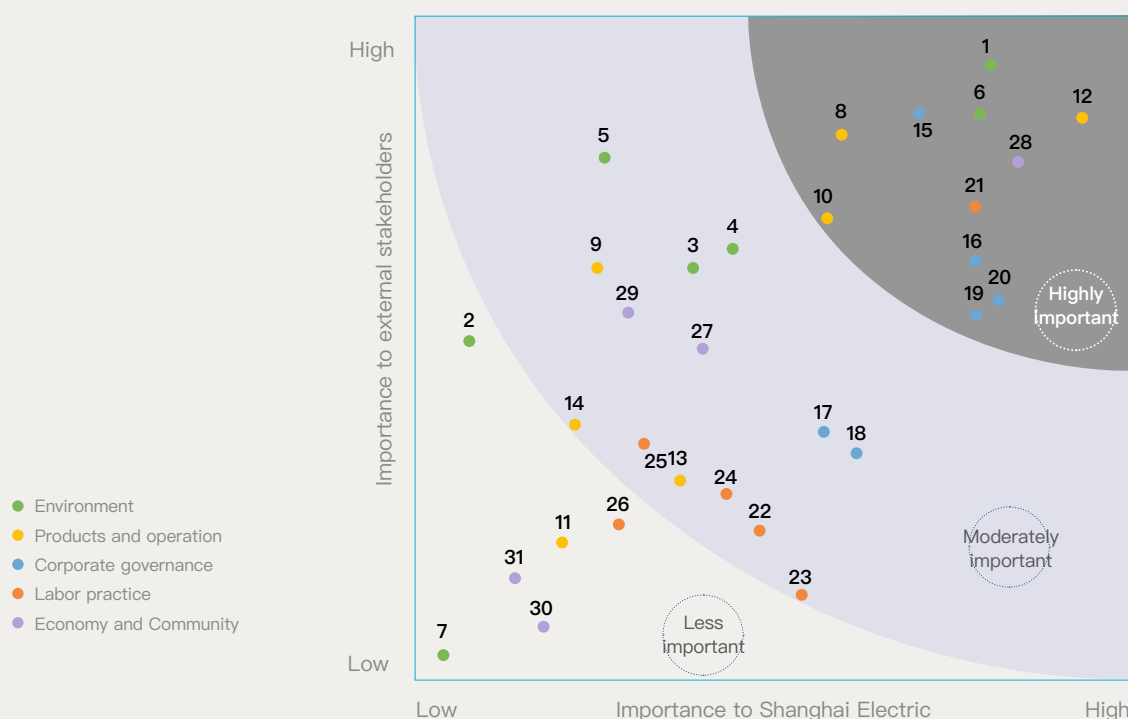
During the reporting period, we collected opinions from investors and other stakeholders on our ESG management and disclosure through in-depth discussions, surveys and road shows with stakeholders. In addition, we kept a close eye on the important documents released by governments, investment institutions and regulators to explore the ESG trends in the industry, and held discussions and exchanges to drive deeper communication with them. We combined the focus and expectations of various stakeholders on Shanghai Electric with the results of the questionnaire survey and interviews last year, and adjusted and updated the matrix of major issues.

The identification process of Shanghai Electric's material issues



Through the above identification process, we concluded 31 ESG issues, 11 of which are highly material ESG issues. For the future ESG development, the Group will continue to focus on the highly material ESG issues, which also constitute the key subjects disclosed in this report to varying extent.

The Matrix of Shanghai Electric's Major Issues



NUMBER	ISSUE	NUMBER	ISSUE
1	Renewable energy	17	Performance and remuneration for sustainable development
2	Water resource management	18	Anti-corruption
3	Wastewater discharge	19	Risk and crisis management
4	Exhaust gas emissions	20	Legal compliance
5	Solid waste treatment	21	Occupational health and safety
6	Coping with climate change	22	Employment and employee retention
7	Biodiversity in the place of operation	23	Employee benefits and remuneration
8	Product quality and aftersales maintenance	24	Education and training
9	The protection of customers' privacy information	25	Diversity and acceptance
10	Product safety and health	26	Human rights
11	Brand management	27	Economic impact
12	Technology and innovation –Clean technology opportunities	28	The trends and policies of the industry
13	Supply chain management	29	International trade situation
14	Raw material procurement	30	Support for community development
15	Governance framework	31	Charity and donations
16	Strategy of sustainable development		

Note: The issues in bold letters are highly material issues

Standardized Disclosure

Shanghai Electric is fully aware that timely, transparent, efficient and strict information disclosure is the bridge connecting the Company and its stakeholders including investors and a powerful tool affecting the Company's behaviors and protecting investors' rights. Valuing investors' demand, building the credibility of information disclosure and increasing the communication with stakeholders are important for the Company to implement the concept about green development and accelerate high-quality development.

Shanghai Electric has attached great importance to investor relation management, strictly implemented the Articles of Association of Shanghai Electric Group Company Limited and the Information Disclosure Management System of Shanghai Electric Group Company Limited in accordance with laws and regulations and the requirements of the listing rules of Hong Kong and Shanghai, disclosed information in a transparent and efficient manner, strengthened interaction with investors through various channels so that they can have a comprehensive, accurate and timely understanding of the Company's performance and development strategies.

In addition, as a major approach for Shanghai Electric to disclose information to the public, CSR reports see contents upgraded year by year. In the 2022 report, we worked to present our ESG values and stories to stakeholders. Meanwhile, in compliance with the national 14th Five-Year Plan and with the focus on carbon peaking and carbon neutrality, we analyzed the climate-related risks and opportunities, governance framework and countermeasures of the Group for the first time, and fully explained the Group's climate change response strategy and green transformation plan, with the aim to bolster investor confidence.

Interaction with Investors

Shanghai Electric actively holds regular results press briefings to introduce its operating results or major matters to investors. In 2022, the Company held the 2021 annual operating results briefing and 2022 interim operating results briefing online, responded to investor appeals in time, solicited opinions from investors and made corresponding improvements.

To make more investors better understand Shanghai Electric's industrial characteristics and business model and recognize Shanghai Electric's move to upgrade the traditional industry and enter a new industry, we worked to train the spokespersons for the Group to keep investors well informed of our strategy. Also, to increase interactions with investors in more aspects, based on diversified investor demands, we expanded and enriched the channels of interaction both online and offline.

In 2022, Shanghai Electric answered 123 questions raised by small and medium investors about its operations on "SSE E-Interaction" platform, and posted 437 articles via its public account on 10jqka.com.cn, 266 of which were pushed to the individual stock channel of 10jqka.com.cn. Meanwhile, the Group explored the application of integrating traditional media and emerging media, leveraged the synergy of different media, actively met investors' reading habits, and highlighted integration, development and management in practice.



Live Interactions

Keeping pace with the time and leveraging new media like finance.sina.com.cn and 10jqka.com.cn, we arranged live interactions between our senior experts and investors. The contents covered hotspot issues of the industry, such as carbon peaking and carbon neutrality, digitalization and clean energy, fully demonstrated Shanghai Electric's pioneering role in relevant areas, and introduced the Company's competitive businesses to investors.



Investigations by External Directors

Shanghai Electric provides necessary working conditions and support for the performance of duty by its independent directors. In 2022, the Company's independent directors gained a full knowledge of the Company's operations by hearing reports, reviewing materials, conducting onsite investigations and holding discussions with the management, and used expertise to promote scientific decision-making by the Company's Board of Directors.



Shanghai Electric's Open Day

On September 26, a day marking the 120th anniversary of Shanghai Electric, we invited over 2,800 investors to the Enterprise Summit & Shanghai Electric's 120th Anniversary Activity themed "Energy Integration for a Intelligent Future", to discuss energy development and green operations for a better future. At the end of the summit, we arranged a wonderful cloud visit for participating investors, who saw Shanghai Electric's lithium battery production base, Shanghai Electric Wind Power's smart energy project and some other real application scenarios, and gained a deeper understanding of Shanghai Electric's strategy and practice to create a new landscape of intelligent energy. We also invited experts and scholars from universities and media to the forum, who had in-depth discussions with the heads of different energy lines of Shanghai Electric on hotspot issues like energy security under extreme weather.



Strengthening Supervision to Prevent risks

Raising risk awareness and strengthening internal control and supervision to secure the high-quality development of the Group.

We always incorporate risk awareness into our operations, stand in awe of risks, and maintain risk prevention and internal control all the time. In 2022, aligned with the Group's strategic positioning, Shanghai Electric upgraded its annual plans, improved the audit and risk control governance structure, completed the risk control mechanism, and, by resolving difficult issues, securing the implementation of key projects, preventing risks and promoting development, continued to enhance the effectiveness of risk prevention, internal control and audit & supervision.

Risk Prevention and Control

During the reporting period, the Group deepened efforts to prevent and defuse risks. It made overall arrangements while focusing on specific aspects, defined the division of responsibilities and ensured their fulfilment, stepped up risk screening and response in key areas, and took a combination of measures to prevent and ease risks in an orderly manner.

Further deepening risk screening and judgment

- ◆ Conducted risk investigations and assessments targeting 30 risk points in five years.
- ◆ Strictly followed regulatory requirements and organized eight special risk screening projects based on reality.
- ◆ Conducted in-depth analysis with the focus on financing guarantee, engineering construction and project investment, etc.
- ◆ Focused on existing risks, regularly conducted risk screening and assessment, and tracked and reported risks on a monthly basis.

Going all out to advance risk disposal and defusion

- ◆ Set up the risk prevention leading group and working group at the Group level to strengthen risk control leadership and coordination.
- ◆ Managed risks by grades and classifications based on factors like risk impact, occurrence possibility and anti-risk capability.
- ◆ Established the special team working mechanism to tailor solutions for specific risk accidents and advance implementation of the solutions.
- ◆ Popularized the risk list and accountability system, specified subjects of responsibility and risk prevention requirements, and established the mechanism for coordination, tracking and supervision.

Internal Control

The Group always makes the improvement of the internal control system a major support for strengthened internal control. By improving the internal control architecture, revising and perfecting key systems and strengthening the effectiveness of execution, the Group works to build a complete internal control system to provide support for its high-quality development.

Improving the internal control of architecture

- ◆ Overlooked system building and execution by the Group since 2018, analyzed weaknesses in internal control, and proposed the objectives and improvement measures for the next step.
- ◆ In line with the Group's improvement requirements, assessed the effectiveness of the system, developed annual improvement plans and advanced the revision and improvement of the internal control system and process in batches and by categories.

Revising and perfecting key systems

- ◆ Improved weaknesses in internal control in areas like capital management, investment management and engineering management, and further completed the risk-oriented internal control system that highlights compliant operations.
- ◆ With the focus on optimizing the investment management process, exercised the differentiated authorization management that combines authorization with management and assessment, and made consistent efforts to make the process more scientific and standard.

Strengthening the effectiveness of execution

- ◆ Promoted the learning, understanding and application of the system both online and offline through diverse forms of training like publicity targeted at business lines, video-based micro lectures and lectures in enterprises.
- ◆ Identified the weaknesses of internal control through the mechanism that combines special inspections, segment inspections and joint inspections, and strengthened rectification of the weaknesses and implementation of internal control requirements.

Audit and Supervision

Shanghai Electric continued to improve the audit and supervision mechanism, earnestly performed its duty in audit and supervision, pressed ahead with the audit of key projects, conducted special audit and investigation projects in key risky areas, strengthened joint supervision over the application of audit results, and upgraded audit work to provide support for decision-making by the management.

Implementing leveled and classified audit in an orderly manner

- ◆ Reinforced internal audit and supervision responsibilities, refined the definition of internal audit and supervision responsibilities and corresponding staffing at two levels, and strengthened the performance of respective duties through leveled organization, graded responsibility and classified targets.
- ◆ Revised and improved internal audit management, audit rectification and other systems, completed business codes and working standards, and optimized the audit mechanism.

Vigorously advancing implementation of audit projects

- ◆ Implemented internal control assessment, special audit, economic liability audit and other audit projects with the focus on the operation of core businesses, significant economic behaviors and critical risky areas.
- ◆ Conducted special investigations of engineering projects and industrial financing projects, ensured risks to be controllable, gave early warning of risks and made improvement recommendations to improve management.
- ◆ Stepped up rectification of problems identified in audit, advanced rectification from the source by analyzing reasons and giving control suggestions, and improved rectification results by strengthening system execution and clearly defining rectification responsibilities.

Effectively strengthening the synergy of internal and external supervision

- ◆ Strengthened research on joint supervision and inspection, and worked with relevant departments on special inspection and project research to improve working efficiency and supervision.
- ◆ Intensified the sharing of audit information and results, implemented the mechanism of joint meetings for supervision efforts, strengthened the joint identification of problems and risks by supervisory departments and functional lines, and worked together to rectify the problems identified.



Rule of Legal Construction

To ensure the quality of operations and promote the harmony across the Company, we kept improving the rule of law, strictly controlled risks related to legal compliance, adhered to operation and management according to law, and pressed ahead with legal construction, to make the whole company governed by the rule of law as much as possible and thus secure the steady development of the Company.

In 2022, Shanghai Electric worked actively to improve legal affairs management by levels and categories, matched authorities with responsibilities, and improved working standards and processes.



The rule of law construction strongly bolstered our operations in a range of areas. We coordinated efforts on risk management at the source, supported management improvement and ensured effective risk screening. Meanwhile, we advanced the Phase III project of the contract management system, and further improved the contract template library. In Shanghai 6th Legal Skills Competition, Shanghai Electric won the third prize.

Rule of law publicity activities

- ◆ Organized high-quality themed training sessions in areas like engineering, labor, IPRs and criminal compliance.
- ◆ Completed annual training for 1,200 persons on contract signing and management as scheduled and organized testing.
- ◆ The legal line completed 13 internal training sessions.

Contract template building

- ◆ Released 47 engineering contract templates and core text risk lists, 7 fund investment contract templates, and procurement framework agreements and order templates.
- ◆ Further standardized contract data, and improved the system for standardizing related party management.

Adhering to Leadership by Party Building to Unite Efforts across the Group

Shanghai Electric emphasizes Party building, adheres to leadership by Party building and improves the quality of Party building to provide a strong driver for its high-quality development.

Leadership by Party Building

2022 marked the 101st anniversary of the founding of CPC, as well as a critical year for the Group to build a first-mover advantage in some new areas, foster new growth drivers and further implement the strategy devised for the 14th Five-year Plan period. To give further play to the role of grassroots-level Party organizations, Party members and cadres in the Group's implementation of the strategy for the 14th Five-year Plan period, the Party Committee of the Group, in line with the Circular on Carrying out the Party Building Campaign Launched by the Municipal State-Owned Assets Supervision and Administration Commission Themed "Firmly Following the Party and Welcoming the 20th CPC National Congress", set up the Party Building Research Center, and carried out the Party building activities under the theme of "Opening up a New Situation with Pragmatic Efforts and Forging ahead in the 14th Five-Year Plan Period" across the Group, to embrace the 20th CPC National Congress.



Shanghai Electric celebrated the 101st anniversary of the founding of CPC and the setup of the Party Building Research Center

Shanghai Electric made constant efforts to make Party building more systematic, vigorously advanced institutional building to base various work on rules, and promoted the implementation of the working system for the strict governance over the Party. In 2022, the Group revised four policies, including the Rule of Procedures for the Party Committee of Shanghai Electric Group Company Limited and the Detailed Rules of Shanghai Electric Group Company Limited for the Implementation of the Decision-Making System for Major issues, Important Appointments and Removals, Major Projects and the Use of Large Amounts of Money.

Shanghai Electric pushed for the further integration between Party building and business operations. To further boost morale among employees and lead high-quality development through high-quality Party building, the Group's Party Committee initiated the Party building project of building dozens of Party building brands, 100-plus Party member commando teams and 1,000-plus Party member demonstration posts and engaging 10,000-plus Party members in commitment to their jobs, so as to encourage Party organizations and Party members at all levels to act proactively in the new round of strategy implementation.

Building Distinctive Party Building Brands

Party building is a unique advantage of a state-owned enterprise, as well as what drives an enterprise to enhance its core competence. In 2022, the Party Committee of Shanghai Electric started a new round of Party building efforts, and required Party organizations at all levels to play a part in leading or serving enterprise development or a part that combines both, and forge distinctive Party building brands that focus on different aspects, cover all areas and complete each other, so as to give full play to the exemplary role of Party building brands.



◆ In the new round of Party building brand application, the Party organizations under the Group applied for 97 Party building brands.

◆ In the appraisal for "Shanghai's State-Owned Enterprise Party Building Brands", Shanghai Electric's Party Committee saw 6 Party building brands shortlisted in the first batch and 7 in the second batch.

Raising the Banner of Party Member Commando Teams

To further focus on the Group's primary responsibility and business, the Group's Party Committee stepped up efforts to build Party member commando teams, fostering new ones while effectively managing ones. To give play to the exemplary role of Party members and overcome difficulties to make new achievements, it selected representative Party member commando teams for contract signing projects in new areas, major projects, tech innovation projects, special rectification projects to enable "three decreases and one increase" and emergency, difficult, dangerous and arduous missions.



◆ 203 Party member commando teams were set up, giving full play to the exemplary role of Party members and cadres in overcoming difficulties and making new achievements.

◆ Shanghai Electric held the flag handover ceremony at the 2022 Party Building Work Conference. As representatives, two leaders, respectively from Shanghai Electric Power Station's Hydrogen Power Party Member Commando Team and Shanghai Electric Wind Power's Floating Fan R&D Party Member Commando Team, received the red flags, which symbolized responsibility and mission, from Liu Ping, Party Committee Deputy Secretary and President of Shanghai Electric.

Honoring the Solemn Commitment as Party Members

To encourage Party members to strive for the best in respective posts and contribute to the Group's high-quality development through real actions, the Group's Party Committee took measures like setting up Party member demonstration posts and posting Party members' commitment on walls, to demonstrate the advanced nature of Party members and highlight the exemplary role of Party members in thinking and acting ahead of others.



In 2022, 2,494 Party member demonstration posts were set up, and over 10,000 Party members made the commitment as Party members under the theme of "Contributing to High-Quality Development".

Party Member Education

With a consistent focus on Party member's quality development and ideological building, Shanghai Electric continued to deepen the integration between Party leadership and corporate governance and between Party building and production & operations. In 2022, to embrace the 20th CPC National Congress, Party organizations at all levels carried out themed Party building activities in combination with corporate operation, and pressed ahead with Party history education and the building of a long-term mechanism of "doing practical things for the public" based on the Group's historical, cultural and red resources. It made resolving real problems and advancing real work a fundamental measure for the quality of activities, and took solid steps to deepen learning and education.



Adhering to Political Leadership and Deepening Learning and Education

The Group's leadership took the lead in publicizing the guiding principles of the 20th CPC National Congress at primary-level organizations

According to the unified plans of the Party Committee of Shanghai Electric, members of the Group's leadership went to primary-level points of contact, where they publicized the guiding principles of the 20th CPC National Congress and exchanged ideas with the Party members and employees, in a bid to promote the understanding and implementation of the guiding principles of the 20th CPC National Congress.

On November 30, Leng Weiqing, Party Committee Secretary and Chairman of Shanghai Electric, gave a report on the guiding principles of the 20th CPC National Congress at Shanghai Mitsubishi Elevator. Under the theme of "Thoroughly Implementing the Guiding Principles of the 20th CPC National Congress and Working to Open up a New Situation for the High-Quality Development of Shanghai Electric on a New Historical Starting Point", Leng Weiqing offered a deep interpretation of the main contents of the report delivered at the 20th CPC National Congress, including the guiding principles of the 20th CPC National Congress, work over the past five years, the great changes in the first decade of the new era, the missions of the CPC in a new journey and a new era, and the efforts to accelerate the new development paradigm and advance high-quality development. Also, she arranged work related to learning and publicity of the guiding principles of the 20th CPC National Congress, and raised specific requirements for Shanghai Mitsubishi Elevator to fulfill the objectives set for Phase II of the "2025 Action Plan".

On December 1, Liu Ping, Party Committee Deputy Secretary and President of Shanghai Electric, publicized the guiding principles of the 20th CPC National Congress among the Party members and employees of Shanghai Electric Power Transmission and Distribution Group. Liu Ping said, Shanghai Electric Power Transmission and Distribution Group acted as a cornerstone and pillar in Shanghai Electric's traditional business segments, and should make efforts to accelerate industrial restructuring and the entry into new areas, build new industrial clusters and foster new growth drivers and points centering on the carbon peaking and carbon neutrality goals and the building of a new-type power system. He added, it should make the leading enterprises in new areas the benchmark, increase input and work with upstream and downstream enterprises, research institutes and partners in the ecosystem to build a tech innovation system featuring openness and coordination and ensure the optimal allocation of resources. Highlighting talents as the primary resources, he called for efforts to build a high-quality and professional tech talent team through both internal cultivation and external introduction, and to popularize the philosophy of "projects first and promotion for employees with pragmatic work", which allows the employees with the willing to act to have the chance, those with the ability to succeed and those with contribution to be rewarded.

The Theory Learning Central Group of the Group's Party Committee holds an enlarged learning meeting

On October 12, Leng Weiqing, Party Committee Secretary and Chairman of Shanghai Electric, chaired an enlarged learning meeting of the Theory Learning Central Group of the Group's Party Committee, which studied the guiding principles of the important speeches recently made by CPC Central Committee General Secretary Xi Jinping, and held discussions under the theme of "Management of Foreign Exchange Risk by Shanghai Electric amid the Complex Political Situation". Shanghai Electric's Party Committee Deputy Secretary and President Liu Ping and Supervisory Committee Chairman Cai Xiaoqing were present at the meeting. Zhu Zhaokai, Party Committee Deputy Secretary of Shanghai Electric and Chairman of Shanghai Electromechanical Trade Union, led the learning of the guiding principles of the speech delivered by Xi Jinping at the exhibition on the theme of "Forging Ahead in the New Era". Yang Hong, Vice President of Shanghai Electric, led the learning of the guiding principles of the speech made by Xi Jinping when chairing the 27th meeting of the Central Commission for Comprehensively Deepening Reform. Zhou Zhiyan, CFO and Board Secretary, gave a report themed "Management of Foreign Exchange Risk by Shanghai Electric amid the Complex Political Situation". The three members of the central group also shared their feelings in combination with the work in charge.

The learning meeting was held both offline and online, with members of the central group at the main venue and heads of functional departments at the Group's headquarters at the other venue.



02 JOINTLY BUILDING PREMIUM QUALITY THROUGH DIGITAL



During the "14th Five-Year Plan" period, Shanghai Electric focuses on the high-quality development and takes "technology is the first driving force and talent is the first resource" as its guiding principle. With digital intelligence and innovation as two essential drivers, Shanghai Electric continues to improve technologies, strengthen independent research and development, and undertakes the responsibilities for the goals of the "carbon peaking and carbon neutrality" to guide the booming development of the low-carbon industries and make greater contributions to advancing China's sustainable development strategy.



Leverage Technologies to Integrate Digitalization and Intelligence

Increase investment in technologies for green development and "carbon peaking and carbon neutrality", actively embrace opportunities brought by digitalization and intelligence, guide scientific research to tilt to the new segments so as to cement the core competitiveness of the enterprise and release new momentums for the Group's high-quality development.

Innovation-driven

Shanghai Electric's innovation model is also moving with the times, from a single lineup of products in the past to system integration solutions. As a result, Shanghai Electric has established a brand-new relationship with technological innovation and accelerated the commercialization of scientific and technological achievements.

In order to further drive the scientific and technological innovation, we revised and issued the Several Opinions on Accelerating Scientific and Technological Innovation and Development of Shanghai Electric (2022 Version) in 2022, proposing to establish and improve an open scientific and technological innovation system suitable for the development of Shanghai Electric. This new system aims to build a dual circulation pattern featuring the internal collaborative innovation and the external collaborative innovation with universities and scientific research institutions. At the same time, Shanghai Electric continues to implement the scientific and technological innovation strategy featuring "big picture, joint efforts, integrated network" to stimulate the Group's innovative research and development work, gradually form a scientific and technological innovation mechanism characterized by planning as the guidance, project-based coordination and talent flow, boost the firm-wide research and development cooperation, promote the firm-wide advantage complement and resource coordination, and build a multi-level, multi-field technological exchange platform across industrial groups.

Getting a big picture in rational layout and R&D of the Group's science and technology

Share scientific and technological resources, jointly research common technologies, coordinate scientific and technological resources and R&D capabilities inside and outside the Group, encourage the establishment of multiple technological exchange mechanisms including maker clubs and professional technology alliances, thus promoting the rational layout and optimized allocation of scientific and technological resources.

Making joint efforts in the Group's technology and business

Strengthen the joint research and discussion on technology and business through major scientific research projects, and drive the cross-field technological exchange. Take the major scientific research projects in the key areas of the Group as the carrier to implement technical exchange and cooperation across the industrial groups, explore the establishment of project organizations across industrial groups, further integrate the Group's scientific and technological resources, and promote collaborative innovation across industries.

Building an integrated network for training and flow of the Group's scientific and technological talents

Share and co-manage the system of technological talent resources to accelerate the buildup of technological talent teams, boost the cross-industry flow of technological talents, and realize the systematic optimization of talents through expert engagement and on-the-job training across industrial groups.

Scientific research strength

In 2022, according to the overall strategic requirements of the Group, Shanghai Electric formulated the "Technological Development Plan of Shanghai Electric" to clarify the direction, goals, tasks and implementation methods of the technological development. Shanghai Electric also organized industrial groups to jointly formulate 15 technology-specific special programs for new business segments (sub-programs). Using the method of "Three Reportings and Three Replies", Shanghai Electric gathered internal and external experts to further refine the Group's direction, development goals and innovation system for scientific and technological development during the "14th Five-Year Plan" period, providing a solid foundation to quantify and assess the scientific and technological innovation in "emerging industries".

In addition, we made good use of the three-tier scientific and technological innovation system led by the Central Academe. By working with the Group's science and technology management department, the Central Academe serves as a platform to lead the Group's scientific and technological innovation system. In terms of "hardware" resource coordination, the Group and the Central Academe have jointly created a scientific and technological innovation resource sharing platform, and surveyed all CNAS-certified and CMA-certified laboratory resources owned by all the Group's subordinate enterprises. In 2022, we introduced 12 certification and testing institutions capable of comprehensive testing, metrology and calibration and scientific experiments, covering such fields as electromagnetic compatibility, chemical analysis and environmental testing. On the "software" resource coordination, the two sides have jointly built a platform for internal and external exchanges and cooperation, and organized a number of salon forums and training activities for common technical fields such as industrial software, digitization, and heat pump energy storage. Focusing on the synergy of common underlying technologies, we have also set up five science and technology expert studios for "advanced material pedigree, product noise control, extreme manufacturing, electricity & electronics and additive manufacturing", in order to further play the role of experts and promote the collaborative innovation of common technologies across industrial groups and enterprises.

By the end of 2022, Shanghai Electric had 62 national high-tech enterprises, 7 national enterprise technology centers, 14 enterprise technology centers in Shanghai and other provinces and cities, 7 engineering technology research centers in Shanghai and other provinces and cities, 4 key laboratories in Shanghai, 10 CNAS-certified laboratories, 3 academician expert workstations and 3 postdoctoral research workstations.

Thanks to our excellent scientific research capacities, Shanghai Electric undertook a number of major national strategic tasks in 2022. Driven by the Group's ongoing efforts, more scientific and technological achievements have sprung up.

Major national strategic tasks

- ◆ The first transonic low-temperature wind tunnel in Asia and the third in the world was officially ventilated, in which Shanghai Electric undertook the development of two difficult key components;
- ◆ Deeply participate in the construction of major national science and technology projects such as fast neutron reactor, "Guohe No. 1" large-scale advanced pressurized water reactors (third generation), and high-temperature gas-cooled reactors (fourth generation) in Shidao Bay.

Significant scientific and technological achievements

- ◆ Development of the first equipment of alkaline water electrolysis for hydrogen production with capacities of 1,500Nm³/h and the equipment of PEM water electrolysis for hydrogen production with capacities of 50Nm³/h;
- ◆ The first 8.5MW offshore semi-direct-drive wind turbine was put into operation;
- ◆ Development of S112 ultra-long offshore wind turbine blade;
- ◆ 100MW energy storage power station in Jinzhai County was put into operation;
- ◆ Development of the high-speed single-pole rectifier generator for high-power flywheel energy storage and its system;
- ◆ Development of large capacity and long life (8,000 times) lithium ion battery;
- ◆ Amine-based carbon dioxide capture facility with capacities of 10,000Nm³/h was put into operation;
- ◆ Development of core equipment for sodium-cooled fast neutron reactor;
- ◆ Development of the catalyst ceramic fiber filter tube technology for integrated ultra-low flue gas emission, and related equipment was put into operation;
- ◆ Research and development of pervaporation membrane technology applied to water-based waste solvent for coating;
- ◆ Breakthroughs in the first set of axle box bearings for Type A metro trains;
- ◆ Development of high-speed and energy-efficient bearings for new energy vehicles.



Scientific research input

In 2022, the Group revised the "R&D Investment and Profits as Assessment Metrics of Shanghai Electric Group", expanding the coverage and simplifying implementation procedures to stimulate the Group's investment in scientific and technological innovation. Under the comprehensive guidance of a series of planning measures, the scientific research investment rate reached a new high, and the proportion of investment in emerging industries continued rising, demonstrating Shanghai Electric's resolution to seize opportunities in emerging industries.

R&D investment in 2022

- ◆ The Group carried out a total of 848 scientific research projects and spent RMB5,028 million on R&D, representing an R&D investment rate of 4.33%, an increase of 0.16 percentage points from 2021 and the highest in the past three years.
- ◆ The proportion of the R&D investment in emerging industries hit 33%.

In terms of cultivating talents for scientific research, the Group attaches great importance to the construction of a strategic support system for human resources, and is committed to forming an orderly, efficient and collaborative organizational system and an open and cooperative scientific and technological innovation ecosystem, so as to shape a firm-wide innovative development pattern and empower the long-term development of the Group.

In 2022, under the Group's strategy of "integrated network" for training and flow of scientific and technological talents, we updated the selection mechanism for different talents. In the selection of experts, we formulated a policy for the selection of the scientific and technological experts, breaking through the limits of titles and years of experience. We launched the "open competition mechanism to select the best candidates" to undertake tasks, screening out a large number of new outstanding leaders; to select the leaders for scientific and technological projects, we adopted the principle of "selecting talents based on scientific and technological projects, emphasizing "leaving positions for capable persons, rewarding those making contributions". We also set great store by the selection of young scientific and technological innovation talents. We actively participated in the innovation and entrepreneurship competition of "Talents in Shanghai", and organised various competitions within the Group, such as the "E Innovation Future" and "2022 Shanghai Electric Digitalisation Competition", identifying and cultivating a new-generation talent pool for the scientific and technological innovation.



Intellectual property

While promoting internal scientific and technological innovation, Shanghai Electric effectively manages and protects its own technological innovation achievements. In accordance with the Patent Law of the People's Republic of China, the Copyright Law of the People's Republic of China and the Guide to Intellectual Property Management in Industrial Enterprises and other relevant laws and regulations, we formulated and implemented the Intellectual Property Management Measures, the Guide to Intellectual Property Management and other system documents, and urged business divisions to develop detailed rules and regulations.

In addition to advancing patent research and development, we also focus on improving the quality of patents. We actively guide enterprises to formulate patent layout plans to better utilize the information of intellectual property rights throughout the life-cycle of the technologies including project initiation, R&D, testing and verification, and promotion and application by leveraging major scientific research projects and the R&D platforms of enterprises. Meanwhile, we're actively exploring the establishment of patent evaluation models, and strive to cultivate a number of invention patents with attractive value from the perspectives of technologies, laws and markets in key industries and technical fields.

In 2022, Shanghai Electric stepped up efforts to build an information platform for intellectual property management, establish a professional database, and realize the standardization and systematization of intellectual property business. At the same time, we established dedicated positions for intellectual property rights to build a team of IPR talents and enhance professional management to ensure that IPR work is carried out in an orderly manner. In addition, strengthening the prevention of intellectual property risks is also one of our top priorities. The Group actively guides all business divisions to establish a mechanism to identify, warn and prevent intellectual property risks, gradually set up an intellectual property risk control system, regularly identify and monitor fields and patents subject to high risks, constantly improving the intellectual property risk management and control across such links as purchase, sales, R&D and production, and eventually build a mechanism of risk analysis, risk identification and risk avoidance across the whole process.

Intellectual Property Right Salon Activity Theming "Intellectual Property Right Protection Supports Development, Independent Innovation Creates Future"



In November 2022, Shanghai Electric held a salon training for intellectual property rights in Central Academe during the Science and Technology Month with a theme of "Intellectual Property Right Protection Supports Development, Independent Innovation Creates Future". The Shanghai Electric Group Rights Protection Assistance Workstation of China (Shanghai) Intellectual Property Protection Center was officially inaugurated at the event. Approved to be established in mid-August 2022, this workstation is in the charge of Central Academe for its routine work, and is committed to support the right protection related to intellectual property within the whole system of Shanghai Electric. Upon its establishment, the workstation will provide professional business guidance, rights protection assistance and publicity training with distinctive characteristics of an equipment manufacturer. It will help Shanghai Electric to establish a more efficient comprehensive management system and a healthier protection ecosystem to protect intellectual property rights. The 2022 edition of Shanghai Electric's "White Paper on Intellectual Property Service Solutions" was also released at the event, which aims to create a good atmosphere for internal exchanges on intellectual property rights and provide necessary basis for Shanghai Electric to build an intellectual property ecosystem.



2022

Patents applied

1,681

Patents authorized

904

As of the end of 2022

Valid patents

6,289

Cumulative invention patents

2,580

In 2022, Shanghai Electric won China's annual patent award for three patents:

AWARD	PATENT NAME	AWARD WINNER	BRIEF INTRODUCTION OF PATENT
First Prize of China Annual Patent Award	A Tower Boiler with Two Reheaters	Shanghai Boiler Works	Ingeniously adopting a variety of parallel arrangement schemes for high-temperature heating surfaces, this patent is a solution to the contradiction between heat transfer requirements and layout by adopting a simple and flexible flue gas and coordinated steam control for temperature regulation and a new truss-type tower furnace steel structure. As the core technology of the primary reheating boiler for power generation, the patent has been successfully applied to the demonstrative reheating project of Guodian Taizhou, the world's first 1,000MW ultra-supercritical double reheat coal-fired power generating boiler, with the highest capacity and comprehensive parameters in the world at that time.
Second Prize of China Annual Patent Award	Safety Detection Device for Passenger Conveyor Equipment and Its Implementation Method	Shanghai Mitsubishi Elevator	The patent pioneers the technology of escalator status detection based on absolute position coding. The absolute position sensor reads the yardstick mounted on the spindle to directly obtain the absolute position of the upper sprocket spindle and calculate the current running speed and direction. By so far, more than 40,000 units have been sold and installed.
Third Prize of China Annual Patent Award	A Throat Structure and Biomass Gasifier Containing the Throat Structure	Central Academe	The technical solution adopted in the patent significantly improves the efficiency of tar removal in the biomass gasifier, increasing the efficiency of the system gasification and thus the efficiency of energy utilisation. The high-quality biogas produced can not only be used for heat and power generation but also as a raw material for high value chemical synthesis, greatly expanding the use of biomass energy.

"Intelligence" on Right Track

As an important part of the Group's development, integrating digitalization and intelligence runs through the whole process of Shanghai Electric's blueprint for digital transformation and carbon peak and neutrality goals. In 2022, the Group actively carried out all-round and full-chain transformation of traditional advantageous industries through digital technology to promote innovation in industrial form, business form and value form. Based on the principle of "reference and reuse", we sorted out the key advantages of major industries in the value chain in 2022, driving the construction of demonstrative digital intelligence projects at all levels based on three scenarios namely intelligent work, product operation and maintenance, and energy industry internet. At the same time, we actively explored the implementation path of safe carbon reduction through technological innovation, and made important contributions to the sustainable transformation of the Group by enabling the green and low-carbon development through digital intelligence.

DEMONSTRATION PROJECTS AT GROUP LEVEL

Intelligent factory, equipment operation and maintenance, energy industry internet

DEMONSTRATION PROJECTS AT INDUSTRY LEVEL

Power station equipment networking, digital quality management for nuclear power, intelligent warehousing for hazardous waste treatment plants

DEMONSTRATION PROJECTS AT ENTERPRISE LEVEL

Auxiliary consumables management system for power stations, electronic signature application for power stations, enterprise asset management (EAM) system of Shanghai Electric Wind Power Engineering Services

Energy Equipment

As one of the largest energy equipment manufacturers in China, Shanghai Electric prioritizes the national strategies of "carbon peaking and neutrality" and comprehensive transformation to green and low-carbon development through three implementation paths of "energy alternative, energy efficiency increase, and resource utilization". Meanwhile, Shanghai Electric built an intelligent and collaborative smart energy system using intelligence and digitization to help accelerate the energy revolution.

On the one hand, relying on the advantages of integrated energy system solutions, Shanghai Electric actively built and promoting the construction of integrated smart energy demonstration projects, created "smart solutions" at three different levels: consumer side, power generation side and grid side, so as to ease problems in the operation and consumption of new energy, and establish a new power system focusing on new energy. On the other hand, Shanghai Electric integrated industrial Internet, big data and artificial intelligence technologies to provide users with big data analysis services, equipment operation and maintenance services and full-life-cycle management services and realize centralized control and intelligent operation and maintenance of energy storage power stations.

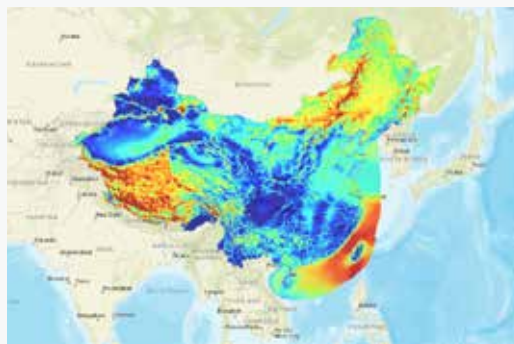
Shanghai Electric Installed Strongest Brain for Traditional Thermal Power Equipment

Under the background of "carbon peaking and neutrality", Guangdong Yangxi Power Plant added the frequency modulation energy storage project to two 600MW thermal power units in Plant A, for which Shanghai Electric undertook the engineering, procurement and construction. In order to ensure the high efficiency and stability of the power plant and the power grid, Shanghai Electric fully improved the adaptability of thermal power units and energy storage batteries in the energy storage frequency modulation system of Yangxi Power Plant. In June 2022, the project was praised by the customer for its frequency modulation performance ranking first in Guangdong Province and its better-than-expected return on investment. Under the principles of charging without overloading, discharging without backfeeding, best integrated frequency modulation performance and best economy, Yangxi Power Plant's thermal power frequency modulation energy storage project not only allows the power plant to significantly increase its frequency modulation capacity, but also provides a buffer for large-scale grid connection for wind power and photovoltaic projects in the region.



Digital Design Platform for "Xunming" Wind Farm

As a pioneer in China's wind power industry, Shanghai Electric Wind Power started to explore the path to digitalization earlier. In 2021, it officially launched the WINDSIGHT – "Xunming", a digital design platform for wind power. The platform includes four modules: database, micro-siting, wind farm design and post-assessment, integrating a complete wind resource assessment workflow to collect, clean, analyzing, utilizing and manage the massive amount of information generated during the entire life cycle of a wind farm. It uses the cloud technology to improve data information processing, hence addressing the problem of without refined standard system and unified management platform regarding the traditional assessment of wind resources. Meanwhile, this platform provides an overall optimal solution for wind farm owners in terms of safety, power generation capacity and cost per kWh.



Industrial Equipment

Relying on its rich experience and technical advantages in automation equipment and services, Shanghai Electric made full use of advanced information technologies such as Internet, Internet of Things, big data and cloud computing to provide industry-leading intelligent manufacturing system solutions, automation products and equipment, production management software system and intelligent factory solutions to create a whole intelligent manufacturing industry chain from "basic products, intelligent equipment, software, integration to services".

In 2022, we continued accelerating "the integration of digitalization and manufacturing", and focused on scenarios including intelligent factory, industrial software and industrial services to explore solutions integrating manufacturing with digital technologies, drive the industrial internet platform to become a hub of undertaking and allocating data assets, make use of application scenarios and industrial data, optimize the efficiency of manufacturing resource allocation, and boost the coordinated development of the industry chain, value chain and innovation chain.

After a series of optimization and iterations, the upgraded "SEunicloud" Industrial Internet Platform derives more sub-platforms for wind power, photovoltaic and energy storage by taking into account the development strategy and emerging industry deployment of Shanghai Electric during the 14th Five-Year Plan period. Moreover, the platform upgraded common products and tools, creating such products as cloud configuration tools and lightweight industrial internet platform. In addition, in order to continuously improve the usability of the platform, we further launched the mobile version of SEunicloud, upgraded the intelligent cloud box and built the "digital link(数联)" portfolio.

Shanghai Electric Digital Eco-Tech Shortlisted for Top Ten Emerging Enterprises and Received Most Popular Enterprise Award

In March 2022, the winners of the "2021 Stars of Internet of Things" were officially announced. Focusing on the needs of the smart water industry for sensor miniaturization, digitalization, intelligence, systematization, networking and multi-parameter fusion, Shanghai Electric Digital Eco-Tech was shortlisted as one of the "Top 10 Emerging Enterprises" and won the "Most Popular Enterprise" award with its core water quality sensor technologies developed with its software platform. As a provider of smart water solutions, Shanghai Electric Digital Eco-Tech continues to explore the smart water market with its strong capabilities of information system consulting and design, software development, and integration of software and hardware.

Shanghai Electric and Bentley Enter into Strategic Cooperation Agreement to Jointly Build Industrial Metaverse



In November 2022, Shanghai Electric Group Smart Energy Technology Co., Ltd. and Bentley signed a strategic cooperation agreement. The signed agreement signifies Shanghai Electric and Bentley joining hands in the industrial metaverse for all-round innovation in the development, construction and operation of digital and intelligent application platforms in energy, industry and other infrastructure areas. Shanghai Electric Smart Energy Co., Ltd. is an industrial Internet technology company in the vertical market of smart and low-carbon energy, providing three types of services: smart power plants, intelligent manufacturing, low carbon solutions and project implementation. According to the agreement, the two companies will leverage their respective advantages and work together to build an industrial metaverse based on the industrial Internet and intelligent manufacturing, with a focus on industrial software supply capacity and integration technology.

Integration Services

Actively responding to the development requirements of Shanghai to comprehensively promote the digital transformation and build an international digital capital with world influence, Shanghai Electric gives full play to its advantages and empowers the city constructions in all aspects. As an "enabler", Shanghai Electric provides transformation and upgrade services for traditional urban infrastructure, such as intelligent transportation infrastructure and smart energy infrastructure, and provides more optimized and efficient intelligent infrastructure solutions by integrating multiple businesses such as industrial Internet, rail transit, sewage treatment, intelligent elevators and etc.

Shanghai Electric Helps China's Aviation Industry Take Off In Blue Sky

In December 2022, COMAC officially delivered the world's first homemade C919 aircraft with a registration number B-919A to China Eastern Airlines, marking a brand-new milestone in the development of China's commercial aircraft career. As a large passenger aircraft developed in accordance with international airworthiness standards, the C919 is a new generation of single-aisle mainline passenger aircraft with independent intellectual property rights. Broetje-Automation, a German subsidiary of Shanghai Electric, has been deeply involved in the manufacturing of this aircraft by undertaking the production of the automated assembly line for the fuselage and the fully automated robotic drilling assembly line for flap and aileron, effectively guaranteeing the process quality and construction accuracy in the manufacturing process of the domestic large aircraft and helping the C919 to take off the sky. Since announcing its entry into the aerospace manufacturing industry in 2016, Shanghai Electric has made breakthroughs in the domestic aviation manufacturing sector by introducing and utilizing advanced technologies in conjunction with its unique capabilities of extreme manufacturing and integrated equipment.



"Intelligent Electric Manufacturing" Contributes to Construction of "Five New Cities"

In July 2022, Shanghai held a press conference in Jiading District for introducing major functions to new cities: defining four functions namely "introducing enterprise headquarters, strengthening R&D innovation, gathering element platforms and improving public services" for "five new cities". The construction of "five new cities" is not only an important carrier for Shanghai to undertake the national strategy and serve the construction of a new development pattern, but also a major strategic choice for Shanghai to face the future. As the power source of China's industry, Shanghai Electric will make contributions to China's "carbon peaking and neutrality" strategy, and help Shanghai to coordinate the construction of "five new cities" and its own high-quality development.

◆ New Fengxian City

Shanghai Electric New Energy Company will actively expand the energy business to cover "wind, PV, storage, heating and hydrogen" and the integration of "power source, grid, load and storage". It will build a whole life cycle service platform for new energy projects, boost the implementation of multiple smart projects, participate in the construction of the new cities in green planning and zero-carbon industrial parks, and work with new cities to create a model of "smart city" in the Yangtze River Delta Region.

◆ New Jiading City

The Waigang Bearing Base, a bearing manufacturing and operation headquarters in the New Jiading City, will focus on the "domestic alternatives" of bearings for high-end equipment used in such sectors as rail transit, new energy vehicles, aerospace and aviation. Our Shanghai United Bearing will establish relevant functions in this base and strive to make it a demonstration base and an R&D base in East China for rail transportation bearings and robot reducer bearings in East China, helping new cities to transform and upgrade their industries.

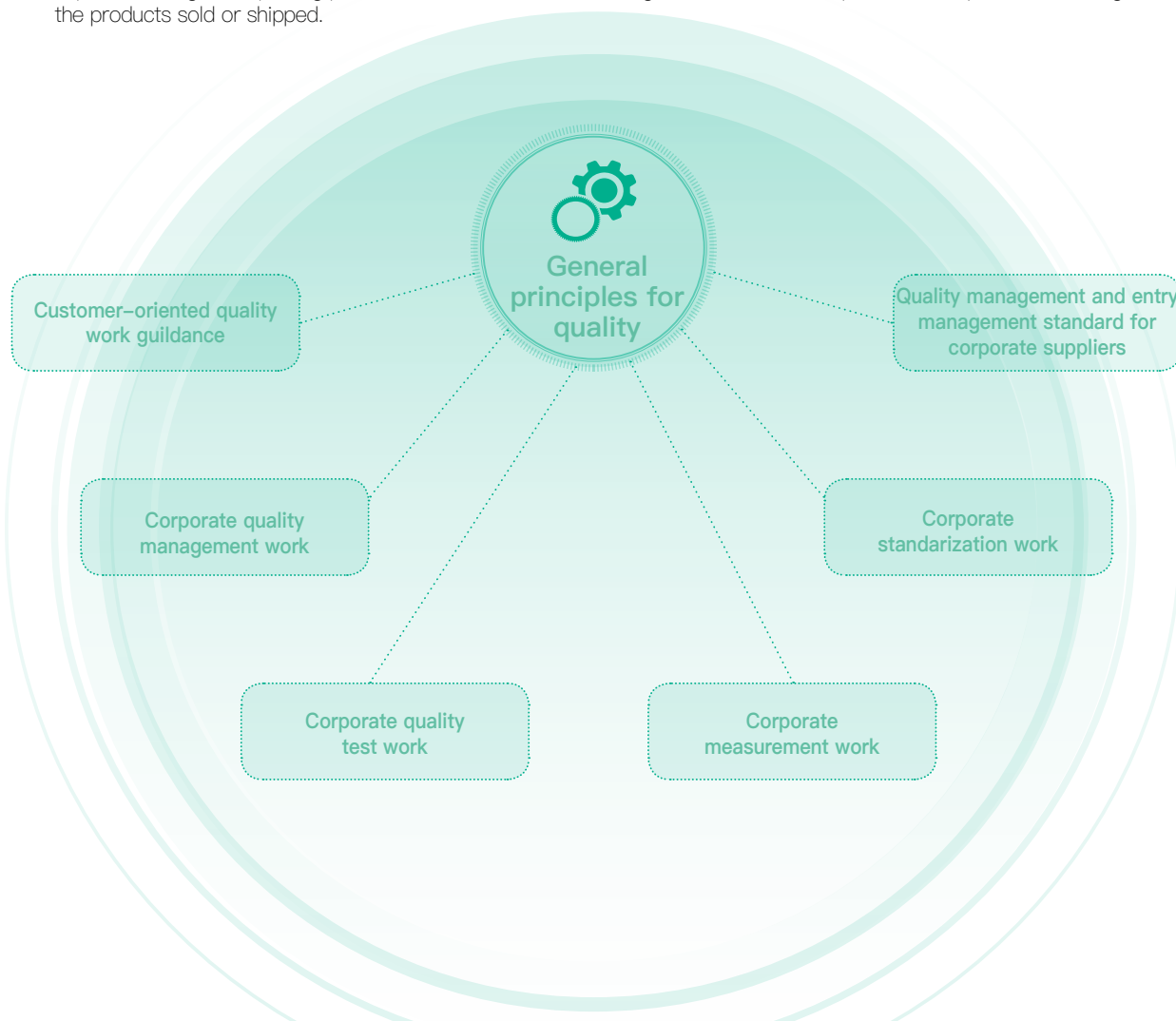
Putting Quality First to Pursue Excellence

Take quality as the foundation, comprehensively deepen the quality construction, vigorously improve the maturity and advancement of the quality management system, and deliver high-standard products to empower the further development of the enterprise.

Taking quality as the foundation of development, Shanghai Electric strictly abides by the laws and regulations such as the Product Quality Law of the People's Republic of China, and the Regulations on the Administration of Industrial Product Production Licenses. All manufacturing enterprises of the group have completed the ISO 9001: 2015 quality management system certification. We have formulated a complete set of quality work standards in years of practice, including general principles for quality management, quality work guidance and Provisional Measures for Material Quality.

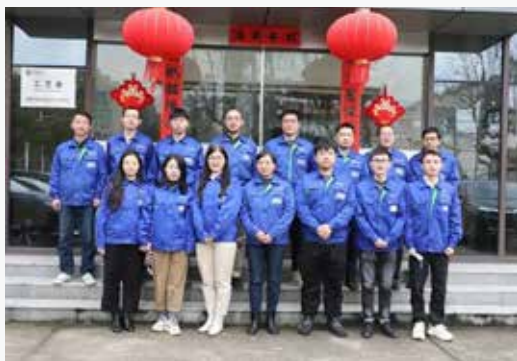
Shanghai Electric strictly focus on product quality evaluation, assess on and set targets for product grade rate, quality loss rate, material quality issue and key quality problems tackling project, etc., so as to ensure the realization of the promise of quality to customers with all effort while devoting ourselves to researching and developing products. We also have a sound equipment supply chain system and a team of experienced manufacturing supervisors to monitor the full process from equipment ex-factory to acceptance to ensure product quality.

In 2022, Shanghai Electric focused on the overall quality level and the management over the impact of material quality events. With high-standard management, we continuously made breakthroughs to reduce the internal quality loss rate and further improve the product yield. In addition, we have successfully managed the material quality issues by taking active measures, establishing a closed loop for all material quality issues and minimizing the associated impacts. During the reporting period, there were no issue relating to recall due to the product safety reasons among the products sold or shipped.



Shanghai Electric Turbine Plant Topped Again by Comprehensive Reliability Index

The welding process department of Shanghai Electric Turbine Plant was awarded by the China Quality Association the "National Trustworthy Group for Quality" in 2022 for its outstanding performance. This department currently has 15 members, including 5 senior engineers and 1 senior technician. Being strong in execution, it is a young and innovative team rising to the challenges and pursuing quality. This team ever won such honors as "National Excellent Quality Management Group in Mechanical Industry" "Shanghai Excellent Quality Management Group" "Shanghai Excellent Quality Management Team" and "1st Prize for Shanghai Science and Technology Progress Awards". The welding process department is a technical and service-oriented team, which is mainly responsible for the technical support and service work throughout the whole life cycle of welding-related process preparation, technology development, product production site and after-sales services. With exquisite welding technology system, this department strives to ensure technological advancement and quality excellence of products in six fields namely thermal power, nuclear power, gas turbine, industrial turbine, services and overseas market.



Shanghai Mitsubishi Elevator Completed Tasks of Supporting Beijing 2022 Olympic and Paralympic Winter Games and "Two Sessions"

In March 2022, with a strong sense of social responsibility and corporate mission, the Beijing branch of Shanghai Mitsubishi Elevator successfully completed the tasks of ensuring the safe operation of lifts for the Beijing 2022 Olympic and Paralympic Winter Games and the "two sessions". Since February 2022, the team has been on strict 24/7 duty, with a total of 14 members for the "two sessions", 18 members for the Beijing 2022 Olympic and Paralympic Winter Games, over 130 members at the back-end and nearly RMB1.2 million-worth spare parts. A total of 100 lifts were installed in six sites for the "two sessions", while 86 lifts for 8 units including venues for the Olympic Games, media centers, supporting hospitals, conference centers and hotels. All equipment run smoothly with normal indicators, realizing the "three zero" goals of "zero accidents, zero breakdowns and zero complaints".



Quality Training and Publicity

The 2022 marked the 120th anniversary of Shanghai Electric. As an important part of Shanghai Electric's spiritual spectrum, putting quality first has been deeply rooted in our development. During the reporting period, we took this opportunity to promote and implement our quality culture to ensure that quality awareness is reflected at all levels of the company.

Shanghai Electric "Quality Month" Activity Under Theme of "Focusing on Product Excellence and Process Innovation, Continuously Improving Customer Satisfaction"

Under the unified deployment of the CPC Central Committee and the State Council on "driving quality improvement and innovation, and building China into a manufacturer of quality products" in conjunction with Shanghai's requirements for "strengthening efforts to build China into a manufacturer of quality products and pushing forward Shanghai's high-quality development", Shanghai Electric launched the 2022 Quality Month under the theme of "focusing on product excellence and process innovation, continuously improving customer satisfaction". During the event, the Group earnestly organized and implemented various tasks with producing high-quality products as the starting point. Focusing on quality improvement, process technology innovation and skill improvement of employees, among others, Shanghai Electric carried out a series of fruitful activities with various forms, distinctive features and strong responses, including quality training, quality culture publicity, labor competition, mass quality activities, customer callback for satisfaction activities, and internal and external exchanges.

Shanghai Electric 2022 Training Class for Quality Management

From September 20 to 22, 2022, Shanghai Electric held a 3-day training session at Shanghai Electric Training Base. A total of 72 staff participated in the training, including key quality management personnel, quality managers and senior executives from various industrial groups and subordinate enterprises of Shanghai Electric.

The training covered three topics: "lean production", "risk identification and control based on production process", and "total quality management". It aimed to improve the corporate quality competitiveness, strengthen corporate quality management, and arouse the modern quality management concepts and awareness of quality management personnel, thereby improving the overall quality management caliber and capability and strengthening the lean production and risk prevention capabilities.





Putting Customer First and Providing Quality Services

Shanghai Electric always put customers first and shoulder responsibilities for customers. With deep insights into the market changes, Shanghai Electric works hard to improve the core competitiveness of products, meet changing needs of customers and empower their sustainable development.

Customer Feedback

We have established a sound management system for customer files and constantly improved the customer feedback mechanism, complaint handling mechanism and rapid response mechanism. While trying to provide customers with high-quality and efficient operation and maintenance services to ensure the long-term stable and safe operation of products, we always pay attention to customer needs and feedbacks, actively respond to customer complaints, and deal with quality objections in a timely manner. Meanwhile, the Group requests each department of the subsidiaries has a specially-assigned person to take charge of the record of complaints, organize investigation, analysis and handling of complaints, and properly resolve and give satisfactory responses to complainants within a limited time frame.

In 2022, Shanghai Electric's major industrial groups did not receive customer complaints.

Shanghai Electric Turbine Plant Overcomes Difficulties to Meet Contract Deadline

On the last day of 2022, with the cooperation of various departments of Shanghai Electric Turbine Plant, all equipment for the Surabaya project in Indonesia were shipped to the port for container gate-in, fulfilling our commitment to the customer. As an overseas project, the Surabaya project not only has a tight delivery schedule, but also has extremely strict requirements for complete sets. Equipment within the scope of supply in the contract are required to be delivered, concentrated and declared jointly. Despite the blocked supply chain in the first half of 2022 because of material shortage, Shanghai Electric, living up to the spirit of the contract, made a solemn commitment to the customer to strictly adhere to the delivery date in the contract and ensure the delivery within the year. Facing challenging situations, the order management department held special meetings twice a week. The planning, production, procurement, quality assurance, logistics and other departments worked together to control the whole process from the front-end production, the middle-end transportation to the back-end packaging, packing list and shipping marks, finally ensuring the delivery on time.

Shanghai Electric's Overseas Engineering Business Extends to Full Life-Cycle Services

At the end of June 2022, the signing ceremony of Shanghai Electric Wassit Power Station was held at the headquarter of the Middle Power Generation Company of Iraq's Ministry of Electricity. As stipulated in the contract, Shanghai Electric is responsible for the maintenance, repair and upgrading of all 6 units and public systems, symbolizing that Shanghai Electric has created a new milestone in tapping into the market of life-cycle services for power stations in Iraq. Since its operation, Shanghai Electric has supported the Wassit Power Station, which is Iraq's largest thermal power station, to work stably for 8 years through its maintenance services and has produced over 125 billion kWh, accounting for 20% of Iraq's aggregate power generation. Since 2022, Shanghai Electric has accomplished the annual maintenance, and all 6 units have been working at full capacity, ensuring the livelihood of around 3 million households in the capital Bagdad and its surrounding areas.

Value Increment

Adhering to the spirit of innovation and pioneering, Shanghai Electric continues to refine the quality of its products and services, while striving to provide customers with leading solutions through its continuous breakthroughs in green and low-carbon sectors, supporting customers' long-term efforts in energy innovation and sustainability, thereby creating greater value for customers.

Shanghai Electric's First Low Calorific Gas Turbine Put into Operation

In March 2022, Shanghai Electric's AE94.2KS, the first low calorific gas turbine, successfully passed 96 hours of full-load trial operation in Benxi Steel Group. During the trial operation, the unit run smoothly with good economic indicators and technical indicators. The project adopts the AE94.2KS gas turbine, which is jointly developed by Shanghai Electric and Ansaldo, and is well suited to burning low calorific gases. The coal compressor adopts a high-performance unit consisting of "centrifugal + axial flow" ventilators and inter-coolers, which aims to provide syngas with stable parameters for the gas turbine. As the "green heart" to ensure the power supply of the load center of the steel plant and realize the secondary utilization of gas resources, this project represents a new milestone for Shanghai Electric's ultra-low calorific gas turbine used in a steel plant and a new breakthrough in the technology of associated gas-fired power generation in China's metallurgical sector.



"Zero Discharge" Softening and Concentration System for Desulfurization Wastewater from Shanghai Electric Power Generation Environment Protection Engineering

The "zero discharge" softening and concentration system for desulfurization wastewater from Shanghai Electric Power Generation Environment Protection Engineering was included in the "Catalog of Shanghai for Promoting Water Conservation Technologies and Products (First Batch)" issued by Shanghai Water Authority. The system's "zero discharge" softening and concentration system for desulfurization wastewater can achieve a recovery rate of 70% and a desalination rate of 99%, and the quality of the produced water meets the requirements of the Code for Design of Industrial Recirculating Cooling Water Treatment (GB/T50050-2017) and can be used directly to replenish water for the recirculating cooling water systems. In addition, the harmful substances in desulfurization wastewater are detrimental to the environment and water. The research and development of zero discharge process and high performance concentration products for desulfurization wastewater can not only effectively solve the environmental pollution of desulfurization wastewater, make the treated water reach the reuse standard and recycle a lot of water resources, but also separate a large amount of sulphate and chlorinated salt in the water, which can be used as by-products for resource utilization. At the same time, the operation cost of the whole system is low, which helps significantly reduce operation cost for zero discharge of desulfurization wastewater.





Information Security

Shanghai Electric has abided by the Cybersecurity Law of the People's Republic of China and the Administrative Measures for the Classified Protection of Information Security and other laws and regulations, and has established a comprehensive protection system and mechanism for information security. Shanghai Electric has assigned the Group's Network Security and Informatization Leadership Group as the responsible organization for information security of the Group to standardize the internal information security protection in a comprehensive manner in accordance with internal systems and standards, such as Information Security Management and Control, Password Management, and System Security Protection.

In 2022, Shanghai Electric formulated a three-year work plan for digital and information technology in accordance with the "14th Five-Year Plan" strategy, and actively promoted four "batches", i.e., "a batch of scenarios, a batch of demonstration projects, a batch of tools and products, and a batch of teams". According to the basic principle of "focus on the system and shore up weak points", we also carried out targeted network security system construction to build a network security baseline by taking into account internal and external network security incidents. At the same time, we continue to improve the information security management system and standards, optimizing and upgrading client standards, information security management and control, and secret-related equipment management. We added relevant policies and procedures including security vulnerability identification and repair process, and source code management.

In addition, we continue strengthening the development of digitalization projects including credit risk system and contract management system, ensuring orderly and safe data sharing on the Group's platforms by cementing data governance. In order to better publicize the importance of information security and improve the security awareness of our staff, we organized quarterly technical training sessions for over 780 employees from corporate information management departments in 2022. We also took part in the offensive and defensive exercises of the Shanghai Panshi Action. Our subordinate enterprises also actively organized internal training on cybersecurity and data security by taking advantage of various scenarios including the "2022 Shanghai Cybersecurity Publicity Week".



Technical Training for Information Management Staff



Internal Training on Data Security



Offensive and Defensive exercises of Shanghai Panshi Action

In terms of protecting customer privacy, Shanghai Electric requires all employees to highly value the security over the information on the privacy of customers. We have formulated a special confidential system for customers' information to regulate the handling methods and confidential measures for information of customers. Meanwhile, we have launched the IT maintenance review system to record and review the operations by internal special accounts such as the system administrator's account and by supporting accounts such as the external consultant's account, so as to avoid the leak of the information of customers.

The background of the page is a blurred industrial scene. On the left, there are yellow metal stairs leading upwards. In the center and right, there are various industrial structures, including what looks like a large rectangular duct or container. The overall color palette is a mix of muted greens and blues, giving it a clean, modern feel.

03

JOINTLY PROMOTING THE PHILOSOPHY OF GREEN, STEADY AND SUSTAINABLE OPERATION

Responding to the nation's call for a low-carbon and environment-friendly economy, Shanghai Electric incorporates green concepts in every aspect of its operations, and continues to upgrade its characteristic safety and environmental protection management mode via solid system construction and effective safety and environmental management initiatives, to ensure its industry leadership in terms of environmental compliance and environmental risk control.

Environmental Protection and Fine Management

We reinforce Group-level control to lay a solid foundation for environmental management, realize targeted safety and environmental protection management, and enhance our resistance to environmental risks and green development capability.

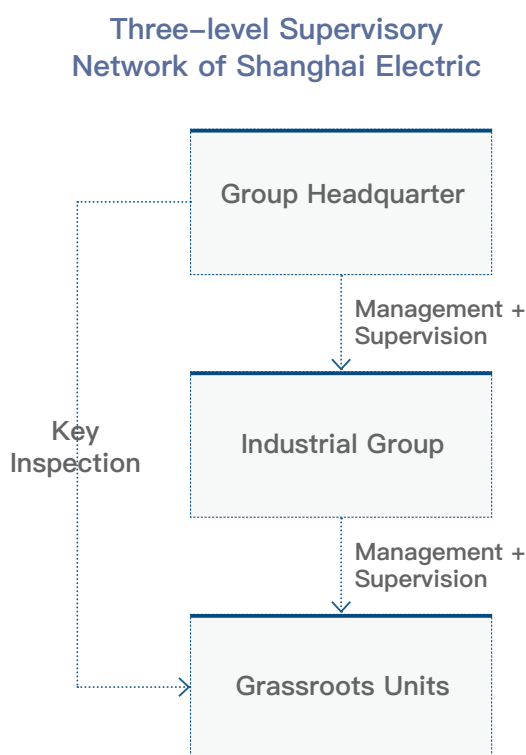
Safety and Environmental Management Model

In 2022, with focus on compliance control and environmental rectification, Shanghai Electric promoted fine management of safety and environmental protection, and implemented safe and green concepts throughout its production and operations, thereby improving the quality and efficiency of safety and environmental management. In the management of environmental compliance, we boosted risk governance in accordance with the Negative List for Corporate Environmental Management of Shanghai Electric based on the Company's environmental issues and key governance tasks. While strengthening closed-loop management of environmental rectification at each level, we completed the Three-year Action Plan on Environmental Governance of Shanghai Electric in the Reporting Period in conjunction with the annual work plan for environmental governance. We also continued to advance the practice and application of SEC-LOVE model in production management based on SEC-LOVE optimization results.

S	E	C	L	O	V	E
Continuously promote and emphasize the practice of corporate social responsibility	Focus on strengthening occupational health, environmental protection, collective control on fire and the ability to pay attention to emergency response	Strengthen the requirements of informatization, intelligence, digitization, and incorporate standardized safety management requirements for non-production enterprises	Improve the quality of our leaders in the safety and promote the overall safety and environmental level through leadership building and safety culture	Focus on universal responsibility, optimize full accountability and strengthen horizontal synergy	Establish a multi-type and multi-model inspection mechanism to conduct more effective inspections with responsibility requirements and risk characteristics	Optimize and improve the performance assessment and incentive mechanism, and promote the development of vision focusing on development goals

Safety and Environmental Risk Control

Shanghai Electric insists on well-balanced combination of powers between central management and divisions, forming a three-level supervisory network structure of the headquarters of the Group, industrial groups and grassroots units, to continuously promote the dual prevention mechanism of risk identification and hidden danger investigation and management.



Committed to improving the quality of safety and environmental management in 2022, the Group vigorously promoted safety and environmental risk control with focus on intelligent applications for EHS management and risk control. Shanghai Electric expanded the coverage of its EHS information management system in the Group and among production enterprises in the city, and significantly enhanced its big data analysis and processing ability. The Group also introduced digital intelligence and informatization technologies to safety and environmental supervision, enabling video surveillance of major risk points and remote supervision of enterprises outside the city, and greatly improving EHS management and supervision efficiency. In addition, the Group completed the guide book for the management and control of environmental risks, during which it comprehensively identified risks, standardized tiered control, and systematically sorted out the prevention and control measures for various risks, laying a solid foundation for the management and control of environmental risks. Under the Group's guidance and supervision, 40 key environmental governance projects were completed, and 24 enterprises implemented clean production audit.

In addition, we implemented Shanghai Electric Engineering Project Safety and Environmental Risk Grading and Control Guide and Shanghai Electric Engineering Project Safety and Environmental Risk Control Standard Operation Inspection Management Measures in details, and deepened the dual prevention mechanism of classified management of risks and hidden danger identification in accordance with the Guidance Manual of Shanghai Electric Group on Classified Management and Control of Safety Risk. We established standard examples for control measures on key environmental risks based on the List of Important Environmental Factors and Risks for Production Enterprises of Shanghai Electric, and identified hidden dangers in association with risk units by implementing the risk control list, "risk heat map", risk disclosure, warning signs, risk education and skills training, thereby improving visual safety and environmental management at production sites.



Safety and Environmental Management Objectives

In 2022, the Group refined safety and environmental management objectives by clarifying the management responsibilities and appraisal methods. In accordance with the Law of the People's Republic of China on Work Safety and the Opinions of the CPC Central Committee and the State Council on Promoting Reform and Development in the Field of Work Safety, we promoted the all-member responsibility system in safety production and environmental protection, added responsibilities of principal responsible persons, and formed the List of Responsibilities for Safety Production and Environmental Protection. We also added and refined the reward and punishment requirements in the Safety in Production and Environmental Protection Performance Evaluation and Assessment Measures, and added requirements for self-evaluation, performance appraisal, and grading review in safety production standardization in the Implementation Rules for Safety Production Standardization based on the Measures for the Grading of Safety Production Standardization.

In light of the key, difficulties and weak points in safety and environmental risk control, we reinforced spot supervision and technical guidance in 2022 to enhance the effectiveness and pertinence of safety and environmental management. During the Reporting Period, the Group organized a total of 147 EHS inspections and specific inspections that covered all production enterprises, and conducted specialized evaluation, involving 158 enterprises, in seven key fields and units including safety production standardization, environmental protection, hazardous chemicals, hazardous waste and fire protection, and promoted rectification accordingly.

To boost closed-loop management of environmental governance and rectification, we launched special inspection and supervision of rectification in units with serious problems, strengthened on-spot environmental management, and organized environmental protection review actions implemented primarily by industrial groups, with the focus of supervision and inspection on uncontrollable discharge of waste gas, non-compliance storage and disposal of solid waste, untimely handling of equipment failures, improper environmental risk control, shortage of emergency drills, and inadequate emergency supplies.





Energy Conservation and Efficiency Improvement for Green Development

Guided by the "carbon peaking and carbon neutrality" goals, we enhance green manufacturing, deepen energy conservation and emission reduction in the industrial field, and keep to the path to civilized development featuring the growth of production and a sound ecosystem.

Energy Saving and Consumption Reduction

Adhering to the green and low-carbon development concepts, Shanghai Electric actively cooperates with the government in carbon peaking and carbon neutrality work, and promotes green and low-carbon production through elimination, upgrading and renovation in terms of energy, process, materials, equipment and facilities, transportation and employee behaviors.

Shanghai Electric strictly abides by the industrial energy conservation laws, regulations and standards of the places where it operates, such as Energy Conservation Law of the People's Republic of China and Measures for the Administration of Industrial Energy Conservation, continuously explores and improves energy conservation potential, and conducts energy audits according to the requirements of Shanghai Municipal Commission of Economy and Information Technology, to urge itself to improve the energy conservation management framework and promote the self-restraint mechanism of energy conservation according to the law. Shanghai Electric has built a three-level working system such as the Group's Economic Operation Department – Industrial Group – Subordinate Enterprise, to steadily promote energy saving and efficiency enhancement. As the responsible department for the Group's energy management, the Economic Operation Department is responsible for coordinating energy management and improving the quality of economic operation; each industrial group and key enterprises have established the enterprise energy management center to supervise and manage energy consumption and energy consumption index assessment.

During the Reporting Period, Shanghai Electric achieved the goal of 1,330 kg of standard coal/ton for unit consumption of large castings and forgings. In addition, we issued the Summary of Energy Consumption Double Control Targets of Key Energy-using Enterprises under Shanghai Electric, to collect energy consumption amount and intensity data of key energy-using enterprises under the Group and get first-hand information of their progress with the double control targets.

To promote energy saving and consumption reduction, Shanghai Electric took the following measures this year:

System support

Industrial groups and enterprises under the Group form a hierarchical energy management network, enabling dynamic tracking of energy consumption per unit of output.

Meeting mechanism

Energy management meetings are held regularly to communicate policy requirements, give alert on major energy consumption deviations, and make overall arrangements to promote energy efficiency enhancement.

Appraisal mechanism

We break down energy conservation appraisal indicators for major industrial sectors and key energy-using enterprises, and strengthen appraisal by objective, to supervise production and energy use in major energy-using enterprises.

Energy conservation publicity

The industrial sectors organize featured energy conservation activities, such as "empty plate campaign" and "energy saving and low-carbon knowledge contest".

Training improvement

We organize training for energy consumption management personnel, such as the "Shanghai Electric Energy Management" training in 2022.

Shanghai Mitsubishi Elevator Saved Energy and Reduced Carbon Emission by Using Aluminum-zinc Alloy Coating instead of Hot-dip Galvanizing

Shanghai Mitsubishi Elevator used to adopt hot-dip galvanizing in the production of exterior parts. This process requires high-polluting acid pickling in preliminary treatment and generates high carbon emissions due to the hot environment. In 2022, Shanghai Mitsubishi Elevator launched an exterior parts surface treatment process improvement project to replace hot-dip galvanizing with aluminum-zinc alloy coating which doesn't require acid pickling and features room-temperature curing. After the process improvement, Shanghai Mitsubishi Elevator can replace 800 hot-dip galvanized trusses every year, and reduce the energy consumption of hot-dip galvanizing for a single escalator by 200kWh, which means an annual reduction of 125.6 tons in carbon emission.



The energy consumption and greenhouse gas emission of Shanghai Electric in 2022 are shown in the following table:

ENERGY CONSUMPTION AND DENSITY	2021	2022	UNIT
Purchased electricity	36,769.12	30,899.59	'0000 kWh
Natural gas	6,085	4,396.43	'0000 m ³
Diesel	392	238.52	tons
Gasoline	1,810,245	1,573,531.23	liters
Direct energy consumption ^[1]	83,427	60,498.67	tons of standard coal
Indirect energy consumption ^[2]	45,189	37,975.60	tons of standard coal
Comprehensive energy	128,616	98,474.27	tons of standard coal
Energy consumption per unit of output value	0.0098	0.0084	tons of standard coal / RMB'0000 of operating revenue
GREENHOUSE GAS EMISSION AND DENSITY			
Scope 1 greenhouse gas emissions ^[3]	137,200	99,639.35	tons of carbon dioxide
Scope 2 greenhouse gas emissions ^[4]	154,430	129,778.28	tons of carbon dioxide
Total greenhouse gas emissions	291,630	229,417.63	tons of carbon dioxide
Greenhouse gas emissions intensity	221.96	195.04	tons of carbon dioxide/RMB'00000000 of operating revenue

[1] Direct energy consumption refers to the consumption of natural gas, gasoline and diesel.

[2] Indirect energy consumption refers to the consumption of purchased electricity.

[3] Scope 1 greenhouse gas emissions refer to direct emissions from business activities. The accounting method refers to the "Greenhouse Gas Emission Accounting Methodology and Reporting Guide for Enterprises in Other Industries (for Trial Implementation)" (《工業其他行業企業溫室氣體排放核算方法與報告指南（試行）》) published by the National Development and Reform Commission in 2015.

[4] Scope 2 greenhouse gas emissions refer to emissions from purchased energy. The Group's Scope 2 emissions primarily include emissions from purchased electricity. The default values of emission factors for electricity of the company whose main production location is Shanghai, have been updated and adjusted according to the "Notice of Shanghai Ecological Environment Bureau on Adjusting the Values of Emission Factors Related to the City's Greenhouse Gas Emission Accounting Guide" (《上海市生態環境局關於調整本市溫室氣體排放核算指南相關排放因數數值的通知》).



Water Conservation

Since water is the lifeblood of production enterprises, Shanghai Electric always attaches great importance to the management of water resources in the production and operations. Under the overall planning by the Economic Operation Department, we make exhaustive arrangements for water conservation, and arrange specific personnel to take charge of water conservation management in main industrial sectors and key enterprises. We continue to strengthen water consumption measurement, analysis and assessment, promote new water saving technologies and processes, publicize water conservation knowledge by multiple channels, and set water-saving statistical report system in major enterprises, to standardize water resource management.

Led by the headquarters, all subordinate enterprises of the Group actively carry out water saving activities and strengthen the publicity of water saving concepts. In 2022, the Shanghai Water Conservation Promotion Center conducted the annual assessment of Shanghai's water conservation management departments and individuals, and after comprehensive evaluation, an employee from Shanghai Electric Machinery Co., Ltd. was awarded the 2022 Shanghai Water Conservation Outstanding Worker.

The water consumption of Shanghai Electric in 2022 is shown in the following table:

WATER CONSUMPTION AND DENSITY	2021	2022	UNIT
Water use	7,095,780	6,111,246.79	tons
Water consumption per unit of production value	0.5401	0.5196	tons/RMB'0000 of operating revenue



Green Office

Responding to the national sustainable development initiative, Shanghai Electric not only pays attention to environmental protection in production and operations, but also actively promotes green and low-carbon office style. We create a green office atmosphere, adopt energy-efficient office equipment, take effective and practical management measures and convey relevant concepts to help the employees form the consciousness of energy conservation and environmental protection in work and life and build an environment-friendly enterprise.

To enhance the employees' environmental protection awareness, we organize publicity and training activities from time to time, thereby bringing the concept of green office to everyday life of all employees. We encourage the employees to:

- ◆ drive less, take public transportation and bicycles as much as possible;
- ◆ give priority to purchasing and using of green environmentally friendly products to reduce sources of emission pollution and energy usage;
- ◆ adopt energy devices such as automatic induction lighting systems and rainwater recycling system equipment within the Company's internal public areas;
- ◆ reasonably transform and update and regularly maintain the office equipment, so as to extend the use life of equipment;
- ◆ adopt double-layer windows and energy saving curtains, control the temperature of water supply and of the central air conditioner, maintain a lower indoor temperature in winter and a higher indoor temperature in summer as appropriate to reduce energy consumption within the Company's public areas;
- ◆ promote the use of paperless office, create an automated management system for the entire life cycle of meetings, including meeting notices, reception plans, receipt of feedback, sign-in, meeting minutes, reviews, etc.



Digital Intelligence Office of Shanghai Electric Won "Oscar" in the Architectural Field

In June 2022, Shanghai Electric attained a WELL certification for its independently developed digital intelligence office space from the International WELL Building Institute, and its application for a dozen related patents was accepted. This digital intelligence office space is the first one of its kind built with WELL standards in the industry. To create a green, low-carbon and efficient workplace, and to enhance the employees' office experience, the Company adopted an intelligent IoT solution that combines IoT with air, light, temperature and other environmental amenity scenarios in light of human behaviors and its business procedures, realizing one-touch linkage and intelligent control of air-conditioning, lighting, curtain and other equipment, and reducing electricity consumption at the same time. The solution also features a modular design of office and meeting resources, which enables life-cycle digital business management that is sharing, efficient and collaborative and effectively improves resource efficiency and employee experience with a smart space system of digital terminals changing with the scenarios.





Management of Packaging Materials

Shanghai Electric continues to strengthen the management of packaging materials by exploring possibilities of improving material performance, reducing consumption and recycling the materials. We have established close cooperation with packaging material suppliers, and had regular feedback and communication with them to ensure the selection of packaging materials with high quality and less environmental impact. The main packaging materials consumed by Shanghai Electric in 2022 are shown in the following table, and the corresponding packaging material consumption density is 115.92 tons/ RMB'00000000 of revenue.

The consumption of packing materials of Shanghai Electric in 2022 are shown in the table below:

CONSUMPTION OF PACKAGING MATERIALS ^[5] (UNIT: TONS)	2021	2022
Timber	141,446.45	118,880.04
Iron support	1240.75	1,483.13
Iron leather suitcase	26.82	34.38
Card-board box	9,972.16	8,631.68
Plastic	1,023.07	821.96
Other	5,131.52	6,491.85 ^[6]

[5] The Group optimized its statistical method for packaging materials in 2022, therefore the packaging material consumption data of 2021 were accordingly.

[6] Other packaging materials include, without limitation, paper-case film, stretch film, and cable tray.

Protection of Biodiversity

As the 20th National Congress of the Communist Party of China, the 27th session of the Conference of the Parties to the UNFCCC (COP27), G20 summit and the United Nations Biodiversity Conference (COP15) were held one after another in 2022, biodiversity has become a major environmental subject in China and around the world. Shanghai Electric, a global enterprise with operations around the world, continues to promote biological balance and biodiversity protection in places where it operates or has projects, and keeps working towards harmony between man and nature.

Biodiversity Day Event of Shanghai Electric

In May 2022, Shanghai Electric held a Biodiversity Day event around the theme "building a shared future for all life" of the International Day for Biodiversity. Always committed to harmony between man and nature, Shanghai Electric vigorously promotes efficient clean energy exploitation, development in new energy industry, harmless waste disposal, study on desalination technology, tree planting and forest restoration with its low-carbon and green business solutions, to empower response to climate change, biological habitat protection and ecological sustainability, and contribute to biodiversity conservation.



Regulating Pollution Discharge by Addressing Both Symptoms and Root Causes

We implement supervisory responsibilities with focus on key pollution control tasks and effectively enhance pollution control.

Shanghai Electric strictly abides by the requirements of the Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution, the Law of the People's Republic of China on the Prevention and Control of Water Pollution, the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution of Solid Wastes, and the Opinions on of the CPC Central Committee and the State Council on Deepening the Efforts to Win the Battle of Preventing and Controlling Environmental Pollution, comprehensively exercises the new development philosophy, and realizes precise pollution control, scientific pollution control, pollution control according to law. It also requires the industrial groups and enterprises to identify key issues in environmental governance, formulate and submit annual governance plans, improve governance targets, responsible persons, deadlines and capital requirements, specify the subject of environmental protection, and strengthen the implementation of annual environmental governance tasks.

In 2022, we continued to promote emission management of all kinds of waste, and conducted special inspection and in-depth assessment, with emphasis on enterprises with emission issues in the past, key units with major environmental risks and organizations with a high risk of non-compliance regarding hazardous waste, to ensure the compliance of relevant enterprises in operations. We also promoted the implementation of audit responsibility, and realized improvement in both prevention and control at source and pollution control through clean production audit, progress inspection and acceptance tracking.



Waste Water Management

- ◆ Water pollution treatment project of sewage interceptor
- ◆ Wastewater is discharged after being treated to meet discharge standards
- ◆ Online monitoring of wastewater discharge



Exhaust Gas Management

- ◆ Exhaust gas is discharged at high altitude after being collected and treated
- ◆ Through technological transformation, some enterprises and workshops are transformed into organized emissions



Waste Management

- ◆ Entrust qualified environmental protection companies to handle hazardous wastes. Reusable general industrial wastes shall be reused by enterprises, and the rest shall be entrusted to third-party institutions for disposal.
- ◆ Actively promote the replacement of hazardous waste products, such as the use of special cleaning liquid instead of gasoline, acetone and other cleaning machine surface, to minimize the generation of hazardous waste.

In 2022, with focus on hazardous waste-generating enterprises, we evaluated hazardous waste standardized management of 19 key units under regulation, and guided the enterprises to improve standardized management and risk prevention in terms of collection, storage, utilization and disposal.

Shanghai Electric's emission of pollutants and waste discharge in 2022 are shown in the following table:

POLLUTANT EMISSIONS	2021	2022	UNIT
Wastewater discharge	2,755,954	2,201,572.67	m ³
Exhaust emission ^[7]	537,307.36	561,127.89 ^[8]	'0000 m ³
Nitrogen oxides	70.56	31.20	tons
Sulfur oxides	1.77	0.66	tons
Particulate matter	18.20	9.86	tons
VOCs	100.61	47.64	tons
WASTE DISCHARGE AND INTENSITY	2021	2022	UNIT
Hazardous waste	3,292.41	2,963.14	tons
Non-hazardous waste	70,045.90	51,736.34	tons
Hazardous waste intensity	2.5	2.5	tons/RMB'00000000 revenue
Non-hazardous waste intensity	53.31	43.98	tons/RMB'00000000 revenue

[7] The Group optimized its statistical method for exhaust in 2022, therefore the exhaust emission data of 2021 were accordingly.

[8] The exhaust emission in 2022 was higher than previous years because the renovation and expansion project of Shanghai Electric Nuclear Power Equipment Co., Ltd. was put into operation.



04

JOINTLY EXPLORING A BRAND-NEW LANDSCAPE FEATURING OPENNESS AND COLLABORATION

Shanghai Electric upholds multi-level, multi-domain and multi-form communication, continues to expand cooperation with upstream and downstream partners, strengthens industry-academia-research integration in synergistic development, and explores carbon peaking and carbon neutrality opportunities through multi-dimensional collaboration with strategic partners. It also continues to integrate the Group's resources to actively carry out supplier management, tap supply chain potentials, improve supply chain digitization, promote high-quality sustainable development of the supply chain, and lead its partners to embrace a green and low-carbon future.



Collaboration for Win-Win Outcomes

We adhere to the tenet of "achieving win-win situation in an open and synergistic way", and work together with business partners to maximize overall interests and realize long-term development of ourselves and the industry.

With new opportunities brought by "carbon peaking and carbon neutrality", Shanghai Electric actively seeks high-quality, high-level and high-influence strategic partnership, and continuously optimizes cooperation pattern and develops new ideas for cooperation to remain at the cutting edge of energy and manufacturing sectors. We also promote joint development with global partners in R&D, business and social construction through resource integration and in-depth cooperation, to build inclusive, open, sincere and mutually beneficial partnership.

Government-Enterprise Cooperation

Bearing in mind its mission as a state-controlled enterprise in full-scale modernization, Shanghai Electric advances strategic cooperation with governments at all levels in fields including energy transformation, smart city, infrastructure and industrial development based on its strengths in R&D and manufacturing and the needs of regional economic and social development.



The People's Government of Fengxian District Shanghai Signed Strategic Cooperation Agreement with Shanghai Electric

In July 2022, the People's Government of Fengxian District, Shanghai signed a strategic cooperation agreement with Shanghai Electric for the establishment of Shanghai Electric New Energy Development Co., Ltd. in Fengxian New City. In the future, the two sides will act together around the new development concept of "innovation, coordination, green, openness and sharing", the "carbon peaking by 2030 and carbon neutrality by 2060" goals, and the principle of "supporting each other for mutual benefits and win-win results" to build Fengxian New City a pacesetter in "carbon peaking and carbon neutrality" with planning at a high starting point, high-quality construction, high-standard functions and high-level services.

Yantai and Shanghai Electric Wind Power Group Signed Strategic Cooperation Agreement

In December 2022, Yantai and Shanghai Electric Wind Power Group signed a strategic cooperation agreement for high-level strategic cooperation in multiple fields including offshore wind power, seawater desalination, hydrogen energy, nuclear power equipment and offshore PV, to build a model for cooperation in green and low-carbon high-quality development. Shanghai Electric Wind Power Group plans to strengthen its business presence in Yantai, and deepen industry-academia-research cooperation with Yantai in offshore wind power, offshore PV, nuclear power and energy storage based on its strength in innovative development of renewable energy, to create more demonstration scenarios, to promote the construction of a clean, low-carbon, safe and efficient modern energy system in Yantai, empower the development of key industries, facilitate high-quality development of Yantai, and achieve mutual benefits and win-win results.



Government–Enterprise Cooperation to Build Minhang Model for Medium–capacity Transit

In February 2022, Shanghai Shendiantong Rail Transit Technology Co., Ltd. was unveiled at the contract signing ceremony of the People's Government of Minhang District, Shanghai Electric and Shentong Metro. The company invested by Shanghai Electric and Shentong Metro is engaged in subway, urban (inter-city) railway, and medium–capacity rail transit services. It is the main body implementing the medium–capacity rail transit construction project of Minhang District. Given the needs of Minhang District and Xinzhuang Industrial Park as a cluster of advanced manufacturing industries, Shanghai Electric, Shentong Metro and Minhang District People's Government signed a cooperation agreement to jointly build a Minhang model for investment and financing, construction, operation, maintenance and industrial development of medium–capacity rail transit, and boost regional economic and social development. Based on deep cooperation between the three parties, the medium–capacity rail transit system of Minhang District will move to a new stage of higher quality and level, and form a new pattern of demonstration, integration, technical innovation and industrial settlement, thereby facilitating the construction of Yangtze River Delta on rail and promoting the development of a modern integrated transportation system.

Shanghai Electric Signed Contract for the Construction Project of Yuxi Zero–carbon Industrial Park

Shanghai Zhiheng New Energy Co., Ltd., a wholly–owned subsidiary of Shanghai Electric Wind Power Group, signed contract with Huaning County, Yuxi Province for the construction project of Yuxi Zero–carbon Industrial Park. The project is another major move of Shanghai Electric Wind Power Group after the establishment of its Yunnan company in 2015 to build the only wind power industrial park in Southwest China and the strategic cooperation with the Energy Administration of Yunnan Province and Yuxi municipal government in 2021. Shanghai Electric Wind Power Group will promote implementation of the project as soon as possible and expand cooperation with the zero–carbon park in time to increase the structural proportion of green power in Huaning County and the industrial park, and promote the integration of green energy and green advanced manufacturing industry in Yunnan and Yuxi.



Cooperation between Schools and Enterprises

Shanghai Electric is well aware of the significance of industry-academia-research integration to enterprises, industries and the society. Through cooperation with schools, the Group realizes prospective layout for talent reserve and creates fertile soil for cultivating specialized talents and breaking through cutting-edge technologies with its profound industry background and insights.

Shanghai Electric and Shanghai Artificial Intelligence Research Institute Jointly Promoting the Cultivation of Digital Intelligence Talents

On October 13, 2022, Shanghai Electric and Shanghai Artificial Intelligence Institute signed a strategic cooperation agreement. Upholding the concept of open collaboration and win-win cooperation, Shanghai Electric endeavors to promote linkage between smart energy and intelligent manufacturing, boost intelligent development of industry and industrialization of services, and empower global industrial development with science and technology. In line with the new trend of digital economy, the two sides will cooperate more extensively, profoundly and comprehensively in fields like talent cultivation, planning and building smart learning campus and platform, industry research, consulting and planning, and joint project application, to meet the urgent need of industry for high-quality digital talents. Based on this cooperation agreement, Shanghai Electric and Shanghai Artificial Intelligence Institute will strengthen cooperation by drawing on each other's strengths and creating synergy to realize mutual benefits. It will help Shanghai Electric achieve transformation and upgrading, seize new development segments, gain new momentum and rebuild core competitiveness with technological innovation.



Shanghai Electric and Shanghai Dianji University Discussed on Integration of Enterprises with Vocational Schools and Universities

In October 2022, Shanghai Dianji University and Shanghai Electric had an in-depth discussion on deepening integration of enterprises with vocational schools and universities and exploring new models and ideas for school-enterprise cooperation at the Group's headquarters. Shanghai Electric and Shanghai Dianji University have cooperated in talent cultivation, employment and projects a long time, and made joint progress in transformation of technological achievements and research cooperation through a platform for integration of enterprises with vocational schools and universities, with a dozen scientific research projects and several ministerial- and provincial-awards for scientific and technological achievements. In the future, the two sides will continue to deepen cooperation, establish an achievement sharing mechanism and explore new models for integration of enterprises with vocational schools and universities through the joint construction of Shanghai Electric Lingang Hydrogen Energy Research Institute, to give new meanings to integration of enterprises with vocational schools and universities and achieve synergistic development and mutual benefits.

University of Shanghai for Science and Technology Visited Shanghai Electric

In November 2022, Shanghai Electric and the University of Shanghai for Science and Technology had an in-depth exchange of views on talent cultivation and industry-academia-research cooperation, and reached consensus on establishing innovative development philosophy, building an ecosystem for innovation, and exploring innovation models. The two sides will rely on respective strengths and resources to deepen school-enterprise cooperation and strengthen integration of enterprises with vocational schools and universities, make greater breakthroughs in energy equipment, engineering equipment and industrial Internet through innovation, jointly develop excellent engineers, cooperatively introduce international high-end talents, realize co-breeding and sharing of talents, and support high-quality development of Shanghai Electric.

Joint Innovation of Technology

In response to the rapid development of new energy globally, Shanghai Electric seizes emerging opportunities in the industry with open and cooperative mind, promotes exchange of resources, knowledge and technological collaboration in the industry, and continuously improves its competitiveness with advanced technologies and leading innovation capability.

Shanghai Electric Signed Strategic Cooperation Agreement on the "Research and Application of Coupling of Coal Power and Liquid Sunshine"

On March 10, 2022, the symposium on sustainable development of coal power under "carbon peaking and neutrality" goals and project signing ceremony was held in Shanghai. The symposium was sponsored by Shanghai Low Carbon Technology Innovation and Application Platform and organized jointly by Shanghai Electric and Shanghai ICT Developer Energy Technology Co., Ltd. Along with the rapid development of new energy, the sustainable development of coal power is faced with a lot of new technical challenges and opportunities, requiring deep engagement and integration of all social resources. Engaged in new energy equipment and coal power equipment, Shanghai Electric expected to promote implementation of the strategic project with all participants, and promised to work closely with all parties by exploiting complementary advantages to develop a win-win and sustainable cooperation model and contribute to the "carbon peaking and neutrality" goals.



Central Academe of Shanghai Electric Group Signed Strategic Partnership with EDF R&D

In 2022, the Central Academe of Shanghai Electric Group and EDF R&D signed strategic partnership. The two sides plan to cooperate closely in projects around "advanced heat storage and power storage technologies", "hydrogen energy production, storage, transportation and use technologies", "basic industrial software", "intelligent operation and maintenance of power plant core equipment", "integrated energy planning, energy management platform and intelligent operation and maintenance related services", "additive manufacturing technologies for energy equipment spare parts and on-site repair", to deepen international exchanges and cooperation and make common progress in the field of new energy.

Shanghai Electric and Ideal Wanlihui Semiconductor Signed Contract for Cooperation in Innovation

In 2022, Shanghai Electric and Ideal Wanlihui Semiconductor Equipment Co., Ltd. signed cooperation contract to jointly promote innovation in the pan-semiconductor industry in terms of market, technology, equipment and integration.

Ideal Wanlihui is a major Chinese supplier of HJT battery equipment, and HJT technology is an important direction for production expansion in PV manufacturing, making the company a perfect match of Shanghai Electric's layout of emerging energy focusing on "wind, solar, storage, and hydrogen". The strategic cooperation at equity level following the parties' contract signing for "establishing an innovation center for the pan-semiconductor industry" in October marks the formation of a close alliance between the two companies in the pan-semiconductor industry, especially in the field of high-efficiency photovoltaic cells.

Cooperation with Industry Partners

To achieve carbon peaking and neutrality, the industry is actively promoting transformation of traditional energy and innovative development of new energy. As an industry leader, Shanghai Electric grasps industry development opportunities, and strengthens communication and cooperation with industry partners to create win-win situation amid cooperation and competition, and make the industry thrive with an embracing mind and a broad strategic vision.



Shanghai Electric and Wenergy Group Established Deep Cooperation

In September 2022, Shanghai Electric visited Wenergy Group and had a deep discussion on strengthening cooperation and building a new development pattern. The two companies have a long history of close cooperation in thermal power and gas turbine, and jointly implemented the first F-class gas power generation project in Hefei. In May this year, Shanghai Electric won the bid for Wenergy Hefei's 2×490MW gas turbine project and was awarded the first gas turbine project order in Anhui Province. Wenergy Group is a main force and enabler in energy development of Anhui Province, and a very important strategic partner of Shanghai Electric. The two are highly aligned and complementary in the industry. In the future, Shanghai Electric will cooperate with Wenergy Group in broader fields to help it maximize the value of smart energy throughout the life cycle.

Shanghai Electric Nuclear Power Group Became a Member of "Guohe One" Industry Chain Alliance

In February 2022, the industry chain alliance for Guohe One, China's homegrown third-generation nuclear technology, was established in Shanghai. Shanghai Electric Nuclear Power Group attended the inaugural meeting as one of the first members and spoke on its experience and cooperation prospects on behalf of the industry chain enterprises. The industry chain alliance is a non-profit unincorporated organization formed by units engaged in the construction of Guohe One, and the industry chain partners are from nuclear power technology development, design, equipment manufacturing, bulk material supply, civil construction, installation, commissioning, operation and other links of the industry chain. As an engine of technical development, the alliance will focus on the construction of specialized industry chain platforms to bring China's nuclear power cause to a higher level in the 14th Five-year Plan period.

Shanghai Electric and Huaneng Group Discussed New Cooperation Pattern under Carbon Peaking and Neutrality

In August 2022, Leng Weiqing, Secretary of the Party Committee and Chairman of Shanghai Electric, and Liu Ping, Deputy Secretary of the Party Committee and President of Shanghai Electric, visited China Huaneng Group. The two sides exchanged views on expanding cooperation fields and strengthening strategic collaboration. With a long history of cooperation and a solid foundation of trust, the two will have huge room to cooperate in the 14th Five-year Plan period. Both hoped to build an all-round strategic partnership, and create a new cooperation pattern featuring complementarity, resource sharing and mutual benefits. Guided by the overarching national energy strategy in the context of carbon peaking and neutrality, they will join hands with industry peers to build large-scale new energy bases, develop new-type power systems, address industry demands, and create ground-breaking innovation demonstration projects.



Shanghai Electric and China Electrical will Jointly Expand More Increments in New Segments

In January 2022, China Electrical Equipment Group visited Shanghai Electric. Both parties believed that they would have a lot of chances to interact in the energy sector, and would strike a chord in cooperation and competition. With geographical advantages of Shanghai and the Yangtze River Delta, they would jointly expand more increments in new segments like new-type power system and digitization of power distribution network and actively explore new cooperation models to contribute to the construction of new power system and market with new energy as the mainstay.



Shanghai Electric and Shenergy Jointly Entered Offshore Wind Power Market in Hainan: Zero-carbon Equipment Industry Project Started in Danzhou



In January 2022, the first batch of Yangpu projects were kicked off at Hainan Free Trade Port. The zero-carbon energy equipment industry project jointly invested by Shanghai Electric Wind Power Group and Shenergy Group was settled in Yangpu Economic Development Zone, Danzhou, Hainan, marking the entry of Shanghai Electric and Shenergy Group together into Hainan's offshore wind power market. Based on this project, the two sides will jointly develop offshore wind power resources in Hainan, and build an "offshore power+" industry chain layout model that features integration of onshore and deep-sea wind power development, power transmission and distribution, energy storage and comprehensive energy management, to help Yangpu and Hainan achieve zero carbon and promote win-win development of all parties.

Shanghai Electric and Shanghai United Assets and Equity Exchange Joined Hands to Promote Green and Low-carbon Development

On February 6, 2022, Shanghai United Assets and Equity Exchange (SUAEE) visited Shanghai Electric. The two sides exchanged views on the possibility of continuing to expand cooperation in resource import, capital trading, asset liquidation and so on. Shanghai Electric hoped that they could work together to promote the "carbon peaking and neutrality" strategy in Shanghai, build assessable, measurable and traceable "carbon standards" and "carbon systems" for carbon emission reduction based on Shanghai Electric's industrial entities and SUAEE's service platform, actively expand specialized resources of Chinese central state-owned enterprises and stimulate cooperation between central and local governments to realize greater synergies, and strengthen intellectual property cooperation to help Shanghai Electric grasp core technologies and competitiveness and gain greater market value and industry competitiveness.



Overseas Expansion

Shanghai Electric actively explores international markets. While bringing technologies abroad, it continues to promote the development of "Made in China" in the international markets, and benefits people around the world with high-quality products and services, making "intelligent manufacturing in China" acknowledged globally.

Water Conservancy Project in Uzbekistan with Shanghai Electric's Participation in Construction Passed Acceptance Inspection



In 2022, a hydraulic pump station in Uzbekistan with Shanghai Electric's participation in construction completed debugging with water pressure and passed field acceptance by the Ministry of Water Resources of Uzbekistan. Shanghai Electric provided all of the 26 2MW synchronous motors for the project, and was highly praised by the Ministry of Water Resources of Uzbekistan, the supervision company and the general contractor, for its excellent product quality and service. Uzbekistan is a crucial market along the Belt and Road, and the project is a key project Shanghai Electric has undertaken in Uzbekistan's water conservancy market, therefore it is of great significance as a benchmark and will help the company further expand the market in the future.

Japanese Yakai Photovoltaic Project Undertaken by Shanghai Electric in Japan Successfully Connected to Grid

In April 2022, the Japanese Yakai photovoltaic power generation project undertaken by Shanghai Electric completed grid connection with the support of local sub-contractors and electric power company. During project construction, the project department and the installation subcontractor jointly overcame the impact of the 7th epidemic outbreak and the Fukushima earthquake on March 16 on project construction and commissioning by reasonably deploying human resources and successfully achieved full-capacity grid connection with concerted efforts of all project members. The project department also actively coordinated with the local government and electric power company to enable power generation from the installed PV modules in compliance with local laws and regulations, thereby generating more revenue for the owner and winning recognition of the project owner.



No.1 Unit Boiler of Vietnam's Thai Binh 2 Project Successfully Ignited

In February 2022, the No.1 unit boiler of Vietnam's Thai Binh 2 project was successfully ignited. Le Van Thanh, Deputy Prime Minister of Vietnam, was present at the scene the moment and visited the project department. The Thai Binh 2 project has a designed capacity of 1,200 MW. Shanghai Electric SHMP Pulverizing & Special Equipment Co., Ltd. provided coal mills for the project, and Qingdao Huachen Weiye Electric Power Technology Engineering Co., Ltd. of Shanghai Electric was responsible for project debugging, performance testing and trial run. After commissioning, the project will provide about 7.2 billion kWh of electricity per year to Vietnam's power grid. It creates a good foundation for subsequent cooperation with Vietnam National Oil and Gas Group.



Perfect Debut of Shanghai Electric in Large-scale International Coking Market

In May 2022, the KunRui coke project with an annual capacity of 2.6 million tons in the PT Indonesia Morowali Industrial Park (IMIP) produced the first batch of red hot coke after 527 days of hard work. The project was invested by Nanjing Iron & Steel and undertaken by Shanghai Electric Guokong Global Engineering Co., Ltd. During project construction, Guokong Global, the project owner and related parties overcame various difficulties brought by the epidemic and promoted the progress of all tasks. Milestones such as construction of No.2 coke oven, capping of No.1 chimney, completion of gas pipeline and commissioning of coal preparation line were achieved one after another. The project is a key project of Shanghai Electric in its implementation of the dual circulation development pattern and promotion of its international strategy, and it marks the debut of Shanghai Electric in large-scale international coking market, so it has profound significance for the Group's implementation of its strategic plan for the 14th Five-Year Plan period and its overseas industrial development.



Supply Management for Better Development

Leveraging our advantage in centralized procurement, we continue to optimize supply chain management, and increase our impact in the supply chain, thereby lowering our own risks and at the same time helping supply chain partners achieve high-quality sustainable development.

In accordance with national laws and regulations including the Contract Law of the People's Republic of China, the Law of the People's Republic of China on Tenders and Bids, the Law of the People's Republic of China on Product Quality, and the Pricing Law of the People's Republic of China, Shanghai Electric continues to optimize its existing management system and regulations including Shanghai Electric's Purchase Management, Shanghai Electric's Centralized Purchase Management, the International Procurement and Supplier Management Plan and Purchase Pricing Management.

Supplier Management

In light of the Group's procurement featuring large scale, wide coverage and diverse categories, Shanghai Electric improved its supply chain planning in the Reporting Period, followed the principle of "relying on core enterprises to enhance supply chain dominance; and taking advantage of scale to maximize supply chain value", and built a new supply chain management model by upgrading the supply chain operation platform and integrating demands by levels with focus on online operation, bulk material procurement, industry support and centralized procurement, thereby realizing cost reduction and efficiency enhancement along the supply chain, putting risks under strict control and increasing supply chain synergy.

In supplier management, the Group optimized the Management of Centralized Procurement based on its supply chain planning and actual business during the Reporting Period, to provide institutional basis and operational guidance for centralized procurement. It also clarified responsibilities and authorities in centralized procurement and specified the pricing principle to ensure compliance by its subordinates. In November 2022, Shanghai Electric organized a "supply chain procurement training camp" for mid-level leaders responsible for procurement management in the industrial groups and enterprises to help them learn relevant experience and improve knowledge and operation level through lessons, publicity of regulations and case discussion. With optimization of supply chain management this year, we reduced the cost of centralized procurement by 11.8%, exceeding the target of more than 5%.



Supplier Audit

We maintain strict control over our suppliers and require them to comply with the Supplier Code of Conduct. We also unify approval standards on suppliers so as to coordinate supplier information and strengthen supplier management and supervision. Based on system certification and product certification, we adopt self-registration system and third-party risk system that automatically connect with risk radar to obtain risk information in the first time and achieve advanced, efficient and consistent risk control. Suppliers with negative records, such as breach of trust, legal disputes and environmental penalties will be excluded from cooperation.

A process performance feedback mechanism is adopted whereby unqualified suppliers will trigger a notification, a warning, a suspension or cancellation of cooperation. In addition, we evaluate the quality of suppliers' supplies, projects or services and check their re-supply qualification via annual inspection, unannounced inspection and review upon expiration. Some supplies will be selected for joint review with factories, and unqualified suppliers will be eliminated.

Supplier Relationship Management (SRM) Platform

In response to the trend of digitization, Shanghai Electric continues to optimize its information-based supplier relationship management (SRM) platform, promotes advanced management ideas and standardized procurement processes, and upgrades procurement and supplier management mechanisms, realizing cost reduction and efficiency enhancement in procurement. Shanghai Electric's SRM platform includes a supplier life-cycle module, a bidding and sourcing module, an order coordination module and an e-marketplace module, which connects with the upstream and downstream of the supply chain, enabling each department to manage the supply chain in a real-time and dynamic manner, so as to improve management efficiency. In 2022, we continued to optimize the smart supply chain platform by expanding the coverage of enterprises and product categories, improving the supplier life-cycle module, and promoting online bidding and procurement e-commerce, and enhanced user experience. During the Reporting Period, we made the following achievements:

- ◆ 400 daily active users and 6,000 more registered suppliers on the SRM platform;
- ◆ 112 enterprises covered by the supplier life-cycle management module, with an increase of 7%;
- ◆ More than 10,000 qualified suppliers, and 28% of increase in the number of registered suppliers;
- ◆ 50 enterprises covered by the online bidding module, with an increase of 8%;
- ◆ 150 enterprises covered by procurement e-commerce, with an increase of 15.6%.

The platform construction work earned us a lot of recognition and honors in and out of the industry, including:



2022 Golden Award—Digital Supply Chain Innovation Demonstration Award



Golden Purple Bamboo Award—Best Case of Industry Empowerment



Gongfu Choice Software 101

Sustainable Supply Chain

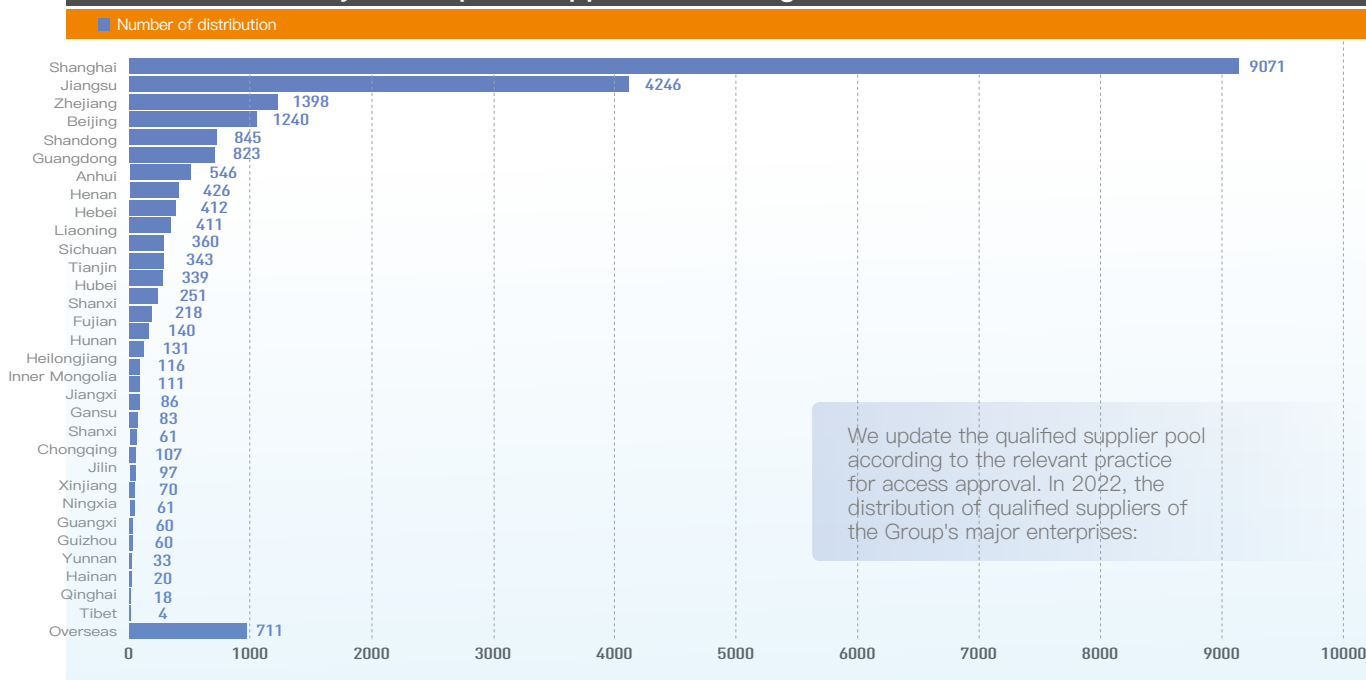
In order to create a sustainable supply chain and convey and practice sustainable development philosophy, Shanghai Electric has set out clear requirements for corporate ESG performance in its Supplier Code of Conduct. Shanghai Electric encouraged all suppliers to enter into the Agreement on Workplace Safety and Environmental Protection, and conducted a comprehensive safety and environmental review of its suppliers. In everyday management, we regularly conduct comprehensive review and examination of suppliers' qualifications, safety and environmental performance in the past three years, the degree of workplace safety standardization, safety and environmental laws and rules violations and incidents, and other related matters involving regulations on workplace safety. Some subsidiaries, such as Shanghai Mitsubishi Elevator, have added carbon emission related requirements to supplier approval and performance review processes, encouraging the suppliers to provide products in lower-carbon ways.

Anti-corruption is also a key issue in Shanghai Electric's construction of sustainable supply chain. To improve Party conduct and uphold integrity and prevent disciplinary violations for improper benefits in procurement, Shanghai Electric requires all suppliers to sign the Integrity Agreement together with the Procurement Contract, and specifies various responsibilities and strong disciplinary measures in the Integrity Agreement to regulate the suppliers' behaviors and reduce compliance risks in procurement. In addition, the Group has incorporated anti-corruption management of the supply chain into the smart supply chain platform to capture and track information about corruption, breach of trust and significant business risks of all suppliers, and announces suppliers on the negative list via the supplier life-cycle management platform in real time. According to information from the smart supply chain platform, none of Shanghai Electric's suppliers were involved in corruption in 2022.

Requirements on supplier ESG performance including but are not limited to:

- ◆ To never tolerate the act of, or engage in corruption and bribery in any form;
- ◆ To respect the basic interest of employees and offer equal opportunities and treatment;
- ◆ To prohibit the forced labor and child labor;
- ◆ To adopt measures to control the safety risks;
- ◆ To provide the trainings in relation to health and safety;
- ◆ To act in strict compliance with statutory environmental standards and international standards;
- ◆ To continue to improve the measures on environmental protection.

Distribution of major enterprise suppliers of Shanghai Electric



05

JOINTLY CREATING A SOUND ATMOSPHERE IN WHICH TALENTS ARE FAVORED AND RESPECTED

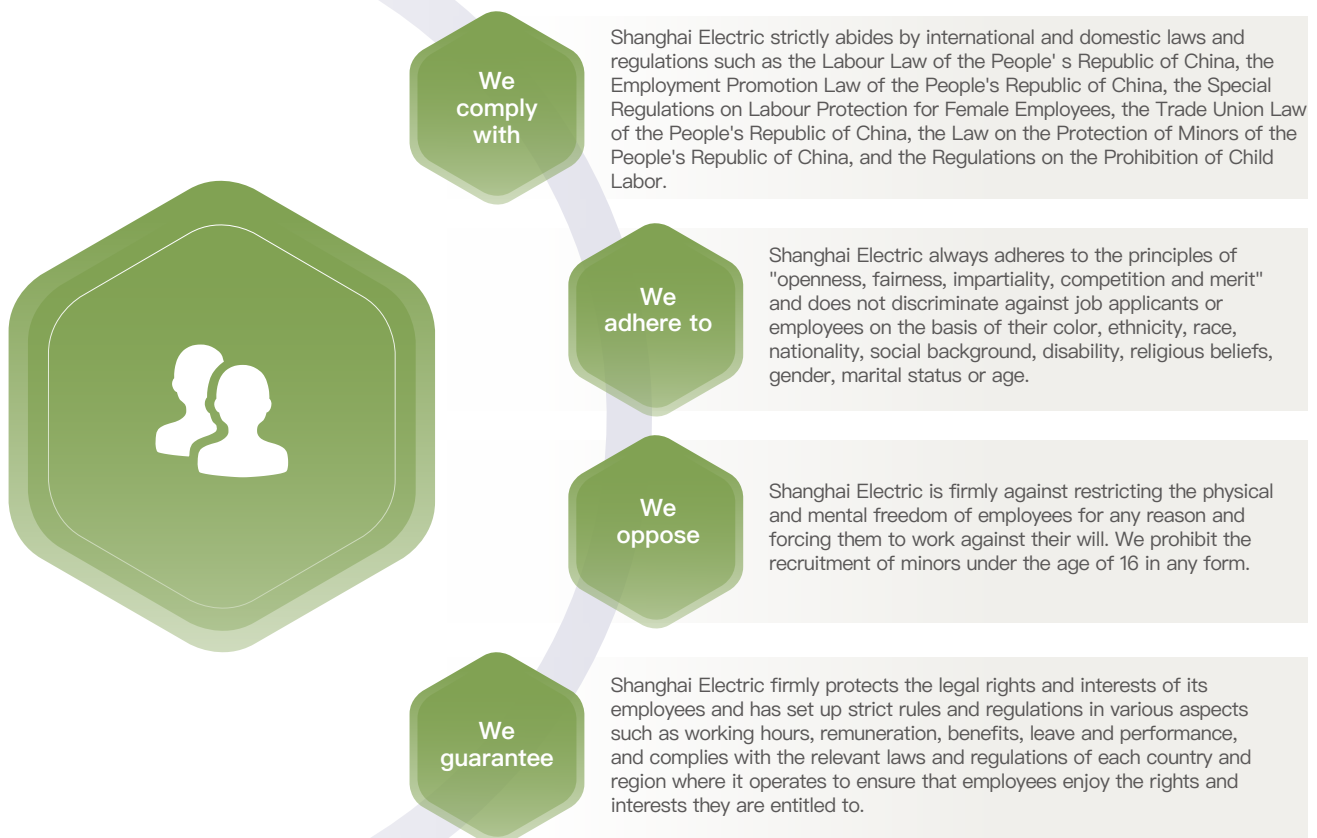
Shanghai Electric understands of the importance of the talent to the high-quality development of the Group, so it adheres to the talent strategy of "regarding talent as the primary resource, taking the talents discovery and development as the first pursuit, and enable the strivers to have a stage to perform". The Group fully protects the rights and interests of employees, establishes a fair and equitable employment management system, provides targeted training and reasonable promotion mechanism, creates a safe working environment and an open, inclusive and diverse cultural atmosphere, and ensures the physical and mental health of employees while reasonably planning their development and growth.

People Orientation, Inclusiveness and Sharing

We safeguard the legitimate rights and interests of our employees, create an equal working environment, and build harmonious labor relations. At the same time, we are dedicated to enriching the life of employees, helping them to solve their problems, enhancing their happiness, and improving the cohesion of Shanghai Electric.

Employment and remuneration management

Shanghai Electric has formulated a series of employment policies and corresponding rules and regulations, including "Recruitment Management Rules", "Recruitment Implementation Rules" and "Staff Handbook", aiming to standardize and integrate the recruitment process and employment matters. Shanghai Electric understands that a firm principle of fairness and impartiality, an inclusive and enlightened management philosophy, the protection of employees' legal rights and interests, and the creation of a rich and diversified employment environment are important factors in attracting talents from different backgrounds, fields and experiences.



Shanghai Electric was named to the Best Global Employer on Forbes 2022

Shanghai Electric was recognized by Forbes on its World's Best Employer list for the second year in a row. In 2022, the list anonymously surveyed 150,000 full-time and part-time employees working for multinational companies and organizations from 57 countries. In total, 800 companies from around the world made the list. Among 55 shortlisted Chinese companies, Shanghai Electric was ranked 36th. The ability of Shanghai Electric to receive such honor represents the recognition from the outside world and our employees, and we will continue to work hard to create the best employment environment for our employees.

In 2022, Shanghai Electric built a HR strategic support system to drive business transformation, insisted on allocating more resources to excellent sectors, excellent enterprises, excellent talents, and encouraged value creation, whoever works more gets more. To this end, the Group carried out a special analysis of HR effectiveness, and completed the overall HR effectiveness analysis report of the Group and the HR effectiveness analysis reports of 11 industrial groups; improved a short-and long-term remuneration system and designed the mechanism of "self-performance challenge and independent selection of remuneration standard"; completed a new round of professional manager plan and other systems related the remuneration of managerial personnel in accordance with the requirements of "market-oriented recruitment, contractual management, differentiated remuneration and market-oriented exit".

We adhered to the concept of appointing people on their merits, extensively recruited excellent talents, and actively implemented the task of "Two Guarantees" issued by Shanghai SASAC, that was to "guarantee that the total number of college graduates enrolled was not lower than the level of 2020, and that no less than 50 percent of jobs are targeted recruitment for college graduates in Shanghai", in a bid to accumulate new strength for the Group's high quality development. In 2022, the Group guided enterprises to develop the humanized recruitment plan to strengthen the recruitment of the outstanding fresh graduates through dynamic adjustment of recruitment program. At the same time, we optimized the recruitment strategies and focused on strengthening the publicity and recruitment of Shanghai-based colleges and universities by adopting diversified recruitment channels and methods such as air publicity, livestreaming recruitment and two-way selection meeting, participating in "Achieving Greatness Together" campus employment promotion month, and organizing summer internship and other programs.

During the reporting period, we completed 61 online presentations and hired 710 people.



"Joining in intelligent manufacturing, energizing the future", new employee orientation ceremony

On August 2, themed on "Joining in intelligent manufacturing, energizing the future", Shanghai Electric held a 5-day orientation ceremony for 667 new joiners at the Group's training base. The Youth League Committee of the Group innovatively planned "Electric Garden Party", organized fresh college graduates to visit the cross-industry groups after joining the Group to enhance their intuitive understanding of the Group, and planned to launch short videos such as "Orientation Guide" and "Guide for Non-Shanghai Students to Settle Down" to do a good job in orientation navigation. Through the systematic study of three themed courses, "Strategic Analysis", "Cultural Cohesion" and "Growth Empowerment", and the themed events, including "Fight to the End" knowledge contest, "I Speak for Electric", Electric Culture Market, "One hundred and twentieth anniversary·Youth Day (百廿电气正青春)" 120-feet fortune drawing, and summer fan clubs, the Group led the new joiners to experience the charm of Shanghai Electric in an immersive manner, helped them deeply understand the strategic blueprint and cultural core of Shanghai Electric, and encourage them to integrate into the big family of Shanghai Electric.



Equality and diversity

According to statistics, the employees of Shanghai Electric in 2022 cover all age groups, with different professional backgrounds and experiences and covering many cities in China and overseas. It is worth mentioning that in 2022, the female managerial staff of Shanghai Electric (divided by function) accounted for 42.0%.

Employee statistical table of Shanghai Electric in 2022

CATEGORY	CONTENT	2021	2022
Total	Total number of people	39,015	41,739
Gender	Male	30,862	32,181
	Female	8,153	9,558
Age segment	<20 years old	0	0
	20–29 years old	10,327	11,119
	30–39 years old	11,306	12,812
	40–49 years old	10,338	10,730
	50 years old and above	7,044	7,078
Area	Inside the province/city (Shanghai)	23,422	22,269
	Outside the province/city (Chinese mainland areas outside of Shanghai)	12,900	16,480
	Overseas (areas out of China)	2,693	2,990
Type	Full-time employees	39,015	41,739
	Part-time employees	0	0
Function	Management	3,641	3,882
	Production	16,911	18,692
	Sales	2,877	2,978
	Technical research	12,596	13,275
	Financial audit	1,188	1,171
	Administration & Logistics	1,802	1,741
Education background	Doctor's degree	206	208
	Master's degree	3,915	4,201
	Bachelor's degree	16,281	17,918
	College degree	8,124	9,191
	Below college degree	10,489	10,221
Rank	Senior managers	216	221
	Middle managers and engineers	9,765	9,947
	General technical staff	10,307	12,879

Democratic construction and communication

For a long time, Shanghai Electric has regarded safeguarding the rights and interests of employees as an important matter, firmly guarantee employees' rights to information, participation and supervision, actively promote communication and exchange between employees and us. Shanghai Electrical and Mechanical Trade Union serves as an effective mechanism to build harmonious labor relations between Shanghai Electric and employees. Since the establishment of Shanghai Electrical and Mechanical Trade Union, we have prepared and issued important documents such as "Opinions on Strengthening Collective Wage Negotiation", "Implementation Measures of Shanghai Electric Group's Employee Representative Meeting" and "Operating Guidelines for Grassroots Enterprises' Employees (Representative) Meeting", and signed collective contracts, special collective contracts for protection of women workers' rights and interests and special collective contracts for wages with enterprises as representatives. As of December 31, 2022, all incumbent employees of Shanghai Electric are members of labor unions.

Door-to-door legal services provide protection for workers' rights and interests



Law introduction for employees

Shanghai Electrical and Mechanical Trade Union attached great importance to the promotion and implementation of legal services for employees and thus organized its cadres, employee representatives and negotiation representatives to learn relevant laws and policies such as "Regulations of Shanghai Trade Union" and "Guidelines on the Operation of Employee Representative Meeting", and held multiple pass through and quiz activities such as "How Much do you know about the Employee Representative Meeting?" and so on, to encourage employees to actively participate in and obtain knowledge about law.

Free legal advice

In 2022, Shanghai Electric provided employees with free legal advice on corporate rules and regulations, compensation for personal damage, identification of industrial injuries, and issues concerning employees, directors and supervisors, retirement age of female employees, labor contracts, full-time union workers, and enforcement of prescription. We handled 44 cases of non-litigation affairs in total, including 16 cases of legal advice, 3 cases of letter processing, 20 cases of proxy writing, and 5 cases of non-litigation mediation, providing guarantee for employees to obtain timely, convenient, high-quality and efficient legal aid services.



Legal service salon

On November 23, Shanghai Electric held the legal service salon. Yuan Shengzhou, the employee supervisor of Shanghai Electric and the executive vice president of Shanghai Electrical and Mechanical Trade Union attended the salon. Xu Guofei, senior partner of Beijing Dacheng (Shanghai) Law Firm, was invited to deliver a special lecture. Shanghai Electric Nuclear Power Trade Union, the Trade Union of Shanghai Electric Group Asset Management Co., Ltd., the Trade Union of Shanghai Zhenhua Bearing Works Factory Co., Ltd., and the Trade Union of Shanghai United Bearing Co., Ltd. made speeches and exchanged views respectively concerning the experience and practice in terms of how to listen to public opinions, care for workers, balance labor relations, and how to implement the democratic process of the employee representative meeting, do a good job in collective negotiation, and standardize enterprise labor and employment. This activity allowed workers to exchange and share their experience in "learning and using laws" and inspired each other on how trade unions implement the democratic process of employee representative meeting, do a good job in collective negotiation and standardize the enterprise labor and employment, in a bid to improve the work.

Shanghai Electric always pays attention to the communication and exchange with employees and is committed to listening to their voice in a timely manner, understanding their ideas in an all-round way, and promoting the effective communication between the Group and employees through a sound communication system, so as to help employees solve problems in their work and life.

Shanghai Electric has been holding various activities to strengthen the communication and interaction between the Group and its employees. We have established the platforms for employees to express their interest demands and the smooth channels for letters and visits, aiming to provide the employees with a path to solve problems and give feedback. We apply different policies for different categories of demands from the employees to effectively promote a solution to the demands. At the same time, we give full play to the role of functional management platform for incumbent employees and retirees to help employees resolve their worries and difficulties.

Shanghai Electric spent the summer together with lovely children of its employees

As an important starting point to promote the service to employees and narrow the distance between the Group and its employees and their families, Shanghai Electric has carried out the parent-child activities for employees, inviting the lovely children of its employees to come into the place where their parents work.

On August 13, a group of lovely children walked into a beautiful garden factory—the enterprise culture exhibition hall of Shanghai Electric Machinery Co., Ltd. to have a close experience of the history of the industrial development of new China, listen to the story of the "Shoulder Pole Motor Spirit", and appreciate the fruitful results of the "Great Power". The children visited the "Power Town" to explore the knowledge behind multiple forms of energy generation through thermal, nuclear, wind and photoelectric power, hydrogen energy, as well as energy storage, and experience the importance of their parents' work.



Employee care

Shanghai Electric has deeply integrated employee care into the enterprise management. Through providing special comfort, improving talent service guarantee policies, and implementing practical measures concerning employees' livelihood, Shanghai Electric helped its employees maintain a healthy and good working attitude, and constantly enhance their sense of identity and sense of belonging to the Group and enhance their cohesion.

Warm solicitude conveyed the care and love

The leaders of Shanghai Electric cared about the staff, kept an eye on employee dynamics, do a good job in caring for employees, extend deep solicitude to the employees struggling on the frontline and working far away from home, and also send care to the model workers, and employees in difficulties, so that the majority of staff can truly feel the warmth of the big family of Shanghai Electric.

In August 2022, Leng Weiqing, secretary of the Party Committee and chairman of Shanghai Electric, visited the company and offered his high respect and sincere solicitude to the cadres and employees who were struggling with the high temperature on the frontline. In 2022, the Group's high temperature solicitude covered 85 enterprises and more than 40,000 employees, with a total expenditure of more than 2 million yuan.



At the same time, Liu Ping, deputy secretary of the Party Committee and president of Shanghai Electric, went to the project sites in Dubai and Pakistan respectively to have an in-depth understanding of the project construction, and express his sincere solicitude to the overseas employees who has been stationed at the project sites for a long time to overcome various difficulties. He also said that all levels of the Group would take good care of the domestic families of overseas employees and stabilized the "home front" so that the employees would have no worries.



On August 17, 2022, Leng Weiqing, secretary of the Party Committee and chairman of Shanghai Electric, and Liu Ping, deputy secretary of the Party Committee and president of Shanghai Electric, during their stay in Beijing, made a special trip to visit the cadres and employees of the Group's institutions and enterprises in Beijing, inquired about the work and life needs of the cadres and employees in Beijing and thanked them for their hard work.



As the Spring Festival was approaching, the leaders of the Group carried out pre-festival visits to the homes of model workers and employees with difficulties to express sincere greetings and New Year wishes and send warmth and care. Leng Weiqing, secretary of the Party Committee and chairman of the Group, talked with the model worker about the work and development, encouraged her to continue to play a role in her post, and cultivate a group of outstanding young scientific and technological talents for the enterprise. Meanwhile, Liu Ping, deputy secretary of the Party Committee and president of the Group, inquired about the health and living conditions of the employees in detail, and told them to take good care of their health and positively face life.

Shanghai Electrical and Mechanical Trade Union provided accurate and intimate services for the employees to solve their "urgent expectations and difficulties". By December 31, 2022, the Trade Union has implemented and completed all 13 items listed in the 2022 Shanghai Electric Employee Service Project. Moreover, the Trade Union provided special solatium and assistance for workers in need and raised funds to help them. The Trade Union arranged for the heart-warming recuperation and convalescence for 54 workers, health examination for 333 retired model workers and the distribution of gifts for 212 elderly model workers during the Double Ninth Festival to convey the care and solicitude and funded a total of 278,000 yuan in the construction, operation and maintenance of the innovation studio. At the same time, the Trade Union cooperated with the Group Office (the office of the Board of Directors) and the Human Resources Department to organize the internal preferential purchase activities for employees, so that the employees in need could truly enjoy preferential benefits.

Results of employee service projects

NAME OF PROJECT	NUMBER OF BENEFICIARIES (PERSON)	AMOUNT OF SUBSIDIES (YUAN)
"B+" Guarantee Plan of Shanghai General Trade Union	45,393	2,380,000
"See Shanghai, Taste Shanghai, Love Shanghai" Activity	43,107	8,782,800
Graduation Awards of "3+3+3" Training Course	20	40,000
Solicitude for Children of Overseas Employees	210	63,000

In 2022, the Group carried out special solicitude and assistance programs, which benefited 1,244 people at a cost of 1.244 million yuan. Meanwhile, the Group raised funds to help the employees in difficulty. In the "One-day Donation" fundraising activity organized by the Group, a total of 5.31 million yuan was raised from 65 enterprises for them. Shanghai Electric's special solicitude and assistance programs benefited 5,244 employees in difficulty throughout the year with an investment of 6.988 million yuan.

Helping employees in difficulty



In addition, Shanghai Electric in 2022 continued to improve the awareness of its talent introduction and training policies, encouraged the Company to declare various preferential policies for talents and strived to apply the talent policies to the full. At the same time, we continued to pay attention to women, to build a career stage for more women and give full play to the female talents.

Shanghai Electric improved the welfare services for talents

Based on the existing group talent apartment, Lingang public rental housing and municipal public rental housing policies, Shanghai Electric comprehensively improved the talent service guarantee, maximized the housing needs of young employees, actively solved the problem of "housing difficulties" for young backbones, and promoted the implementation of talent training, retention and introduction.

On February 7, 2022, the inauguration of Phase II of Shanghai Electric Minhang Talent Apartment Project was held, marking the kickoff of the construction of a group of talent gathering places during the 14th Five-Year Plan period of Shanghai Electric. Phase I and II of the project can provide 551 apartments, and each apartment was equipped with independent toilets and fully furnished with furniture such as water heater and frequency conversion air conditioner. The public area of the apartment is also equipped with dining rooms, laundry rooms and other living assistance facilities, which basically meet the needs of workers to live immediately.



Shanghai Electric actively helps women in employment and protects the rights and interests of female workers

Shanghai Electric has joined the "Seagull Plan" launched by the Shanghai Women's Federation and the Municipal Education Commission with the aim of "helping young women get good jobs and careers" and was awarded the "Seagull Plan Career Development and Employment Guidance Base for Female Students".

In addition, Shanghai Electric and Shanghai Electrical and Mechanical Trade Union signed a special collective contract for the protection of female workers' rights and interests upon their consensus, encouraging female workers of the Group and its affiliated enterprises to actively participate in the production and operation activities of the enterprises and make new contributions to the development of enterprises through continuous innovation. Shanghai Electric will be their strong support, providing them with a safe, healthy, comfortable and equal working environment, and firmly protecting their legal rights and interests, and showing care to them.



Living care

Shanghai Electric hoped to let employees feel the warmth of the big family all the time, and not only experienced the care in work, but also integrated the care into all aspects of life. With the goal of satisfying employee's yearning for a better life, we have built a service complex for workers and established a platform for accurately connecting social resources with workers' needs. We actively carried out various forms of cultural and sports activities, encouraged employees to actively participate in, develop hobbies, and provided a stage for employees to show their versatility. At the same time, Shanghai Electric cared about the life of every employee, provided help to the special groups, and was committed to creating a humane environment, so that employees can work at ease and live a happy life.

A good life in Shanghai Electric

Wonderful life of employees

In order to add a splash of color to employees' life after work, we held a variety of cultural, sports and educational activities, and provided a stage for employees with special talents to show themselves. The Trade Union held eight "Universal Pleasure——Staff Seminars" throughout the year on music sharing, calligraphy exchange, parent-child lectures on Chinese marks, Liupao Tea culture, portrait photography skills and home gardening, to deliver health knowledge, culture and art and practical skills to the staff. More than 120 workers participated in the onsite activities, and more than 90,000 people participated in the online live streaming activities. At the same time, the Trade Union and the discipline inspection Commission of the Group jointly held the online calligraphy and painting exhibition themed on "Integrity", collected 52 original painting and calligraphy works of employees, and selected 33 excellent works and shortlisted works. In addition to cultural influence, the Trade Union also organized the cloud clock-in activity of "Walking 120 Kilometers to Celebrate the 120th Anniversary", which attracted more than 4,000 employees, of which 2,037 employees finally finished the race, strengthening the health of the employees at time of enjoying the fun of the activity. In 2022, we selected and recommended 12 people to participate in the calligraphy and painting exhibition and e-sports competition held by Shanghai General Trade Union and recommended 127 excellent photographic works of employees to participate in the photography competition held by Shanghai General Trade Union.



Liupao Tea Tasting and Sharing Session of the 19th "Universal Pleasure——Staff Seminar"



Mr. Chen Shaoze, a national first-class actor and famous performing artist, gave a public lecture on art and culture to staff

"Overseas Homes" send warmth

We have set up "Staff Homes" for our employees who have worked overseas, and provided them with a variety of cultural exchange, learning and entertainment activities to help them solve their living difficulties, integrate into local activities and build a platform for communication. In 2022, Shanghai Electric continued to support the building of "Staff Homes and Small Homes for Employees" overseas and outside Shanghai, with subsidies amounting to 343,000 yuan. Our Trade Union has helped complete the onsite construction of 21 "Staff Homes" to send warmth of home to the employees who have worked overseas.



"Love Mommy Hut" has been upgraded

We have set up the "Love Mommy Hut" for female employees to have a private, hygienic and safe place to rest during pregnancy and breastfeeding period. We continued to improve the facilities of the hut so that mothers-to-be and new mothers can have a relaxed and happy mood while having a well-equipped exclusive place. Since the hut was set up, the Group has helped build 52 "Love Mommy Huts", including 4 five-star and 6 four-star huts.



Talent Cultivation for Mutual Achievement

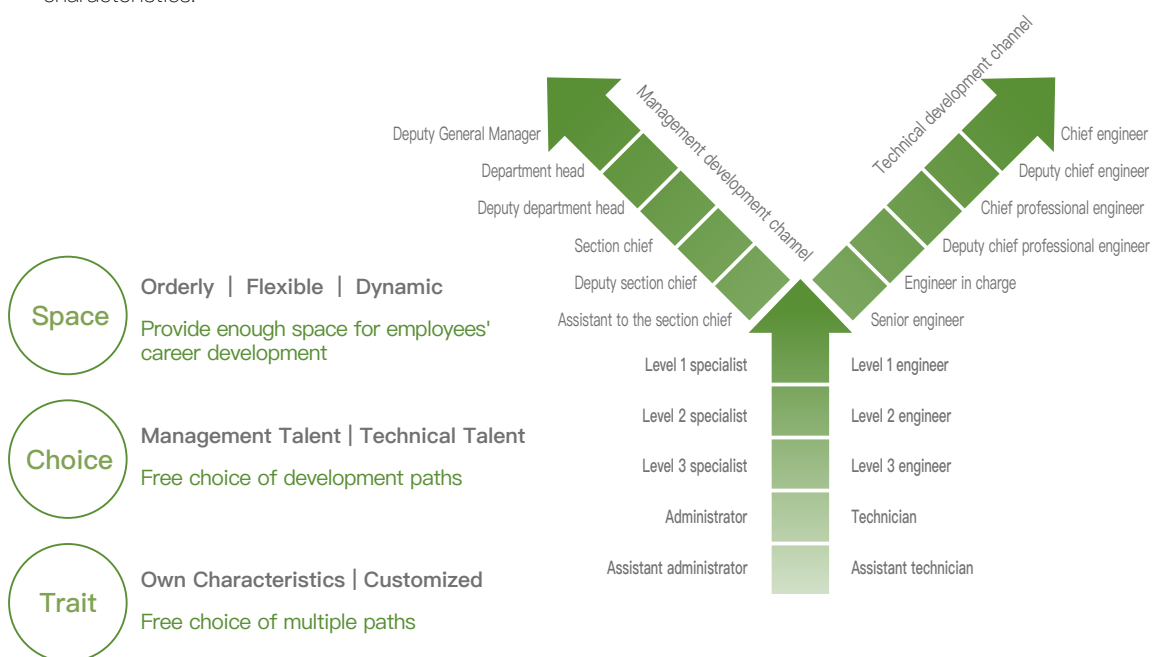
Oriented to cutting-edge technology, cultivate innovative talents and provide multiple training methods and incentive mechanism to promote the common progress of employees and the Company.

Talent reserve

Shanghai Electric sets up new policies and plans to build career growth channels for different employee groups. We focus on strategic transformation, actively build the talent teams for new sectors, strive to create a diverse and inclusive environment, and promote the green transformation and development of the Group with talent reserve as the driving force.

Career development Y channel

Shanghai Electric understands the high-quality talents is an important factor to build a high-quality team and promote the progress of the Company as well as the core competitiveness of the Company. In order to improve the enthusiasm of employees, give full play to their own talents and expand their possibilities, we have built a "Y-shaped" career development channel, aiming to encourage employees to choose a development channel suitable for them according to their own characteristics.



New talent policies for new industrial sectors

In 2022, the Group focused on "strategic reserves" and intensified its opening up to attract talents. With the goal of "Building Shanghai Electric into a highland of high-level talents, constructing a pyramid structure of talents and creating a high-quality talent ecology", we have formulated the new talent policies for the Group's new industrial sectors, aiming at gathering a team of high-quality professional cadres and talents and building a talent ecosystem of scientific and technological innovation for Shanghai Electric.

The Group has formulated 14 new sector-oriented talent policies in five major aspects.

Overview of new sector-oriented talent policies

5

major aspects

14

policies

1

Planning Budget

Synchronous Resonance

Planning and synchronising industry and talent

Benchmarking advanced

Implementing a separate budget for new track talent

Collaborative Response

Establishing an optimal agile team management structure

2

Talent Introduction

A bold breakthrough

Innovative ways to bring in talent

Spotlight on leading talents

Talent fund support

Activation Team

Deepening the contractual management of managers

3

Innovation Incentive

Breakthrough pilots

Opening up to a variety of medium and long-term motivational tools

Quantifying Value

Focusing on motivating technology professionals

Openness and Transparency

Encourage motivational activities

4

Flexible use of talents

Unrestricted promotion

Encourage open competition for employment

Breaking down barriers

Promoting internal talent mobility

Open collaboration

Strengthen the integration of industry, academia, research and application

5

Resource Protection

Living and working in peace and contentment

Diversifying talent security and services

Highland of talent

Encourage industries to make full use of the Group's new talent policy

In terms of talent introduction, the new talent policies focus on guiding the opening up of new industrial sector to attract and employ talents and gathering the leading talent strength to form a strong talent support for the Group.

In addition, the new talent policies and the supporting innovation incentive mechanism can stimulate the scientific and technological innovation and the transformation of growth drivers through various market-based incentives.

Make the "One-person, One-strategy" high-end talent introduction plan

- ◆ The Group selected and employed external experts to fill its expert and talent pool by a variety of cooperation or employment methods. The external experts can serve as the Group's scientific and technological experts or project leaders.

Provide fund support for talents

- ◆ The Group provides the differential salary compensation for high-end talents
- ◆ The Group provides the fresh graduates in the admission list with the single-column award of the total salary.
- ◆ The Group provide the differential salary compensation for technical trainees and management trainees.
- ◆ The Group sets up awards for successful internal

Strengthen the contractual management of the managers

- ◆ The Group has achieved a 100% contractual coverage of enterprise managers in new industries and new sectors, and implemented differentiated compensation, market-based exit mechanism and long-term tenure incentive to continuously stimulate the motivation and vitality of enterprises.

Implement diversified long-term incentive

- ◆ The Group rewards important technical and managerial personnel in the form of "equity + cash".

Develop market-oriented result incentive

- ◆ The Group is driven to evaluate the value of scientific and technological achievements through market-based methods and rewards the value-added part of technical teams.
- ◆ The Group is encouraged to formulate special reward systems and schemes for major projects and research and development subjects, and explore corresponding assessment and incentive modes. As a milestone reward for major scientific and technological projects of enterprises, the total salary can be added.

Unveil a hero by practical ability

- ◆ The Group encourages the high-end technical talents at all levels to "reveal the list". During the revealing period, they can enjoy the corresponding treatment of scientific and technical experts, and have more autonomy to team building, budget control, bonus allocation, etc.

During the reporting period, Shanghai Electric introduced 28 leading technical talents in the fields of hydrogen energy, photovoltaic and energy storage through the open and fully-authorized talent introduction schemes and the open and transparent incentive mechanism featured with pilot breakthrough and value quantification; and 14 people from the Group participated in the pilot and promoted "Revealing the list and taking command". mechanism of major projects.

Talent map

In 2022, Shanghai Electric drew a strategic talent map around the strategic planning of the Group and focused on promoting the construction of three talent teams and attracting strategic scientists, high-end talents and innovation teams to join, so as to drive the practical transformation from talent strategy to talent reserve.

Outstanding engineer team

- With the focus on the training program for outstanding engineers, we have formed a training mode combining professional depth with horizontal communication expansion, and always mastered and highlighted a group of "key minority" leading technical innovation talents to carry forward the engineer culture.

Craftsman team

- With the focus on the evaluation and employment of chief technician, special-grade technician selection, and "3+3+3" graduate joint training program of Shanghai Polytechnic University, we focused on the leading talents and carried on the craftsman spirit to establish a talent team of craftsmen.

HQ employee teams

- Based on the organizational structure adjustment plan of the headquarters and in compliance with the principle of "streamlining, efficiency and professionalism", we strictly controlled the size of the HQ teams, rationally optimized the HQ staff structure, and strengthened the HQ capacity and quality construction.

Internal talent market of the Group

In 2022, by further invigorating its internal talent resources and fully exploring the value and potential of its employees, Shanghai Electric established the internal talent market of the Group, which gives priority to internal recruitment for the job needs of various enterprises within the Group, so as to provide more job choices, career development opportunities for employees and promote the talents to create greater value in more suitable positions.

The establishment of the internal talent market of Shanghai Electric has successfully broken the barriers between the Group and enterprises and promoted the flow of internal talents. In 2022, the staff turnover rate of the Group was 3.5%, lower than last year, especially in Shanghai, where the staff turnover rate fell by 0.33% year on year.

Employee turnover (percentage to total number of employees)

YEAR	GENDER		AGE (YEARS OLD)				AREA	
	Male	Female	Below 30	30-39	40-49	50 and above	Shanghai	Outside Shanghai
2021	3.1%	0.8%	1.3%	2.0%	0.5%	0.1%	3.5%	0.4%
2022	2.73%	0.76%	1.21%	1.80%	0.37%	0.11%	3.17%	0.32%

Talent cultivation

We uphold the management-oriented and technology-oriented employment concept and provide enough space for the development of different types of talents. We set up the "Excellent E+" training system for young college students, the training courses for young and middle-aged management personnel, and the seminar for model worker and craftsmen, so as to upgrade the comprehensive quality of Shanghai Electric staff in an all-round way.

Young college student cultivation

In 2022, based on the original "1+3+5" training system for young college students, Shanghai Electric grasped the law of youth growth and launched the "Excellent E+" training system. By taking synergy from top to bottom, extension at both ends, and open empowerment as a general idea, the system accelerated the cultivation of young talents needed by the development of the Group through systematic training in five stages: integration period, cognition period, accumulation period, promotion period and maturity period. We actively carried out the training programs for the urgently-needed talents in national key industries and outstanding engineer reserve talents of the Organization Department of the CPC Central Committee with various colleges and universities. We have successively signed cooperation agreements with Shanghai Jiaotong University, Huazhong University of Science and Technology, East China University of Science and Technology and other colleges and universities. At present, 32 people have been included in the training program.

"Excellence E+" Young College Students Development Systems



E-based Future Youth Innovation Competition

The Youth League Committee of the Group, together with the Science and Technology Management Department of the Group, held the Shanghai Electric E-based Future Youth Innovation Competition themed on "Strive for Innovation, Live up to Youth", and set up three theme courses of "Intelligent Energy", "Intelligent manufacturing" and "Intelligent infrastructure", which attracted 132 teams to participate. During the competition, the Group organized various activities such as master lecture, youth sharing and mutual learning. Shanghai Electric hoped to create an innovative atmosphere among the youth in the form of innovation competition, and lead them to embrace challenges, promote knowledge exchange, mutual learning and mutual progress.



Training programs for young and middle-aged personnel

In order to cultivate a team of managerial and administrative talents who can led the industry to "win the battle", Shanghai Electric focused on the seven business priorities of "Management Improvement Year" and carried out training programs for young and middle-aged managerial and administrative personnel. The programs aimed to enhance the young and middle-aged managers' understanding of the connotation of strategic business and high-quality development of the Group and the understanding of the work requirements of "Management Improvement Year", and meanwhile expand their management concepts, management knowledge and skills and improve their scientific decision-making ability and excellent execution ability, so as to build a reserve team of young and middle-aged managerial talents suitable for high-quality development.

Training courses for young and middle-aged managerial and administrative personnel

In 2022, the first and second sessions of training courses for young and middle-aged managerial and administrative personnel of Shanghai Electric, themed on "Steady and Far Away in Progress" were completed on July 28 and November 5 respectively. A total of 28 trainees from the Group headquarters and affiliated industries and enterprises participated in the first session of training courses, and 16 trainees participated in the second session of training courses. Through these two sessions of training courses, Shanghai Electric hoped to continuously improve the strategic insight and self-drive force of young and middle-aged cadres, so that they would become not only the managers in professional fields but also the managers of state-owned enterprises in pursuit of entrepreneurship.





Seminar for technicians

In order to meet the needs of model workers and advanced technicians in education upgrading and comprehensive quality improvement, Shanghai Electric signed a school–enterprise cooperation agreement with Shanghai Polytechnic University to jointly help realize the integration of production and education and establish a school–enterprise integrated training mode for highly skilled talents. Since the implementation of the "3+3+3" technician training project 14 years ago, Shanghai Electric has opened 23 sessions and 27 training courses, covering training for 13 professional types of work. At present, 558 trainees have graduated and obtained the bachelor's degree, college degree and "double certificates" for technicians and senior technicians.

Seminar for training "3+3+3" technicians into model workers and craftsmen

On the morning of February 26, Shanghai Electric officially kicked off the seminar for training "3+3+3" technicians into model workers and craftsmen. The training programs of the seminar have been upgraded again and provided the graduate courses tailored for model workers and first–line skilled talents, so that the continuing education of model workers and employees was closely integrated with the industrial upgrading, enterprise development, and technological innovation.



In 2022, Shanghai Electric invested a total of 104.55 million yuan in training, covering the staff of various job levels, of which the senior management accounted for 100%, and the middle management and general staff took up more than 97%, with an average coverage rate of 98.56%.

GENDER	FEMALE			MALE		
	Senior management	Middle management	General staff	Senior management	Middle management	General staff
Percentage of training	100%	98.70%	97.17%	100%	98.36%	97.10%
Average number of training days	4.8	2.9	2.7	4.8	2.9	2.7

Care for Health and Safety Protection

Adhere to the concept of safe development, ensure the safe working environment of employees, and protect the physical and mental health of employees.

Safety mechanism

Under such laws and regulations as the Law of the People's Republic of China on Workplace Safety, the Law of the People's Republic of China on the Prevention and Control of Occupational Diseases, the Measures for the Administration of Emergency Plans for Workplace Accidents, and guidelines like the ISO 45001: 2018 Occupational Health and Safety Management Systems — Requirements with Guidance for Use, the GB/T 33000-2016 Guideline of China Occupational Safety and Health Management System, we strive to establish a sound health and safety management system to minimize workplace accidents.

The year 2022 was the final year for Shanghai Electric's three-year special rectification action on work safety. Shanghai Electric constantly improved the efficiency of safety and environment management. On the basis of continuously promoting the "SEC-LOVE" safety and environment management model in a new era, Shanghai Electric has formulated and released the Three-year Special Rectification Action on Work Safety of Shanghai Electric — 2022 Work Plan.

Furthermore, by centering on the continuous strengthening of the effective implementation and efficient operation of the EHS management system, the Group arranged for all units, in combination with the internal audit of the EHS system operation, the performance evaluation of work safety standardization operation and other work, to make every effort to organize and conduct relevant activities for the improvement of the safety and environment management system, and the use and storage of dangerous chemicals, and the special rectification activities on explosion-related dust and limited space. During the reporting period, our enterprises carried out a total of 672 special rectification activities, rectified 2,327 non-standard items, and further improved the overall safety and environmental management efficiency of the Group.

Strengthening risk control in key areas, vigorously carrying out EHS supervision and inspection and special inspection

In view of the key points, difficulties and weak points in the risk control of environmental protection, the Group strengthened the on-site supervision and professional technical guidance to improve the effectiveness and pertinence of the overall work. As planned, the Group organized and implemented EHS supervision and inspection and special inspection, covering all subordinate manufacturing enterprises and totaling 147 times. By taking the Regulations of Shanghai Municipality on Fire Fighting as the standard, the Group carried out special inspection and comprehensive fire extinguishing ability evaluation on key fire control enterprises, so as to improve the fire equipment ability, and also formulated and released the 2022 Special Rectification Action on Fire Safety of Shanghai Electric and the Implementation Plan of Shanghai Electric Concerning the Special Rectification "100-day Closer-to-Zero Action" on Work Safety. Meanwhile, the Group has carried out special evaluation and evaluation involving 158 enterprises in seven key areas and key units, including production safety standardization, enterprises outside Shanghai, occupational health, environmental protection, hazardous chemicals, hazardous waste and fire extinguishing ability.

In addition to risk control in key areas, the Company management has repeatedly led the team to carry out production site safety inspection on industrial groups and enterprises as well as the production inspection on subordinate enterprises, striving to do a good job in production safety with two hands.

Never lower the guard around the National Day, keep safe to wish our country a happy birthday

Around the National Day, all kinds of production and operation activities entered into the peak season. The management of Shanghai Electric respectively led a team to the production field of some industrial groups and enterprises to carry out work safety inspection, so as to effectively guarantee the normal production and operation and stabilize the work safety .



Leng Weiqing, secretary of the Party Committee and chairman of the Group, walked into Shanghai Dahua Electrical Equipment Co., Ltd. and heard the work report



Liu Ping, deputy secretary of the Party Committee, and president of the Group visited Shanghai Tool Works Co., Ltd. and inspected the safety and environment management



Dong Jianhua, executive vice president and member of the Party Committee of the Group inspected the 709 Multi-media Park



Yang Hong, vice president of the Group, inspected Shanghai Automation and Instrumentation Co., Ltd.

During the reporting period, there was no death due to industrial injuries and no serious injuries in Shanghai Electric. The number of working days lost due to industrial accidents was 4,305, 31% less than last year.

YEAR	2020	2021	2022
Work-related death (person)	0	1	0

Shanghai Electric effectively guarantees the health and safety of its employees, constantly improves the occupational disease prevention and management and corresponding measures by means of management system and technical transformation, and further strengthens the effectiveness of the occupational disease source treatment, which effectively controls the occupational disease hazards in the workplace and protects the health rights and interests of its employees.

In order to improve the level of occupational health monitoring in enterprises, Shanghai Electric promoted and applied the appropriate labor protection technology, process, materials and equipment. Through special inspection, management, supervision and other means, Shanghai Electric verified the integrity of the enterprise's occupational health archives, the effectiveness of on-site occupational disease prevention facilities, the rationality of the allocation of occupational disease prevention articles, and the coverage rate of the physical examination of occupational disease inductive posts, and put forward the requirements and suggestions for improvement in terms of management, process and technology.

In 2022, via the Internet and digital platform, Shanghai Electric introduced high-quality medical resources and launched the enterprise health management "cloud" project, which provided convenient medical services by means of 7x24 hours remote medical services mental health consultation, green channels for medical treatment and so on, to improve the enterprise health management level in an all-round manner. Since it was kicked off in August, a total of 273 overseas workers have received remote video medical services.



Training and education

It is an important routine work for us to formulate the health and safety training plans and carry out relevant training regularly. Through employee exchanges, system learning, emergency drills and theme activities, in combination with online and offline channels, we have carried out publicity and education activities on safety and environment management in a comprehensive, multi-disciplinary and targeted manner, so that the concept of health and safety will be deeply rooted in employees' minds.

In combination with the actual situation of the Group and the focus and main tasks of safety and environmental protection work in 2022, Shanghai Electric has formulated the "Shanghai Electric 2022 Safe Production Month and World Environment Day" Action Plan and organized and developed the safe production month activity themed on "Abide by the Work safety Law, be the first responsible person" within the group headquarters, industrial groups and subordinate enterprises.

1

We carried out 845 sessions of work safety learning activities such as "Open Classes", "Let's Talk" and "Team Meeting", with 34,667 attendances in the publicity of safety and environment protection.

2

We organized the subordinate units to learn and publicize fifteen mandatory measures on safety production, and carried out 786 sessions of relevant learning and publicity activities, with 33,434 attendances.

3

We organized all units to gradually revise and improve their emergency plans and organize and carried out 338 emergency drills of various kinds with 8,914 attendances in light of actual conditions, covering electric shock, lifting injuries, fire, dangerous chemicals, limited space, flood and typhoon prevention, etc.

4

We conducted the publicity activities themed on the Law on Work Safety and Regulations of Shanghai Municipality Work Safety, and actively organized online knowledge contest on "How Much Do You Know about the New Work Safety Law", with a total of 16,422 attendances.

5

By taking the "Regulations of Shanghai Municipality on Work Safety" as the starting point, we specially invited experts from Shanghai Emergency Management Bureau to a special training on how to implement the main responsibility of enterprise work safety, to further strengthen the sense of responsibility of the cadres and earnestly shoulder the responsibility of the "first responsible person" in work safety.

6

By setting up special columns in various media, we organized the comprehensive, multi-angle and multi-dimensional publicity and risk warning education activities for our employees. All units made the public service advertisements, posters, short videos and voice prompts, totaling 1,515 pieces and with 49,211 attendances.





An emergency plan drill



An emergency rescue drill



A fire drill



An on-site meeting held by internal auditors on emergency response drill

Ensure work safety standardization was up to par

In order to enable relevant industrial groups, engineering companies and project departments to better, more effectively and accurately implement the "Project Safety and Environmental Protection Management Standards", the "Implementation Manual on the Management and Control of Project Risks", and the "Operation Inspection Methods for the Management and Control of Project safety and Environmental Protection Risks" issued by the Group and ensure the work safety standardization of projects was up to par, on June 28, the Group specially invited the industrial safety experts to the publicity and training activities for the leaders with specific duties, project managers, safety directors and safety-related managers of the three major industrial groups, related engineering companies and project departments involved in the engineering projects, with a total of 217 attendances.

Awarded by "Ankang Cup" competition

In recent years, the relevant units of Shanghai Electric have implemented the decisions and arrangements of the country and Shanghai Municipality on work safety, and by closely centering on the competition theme of "strengthening awareness, investigating into hidden dangers, promoting development and ensuring safety and health", earnestly organized its employees to carry out mass hidden danger detection, occupational health protection and safety culture popularization and education activities, and constantly enriched the contents and forms of competition activities, so as to continuously promote the innovative development of the work safety of enterprises and the labor protection of the Trade union. In August 2022, according to the results of the 2020-2021 National "Ankang Cup" (Shanghai Division) Competition jointly held by Shanghai General Trade Union, Shanghai Emergency Management Bureau and Shanghai Municipal Health Commission, a total of 53 enterprises, 1,685 teams and groups, and 27,668 employees of Shanghai Electric signed up for the competition; and 12 groups and individuals were respectively awarded by the national "Ankang Cup" competition and Shanghai Division.



"Female Driver Challenge" of Ankang Cup Employee Skills Competition



Poster of "Ankang Cup" Competition



2020-2021 "Ankang Cup" Competition Honor List

06

JOINTLY WRITING A CHAPTER OF BUILDING A HARMONIOUS SOCIETY

In addition to creating economic value, Shanghai Electric has also kept its corporate social responsibility in mind. We care about people's livelihood, always keep in mind the historical mission of rewarding and serving the society, boost national rural revitalization with our technical strength, and offer financial support for social charity and public welfare. Meanwhile, we have taken the initiative to provide foreign assistance and fulfilled the group's social responsibilities effectively.



Contributing to Rural Revitalization

The company has cared about rural development, and helped tap the economic development potential in rural areas through project construction and special supports, so as to make contribution to rural revitalization.

The year 2022 marks the beginning of the 14th Five-Year Plan and a key year for promoting rural revitalization in an all-round way. As a leading enterprise in China's advanced equipment manufacturing industry and a representative of state-owned enterprises in Shanghai, Shanghai Electric is deeply aware of its great responsibility in consolidating and expanding the achievements of poverty alleviation and rural revitalization. We have focused on our business development, and striven to upgrade rural infrastructure construction through rural local project construction, improved rural economic and social development, and offered more employment opportunities for rural residents, in order to contribute to rural revitalization.

The group has been paired to help local development and promote rural revitalization. In 2022, to consolidate and expand the achievements of poverty alleviation and rural revitalization, the group gave priority to Zhuanghang Town, Fengxian District, Shanghai, and allocated RMB600,000 of support fund; and helped sell pears, yellow peaches, rice and other agricultural products of Fengxian District and got RMB1.527 million. In the program of "Double One Hundred" village enterprise for pairing up for targeted poverty alleviation, the group provided a total of RMB450,000 of support fund to three villages in Mohong Town, Fuyuan County, Qujing, Yunnan Province.

Boosting rural revitalization and environmental protection

In March 2022, Li Jianzhong, Vice Governor of Anhui Province, and his party visited Shanghai Electric Wuhe Biomass Thermal Power Co., Ltd. for an inspection. During the inspection, Li Jianzhong fully affirmed the contribution of Wuhe Power Plant to local "carbon peak and carbon neutrality" and rural revitalization strategy. Wuhe Power Plant of Shanghai Electric is one of the five major biomass energy cogeneration projects invested by Shanghai Electric Environmental Protection Group in Anhui, and owns the world's advanced desulfurization and denitrification environmental protection technologies. The power plant could process 400,000 tons of biomass fuel, such as biomass straws and agricultural and forestry wastes every year, bringing nearly 90 million for local farmers a year and solving employment for more than 1,500 people. The annual biomass fuel treatment capacity of the project is equivalent to a reduction of 110,000 tons of standard coal consumption or 150,000 tons of carbon dioxide emissions, and its average annual cumulative power generation capacity is 250 Gwh, realizing the agricultural circular economy model concept of "resource-product-waste-renewable resources". Wuhe Power Plant helps increase employment and income for farmers in surrounding areas and improve local fiscal revenue and environmental protection successfully, so as to achieve the unity of social, economic and environmental protection benefits.



Ecological wind power supports rural revitalization

With the in-depth implementation of the 14th Five-Year Plan, the rural revitalization strategy ushered into the stage of full implementation in China, while "new energy + rural revitalization" is becoming the key emphasis of national efforts. In July 2022, Shanghai Electric signed the Strategic Cooperation Framework Agreement with Jilin Provincial People's Government, under which both sides will carry out in-depth strategic cooperation in green energy development. Among them, the 40.2-megawatt rural revitalization new energy project in Gongzhuling, Jilin Province, is one of the first and largest decentralized wind power projects in the area. Shanghai Electric gave full play to its advantages in R&D and manufacturing, promoted wind power generation, strengthened clean coal utilization, and increased the proportion of clean energy in North China in a safe and orderly manner, in a bid to provide effective support for rural revitalization in Gongzhuling as soon as possible.

Charitable Donations to Show Care to the Society

With a global view, the company has focused on the national economy and people's livelihood, and taken an active part in charity, public welfare and foreign assistance, which indicates its responsibility of great love.

In order to better practice Shanghai Electric's responsibility and mission as a state-owned enterprise, Shanghai Electric has always regarded charity as an important component of its social responsibility. We focus on our advanced business level and scientific and technological capabilities, actively give play to our advantages in many areas and fields, and continue to provide fund, manpower and technical assistance to poverty-stricken areas, disaster areas and other areas in urgent need of help. In recent years, Shanghai Electric has gradually turned from single temporary donation to a strategic donation, with the intention of taking charity as its long-term development strategy and contributing its pygmy efforts to building a harmonious society.

Charitable donation

Shanghai Electric believes that charitable donation is a rapid and efficient means to achieve common prosperity and solve urgent social problems. We are continuously exploring new charitable donation patterns, holding diverse charity donation activities according to our advantages, and constantly expanding our influence to encourage our subsidiaries to join the charity programs. In 2022, Shanghai Electric and its subsidiaries donated a total of RMB337,000.

Donation form of subsidiaries of Shanghai Electric in 2022

NAME OF SUBSIDIARY	RECIPIENT	DONATION AMOUNT/ MATERIAL (RMB)
Shanghai Electric Group Real Estate Co., Ltd.	Xinye Village, Zhuanghang Town, Fengxian District	7,110
Shanghai Electric Wind Power Group Co., Ltd.	Daitou Community, Guang'ao Subdistrict, Haojiang District, Shantou	50,000
Shanghai Electric Wind Power Group Co., Ltd.	Chaonan District epidemic prevention and control commando team supported by Shantou Development and Reform Bureau	80,000
Shanghai Electric Wind Power Group Co., Ltd.	Huilai County, Jieyang	100,000
Shanghai Mitsubishi Elevator	Minhang Jiangchuan Community Development Foundation	100,000

Preservation of cultural relics

By virtue of its scientific and technological strength, Shanghai Electric helped excavate precious cultural relics hidden underwater for more than 150 years old, which was a milestone for China's underwater archaeology cause. Besides, the Group completed the "hardest-ever" salvage in history by relying on its equipment strength, which not only demonstrated its processing strength in the field of high-end assembly manufacturing, but also fully reflected its new thinking of the industrial ecosystem of "crossover integration and common development" based on its technology.

Helping China's underwater archaeological relics salvage with its scientific and technological strength

In the early morning of November 21, 2022, after 77 days of offshore operation, Shanghai Electric Nuclear Power successfully completed the overall salvage of "Changjiangkou II", the largest-ever wooden shipwreck discovered in underwater archaeology. The salvage device was a super-large, high-precision limit device, with extremely high requirements in welding, assembling and machining precision, whose manufacturing process was extremely challenging. The scientific research team of Shanghai Electric Nuclear Power tackled the problems of welding deformation control of large plane and arc devices, the machining of large rotating parts and the large workpiece assembly precision control and measurement precision control one after another. Within eight months, it successfully manufactured a total of 2,600 tons of equipment, applying large arc beam technology for nuclear power in the fields of archaeology and relics preservation.

Shanghai Electric's support for archaeology and relics preservation fully reflected the integrated development of relics preservation and scientific and technological innovation, providing new methods, new ideas and new cases for the overall salvage patterns of underwater archaeology as well as Chinese concepts and Chinese experience for global underwater archaeology.



Taking actions to guarantee supply and production

In March 2022, Shanghai Electric gave full play to its advantages, assumed the responsibility of guaranteeing supply and production, actively helped with the construction of Fangcang shelter hospitals, protected residents' elevator emergency services from outage, and ensured the construction of the government's key projects on schedule. Since June, with the accelerated production in Shanghai, Shanghai Electric implemented various protection work requirements in earnest, quickly adjusted its production strategy, increased the production efficiency, and went all out to ensure urban operation and delivery of key projects. In this defense battle, Shanghai Electric demonstrated not only its powerful enterprise resilience and performance capabilities, but also its workstyle as a state-owned enterprise.

Guaranteeing urban emergency supply to Shanghai



In April, Pudong Metro was out of service. Shanghai Electric Thales and Shentong Metro Group worked closely to adjust the on-site personnel organization and the distribution of emergency response forces in real time.

The maintenance team was divided into groups of four for 24-hour centralized closed management, provided uninterrupted duty guarantee for the seven main lines of rail transit in the Puxi section, and set up an emergency response team in Puxi to stand by for 24 hours. Meanwhile, the team set up a 24-hour duty station in the Longyang Road base, and stood by all time to meet the emergency repair demands of customers. In brief, Shanghai Electric's team tried its best to make full preparations for the restored subway operation and guarantee the travel of citizens.

In April, people's power plant of Shanghai Electric Appliance Co., Ltd., a subsidiary of Shanghai Electric Power Transmission & Distribution Group, opened a "green channel" for coordinated optimization and cooperative response to suppliers, production lines, logistics and other resources one by one. In particular, the front-line team step up production at full capacity to provide switching components for centralized isolation management sites due to infectious disease in Jiading within a day. In the special time, the plant received orders of power distribution projects from different areas, so its workers refreshed their production speed and raced against the clock to fully support urban construction.



In early June, Shanghai Electric SHMP Casting & Forging Co., Ltd. stepped up production in all working procedures, including electroslag remelting, electric furnace smelting, forging, thermal treatment, machining and testing, ensuring the completion of national key projects on schedule and the safety of the supply side of the key industrial chain.

Foreign assistance

With the deepening of globalization, Shanghai Electric has established solid and friendly partnerships with many parts of the world by virtue of its high-quality products and services. Meanwhile, we have always paid attention to the hot topics about people's livelihood in the international community, actively responded to the call for international assistance, and made positive contributions to people's well-being and community development in various countries and regions by means of financial support, technical assistance and project construction, and made unremitting efforts to build a human community with a shared future.

Shanghai Electric's Tar projects made contribution to the development of the China-Pakistan Economic Corridor

At the 14th Annual Corporate Social Responsibility Summit of the National Environment and Health Forum of Pakistan in March, Shanghai Electric's Tar power station project won the Corporate Social Responsibility Award; and the Tar coal mine project won the Outstanding Public Health and Safety Award, the Outstanding Educational Responsibility Award, the Outstanding Community Development Service Award, and the Green Energy Plan Award.

In September, Shanghai Electric's Tal coal and electricity integration project won the 19th Annual National Outstanding Environmental Protection Award of Pakistan at the National Environmental Protection and Health Forum in Karachi, which is the project's second honor after winning the award for the first time in 2021. Sponsored by the local national-level environmental protection forum and social responsibility committee, and organized by the Karachi Administration of Industry and Commerce, the forum aimed to call on local companies to raise their awareness of green development and play an active leading role in strengthening the "green earth" reconstruction process.

The Chinese Consulate General in Karachi spoke highly of Shanghai Electric's Tar projects, sent a letter of praise for the Tar Coalfield Block-I Coal Electricity Integration Project, fully affirmed the concerted efforts and hardworking spirit of all staff of the project, and highly appraised the successful completion of multiple major nodes of the Tar power station and coal mine projects.



Shanghai Electric opens Chinese classes jointly with University of Karachi

In March 2022, a Chinese class opening ceremony was held in Lslamkot Town, Tar Coalfield, Sindh province, Pakistan, marking the official establishment of the Tar Chinese Teaching Center jointly organized by the Tar Coalfield Block-I Coal Electricity Integration Project of Shanghai Electric and the Confucius Institute of University of Karachi, with the aim to provide free basic Chinese language teaching services for local residents and Pakistani employees of the project. The first Chinese class planned to provide free Chinese language training for 30 project employees and 60 local students. In addition, Shanghai Electric plays an active role in creating jobs, improving water sources, strengthening power supply and improving the environment. The project created nearly 7,000 local jobs, further deepening China-Pakistan friendship.



Community Care to Warm Others

Putting community construction into practice, and passing on warmth

Voluntary services are an important carrier for strengthening and promoting the construction of spiritual civilization in modern society. Shanghai Electric has practiced the corporate social responsibility actively, and organized and established a youth volunteer association to give full play to the enthusiasm of employees who are enthusiastic about public welfare and provide help to people in need. Meanwhile, Shanghai Electric has held environmental protection public welfare events actively, and advocated green lifestyles. We and our subsidiaries have always maintained close ties with local communities to help build harmonious communities with warmth, health and environmental friendliness.

Green public welfare

Shanghai Electric has adhered to the concept of sustainable development, always paid attention to green public welfare and made unremitting efforts to build a green ecosystem. On the 120th anniversary of Shanghai Electric in 2022, we launched a series of public welfare activities of "120 Green Footprint" with the creative theme of protecting the green environment, advocating green lifestyles and boosting green development.

Launching public welfare afforestation jointly with China Green Carbon Foundation



In 2022, Shanghai Electric launched green public welfare cooperation with China Green Carbon Foundation to plant the first Shanghai Electric low-carbon green forest on the west bank of the Yellow River in Yan'an, Shanxi Province. The green forest was composed of 1,200 oriental arborvitae trees, each of which can reduce about 96kg of carbon during the whole life cycle. In the public welfare cooperation, Shanghai Electric implemented its corporate responsibility to protect the ecological environment and create green and sustainable value for a better life for mankind.



Green Footprint "0 Carbon Walker"

From September 29 to October 10, Shanghai Electric launched the online public welfare event of "0 Carbon Walker" jointly with Huanqiu.com with the theme of "1 person, 20,000 steps, 0 carbon future" as the theme, in a bid to advocate travel green in the public. More than 1.11 million people followed and participated in the event through WeChat Mini Program. The participants walked 20,000 steps in exchange for green footprints, so as to the digital collection award of Shanghai Electric Low-Carbon Green Forest and contribute to a zero-carbon future together with Shanghai Electric.



Community contribution

By virtue of its corporate responsibilities, Shanghai Electric has given back to the society, provided voluntary services to communities, improved transportation and housing infrastructures with its technical strength, and provided residents with smarter and safer ways to travel.

Caring for autistic children in the "Blue Ribbon" public welfare activity



Since its establishment in 2015, the Blue Ribbon Volunteer Team of Shanghai Electric Wind Power Group has been committed to providing help and care for autistic children and their families, giving back to the society, and promoting the development of public welfare undertaking and the construction of corporate spirit culture.

In September 2022, Shanghai Electric Wind Power Group organized a public welfare activity with the theme of "Spiritual Care for Autistic Children" jointly with Blue Harbor Autism Youth Development Center, in which four autistic children and their families and more than 20 volunteers with their families participated. Volunteers made classic vintage bags together with the children from "Blue Harbor" to get close to them and encourage them to step out of their own world and integrate into society soon.

"Xiaodianhe" volunteer action



The CYL committee of the group mobilized CYL organizations at all levels to lead young people to actively participate in voluntary services, and established the "Xiaohedian" youth volunteer team this year. The group actively responded to the SASAC's call, and assigned a volunteer team to help Meilong, Minhang, with more than 100 volunteers on standby. During the special period of centralized disease prevention in Shanghai, CYL organizations at all levels assigned 72 youth teams and 45 volunteer service teams, and 3,617 CYL members participated in the prevention and control of epidemic infectious diseases in communities.

Guaranteeing convenient travel for citizens

It's crucial for citizens to enjoy convenient and safe travels. With growing travel demands of citizens in Nanchang and Hefei, 39.6km and 41.37km of subway lines needed building in the two cities, respectively. Because the subway lines have the longest operating mileage in the area, Shanghai Electric Thales' project team provided the subway with a vital signal system through close cooperation and scientific planning with relevant local departments, ensuring that the high-standard, high-quality opening of the two lines. On December 26, Nanchang Metro Line 4 and Hefei Metro Line 4 were officially put into operation, bringing a more convenient travel experience to local citizens.



Elevator installation project for people's livelihood in old communities

On November 30, 2022, Shanghai Mitsubishi Elevator welcomed the honorary customer of the 12,000th elevator, Zhongyuan Liangwan City in Putuo District, Shanghai. It held a solemn ceremony for the delivery of the 12,000th elevator, and handed over the commemorative plaque to users. Zhongyuan Liangwan City was developed in 1999. Its old elevators were in a poor condition and urgent need of renovation. Shanghai Mitsubishi Elevator tailored a renovation scheme for Zhongyuan Liangwan City, which shortened the renovation period and reduced disturbance to residents during the renovation without destroying the original building structure and decoration as much as possible. Meanwhile, it increased the height of elevator cars, improving the decoration of elevator cars, and equipping the automatic identification system of electric bicycles and antibacterial buttons, so as to bring residents a safer, more comfortable and intelligent experience. In addition, in order to make the users feel more comfortable and save money for using the elevators in the future, Shanghai Mitsubishi Elevator made a 10-year warranty commitment for the core components, and included the elevators into Shanghai Mitsubishi remote monitoring system to ensure long-term and efficient operation and maintenance management.



Appendix I. Environmental, Social and Governance Reporting Guide of HKEX Guide Index

Subject Areas, Aspects, General Disclosures and KPIs

Disclosed in

A. Environmental		
Aspect A1:Emissions		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste.	3.2 Energy Conservation and Efficiency Improvement for Green Development 3.3 Regulating Pollution Discharge by Addressing Both Symptoms and Root Causes
KPI A1.1	The types of emissions and respective emissions data.	3.3 Regulating Pollution Discharge by Addressing Both Symptoms and Root Causes
KPI A1.2	Greenhouse gas emissions (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	3.2 Energy Conservation and Efficiency Improvement for Green Development
KPI A1.3	Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	3.3 Regulating Pollution Discharge by Addressing Both Symptoms and Root Causes
KPI A1.4	Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	3.3 Regulating Pollution Discharge by Addressing Both Symptoms and Root Causes
KPI A1.5	Description of emissions target(s) set and steps taken to achieve them.	3.2 Energy Conservation and Efficiency Improvement for Green Development 3.3 Regulating Pollution Discharge by Addressing Both Symptoms and Root Causes
KPI A1.6	Description of how hazardous and non-hazardous wastes are handled, and a description of reduction target(s) set and steps taken to achieve them.	3.3 Regulating Pollution Discharge by Addressing Both Symptoms and Root Causes
Aspect A2:Use of Resources		
General Disclosure	Policies on the efficient use of resources, including energy, water and other raw materials. Resources may be used in production, in storage, transportation, in buildings, electronic equipment, etc.	3.2 Energy Conservation and Efficiency Improvement for Green Development
KPI A2.1	Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility).	3.2 Energy Conservation and Efficiency Improvement for Green Development
KPI A2.2	Water consumption in total and intensity (e.g. per unit of production volume, per facility).	3.2 Energy Conservation and Efficiency Improvement for Green Development
KPI A2.3	Description of energy use efficiency target(s) set and steps taken to achieve them.	3.2 Energy Conservation and Efficiency Improvement for Green Development
KPI A2.4	Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency target(s) set and steps taken to achieve them.	3.2 Energy Conservation and Efficiency Improvement for Green Development
KPI A2.5	Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	3.2 Energy Conservation and Efficiency Improvement for Green Development
Aspect A3:The Environment and Natural Resources		
General Disclosure	Policies on minimising the issuer's significant impact on the environment and natural resources.	3.1 Environmental Protection and Fine Management
KPI A3.1	Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	3.1 Environmental Protection and Fine Management 3.2 Energy Conservation and Efficiency Improvement for Green Development 3.3 Regulating Pollution Discharge by Addressing Both Symptoms and Root Causes
Aspect A4:Climate Change		
General Disclosure	Policies on identification and mitigation of significant climate-related issues which have impacted, and those which may impact, the issuer.	Forging Ahead with Enterprise: Seizing Opportunities Associated with the Carbon Peaking and Carbon Neutrality Goals and Building a Green Homeland Together
KPI A4.1	Description of the significant climate-related issues which have impacted, and those which may impact, the issuer, and the actions taken to manage them.	Forging Ahead with Enterprise: Seizing Opportunities Associated with the Carbon Peaking and Carbon Neutrality Goals and Building a Green Homeland Together

Appendix I. Environmental, Social and Governance Reporting Guide of HKEX Guide Index

Subject Areas, Aspects, General Disclosures and KPIs

Disclosed in

B. Social		
Aspect B1:Employment		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare.	5.1 People Orientation, Inclusiveness and Sharing 5.2 Talent Cultivation for Mutual Achievement
KPI B1.1	Total workforce by gender, employment type, age group and geographical region.	5.1 People Orientation, Inclusiveness and Sharing
KPI B1.2	Employee turnover rate by gender, age group and geographical region.	5.2 Talent Cultivation for Mutual Achievement
Aspect B2:Health and Safety		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards.	5.3 Care for Health and Safety Protection
KPI B2.1	Number and rate of work-related fatalities occurred in each of the past three years including the reporting year.	5.3 Care for Health and Safety Protection
KPI B2.2	Lost days due to work injury.	5.3 Care for Health and Safety Protection
KPI B2.3	Description of occupational health and safety measures adopted, and how they are implemented and monitored.	5.3 Care for Health and Safety Protection
Aspect B3:Development and Training		
General Disclosure	Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities. Training refers to vocational training. It may include internal and external courses paid for by the employer.	5.2 Talent Cultivation for Mutual Achievement
KPI B3.1	The percentage of employees trained by gender and employee category (e.g. senior management, middle management).	5.2 Talent Cultivation for Mutual Achievement
KPI B3.2	The average training hours completed per employee by gender and employee category.	5.2 Talent Cultivation for Mutual Achievement
Aspect B4: Labour Standards		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child and forced labour.	5.1 People Orientation, Inclusiveness and Sharing
KPI B4.1	Description of measures to review employment practices to avoid child and forced labour.	5.1 People Orientation, Inclusiveness and Sharing
KPI B4.2	Description of steps taken to eliminate such practices when discovered.	5.1 People Orientation, Inclusiveness and Sharing

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Subject Areas, Aspects, General Disclosures and KPIs

Disclosed in

Aspect B5:Supply Chain Management		
General Disclosure	Policies on managing environmental and social risks of the supply chain.	4.2 Supply Management for Better Development
KPI B5.1	Number of suppliers by geographical region.	4.2 Supply Management for Better Development
KPI B5.2	Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, and how they are implemented and monitored.	4.2 Supply Management for Better Development
KPI B5.3	Description of practices used to identify environmental and social risks along the supply chain, and how they are implemented and monitored	4.2 Supply Management for Better Development
KPI B5.4	Description of practices used to promote environmentally preferable products and services when selecting suppliers, and how they are implemented and monitored	4.2 Supply Management for Better Development
Aspect B6:Product Responsibility		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to health and safety, advertising, labelling and privacy matters relating to products and services provided and methods of redress.	2.2 Putting Quality First to Pursue Excellence 2.3 Putting Customer First and Providing Quality Services
KPI B6.1	Percentage of total products sold or shipped subject to recalls for safety and health reasons.	2.2 Putting Quality First to Pursue Excellence
KPI B6.2	Number of products and service related complaints received and how they are dealt with.	2.3 Putting Customer First and Providing Quality Services
KPI B6.3	Description of practices relating to observing and protecting intellectual property rights.	2.1 Leverage Technologies To Integrate Digitalization and Intelligence
KPI B6.4	Description of quality assurance process and recall procedures.	2.2 Putting Quality First to Pursue Excellence
KPI B6.5	Description of consumer data protection and privacy policies, how they are implemented and monitored.	2.3 Putting Customer First and Providing Quality Services
Aspect B7:Anti-corruption		
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering.	1.1 Compliant Operation, Self-discipline and Integrity
KPI B7.1	Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.	1.1 Compliant Operation, Self-discipline and Integrity
KPI B7.2	Description of preventive measures and whistle-blowing procedures, how they are implemented and monitored.	1.1 Compliant Operation, Self-discipline and Integrity
KPI B7.3	Description of anti-corruption training provided to directors and staff.	1.1 Compliant Operation, Self-discipline and Integrity
Aspect B8:Community Investment		
General Disclosure	Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests.	6.1 Contributing to Rural Revitalization 6.2 Charitable Donations to Show Care to the Society 6.3 Community Care to Warm Others
KPI B8.1	Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	6.1 Contributing to Rural Revitalization 6.2 Charitable Donations to Show Care to the Society 6.3 Community Care to Warm Others
KPI B8.2	Resources contributed (e.g. money or time) to the focus area.	6.1 Contributing to Rural Revitalization 6.2 Charitable Donations to Show Care to the Society 6.3 Community Care to Warm Others

Appendix II. List of Major Subsidiaries Involved in Environmental Data

1	Shanghai Electric Power Generation Equipment Co., Ltd Turbine Works	19	Shanghai Jiejin Power New Materials Co., Ltd.
2	Shanghai Electric Power Generation Equipment Co., Ltd Auxiliary Equipment Works	20	Wujiang Transformer Co., Ltd.
3	Shanghai Electric Power Generation Equipment Co., Ltd Turbine Generator Works	21	Shanghai Huapu Cable., Ltd.
4	Shanghai Boiler Works, Ltd.	22	Shanghai Mitsubishi Elevator Co., Ltd.
5	Shanghai Electric Group Shanghai Electric Machinery Co., Ltd	23	Goss Graphic Systems(China)Co., Ltd.
6	Shanghai Electric Heavy Machinery Milling Special Equipment Co., Ltd.	24	Shanghai Simike Welding Material Co., Ltd.
7	Shanghai Electric Wind Power Equipment Dongtai Co., Ltd.	25	Shanghai Electrical Hydraulics and Pneumatics Co., Ltd
8	Shanghai Electric Wind Power Equipment Heilongjiang Co., Ltd.	26	Shanghai United Bearing Co., Ltd.
9	Shanghai Electric Wind Power Equipment Gansu Co., Ltd.	27	Shanghai Tian'an Bearing Co., Ltd.
10	Shanghai Electric Wind Power Equipment Yunnan Co., Ltd.	28	Shanghai Zhenhua Bearing Plant Co., Ltd.
11	Shanghai Electric Wind Power Equipment Hebei Co., Ltd.	29	Wuxi Turbine Blade Co., Ltd
12	Shanghai Electric Appliances Ceramics Factory Co., Ltd.	30	Shanghai Tool Works Co., Ltd.
13	Shanghai Electric Power-Electronics Co., Ltd.	31	Shanghai High Strength Bolts Plant Co., Ltd.
14	Shanghai Nanqiao Transformer Co., Ltd.	32	Shanghai Centrifuge Institute Co., Ltd.
15	Shanghai Najie Complete Sets Of Electric Co., Ltd.	33	Shanghai Cyeco Environmental Technology Co., Ltd
16	Shanghai Feihang Electric Wire And Cable Co., Ltd.	34	Shanghai Denso Fuel Injection Co., Ltd.
17	Shanghai Dahua Electrical Equipment Co., Ltd.	35	Shanghai First Machine Tool Works Co., Ltd
18	Shanghai Nanhua-Lanling Electrical Co., Ltd.	36	ShanghaiElectricShanghaiHeavy Machinery Forging Co., Ltd.
		37	Shanghai Electric Nuclear Power Equipment Co. Ltd.
		38	SEC-KSB Nuclear Pumps&Valves Co., Ltd.
		39	Shanghai Electric Machine Tool Works, Ltd.
		40	Renmin Electrical Apparatus Works of Shanghai Electric Group Co., Ltd

