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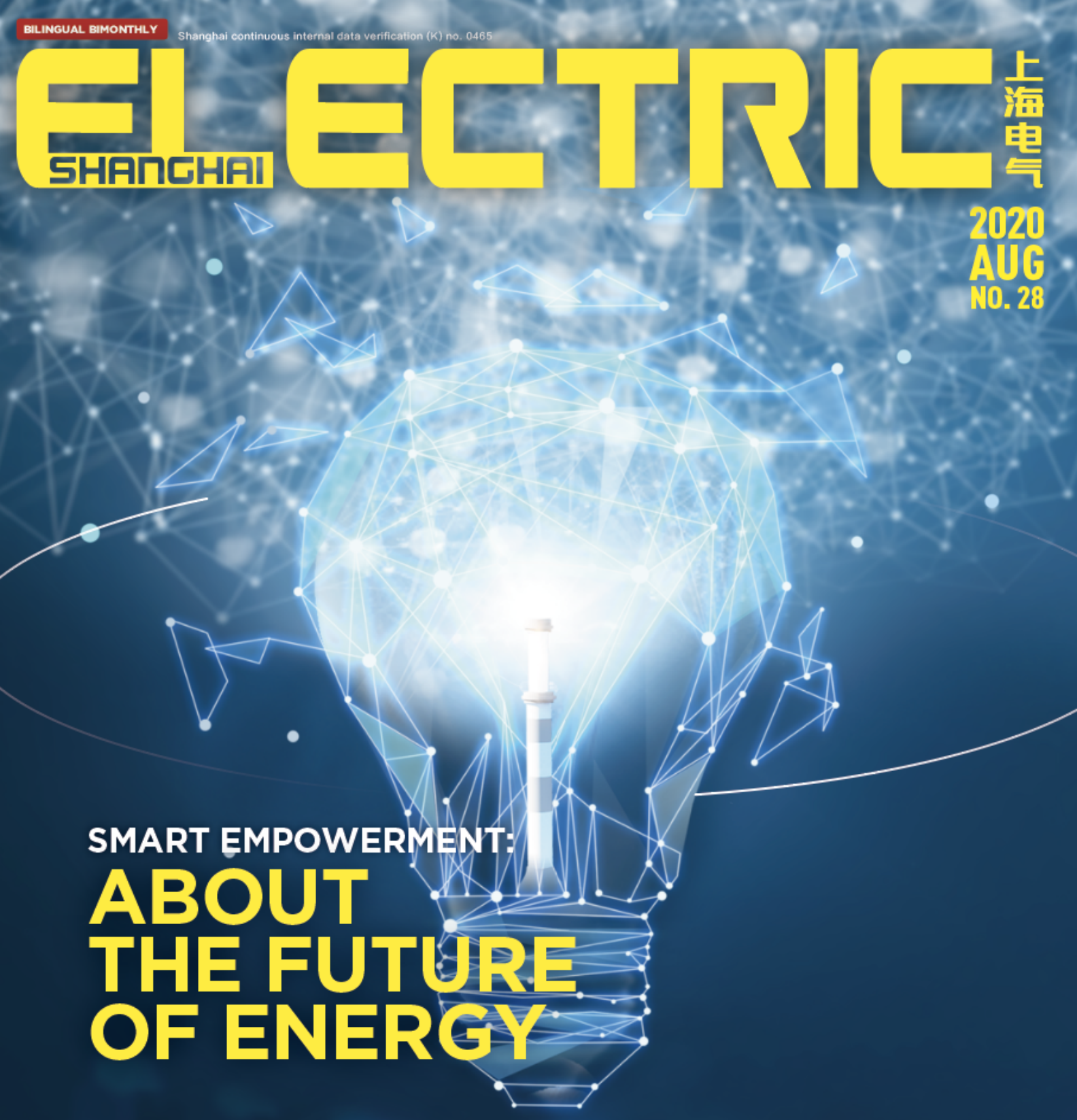
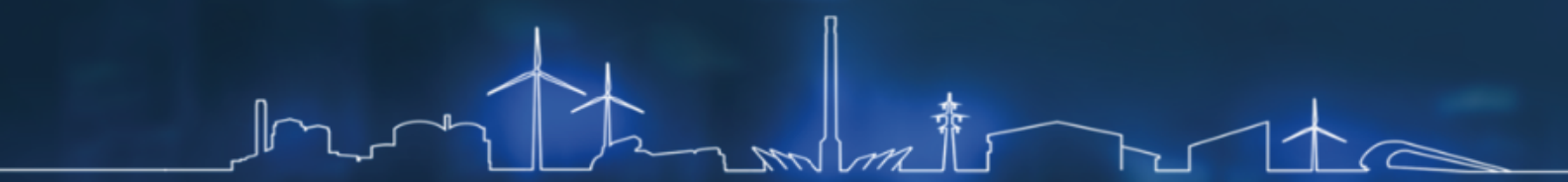


SMART EMPOWERMENT:
ABOUT THE FUTURE OF ENERGY



上海电气
SHANGHAI ELECTRIC

WHEN ENERGY BECOMES SMARTER

This title derives from a publication of a Chinese professional in 2009, showing high expectations for energy. Books alike have elicited attention from the industry to smart energy, a concept that has been recognized by the public since then.

It is stated in Smart Energy-10 Thousand Years of Human Development authored by Liu Jianping that smart energy is about utilizing human being's intelligence and competence to innovate technologies and upgrade institutions, which will integrate intelligence only owned by mankind into the whole process from energy development, utilization to production and consumption. A new form of energy will be developed on top of the establishment and improvement of eco-friendly and sustainable energy technology and energy system.

In short, smart energy is a form of energy that has a couple of human brain functions of self-organization, self-examination, self-balance and self-optimization and meets an array of demands in terms of system, security, cleanliness and economy.

Regarding smart energy, Shanghai Electric has independently developed platforms for planning and design, energy management and remote operation and maintenance. With strong competence in system integration, it provides safe and reliable green electricity for smart energy.

The Sanxing Town in Chongming District, Shanghai, has built a smart microgrid that generates power from renewable energy: PV panels in different sizes are installed on roofs of residential buildings and road lamps based on different light conditions with well-equipped wind turbines, charging piles and energy storage batteries. This "wind-solar-storage-charging"-integrated smart energy system is one of smart energy projects of Shanghai Electric.

It resonates with the internet-based mindset because "internet+" smart energy basically is to push energy development by internet mindsets, which stresses connection of demands and the development philosophy of public engagement and sharing. Smart energy fully mobilizes everyone's subjective initiative, and comprehensively adopts many ways to improve energy utilization efficiency. By involving all households into this energy revolution, energy is made an investment to the future for them, leading us towards an ecological civilization.

It is foreseeable that once energy becomes smarter and gives rise to a new energy generation and consumption model, a new power body will be formed that will rewrite all existing environmental problems and even our life.

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shanghai-electric

ELECTRIC NEWS
BRIEF NEWS

Shanghai Electric Ranks the 81th among the Fortune 500 in China

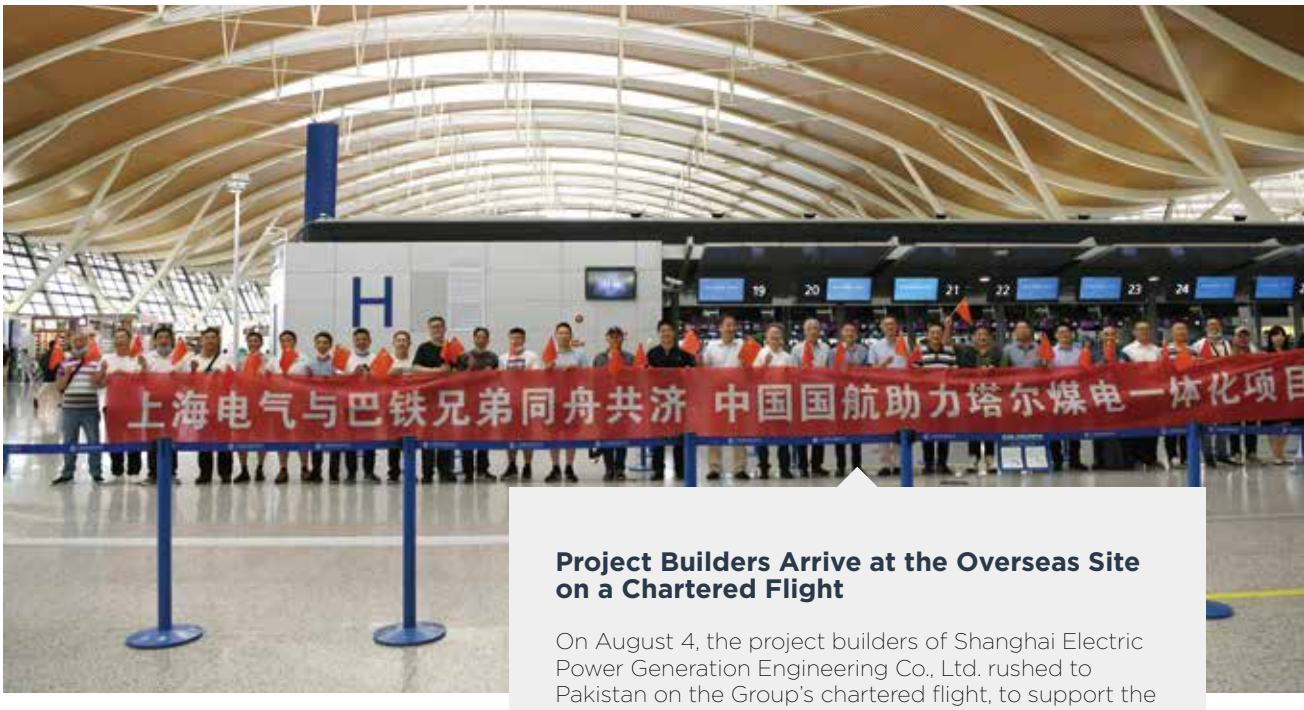
On July 27, the 2020 “Fortune 500 in China” List was officially announced. Shanghai Electric Group Co., Ltd. ranked the 81st on the List, up by 12 places over the previous year’s ranking. Besides, Shanghai Electric ranked the 2nd on the machinery and equipment manufacturing industry list of the “Fortune 500 in China” List.
The gross operating income of all Chinese listed companies ranking among the 2020 “Fortune 500 in China” List reached RMB 50.5 trillion, up by 11% over the previous year; the net profit reached RMB 4.2 trillion, up by 16% over the previous year. Last year, China’s GDP exceeded RMB 99 trillion, which meant that the aggregate income of the 500 listed companies still exceeded half of China’s GDP for that year.

Shanghai Electric Is Far Ahead in the Annual Evaluation of Energy Efficiency Level of Thermal Power Plants in China

Recently, China Electricity Council published the energy efficiency benchmarking results for thermal power units in the power industry in 2019. All steam turbines and generators of five 5A 1,000MW ultra-supercritical thermal power units were provided by Shanghai Electric.
Besides, the results of selection of “Ten Major Events” in Shanghai municipality’s key energy conservation areas from 1991 to 2020 were formally released at the opening ceremony of the 2020 Shanghai Energy Conservation Week. Shanghai Electric was selected for “successfully developing the world’s first 1000MW double-reheat coal-fired power generation unit and capturing key energy conservation and emission reduction technologies in the world’s coal power field”.

Shanghai Fanuc Offers Support to World Skills Competition

Recently, Robot Systems Integration Technical Exchange & Promotion Conference, a newly added event of World Skills Competition, was jointly held by World Skills Competition China (Tianjin) Research Center and Guangzhou Electromechanical Technician College in Guangzhou. Shanghai Fanuc Robotics Co., Ltd. (hereinafter referred to as “Shanghai Fanuc”), in which Shanghai Electric took equity stakes, appeared as a technical supporter to offer support to the event.
World Skills Competition, also hailed as the “World Skills Olympics”, is the largest vocational skills competition with the highest position and greatest influence in the world, of which the competitive level represents the advanced world level of development of vocational skills. In 2018, Shanghai Fanuc officially joined World Skills International and became the only robotics brand in the organization at that time. As a global industry partner in World Skills International, Shanghai Fanuc will take an active part in the World Skills Competition to be held in Shanghai.



Project Builders Arrive at the Overseas Site on a Chartered Flight

On August 4, the project builders of Shanghai Electric Power Generation Engineering Co., Ltd. rushed to Pakistan on the Group's chartered flight, to support the Thar Coal-Electricity Integration Project affected by the COVID-19 outbreak.
Thar Project was a key project for "One Belt One Road" and "China-Pakistan Economic Corridor", of which the timely completion and production was of profound significance to the Chinese and Pakistani governments as well as the development of Shanghai Electric. With the help and guidance of relevant departments of the municipal government, Shanghai Electric actively contacted with aviation companies about charter flights and coordinated the chartering of flights for three overseas projects. The aforesaid project builders are the first group of builders rushing to the site on a chartered flight. Later, there will be another three groups of builders rushing to support Dubai Project and Serbia Project on chartered flights, including nearly 1,000 builders from all cooperating organizations.

No.1 Generator Unit of Zhuhai Yuhai Gas Turbine Project Is Put into Operation

On July 30, No.1 9F gas turbine generator unit of Zhuhai Yuhai Natural Gas Cogeneration Project officially entered the stage of commercial operation after 168 hours' trial operation. The project adopted Shanghai Electric's AE94.3A gas turbine technology for two efficient "one-driven-one" F-class single-shaft combined cycle generator units, including F-class gas turbines, double-casing three-pressure reheat steam turbines with axial condensers, and water hydrogen turbine generators. Zhuhai Yuhai Natural Gas Cogeneration Project is located in Pingsha Town, Gaolan Port Economic Development Zone, Zhuhai, Guangdong Province, and can supply energy to those thermal (cold) energy consumption enterprises and users in Gaolan Port Economic Development Zone and Jinwan District in a centralized manner, improve the power supply capacity and reliability of Zhuhai and Macao, meet the medium and long-term power consumption needs, improve the quality of regional environment, and alleviate the tension in supply of thermal load in the surrounding area.

The Construction of the First Large PV Project Begins in Japan

Recently, as witnessed by the owner, Shanghai Electric and the subcontractors, the opening ceremony of Japan Yakai 28MW PV Project was held on the project site, which marked the official commencement of the first 20MW+ PV project undertaken by Shanghai Electric Power Generation Group in the Japanese market. This project was of great significance to Shanghai Electric's further exploration of the Japanese market and transformation towards new energy business in the high-end market. Subsequently, Shanghai Electric will overcome the adverse effects of the COVID-19 outbreak and steadily promote the implementation of the project, so as to ensure the successful completion of all important nodes and to put the project into operation as soon as possible.

The EPC Contract for Changi Business Park PV Power Station Project Is Signed

A few days ago, Shanghai Electric Power Generation Engineering Co., Ltd., a subsidiary of Shanghai Electric, signed the EPC Contract for Changi Business Park PV Power Plant Project (Sunny Land Phase II) with Earth Energy Development Co., Ltd. in the form of cloud-based signing. This project is the first investment+EPC project jointly obtained by Shanghai Electric Finance Group and Shanghai Electric Power Generation Group in Singapore, and became a benchmark for "industry and finance combination". Up to now, the project, of which the total installed capacity is approximately 20MW, is the largest centralized photovoltaic power plant in Singapore. The project site is approximately 5km away from Singapore Changi International Airport and has good light conditions. The lighting time per year can reach 1650 hours or above. After the project is completed and put into production, the estimated annual energy output will be approximately 25 million KWh, and the project will supply low-carbon and environmentally friendly clean energy to the Asia-Pacific Big Data Center to be built in Changi Business Park in the future.

Shanghai Electric Wins the Bid for a Project in Malaysia

A few days ago, the subsidiary of Shanghai Electric Power Transmission & Distribution Engineering Co., Ltd. in Malaysia, owned by Shanghai Electric, won the bid for Malaysia Sarawak Maidami-Limbang 275KV Backbone Transmission Line Project, which was the fourth bid won by the company in Sarawak. The project is the trunk network in the northeast of Sarawak. The construction of the project will thoroughly solve the power shortage problem existed in Limbang for decades, improve the electricity consumption conditions for industrial development and residents in this area, and light up the Beisha area.

Shanghai Electric Contracts Baoshan's Largest Waste Incinerator in China

Recently, Shanghai Boiler Works signed a contract with Shanghai Shangshi Baojingang Environmental Resource Technology Co., Ltd. with regard to the supply of waste incineration waste heat boilers to Baoshan Renewable Energy Utilization Center Project. This project is the major municipal engineering project in Shanghai municipality, and also the largest high parameter waste incineration project in China, and will help Shanghai Boiler Works further consolidate its position in the large-sized high parameter waste incineration waste heat boiler market. The picture is the design sketch of the project.

Shanghai Electric's First PV Project in Vietnam Is Completed

Recently, Futai 50MW PV Project (Phase I) of Shanghai Electric Power Generation Engineering Co., Ltd. in Vietnam was successfully connected to power grid. The construction goals of the project were completed ahead of time. The project was the first new energy EPC project undertaken by Shanghai Electric in the Vietnamese market, and the EPC contract for the project was signed on September 5, 2019. The construction period was from September 6, 2019 to July 31, 2020.

The King of the Netherlands Visits Shanghai Electric's Overseas Enterprise

Qi Linxue

On June 25, accompanied by President Matias Skoll of Nedschroef, King Willem-Alexander of the Netherlands visited Nedschroef Helmond Factory, an overseas company of Shanghai Electric, to know more about the impact of the COVID-19 outbreak on automobile industry and countermeasures.

Willem Alexander visited the production status of the Helmond factory, and talked with staff representatives kindly. Skoll introduced the development condition of Nedschroef as well as the condition of the epidemic prevention work under the general deployment of Shanghai Electric as well as the guidance of Shanghai Prime Overseas COVID-19 Prevention and Control Leading Group to Willem Alexander.

It's learned that Nedschroef founded in 1894 is the largest fastener enterprise in Europe. In August, 2014, Shanghai Electric invested 190 million euros in completing the purchase of 100% of the shares of Nedschroef through Shanghai Prime Machinery Co., Ltd., a subsidiary company of Shanghai Electric specialized in providing parts and solutions, and then, Nedschroef becomes an important part of the global layout of Shanghai Electric. D

RMB 105.64 Billion

Shanghai Electric's Brand Value Sets a New Record!

Zhang Cheng

On August 5, the 17th "World Brand Summit" sponsored by World Brand Lab published the List of "China's 500 Most Valuable Brands" in 2020. In the annual report based on financial data, brand strength and consumer behavior analysis, Shanghai Electric ranked the 48th on the List with the brand value of RMB 105.64 billion, up by 30% over the previous year. From then on, Shanghai Electric stepped into the club of enterprises whose brand values reached or exceeded RMB 100 billion, and became a leader in China's machinery industry.

Guided by the "Three-step" strategy, the Group made a concerted effort to achieve growth against trend and went on the fast track of development. In 2019, the Group's operating revenue, net profit and quantity of new orders respectively grew by 23.7%, 19.2% and 40.7% over the previous year, and the three major indicators hit a new record. With the rapid growth of the Group's business, the popularity, status and brand influence of Shanghai Electric in the industry were improved significantly. Besides, the Group implemented the digitalization, intellectualization, internationalization and servitization of traditional industries on the basis of the advantages and features of the equipment manufacturing industry, and gradually enhanced its comprehensive competitiveness. Furthermore, the Group has built the "SEunicloud" industrial Internet platform independently, which marks that Shanghai Electric has taken the first step for digital transformation, and has quickened the cultivation of strategic emerging industry, which will inject powerful impetus into the sound and sustained development of the Group in the future.

As the pace of globalization was quickened, Shanghai Electric kept driving the global arrangement of resources and industries and put forward the ambitious goal of "build another Shanghai Electric within 3-5 years". Focused on its overseas business layout, the Group participated in global industrial exhibitions and mainstream media cooperation and conducted online and offline brand communication activities, in order that the brand could better serve the overseas market development. In terms of international communication, the Group built a unified brand image, voiced their opinions actively, improved the layout of brand communication channels, strengthened the interaction with overseas media, conducted the deep operation of social media, and continuously improved the brand popularity and reputation overseas. In the future, the Group will further carry out communication activities that were focused on such content as diversified development, global layout, intelligent transformation and comprehensive system solutions, build a new brand image that matches the Group's strategic transformation, make efforts to lead the industry, promote the dissemination of values, boost the construction of a respected world-class enterprise, and build an influential global brand. D

Shanghai Electric Wins the "Zhan Lu Award" in Global Industrial Intelligence Field

Lu Le

On July 10, "2020 World Artificial Intelligence Conference (WAIC 2020) Industrial Intelligence Forum—Global Industrial Intelligence Summit" opened at Shanghai Expo Centre. "Zhan Lu Award", the world's first industrial intelligence award, was given at the opening ceremony. Shanghai Electric stood out from many shortlisted enterprises worldwide and won the Industrial Engine Prize (best service direction) of "Zhan Lu Award".

As a global-oriented industrial intelligence award, "Zhan Lu Award" is jointly established by Forbes China and Global Industrial Intelligence Summit, and aims at attracting the leaders of the global industrial internet + AI heartland and guiding the rapid development of digitalization and intellectualization of industry. In the future, the organizations will set up annual awarding mechanism and build "Zhan Lu Award" into "Oscar" in the global industrial intelligence field. The Award contains six prizes, i.e. Industrial Engine Prize (four directions, i.e. intelligent data, intelligent algorithm, intelligent tools and best service), Industrial Internet Innovation Prize (two directions, i.e. technological innovation and application innovation), Most Dynamic Platform Prize, Industrial Safety Prize, Bole Prize and Rising Star Prize, which are designed to commend the contributions made by relevant enterprises in the industrial intelligence field, to encourage benchmark enterprises to create new models and business forms of industry, to advance the digital transformation of industry, and to give impetus to the development of global industrial intelligence.

The "Zhan Lu Award" given to Shanghai Electric shows that the achievements made by Shanghai Electric in terms of digital construction over the past few years were well recognized by the outside world. The review committee believes that Shanghai Electric has been generating digital dividends, opening up new channels and passing on the genes of century-old industry for the past few years. Shanghai Electric's "SEunicloud" creates a new service system with regard to industrial internet of things, digitalization and intelligence, and redefines the connotations of service-oriented extensions with respect to high-end equipment, so that it is worthy of the Industrial Engine Prize of "Zhan Lu Award". D

Shanghai Electric Wins the Bid for Complete Equipment of Fuyang 660MW Double Reheat Power Unit

Ma Qianli & Wang Xiaojuan

A few days ago, Shanghai Electric Power Generation Group received a notification of award from China Resources Power (Fuyang) Co., Ltd. ("CRPFY"), and successfully won the bid for the complete equipment of three generator sets of Fuyang CR Phase II 2*660MW Ultra-supercritical Double Reheat Power Unit Project. This project is another large thermal power unit implemented jointly by Shanghai Electric and China Resources after CR Wujianfang Project and CR Caofeidian Project, which fully reflects users' acceptance of Shanghai Electric's double-reheat power generation technology and equipment and further consolidates the leading position of Shanghai Electric in the field of high-efficiency ultra-supercritical power unit projects.

Since the first bidding process of Fuyang CR Phase II Project was launched in 2019, the power station has maintained close communication with all departments of the project company and has paid close attention to the progress of the project. At the beginning of 2020, the technical solution for the project's power unit was changed from the high-positioned arrangement of a 660MW double-reheat power unit to the conventional arrangement of a 660MW double-reheat power unit, and the power station launched the second bidding process. On the basis of the stable relationship established between the parties as well as the experience learnt from the first bidding process, the power station fully analyzed all of the terms and conditions of the bid, and further studied and discussed the bidding plans and strategies for the project. During the Dragon Boat Festival, the sales and technical support team gave up rest, and worked overtime to complete the clarification during the project bidding. In the end, Shanghai Electric ranked the first on the list of electromechanical furnace manufacturers relying on its superior technologies, and successfully won the bid for the project.

Shanghai Electric Wins the Bid for Dubai Phase V 900MW PV Solar Power Generation Project

Chen guanglei

On July 28, the signing ceremony of Mohammed bin Rashid Al Maktoum Solar Park Phase V 900MW PV Solar Power Generation Project was held via videoconferencing. Zheng Jianhua, secretary of the CPC Committee and chairman of Shanghai Electric Group, and Mohammad Abunayang, chairman of ACWA Power, signed a contract on behalf of the parties.

This project is an exemplary project that adopts advanced PV solar power generation technology in the Middle East. On the basis of the good relations of cooperation established by and between Shanghai Electric and ACWA Power in the Phase IV Project, Shanghai Electric participated in the bidding for Solar Park Phase V 900MW PV Solar Power Generation Project at the invitation of ACWA Power, and finally defeated many opponents and won the bid.

For the past few years, with the continuous development of the global solar power generation industry, Shanghai Electric has quickened the pace of its transition towards new energy industry. The contract signing indicates that Shanghai Electric has been recognized by the market in terms of new energy industry development, and that the influence of Shanghai Electric in the new energy industry in the Middle East and even the whole world will be improved continuously.

At the signing ceremony, Zheng Jianhua said that solar power generation was still growing, and Shanghai Electric, as one of China's important one-stop energy solution providers, had made efforts in new energy power generation for a long time and had gotten some achievements. Since the implementation of Mohammed bin Rashid Al Maktoum Solar Park Phase IV 700MW CSP+250MW PV Hybrid Project, Shanghai Electric has established a good relationship of cooperation with ACWA Power and has developed extensive cooperation in an array of global markets. Undoubtedly, Phase V 900MW PV Solar Power Generation Project is a new model of the mutually-beneficial and win-win cooperation between the parties. As the largest PV power station project among those projects under planning in Dubai, this project will definitely become another milestone for Dubai's clean energy development path. This represents that the cooperation between the parties has stepped into new phase. As the general contractor of the project, Shanghai Electric will attach great importance to the project, devote top-quality resources and highly qualified manpower to the project, and make efforts to alleviate the possible adverse impacts of the COVID-19 outbreak on the subsequent work of the project, in order to ensure the smooth progress and timely completion of the project. He sincerely hoped that the parties could further strengthen communication and conduct extensive cooperation in more fields to achieve common development.

Shanghai Electric's First Overseas Metro Project Is Launched in Philippines

Lv Yan

On July 20, the contract for Philippines Makati Metro EPC Project was signed in Shanghai. Jejomar Binay, former vice-president of Philippines, and Mahlon Binay, mayor of Makati, sent out their congratulations via videoconferencing. Zhu Yi, deputy director of Shanghai Municipal Commission of Commerce, and Huang Ou, deputy secretary of the CPC Committee and president of Shanghai Electric Group, attended the signing ceremony.

As Shanghai Electric's first overseas metro project, Makati Metro Project is the first rail transit electromechanical integration EPC project after the establishment of Shanghai Electric Automation Group, which marks the leap of Shanghai Electric's rail transit industry from simple services to EPC turnkey contracting and is also a major breakthrough made by Shanghai Electric in implementing the "One Belt One Road" initiative and actively exploring overseas markets. The mechanical and electrical equipment engineering part of the project is contracted by Shanghai Electric Automation Group as the general contractor, which will provide a full range of services, including system design, procurement and construction of communication, signals, power supply, integrated monitoring, disaster prevention and alarm, environment and equipment monitoring, security and access control, ventilation and air conditioning, water supply and drainage, firefighting, automatic fare collection, station ancillary equipment, process equipment of vehicle bases (containing control centers) and vehicles.

In his remarks, Huang Ou said, "the contract signing of the Makati project is an important practical achievement for the implementation of the "One Belt One Road" initiative and will play a vital part in promoting the economic development of Makati and the industrial development of Shanghai municipality. As a leader in China's high-end equipment manufacturing industry as well as a forerunner in the intelligent transformation of China's manufacturing industry, Shanghai Electric is absolutely delighted to provide services as the general contractor for the mechanical and electrical equipment engineering part of the project and will take this opportunity to apply world-leading Chinese rail transit construction and operation knowledge as well as advanced technologies such as 5G communication applications, automatic train operation and intelligent operation and maintenance platform to building an intelligent, connected, stable, efficient, safe and reliable metro operation system for the Makati Metro Project, facilitating alleviation of local traffic congestion, and promoting harmonious development of urban economic construction and environmental protection. Meanwhile, Shanghai Electric will make the most of its technological superiority and experience in rail transit and integrate digitalization, networking and intellectualization technologies to further provide full life-cycle services for the Makati metro project and constantly create new values for partners."

Jia Tinggang, president of Shanghai Electric Automation Group, and Ren Jinhua, chairman of INFRADEV, signed on the contract on behalf of the parties.

Yangxi No.5 Unit Is Put into Operation

Xiong chenglong Deng haiqiang Zhang jiafu

On July 7, No.5 thermal power unit of Yangxi 1240MW Project (phase II) contracted by Shanghai Electric Power Generation Group as the general contractor successfully passed the 168-hour full-load test run. The single-shaft thermal power unit with the largest unit capacity in the world was officially put into commercial operation. The three power generation sets of the project with completely independent intellectual property rights are independently developed by Shanghai Electric. The technical division makes the most of serialization and modular design ideas and carries out adaptive optimization in terms of parameters and capacity of the thermal power unit, so that the thermal power unit has excellent reliability and performance and all of its parameters have reached the international advanced level. After having been put into operation, the thermal power unit will effectively alleviate the power shortage in the west area of Guangdong province and ensure the safe and stable operation of the power grid.

The EPC Contract for Shanghai Electric Environmental Protection Group's First 50,000t+/a Hazardous Waste Disposal Project Is Signed

Zhang Juncheng

Recently, Shanghai Electric Environmental Protection Group and Henan Jincheng Environmental Technology Co., Ltd. signed the EPC contract for Eastern Henan Centralized Hazardous Waste Disposal Center Project in Henan Province. The project, with the total disposal capacity of 54,000t/a, is Shanghai Electric Environmental Protection Group's first hazardous waste disposal EPC project, of which the total disposal capacity exceeds 50,000t/a.

The negotiations over the project were started at the beginning of 2020, i.e. a period that was most affected by the COVID-19 outbreak. Shanghai Electric Environmental Protection Group's solid waste business division responded positively to the owner's technical appeal in remote distance, communicated with relevant departments by telephone, and adjusted the project's technical solution in a timely manner. Besides, Shanghai Electric Environmental Protection Group specially invited the owner to visit the site of the Hai'an Project, demonstrated its value with performance, and won the owner's recognition and trust of its professional construction experience.

The successful contract signing of the project represents the new breakthrough made by Shanghai Electric Environmental Protection Group in the field of general contracting of hazardous waste disposal, expands the field of hazardous waste disposal business, and further improves the competitiveness of Shanghai Electric in the field of hazardous waste disposal.

SMART EMPOWERMENT: ABOUT THE FUTURE OF ENERGY.....

Planner | **Shen jin Tu min**

New requirements on energy development come alongside the new era, namely clean, smart, efficient and secure development. With the wide application of renewable energy and advancement of information technologies like the internet and Internet of Things (IoT), "internet+" smart energy has become an important way to facilitate transformation, upgrading, innovation and development.

As an innovation pioneer of the equipment manufacturing industry, Shanghai Electric has been crowned with many "firsts" in Chinese equipment manufacturing and achieved high energy efficiency and low emission in coal-burning due to its commitment to the utmost resource utilization. In terms of energy structure, Shanghai Electric has transformed from traditional sources, such as coal power, gas power and nuclear power, to new energies including solar, wind power and biomass power generation. which shows that "internet + smart energy" has incited a new revolution in Shanghai Electric and across the whole industry.

BIG DATA EMPOWERMENT EMBARKS A NEW ERA FOR SMART ENERGY

The first batch of intelligent demonstration coal mines construction is developed, and smart energy network is built……Since the beginning of 2020, the energy industry has been exploring new development areas and new economic growth point created by the promotion of new infrastructure construction. Thanks to strong policy support, positive response of all parties and active layout of enterprises, smart energy construction has entered a fast track.

In order to adapt for the energy consumption revolution under new conditions, carry out the concept of green energy development, accurately manage energy consumption and elevate holistic social energy efficiency, Shanghai Electric has constructed a comprehensive management cloud platform for internet of energy (IoE) based on AI technologies to coordinate and optimize the integrated energy system of "source-grid-load-storage" and to better the system design of integrated energy; IoE data collection and communication; energy management of multi-energy complementary system; big data storage and visualization; predictive maintenance; health level evaluation; status assessment and fault diagnosis; multi-time-scale prediction skills; asset management platform. They satisfy governmental and business needs of distributed energy integration, energy management, data analysis, energy consumption monitoring, operation and maintenance services, asset management, energy conservation supervision and energy trade.

COVER TOPICS

SMART ENERGY

OPEN THE "ENERGY MAGIC BOX" OF GREEN PLANTS

On the upper reaches of Huangpu River, the "four major factories", a symbol of Shanghai's industrial achievement in the modern and contemporary times, have stood in the old industrial base at Minhang District in the southwest of Shanghai for over 70 years. In the industrial base sitting beside the Huangpu River, there are both camphor trees and advanced plants, and the good environment has earned it the title of national "green factory" in a true sense.

The smart energy demonstration project launched in the campus of Shanghai Electric Machinery Co., Ltd. serves as another green energy utility featuring good environment and utility for the "garden factory" in line with the company's sustainable development philosophy, making the garden factory more advanced in technology in addition to being clean and environmentally-friendly.

On July 3rd, the Minhang Industrial Zone Smart Energy Demonstration Project (Phase One) was completed on the campus of Shanghai Electric Machinery Co., Ltd. in Shanghai Electric Minhang Base, which is funded and constructed by Shanghai Electric Group and State Grid Shanghai Electric Power Company. As an integrated energy solution demonstration project, it is customized for the campus of Shanghai Electric Machinery Co., Ltd. that contains "wind-solar-storage-charging-control" units, green smart distribution and microgrid, a new card for Shanghai Electric's smart energy.

From its conception and blueprint to the implementation today, the Minhang Industrial Zone Smart Energy Demonstration Project shows the wisdom and exploration of smart energy innovators in China.

In September 2019, the project company, Shanghai Jumai Energy Technology Co., Ltd. was established. From the project initiation and planning, the company has adhered to the goal of reducing urban energy consumption and facilitating environmental protection in order to establish the comprehensive application of clean and smart energy represented by renewable energy and energy storage via technological progress and model innovation and provide the smart microgrid integrating "wind-solar-storage-charging-control" to the user side. While ensuring reliable power supply, it will cut energy consumption and power cost on the enterprise level, and make employees commute in a greener way.

According to Qiao Yinping, General Manager of Shanghai Electric Machinery Co., Ltd., as a major manufacturer in the traditional energy sector for decades, the company has tried to figure out how to make the company use energy in a more efficient, sustainable, greener and cleaner way in the new era.

During project planning stage, Shanghai Electric Power Generation Group took all clients' needs and characteristics in using energy as well as environmental protection into consideration, which was complemented by evaluations on the local renewable energy, geographical conditions, grid load and power quality. Based on that, suitable facility types on new-energy-based power generation and energy consumption as well as capacity allocation meet the clients' various needs in energy usage.

On the power generation side, it deployed different kinds of new-energy-based power generation products and optimized the electricity consumption structure inside the factory by utilizing thin film photovoltaics' excellent weak light performance, the cost-effectiveness of polysilicon that is used in PV industry and wind turbines that can still fill in the electricity gap when PV is not available. This project is made up 6 units which are the 35kV station of energy storage system, "wind-solar-storage-charging" system in No.2 Parking Lot, "solar-charging" system in No.3 Parking Lot, and rooftop PV power generation systems for Shangfa total immersion workshops, new-type coil workshops of Shanghai Electric Machinery Co., Ltd. and the main Voith plant respectively. The 6 units operate in a separate way and send all the data to the smart energy management platform independently developed by Shanghai Electric via data collection measures.

This smart energy system is like a central nervous system comprising 1 brain and 6 functional modular, which targets at 6 aspects.

Firstly, enhance the usage of renewable energy and optimize the energy structure of the industrial zone; secondly, fit into the industrial zone with a tailored solution for harmonious development; thirdly, establish a solar-storage-charging system in the car park that allows employees to travel in a "greener" way; fourthly, reduce the company's energy consumption and cost via smart energy technologies for a win-win cooperation between the industrial zone and enterprises; fifthly, reduce electricity cost and increase power supply reliability by peak shaving and demand-based control, and explore how user-side energy storage can contribute to demand-side management; and sixthly, it develops into a smart energy business demonstration model of a low-carbon green industrial zone.

Shanghai Electric Machinery Co., Ltd. is not only the user unit, but also the maintenance provider in this demonstration project. It leverages its specialties in tour of inspection and maintenance to ensure the reliability of power supply inside the industrial zone and the safe, cost-effective and stable operation of this project.

Shanghai Electric's latest achievements in new energy and smart energy transformation are fully employed in this project, from the platform to products, from the solution to system integration and from EPC to operation and maintenance later. To be more specific, based on Shanghai Electric's strengths in equipment manufacturing, over 80% of facilities featured in this project are sourced from Shanghai Electric companies, such as energy storage equipment made by Shanghai Electric Guoxuan New Energy Technology Co., ltd., CIGS thin film PV components by Manz AG, one of whose shareholders is Shanghai Electric, Shanghai Electric's distributed energy cascade utilization and storage system and energy management system as well as power T&D equipment by Shanghai Electric Power Transmission & Distribution Group. Therefore, this project endorses Shanghai Electric New Energy Group's transformation from a seller of equipment to a provider of turnkey solutions.

Yuan Yi, Vice President of Shanghai Electric Power Generation Group, said that the project put great emphasis on its "hard currency", or commercial and economic feasibility, from the commercial planning stage because reliable return was the true foundation for investments on a project.

Data proves everything. Within the one-month trial

operation, the whole system delivered an excellent performance despite the impacts caused by the rainy season in Shanghai: over 80,000 kWh of PV power generation, and over 550,000 kWh charged and 480,000 kWh discharged via energy storage systems.

All power is generated and used by factories nearby, which allows them to reduce energy usage and cost and in turn increase revenues based on the annual average output of around 2.15 million kWh.

The energy storage system adopts the strategy of double-charging-and-discharging to realize peak shaving, which means to charge when the grid is in the basic and medium load and discharge during peak hours. Considering the current electricity rates in Shanghai, the summer peak rate for the campus of Shanghai Electric Machinery Co., Ltd. is 1.088 yuan, the medium 0.66 yuan and the basic 0.239 yuan, so the enterprise is able to tremendously save the power cost by using electricity stored during peak hours.

It is estimated that the PV system of this demonstration project is able to cut standard coal usage by about 665 tons, CO_2 emission by 1,760 tons and harmful gas emission by 1.8 tons, contributing to environmental protection.

By integrating 6 sub-systems into one, Shanghai Electric energy management system offers an effective method for larger energy consumers to save energy and costs, and showcases a workable and cost-effective system solution supporting different smart energy unit combinations for more industrial zones in the future.

If the smart energy demonstration project created by Shanghai Electric for Minhang Industrial Zone empowers the energy management in a modernized industrial zone with the "magic box of energy", and explores the smart energy market via multiple dimensions, levels and channels, then the smart energy system transforms the Xin'an Village in Sanxing Township into a true beautiful village in the new era.

SMALL AND BEAUTIFUL VILLAGE "SMART MICROGRID"

It takes 2.5 hours' drive to arrive at Xin'an Village in Sanxing Township from Shanghai Electric Power Generation Group. Wang Jinghong, Project Manager of Energy Storage and Fuel Cell Business Unit of Shanghai Electric Power Generation Group, said that it is a "small and beautiful" new energy project that is totally different from traditional power plant projects lasting for years. Characterized by the fast pace and new methods, the project breaks new ground for energy transformation and new countryside construction.

Having reached Shanghai Yangtze River Bridge, there is still one hour's drive ahead. On the village road, the begonia pattern on walls on both sides caught journalists' attention. Every township in Chongming District has it is own floral symbol, and the begonia represents Sanxing Township. On both road sides, there are also sculptures of goat herds, road lamps installed with PV panels and flying flags with the print of Shanghai Electric logo. Sanxing Township "wind-solar-storage-charging" demonstration project is located here.

Different from others, this smart energy project hides inside a site, well fit into the surrounding. The whole site encompasses around 5000 mu of arable land, and the finished Sanxing Township Complex locates in the center comprising the management center, Begonia Left Bank, doctor workstation, vegetable garden and waste treatment center. The smart energy project created by Shanghai Electric is part of it.

Different sizes of PV panels are installed on rooftops of office buildings of the village committee and villagers' homes, and other installations like wind turbines, thin-film PV, charging piles and energy storage systems can also be found. As a demonstration village in implementing rural revitalization, a lot of media come here to do interviews. Sanxing Township in Chongming District of Shanghai was credited as 2018 China Industry-University-Research Collaboration Demonstration Township in the 12th China Industry-University-Research Collaboration and Innovation Conference held in Beijing on January 6th, 2019.

The building named "Dianqi Yuan" houses the "smart brain" of the microgrid that integrates "solar, wind, charging and storage" units. It can be explicitly seen from the big screen for centralized control that the project is set with two systems, "connected to the grid" and "off the grid". The former uses "self-generated power and delivers the surplus to the grid" to increase earnings of the community; and the latter is mainly composed by thin-film PV facilities and small wind turbines without being connected to the grid of Shanghai Electric Machinery Co., Ltd., and is able to work in a flexible way for electricity usage.

Chongming District has been building the world-class ecological island, which has strict requirements on environmental protection.

SMART ENERGY

Sanxing microgrid contributes to build up a zero-carbon community because it uses 100% of renewable energy. The microgrid has 3 major levels in its architecture: the first is on power generation mainly comprising crystalline silicon PV modular; the second is on power distribution added with the energy storage battery system for peak shaving and the grid's stable operation; and the third is on electricity usage and controls the lighting system of user-side equipment and public utilities like charging piles via the energy management system.

This project was initiated on May 12th, 2018 and connected to the grid on December 24th, 2018, 80% of whose equipment were sourced from Shanghai Electric companies, such as Shanghai Electric Power Transmission & Distribution Group, Shanghai Electric Guoxuan New Energy Technology Co., ltd., Shanghai Electric Fuji Electric Power Technology Co, Ltd. and the Germany-based Manz AG. This project represents a new exploration into new energy. The real-time operation of the microgrid can be checked on the comprehensive management platform or the App on mobile phones. Xin'an villagers are among the first batch to use clean energy with zero carbon emission. Meanwhile, rooftop PV panels are under a lease, which can generate additional incomes to villagers. Thanks to technological innovation, Shanghai Electric is rising as a leader in smart energy development.

Shanghai Electric proposed during the project implementation that villagers were both generators and consumers of electricity, which was highly recognized by the local government and enterprises. What's more, National Grid played an important role in tackling the pain points and obstacles in urban grids.

It is reported that rural areas are low power quality and electrification progress because they are at the end of the grid. Therefore, National Grid renovated the end grid and electric transducers in Sanxing Township to facilitate surplus electricity that are generated by the Sanxing Microgrid Project connected to the grid. At the same time, Shanghai Electric also optimized power quality in the end grid via its independently-developed power quality comprehensive management system and advanced technology of reactive power compensation in order to ensure the reliability of power supply and the best possible operation of the microgrid. This "small and beautiful" project has actually led to a win-win situation for multiple parties.

8MW "BLACK START" IGNITES A MIRACLE

"Technology leader of the world"- Japanese media used to evaluate Chinese new energy industry in this way. For over a decade, a lot core technologies of PV and wind power industry have been developed or widely applied by Chinese enterprises, and Shanghai Electric Wind Power Group Co., Ltd. is on its way to becoming the main driver of the new energy industry.

On June 8th, an update titled "The First 8MW Offshore Wind Turbine Succeeded to Generate Power in 'Black Start'" swept the WeChat Moments of Shanghai Electric Group. The Shantou Smart Energy Demonstration Project not only attracts attention of the group but also the industry. It is more than a success of a project, but a "joint" victory of all related companies of Shanghai Electric Group. It is a milestone in Chinese offshore wind power development, and at the same time, a miracle in the development of Chinese new energy industry.

There are only a handful of successful "black starts" of wind turbines, none of which is a mega-level turbine. Many gurus in this field were still pessimistic about the final outcome on the day before the "black start".

"Actually we did not expect such a big smart energy demonstration project, and what we wanted was simply to locate a position for the prototype of the 8MW offshore wind turbine. However, more and more ideas and elements were introduced into this project, like rooftop PV panels for factories, lithium battery for energy storage, vanadium redox flow technology for energy storage and smart microgrid, and all these added up to Shanghai Electric's scheme of 'IoE+' for the industrial zone, a mega project." Talking about original goals of this super project, Peng Ming, Chief Engineer of Shanghai Electric Wind Power Equipment (Guangdong) Co., Ltd. and Technology Manager of Shantou Smart Energy Demonstration Project, said with the easiness that can only be found in winners.

How can two offshore wind turbines develop into a smart energy project integrating "wind, solar, storage, charging and load" units? The answer is "to snowball".

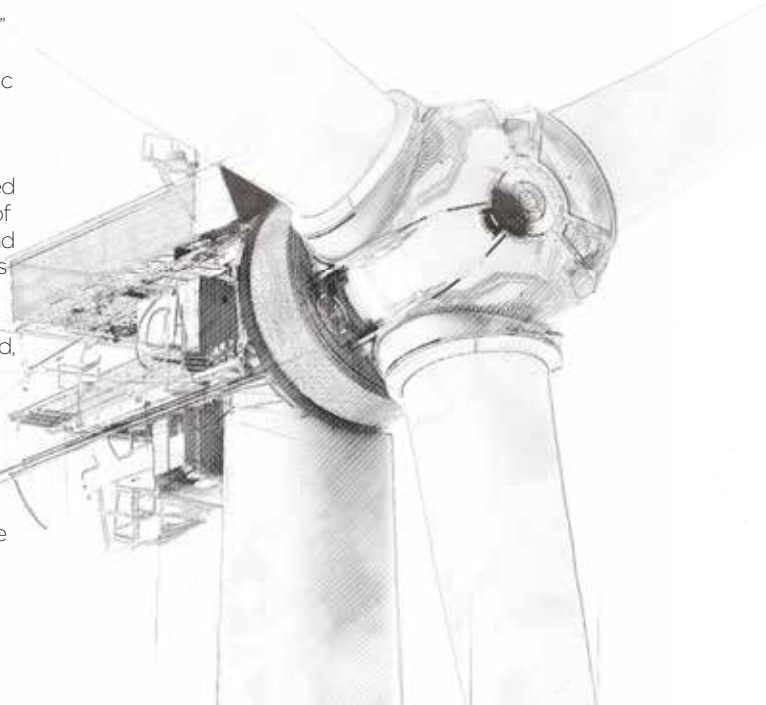
Having known of Shanghai Electric Wind Power Group's plan in Shantou City, Guangdong Province, Shanghai Electric came up with a bigger plan.

On one hand, Shantou sits in subtropics, rich in renewable resources like wind and solar energies, and on the other hand, the industrial park has a large electrical load, so it makes a typical scenario for the incremental distribution network and the penetration of renewable energies. Is it possible to utilize Shanghai Electric's advantages in comprehensive energy to build up a demonstration project for Shanghai Electric Group's energy landscape in the future?

Shanghai Electric Group convened a seminar, and experts from different fields proposed new inspirations. Therefore, the prototype of a smart energy demonstration project took shape, which integrates wind power, solar power, storage and charging, manages the grid, source, load and storage, and "uses self-generated electricity and sends the surplus to the gird", featuring a high proportion of renewable energy, strong reliability in power supply and good electricity quality.

Shanghai Electric Wind Power Group Co., Ltd., Shanghai Electric Power Transmission & Distribution Group, Shanghai Electric Guoxuan New Energy Technology Co., ltd. and Shanghai Electric Group Co., Ltd. Central Academe jointly researched on and refined the smart energy project, making it more detailed and feasible and preparing for the largest smart energy demonstration project in China to the utmost.

Combining the smart energy project and smart manufacturing together, Shantou Base leverages successful experiences from Putian base, the most



COVER
TOPICS

advanced smart manufacturing base in Asia, and builds up a modern offshore-wind-power smart manufacturing base by adopting the "Industry 4.0 + Energy 4.0" model. Shantou Base "emerges as the best in its kind from the start" because it seizes all major opportunities created by "new infrastructure construction" including 5G, Industrial Internet, big data, smart manufacturing and smart energy.

Shantou Base, a key offshore wind power smart manufacturing base of Shanghai Electric Wind Power Group, places equal importance on both the present and the future, and carries unprecedented expectations. For example, Shantou Base needs to design factories that are capable of producing 15MW offshore wind turbines. So far, the largest offshore wind turbine in the world is only 14 MW. Therefore, it means the steel structure of factories in Shantou Base must be able to hoist a weight of 500 tons, a daunting challenge.

Based on collaboration with related parties, the Process and Equipment Department of Shanghai Electric Wind Power Group, Shantou Base and Central Electromechanical Academe together solved the problem lying with the steel structure, removing technological obstacles for the progress of Shantou Base. What's more, this technological advancement was highly recognized, and won the "Jin Gang Award", the top award of the industry.

Shantou Base has proved itself with its excellent achievements in smart energy and smart manufacturing, but Shanghai Electric's "Shantou story" has just begun. By signing agreements with Huawei and China Mobile, Shanghai Electric Wind Power Group's"5G + Smart Energy" and "5G + Smart wind farm" are unveiling the curtain step by step; There will be a fierce competition in offshore wind power installation in Guangdong next year, and Shantou Base will make new progresses while guaranteeing smooth delivery; With a huge market potential in deep-sea wind power market, Guangdong will witness more successes in offshore wind power development made by us with concerted efforts in future.

"Shanghai Electric will seize the opportunity created by industrial transformation and actively participate in the "new infrastructure construction" across China based on the integration of Yangtze River Delta. We are committed to enhance online data strengths of Industrial Internet platforms and leverage our advantages in offline resources as a leading manufacturer. In this way, we are able to connect users with intelligent products and create values for customers via online services, making Shanghai a known brand concerning online new economy." said Huang Ou, Vice Secretary of the CPC Committee and President of Shanghai Electric Group, in an interview with China Business Network.

In the post-pandemic era, Shanghai Electric will promote online economy and accelerate digital transformation. Due to decades of development and accumulation, Shanghai Electric is among the industrial leaders in terms of industrial technologies. At the same time, it proactively explore and apply new technologies like 5G, AI and blockchain, and in particular, it has made enormous efforts on how to empower traditional industry with new technologies for deep integration with industry.

Looking ahead, IoT and AI are making the gate to a new smart energy world wider and wider. Shanghai Electric will demonstrate more innovative business models and stronger power due to its integrated advantages brought about by the smart energy system, which will multiply with each other to build a promising future.

CHEN YONG:

INHERITING THE SPIRIT OF CRAFTSMANSHIP, PURSUING SINCERITY AND PERFECTION

Planner | **Shen Jin Tu min**

Planner | **Tu min**

In the past, a hammer and a drill were used to make a finished product; now, an instrument and a set of data can do that. The difference of manual and mechanical or semi-mechanical operation makes people change accordingly. From traditional to modern, what's upgrading is not only machinery but also technology, but the spirit of craftsmanship has always been passing on from generation to generation.

How much cost can a CNC debugging worker at a basic position save for the enterprise? The answer is more than RMB 10 million yuan. Chen Yong, a CNC debugging worker of Shanghai Electric Hydraulics Pneumatics Co., Ltd., entered the factory at the age of 19 and studied under Li Bin, a famous national model worker at the age of 31. He has worked at this position for 28 years, transforming from a green hand to a skilled worker who is proficient in operating various kinds of ordinary lathes, CNC lathes and CNC machining centers.

"I want to be a knowledgeable, skilled and innovative worker like my master." Chen Yong is Li Bin's apprentice. For Chen Yong, this identity is both an honor and a responsibility. He wanted to carry Li Bin's spirit and unfinished business on his shoulders and pass it on.

LEARN FROM LI BIN AND BE LIKE LI BIN

"I've been working in the front line all the time, and my eloquence is not good." I met Chen Yong in the Shanghai Worker Story Contest. He seemed a little embarrassed. His speech "I Also Want to be on the National Day Reviewing Stand" told us about the people and things he is most familiar with. It was simple and true but gave people an unswerving confidence.

Chen Yong, who was recruited into Shanghai Hydraulic Pump Factory in 1992, came to Shanghai from Anhui Province. Like most migrant workers, he just wanted to find a job in a big city. "I don't have professional knowledge and I know nothing about machining. I didn't even see machine tools, let alone reading drawings." In Chen Yong's words, when he first entered the factory, he was "a piece of white paper".

In 2004, the factory arranged him to work in Li Bin's team and became an official apprentice of Li Bin. At that time, it was not easy to get into the team of Li Bin and learn from him, and hardworking spirit, dedication and professional skills were prerequisites.

When he first joined Li Bin's team, he saw complex CNC panels, the program-controlled automatic tool change, and the polished parts processed. He was curious and surprised, and the idea of "learning from Li Bin and being like Li Bin" came into being. He hoped to become a knowledgeable, skilled and innovative technical worker like his master.

The day July 15, 2004, remained fresh in Chen Yong's memory. It was his first time being on duty. He was processing spindle 7-hole ball socket by himself, and "due to the high precision requirements, my master selected a special machine tool with good performance which has been debugged repeatedly to process this product."

The first several products were satisfactory. All of a sudden, the machine tool made a abnormal sound when cutting, and the parts trembled. Chen Yong instinctively pressed the stop button, and the rotating machine tool stopped. However, the tool holder directly hit

the workpiece, and all the tools, tool holders and parts were damaged. Chen Yong's face turned pale immediately.
It was past 10 o'clock in the night. After checking, Chen Yong learned that the dimensional deviation of the parts caused the damage of the cutter of the only imported machine tool in the factory that could process such parts. He was scared and summoned up courage to call his master Li Bin. "I thought my master would come to workshop the next day, but after waiting in the workshop for a while, I saw my master running over in his overalls. He first told me to take it easy, and then he started to check it." Li Bin removed the cutter skillfully, looked at it, turned to Chen Yong and said with a smile, "it doesn't matter. Only a few teeth were broken, but there are spare parts." Hearing this, Chen Yong suddenly felt hopeful, and warmth surged in his heart.
At three o'clock in the morning, they repaired and replaced all the damaged tools, tool holders and gears. Li Bin then took a chair, sat down and said to Chen Yong, "if the cutter is broken, it can be repaired, and if the gear is broken, it can be replaced. However, as an excellent CNC worker, self-cultivation is the most important thing, which can't be replaced by anything. It depends on your continuous learning and improvement."
Chen Yong was deeply influenced by his master for his tolerance and leniency. "I not only asked myself to be careful in my work, but also taught my apprentices what my master taught me and treated them the way he treated me."

WRITE DOWN "CHEN YONG FORMULA"

The 21st century is an era of knowledge economy. The lifelong learning concept of "knowledge changes fate, and learning shapes future" is deeply rooted in Chen Yong's mind. With Li Bin's careful guidance and help, through more than one year's painstaking study, Chen Yong quickly mastered the operation skills, programming and debugging skills for the CNC machining center and other equipment. At present, Chen Yong operates the key equipment of the enterprise and processes most of the key parts. Among them, there are military products with high technical requirements and heavy responsibilities. He himself has become the production technology backbone of the national excellent team "Li Bin Team".
Opportunities come to those who are prepared. In past years, the development of China's medium and high-end construction machinery and other host machine industries completely depends on the import of hydraulic components and the supporting parts of military products are also greatly affected.
As a member of Li Bin's studio, Chen Yong participated in the technical research projects regarding the world's advanced high-pressure inclined shaft piston pump/motor and national key military products, and finished the tasks of NC machining, debugging and trial production of key parts of high-pressure inclined shaft piston pump/motor and military products such

as "052", "054", "093", "094", etc., which has made great contributions to the completion of military products production tasks in advance.
"Let me have a try," Chen Yong said that this kind of product was also made before. At that time, it was processed by ordinary machine tools, which were featured by multiple processes, long cycle and poor accuracy control. Now, CNC machine tools can guarantee the accuracy, but the process, steps and tooling and so on had to be completely changed.
Due to the tight delivery time, Chen Yong worked with operators in the workshop to work out a new processing technology according to the actual conditions. Through on-the-spot observation and research, Chen Yong figured out the numerical control technology suitable for the machining center, and combined five processes into two processes, which not only ensured the accuracy of parts processing, but also greatly improved the production efficiency. Through more than one month's hard work on the site, most of the military parts product processes were improved, which not only improved the quality of military products, but also improved the production efficiency, guaranteeing the delivery of "210 cartridge motor" and receiving high praise from customers and enterprise leaders. This means that as long as we get similar product orders in the future, the factory can easily process according to the "Chen Yong Formula" and deliver the products to customers with the minimum lead time and optimal quality.

ORDINARY PEOPLE DO EXTRAORDINARY THINGS

In Chen Yong's views, he only did what he should do in his ordinary post, but for Shanghai Electric Hydraulics Pneumatics Co., Ltd., Chen Yong did a lot of important things.
With the rapid development of the market, the orders of the enterprise increase rapidly, and the production task is extremely heavy. With the expansion of equipment and the increase of workers, Chen Yong took on the task of teaching new recruits. The newly purchased OKUMA 2SP-V55 CNC machine tool is an old model purchased from a joint venture. The processing technology and tooling of the whole TMG reducer parts were designed by foreign enterprise personnel, and it was handed over to the manufacturing department after installation and debugging. The enterprise then assigned Chen Yong to guide the operators to process the parts.
After a period of careful observation, Chen Yong found that there was a great potential safety hazard in this process: if the machine tool stalled and stopped suddenly, it may cause the risk of parts flying. So he immediately analyzed the program and fixture, and modified the original program which was

not suitable for the processing, eliminating a major safety hazard in time.

Chen Yong not only teaches new employees to operate and program CNC machine tools, but also helps them master the processing technology as soon as possible, especially on the processing technology of thin-walled parts of cover pipes: it is difficult to process nodular cast iron, and its thin wall makes it prone to deform during processing, so the outer diameter and inner hole size are difficult to control; and the roughness at the outer diameter is required to be Ra0.2um, so it must be processed with the grinder; but if it is put into the grinder to clamp twice, it can't guarantee that the outer diameter and the outer circle does not deform, making the thin-walled parts processed very difficult to meet the dimensional requirements. According to its characteristics, Chen Yong improved the processing technology, and optimized the design of the fixture - using the CNC turning center for processing, so that the process was centralized, and all the related surface dimensions were processed at one time by clamping to ensure the shape and position tolerance between the relevant dimensions; the design of the tooling and fixture followed the principle of unified standard, which reduced the deformation of thin-walled parts in the processing, and ensured the processing quality of cover pipe parts. Chen Yong's integrated process reduced the unproductive time and improved the labor productivity. In addition, the scrap rate of parts was reduced from 6 ‰ to 2.3 ‰, which saved the production cost for the enterprise.

In Chen Yong's opinion, what the enterprise needs most now is knowledgeable workers who are devoted to research and innovation. They should have persistent will, constantly improve their professional skills and play a leading and exemplary role in the industry. "The most important thing is to have a spirit of pursuing sincerity and perfection, a serious and responsible attitude, and be responsible for each product and task."

Strict requirements produce excellent professional skills, and people who dare to explore can make impossible things possible. Let's pay tribute to the craftsmen at Shanghai Electric!

SHANGHAI ELECTRIC WIND POWER:

FULL OF STAMINA

Shanghai Electric recently disclosed the latest listing plan. The road map for China's largest offshore wind power turbine manufacturer to land on the Sci-Tech innovation board (STAR Market) has become clearer. Shanghai Electric Wind Power will become the 5th listed wind power turbine manufacturer in China.
Today, China's wind power subsidies have declined, and the epidemic has obviously affected the manufacturing industry, but this has not affected the pace of Shanghai Electric's wind power splitting and listing. Going forward against the wind with firm will, what emboldens Shanghai Electric Wind Power?

WITH THE LEADING ENTERPRISE'S AUREOLE, IT HAS OBVIOUS LEADING ADVANTAGES IN THE INDUSTRY

Shanghai Electric is a "Veteran" of China's wind power industry. It has China's wind power's ups and downs, from weak to strong, but its strategic determination to develop wind power has never changed. Shanghai Electric has gradually found its own development path in the market competition of big waves and sand washing. Now Shanghai Electric has become one of the leading wind power enterprises in China.
In recent years, Shanghai Electric has also increased its support for wind power industry, and wind power has become an important business segment of Shanghai Electric. Especially, offshore wind power has achieved good results.
Shanghai Electric's new offshore wind power installed capacity reached 732MW in 2019, ranking first in China and the top three in the world for five consecutive years in accordance with authoritative statistics; The cumulative installed capacity of offshore wind power exceeds 3.2GW, accounting for more than 50% of the market, making it a well-deserved leading enterprise of offshore wind power.

Shanghai Electric has continuously consolidated its leading position in Jiangsu, Fujian, Guangdong and other offshore wind power markets, leading the development of the industry. In Jiangsu, the first batch project of offshore intertidal zone in China, the first "Double Ten" offshore wind farm in China, and the first offshore wind power project in China that won the national "Quality Engineering Gold Award" ... Each project records Shanghai Electric's footprints of the field of endeavor in the offshore wind power. In Fujian, the equipment utilization rate of Shanghai Electric Offshore Wind Turbine in Xinghua Bay Wind Farm has been 100% for three consecutive months, and Sanchuan Project has become the first batch application offshore wind farm of 7MW class in China, and won the first batch order of 8MW offshore wind turbine in China; In Guangdong, the first 8MW offshore wind turbine in China was rolled off and hoisted, leading the era of large MW offshore wind power in China. Shanghai Electric also takes the lead in the upcoming offshore wind power markets such as Shandong and Zhejiang. Shanghai Electric won the first order of Shandong offshore wind turbines at the beginning of this year ; Shanghai Electric's 63 offshore wind turbines, the first offshore wind power project in Zhejiang Province, were all connected to the grid in April last year.

Whether you like it or not, the normalization of epidemic prevention and control has become a reality; whether it is admitted or not, the epidemic has an impact on the product delivery of wind power enterprises. On the one hand, it is a rare “Small lifting peak"; on the other hand, it is a tight supply chain affected by the epidemic situation. How to minimize the impact of the epidemic situation on insurance delivery is a common problem faced by the wind power industry, and it is also the key to solve the common "embarrassing" situation of the industry.

Shanghai Electric is also more comfortable in the response to the supply chain guarantee of wind power, and has made early deployment with years of deep cultivation in the field of wind power and the advantages of leading enterprises.

Shanghai Electric signed contracts with more than 40 core suppliers at the Wind Power Suppliers Conference to build the strongest wind power delivery guarantee alliance in last November; In view of the international supply chain guarantee, Shanghai Electric Wind Power set up a procurement center in Europe in the middle of last year to track supplier dynamics and capacity supply in real time. The production capacity is also locked in advance in terms of scarce resources. For example, in terms of main bearings, Shanghai Electric has signed strategic cooperation agreements with three major global suppliers SKF, Roteder and Schaeffler to ensure product delivery to the greatest extent. Meanwhile, Shanghai Electric is also actively developing domestic supply chain support resources.

Shanghai Electric exerts the resource advantages of its industrial giants in logistics and transportation, launches a new model of "shared logistics", and integrates the superior resources of the whole group to solve the problem of wind power logistics and transportation; In terms of manufacturing, epidemic prevention and control and production are both hard-working, and many difficulties are overcome to ensure production, which has also achieved good results. Shanghai Electric Rudong Base, for example, under the severe influence of the epidemic situation, Rudong Base still handed over beautiful transcripts of 25 wind turbine units per month in March.

Shanghai Electric will continue to keep close contact with domestic and foreign suppliers, strengthen cooperation in multiple dimensions to overcome the difficulties and ensure product delivery to the greatest extent facing the impact of the epidemic.

We should not only look at the future, but also look at the past. The prospect was also favored by the industry after the news of Shanghai Electric's wind power split and listing spread. Iwind Big Data Center has been enabled, and onshore 4.X and 5.X series wind turbine products have been launched in recent years, which has entered the European wind power market and been recognized as "National Enterprise Technology Center". Together with Huawei, "5G+ Smart Wind Farm" has been established, and Dalian Artificial Intelligence Research Center has been established ... It is obvious to all that Shanghai Electric Wind Power keeps pace with the times and is pioneering and enterprising. I believe that Shanghai Electric Wind Power will usher in a qualitative leap in the future .D

上海电气
SHANGHAI ELECTRIC

AVIATION AND AEROSPACE EQUIPMENT 航空航天装备
INDUSTRIAL ROBOTS
MACHINE TOOL 工业机器人
能源装备
RAIL TRANSIT 火电
INDUSTRIAL EQUIPMENT
OIL, GAS & CHEMICAL ENGINEERING
NUCLEAR POWER
DUBAI
THERMAL POWER
GAS TURBINE
AUTOMATION
核电 NUCLEAR POWER
THERMAL POWER
ELECTRIC 火电
ENVIRONMENTAL PROTECTION
自动化
AUTOMATION
OIL, GAS & CHEMICAL ENGINEERING
埃塞俄比亚
迪拜 RAIL TRANSIT 轨道交通
ETHIOPIA
NE1-700MW CSP+250MW PV Hybrid Project
空调压缩机 SOLAR POWER 太阳能 BASIC PARTS
MALAYSIA 马来西亚 ENERGY EQUIPMENT
吉布提 ENERGY STORAGE AND FUEL CELL
分布式能源 DJIBOUTI
不止上海
DISTRIBUTED ENERGY
Djibouti Goubet Substation Project
迪拜700MW光热和250MW光伏太阳能电站项目
INTEGRATION SERVICES
不止电气
BASIC PARTS
上海电气
工业装备高端医疗 HIGH-END HEALTH CARE
上海 LIFE-CYCLE SERVICES
SHANGHAI
CONSTRUCTION INDUSTRIALIZATION
INDUSTRIAL INTERNET
工业互联网
FINANCE 金融
WIND POWER
风电

不止上海 不止电气

BEYOND SHANGHAI BEYOND ELECTRIC