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ENERGY STORAGE

INDUSTRY HAS ONCE AGAIN COME UNDER THE SPOTLIGHT

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SHANGHAI ELECTRIC

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SHANGHAI ELECTRIC PLAYS A LEADING ROLE IN GREEN DEVELOPMENT

News about the "two sessions" (the fourth session of the 13th National Committee of the Chinese People's Political Consultative Conference (CPPCC) and the fourth session of the 13th National People's Congress (NPC)) attract most attention at present. We find that the most discussed topics are "carbon peak" and "carbon neutrality".

Carbon peak, which is easy to understand, means that at a certain time point, China will have the CO_2 emission peak and from then on, the emission will drop. What is carbon neutrality? According to Issue 2 (2020) of Ecological Economy, it means that "the net CO_2 emission is zero".

Is carbon neutrality far away from us? A UN report shows that if the temperature rose by 1.8 degrees Celsius by 2050, then there would be 2 billion people have no access to water, and 20% to 30% of natural species would basically die out. This "1 degree Celsius" leading to the "highway to extinction" is alerting people to reduce CO_2 emission.

Carbon neutrality forces the public to confront environmental protection problem. Forests are lungs of the planet. According to scientists, a big tree in the urban area is as effective as 5 or 6 air conditioners in that it can lower the temperature and absorb CO_2. Every tree is invaluable. That's why the Netherlands did everything possible to protect a tree.

During World War Two, the 14-year-old Jewish girl Anne Frank wrote the Diary of Anne Frank while hiding in a secret place to avoid being captured by the Nazi, in which a chestnut tree was mentioned. Today, the tree that had stood for over 150 years was on the verge of being cut down because it could fall at any time due to tree rot. The local government had spent more than 100 thousand euros to save it. The tree cutting permit issued by the court was strongly opposed.

What matters does not lie in the fate of the tree, but how valuable the Netherlanders see trees. They are protecting not only cultural heritage, but more importantly, the environment. In the past few years, the international community has put carbon emission high on the agenda and adopted many measures like signing agreements on climate change, enforcing related policies and substantially adjusting major strategies.

On May 15, 2021, President Xi Jinping urged during the "two sessions" that "carbon peak and carbon neutrality shall be incorporated into the whole plan of constructing ecological civilization, and every effort shall be made to reach carbon peak before 2030 and realize carbon neutrality before 2060 as scheduled."

So far, 40% of economies in the world are moving towards this end. A new solution surfaces for the previous dilemma: how to expand economy and protect environment at the same time? The solution is clear-cut: high-quality development. Then, the question is what kind of development is high-quality development? The answer is simple as well: sustainable industrial upgrading. This closed loop shows that carbon neutrality is part of good environment as well as industrial upgrading, and also the driver and destination of the latter. Since green development embodies how science contributes to the common good and the opportunity to drive business growth, Shanghai Electric will press ahead with the whole country to realize carbon neutrality.

ELECTRIC SHANGHAI 上海电气

CONTENTS

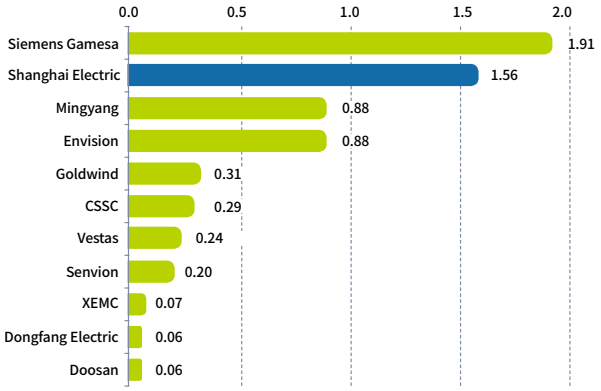
ELECTRIC NEWS

Shanghai Electric Ranked 2nd in 2020 World Installed Offshore Wind Capacity No. 4 Chinese Wind Turbine Manufacturer

In early March, BloombergNEF revealed its 2020 lists of top global and Chinese wind turbine manufacturers. Shanghai Electric ranked 7th in the global list by commissioning 5.07GW of wind turbines hoisted, 4 positions higher than that of last year. It ranked 4th due to its 9% share of Chinese wind power market in 2020. Data shows that the global wind power capacity commissioned saw an increase of 96.7GW in 2020, rising by 59% compared with that of 2019. To be specific, the onshore wind turbines installed recorded a record high of 90.2GW and the offshore was 6.5GW. The cumulated capacity increase of grid-connected Chinese wind turbines stood at 71.76 million kW and the commissioned capacity of turbines hoisted soared by 57.8GW, both of which doubled their respective amounts in 2019. More importantly, Shanghai Electric remained the top offshore wind turbine manufacturer due to 1.56GW of turbines commissioned in China, and jumped to the second in the global offshore market.

Newly-Commissioned Capacities and Market Distribution of Top Offshore Wind Turbine Manufacturers in the World in 2020 (GW)

Data from: BloomergNEF



A New Product of Tianjin Pipe Corporation Co., Ltd. Used in China's Largest Offshore High-Pressure and High-Temperature Gas Field

The Dongfang 13-2 gas fields project, China's largest offshore high-temperature and high-pressure gas fields project, has been put into operation recently. The X65QO deep-sea steel pipe* weighing roughly 1000 tons, independently developed by Tianjin Pipe* Corporation Co., Ltd., has been used in the subsea pipeline installation program connecting the central platform of Dongfang 13-2 Gas Field and the auxiliary platform of Dongfang 1-1 Gas Field. The operating project directly delivers natural gas to the southern China and Hainan Province, sustainably driving the Guangdong-Hong Kong-Macao Greater Bay Area and Hainan Free Trade Port.

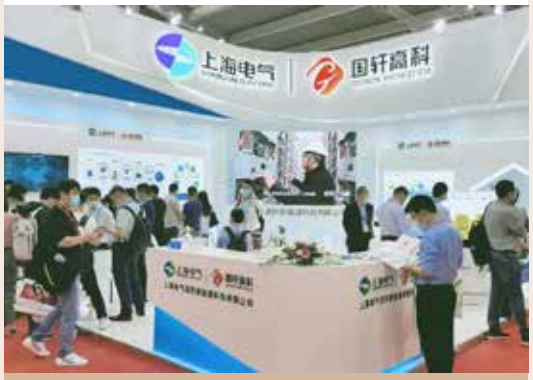
NEWS

Shanghai Electric Implements the Fourth Phase of Mohammad Bin Rashid Al Maktoum Solar Park for 10 Million Hours Without Accidents

Days ago, Shanghai Electric held a celebration on the site of NE1-700MW CSP+250MW PV Hybrid Project in Dubai to mark its 10 million-hour safe operation. The project owner congratulated Shanghai Electric on its achievements in the Dubai solar park project and spoke highly of the safety, health and environmental management and COVID-19 containment.
To date, the project has been progressing smoothly in that 60,000 heliostats of CT units have been put in place, and the installation of the field is coming to an end.

Shanghai Electric Power Generation Group Signed Another Contract on Three Major Facilities of Million-Level Double Reheat Unit

On February 25, Shanghai Electric Power Generation Group inked a contract with Jiangsu Sheyanggang Power Generation Co., Ltd. on the three major facilities of the expansion project of 2×100 MW coal-fired power units. Approved by Jiangsu Development and Reform Commission in December 2020, this project, invested by Jiangsu Guoxin Investment Group Limited and Xuzhou Coal Mining Group, is crucial to provide electricity that Jiangsu needs for economic development and power structure optimization, and will further push Jiangsu to shut down units whose output power is no more than 30 MW, driving the construction of an eco-friendly society with a high resource efficiency, the healthy development of the local power industry, and the fulfillment of energy-saving and emission-reduction goals. The project is expected to improve the energy landscape of Jiangsu Guoxin Investment Group and yield clean and efficient growth after its completion.



Shanghai Electric Smart Energy Solutions Displayed at China International Battery Fair

On March 19, Shanghai Electric Guoxuan New Energy Technology Co., Ltd. ("Shanghai Electric Guoxuan New Energy" for short) participated the 14th China International Battery Fair. As the largest event for the international battery industry, Shanghai Electric Guoxuan New Energy displayed a whole range of smart energy solutions on one-stop energy storage, 5G communication standby power, user solar power storage and electric bike. In the bigger picture defined by "carbon neutral" and "carbon peak", Shanghai Electric Guoxuan New Energy implements smart cloud-based management to deliver ultimate smart energy experience for users, supporting global operators to build a zero-carbon network and a green world.

11th Consecutive No.1 Provider Shanghai Mitsubishi Elevator Re-Selected as No.1 Provider by Top 500 Real Estate Companies

On March 16, the China Top 500 Real Estate Companies Conference published the "First-Choice Providers by Top 500". Shanghai Mitsubishi Elevator Co., Ltd. was re-selected as the No.1 provider in the elevator category with 19% of the top 500 developers seeing it as their first choice, making it the holder of the first position for a 11th year in a row.
The China Top 500 Real Estate Companies Conference, co-hosted by China Real Estate Association and Yiju China Real Estate Evaluation Center, has been held for 13 consecutive years. Its evaluation and researches have been used as important criteria in assessing overall strengths of real estate developers and their industrial positions.

Shanghai Electric Signed 2 Contracts with Indonesian and Singaporean Companies

Recently, Shanghai Electric Power Generation Group successfully signed 2 contracts with foreign counterparts: the Indonesian Qingshan Steel 3×380MW Thermal Power Generation Project and the Tuas IWMF Waste-To-Energy Project Phase One 2×65MW steam turbine units at Singapore. It is important to note that the Singaporean project signals that the steam turbine made by Shanghai Electric Power Generation Group truly breaks down the monopoly of western and Japanese players and steps into a developed market, amplifying Shanghai Electric's international influence and embodying strategic importance for the group's overseas development.

Shanghai Electric Power Transmission & Distribution Group Successfully Completed the PV Project in Cuba

Days ago, Shanghai Electric Power Transmission & Distribution Group obtained the Certificate of Substantial Completion from the project owner of the 61MWp PV Plant Project at Mariel Special Development Zone, Cuba, in which it served as the EPC contractor.
It is the largest centralized PV project in Cuba, and also the first PV project adopting the single axle tracing system in the Caribbean area. Meanwhile, it has made major technological breakthrough as the only centralized PV project using steel spiral brackets across the whole field in the area so far.
Shanghai Electric Power Transmission & Distribution Group, the EPC contractor, and Shanghai Electric Finance Group, the investor, met all criteria of substantial completion as scheduled via smooth collaboration despite COVID-19 pandemic.

Shanghai Electric Power Generation Equipment Co., Ltd. Turbine Plant Signed the Largest Contract on Localized Steam Turbine for Solar Power Development

Recently, Shanghai Electric Power Generation Equipment Co., Ltd. Turbine Plant won contracts of Qinghai Zhongkong Delingha 135MW photothermal power generation project and SUPCON Jinta 100MW CSP project, which represents the first 2 contracts in the 100MW solar power segment. Therefore, it becomes the only Chinese manufacturer of 100MW steam turbines for solar power projects and breaks the monopoly of foreign players in this regard. By inking the contract of Delingha 135MW project, it also becomes the provider of steam turbines of the largest power for solar power in China.

SHANGHAI ELECTRIC HELD 2020 EARNINGS CONFERENCE CALL

After releasing its financial results for 2020 on March 27, Shanghai Electric held an earnings conference call coupled with live streaming, and announced that it would further high-end manufacturing, accelerate digital transformation by empowering traditional industries with digital tools to revitalize enterprises, and progress steadily towards the vision "world-class high-end equipment manufacturer". Zheng Jianhua, Party Secretary and President of Shanghai Electric Group, was present.

He said that efforts were made to reinforce institutional reform and shared business benefits between employers and employees, which helped Shanghai Electric to achieve a two-digit growth for 3 successive years while optimizing its industrial structure. The sales, new orders and orders in hand from different sectors, like new energy and intellectual manufacturing, accounted for almost half of the group's aggregate business. Thanks to its active responses, Shanghai Electric generated a substantial increase in its annual revenue despite the strike of COVID-19, putting itself under the spotlight of the capital market. Zheng Jianhua noted that it was because Shanghai Electric upgraded its commercial model by identifying a new development path. On one hand, it has turned to providing comprehensive solutions to customers. On the other, it has been pressing ahead smart city strategy. By entering and improving the emerging industry of new energy + energy storage, it has built up initial advantages in new energy and digitalization and outlined its strategy to boost the reform of the energy industry. Smart application solutions based on the Industrial Internet platforms empower industrial transformation. Businesses on environmental protection and prefabricated buildings have expanded tremendously.

Over 100 domestic and international institutional investors, such as Morgan Stanley, Citibank, Haitong Securities, Everbright Securities and BOCOM Schroders, and analysts participated the conference in-personal or online, and shared their views.

Energy Storage Leader

Shanghai Electric Smart Energy

Campaign Packed with Guests

On the afternoon of March 31, Shanghai Electric held the "New Pattern of Smart and Innovative Energies and Smart Energy Solution" Campaign at Nantong City, Jiangsu Province. Guests at the event included institutional investors of and analysts from Yinhua Fund, Fullgoal Fund, Xiangcai Fund, Guosheng Securities, TF Securities, HSBC Qianhai and Western Securities, and more than 10 major media agencies, such as Xinhua News Agency, China Securities Journal, Shanghai Securities News, International Financial News, The Paper and Jiemian.com.
At the campaign, Shanghai Electric fully demonstrated its technological strength and advantages in energy storage to investors and media simultaneously online and offline via a number of demonstration projects, including the sharing energy storage power station and Anhui Jinzhai independent energy storage station that are on the grid side, and the smart energy demonstration project in Minhang Industrial Zone, Shantou wind-solar-storage-charging integrated microgrid and the soloar power storage microgrid at Dubai that are on the user side. In addition, it detailed on the business structure, strategic plan and future blueprint in the field of energy storage .

Shanghai Electric

Convened 2021 Manager Conference

On March 5, the 2021 Shanghai Electric Manager Conference was convened at the Education Center Party School, which aimed at boosting transformation and high-quality development, celebrating the 100th anniversary of the founding of the Communist Party of China (CPC) and achieving the phase two strategic goal. The meeting summarized progresses made in the past three years under the guidance of the "three-step" strategy, and made plans for this year's budget and major tasks. Zheng Jianhua, Secretary of Party Committee and President of Shanghai Electric Group, addressed the meeting, while Huang Ou, Vice Party Secretary and President, hosted the conference and delivered the work report.

Zheng Jianhua articulated the special significance of the year 2021 for Shanghai Electric, which was the high time to celebrate the 100th anniversary of the founding of CPC with better business performance, to set off properly to implement the "14th Five-Year Plan", and a pivotal year to carry out the second step of the "three-step" strategy. He demanded that Shanghai Electric should shoulder responsibilities and make contributions through hard work, which fit into the bigger picture. If the whole group, from top to bottom, can move in the right track while doing the right thing under a sound development mindset, we are most likely to build up a new landmark in Shanghai Electric's history. This year is defined by "reducing cost and improving efficacy and efficiency". Therefore, the three key words "quality, structure, implementation" shall navigate all the work throughout 2021.

Huang Ou reviewed what had been done in 2020 and put forward the 2021 plan in his report titled "Stick to High-quality Development and Accelerate Digitalization". He noted that in 2021, we will reinforce our confidence in both strategy and development and meanwhile, actively adapt for changes by the accurate identification and sound measures.

Shanghai Mitsubishi Elevator Propelled

"Hongqiao International Hub for Opening Up"

The State Council approved the Overall Plan to Build the Hongqiao International Hub for Opening Up in February 2021, marking another important step for Shanghai to implement the national strategy of the Yangtze River Delta Integration after the Lin-gang Special Area of China (Shanghai) Pilot Free Trade Zone and the demonstration zone for integrated ecological and green development in the Yangtze River Delta region.

It is necessary for Shanghai Hongqiao International Airport, a key driver to build the hub, and to upgrade facilities and daily maintenance. There are 53 lifts and 86 elevators, 139 units in total, in all terminals, all of which are from Shanghai Mitsubishi Elevator.

A few days ago, the T2 maintenance team of Shanghai Mitsubishi Elevator was awarded "The Best Credit Team" by Shanghai Transportation Trade Association due to its excellent services. The team is made up of 16 personnel including 1 senior technician, 1 technician and 2 project managers.

Following Hongqiao Airports' vision to build a world-leading airport, the team has pressed ahead the construction of a star-level demo unit by delivering standard and modular maintenance services, improving service quality and enhancing continuous innovation, by which it has rose to a leading player in maintaining elevators and lifts used in public transportation projects with high competitiveness.

Confronting challenges of a high volume of passengers, the team promotes management panel, 5S on-site treatment and other advanced measures by leveraging Shanghai Mitsubishi Elevator's advantages of Internet of Things tools, mobile end-device and smart management platform, and drives its performance by both products and services genuinely on basis of competent services for venues, equipment, facilities and people.

Shanghai Mitsubishi Elevator has been part of Hongqiao's development for a long time.

As early as 2015, the company was selected to manufacture all 33 lifts and 20 elevators for the Hongqiao Airport T1 renovation project due to its long-term excellent and professional services. What's more, it has also produced and maintained hundreds of elevators in the National Exhibition and Convention Center (Shanghai) amid the 3rd China International Import Expo, contributing to the success of the event with a "zero failure, accident and complaint" performance.

In the future, Shanghai Mitsubishi Elevator will continue to offer professional and great services for all users and passengers and support the construction of Hongqiao International Hub for Opening Up with utmost efforts.

Shanghai Electric Contributed to First Overseas Hualong One Nuclear Reactor in Grid-Connected Power Generation

On March 18 local time, the Karachi K2 generator unit in Pakistan, China's first overseas Hualong One nuclear reactor, was integrated into the grid and began power generation.

With China Zhongyuan Engineering Corp. of China National Nuclear Corporation as the general contractor, Shanghai Electric served as the major equipment supplier in the construction of Karachi K2 generator unit, providing main equipment including reactor vessel internals and steam turbines and other crucial facilities.

Shanghai Electric began to manufacture reactor internals of the K2 unit that is also known as the "Backbone of Hualong" since 2015. The equipment comprises 13,487 components under 236 categories with a height of 11.036 meters, a diameter of up to 4.188 meters and a weight of some 160 tons, adopting the highest standards in the world.

Throughout the project, Shanghai Electric tackled 71 processing and testing problems, localized two kinds of materials, innovated many technologies including 5 on welding, 4 on testing and 7 on processing, and obtained 10 invention patents.

Shanghai No.1 Machine Tool Works Co., Ltd., an affiliate of Shanghai Electric, delivered K2 unit's internals in May 2018, 33 months after its inception. The upgraded 1100MV nuclear generator was transported to Pakistan in July 2018, which fully adopted Shanghai Electric's indigenous technology.

In September 2018, the low-pressure cylinder of K2's steam turbine and Shanghai Electric's first million-level low-pressure rotor were completed, becoming a marked achievement in China's overseas million-level nuclear projects.

The Unit 5 of China's Fuqing Nuclear Power Plant, the world's first project to adopt nuclear power technology Hualong One, began commercial operation in January 2021, whose reactor internals and auxiliary parts are produced by Shanghai Electric. Fujian Fuqing Nuclear Power Co., Ltd. expressed its gratitude in a letter for Shanghai Electric's efforts and genius devoted to the successful application of Hualong One technology.

The Pakistan-based K2 unit is estimated to generate some 100 gigawatts on a yearly basis, meeting the production and life demands of 1 million natives. In other words, it equals to cut the consumption of standard coal by 3.12 million tons and CO2 emission by 8.16 million tons, or plant over 70 million trees.

The project construction also boosts related industries in Pakistan by creating over 10,000 jobs, bringing benefits to local livelihood and economy.

Over 240 Workers Finished Installing 492 Boxes by Working Round the Clock
Shanghai Electric Matechstone Engineering Group Co., Ltd.: Supports the 10th China Flower Expo

All 492 boxes of the temporary accommodation project of the China Flower Expo are in place and ready for use so far.
Blossom with Chinese Dream and Celebrate Chongming's Charm The 10th China Flower Expo is coming to Chongming District, Shanghai, in May 2021. Shanghai Electric Matechstone Engineering Group responded with first-level mechanism after undertaking the temporary accommodation project of the expo. A group of experts were brought together to analyze the task from the perspective of building a world-class ecological island. They decided on a modularized construction plan featuring flexible assembly methods and reusable materials, which was in line with Chongming's ecological idea of "green organization and low-carbon construction" and accommodation principle of "being reasonable, compact and integrated".
The project is set in the No.3 plot of area at Dongping National Forest Park, Chongming District with a total planned floor area of 16,348.10 m2. To be more specific, there are 40 independent two-storey buildings with 6 rooms on each floor in a triangle layout. All the 480 rooms cover an area of 11,989.20 m2. Shanghai Electric Matechstone Engineering Group was responsible for all rooms.

Shanghai Electric Completed Registration of Its Leg Rehabilitation System

Recently, Shanghai Electric GeniKIT Medical Science and Technology Co., Ltd. acquired the II Registration Certificate for Medical Device from Shanghai Medical Products Administration for its rehabilitation robot "partial weight bearing gait training and evaluation system" after two years' registration testing, clinical testing and application.

As the first medical device company incubated within Shanghai Electric, it has made a landmark in transformation of technologies independently developed by the Central Academe and internal incubation by obtaining this certification, and signals that it will move forward to a much more commercialized stage. Clinical researches of this robot were carried out in many renowned domestic hospitals like Huashan Hospital of Fudan University, generating valuable clinical data and application expertise.

Shanghai Electric Power Transmission & Distribution Group Expanded into West African Market under the Belt and Road Initiative

Recently, Shanghai Electric Power Transmission & Distribution Group inked the 300kV and 132kV substation transformation and restoration EPC project contract with the Transmission Company of Nigeria (TCN) Shanghai Electric Power Transmission & Distribution Group is to transform and restore seven 132kV substations and three 330kV.

Nigeria is a major participant of the Belt and Road Imitative, representing the largest market in Africa for Chinese contractors. This project marks many firsts for Shanghai Electric Power Transmission & Distribution Group: the first open tender with loans offered by the World Bank, the first open tender in West Africa, the first transmission and distribution project involving 330kV, the highest voltage in West Africa, and the first substation restoration project. Therefore, it lays a solid foundation for Shanghai Electric Power Transmission & Distribution Group to further explore the Nigerian market and bid for more high-voltage substation projects in Sub-Saharan Africa.

Shanghai Electric Participated in Shanghai's First Urban Digitalization Program

On the morning of February 27, the "Digital and Smart Putuo" Conference and Launching Ceremony of Putuo Digitalization themed "Maximum Digitalization and Innovation" unveiled its curtain at Shanghai Convention & Exhibition Center of International Sourcing, signaling Putuo District's pioneering status among all Shanghai districts in going digital. Shanghai Electric Automation Group signed a strategic partnership agreement with the People's Government of Putuo District to "boost economic digitalization".

Early in January, the CPC Shanghai Municipal Committee and Shanghai Municipal People's Government issued Opinions on Promoting Overall Digitalization in Shanghai that revealed Shanghai's strategy on building the "international digital capital". The policy makes it clear that efforts shall be made to accelerate the development of digital industry and industrial digitalization, to amplify the influence of digital economy, and to expand and enhance core urban functions to support Shanghai's economy characterized by innovation, services, headquarters, opening-up and traffic.

Putuo District begins to implement digital transformation to echo Shanghai's call and improve the urban competitiveness and modern city governance performance. It will empower and reshape Putuo in an all-rounded way by speeding up the construction of "Digital and Smart Putuo" that turns pain points in all areas into highlights and growth drivers. This type of "digital revival" will better support Shanghai's overall digitalization with its regional influence.

In accordance with the agreement, Shanghai Electric will draw on previous successful cases of "one net for all" and continue to optimize city governance operation model via utilizing its remarkable strength in high-end equipment manufacturing and advanced new technologies. It will make every effort to build Putuo District into a "lab" for Shanghai's digital transformation, and support the district to upgrade and innovate "economy, life and governance", the three major areas to be digitalized.

Shanghai Electric has actively participated in "Smart city" constructions for years, and explored digitalization in various areas like city governance and industrial companies. Under Shanghai Electric Group's general plan on digital transformation, Shanghai Electric focuses on core industries of smart city development including smart system solutions and smart products and devices, which has yielded excellent results so far:

In January, 2021, the medium-transit line T1, the first Digital-rail Rapid Transit (DRT) line in China, deployed in Lingang New Area of Shanghai's Pilot Free Trade Zone was put into operation. Shanghai Electric participated in the construction.

In September, 2020, Shanghai Electric Group and the People's Government of Hongkou District, Shanghai, formed a strategic partnership. It would build a demonstration area "5G Global Innovation Hub" for the district, and reinforce collaborations on smart buildings, intelligent transportation and smart energy.

In July, 2020, Shanghai Electric Group and the People's Government of Yangpu District inked the strategic partnership agreement at 2020 World Artificial Intelligence Conference. It would accelerate Yangpu's construction of smart city.

In June, 2020, Shanghai Electric and the People's Government of Baoshan District became strategic partners who would exchange and cooperate on various levels concerning smart city and smart energy.

In the future, Shanghai Electric will continue to fully empower digital ecology based on its strength. While exploring "Shanghai Electric Model" in digital transformation, it will revive traditional industries, improve city life and enhance community governance with digital tools.

Shanxi's First 1000MW Power Unit Start Operation, Supported by Shanghai Electric's Main Equipment

Recently, Yuguang Coal Power Plant's No.1 2x1000MW Power Unit has started operation after completing its 168 hours of full-load tests. As the first 1000MW power unit in commercial operation, it marks a major breakthrough in both single unit capacity and power generation technology at Shanxi Province. The steam turbines, generators and boilers used by the two sets are manufactured by Shanghai Electric Power Generation Group, and have run smoothly during the testing period with parameters in a normal operating range, laying a good foundation for stable and healthy operation in the long run. It a supportive power project for the "Shanxi Yu County Power Plant-Hebei South Grid 500kV Transmission" program, one of the 12 core electricity transmission channels stipulated in the national Airborne Pollution Prevention and Control Action Plan. After its completion, it is expected to deliver 10 billion kWh of electricity every year with 5000 available hours and yields a revenue of RMB 3 billion, making remarkable contributions to Shanxi Province's transformation and upgrading.

Shanghai Electric's First W6.5F-185 Prototype Produced

Days ago, Shanghai Electric's first W6.5F-185 prototype was produced at its site in Putian City, Fujian Province, signaling a good start for Shanghai Electric to lower the cost of the offshore wind power. Leveraging the Shanghai Electric 6.25-172 directly-driven platform, this prototype adopts the platform model and is designed to upgrade core technologies on generation capacity, reliability, smart control and whole-field solution. The unit uses the S90 glass-fiber blade newly-developed by Shanghai Electric, the longest in China so far, and its wind wheel diameter reaches as long as 185 meters, which increases the swept area per kilowatt by 11% compared with the previous version. In areas whose average annual wind speed is 7.5m/s, its full load time exceeds 3,200 hours on a yearly basis.

HYDROGEN

Shanghai Electric Made a Further Step Towards Hydrogen

Shanghai Electric, one of the largest equipment manufacturer in China, iterates its business landscape proactively and has made a further step in green hydrogen development recently. On March 4, Shanghai Electric Power Generation Group inaugurated the Proton Exchange Membrane (PEM) Hydrogen Production Technology R&D Center with Dalian Institute of Chemical Physics of the Chinese Academy of Sciences, and signed an agreement on "Megawatt Modular and High-Efficiency PEM Hydrogen Production Equipment and System Development", marking an important step forward for Shanghai Electric in the field of hydrogen energy.

To date, both sides have initially agreed on the industrial development path "new energy power generation + hydrogen production via electrolysis". They will continue to enhance the commercialization of PEM hydrogen production technologies, accelerate the development of competitive products in this regard, and promote demonstration projects for industrial application. Moreover, they intend to carry out in-depth cooperation across the entire hydrogen energy industry chain, to accelerate overall industrialization.

To meet needs of efficient hydrogen production from renewable energy, so far, a number of domestic companies and research centers have put studies on the structure design of electrolytic cells and modularized integration technologies, and the preparation processes on key parts like large membrane electrodes collectors mature more slowly. At present, they are attempting to design and manufacture MW-level PEM hydrogen production equipment- which is the main push for this cooperation. Shanghai Electric will leverage this opportunity and collaborate with Dalian Institute of Chemical Physics to refine system designs based on its remarkable technological strengths and manufacturing experience to lower product cost, to increase conversion efficiency and to facilitate the demonstration project of PEM hydrogen production and the transition to clean energy in China.

The cooperation will push PEM hydrogen production in terms of technology innovation, production development and system integration, and make efficient combination of renewable energy and hydrogen production, which will in turn be a big support for demonstration projects later and build up a group of technicians with Shanghai Electric's characteristics.

NEWS

Shanghai Electric's First 4.5MW Onshore Wind Power Storage Project Started Producing Power

On March 19, the wind power storage microgrid at the cost-effective base Xingfu No.1 Wind Farm in Ulanqab City, Inner Mongolia successfully generated electricity with a "black-start". It is Shanghai Electric's first onshore 4.5MW wind power storage project that has been in commercial operation.

The Ulanqab Wind Power Base is the world's largest single onshore wind power project, and also China's first scale demonstration project of cost-effective gird-connection powered by renewable energies. A microgrid including wind turbines and a lithium battery energy storage system (BEES) has been set up at Xingfu No. 1 Wind Farm. The BEES is a standardized knockout product launched by Shanghai Electric for the generation-integrated wind energy storage scenario. It uses the LFP (LiFePO4) cells specially developed for energy storage by Shanghai Electric Guoxuan New Energy Technology Co., Ltd., which is characterized by security, efficiency and a long service life, and adopts a highly integrated comprehensive solution. This microgrid is able to accurately balance the wind turbine, energy storage and load via technologies integrating wind power and energy storage the without the external gird, providing stable power to temporary constructions. Shanghai Electric's new digital wind turbines can operate for a long time in a weak grid, proving one of its excellent performances. Shanghai Electric implemented a "black-start" for China's first 8.0MW onshore wind turbine deployed in Shanghai Electric Shant. D

Electric's Thermal Desalination Project for Sinopec Zhoushan Shortlisted for Global Water Awards

Days ago, Shanghai Electric became one of the four suppliers shortlisted for the 2021 Global Water Awards with its thermal desalination project for Sinopec Zhoushan with a daily capacity of 300,000 tons of multiple-effect distillation (MED).

With Phase One finished in 2020, Phase Two of the Zhoushan project is under construction and expected to start trial operation in November, 2021. Shanghai Electric is the EPC constructor of both phases of the MED desalination project. The first phase is designed to produce 105,000 tons of water every day, and second phase 200,000 tons. Phase One started operation in November, 2019, and Phase Two, whose contract was signed on December 2019, is going to operate in November, 2021.

Concerning the MED system solution provided by Shanghai Electric to Zhejiang Petroleum & Chemical Co., Ltd., the desalination facility can alter between MED-TVC and F-MED models seamlessly for different working conditions, setting up a good example for international petroleum and chemical companies.

In addition to thermal desalination, Shanghai Electric also owns membrane desalination technologies. By the end of 2020, Shanghai Electric has constructed over 20 desalination projects for domestic and overseas customers, which produce an aggregate of over 600,000 tons of water on a daily basis, 450,000 tons from thermal desalination and 170,000 tons from membrane desalination.

The Global Water Awards, established in 2005, is esteemed as the Academy Award in the water industry. The other 3 shortlisted projects are membrane desalination programs in Bahrain, Saudi Arabia and Singapore.

Shanghai Electric Power Transmission & Distribution Group Won A Tender Contract in Mymensingh, Bangladesh

Days ago, Shanghai Electric Power Transmission & Distribution Group won the tender contract on procurement and installation of capacitors and switches at Mymensingh, Bangladesh. It is a second cooperation between Shanghai Electric Power Transmission & Distribution Group and Power Grid Company of Bangladesh Ltd. after the 400kV gas-insulated substation in 2020. According to the contract, the group is to provide 33kV 15 Mvar capacitors and switches to substations in Tangail, Mymensingh, Shanghai Electric Power Transmission & Distribution Group has gained rich experiences about the Bangladesh market due to decades of in-depth cooperation. By winning the tender contract among a number of competitive international groups, the group has laid a solid foundation for winning more contracts in the future.

ENERGY STORAGE

INDUSTRY HAS ONCE AGAIN COME UNDER THE SPOTLIGHT

The energy storage industry delivers unexpected growth despite that COVID-19 has hampered many industries. In 2020, the scale of energy storage industry expanded 5.3GW/10.7GWh globally, much higher than the 3.4GW/6.8GWh in 2019, which logged a new record high in annual new capacity installed and reflected a more rapid expansion than expected.

According to the forecast of global energy storage market trends by Bloomberg New Energy Finance, from now to 2023, the installed capacity of energy storage will grow at a compound annual growth rate of 37%. And with a big leap, the newly commissioned capacity is expected to reach 9.7GW/19.9GWh in 2021, to exceed the 10GW threshold in 2022, and to reach 13.8GW/29.4GWh in 2023.

With incentive policies, the slow development of the energy storage industry has come to an end and come under the spotlight again. However, there are still many problems to be solved, such as the pressing layout planning, technical routes, supporting policies, and etc. From the vantage point of building a new power system, energy storage faces both opportunities and challenges.

SHANGHAI ELECTRIC ENERGY STORAGE ROADMAP

Chemical energy storage is the most common form that uses batteries to charge up during off-peak hours and discharge during peak hours to improve electricity quality, serve as a backup power supply, adjust frequencies and contribute to smart grid construction. Therefore, energy storage is seen as "indispensable" for the coming energy revolution and a crucial driver for the Chinese power industry to reform and improve structures and institutions.

As international new energy and Internet industries grow, energy storage becomes more and more important. "Carbon Peak and Carbon Neutrality" stressed in national strategies has set the tone for coming decades. Therefore, the "new energy + energy storage" market value is going to exceed 1 trillion RMB, due to ongoing expansion during and after the "14th Five-Year Plan" period.

As an undoubtedly promising industry, energy storage is drawing more and more attention. Shanghai Electric has untapped the potential of various kinds of new energy including solar energy, wind power, biomass power, hydrogen in a visionary way. Coupled with smart and digital tools, it has formed a "new energy + energy storage" business structure and digital infrastructure, and outlined the strategic development path clearly.

SUPPORTED BY POLICIES, ENERGY STORAGE IS NOW IN THE FAST LANE OF DEVELOPMENT

It can be said that policies are the baton and barometer of an industry. Since this year, frequent policy introduction in the field of energy storage has sent positive signals. By the end of March, 26 provinces and municipalities have released the "14th Five-Year Plan", the "Long-Range Objectives Throughout the Year 2035" and other documents which included energy storage in the "14th Five-Year Plan". In addition, 11 provinces have required new energy power plants to configure energy storage this year. Nine of the provinces specified the size and duration of the storage capacity, one province required the configuration of energy storage to be under the requirements of the grid dispatch, and one province gave priority to projects configured with energy storage in the project declaration and scoring process.

Besides, many provinces and municipalities in 2020 issued policy documents encouraging the development of new energy plants equipped with energy storage, to respond to the rising new energy installations, to promote new energy consumption, and to ease the pressure on peak regulation and frequency regulation. Since this year, many places have issued policies to support the development of the "new energy + energy storage" model. In terms of the wording, the local authorities' attitude toward energy storage also changes from "encourage", "recommend" to "prioritize" and "require". In addition to actively promoting power-side energy storage, the emerging user-side energy storage has also been greatly developed. During the "14th Five-Year Plan" period, energy storage is expected to become the standard configuration for new energy power plants.

In addition, since the second half of 2020, the world's major economies have successively put forward long-term "carbon neutral" goals, and emission reduction has become a global consensus. In September 2020, President Xi proposed the goals of 2030 peak carbon dioxide emissions and 2060 carbon neutrality in the general debate of the 75th UN General Assembly. EU leaders agreed on the goal of achieving carbon-neutral emission by 2050 at the EU Winter Summit in December 2020, and U.S. President Joe Biden also proposed in his previous presidential campaign to achieve carbon neutrality by 2050. In the timeframes, there are only 30-40 years left for major economies to achieve carbon neutrality, and there is an urgent need to accelerate the emission reduction process.

After years of development, the global energy

storage market has taken shape. From 2021, the U.S. will be in the lead, accounting for 41% of the global energy storage deployment, with California, Nevada, Hawaii, and New York leading the way, while Virginia's energy storage target is also increasing. Moreover, after his inauguration, Biden set a grand goal for the U.S. power sector to achieve net zero emissions by 2035, expediting the future growth of U.S. energy storage.

Europe is expected to grow to be the second largest energy storage market in the world by 2023, but there are differences in the activity of the energy storage industry across countries. Germany is the world's leading market for residential energy storage with an annual growth of 552MW/1,020MWh and will continue to drive its energy storage market. The UK is the largest grid-side energy storage market in Europe, gradually providing more revenue growth opportunities from frequency regulation and other ancillary services. Other highlighted markets include Italy, Spain, Ireland, Belgium, the Netherlands, Poland, and South Korea.

The global energy storage market is in the fast lane of development.

IN TERMS OF INDUSTRIAL LAYOUT, ENERGY STORAGE HAS BECOME A NEW GROWTH POINT FOR THE GROUP.

Energy storage is the "backup power" and "reservoir" of the energy and power system with numerous advantages: It can enable peak regulation, frequency regulation, backup, black start, demand response support, and other key services for grid operation; it can significantly improve the consumption and storage of wind, light, and other renewable energy and support distributed power and micro-grid; it can promote open sharing and flexible trading of energy, and realize multi-energy coordination. The authorities have high expectations for energy storage, regarding it as an important means to enhance the flexibility, economy and safety of the traditional power system, a key technology to promote the transition from fossil energy to renewable energy, and a core foundation to promote the reform of the power system and the development of a new industry form. These high hopes and important positioning fully reflect that energy storage is indispensable in the future energy and power system. China has been promoting energy structure for years, which pushes Shanghai Electric to turn to markets of new energy and renewable energy with energy storage as a focal area.

- In December 2017, Shanghai Electric and Guoxuan High-Tech established the joint venture Shanghai Electric Guoxuan New Energy Technology Co., Ltd. ("Shanghai Electric Guoxuan" for short) after a mixed-ownership reform.
- In June 2018, Shanghai Electric Guoxuan purchased a Kunshan-based production line to produce high energy-density cells whose capacity is 0.3GWh.
- In December 2018, the foundation stone laying ceremony of the Nantong Site. The total capacity is 10 GWh, and that of Phase One is 5GWh.
- On August 27, 2020, Shanghai Electric Guoxuan was awarded 2020 Top 10 China Energy Storage System Integrators.
- In September 2020, Phase One of Shanghai Electric's energy storage battery production line in Nantong City began operation, whose planned annual capacity was 10GWh.
- In October 2020, Shanghai Electric (Anhui) Energy Storage Technology Co., Ltd. started operation in Chaohu Economic and Technological Development Zone, Anhui Province. With advanced automatic production lines deployed, the new flow cell factory will deliver an annual capacity of 200MW/1GWh.
- In January 2021, Shanghai Electric and Pacific Green Technologies Inc. (PGTK) inked an MoU on developing Lithium-ion Battery Energy Storage Systems (BESS) globally, indicating that Shanghai Electric has become an international player in this regard. The signing of the MoU to develop a variety of lithium-ion battery energy storage system (BESS) worldwide marked Shanghai Electric's entry into the international energy storage market.

From zero to one, Shanghai Electric proves itself by substantial efforts made in the energy storage sector. The last 3 years witnessed its diligence and resolution.

In March 2018, Shanghai Electric Power Generation Group announced to set up the Energy Storage and Fuel Cell Business Unit, hoping the new unit, a latecomer to the market, could become an owner and leader of core technologies, and a pioneer in the commercialization. Power Generation Group hopes that the Energy Storage and Fuel Cell Business Unit can gradually master the core technology, catch up with the early starter, become the leader in technology, and take the lead in commercializing them. From then on, Shanghai Electric Power Generation Group has speeded up transformation both within itself and of the engineering companies, service providers and factories. At the same time,

it is penetrating into domestic and overseas energy storage markets with a greater momentum by leveraging its advantages in technologies, talents, products, channels and brands built up in power and new energy sectors in the past more than 10 years.
The Central Academe took a farsighted move in 2012 by setting up a special team on flow cell energy storage. Targeting at the all-vanadium redox flow battery, it was determined to independently develop products of this kind and own core technologies in order to better support the group's exploration into energy storage. By the end of 2019, the all-vanadium redox flow battery was included in the First Unit (Set) of Major Technical Equipment Promotion and Application Guide (2019) by the Ministry of Industry and Information Technology.
From the joint venture to visionary researches, from adding production lines to explore new business models, Shanghai Electric has made solid efforts to cement its leading positions in China and the world.
Zheng Jianhua, Chairman of Shanghai Electric Group, pointed out at the ceremony that Shanghai Electric will reinforce its energy storage business to become the No.1 player in China, and one of the global leaders.
With the rapid expansion of energy storage capacity in the future, Shanghai Electric will turn value-added services including the EPC contracting, maintenance, project investment operation and smart management system for energy storage plants into fresh drivers for growth.
Likewise, Shanghai Electric Power Transmission & Distribution Group also fabricates its own development strategy. The technology center, the R&D leader, develops the energy storage converter, energy management system and containerised energy storage system on its own, whose industrial applications are promoted paired with the micro grid and 3-in-1 station.
"Energy storage can be used not only for new energies, but also for traditional energies. So far, the potential of the energy storage market has not been fully unleashed. Shanghai Electric is to enhance its business on the generation and grid sides to make the cake bigger. On March 31, Shanghai Electric held the "New Pattern of Smart and Innovative Energies and Smart Energy Solution" Campaign, Hu Jianbo, deputy general manager of Shanghai Electric Power Plant Group Solar Power Energy Storage and Fuel Cell Business Unit made these statements.
"Shanghai Electric has been a long-term partner with many traditional power plants which are seeking transformation towards new energy. We will leverage this healthy relationship to strengthen our presence in this market. We also launched a number of sizable new energy projects in the overseas market, and soon we are going to see the implementation of another 1 GWh-grade project. "said Hu Jianbo.

POPULAR NEW BUSINESS MODEL-ENERGY STORAGE "SHARING"

Power supportive services are attracting more and more attention as the power market reform deepens. Energy storage, part of the reform toolkit, has been applied in commercial scenarios successfully among supportive services represented by frequency adjustment thanks to its fast and accurate response and flexibility in deployment.

For over 3 years, Shanghai Electric has carried out many large energy storage programs in multiple areas including "energy storage micro-grid, industrial and commercial energy storage, new energy + energy storage, PV energy storage sharing and energy storage + charging solutions" at Anhui Province and Qinghai Province based on its advantages and experiences in branding, expertise, development resources and manufacturing in fields of energy equipment and power battery, which are seen as benchmarks and recognized by users.

According to Yuan Yi, Vice President of Power Generation Group, the company has found a diversified business model for future development through continuous innovations from the rural "Internet +" smart energy demonstration project in Sanxing County of Chongming District, smart energy project in Minhang Industrial Zone to the sharing energy storage station at Golmud of Qinghai and Jinzhai smart energy project at Anhui Province, expanding from user-side and generator-side to the grid side.

The Golmud energy storage plant is China's first independently-operating, energy sharing storage power station, which serves as a good example of "generation side + grid side". This project embodies Shanghai Electric's whole energy storage industrial chain because it is responsible for project development, operation, engineering construction and maintenance as well as supplying equipment.

"Why we launch this project in Qinghai Province? It is because Qinghai is a national demonstration province of renewable energy utilization due to its vast reserves. "said Hu Jianbo. At present, Qinghai's accumulated installed renewable energy capacity totals 20 million kW, which is greater than 80%. Over 5% of wind and solar power are curtailed, and the rate is over 10% in Haixi Mongolian and Tibetan Autonomous Prefecture. "We choose Qinghai because we will think in the future, there is a big market for energy storage facilities required by renewable energy development."

Shanghai Electric explores the new business model of energy storage "sharing" "There are more and more new energy projects, and how shall energy storage go with that? How to consume new energy? Although many provinces and cities require new energy projects to include energy storage facilities that can collect a certain percentage of electricity, plans on how to use them after construction are rarely made. "said Hu Jianbo. From the perspective of social value, Shanghai Electric believes that energy storage will bring more benefits to the community by adopting the "sharing" development concept. An energy storage station was erected near the new energy pooling station to service surrounding power plants.

Shanghai Electric joined hands with State Grid Qinghai Electric Power Company to explore specific mechanisms on energy storage piloting and sharing. "Let's say there are many power plants. Who on earth is the generator? How much electricity does the station collect? How to find out? All these questions call up a good platform. Qinghai Electric Power Company ensures the smooth implementation of the sharing model in this project thanks to its control, transaction and settlement platforms. "said Hu Jianbo. It is equally a test and demonstration of grid-side energy storage products in terms of engineering construction, operation, maintenance and services.

The Golmud Energy Storage Station began construction on June 22, 2020, commissioning after grid connection since November 2, and commercial operation on December 28, 2020. As of March 15, 2021, it has accumulatively charged up 5.77962 million kWh of electricity and discharged 4.7943 million kWh amid its safe and reliable operation. It starts operation after completing all AGC and AVC tests. By starting bilateral transactions on May 15, it becomes China's first energy storage station that executes market-based transactions on the basis of bilateral negotiation and supports grid-side use and market-based transactions in parallel.

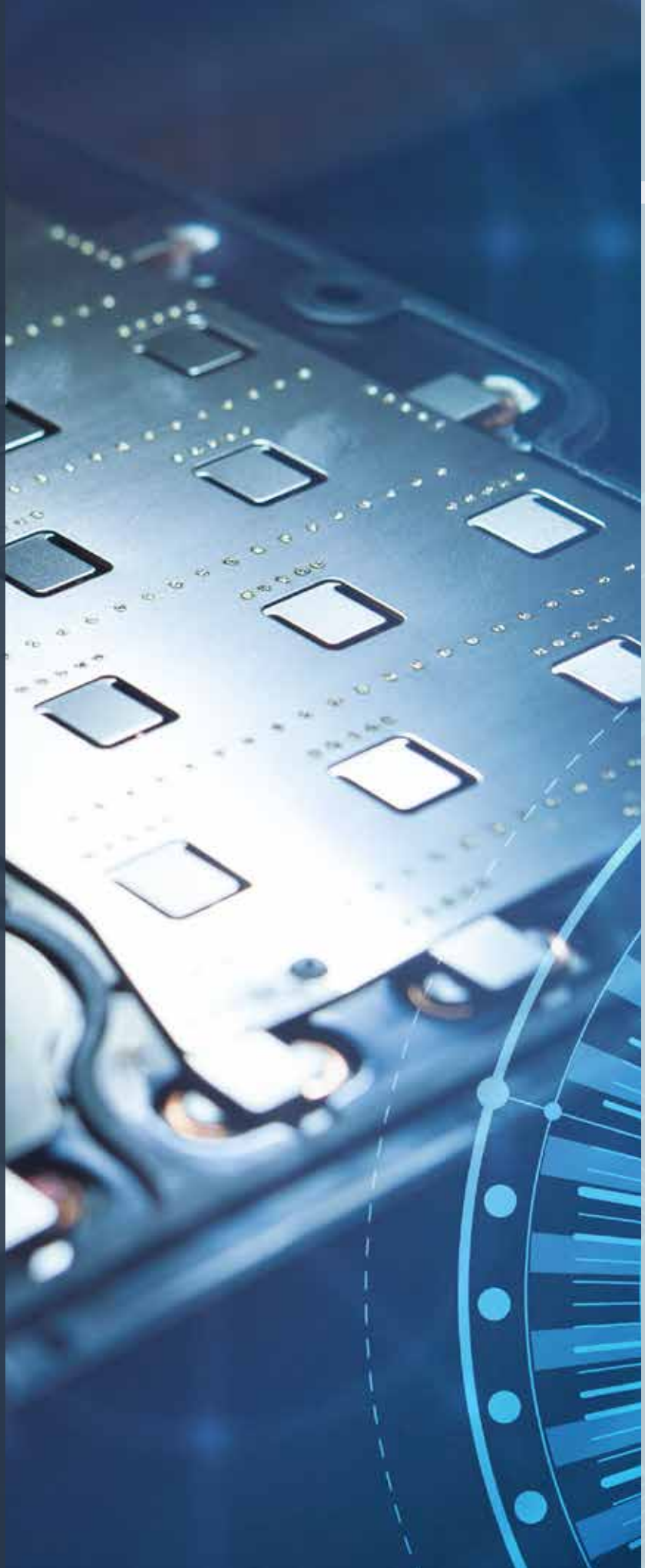
"This project enables grid-side energy sharing, which offers a solution to new energy consumption as an industry pioneer. This measure will make the two example integration projects, wind-solar-water-thermal-storage and source-grid-load-storage, into one, tackle the problem of wind and solar curtailment caused by massive renewable energy, and boost trial implementation projects on new energy consumption and new-type grid system nationwide. "said Hu Jianbo.

The first large comprehensive energy project in Tibet, with Shanghai Electric being a part, started generation as well. In December 2020, with the support of Guoxuan 10MW / 20MWh system device, comprehensive solar power storage project at Sangzhuzi District, Tibet, began power generation after grid connection. In addition, Shanghai Electric signs the contract on building the Jinzhai 100MW/200MWh energy storage system. The project is positioned as an independent grid-side energy storage power station, which can support unified dispatch of Anhui Provincial Grid Regulation and Control Center, and help the grid with de-peaking, peak regulation, frequency regulation,

spinning reserve, black start, etc.
On the user side, the "wind-solar-storage-charging-control" integrated smart energy project in Minhang Industrial Zone, which is co-developed by Shanghai Electric and State Grid Shanghai Municipal Electric Power Company stands out. As the largest energy storage system in Shanghai so far, it combines charging piles with technologies of CIGS thin-film solar cells, crystalline silicon PV cells, wind power, containerized LFP battery storage system and power battery cascade utilization to ensure smart management of the zone's energy consumption, reducing annual electricity consumption by 2,158MWh.
Its smooth operation shows that the smart energy business model for industrial zones is feasible and it will become a new landmark in energy conservation and reduction and green transformation of industrial zones in the future.
As for charging stations, Shanghai Electric Guoxuan won the bid of developing 20 sets of energy storage systems for changing stations of Beijing Huashang Sanyou New Energy Technology Co., Ltd. with a contract worth over 10 million RMB. It is a marked move for Shanghai Electric Guoxuan in that it is the first energy storage charging station contract obtained by the company. The charging pile market is of huge potential according to national policies on electric vehicle charging infrastructure.
As of now, Shanghai Electric has explored how to utilize user-side, generator-side and grid-side comprehensive capabilities in a well-planned manner, manifesting its "smart solutions" designed for the new energy market.

ENSURING RELIABLE AND SAFE FUTURE ENERGY STORAGE WITH EXCELLENT PERFORMANCE

"Aiming for energy storage industry's needs, try to provide safe, reliable and innovative products and solutions with excellent performances in order to change how people use power by removing constraints of time and space. "These are written on a wall of Shanghai Electric's site in Nantong City. To realize this goal, a revolution has to be made. From power generation, transmission and distribution and energy storage, Shanghai Electric's dream has remained intact-to ignite an industrial revolution.
The "14th Five-Year-Plan" period is critical to achieving goals of the carbon peak and carbon neutrality, which require energy structure reform accelerated and new energy development enhanced.
Although some domestic and foreign companies have occupied slightly better positions due to early participation, there are neither substantial differences made or absolute technological advantages and barriers formed. Chinese companies have obtained a sizable share in the lithium battery production



market with formidable brand influence, but have not yet been leading energy storage system integrators. LFP battery is used in a growing number of energy storage projects in the world, especially large ones. Shanghai Electric Guoxuan uses technologies in this area to develop lithium-ion batteries, battery management system and energy storage system integration. Core technologies cover areas of cells, system integration and holistic solutions. It owns a number of domestically leading technologies in light of battery safety, stability, reliability, system control and smart maintenance.

"Meticulously control every step throughout product design and its production" to ensure product reliability and develop a flexible and smart energy storage management system. To this end, Shanghai Electric Guoxuan spares no effort.

Shanghai Electric's energy storage projects have entered 18 provinces, municipalities, and autonomous regions across China, and have completed the layout of power-side, grid-side, and user-side applications, with high quality products suited for special environments such as plateau or those of extreme heat, sand, salt or salt-fog. In addition to domestic market, Shanghai Electric develops the overseas energy storage market, and have built a megawatt-level energy storage demonstration project in Dubai, which has been connected to the grid. The project has proved that Shanghai Electric's energy storage system can cope with high temperature, high humidity, severe sand, and other special environments with stable operation.

The last few years have seen higher demands for the quality of power supply by the grid due to the booming development of large industrial companies and a wider application of big new energy power plants. Energy storage technologies provide a holistic solution to tackle the power supply-demand imbalance, enhance power supply reliability and guarantee the grid's sustainable development.

Energy storage, a representative of advanced productivity, is crucial for energy transformation to a large extent. The further opening of the power market will naturally push energy storage to a dominant position while demonstrating its functional values as a flexible energy provider.

The trend of exploring overseas market will be on the rise in China for decades to come, which will give birth to several monopolies in areas of Li-ion battery, PCS, BMS, system integration and developer.

In the future, energy storage will penetrate into more fields owing to global decarbonization and the power system structure, and create more possibilities for more application scenarios. D

ZHUANG QIUFENG
A KEY ROLE TO "SMARTIZE" THE CNC MACHINE TOOL

"There are only two kinds of quality, good or bad, and there is nothing in between. So you have to do your best. " Zhuang Qiufeng does what he says at work, and instructs his colleagues in the same way. He is the senior engineer of the steam turbine workshop of Shanghai Electric Power Generation Equipment Co., Ltd. Turbine Plant ("Shanghai Electric Turbine Plant" for short), and honored the title "Shanghai Craftsman".

Everyone in the workshop knows him, a humble and diligent technician. Exceling in programming for and commissioning CNC machine tools, he has accumulated rich expertise on vertical lathe processing like the large cylinder, carrier ring, bearing seat and stationary blade shroud. He is the "best of the best" though Shanghai Electric boasts a huge pool of talents.

Not long ago, he was just awarded the special State Council allowance. As the head of the NC vertical lathe team of the steam turbine workshop, Shanghai Electric Turbine Plant, and the mobile plant department, he and his teammates have finished over 30 tasks on upgrading supercritical unit through-flow and emergency repairs of various units, and developed more than 30 sets of NC equipment that are in operation, which builds up and amplifies Shanghai Electric's influence on repair services.

ADVANCE AGAINST ADVERSITY BY THINKING DIFFERENTLY

Zhuang Qiufeng's career at the workshop began in 1994 when he was only 19 years old. He has rotated on an array of positions on bench work, lathe, boring machine and lineation, of which he has been on the vertical lathe position for the longest time.

He recalled that he applied for a NC machine tool training program held at the old Minhang-based training center in the summer of 2003, which was hardly supported by his workmates. They said things like, "You have already been in your late twenties. Why bother with learning? " Zhuang Qiufeng thought differently. He believed that as the society developed and more and more people began to use computers, it was only a matter of time for CNC machine tools to replace common ones.

Advance Against Adversity by Thinking Differently. Soon, the steam turbine workshop purchased a second-hand NC "vertical lathe" from Germany in the autumn of 2004, which was no surprise at all for him but made his workmates regretful. "He is a man of vision." They said. Naturally he was appointed as the operator of the CNC machine tool, and from then on, his venture truly began.

"Program confirmed. Only one press of the button is needed to complete all the processing. What a delight. "Zhuang Qiufeng felt that he and the CNC machine tool combined into one. In 2005, he was sent to Siemens for a two-week training session due to his excellent performance, which led him into the world of NC machine tool. From then on, he was fully indulged in NC programming and tried every means to solve problems he met, which finally made him the NC "expert" at the workshop.

In 2008, Shanghai Electric Turbine Plant bought new CNC machine tools to build itself into a world-leading manufacturer. Machines were ready, but operators not. "It is difficult to learn something new, and it appears to be much harder for elder technicians. "Zhuang Qiufeng knew deep down in his heart that it was more of changes in mindsets than in operation steps, which took him quite some time to figure it out. In the end, he complied a manual on key steps of CNC machine tool operation and printed it for elder technicians to turn to whenever they needed.

In this way, more and more people have seen him as "Master Zhuang" rather than "Mr. Zhuang" in the early days.

OPTIMIZE FOR THE BEST

Better skilled as everyone has become, quality defects were often identified in parts processing. "For example, incorrect NC parameters or tool-setting parameters. A tiny mistake will lead to a dreadful quality problem. "Zhuang Qiufeng found that operators were accountable for over 90% of such errors after a thorough analysis. Although equipment were numerically controlled, many processing procedures were still manually performed.

"How to avoid human errors? "Zhuang Qiufeng explained with an example that in processing a 5mm-wide slot, a technician may misplace the upper and lower blade edges due to carelessness or fatigue, which caused a quality problem "Concerning blade parameter errors, is it feasible to develop a checking program that can automatically give warnings once the blade is incorrectly placed," At that time, Siemens had some of its instructions encrypted, which made it impossible for Zhuang Qiufeng to comprehend because his lack of computer knowledge. "I don't believe that I am not able to understand it. " Instead of being discouraged, he was inspired and forced to realize that his expertise was far from being adequate. Therefore, he decided to "polish himself".

Every day, he routinely spent 2 hours on reading and summarizing to enhance his programming skills, and at weekends, textbooks in libraries were his favorite. In addition, he wrote every problem encountered in a notebook that he carried everywhere, analyzed them whenever possible, such as before sleeping, after meals, on the shuttle or at night, and took down inspirations as well. He often says this to his colleagues: "When doing one thing, either don't do it at all, or do your best." He gives great attention to every detail and tries to influence his workmates through actual deeds, which has been echoed by many staff. Substantial breakthroughs were made about the problem after nearly a year's trials and tests.

To fully avoid human errors in processing, Zhuang Qiufeng maximized the checking

scope of blades in programming by taking a lot of factors into consideration, such as compensation parameter values, blade edge positions, blade abrasion, and if blades are fast installed.

"Never be content and keep upgrading" is Zhuang Qiufeng's working philosophy. Based on continuous applications and test feedbacks, he has promoted innovations like digitalized delivery of blades and measuring tools, 3D stimulated clamping and accurate stimulation of working hour from perspectives of standard operation and management, some of which are leading technologies in China or in the world. These programs were imported into CNC machine tools and worked immediately because it reduced the number of NCRs caused by human errors at the workshop by 80% in the same year of importing and eliminated such NCRs in the second year, making it the "strongest guardian" of processing quality.

Zhuang Qiufeng is destined to embrace successes thanks to CNC machine tools.

SHIFT PRIORITY TO ON-SITE SERVICES

Orders of repairing and renovating power plants have begun to balloon in the past few years, making power plants another battlefield for Zhuang Qiufeng. "It is a tough task to deliver on-site services. "Zhuang Qiufeng said because on-site services have to fix the problem. "Or you would ruin the reputation of your company and yourself. "

Different from working at the workshop, on-site services are often impacted by space and device constraints coupled with unexpected or emergency problems. To name just a few: unsuitable tools or power supplies, instable equipment, the client cannot provide a proper space for on-site operation, the installation company is late, and the shell that was able to be opened rusts now. "However, solutions always outnumber problems. "He concluded.

In 2017 alone, he led his team finished through-

"THE XIBAIPO POWER PLANT RENOVATION PROJECT IS DIFFERENT AND IMPORTANT BECAUSE THEIR STEAM TURBINES ARE PRODUCED BY HARBIN ELECTRIC CORPORATION. ALTHOUGH WE WERE NOT FAMILIAR WITH IT, WE MANAGED TO TACKLE THE PROBLEM. "

flow upgrading for many 600 MW supercritical units and on-site emergency repairs of Taizhou Power Plant, Jinjie Power Plant, Changling Power Plant and Hongxing Power Plant. It is worth mentioning that he upgraded the through-flow of No.5 and No.6 units at Xibaipo Power Plant that represents the first non-OEM unit.

"The Xibaipo Power Plant Renovation project is different and important because their steam turbines are produced by Harbin Electric Corporation. Although we were not familiar with it, we managed to tackle the problem. "He said.

At the Xibaipo Power Plant, they came across a string of difficulties: slipped screw heads of screws connecting the main axle could not be disassembled; it was difficult to cut off high-pressure pipe made of surfacing hard alloy, and existing tooling couldn't work. Pressing as the situation was, Zhuang Qiufeng solved all the problems via data computing, on-site testing and modifying tooling together with his team. The client expressed its gratitude by sending him a silk banner.

Change is the only constant in life. Zhuang Qiufeng keeps changing from a bench worker to a senior engineer on CNC machine tool. "Develop with the time and innovation allows me to survive. "Zhuang Qiufeng said. He loves his job and the CNC machine tool is part of his younger days. "What I have done now is far from enough. This industry still grows and new things come up every day. I will continue my journey for the better. "

上海电气
SHANGHAI ELECTRIC

CREATE OUR FUTURE 与创造者共创未来 TOGETHER