

BILINGUAL BIMONTHLY

Shanghai continuous internal data verification (K) no. 0465

ELECTRIC

SHANGHAI

上海电气

2020
OCT
NO. 29

SMART CITY ARE TO COME AS PLANNED



上海电气
SHANGHAI ELECTRIC



ACCESSIBLE URBAN INTELLIGENCE

This National Day is a little bit different.

Instead of its usual being crowded, Shanghai Museum was replaced by an orderly reservation check-in. After entering Shanghai Museum, there will be at most 3 to 4 people in each platform. People don't need to make great efforts to squeeze in. Every detail can be visible, and even inscriptions engraved on bronze can be viewed in details. Most of the exhibits have a QR code in front of them. By scanning them, you can learn about the role and history of cultural relics on your phone. Immersed in cultural relics, I perceived civilization and history. Before I left, I bought a copy of Zhengbanqiao bookmark by Alipay.

During the National Day, viewing exhibition over the cloud, online booking, online shopping and mobile payment constitute the vacation mode for most people. Nowadays, as long as you have a mobile phone, you can realize eating, drinking, amusement, pleasure-seeking and learning.

Statistically, there are massive data flows every day, and the rise and fall in traffic reflects the rich online activities of more than 900 million Chinese netizens: use APP to take the subway/bus to work at 8:00 a.m.; read news at 9:00-10:00 a.m.; use APP to order a lunch at 11:00-12:00 a.m.; take public vehicles to go home at nightfall and meanwhile open the APP to buy food for dinner; make payment for the goods in the online shopping cart at 8:00-9:00 p.m.; watch short videos and chat via social media at about 10:00 p.m....

Digital economy represented by such application scenarios is the most effective means for China to rank among the forefront of the world and then lead the international trend; Besides, it also brings convenience to our life and becomes one of the means to realize smart cities.

2020.10 NO.29 Bilingual Bimonthly Journal

Shanghai Continuous Interior Materials Printing Permit (K) No.0465

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Shanghai Electric



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SMART CITIES
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ELECTRIC NEWS

BRIEF NEWS

Shanghai Electric Ranked No.87 in Asia's 500 Most Influential Brands 2020

The Asia Brand Summit was organized in Shanghai on Sept. 22 by the World Brand Lab, where the "Asia's Most Influential Brands 2020" list was released. Among the 500 brands from 21 countries and regions selected, Shanghai Electric made step forward from No.88 in 2019 to No. 87 and occupied the second ranking in the machinery sector. Asia's Most Influential Brands are assessed in terms of their influence in the Asian market. Brand influence refers to a brand's competence in exploring and occupying marketing and profitability.

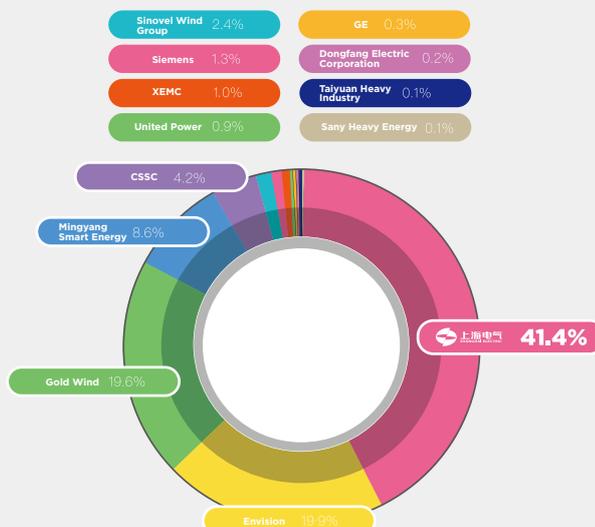
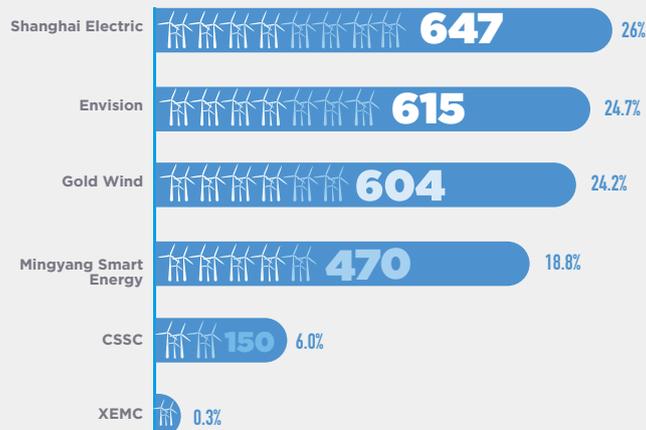
Shanghai Electric Topped the 2019 New Installed Capacity List in Chinese Offshore Wind Farms

The 5th Global Offshore Wind Power Summit was held in Jinan City, Shandong Province, from August 27 to 28, when the report "Review and Outlook of Offshore Wind Power 2020" was jointly released by Global Wind Energy Council, Chinese Wind Energy Association and other organizations. At the same time, the highly-expected list of Chinese offshore wind turbine manufacturers was unveiled.

Shanghai Electric held the top ranking for the 5th year in a row, further consolidating its leadership in the Chinese offshore wind power market. In addition, it has been listed among the top 3 offshore wind power player in the world for 5 consecutive years.

Shanghai Electric Ranked No.160 in the 2020 Top 250 International Contractors

Engineering News-Record, an American weekly magazine, published the 2020 Top 250 International Contractors on August 20 (local time), Shanghai Electric and its subsidiary CSEEC (China Sinogy Electric Engineering Co., Ltd.) listed. Shanghai Electric ranked No.160 due to its aggregate revenues earned as general contractors of 9 overseas projects including those based in Dubai, Wassit (Iraq) and Thar (Pakistan). CSEEC jumped from No. 226 in 2019 to No. 215 this year, marking a big achievement.





Main Body of No.1 Trough Generator’s Heliostat Field Was Installed in the Dubai Project

On September 20 (local time in Dubai),the main body of No.1 trough generator’s heliostat field was successfully installed after the last set of solar collectors was put in place gently, marking a milestone in the construction of Dubai 700MW CSP+250MW PV Hybrid project. Covering an area of 9.9 km², the No.1 trough generator unit has an array of over 20,000 sets of parabolic collectors whose total weight is more than 53,000 tons, each weighing roughly 4 tons and measuring 143 m². The innovative design optimizes optical precision, installation processes and minimizes production and installation costs, maximizing absorption of solar radiation.



Shanghai Electric Entered the List of 2020 Top 10 China Energy Storage System Integrators

The 9th Energy Storage International Conference and Expo opened in Beijing on August 27, where a ceremony was held to release 2020 lists concerning energy storage enterprise. Shanghai Electric Guoxuan New Energy Technology Co., Ltd. (“Guoxuan” for short) was selected as one of the 2020 Top 10 China Energy Storage System Integrators. Developing energy storage into a new economic driver is a major target in the industrial scheme of the “14th Five-year Plan”. Seeing the urgent demands of commercialization and large-scale development of the energy development industry in the next 5 years, Guoxuan that was established more than 2 years ago has put quality as a top priority and managed to cover all application scenarios by utilizing late-mover advantages. By being selected into the list, it demonstrates its comprehensive strength as a leading player in energy storage in China due to its technologies, brand, resources and experiences.



Indonesia Jawa NO.7 Coal-fired Power Plant's Unit 2 Began Operation

A few days ago, Shenhua Guohua Indonesia Jawa NO.7 Coal-fired Power Plant Project 2x1050MW Unit 2 passed the 168 trial operation, emerging as the third million-KW-class coal-fired unit exported by Shanghai Electric that has started its operation. The steam turbine, generator and main auxiliary equipment are provided by Shanghai Electric.

Jawa NO.7 project is Shanghai Electric's first million-KW-class IPP coal-fired project based in a foreign country, and also Shanghai Electric's first effective overseas ultra-supercritical project. Indonesia Cilacap Phase III 1x1000MW coal-fired project has operated since November 8, 2019, which is the first million-KW-class coal-fired units in commercial operation exported by Shanghai Electric.



Shanghai Electric Power Transmission & Distribution Engineering Co., Ltd. Won the Tender of Its First Uzbekistan-Based Project

A few days ago, Shanghai Electric Power Transmission & Distribution Group won a call for bids for the 500KW overhead transmission line Guzar-Regar (within Uzbekistan), making it the first power T&D EPC project undertaken by a Chinese enterprise in the country. It is reported that its implementation will enhance the grid connectivity between Uzbekistan and Tajikistan, regional power system's stability and power trades in Middle Asia.

The First Wind Turbine in Croatia Began to Be Hoisted



Recently, the first wind turbine in Croatia Senj wind farm, a project invested by Shanghai Electric Wind Power Group, began to be hoisted. It is one of the first batches of wind turbines exported to the European market in Shanghai

Electric's implementation of the "One Belt One Road" Initiative, and also the largest power project in Croatia in the past few years.

The wind farm encompasses around 45 km² and has a total capacity of 156MW, whose average power hour is expected to reach 3,400 and power output 530 million KWHs on a yearly basis. Adopting 39 4MW wind turbines produced by Shanghai Electric, it is Shanghai Electric's first step in Europe and also the largest power program implemented in Croatia in recent years. Shanghai Electric Wind Power Group Co., Ltd. and Norinco International Cooperation signed the contract at the end of March, 2019, witnessed by Premier Li Keqiang together with a number of other projects under the cooperation scheme between China and 16 Central and Eastern European countries (or "the 16+1 cooperation"). As the biggest Chinese enterprise-invested program in Croatia, it serves as an influential demonstration example.

Jiangxi Province's First Smart Power Plant Began Operation with Shanghai Electric as a Constructor

Recently, the expansion project of Fenyi Power Plant that is affiliated to Jiangxi Electric Power Co., Ltd. saw the completion of 168 trial operation of generator Unit 2, indicating Jiangxi's first smart digital power plant began operation, Shanghai Electric being the provider of main equipment. The expansion of 2 660,000KW generator units started on June 6, 2018. Amid the pilot run, expanded units gave excellent performances concerning all main technical and economic indexes. It is the first time for Shanghai Electric to participate the construction of a Jiangxi-based smart digital coal-fired power plant. By enabling one-button start, it can quickly respond to grid demands, making it an energy-efficient and green power plant. The successful delivery and operation serves as a demonstration example of Shanghai Electric's implementation of smart digital power plants.

Pakistan Thar Power Plant's Chimney Was Cast In Place

A few days ago, the chimney of the 2x660MW coal-fired power plant in Thar Coal Mine Block-1 was successfully crowned with concrete. The capped chimney is the highest structure constructed in this project with 170-meter-high concrete walls and 180-meter-high steel inner walls. The construction began in November last year from the foundation and took over 10 months to be finished, which used 114 panels casted consecutively, over 1,000 tons of rebar and over 7,000 m³ of concrete (both the foundation and flue). It adopts the split bolt process and refined fair-faced concrete process that improves the facade visual impression of fair-faced concrete and adds artistic elements into outer walls.



Shanghai Electric Joined the Construction of "Smart Vehicle Network" In Haikou

Recently, the renovated Baiju Avenue and its extended section (east) opened, Shanghai Electric Group Intelligent Transportation Technology Co., Ltd. ("Intelligent Transportation Technology" for short) being one of the constructors. It means that Hainan Provinces has the first effective road for unmanned buses. As a milestone in Haikou's construction of "smart vehicle network", Baiju Avenue applies lane-based positioning technology that achieves centimeter-level accuracy for the first time and geographic information encoding to form invisible digital orbits, making it possible for unmanned buses to be piloted in the future. The delivery endorses successful applications of Intelligent Transportation Technology's iDRT technology in smart transportation, paving the way for its wider coverage across China.

Shanghai Electric released its 2020 interim results on August 29 and held the interim results announcement press conference on August 31 via livestreaming and teleconference. Zheng Jianhua, Secretary of the Party Committee and Chairman of Shanghai Electric (Group) Corporation, attended the event. Based on Chinese Accounting Standards, Shanghai Electric's H1 revenue stood at 53.237 billion yuan, 0.5% higher than the same period a year earlier. New orders totaled 108.84 billion

yuan, up by 40.75%. Orders in hand amounted to 294.37 billion yuan, safeguarding the Group's stable and sustainable development. According to Zheng Jianhua, Shanghai Electric is speeding up the construction of Industrial Internet with its technologies having been applied in an array of sectors including wind power, thermal power, elevators, energy storage, motors and machine tools, enabling the transformation of equipment manufacturing industry through industrial internet. At the same time, Shanghai Electric is committed

Shanghai Electric

Announced 2020 Interim Results

H1 Revenue and New Orders Rose Against the Pandemic

Wu Linshan

to optimizing the industrial structure and transforming growth drivers to achieve high-quality development. So far, Shanghai Electric has seen advantages of economies of scale thanks to its investment into new energy in advance, and particularly the sharp increase of wind power.

Concerning supporting the national strategy "Integration of the Yangtze River Delta", Zheng Jianhua said that Shanghai Electric has been an important player in this region for decades. What's more, Shanghai Electric has introduced 4 R&D centers in this region to boost core competitiveness. In the next few years, Shanghai Electric will step up its development for a bigger market share.

It was also noteworthy that the capital market paid enormous attention to this press conference. Over 100 domestic and international institutional investors and analysts, such as Morgan Stanley, Citibank, Haitong Securities, Everbright Securities and BOCOM Schroders watched the live broadcast and shared their views.

Chief Financial Officer Hu Kang and Board Secretary Fu Rong attended the press conference.

Zheng Jianhua: "Shanghai Electric is speeding up the construction of Industrial Internet." **D**



Shanghai Electric SEunicloud Assisted Over 1,000 Chongqing- Based Enterprises in Digital Transformation

Guo Bo

On September 22, Shanghai Electric Digital Technology Co., Ltd., Chongqing Bishan High-tech Industrial Development Zone and Chongqing Liangshan Technology Co., Ltd. held a strategic contract signing ceremony. They would build Industrial Internet empowerment centers with concerted efforts and provide digital transformation services via the regional Industrial Internet platform to over 1,000 manufacturers in Bishan high-tech zone. Lan Qinghua, Secretary of the CPC Bishan District Committee, and Huang Ou, Vice Secretary of the Party Committee and President of Shanghai Electric (Group) Corporation, witnessed the signing and addressed the ceremony. Three parties have formed good cooperation in the process of mutual research and exchange before. They will give full play to their respective advantages to jointly build Bishan Industrial Internet empowerment centers, promote digital industry development in Bishan and help Bishan Manufacturing realize leapfrog development. Lan Qinghua said that developing Industrial Internet was important for the implementation of national strategies. Shanghai Electric has made remarkable progresses from equipment,

factories, industries, smart manufacturing and Industrial Internet. Therefore, it has accumulated rich expertise in empowering industrial enterprises, making it more suitable for Industrial Internet. The Industrial Internet development here shall enhance industrial companies first, and then span across the supply chain and industrial chain. By greatly empowering related companies, it will make Bishan's companies stronger on an overall level.

Huang Ou said that Bishan Industrial Internet was an active practice of Industrial Internet 2.0. Backed by its experiences of platform operation, Shanghai Electric would provide mature products and professional services for Bishan's Industrial Internet platform. Meanwhile, it would share its expertise on high-end equipment manufacturing to further empower Bishan's high-quality development. By utilizing the innovative structures on SEunicloud, it would synergize inter-company cooperation in regard of manufacturing resources, capacity and knowledge, which not only changed the linear innovation path of traditional manufacturing models, but also boosted digital transformation and upgrading, helping companies to increase quality and efficiency, and to decrease costs. **D**



2020迪拜世博会中国馆官方合作伙伴
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能源装备
ENERGY EQUIPMENT

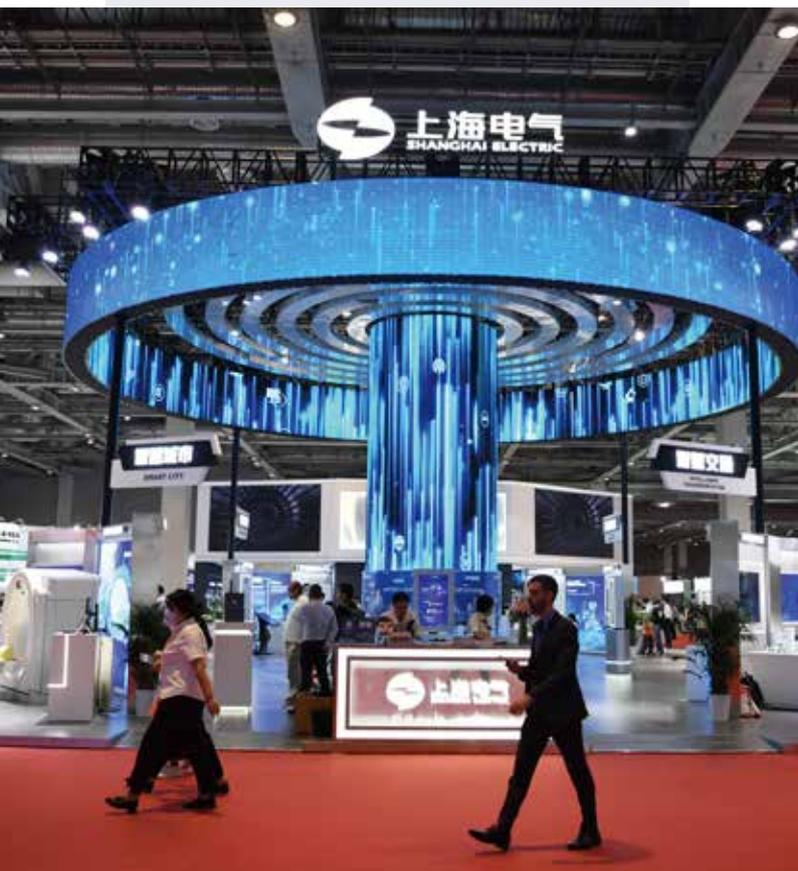
工业装备
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The 22th China International Industry Fair (CIIF) opened in National Exhibition and Convention Center Shanghai on September 15 as the first national industry fair launched amid regular COVID-19 prevention and control. Centering on the theme "Intelligence & Interconnection Empowering New Industrial Development", Shanghai Electric, a leading industry brand in China and an "old friend" of CIIF, demonstrated its comprehensive strength by highlighting "smart city, smart energy, intelligent transportation and intelligent manufacturing" in its exhibition. Zheng Jianhua, Secretary of the Party Committee and Chairman of Shanghai Electric (Group) Corporation, and Huang Ou, Vice Secretary of the Party Committee and President, as well as Zhu Zhaokai, Vice Secretary of the Party Committee, visited the exhibition on the first day of opening. The main exhibition zone mirrored a "starry sky",

Shanghai Electric "Smart Innovative Chain" Lighted up China International Industry Fair

Zhang Cheng



meaning that Shanghai Electric is a brilliant galaxy and its multiple industrial sectors are smart stars. The most important exhibit "smart panorama" 360°AR used AR-based recognition technologies to present a 3D blueprint of "smart city, smart energy, intelligent transportation and intelligent manufacturing", and portray a brighter picture of balanced quality life and modern urban industries based on solutions for 13 industries like 5G, smart medical care and aviation.

During the exhibition, Shanghai Electric participated in CIIF industrial seminars to exchange views with domestic and international counterparts on what to do next upon the arrival of Internet of Everything and how to better support new infrastructure.

CIIF has been committed to implementing national strategies and pressing ahead with innovations for decades. As the most influential international fair for Chinese industry players, it provides an important opportunity for Chinese industry to enter the global market and trade with overseas partners. This 5-day fair was frequently covered by major media. **D**



Shanghai Electric Entered Overseas Markets With Solutions For “Smart City, Smart Energy, Intelligent Transportation and Intelligent Manufacturing” On Cloud

Yang Qing

The overseas fair of China (Shanghai) International Technology Fair (CSITF) 2020 was launched on cloud from September 23 to 25, whose theme was “construct digital new infrastructure and embrace new online economy”. As a large high-end equipment manufacturer, Shanghai Electric was invited to participate in the cloud-based fair.

While regular COVID-19 prevention and control is being implemented, the CSITF overseas fair chose to open on cloud to tear down the barrier caused by the virus and help participators to enter international markets. Wherever they were, visitors could join the fair simply by moving fingers on the screen while being supported by the 5 major cloud-based functions: releasing, livestreaming, negotiating, procuring and signing contracts.

Orienting at “digitalization, intellectualization, internationalization and servitization”, Shanghai Electric displayed four main solutions targeted at “smart city, smart energy, intelligent transportation and intelligent manufacturing” that fully showcased its latest progress and achievements in transforming development and accelerating new industries. In addition, its subsidiary Shanghai Electric-KSB Nuclear Pump & Valve Co., Ltd. used the window of “CSITF Launch” to release its internationally-leading RUV wet winding motor coolant pump online, which is a vertical, single-stage, seal-less and single-suction coolant pump for third-generation nuclear reactors.

This fair is hosted by Shanghai Municipal Commission of Commerce and Council for the Promotion of International Trade Shanghai, and organized by Shanghai International Technology Exchange Center and Digital Expo. It contains 4 major sections: exhibition, opening ceremony and forum, trade promotion and communication and marketing, proving services to 100,000 buyers from over 30 countries and regions including Greece, Italy, Hungary, Poland and China (Beijing and Shanghai), receiving millions of online views. **D**

RUV Wet Winding Motor Coolant Pump Won “CIIF Energy-saving Award”

Zhang Cheng

RUV wet winding motor coolant pump won “CIIF Energy-saving Award” this year. The RUV wet winding motor coolant pump is co-developed by Shanghai Electric-KSB Nuclear Pump & Valve Co., Ltd. and State Power Investment Corporation Limited for China’s independent third-generation nuclear reactor, which took 8 years to be completed after rounds of prototype tests and design iterations. The nuclear coolant pump, known as the “heart” of a nuclear power plant, plays a crucial role because it pumps coolant fluid through the reactor coolant system in the primary loop of a nuclear island, which is of vital importance to safeguard the proper, safe and stable operation of the nuclear power plant. **D**



Huang Ou: Jointly Build An Innovative Open and Shared Industrial Internet Ecology

Sun yimin

On October 10, the ceremony to celebrate the settlement of Shanghai Municipal Industrial Internet Association was held in Hongkou District. Wu Jincheng, Director of Shanghai Municipal Commission of Economy and Informatization, and Hu Guangjie, Head of Hongkou District, attended the ceremony, and Huang Ou, President of the Association and Vice Secretary of the Party Committee and President of Shanghai Electric (Group) Corporation, addressed the event.

The People's Government of Hongkou District and the Association became strategic partners this April, and agreed to focus on new technologies, businesses and economy to develop new highlights of Hongkou's emerging industries. They would jointly build up modern industry systems characterized by regional advantages, promote industrial researches, infrastructure construction, innovation application and pilot tests in terms of "5G + Industrial Internet" in Hongkou, especially the North Bund, making Hongkou an influential brand in Industrial Internet development.

The Association sits in North Bund Pujiang International Financial Plaza. Both parties will push forward 5G, block chain, AI development,

and encourage industrial leading companies to open application scenarios, empower Industrial Internets of different businesses, encourage middle and small companies to connect to cloud platforms and build Hongkou District into a leader of Industrial Internet 2.0 in Shanghai. Huang Ou said that Industrial Internet was the foundation for digital transformation and new-type industrialization and the core of future businesses. In recent years, China has valued the development of Industrial Internet, and the CPC Shanghai Municipal Committee and Shanghai Municipal People's Government have issued a number of supportive policies and measures. As an active participator in building the Industrial Internet ecology, the Association had a lot to do. It would connect the government with companies, facilitate industry development and promote industrial information. With the guidance and support of all related government bodies and Hongkou District, the Association was settled here, providing an important space for member companies to exchange ideas and reach consensus. Starting from here, we were able to integrate researches, innovative technologies and application scenarios to attract more "industrial traffic" to Hongkou. Besides, we would make every effort to integrate online and offline development, and drive synergized development of the industrial chain, value chain and innovation chain in order to build an innovative, open and shared Industrial Internet ecology and to multiply the industrial benefits of Shanghai's Industrial Internet landscape. It is reported that the Association is a non-profit organization made up of over 260 industrial enterprises and industrial technology companies, Shanghai Electric being the first president company. It aims to empower the digital transformation of key industrials, such as equipment manufacturing, automobile, biomedicine, aerospace and electronic information. **D**

Shanghai Electric Presented “Smart Energy” Solutions to Implement The National Energy Security Strategy

Mo Ping Guan Wanjin



Shanghai Electric Smart Energy Solution Promotion themed with “Smart Energy, Now Is Future” was launched on September 28, integrating both offline events and livestreaming. It demonstrated holistic smart energy solutions for renewable energy power generation, energy storage, distributed energy and whole-life-cycle services and briefed cases of Dubai solar energy park, the largest project of its kind in the world, the smart energy project in Shanghai Minhang Industrial Zone and the Industrial Internet platform SEunicloud. Huang Ou, Vice Secretary of the Party Committee and President of Shanghai Electric (Group) Corporation, addressed the ceremony. It was reported that orders of

new energy equipment and projects accounted for 80% of Shanghai Electric’s total orders in the first half of the year. It has entered high-end solar power markets in Europe, Middle East and Japan, and its overseas development is shifting from a high-speed model to a high-quality one. Dubai Solar Park, the largest solar power project in the world that attracts a lot of attention, has been progressing smoothly with roughly steadily-controlled quality against the pandemic impact, fully showing Shanghai Electric’s competitiveness as a general contractor of overseas projects. What’s more, Shanghai Electric has occupied the top ranking in terms of domestic offshore wind power installed capacity for 5 years in a row, taking up 41% of the market share.

In the promotion, Shanghai Electric presented a number of “new energy+” scenarios in various ways, such as concentrated solar power/PV + sea water desalination, new energy + hydrogen production and wind + solar + coal + energy storage to lead the new era for energy development. The integrated “wind-solar-energy storage-charging-administration” smart energy project in Shanghai Minhang Industrial Zone is the largest energy storage system in Shanghai, which is co-developed by Shanghai Electric and State Grid Shanghai Municipal Electrical Power Company. Its successful operation endorses the feasibility of a smart energy commercial model in an industrial park, setting a bench mark for industrial parks to increase energy efficiency and transform to a low-carbon mode. As for energy storage, Shanghai Electric has set up 2 production bases in Nantong City and Kunshan City, spanning across the whole industrial chain of lithium batteries for energy storage.

Huang Ou said that smart energy was an important measure to implement the new national energy security strategy “promoting revolutions of energy consumption, energy supply, energy technology and energy institution and enhance all-rounded international cooperation”. Smart energy shall highlight economic benefits as well as high efficiency, intelligence, sharing and interconnection. Shanghai Electric was a leader in energy equipment industry and the digital transformation of manufacturing. At present, Shanghai Electric was dedicated to build the “triangle of industrial ecology” with smart equipment, Industrial Internet and smart supply chain following the orientation of “smart manufacturing, smart energy, smart transport and smart city”, and expected to seize the opportunity of internet-based digital development with domestic players to realize shared, innovative and high-quality development through win-win cooperation.

Wu Huanqi, Secretary of the Party Committee and Executive Vice President of Shanghai Electric Power Generation Group hosted the promotion. Cheng Yan, Managing Director and General Manager of Shanghai Electric Digital Technology Co., Ltd. introduced the Industrial Internet platform SEunicloud, the winner of “Zhan Lu” Award at the 2020 World Artificial Intelligence Conference. **D**

Shanghai Electric is to provide multiple professional daily maintenance services to Shanghai Metro Line 5 in the next 15 years. On September 3, Shanghai

Shentong Metro Corporation and Shanghai Electric signed a letter of intent for strategic cooperation and the contract on multiple-discipline maintenance for Shanghai Metro Line 5. Yu Guangyao,

Secretary of the Party Committee and Chairman of Shanghai Shentong Metro Corporation, Zheng Jianhua, Secretary of the Party Committee and Chairman of Shanghai Electric (Group) Corporation, Bi Xiangli, Vice Secretary of the Party Committee and President of Shanghai Shentong Metro Corporation, and Huang Ou, Vice Secretary of the Party Committee and President of Shanghai Electric (Group) Corporation, attended the ceremony. According to the letter of intent, both parties will deepen cooperation in an all-rounded way, covering whole-life-cycle multiple-discipline maintenance based on smart operation and maintenance technologies, supply chain cooperation and repair of key parts, coordination of rail transit operation and maintenance in the Yangtze River Delta, talent development and co-building of party. It will amplify the advantages of "Shanghai services" and "Made in Shanghai" in rail transit, and promote the integration between advanced manufacturing and modern services. By sharing resources and complementing each other, both companies would enhance the security, reliability and operation efficiency of the ultra-large rail transit network in Shanghai, offering passengers safer and more convenient travel services.

In the meantime, they will adopt innovative systems and actively explore the maintenance market for middle transit RT and intercity rails to create a new maintenance model characterized by being professional, integrated and market-oriented. While consolidating the market share in Shanghai, they are going to provide services to the Yangtze River Delta market, which actively implement the "One Belt One Road" Initiative. The 15-year contract covers the daily

Shanghai Shentong Metro Corporation and Shanghai Electric Pressed Ahead Strategic Partnership

Lu Yan

maintenance on trains, communication signals, power supply and thorough repairs. Taking this project as both a pilot and demonstration case, they will research on core technologies of the smart maintenance and health management platform i-PHMar that integrates different disciplines and shares data of various sources in order to develop a new maintenance and whole-life administration model for rail transit facilities that can be repeated and promoted. With the support of Shanghai Shentong Metro Corporation, project teams of Shanghai Electric have started all necessary preparations for the handover of rail-related tasks. Based on the principle of "proceed after getting ready", the train department is to start daily maintenance, and departments of power supply and communication signal are expected to finish all the handover at the year end with electromechanical equipment maintenance in the station to be added in the future. According to Yu Guangyao, Shanghai Shentong Metro Corporation and Shanghai Electric have been partners for decades, and this cooperation unsurprisingly endorses their solid trust. Both enterprises are domestic leaders in their respective areas. He hoped that they could continue the partnership and complement each other in high-quality development in their own fields. By taking advantage of this opportunity and the supportive policies of the "Integration of the Yangtze River Delta" national strategy, they would start from Shanghai and span cross the market in the delta area. By empowering



development with technology and leadership, while exploring new models on cooperation and innovation, they will be committed to creating new ideas, platforms and brands with distinct characteristics. Zheng Jianhua said that the signing of the contract was another bold marker throughout their partnership. As an excellent example of international rail transit management in the world, Shanghai Shentong Metro Cooperation is a domestically-leading and one of the best global providers of comprehensive services for urban rail transit operation. At the same time, Shanghai Electric is one of the largest equipment manufacturers in China. Shanghai Rail Transit Group that was set up last year is the unified promotion and administration platform of Shanghai Electric's rail transit businesses, and has rose to the only professional service supplier at home and abroad that provides rail transit electromechanical system solutions and whole-life-circle health management characterized by the widest discipline coverage and most advanced technologies. Shanghai Electric will abide by the highest standards and most strict requirements in implementing the contract with a strong sense of mission and responsibility to build it into a world-class project and a new benchmark for state-owned enterprises' cooperation for a win-win future. **D**



With The Signing Of The Contract On Establishing An Auto Parts Joint Venture, Highly Marelli Is To Be Expected

Wang Qi

Shanghai Highly (Group) Co., Ltd. ("Highly" for short), a subsidiary of Shanghai Electric (Group) and Magneti Marelli S.p.A., a world-leading supplier of auto parts, agreed on establishing a joint venture in this regard.

According to the contract, Marelli will strip off and restructure auto air conditioning compressor and air conditioner assets and businesses and set up Marelli Hong Kong as the entity for pulling together targeted assets and businesses. Highly will purchase 60% of Marelli Hong Kong's equity, which is planned to be completed on January 4, 2021. After the transaction is finished, the joint venture will be renamed as Highly Marelli Holding Co., Ltd. ("Highly Marelli" for short).

On the afternoon of September 4, the signing ceremony of the Highly Marelli auto part project was held in Shanghai in the form of a video conference. Zheng Jianhua, Secretary of the CPC committee and Chairman of Shanghai Electric (Group) Corporation, witnessed the signing, and Huang Ou, Vice Secretary of the Party Committee and President of Shanghai Electric (Group) Corporation, and Dong Jianhua, Vice President and Chairman of Highly, participated in the event.

Huang Ou said that this project was an example of high-level international cooperation on new energy vehicle industrial chain, and would boost the synergized development of Highly's new energy vehicle air conditioner compressor and Marelli's heat pump air-conditioning system to multiply the cooperation effect. Together, both parties would build an international joint venture that is administered digitally and targets the world market. Beda Bolzenius, CEO of Marelli, said that this strategic cooperation was extremely inspiring for the company. Highly is an esteemed company in China, and Marelli always pursues better technologies and manufacturing, which makes this cooperation greatly promising. It was a big achievement for both parties to become world-leading suppliers. **D**

COVER TOPICS



**SMART CITIES
ARE TO COME AS PLANNED**



POWER ALL FOR ALL SHANGHAI ELECTRIC

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he state comes into existence, originating in the bare needs of life, and continuing in existence for the sake of a good life.” What Aristotle said in his Politics over 2000 years ago is being translated into an initiative in building smart cities.

“New Infrastructure” empowers cities with “intelligence”, making them better and stronger. “New Infrastructure” is a new-type infrastructure for digital economy, and developing smart cities is part of digital economic development. Hence “New Infrastructure” development actually paves the way for smart cities.

Today, “smart city” is no longer an exotic term but has its presence in every corner of the society without being noticed, such as crossroads, offices of urban administration departments and industrial zones, impacting our life, economic growth and governmental decisions.

It is made clear in the recently-released national policy Guiding Opinions on Accelerating New-type Smart City Construction that measures will be taken to continue the development of smart cities. As “digital cities” are transforming to “new-type smart cities”, technologies and demands behind smart cities are stepping into new stages.

Planner | **Shen jin Tu min**

SHANGHAI ELECTRIC EMPOWERS SMART CITIES BY INTEGRATING MULTIPLE INDUSTRIES

On September 9, Shanghai Electric Automation Group won the contract of the “one-network uniform administration” service project, a key program in Yangpu District in 2020. As another groundbreaker for Shanghai Electric’s development in new infrastructure, it will become a long-term driver for Shanghai Electric’s transformation, and a pivot in the smart city landscape in terms of economic benefits and social influence.

Meanwhile, the “one-network uniform administration” plays a strategic role for Shanghai Electric to become part of smart city governance system as early as possible. Shanghai Electric has made enormous efforts to accumulate corporate operation expertise and experiences in urban governance projects, and continued to repeat this model in the Yangtze River Delta region and projects of the same kind in other provinces and cities.

Navigated by its long-term vision into the industrial development, Shanghai Electric embarked on its journey in smart city construction as early as the beginning of 2010. In recent years, Shanghai Electric has been approaching to smart and digital city construction based on the Internet of Things and joint efforts of multiple industries involved in urban infrastructure informationization. Huge technological advancements in 5G, new energy and information facilitate the integration between big data and city governance to improve city life quality. The Guiding Opinions on Accelerating Smart City Construction issued by Shanghai this February pointed out that “smart city is an important indicator of a city’s strength level and core competitiveness, and a crucial carrier for Shanghai to develop sci-tech innovation centers with worldwide influence,” and that “Shanghai will grow into a world leader in building new-type smart cities by 2022.”

Technologies and policies fuel smart city demands in urban circles. With an integrated business landscape of rail transit, waste water treatment, smart elevators and new energy vehicles, Shanghai Electric has basically set up its smart city matrix, proactively developing industrial clusters to better serve smart city construction and to create brains for future cities.



1 CREATE “BRAINS” FOR FUTURE CITIES WITH BIG DATA PLATFORMS

Economic and technological development zones are highly responsible to find a way that can “make some

regions smart first” from the complex picture of smart city, which will be then provided to all cities in China as a reference.

Both Yangpu District in Shanghai and Xiong’an New Area are dashing forward in building smart cities with visible achievements because they have diversified and technology-intensive industries but no unsolved problems in the past.

In January 2020, Xiong’an New Area in Hebei Province held a press conference to publish its smart infrastructure innovations. Shanghai Electric participated in the establishment of Xiong’an New Area’s smart intelligence framework and the independent development of the area’s first smart access device, the intelligent gateway X-Hub. The framework stipulates guidelines and standards for many fields involved in smart city construction, such as natural resources and environment, municipal engineering, transportation, buildings, emergency management, underground spaces and people’s livelihood, and the gateway is used to transfer core basic data for Xiong’an New Area’s smart development.

The system leads the standard formulation

in smart city construction, and makes fundamental contributions to implement the State Council’s general positioning of Xiong’an New Area, which is “a world-leading smart city with deep learning capacity and appropriately leading smart infrastructure”.

The example of Xiong’an New Area demonstrates Shanghai Electric’s confidence and passion in developing smart cities. In the past a couple of years, Shanghai Electric empowers industrial transformation and upgrading with digital, internet-based and smart measures to build industrial clusters for supporting smart cities. It has signed letters of intent on cooperation or won smart city project contracts in Nantong City, Qidong City and Yancheng City in Jiangsu Province, Chongming District in Shanghai and Shantou City in Guangdong Province, exporting smart city solutions.

Shanghai Electric executes the smart city construction in an actual rather than theoretical way. It brings convenience, intelligence and agility to everywhere in the city by thoroughly improving its performance in every segment. Smart city, a cross-discipline concept integrating industrialization, informationization and urbanization, is known and recognized by more and more people, providing a new possibility to urbanization’s course and structure.

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DECODE SMART CITY AND IMPLEMENT "SHARP PROJECT"

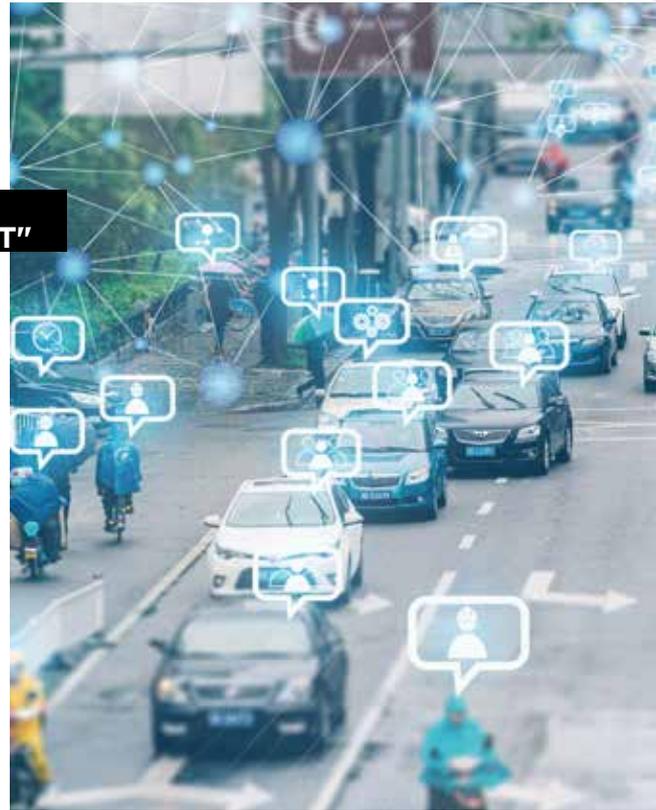
To ensure sustainable urban development and prosperity, smart city construction is expected to provide a new model for urban development by following the trend of diversification, coordination, globalization and socialization, and lay a solid foundation for model by utilizing advanced technologies. To be particular, "Sharp Project" is closely related with smart city development because the two complements each other.

In the 7th China (Shanghai) International Technology Fair held in April, 2019, the "Sharp Project" comprehensive management platform developed by Shanghai Electric interested a lot of visitors due to its comprehensive dynamic analysis and diversified application scenarios. Shanghai Electric became part of the "Sharp Project" in 2018, and soon grew to be an important player in Shanghai.

As a "people-based public safety management project", "Sharp Project", based on comprehensive management data and grid-based administration, takes county-level, township-level and village-level comprehensive management centers as command centers and focuses on the internet application of public safety video surveillance systems.

Public safety management measures reach all the people via three-level comprehensive management centers, which allows social forces and the public to keep an eye on surveillance videos to ensure "a full coverage without blind angle" of public safety services.

The "Smart Sharp Project" platform integrates an array of applications including electronic maps, smart surveillance, data analysis, work routines, monitoring and evaluation, and facility maintenance and management. With all data and resources collected on "one map", "one platform" and "one data", "Sharp Project" is able to realize the vertical penetration, horizontal integration and sharing application of integrated business management platform, and risk insight, early warning linkage and decision support of comprehensive management



big data situation analysis platform, building up a set of "smart sharp" comprehensive management system based on district (county), city block (township) and community bodies.

The video sharing system developed by Shanghai Electric for the Jinshan District Public Safety Bureau has access to roughly 5000 cameras of HD public security videos, over 1000 cameras of outfield videos and more than 60 cameras of videos about waste disposal stations that are administered by Shanghai Municipal Urban-Rural Development Administration Commission.

Police officers are able to identify who the target or suspect is and where he/she is heading for in just few minutes thanks to advanced cameras installed in every monitoring spot, like smart HD cameras, smart face image capture cameras, low-light face cameras and HD integrated dome cameras, which provide utmost support for their work.





3 UNLOCK NEW POSSIBILITIES WITH URBAN SMART WATER SERVICES

As increasingly more industries become smart, more technologies are adopted to guarantee the operation of smart scenarios, and “water”, our closest friend, is one of the important reflections of smart city construction.

The booming economy in cities have made smart urban water supply and drainage an essential part of the growing city culture. Therefore, Shanghai Electric sees water affairs as an opportunity to enhance its influence in smart city.

As early as 1980s, Shanghai Electric Automation R&D Institute Co., Ltd. participated in Shanghai Combined Drainage Project (rainwater, domestic wastewater etc.) Phase I. Based on its remarkable expertise and excellent services, it provides automatic management systems of different sizes on urban waste water treatment and professional services of sewer network monitoring and controlling.

It has completed a number of large smart water service projects due to continuous iteration and upgrading of technologies and processes, and been well received. Adapting to the computer and internet, the system automates production and management across the factory, ensuring operation security, reliability and water quality of the end product. The system uses products characterized by cutting-edge technologies, openness and extensibility, and takes more factors into consideration, such as cost and connection to future projects.

Shanghai Electric transforms traditional urban water service system into a smart one with its proficiency in technologies, allowing the system to run in a safer and smarter way with higher efficiency and lower energy consumption.

At the early design stage, Shanghai Electric had decided to add more supportive and value-added functions to better serve users, so it developed the security system, energy management system, smart administration software for the waste water treatment factory, internet security system, auto-control system's

information safety risk evaluation, science popularization demonstration system and BIM maintenance system to make the factory work in a smarter way.

What's more, Shanghai Electric provides the smart river-channel water-quality guard solution to “Smart Lvxiang”, the first pilot project of Jinshan District's “smart city” construction. The smart water quality guards deployed in river channels work together with the water quality comprehensive treatment platform to monitor water quality in 6 channels, such as Zaofang River, Lujiabang River, Lianxin River, Hongguang River, in a real-time manner to minimize pollution. Another example is Changzhou City's Jiangbian Waste Water Factory Phase IV project, whose contract was won by Shanghai Electric last year. In this case, Shanghai Electric sets up a centralized-management and distributed-controlling monitoring model that is made up of the highly-reliable PLC control station, industrial supervising computer and optical ethernet ring network, and a complete automatic management system for the factory.

CITY

In daily production and life, the generation of waste is inevitable. With the development of living standards, waste generation is also increasing year by year. If such waste cannot be treated in a timely and effective manner, there will be serious environmental problems. Recently, the "Waste Incineration" Project of Shanghai Electric Environmental Protection

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NEW BREAKING POINTS OF SMART CITIES FOR ENVIRONMENTAL PROTECTION INDUSTRY

SMART CITY

Group appeared in the "Smart City" sector of Shanghai Electric at the 22nd China International Industry Fair. "Waste Incineration" Project and "Solid Waste and Water Treatment" Project showed their importance in smart cities and accordingly attracted the attention of many people.

Early in the mid-1990s, Shanghai Electric began to get into domestic solid waste treatment business. Shanghai Electric has system technologies and key equipment with independent intellectual property rights, and it is one of the few enterprises in China that can provide both solid waste treatment process design and key equipment. Shanghai Electric has rich experience in general contracting and management, and can provide users with total service and meet solid waste treatment requirements of towns and industrial parks of different sizes.

In 2001, Shanghai Electric first undertook China's first kiloton incineration power plant (Shanghai Pudong Yuqiao Household Waste Incineration Power Generation Project). In 2003, Shanghai Electric undertook the largest waste incineration power plant in Shanghai

at that time (Shanghai Jiangqiao Household Waste Incineration Power Generation Project). At present, Shanghai Electric's scope of business in solid waste treatment field covers household waste treatment, organic waste treatment, classified recycling at garbage terminal, industrial and medical hazardous waste treatment, comprehensive utilization of biomass, and soil remediation and so on. In the field of household waste treatment, Shanghai Electric adopts the advanced grate furnace incineration technology in China and its self-owned flue gas cleaning technology with ultra-low emissions, and core devices such as waste heat boilers, steam turbines and power generators are manufactured and provided by Shanghai Electric, which ensures the efficient and stable operation of waste incineration plants. Besides, waste incineration plants adopt garden-type plant design and green building structure, and thoroughly eradicate the "NIMBY Effect" by means of the strength and highly transparent information disclosure system of Shanghai Electric

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Environmental Protection Group.

In addition to household waste, hazardous waste is called a “cancer” harmful to the environment. Although it is small in size, it is extremely dangerous to the environment. Industry insiders point out that hazardous wastes will continue to increase because China is still in the booming phase of industrialization and urbanization, and that environmental supervision of hazardous wastes has become a pressing problem.

At present, the hazardous waste treatment method adopted in China is focused on landfill and incineration. Centralized treatment does not only intensify the maintainability of a hazardous waste treatment system, but also improve the ecological environment of a region. In the field of hazardous waste treatment, Shanghai Electric possesses Switzerland’s CTU industrial waste treatment technology, and can realize the industrial waste treatment of a region in a safe and efficient manner by virtue of general and hazardous industrial waste treatment technologies such

as rotary kiln incineration, thermal cracking and secure landfill. Besides, in the aspect of comprehensive utilization of biomass, Shanghai Electric possesses many biomass treatment technologies such as biomass direct combustion power generation, cogeneration, granulation & briquetting, fuel ethanol and comprehensive utilization of by-products, and can realize the recycling of different biomass (e.g. straw and timber) in a cost-effective manner.

Shanghai Electric actively promotes the upgrading of industrial structure, insists on adopting core technologies with independent intellectual property rights, and relies on rich experience in general contracting as well as key equipment manufacturing capability to provide one-stop service and a series of solutions for users. A longer-term goal is to realize smart economy through the construction of smart cities, so as to inject new vitality into the economic development of Shanghai Electric.

SMART CITY

In sync with the development of new energy vehicles, car charging piles are now in the growth stage, especially the car charging piles under "new infrastructures". The car charging pile industry will pay more attention to the integration with such high and new technologies as 5G communications, smart grid, Internet of Things, Internet of Vehicles, cloud computing and big data, and enter a fully new era. Recently, the C-POD electric car charging robot of Central Academe appeared in the "Smart City" sector of Shanghai Electric at the 22nd China International Industry Fair.

Since the end of 2017, Shanghai Electric Central Academe has begun to layout the new energy vehicle field and set about carrying out the research and development of C-POD electric car smart charging robot, an intelligent ancillary equipment for charging

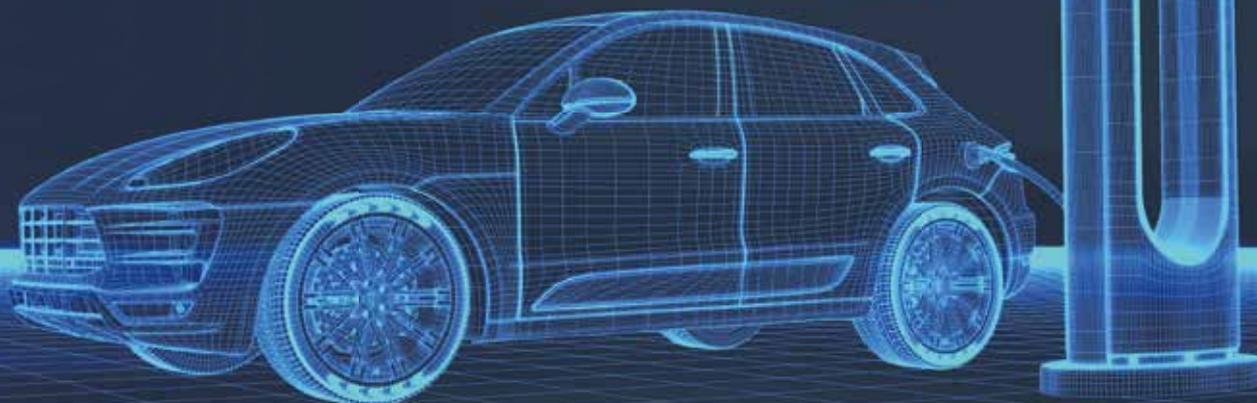
5 INTELLIGENT CHARGING PILES "CHARGE" THE DEVELOPMENT OF SMART CITIES

piles. C-POD automatically identifies the type of an electric car charge port through a binocular vision module, analyzes the coordinates of spatial position of the charge port, guides a mechanical arm to move towards the charge port, and accurately inserts the charger into the charge port to charge an electric car through a flexible end effector, realizing the unmanned operation of the whole charging process.

In 2018, the development of the first generation prototypes of C-POD was completed. In 2019, the prototypes were upgraded and optimized and passed the type test by a third party. Besides, Central Academe developed wall mounted MINI C-POD prototypes according to the potential demand of users. MINI C-POD has such advantages as compact size and easy installation, and is more suitable for household users. At present, the joint debugging of C-POD and many vehicle models such as NIO ES6, Leapmotor S01, XMotors P7, Roewe ERX5 and BAIC EV160 has been completed.

In 2020, charging piles were included in the national "new infrastructure" development and construction strategy. Central Academe actively responded to the national development strategy, integrated C-POD electric car smart charging robots with digital

NEW INFRASTRUCTURE

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intelligence, applied digital, network-based and intelligent means to empowering the upgrading of smart cities, realized the unmanned closed loop of intelligent parking + automatic charging, integrated the manufacturing industry with the service industry, actively explored the commercial implementation of unmanned charging, and made efforts to build new scenes, new ecosystems and new cities. At present, the team is developing movable-type robots as well as one-to-many movable and grasp-type robots. Compared with fixed charging robots, the advantage of movable-type charging robots is that a charging robot can serve dozens of electric cars and even hundreds of electric cars through intelligent parking lot planning. Besides, movable-type charging robots can reduce the work volume of construction as well as the assembly cost of charging infrastructures. This pattern has huge economic potential. In combination with future unmanned parking and intelligent parking lots, movable-type charging robots will bring a more different experience to users. In the future, C-POD intelligent electric car charging robots will be combined with such technologies as artificial intelligence, driverless cars and 5G communications, and through large-scale automatic charging transformation for more application scenarios, such robots will subvert the traditional charging mode,

improve user experience and develop towards the direction of high-end technology and intelligence.

In short, the second half of Smart City is to make intelligence go deep into every corner of a city in a silent manner. Nowadays, the advances in science and technology are accelerating. With science and technology, everything is possible.

Joseph Stiglitz, a Nobel Prize-winning economist, predicted, "there are two major events influencing the world development in the 21st century, i.e. America's high technologies and China's urbanization."

Joseph Stiglitz has not expected that the organic unification of high technologies and urbanization was realized in China. Due to high technologies, some enterprises walk at the forefront of technological innovation in the age of artificial intelligence, and then create China's typical smart cities in the wave of urbanization. Especially when Smart City is entering the second half, Shanghai Electric will play a key role in the construction of smart cities, and is now outputting "smart cities" to the whole country and even the whole world. **D**

VIEWPOINTS

INTERVIEWS

XU DONGHUA: TECHNOLOGY IS WARM AS WELL

Strive for the best and live his life to the most. Xu Donghua has dedicated 30 years to the Chinese manufacturing industry, witnessing the rise and fall, while grown into a middle manager after serving on posts of manufacturing, technologies and processes, human resources, finance and quality control with personal skillset enhanced in all regards. As the work philosophy or focus changes, he has become a mature manager of technology management, but the craftsmanship is always intact and deeply rooted in his blood. This spirit reflects the original aspiration of a craftsman and more importantly, the passion to revolutionize the industry together with his team. Having working on the front line for 31 years, he leads his team to complete a colossal number of generators with superior expertise in terms of processes, manufacturing, safety, quality, talent development and cost control. He is seen as a symbol of guarantee by colleagues due to his decades of excellent technology performances and unappalled sense of professionalism.



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irector of Lingang Generator Department and Secretary of the CPC Lingang Generator Department Branch, Shanghai Generator Works, Shanghai Electric Power Generation Group, specializes in technology R&D on smart equipment. Driven by his pioneering spirit, he transforms Lingang Generator Department from a conventional labor-based assembly line into a digital management and execution system. His contributions, the automatic stacking technology of generator stator cores and replacement of manual coil transport with automatic delivery facilities, improve productivity and reduce quality risks, making him a true "backbone" of the plant.



STUDY HARDER AND INNOVATE MORE

Xu Donghua's journey in the Lingang plant started from 2013. He worked actively in the new environment to know the factory in a direct and detailed manner as quickly as possible.

"The Lingang plant is a typical example of discrete manufacturing, where there are many kinds of components, but each kind requires only a small amount. All equipment is high-end, precise and gigantic with a low cost advantage in mechanized production." Having spending years on surveys and analysis, Xu Donghua developed a reform plan and initiated a number of innovative measures. Smart manufacturing is implemented in this discrete factory through a number of smart manufacturing projects, which improves precision production with a focus on product quality by digital methods.

Frequent changes of posts allow Xu Donghua to know that he always has to study harder to keep up with the time, which is the key to success. He has made every effort to learn about smart manufacturing and Industry 4.0, and used them in on-site manufacturing tasks, and to plan and promote digitalization. During this process, the idea of informationization was imperceptibly communicated to every worker.

Knowledge, innovation and boldness allows him to upgrade the Lingang Generator Department from a traditional labor-based assembly line into a digital manufacturing workshop that employs smart technologies like 3D simulation general assembly and robot-enabled stacking and digital management and execution systems like MES.

HUMAN-ORIENTED TECHNOLOGIES ARE WARM AS WELL

When Xu Donghua came to the Lingang factory in 2013, there were 2 robotic arms for stacking punching sheets of 1000MW-level generator stator, which made Shanghai Electric the first in China and one of the global leaders in manufacturing and assembling a large generator's stator core in sections.

However, Xu Donghua found that it was only a "bubble" after a close look because these arms were not used in actual production. Advanced as it was, it had a flaw: the suspender could not be removed after hoist, which would impact the stator quality and make only a fraction of the stator core available for being processed by robotic arms. Xu Donghua said: "It is such a pity that great equipment as this cannot be used to the fullest.



The stator core of a million-level steam turbine is 6.7-meter long and 294-ton heavy, which is stacked by 140,000 punching sheets. A worker can only transfer and stack one sheet at one time manually, so this task requires 140,000 times of repetition, demanding and exhausting." He felt bad every time he saw workers stacking with their hands. To make things worse, stacking required high precision and rigorous cleaning, which made it even more difficult for manual processing. Last but not least, the stator's production cycle was hugely impacted because pressing had to come after stacking.

Seeing the difficulty, Xu Donghua made up his mind to remove this obstacle. He established a project team on robot-enabled automatic stacking with partners from business lines of processing, equipment, production and logistics.

There were always problems coming in their way, and the suspender was one of them, which could not be removed at first and then failed to bear weight, costing the team several months to solve. Then there was the problem of dislocation between the sheet and insulation paper, which would reduce the ventilation flow rate because it blocked the air hole. The robot-enabled automatic stacking system proposed by Xu Donghua finally rolled out after 2 years' hard work, which was integrated with the automatic transfer line, laser-navigated automated guided vehicle and smart vertical warehouse. They went through all the R&D difficulties, numerous tests, improvements and failures before finally made it.

The new system enhanced the quality stability of the stator core and made stacking and nesting parallel operations, increasing the stacking efficiency by 33%

and reducing the production cycle of a single unit by large. In addition, it saves labor by 1/3, and makes it much easier for workers to process components by lowering waist, shoulder and neck injury possibilities. Therefore, this system was awarded the third prize of quality empowerment and difficulty tackling by Shanghai Municipal Bureau of Quality and Technical Supervision and Shanghai Municipal Economic and Informationization Commission, which was not only a domestic leader, but also outperformed its "teacher".

"Technologies are warm as well." Xu Donghua felt so from the bottom of his heart.

REINFORCE TEAM SPIRIT TO BUILD A VERSATILE TEAM

Fighting on the front line, Xu Donghua understands that manufacturing is more than processing and producing as per required by leaders, but needs the first line department to participate in product design. He advocates to break down inter-department barriers, and encourage designers and processors to serialize new products and modularize components, which would strengthen the quality stability of products made and bring down design and manufacturing costs. Xu Donghua considers team building of significance. In his words, one man is never enough and only a good team can do the best. Aiming to "build a good team, system and atmosphere", he brings workers together and maximizes the team performance and output. He pays a lot of attention to communication and encourages workers to speak up bravely and freely to ignite inspiration sparkles. "Examine problems with a human-oriented perspective", Xu Donghua

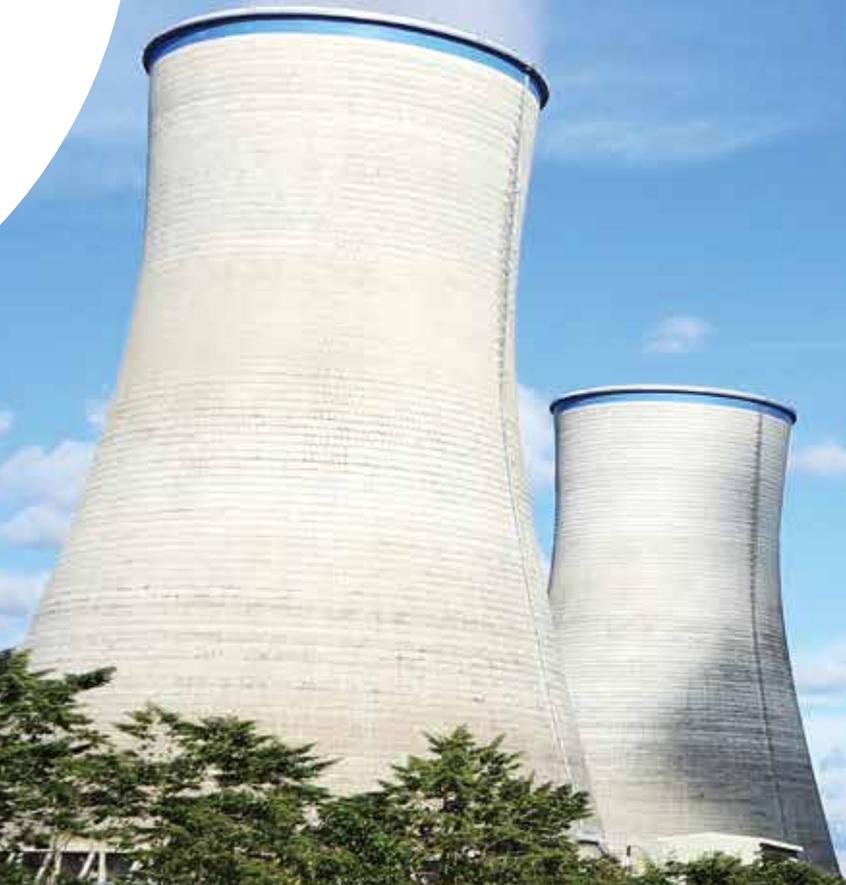
always says. He intended to make the work less tiring when he chose to resolve the robotic arm problem. To equip workers with a complex skill set is to re-balance the worker allocation in manufacturing groups and offer them more possibilities for future development. Since 2016 on, he has implemented a number of projects to nurture versatile talents, such as reorganization of technicians with multiple skills. With the maximization of workers' personal value as a driver, he has built a young but competent team characterised a complex skill set. When it comes to untap the team potential, Xu Donghua says that "we launched the performance revolution for technicians years ago and it serves its purposes this year unexpectedly." Based on the production condition, he combines workers' performance with the product's labor-hour and develops an assessment system incorporating factors of planning, quality, safety, equipment, informationization and groups. In

this set of performance indexes, compulsory ones account for 90% and the other 10% are optional, covering both key and less important indexes, which boosts technicians to work more actively and helps to reduce quality failures and increase productivity. The plant received many orders a few years ago, but the change in markets this year forces it to deal with a sharp drop. At this crucial moment, this assessment system ensures that reasonable cost pressures are transferred from the plant to departments.

From the very start, Shanghai Electric wants to characterize the Lingang plant with "lowest cost and most capable talents". It is craftsmen like Xu Donghua that push the Lingang factory forward and contribute to technological innovations in China. Based on innovation, their craftsmanship explores new territories by groundbreaking achievements and important improvements, reflecting their aspiration for excellence, premium quality and customer satisfaction. Today, Xu Donghua is still on his way to create miracles and a brighter future with pure diligence and dedication. During Premier Li Keqiang's visit to the Lingang Site of Shanghai Electric Group in July 2019, Xu Donghua accompanied him all the way in the workshop as the representative of workers. After the visit, Premier Li spoke highly of the group: "Shanghai Electric, the creator of miracles!" **D**

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As the very first EPC project of Shanghai Electric in Malaysia, the Balingia project has now obtained PAC for its two 300MW units after undergoing performance tests. Along the Balingian River and on a marshland in the primeval forests of Sarawak, Borneo, East Malaysia, Shanghai Electric has erected a modern and clean power plant - another benchmark project of the Group. The power plant is located adjacent to the Balingia River, which was once known as a land with busy business activities. However, the virgin forests here are now an untraversed region. There are only a few scattered villages dwelled by local aborigines who are living a quite primitive life. Just as our project staff said, "Instead of busy business, we only see rainfall all year long." Situated at the equator, Sarawak has a tropical rainforest climate with high temperatures and year-round rainfall.



SHANGHAI ELECTRIC REPORT ON EPC PROJECT FOR
BALINGIAN COAL-FIRED POWER PLANT IN MALAYSIA

BUILDING UP A MODERN AND CLEAN POWER PLANT AMIDST PRIMEVAL FORESTS

Planner | Guan wanjin



CHINA PAVILION EXPO
2020 DUBAI UAE OFFICIAL PARTNER

SHANGHAI ELECTRIC

The Balingian power plant has long been regarded as a local benchmark project since its construction. In February 2017, when the senior executives of Shanghai Electric and the project owner had a meeting, the latter didn't hesitate to show their high recognition, for both the construction progress and execution of the project. Such 100% satisfaction is the highest praise to Shanghai Electric, while the story behind it is little known.

Before the project started, the owner raised a question: whether a Chinese company could follow the contract terms to manage project progress with Primavera P6 - a software tool for enterprise project management. Moreover, Shanghai Electric was required to hire a third party for progress management. For this purpose, the project team of Shanghai Electric was engaged in communication and negotiation with the owner and its recommended third party for six months concerning P6's schedule management models. Finally the owner was persuaded and agreed the project could be managed by the Shanghai Electric team itself. Following the principle of "dynamic and controllable" schedule management, the project department applied P6 to develop a detailed schedule with up to 6,000 operation entries. The proposed schedule was put at a strategic position to ensure that the overall project progress is under control.

In October 2016, when seeing the actual progress S-curve in the monthly report was highly consistent with the planned one, many staff on the owner side doubted its authenticity. The only reason was, a project with such perfect schedule control is rarely seen. But when invited to the site for field research, they were stunned: the milestones of the project were all reached ahead of schedule, with major construction and installation tasks basically completed. Since then, no one has ever questioned Shanghai Electric's project

management capabilities.

When it came to November 2018, the project department was awarded a certificate engraved with "13 Million Man-hours without Accidents" by CEO of the project owner Sarawak Energy Berhad. This is the highest honor granted to Shanghai Electric for its overseas projects. At its busiest time, the project had up to 2,200 workers working on site. Among them, around 800 were Chinese, and the rest were locals hired in accordance with the localization provisions specified in the contract. These workers were engaged in a variety of jobs covering infrastructure, water, power, gas, construction, welding, safety, sanitation and more.

Zero accident in 13 million man-hours is the greatest return to Shanghai Electric's courage and determination. Instead of hiring a third party overseas for HSE management, the Group boldly employed local professionals for this mission. With costs greatly saved, they also successfully fulfilled the management objectives according to local requirements. This is a test on our overseas project team's ability to address complexity and crises, as well as the best testimony to Shanghai Electric's high project management profile.

The boiler fuel used by the power plant is locally-produced high-moisture lignite, which is demanding on the performance of circulating fluidized bed (CFB) boilers. With reference to the domestic experience in manufacturing and using CFB boilers-no absorption, no wear, no discharge, Shanghai Electric Power Generation Group strictly controlled casting materials and anti-wear and heat-resistant materials. Besides selecting optimal materials, the Group also optimized the system to eliminate deficiencies such as coal blockage.

COLLISION BETWEEN MODERNITY AND PRIMITIVITY

Whenever a modern factory is built up against original palm forests, queerness and conflict inevitably arise. During the construction of the Balingian power plant, a "beautiful misunderstanding" between modernization and virgin forests took place.

East Malaysia is largely covered by virgin forests. Due to the rigorous supervision imposed by the Malaysian government, during project construction, the project department has to receive irregular inspections by local administrations of labor, immigration, safety, fire protection, health, etc. For example, the local government requests a power plant to treat sewage as per the highest standards applicable to direct discharge.

It is natural that the plant construction more or less disrupts the originally simple life of the aborigines. During the project, local residents made troubles from time to time for various reasons. According to project personnel, not long after the project kicked off, a long pipe was laid between the site and the nearby Balingian River, so that the staff could use clean water on the site. However, the water was soon cut off. The project department searched along the pipe, only to find that a part of it was maliciously damaged. Soon after repair, the water supply was cut again. After several times, the project department eventually discovered





SHANGHAI ELECTRIC

it was the young locals making sabotages. So the project department contacted the village head to learn about the reason. It turned out that the local villagers meant no harm to the power plant; they did so just out of lack of understanding and fear. Once knowing that, the project department immediately planned an exchange event, bringing supplies from door to door to comfort the aborigines. And science popularization videos on power plant construction were played to let them understand the economic and social benefits of power plants to local areas. This was the beginning of a benign and harmonious relationship. In the next few years, the project department started to making regular donations to local aboriginal schools, and joining in charitable donations on major festivals of the aboriginal people. When the local area was hit by floods or fires, Shanghai Electric delivered relief supplies as soon as possible. These charitable acts were covered by local newspapers, and greatly appreciated by the Chinese Consulate in Kuching and locals. As understood by the project department, being a part of the local area means bearing the land in mind at all times. When the project was about to be put into operation, due to concerns that the power plant might produce

noise during the boiler blow test, the project department visited the aboriginal households one by one to remind them and explain beforehand. Thanks to the superior quality of Shanghai Electric products and the installation of silencers in advance, it turned out that the noise was not as loud as expected, without disturbing the residents at all. In 2018, the Sarawak government evaluated nearly 20 power construction projects under construction in the local region, covering hydropower stations, coal-fired power stations, and power T&D. For the excellent performance of the Balingian project in safety, environment and community integration, Shanghai Electric stood out among more than 30 contractors and won the 2018 Gold Award for Environmental and Safety Management by Contractor of Power Construction Project. Then awards came one after another. In the 2018 Top China Overseas Engineering Campsites selection held by the China International Contractors Association, the Balingian project was honored as Excellent China Overseas Engineering Campsite. As captured by drone cameras, amidst the vast dark green palm groves, the modern facilities and buildings of the Balingian power plant line up orderly. The entire complex is making a striking presence against the virgin forests of Borneo, Malaysia, just like a monument. **D**

**SHANGHAI
ELECTRIC
CREATE
OUR
FUTURE
TOGETHER**

上海电气 与创造者共创未来

