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NEW OPERATION & MAINTENANCE MODE IN THE ERA OF INTELLIGENCE

上海电气
SHANGHAI ELECTRIC

ENTERPRISES THAT GRASP DEVELOPMENT TRENDS WILL WIN THE FUTURE

We have never seen a new school term like the one this year. Every morning, at 8:00 a.m., children turn on their computers, enter their online classrooms, and start math classes. Next door comes the sound of the neighbor's sister reading in the morning, while someone upstairs starts doing morning exercises with rhythmic steps...
The "new online economy" came into being in response to the epidemic. As a fresh food e-commerce company, Dingdong Maicai completed four million orders alone during the weeklong Spring Festival holiday. Huawei's remote operations grew by 80%. Then, there are the online museums... All of these have brought about profound changes in our lifestyles. What they have in common is that they are part of the new online economy.
However, these existing new models and new products are born from the virus outbreak, and the epidemic will pass one day. Only by recognizing the potential for growth of new things during the outbreak and finding the combination for medium and long-term efficiencies, can these products and models be sustainable. As we know, Ma Yun established Taobao during SARS. He later launched Alipay in response to disputes about payment modes, after taking into consideration the demands of buyers. By seizing opportunities in the digital age, he has built the company into the "big brother" of private enterprises.
In addition to the rapid growth in the consumer internet, the industrial internet is also developing rapidly. On February 11, the "national industrial big data public service platform on supplies for the epidemic prevention and control works", jointly built by JD.com and the China Academy of the Industrial Internet, was officially launched. Its purpose was to enable the release and sharing of production cycle data through online and offline channels, and improve digital collaboration between upstream and downstream enterprises in the industrial chain.
All these have made us realize that the "advanced" manufacturing industry does not only mean high-end product production or robots replacing humans. Instead, it means the integration of the manufacturing industry and service industry, to support each other and expand into new models. This integration will become an important driving force for new kinetic energy.Earlier, **Shanghai Electric** created a new type of operation through intelligent manufacturing integrated with digital technology and advanced processes. By improving production efficiency, optimizing product quality, and providing intelligent products, the company has met customers' personalized needs, accelerated service transformation, and maximized the value in the whole manufacturing industry chain.When the wind blows, some builds walls, and others build windmills. The difference depends on whether they are open-minded and possess foresight. The present circumstances have presented new challenges to Shanghai Electric, and we believe those who grasp development trends will win the future!

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ELECTRIC NEWS

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BRIEF NEWS

Shanghai Electric has topped the country in offshore wind power for five years in a row

Zhu Quansheng

Recently, BloombergNEF released the ranking of new hoisting capacity of wind turbine manufacturers in China in 2019. Shanghai Electric ranked first with new installed capacity of 732MW for offshore wind power, and has led China's offshore wind power market for five consecutive years. This installed capacity is based on the database of BloombergNEF renewable energy projects and the relevant data independently verified in the project list submitted by the enterprise. According to statistics, the new hoisting capacity of Shanghai Electric's wind power in 2019 increased to 1.71GW from 1.14GW in the previous year, and its market share also increased to 6%. In 2019, Shanghai Electric Wind Power Group successfully achieved the milestone of "exceeding 10 billion RMB", and its profits and new orders reached a historical high.

The new official website of Shanghai Electric Group has been launched

Liu Yifan

Recently, after preliminary work and internal testing, the new official website of Shanghai Electric Group has been completed and officially launched in mid April. With both Chinese and English versions available, the new website consists of six columns including "About Shanghai Electric", "Industry Map", "News Information" and "Investor Relations", with "Brand Communication", "Product Presentation" and "Investor Relations" as the core functions. The website features three highlights: to provide better visual effects by using the design of flat and large sections and integrating a strong sense of technology into the picture; to be customer-oriented by offering strong search functions to find relevant information quickly and accurately; to add sharing and subscription functions to improve the audience experience. The new website focuses on industry highlights and product introductions of the three segments (i.e. energy equipment, industrial equipment and integrated services), so as to help customers get the information they need more easily.

Shanghai Electric settled in national 5G new media platform

Hu Jing

On February 25, Shanghai Electric officially had settled in the 5G new media platform of China Media Group called Yangshipin, becoming one of the first enterprises to move into the "national-level short video" platform. After settling in the platform, Shanghai Electric will continuously explore new ideas and approaches by creating new channels and positions with the help of CCTV's strong user base and social influence. The company will deliver to the platform users its business philosophy, practical actions and outstanding achievements in the implementation of the "Three-Step" strategic goal in a timely manner, and actively express the corporate culture of Shanghai Electric to the public. It is understood that as the first national-level 5G new media platform in China, Yangshipin was officially launched on November 20 last year, with the purpose of integrating major domestic social resources and striving to become "video social media" in China's major media based on the gist of important strategic instructions of general secretary Xi Jinping - "uphold the innovation, build and make full use of new media and new platform".

The number of orders for 660MW dual internal water-cooled generators has increased to 11 in Shanghai Electric

Ding Dazhang

Recently, Shanghai Electric signed a "new contract" with Zhundong Power Plant of State Grid Energy. So far, the total number of orders for 660MW dual internal water-cooled generators has increased to 11 in Shanghai Turbine Generator Works.
The large-capacity generators, which produced by Shanghai Turbine Generator Works with the innovative technology of dual internal water-cooled generator, are closely watched in the market. In 2019, 660MW double water internal cooling project attracted great interest of customers before bidding for multiple projects. "After the restart of the project, the owner requires to change the model determined at the time of signing the contract to 660MW dual internal water -cooled generator. The reason is that the performance of this model is highly recognized in the market."

TPCO ensures adequate supply for the construction of Tseung Kwan O Bridge

Sun Ning Fan Zhengmao

Tianjin Pipe Corporation (TPCO) under Shanghai Electric Group has completed the urgent production tasks for Tseung Kwan O Bridge in Hong Kong as scheduled. While fully affirmed by CRBC Hong Kong, it also laid a foundation for further cooperation between the two sides in the future.
Before the Spring Festival, CRBC Hong Kong contacted TPCO and expressed urgent demands for pipes for the Tseung Kwan O Bridge project. The project is another large-scale landmark sea bridge in Hong Kong after Tsing Ma Bridge and Stonecutters Bridge. Due to the urgent construction period, the TPCO marketing team quickly developed a feasible production plan to ensure the successful completion of this supply task. The completion of the Tseung Kwan O Bridge will ease the traffic congestion in the existing Tseung Kwan O Tunnel, shorten the passing time and better serve the local people.

New boiler products entered overseas cement industry

Wang Xue

Recently, Shanghai Electric Power Generation Group signed a contract with Sinoma International Engineering Co., Ltd. concerning 110t/h circulating fluidized bed boiler equipment for 25MW captive power plant of the cement production line of Dangote Group in Niger. This is the first new product order for 25MW boiler obtained by Shanghai Electric Power Generation Group in the overseas market. The general contractor of the project is Sinoma International Engineering Co., Ltd. and the owner is the supplier for the captive power plant of cement production line in Niger. With its comprehensive enterprise qualification, management ability, processing level and equipment performance, Shanghai Electric stands out from the competitors at home and abroad and becomes the boiler equipment supplier of the project. After signing the contract on circulating fluidized bed boiler equipment for the cement production line in Niger, Shanghai Electric will realize new achievements in the overseas sales of boiler products, a breakthrough from the traditional power industry to the cement industry. This indicates that there will be more possibilities for Shanghai Electric to expand the market in the future with the technical strength of Shanghai Electric Power Generation Group in the traditional energy market.

Zhang Huaji had a breakthrough in the field of non-standard pressure vessel

Ding Feng

Recently, Zhang Huaji (Suzhou) Heavy Equipment Co., Ltd., a subsidiary of THVOW, delivered to the owner oxidation reactor and level-2 rectifying tower, the second batch of core equipment for Hengli Petrochemical's 2.5 million tons/year PTA-5 project at the heavy cargo wharf of Linjiang site.

Using the industry-leading patent technology of INVISTA, the project is the PTA unit with the world's largest single capacity and scale in the world. The complete set of equipment consists of crystallizer, oxidation reactor and rectifying tower. The design and manufacturing technology of its core titanium composite plate equipment has been monopolized by some domestic enterprises before. This time, Zhang Huaji is responsible for supplying 8 sets of core titanium equipment of the project, manufacturing a complete set of equipment of over 600 tons of titanium composite plate. It has completed the design, process R&D and production of these 8 sets of equipment simultaneously. This delivery is a new breakthrough in the field of non-standard pressure vessel manufacturing, following the manufacturing of gasifier, high-pressure serpentine heater and desalination equipment in the high-end equipment manufacturing sector of THVOW. No titanium parts have been reworked and the equipment has passed multiple tests at one time,

Foundation pouring for Unit 1 of Thar Power Plant completed

Meng Guochao Wang Ligang

On February 24 (local time), after nearly 42 hours of continuous construction, the foundation of No. 1 turbine generator unit of Thar Power Plant Project in Pakistan was successfully poured. Before that, two cold end beams of boiler air preheater of Unit 1 were hoisted in place. So far, two major nodes have been completed for Unit 1 of the project as planned. Facing adverse effects including the outbreak of domestic epidemic and the strike at Karachi Port, the Project Department of Thar Power Plant actively coordinated all construction units to overcome difficulties, promote the construction schedule and ensure the smooth progress of all tasks. The pouring work involves in high-tech content and a large amount of concrete. The successful completion of this node creates favorable conditions for the foundation laying, and promotes the overall progress of the project. The cold end beam hoisted, with a single hoisting weight of 73 tons, is also the heaviest single equipment of the boiler to be hoisted in the project. The successful hoisting provides support for the subsequent installation of the boiler steel structure.

Shanghai Electric Environmental Protection Group won the bid for Huaiyuan Sewage Treatment PPP Project

Shao Jie

Recently, Shanghai Electric Environmental Protection Group won the bid of rural sewage treatment PPP project in Huaiyuan County, Bengbu, Anhui. The project includes the construction of sewage pipe network and sewage treatment facilities in 16 townships and 2 beautiful provincial villages in Huaiyuan County. The total scale of the sewage treatment plant (station) of the project is about 14040 m^3/day, and the total length of the sewage pipe network project is 374.68 km. Meanwhile, an operation and maintenance supervision platform covering the whole project will be built. The project investment is RMB720 million, with the construction period of 2 years, and the operation period of 18 years.

Winning the bid for the project is an important part of "Smart Water" implemented by Shanghai Electric Environmental Protection Group, which will lay a solid foundation for Shanghai Electric to comprehensively improve the data chain of water treatment industry, and set a model for implementing the digital, intelligent and standardized operation and management of sewage system in townships in the 2020s.

“Cloud Supervision” for Shanghai FANUC Robots

Li Xuming

Recently, Shanghai FANUC has successfully developed a set of cloud remote service system (ZDT), which is an Industrial Internet of Things application specially developed for FANUC robots. It can be used to ensure stable and high yield while preventing and controlling the epidemic.
Through the Internet of Things and cloud server, the system is connected to the robots at the user's site. Even at home, the user can remotely monitor the working status and production information of the robots in the factory in real time as long as the computer, iPad or mobile phone is connected to the Internet. In addition to continuously collecting information of FANUC robots, the system can also monitor mechanical parts and controllers of robots, as well as process equipment, such as servo welding gun, spraying equipment, etc., to maximize the monitoring of production process. The system enables equipment management personnel to monitor the equipment 24 hours a day. It can provide early warning for potential problems of robots to eliminate the unexpected shutdown in production. At present, thousands of robots have been connected to this system in China to ensure normal production of users.

Shanghai Electric pressed the "Fast Forward" key in the intelligent medical bed R&D

Zhang Qian

Shanghai Electric GeniKIT Medical Science and Technology Co., Ltd. and a medical equipment company in Hubei jointly developed the intelligent medical bed system and made positive progress. Recently, the team of both sides has completed the system process planning in advance, and the next step will be the system development stage.
In order to explore the application of intelligent technology in new scenarios, GeniKIT Medical and the medical equipment company in Hubei reached a cooperation intention in November last year to develop technologies and products related to artificial intelligent medical bed for the company. The products in the cooperation will be applied to professional medical, pension or rehabilitation institutions, and home-based care. The digital system for intelligent hospital bed jointly developed by both sides can detect all indicators of patients in real time, enabling remote monitoring of patient's temperature, heartbeat, respiration, physical movement and other state indicators. It can provide real-time early warning, reduce the direct contact frequency of medical care personnel with patients, improve the efficiency of intelligent management of institutions, and help meet the needs of anti-epidemic medical treatment.

For the 10th straight year, Shanghai Mitsubishi Elevator Co., Ltd. has been elected the “Top 500 China Real Estate Development Enterprises Preferred Supplier Brand”

Bai Lei

Recently, the annual "China Real Estate Top 500 Summit Forum” was held online, and the evaluation results of "2020 China Top 500 Real Estate Development Enterprises" were released. Shanghai Mitsubishi Elevator Co., Ltd. was among the Top 10 elevator suppliers in the "Top 500 China Real Estate Development Enterprises Preferred Supplier and Service Provider Brand in 2020", and ranked first for the 10th consecutive year with a brand preferred rate of 19%.
In this evaluation, the Top 8 real estate developers were still strategic partners of Shanghai Mitsubishi Elevator Co., Ltd., representing the recognition and trust of customers to Shanghai Mitsubishi Elevator. In the future, Shanghai Mitsubishi Elevator Co., Ltd. will make every effort as usual to innovate and create value for the society and users.

Delivery of World's Largest Double Reheat Power Generation Set Would Be Finished Soon

Hu Zhihua

The production and delivery of the 1×1350MW main equipment of the Huaibei Shenergy Pingshan Phase Two project is expected to be finished in the first half of this year. The site construction is proceeding at a high speed. This project, invested and constructed by Shenergy Group, deployed according to high and low axis, is the largest ultra-supercritical double reheat power generation set in the world in terms of unit capacity. It was listed in the national "251" thermal power demonstration projects in 2016 and is designed to start commercial operation in 2020. Shanghai Electric wins the supply contract of all the main equipments in this project, of which the design and production of the boiler and steam turbine are outsourced to overseas companies in part. Since its initiation of this project in 2017, factories of Shanghai Electric Power Generation Group went to the site to have supply-themed meetings every month, exchanging information on the equipment list with installation companies and property owners in details. What's more, they overcame an array of difficulties, which included frequent modifications to designs made by foreign companies, narrow stocking space in the site and repeated alternations of construction procedure, satisfying the needs of on-site construction in an all-out manner. D

Shanghai Electric shared experience at the "2020 Industrial Internet Spring Action"

Lu Le

In mid-March, the online event of "2020 Industrial Internet Spring Action", guided by Shanghai Economic and Information Commission, China Academy of Information and Communication Technology and Alliance of Industrial Internet, and jointly organized by Shanghai Industrial Internet Association and sh.people.com.cn, was held in Shanghai through a cloud platform. Many enterprises including Shanghai Electric and relevant organizations participated.

According to the relevant guiding opinions of the CPC Central Committee and the State Council, it is important for us to promote the resumption of work and production in an orderly way, and minimize the impact on the economy, provided that the COVID-19 epidemic is effectively controlled. In this context, the Action, with the theme of "Industrial Interconnection - Embracing the Uncertain Future", aims to unite more industrial Internet enterprises, investment institutions, and consulting companies to offer suggestions from the perspective of market, product, fund or personnel training, to help enterprises resume normal operation as soon as possible.

The event consists of a cloud summit, two policy interpretation meetings and three brainstorming sessions. During the event, industry experts, investment institutions, government officials and other guests discussed the impact of the epidemic on the development of industrial Internet in 2020 from their respective perspectives. On the topic of "Ideas for Bottleneck and Breakthrough of Industrial APP Development", Shanghai Electric Digital Technology Co., Ltd. shared the opportunities for innovative development of industrial APP and effective countermeasures to meet the challenges based on the achievements and experience of Shanghai Electric in the field of industrial APP in recent years.

In addition, Shanghai Electric Party School and Education Center also focused on the topic of "Current Situation and Future of the Development of Industrial Internet Talents", and had an in-depth discussion with experts on how to "integrate industry and education", build the industrial Internet talents system, and enable the combination of enterprise technology and industrial benefits as well as the complementarity of school and enterprise resources through college-enterprise cooperation.

It is understood that as the first President Unit of Shanghai Industrial Internet Association, Shanghai Electric has made full use of its advantages in Internet of Things, information gathering, optimized dispatching, distributed collaboration and remote service in this epidemic, making efforts to minimize the impact of the epidemic and ensure that the work and production is resumed in an orderly manner as planned.

Shanghai Electric delivered automatic production line of masks to Threegun Group

Lyu Yan

During the current COVID-19 outbreak, Shanghai Electric has made efforts to fulfill its social responsibilities as a state-owned enterprise. Recently, Shanghai Electric delivered a high-speed automatic production line for flat face masks to Shanghai Threegun Group, to meet material demands for epidemic prevention and control in the market.

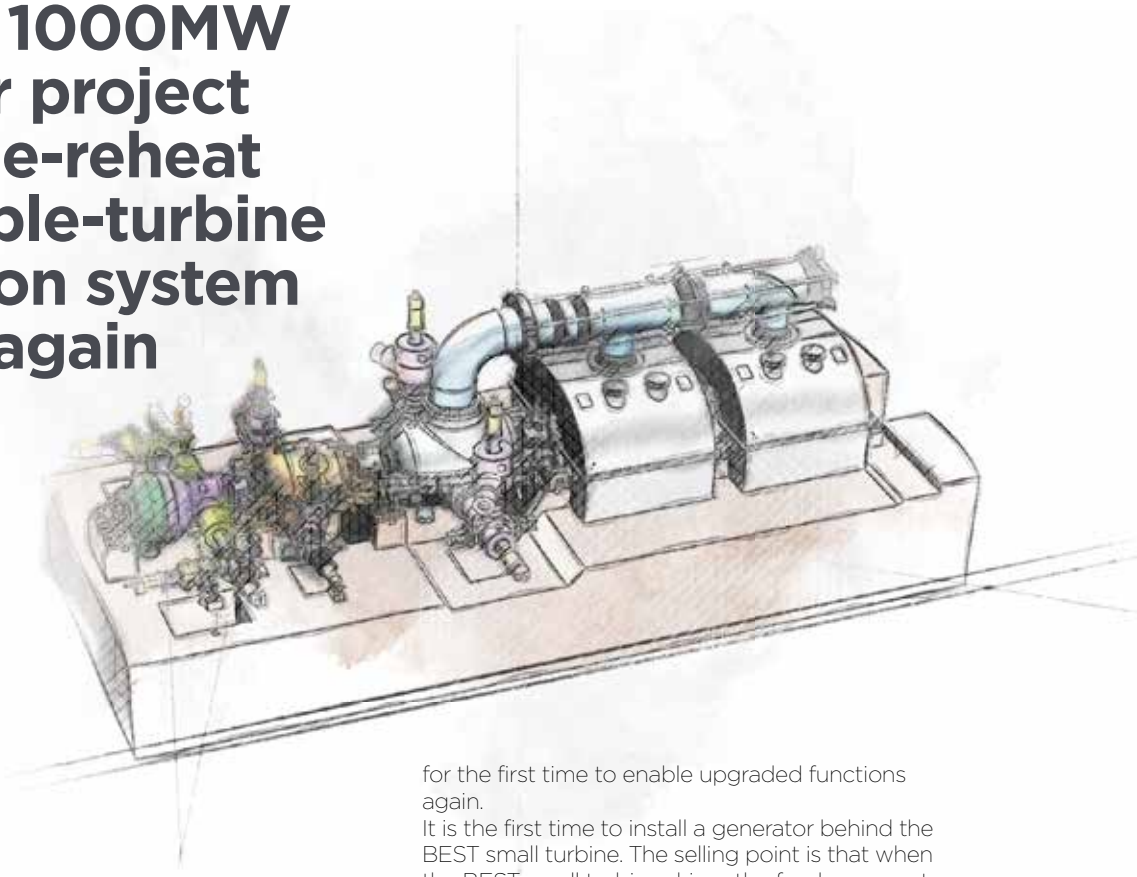
With the spreading of epidemic, masks producers nationwide fail to supply sufficient masks to meet the demands in the market. Masks are made by hand in many plants, where the degree of automation is generally low, and the lack of production capacity has become a supply bottleneck. In such an emergency, with the technical advantages of professional automation equipment manufacturing, new process development and personalized customization, Yinghe Technology Co., Ltd. of Shanghai Electric quickly established a R&D team, and developed the full-automatic all-in-one machine for flat medical face mask in only one week.

Since February 1, Yinghe Technology has made every effort to organize equipment production and mobilized more than 700 installation and commissioning personnel for equipment assembly and commissioning. According to the contract, Yinghe Technology will organize equipment production in batches, with ten production lines to be delivered.

Each production line has a production capacity of 110 masks per minute, and can realize 24-hour automatic and uninterrupted production. Considering the activation of the equipment, 100,000 to 120,000 earloop surgical masks can be produced every day.

Design for 1000MW coal power project with double-reheat unit + double-turbine regeneration system upgraded again

Tang Lu



Recently, Shanghai Turbine Works has successfully completed the processing and assembling design of main components of large and small turbines in the world's first 1000MW turbine project with "double-reheat unit + double-turbine regeneration system" in Ruijin Power Plant in Jiangxi.

Two 1000MW ultra-supercritical double-reheat coal-fired units are planned to be built in Ruijin Power Plant Phase II Project, which will be completed and put into operation in 2021. The new generation of high-efficiency 1000MW double-reheat turbine unit developed by Shanghai Turbine Works is adopted in the project plan. Based on the technical advantages and experience in 1000MW units in Taizhou Project and Jiahuwan Project, the project will be equipped with a double-turbine regeneration system, and the BEST small turbine will be provided for 1000MW double-reheat turbine unit for the first time to enable upgraded functions again.

It is the first time to install a generator behind the BEST small turbine. The selling point is that when the BEST small turbine drives the feed pump set and provides regenerative extraction steam for the large turbine, if there is surplus output, it can also drive the generator to generate power for the power plant, thus saving the user's cost of power consumption. In addition, there are many improvement highlights on the large turbine in the project, such as the highest parameters of 1000MW double-reheat turbine unit, the first design of single flow high-pressure cylinder module, and the first design of single-layer medium pressure inner cylinder module.

It is known that at present, the design of processing and assembling drawing for main parts of large turbine has been completed in Ruijin Project, and the one for subsequent accessories, tools and other parts will be released in April. According to the schedule, large components of the first turbine in Ruijin Project will be delivered in October, and the "BEST" small turbine in September. D

The first overflow tank was successfully hoisted in place in Dubai Project

Huang Aiguo

On March 27 (local time), the first overflow tank was successfully hoisted in place in No. 1 slot-type power generation area of the solar photovoltaic power generation project in Dubai. This is the "first shot" for the Project Department in Dubai to overcome the impact of the epidemic and launch the installation of large equipment. Overflow tank is an important container storage equipment in the heat transfer oil system, and 9 tanks are planned to be installed in No. 1 slot-type power generation area. Each tank is 52 meters long and has a net weight of more than 200 tons, which is the largest single equipment to be transported in the project at present. How to transport the tanks to the project site from Dubai port by land is a big challenge for the Project Department in Dubai. After the equipment arrived at the site, in order to ensure correct installation and epidemic prevention at the same time, the operators would be reminded of safety and epidemic prevention precautions before work to ensure that they operated strictly according to the standard process in the area where multiple workers operated. Meanwhile, in view of the lifting difficulties caused by the oversized and overweight overflow tank, the Project Department conducted in-depth research and repeated verification in detail when formulating the lifting scheme. Afterwards, it directed the installation unit to strictly implement the lifting scheme and successfully have the oversized and overweight equipment hoisted in place. It is reported that the total installed capacity of the solar photovoltaic power generation project in Dubai is 950MW, including a 100MW tower-type photothermal unit, three 200MW slot-type photothermal units and 250MW photovoltaic. It is the world's largest solar power project up to now, with the largest installed capacity, the highest technology standard and the largest investment amount. Guided by the One Belt One Road Initiative, it is also a landmark project of Shanghai Electric Group to put the principle of "Consultation, Contribution and Shared Benefits" in practice.

Building the most advanced integrated offshore wind power industry site in Asia

Construction of Shanghai Electric's intelligent manufacturing site in Haiyang started

Li Lisha Zhu Quansheng

On April 2, the commencement ceremony of Haiyang intelligent manufacturing site of Shanghai Electric was held in Haiyang, Yantai, Shandong. This is another offshore wind power intelligent manufacturing site built by Shanghai Electric after its benchmarking sites in Putian, Fujian Province, Shantou, Guangdong province and Rudong, Jiangsu province. Jiang Qingchun, deputy director of Shandong Ocean Bureau, Wang Fudong, deputy director of Shandong Energy Bureau, and Jin Xiaolong, vice president of Shanghai Electric Group attended.

Based on the Strategic Cooperation Agreement signed by Shanghai Electric and Shandong provincial government last year, Shanghai Electric Wind Power Group will build an intelligent manufacturing site for high-end offshore wind power equipment in Haiyang, and conduct multi-level and all-round strategic cooperation with Haiyang government in the field of high-end energy equipment, ocean industry and offshore wind power resource development. On this basis, the two sides also entered into four cooperation agreements on offshore wind farm, seawater desalination, wind power hydrogen production and ocean ranch, and planned to comprehensively carry out the comprehensive pilot project of offshore wind power integration in Haiyang.

Haiyang Site will be built according to the standard of "Industry 4.0". Shanghai Electric Wind Power Group will introduce the world-class intelligent production technology and management experience, and build a digital and intelligent offshore wind power site integrating product manufacturing, inspection and testing. With 5G technology, a one-stop industrial Internet solution from perception layer, network layer, platform layer to application layer will be used to explore the end, pipe, cloud, security and other fields of intelligent plant, so as to realize high-quality, efficient, low-consumption, clean and flexible production.

After the completion of the project, it will be the most advanced integrated offshore wind power industry site in Asia, integrating technology, manufacturing, experiment, operation and maintenance. It will provide important support for new and old kinetic energy conversion and energy transformation in the region and even in Shandong Province. The construction of the site will be helpful for Haiyang to construct an important wind power industry site in northern China, promoting local energy transformation and upgrading of high-end equipment manufacturing industry.

Shanghai Electric's first overseas combined cycle EPC put into production

Chen Jiyou Zhang Jinming

On March 21 (local time), the trial reliability operation was successfully completed in the Sylhet Expansion Project in Bangladesh. This project is contracted by Shanghai Electric Power Generation Engineering Co., Ltd., and became Shanghai Electric's first overseas combined cycle EPC that was put into production.

With the spread of COVID-19 epidemic worldwide, the unit commissioning and trial operation of the project has been seriously affected, and debugging personnel of many key equipment and system manufacturers failed to arrive at the site. The Project Department has developed special plans during the special period. It actively organized all participating units and equipment suppliers to provide remote commissioning guidance, and organized on-site personnel to conduct the unit reliability test run, on the premise of ensuring the effective epidemic prevention and control measures were taken. During this period, the stability and reliability of the unit indicated by the operation index have been highly appraised by the owner.

It is known that the project is located in the suburb of Sylhet in the northeast of Bangladesh. Based on the first phase of 150MW simple cycle gas power plant, the 1 × 225MW gas-steam combined cycle unit was expanded, with the new main unit of 90MW. The project started on March 15, 2018. It is worth mentioning that the 100MW GVPI small air-cooled generator in this unit is a new product developed by Turbine Generator Works. Being applied for the first time in the world, it has played an important role for Shanghai Electric to seize the overseas market share of new small air-cooled generator.

Kangda Medical "Tianmu" was approved to enter the EU market

Wang Jun

On March 16, Kangda Intercontinental (Ningbo Site), a subsidiary of Shanghai Kangda Medical Equipment Group Corporation Ltd., received the certification on ISO13485-2016 "Quality Management System for Medical Devices" issued by TÜV. Meanwhile, its independently developed Mobile Panel Small C-Arm, "Tianmu" KD-C5100, obtained the "CE" safety certification mark, and is qualified to enter the European market.

TÜV is one of the largest and most authoritative certification institutions in the world, while ISO13485 is the world's leading medical device management standard.

Since the new edition of ISO13485 standard was issued in 2016, TÜV has become one of the first batch of international certification bodies authorized by German Accreditation Council. Germany is a member of the European Union. The report issued by its authorized certification body is widely accepted and recognized in Europe, This time, the quality management system in Kangda Intercontinental Ningbo Site has been approved by TÜV, which is crucial for the company to have its cutting-edge medical devices enter the international market.

Kangda Intercontinental (Ningbo Site) is a wholly-owned subsidiary of Kangda Medical. Since its operation in 2018, it has been focusing on independent research and development. At present, it has developed a series of product lines including CT, MRI, ultrasound, mammography, gastrointestinal machine, C-arm, DR, medical vehicle-borne and dental CT. At the beginning of its establishment, the company was built and managed in strict accordance with the international standards of the quality management system, aiming to promote more series of products to enter the international market.

Shanghai Electric Automation Group makes efforts to expand new energy vehicle market in Europe

Lyu Yan

At present, Shanghai Electric Automation Group is planning to create an overall solution for the production line of lithium battery by integrating internal resources, so as to give full play to the collaborative advantages, upgrade industry level, and improve the intelligent manufacturing industry chain.

Currently, overseas vehicle enterprises are speeding up the business layout of new energy vehicles, and major lithium battery enterprises at home and abroad will expand their production; while Yinghe Technology, Manz and Anwha Automation, subordinate to Shanghai Electric Automation Group, have different technical advantages in the lithium battery segment. In order to seize the development opportunities in new energy vehicle and energy storage markets and build a platform for business collaboration and resource sharing among subordinate enterprises, Shanghai Electric Automation Group plans to support association between strong enterprises. It is based on the production capacity of lithium battery equipment in Yinghe Technology, the advanced technology of lithium battery cell in Manz, and the solutions for lithium battery module and PACK system in Anwha Automation. At the same time, with internal resources of Shanghai Electric, technical advantages of Shanghai FANUC Robotics and financial advantages of Shanghai Electric Leasing, Yinghe Technology, Manz, Anwha Automation and Shanghai FANUC Robotics will work together to create an overall solution and form an integrated platform, with Shanghai Electric Group Automation Engineering as the core and financial leasing as the financial means. Shanghai Electric Automation Group hopes to expand the global new energy market through such collaboration. Supported by the high-end core equipment of lithium battery in Manz, they will gradually promote auxiliary equipment for the lithium battery production in Yinghe Technology and Anwha Automation, expand the new energy vehicle market in Europe, and strive to win more market share, thus helping Shanghai Electric Automation Group achieve its strategic goal of 10 billion RMB as soon as possible.

Tianjin Pipe Succeeds in the Development of Vertical Deep Sea Pipe

Huang Yongzhi Liu Juan

The second round of pilot exploitation of gas hydrate (also called "combustible ice") in Chinese seas has succeeded, which is organized and carried out by China Geological Survey of the Ministry of Natural Resources. The vertical deep sea pipe developed by Tianjin Pipe Corporation Co., Ltd. independently provides strong guarantee by its excellent performance for the pilot exploitation to create two new world records, which breaks the monopoly of foreign companies in this segment.

At the depth of 1225 meters in Shenhu Waters in South China Sea, the pilot exploitation creates two new world records in "total gas output" and "average daily gas output", manages to master the core technology of horizontal drilling in shallow soft strata under the deep sea, and ascends from "exploratory pilot exploitation" to "experimental pilot exploitation". This technology is as sophisticated as forging iron on a piece of tofu, and the casing used in this process is important for the project to move forward, which shall resist the adverse impacts created by high pressure, erosion, washing off and other critical conditions of the deep ocean, meet the stringent criteria of the deflecting of horizontal wells in shallow soft strata and have adequate gas seal capacity. Tianjin Pipe utilizes its leading strengths in seamless tubes and develops new vertical deep sea pipes of two sizes by concentrating R&D resources despite huge production difficulties and short delivery period. It won all the carbon steel casing orders in the bid for the second round of pilot exploitation project.

Yinghe Technology obtained big orders for automatic lithium battery production equipment

Lyu Yan

Recently, Yinghe Technology, a subsidiary of Shanghai Electric Automation Group, signed supply contracts on automatic lithium battery production equipment with CATL, Soundon New Energy and Hunan Times United respectively, with a total amount of nearly 1.2 billion RMB, having obtained the first large orders after the resumption of work.

The orders include a lot of key equipment in front, middle and back sections of lithium battery production line. The production line contract signed with CATL includes coating machine, roll cutting machine, laser die-cutting machine, shell insertion machine, etc.; the order with Soundon New Energy includes aluminum shell lithium battery full-automatic production line and soft package lithium battery full-automatic production line, involving production lines of coating machine, roll cutting machine, winding machine, automatic assembly line, cutting and stacking machine and other equipment, which can meet the requirements for production capacity of 5GWh; the contract with Hunan Times United involves coating machine, roller press, slitting machine, winding machine, automatic assembly line and other equipment.

Shanghai Electric 8.0 wind turbines "settled" in far-sea offshore wind farm in Changle, Fujian province

Zhu Quansheng

Recently, the bid opening was done for the procurement of the first batch of wind turbines and ancillary equipment for the Fujian Changle Far-sea Offshore Wind Farm Zone C Project, and Shanghai Electric Wind Power Group successfully won the bid. The total capacity of the project is 200MW, which is the first order of Shanghai Electric for 8MW offshore wind turbine.

It is known that the first 8MW offshore wind turbine prototype of Shanghai Electric has been hoisted in Shantou, Guangdong Province, and relevant experience has been accumulated for the further development. The maximum power record of offshore wind turbine in mass application has been increased to 8MW in the far-sea offshore wind farm in Changle, Fujian province, which demonstrates Shanghai Electric's powerful strength in the field of offshore wind power in China and further consolidates its leading position in the domestic market.

The project of Changle Far-sea Offshore Wind Farm Zone C in Fujian province is located in the eastern sea area of Changle City and the south shore of Minjiang Estuary, Fujian Province. The center of the project site is about 40 kilometers away from the coastline of Changle City. According to the project construction schedule, it is planned to purchase in batches. The first unit will be delivered in August this year.

Building intelligent protection for elevator users

"New ideas" of Shanghai Mitsubishi Elevator

Bai Lei

During the critical period of COVID-19 epidemic prevention and control, Shanghai Mitsubishi Elevator has used the advanced intelligent health technology to avoid cross infection to the greatest extent and ensure user safety. All the technologies utilized include "voice-operated elevator", non-contact recognition-based intelligent voice function, escalator handrail with sterilization and disinfection function, elevator car air purification and bacteriostatic function as well as the anti-bacterial button.

On the evening of March 6, Shanghai Mitsubishi Elevator provided a "voice-operated elevator" solution to Greenland Group. Passengers can go up and down by the elevator just through voice control, which is convenient and sanitary, offering a new experience of taking the elevator with intelligent technology.

In order to avoid cross infection in the elevator, we should prevent the elevator button from being the carrier for virus transmission. Shanghai Mitsubishi Elevator has added the "voice-operated elevator" function to four staff elevators in the building. After the floor registration is completed by voice identification, the passengers can directly arrive at the floor without touching the button. In this way, they don't need to use hands to push the button, thus effectively avoiding the cross infection of bacteria and viruses. The system can not only identify the voice, but also enable the "call" function through special configuration on each floor. You can call the elevator just by saying "Up!" or "Down!" The installation of the speech recognition system will not damage the original decoration in the elevator car, and the transformation can be completed in only a few hours. The system is suitable for not only the new elevator, but also the elevator in use through transformation.

In addition, Shanghai Mitsubishi Elevator has equipped the escalator handrail with an intelligent UV disinfection function. It is tested that the system can effectively kill up to 99.99% of Escherichia coli and Staphylococcus aureus, and it has two features. One is the real-time disinfection function, that is, sterilization is completed while the handrail is running. Another is the non-contact sterilization. Compared with liquid sterilization, it can not only avoid secondary contamination, but also enable more extensive sterilization.

Elevator car is a public space and relatively closed, where the germs are easy to accumulate. The aqua ion air conditioner and fan launched by Shanghai Mitsubishi, equipped with a new type of aqua ion generating device, can cause denatured protein in the pathogen by releasing nano-sized aqua ions, which can inhibit the pathogen. The rotate speed of fans can be intelligently adjusted according to the number of passengers, enabling rapid air exchange and keep the air fresh and clean in the car space. The antibacterial button developed by Shanghai Mitsubishi Elevator is made of the patented antibacterial stainless steel to ensure that the button features good antibacterial effect.

The intelligent elevator call system includes two non-contact call modes: mobile phone App and face recognition. Passengers can call the elevator and register the floor by these two modes, so as to isolate the cross infection of virus. In the office building, the floor prediction system equipped with face recognition technology can avoid congestion in the car through pre-distribution, and minimize the waiting time and boarding time of passengers. In the residential elevator, owners can also register the floor through the operation box equipped with face recognition function in the car. At present, this technology has been used in escalator products, and will have a good prospect of sale in the future.

NEW OPERATION & MAINTENANCE MODE IN THE ERA OF INTELLIGENCE

Planner | **Shen jin** **Tu min**

The COVID-19 outbreak has brought huge impact on the economy and society, and all walks of life demonstrates different appearances amid the gloom, some of them rising and some of them falling. The question of dialectics on whether this impact is a crisis or an opportunity is best illustrated in this epidemic outbreak. The crisis is the downward pressure brought by supply chain interruptions and weak demand of traditional industries and the opportunity is the rapid growth of "cloud consumption" and non-contact online economy against the downtrend. In this condition, new business forms and new patterns are confronted with new opportunities of accelerated development.

While new consumption patterns are releasing the gushing vitality, the manufacturing industry is quietly transforming. Due to the epidemic outbreak, more and more manufacturing enterprises have seen the convenience brought by digitalization, networking and intelligence in terms of dovetailing of supply and demand of materials and equipment, lean production management, and remote operation and maintenance of equipment, and more and more manufacturing enterprises realized the importance of digital transformation and upgrading. For life, undoubtedly, "Internet plus" adds a suit of armor to our real life to defend against external invasion, so that we could buffer anxiety and stress in the virtual digital world. For production, "Internet plus" has already become the new infrastructure support for us to overcome difficulties in the epidemic situation, and will be our attempt to seek opportunities from crises in the post-epidemic era.

SHANGHAI ELECTRIC: ONLINE SERVICES CREATE VALUE

The outbreak of COVID-19 posed a severe challenge to the economic and social development, meanwhile, it promoted the accelerated germination and rapid development of new economic models. Undoubtedly, the Action Plan of Shanghai Municipality on Promoting the Development of Online New Economy (2020-2022) officially promulgated on April 13, 2020 was quite a reassuring force for the explorers on the path of digital transformation.

Seize the moment and go with the flow. In the epidemic situation, relying on the long-term investment in digitalization and intelligence and the first mover advantage, Shanghai Electric has taken successive actions in terms of intelligent procurement, smart factory, remote diagnosis and industrial internet and launched the all-round intelligent upgrading of the whole industrial chain. For the past few years, Shanghai Electric has always been actively exploring the deep integration of the next-generation information and communication technology and the manufacturing industry. Since 2007, the companies of Shanghai Electric Group, e.g. Shanghai Mitsubishi Elevator Co., Ltd., Shanghai Electric Wind Power Group Co., Ltd. and Shanghai Electric Power Generation Group, have begun to successively build such platforms as elevator IIOT, Iwind system and remote operation & maintenance platform for power plants. In 2018, through integration and unified planning of superior resources in all industries, Shanghai Electric built an industrial Internet platform, i.e. SEunicloud, gradually integrated intelligent products into SEunicloud platform, and promoted the intelligent applications in such fields as smart power plant, operation & maintenance of wind power farms, integrated energy management, comprehensive maintenance of metro trains and medical rehabilitation equipment, so as to realize on-line analysis of operation data, to offer value-added services to users, including software subscription, optimization of operation & maintenance, equipment leasing, and assets custody, to intensify and promote servitization of products and productization of services, and to accelerate the development of new industries and business patterns.

NEW INTELLIGENT OPERATION & MAINTENANCE MODE FOR WIND POWER FARMS: UNATTENDED AND AUTOMATIC

Since the construction plan of artificial intelligence application scenarios was launched, Shanghai Electric's wind power company first made a figure in the intelligent operation & maintenance field through embedding artificial intelligence factors.
How intelligent is the operation & maintenance of wind power stations? On the big screen of the data center of Shanghai Electric Wind Power Group, there are the real-time data and pictures, representing the online intelligent operation & maintenance platform of Shanghai Electric Wind Power Group, i.e. "Iwind System". This system serves the full life cycle of wind power farms, covers five platform systems, i.e. "Observation, Aggregation, Intelligence, Meteorology and Process", and can meet the all-round application scenario needs of wind power users. Besides, it can create value for users through data insight, thus improving the core competitiveness of Shanghai Electric in design and manufacturing of wind power equipment, establishment of wind power farms and operation & maintenance of wind power farms. The daily operation & maintenance mode of "unattended automatic farms" will directly reduce the manpower cost in operation & maintenance.
Among the five platform systems of "Iwind System", "Iwind Observation" is a monitoring platform based on distributed processing systems and AI techniques, which is the next-generation data processing system and network transmission system; "Iwind Aggregation" is a processing platform based on big data, which rapidly extracts valuable analysis from massive data for users through distributed data processing and data warehouse and forms digital enterprise perspectives; "Iwind Intelligence" applies advanced AI techniques and combines with massive data analysis to realize the dynamic adjustment of control strategies, to make the operation of wind turbines and wind power farms more intelligent, and to enhance the operation & maintenance capacity on the basis of the Voice Assistant and AR based intelligent customer service techniques through machine learning; "Iwind Meteorology" blends in such fields as operation & maintenance and monitoring through applying fast meteorological prediction techniques and ocean current analysis techniques to realize accurate prediction and fast operation & maintenance; "Iwind Process" is a process management platform serving the full life cycle of wind power farms, which can make decision making more efficient and manufacturing more intelligent.
In recent years, along with the transformation and upgrading of the manufacturing industry and driven by the trend of intelligent manufacturing, Shanghai Electric's "AI plus Industrial Internet" solution emerged. This solution makes the most of the advantages of artificial intelligence in deep learning. It can not only realize the intelligent matching of troubleshooting solutions for wind turbine generators, but also contribute to the intelligent operation & maintenance system for wind power farms. Besides, the accurate prediction based on big data, cloud computing, knowledge mapping and machine learning algorithm will contribute to the transition of businesses from passive services to proactive services. In the future, active maintenance and predictive maintenance & overhaul will become the new direction of intelligent operation & maintenance of wind power farms.
However, in the past, due to the widespread distribution of wind power farms, a large number of wind turbines and the harsh working environment, it's difficult to detect the failures of wind turbines during operation in time, thus resulting in the increase in the manpower cost of field operation & maintenance and the training cost of professional technicians and making the overall operation & maintenance efficiency of the wind power system hard to improve.
Nowadays, the Iwind system will carry out more accurate prediction and intelligent warning with regard to the failures of wind turbine generators on the basis of the intelligent warning system based on big data, and apply AI techniques to guide overhauls and operation & maintenance to prevent wind turbines from greater losses and lower the training cost of

senior technicians.
At present, "Iwind System" has integrated intelligent video surveillance, energy management platform, current transformer monitoring, box transformer substation monitoring, wind power prediction system and failure diagnosis system into an all-in-one monitoring system, which can meet all monitoring needs of wind power farms and collect and analyze relevant monitoring data. In the future, it will simulate the actual operation conditions of wind turbines more accurately, provide more automatic and intelligent troubleshooting solutions, and improve the operation & maintenance efficiency.

NEW INTELLIGENT OPERATION & MAINTENANCE MODE OF GAS TURBINES: CUSTOMIZATION WITHIN THE FULL LIFE CYCLE

As wind power farms run stably after having been integrated with intelligence, how do traditional gas turbine power plants take advantage of intelligence and make innovations in terms of operation and development?
With the growing demand of global power plants for intelligent, digital and modernized development, intelligent power stations apply internet and big data resources on the basis of automation, digitalization and informatization and give full play to the strong information processing capability of computers to form an intelligent power generation operation control and management mode with self-learning, self-organization, self-optimization and self-recovery functions.
Intelligent operation & maintenance is a process that analyzes and mines operation & maintenance data on the basis of AI algorithms such as machine learning and makes use of automation tools to implement operation & maintenance decisions. Thus, the main techniques of intelligent operation & maintenance include operation & maintenance big data platform, intelligent analysis and decision-making components and automation tools.
From the perspective of power plants, at present, the plant-level monitoring systems and electronic management systems have already been fully used, especially in gas turbine power plants. Gas turbines, as standardized components, have extremely high degree of automation and data acquisition systems. However, since users cannot grasp gas turbine design and manufacturing techniques, in the actual operation & maintenance process, they could only act in accordance with the operation manuals provided by original equipment manufacturers. Due to the complicated conditions on site, especially the volatility of the power grid environment and the frequent start & stop of equipment, original equipment manufacturers are required to provide technical services in the actual operation process as the core service content, which can not only enhance the operation & maintenance capability of gas turbine power plants, but also increase the service value of original equipment manufacturers.
For the pain points of users in terms of equipment use and operation & maintenance, Shanghai Electric's intelligent operation & maintenance service for gas turbines can provide solutions in combination with big data technology.
Shanghai Electric has been focusing on the research, development and production of heavy-duty gas turbine products for more than ten years, so we have fully grasped the full life cycle design, production and service techniques of gas turbines and can help the construction of smart gas turbine

power plants. Moreover, the efficient integration of Shanghai Electric's prominent expertise and user requirements, on one hand, can help users improve the production and operation detection digitalization, control automation, information integration and management efficiency of power plants, and on the other hand, can realize the collection of operation & maintenance information and interconnection of spare parts within the full life cycle of products, improve the competitiveness of new gas turbines and service products, and explore the emerging market of intelligent products through the information interaction between users and original equipment manufacturers. Only in this way, Shanghai Electric can have a foothold in the market where industrial internet competition is increasingly fierce.

Technological innovation, service delivery and sound development are the core of intelligent operation & maintenance service providers. Thus, "Remote Monitoring and Diagnosis Center for Gas Turbines" and "Simulation Testing Center for Gas Turbines" established by Shanghai Electric in 2017 have received close attention from the outside. Relying on the group's huge user groups and generator operation data, we accelerate the autonomous design simulation process of gas turbine control systems, and make relevant control logic improvements and hardware upgrading on the basis of intelligent equipment, strengthen the application of Shanghai Electric's remote diagnosis center for gas turbines and improve the service level of gas turbines.

On the basis of equipment design, manufacturing and service knowledge and in combination with big data, intelligence, and industrial internet concepts, Shanghai Electric has built an intelligent operation & maintenance system for gas turbines, i.e. SIMPLE (Shanghai Intelligent Maintenance Platform for Lifecycle Economy), which can continuously offer customized intelligent solutions within the full life cycle of gas turbine power plants for users.

From the fact that Shanghai Electric's intelligent process runs through the full life cycle of a power plant, it can be seen that, in the construction phase of the power plant, Shanghai Electric can provide the digital models of gas turbine island-level or plant-level primary devices for the infrastructure construction period, and the power plant can guide the construction in a three-dimensional way to effectively prevent collision and avoid waste in infrastructure construction; in the operation phase of the power plant, Shanghai Electric can record the events confronted by all spare parts and components on the basis of digital models of equipment, so as to form equipment life archives; in the operation & maintenance phase of the power plant, Shanghai Electric can provide remote monitoring and expert support for equipment, and the remote diagnosis center for gas turbines can have access to power plant data in real time to carry out remote diagnosis and provide health monitoring and failure diagnosis services for customers.

Users can click each valve and bolt accurately, view its corresponding specifications, operation & maintenance manual and installation manual, and add operation & maintenance and overhaul logs on the platform, thus forming equipment life archives for each part and component. The life archives of parts and components can be used to establish IoT-based spare part warehouse for group-level users among manufacturers. Furthermore, it can vitalize the IoT-based spare part warehouse of manufacturers and the spare part management of Shanghai Electric, so as to provide strategic warehouse management service for users.

As digital transformation further develops, the intelligent operation & maintenance has become the new driver for gas turbines to upgrade traditional industries and promote industrial development, and the construction of intelligent infrastructures and platforms as well as the interface with intelligent applications and services has become the key for Shanghai Electric's transition from a gas turbine manufacturer to an intelligent enterprise.

NEW INTELLIGENT MODE FOR ELEVATOR OPERATION AND MAINTENANCE: HEALTH STATUS MONITORING THROUGH REMOTE "CHECK-UP"

The Service Center thousands of miles away can fully monitor the "health status" of all the elevators. Shanghai Mitsubishi Elevator Co., Ltd. has developed a device which is equipped with clairvoyance and clairaudience. Once the elevator breaks down, the "failure cause" can be identified by the back end system promptly through wirelessly uploaded data.

In the remote center of Shanghai Mitsubishi Elevator Installation and Maintenance Branch, a "map" screen can monitor the dynamics of the nationwide networked elevators in real time. The maps of China and Shanghai dotted with bright marks as well as the internal monitoring screen of an elevator are displayed. Those bright marks represent the elevators in operation.

The personnel on duty told the reporter that once an elevator broke down, the signal would be displayed in the "map" screen of the center and the nearest personnel for emergency repair would be assigned to the site to fix the elevator immediately through the GP. In this way, the passive emergency repair has been transformed to active emergency repair, thus greatly shortening the emergency repair response time and effectively improving the emergency repair efficiency.

In addition, remote fault diagnosis and analysis can also be conducted through remote monitoring of elevators in the service center. Through the mobile application platform, maintenance personnel can grasp the "fault conditions" of elevators immediately, and tackle the causes on site.

In the event of a trapping accident in the elevator, the elevator remote monitoring system can be used to identify the conditions of the passengers in the elevator in real time. Besides, a voice system can also be employed to placate the passengers in the elevator in time, stabilize their panic moods and provide them with safety protection knowledge, thus facilitating rescue through effective cooperation.

What is more"intelligent" is that the monitoring system can transmit the health status of the elevator to the service center in real time, including the daily health indicators of elevators such as the number of times the doors are opened and closed and the number of times the steel wires lift and fall. The big data analysis helps technicians fully understand the recent health trend of a certain elevator and identify the time to replace accessories.

The IoT-based elevator system - "Smart Elevator" aims to connect elevators distributed in various regions and of various types into the network through Internet of Things technology. By carrying out dynamic monitoring, the information and real-time operation status of elevators in case of failure can be timely transmitted to the system.

For example, there was an elevator accident in Shenzhen a few years ago. Instead of following the procedures when adding lubricating oil, the maintenance personnel stuck a hole in the coke bottle and added oil with it. Eventually, the oil dripped down and caused the accident.

According to the Report on the Safety of Special Equipment in 2019 of the General Administration of Quality Supervision, Inspection

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and Quarantine, there were 33 elevator accidents and 29 deaths in 2019, with the number of accidents and deaths accounting for a significant proportion. Among the causes of accidents, there were 9 cases of illegal operation or improper operation, 1 case of unlicensed operation, 4 cases of equipment defects and failure of safety devices or protection devices, 2 cases of improper emergency rescue (self-rescue), and 8 cases of inadequate safety management and maintenance. According to industry insiders, at present, more than 90% of elevator enterprises are still relying on the traditional method of written records for after-sales maintenance and inspection, which is inefficient and extensive in management.

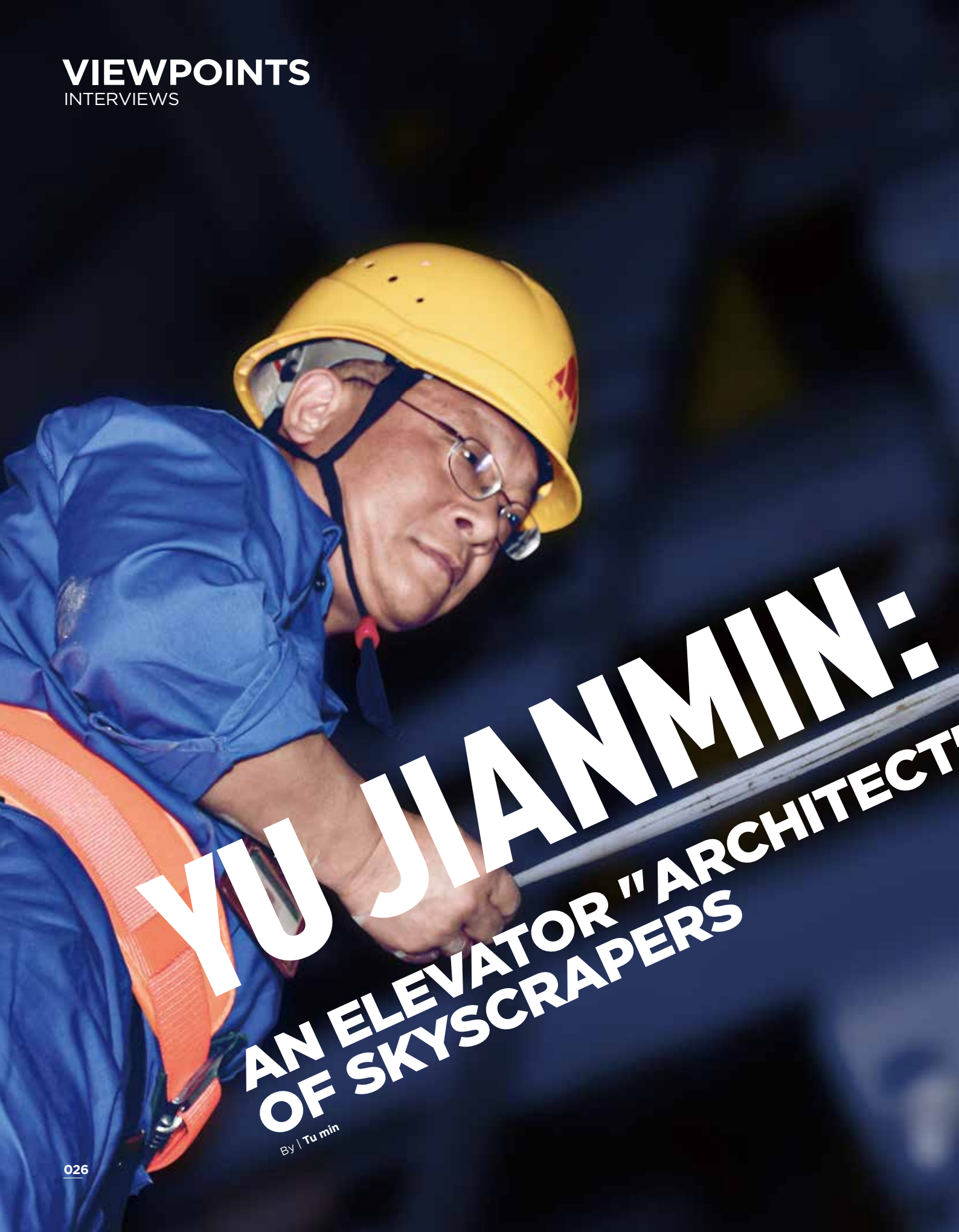
In addition, vicious competition in the maintenance market is also one of the reasons for frequent elevator accidents. It is reported that there are too many elevator maintenance companies in China, with more than 300 in Shanghai alone. The average number of elevators requiring maintenance is small and the price is subject to vicious competition. As a result, maintenance companies with "inferior quality and low price" has been flooding the market, even forming an external effect of "the inferior outweighing the superior".

Based on the "Smart Elevator" system, the largest remote monitoring service platform in China, Shanghai Mitsubishi Elevator provides 24-hour service for the whole year, realizing refined management and improving the user experience in an all-round way. Shanghai Mitsubishi Elevator has fully implemented the transformation and upgrading measures for elevator manufacturing enterprises, so as to provide passengers with safe and reliable experience.

Innovation drives reform, while increment drives stock. When digitalization and intelligence has emerged in the fields of wind power, gas turbines and elevators, and when artificial intelligence is combined with industrial Internet, intelligent manufacturing has brought us numerous surprises and achievements. In the future, we will witness the further extension and application of artificial intelligence in manufacturing industry.

With the great opportunity of industrial transformation, Shanghai Electric will actively participate in the digitalization of "new infrastructure construction", continue to strengthen the online data advantage of the industrial Internet platform and give full play to the offline resource strength of advanced manufacturing industry. Relying on the integration of Yangtze River Delta, we will connect users with intelligent products and create value for users with online services, thus successfully building the brand of "online new economy" of Shanghai.

In the future, cloud and connectivity will boom. We believe that Shanghai Electric will develop with a strong momentum and have a brighter future.



YU JIANMIN: AN ELEVATOR "ARCHITECT" OF SKYSCRAPERS

By | **Tu min**

Nikolaus B. Enkelmann said in his book The Gold Key of Collections, a person must have strong will, unconventional innovative solutions to problems and high enthusiasm for work in order to succeed.
This coincides with the opinion of Yu Jianmin, the engineering director for major projects of Installation Department, Shanghai Mitsubishi Elevator, who often encourages new employees: "You must make persistent efforts to achieve it once you have a goal, and you should never flinch from the difficulties. If you engage in technology, you should allow failure. But you should be confident that such failure can only be a part of the process, not the result."
The road to success is not crowded because there are not many people who insist. For his dedicated pursuit and efforts, Yu Jianmin was selected as one of the first batch of craftsmen in Shanghai. As an elevator "architect" of skyscrapers, Yu Jianmin personally participated in the elevator installation in Shanghai Jinmao Tower and Shanghai Tower, and he wants to continue his career.

A CRAFTSMAN WITH STRONG WILL

In February 1975, Yu Jianmin, at the age of 19, began his work at the Great Wall Machinery Factory in Minhang District, a military gun manufacturing enterprise in the mechanical and electrical industry. Due to the six years of work experience in the military enterprise, Yu Jianmin has been endowed with a strong will like a soldier has, which plays an important role in his work of elevator installation later.
"At that time, in order to save some subsidies, my master and I always took a green train on a business trip, placed several pieces of newspaper under the seat, and then fell asleep there. In this way, we went to install elevators everywhere in the country. " Such experience made Yu Jianmin reluctant, as he had a monthly salary of 40 or 50 yuan only; however, those who resold watches or tape recorders could earn more money in one trade than his salaries for several years. Therefore, he also came up with the idea of making business.

Unexpectedly, after he mentioned this idea, his master criticized him, "it's not right for a worker of the state-owned enterprise to engage in speculation. The safest and most glorious thing is being honest and work hard. If you go into business, I will sever the relationship between us as master and apprentice. " Yu Jianmin was deeply influenced by his words. From then on, he determined to keep working in the field of elevator installation.
Elevator installation seems to be ordinary, but in fact, there may be challenges and even dangers in the work. In his nearly 40 years of work, Yu Jianmin saw the death of foreign experts and his colleagues due to the accidents at the construction site. He also worked with other workers to rescue the Japanese experts and some colleagues from the fire and collapsed ruins. Yu Jianmin believes that it is essential for elevator installers to have a strong will.
Because of his strong will, Yu Jianmin is not impetuous or slack when facing difficulties and temptations, and he never gives up. He remains true to his original aspiration, responds calmly and perseveres in his pursuit.
Looking back on the past years, Yu Jianmin said, "I'm not fighting alone. We represent Shanghai Electric. We have set many records in the domestic and international elevator installation industry with our hands." He has received many awards including the Shanghai May 1st Labor Medal, Shanghai Technical Expert and National Service Star of Mechanical and Electrical Industry, and his team has won the honors of Shanghai Model Collective and Shanghai Worker Pioneer.

DEVELOPING INNOVATIVE SOLUTIONS TO ACCOMPLISH DIFFICULT TASKS

Shanghai Tower and Shanghai Jinmao Tower are the name card of Shanghai, and they also represent the "height" of the city. How many people have thought about how to install elevators in order to ensure the healthy and clear "life blood" of these skyscrapers? What are the unknown difficulties and dangers in the process of elevator installation? According to the conventional installation process, the Shanghai Tower will not be installed with elevators until the structure of the building is completed and the elevator hoistway is closed. This will extend the construction period by 2 years or so which will delay the completion of the building. It is Yu Jianmin's special way that shortens the elevator installation period of the building by 18 months and makes it the world's most stable and comfortable super high-speed elevator group.

How did he do it? Yu Jianmin with his colleagues designed and developed the segmented installation scheme and the platform for installation of mega high-rise elevators without scaffold after fully considering the progress of building construction, and specific factors such as concrete cylinder verticality, steel structure deformation, high-rise building settlement, swing coefficient, and fine decoration of elevator hall. This is the key to complete the elevator installation of Shanghai Tower ahead of schedule.For an elevator installer, it's not the theoretical knowledge or fortune that makes him accomplish the difficult tasks, but the long-term practical experience and unconventional innovative solutions to problems that make him succeed.

Another experience of elevator installation in Jinmao Tower is also unforgettable to Yu Jianmin. At the beginning of 1998, the construction of Jinmao Tower was at the final stage. At that time, the wall ladder for construction must be placed on the east elevation due to the architectural structure. When completing the building structure, the ladder must be removed in order to close the glass curtain wall occupied by the wall ladder. However, the ladder could only be removed when all the fire elevators in the building were installed. The hoistways of the three fire elevators from the 50th to the 88th floor were just beside the unclosed glass curtain wall. According to normal operation procedure, the fire elevator could only be constructed after the glass curtain wall was closed.

"Curtain wall closure, wall ladder removal and fire elevator installation conflicted with each other. If the fire elevator was not installed in time, the whole project could not proceed normally." Looking back on the situation at that time, Yu Jianmin was still a little excited, "it was a tough battle, and we must get it over no matter how difficult it was."

Yu Jianmin and his team members fully estimated the possible adverse conditions during the construction and designed various countermeasures. In the wettest and coldest season in Shanghai, they took dry provisions and worked hard in the tough conditions. They spent four months on the installation of three fire elevators at the height of 420 meters, successfully creating the vertical transportation lifeline of the building.

SETTING FOUR WORLD RECORDS WITH HIGH WORK ENTHUSIASM

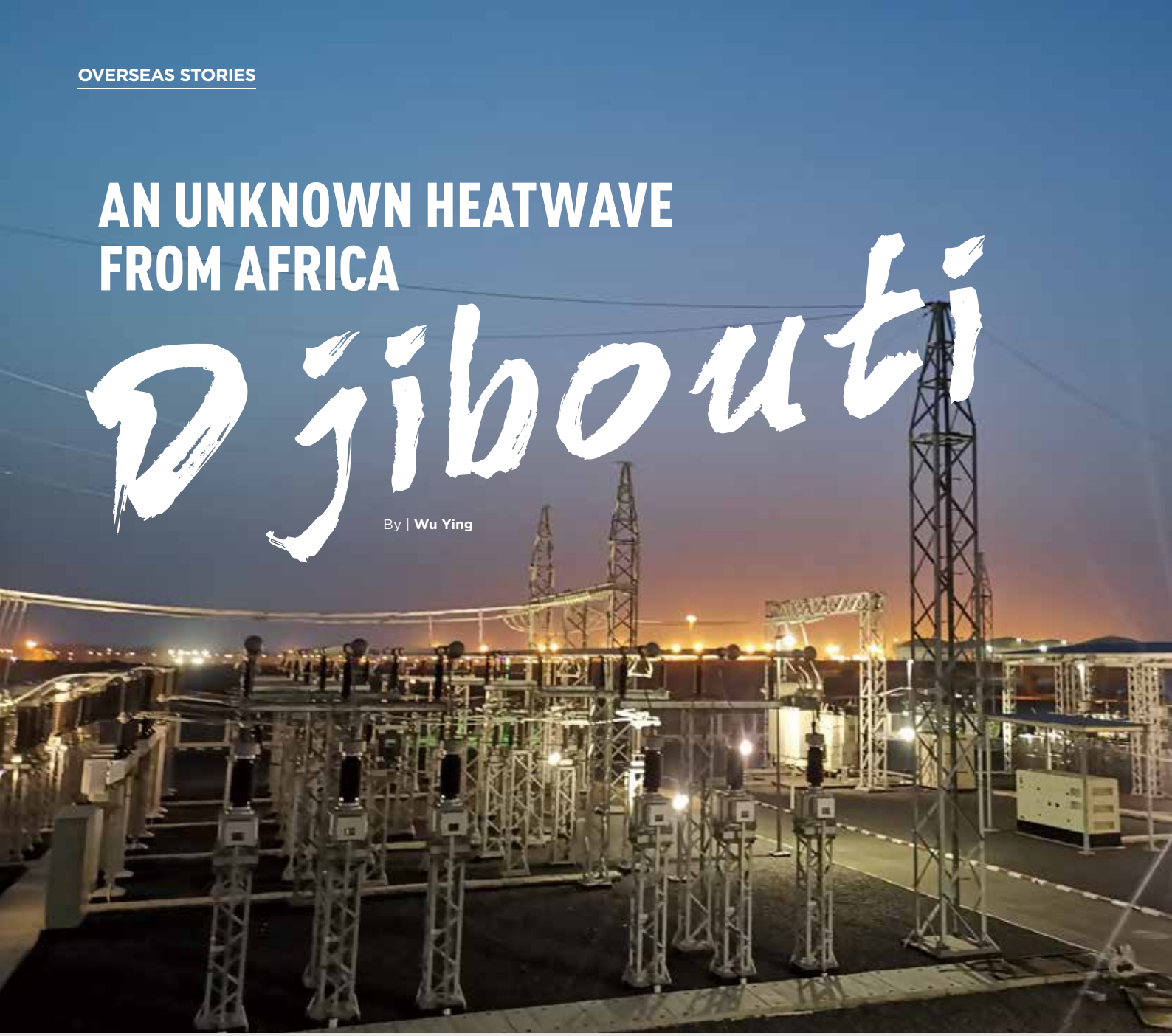
At the mention of Shanghai Tower, we might immediately think of a number, i.e. 632m. However, in the mind of Yu Jianmin, there is another group of data: Shanghai Tower has 114 elevators in total. Shanghai Tower sets several world records in elevator installation industry: first, the running speed reaches 20.5m per second; second, the running speed reaches 10m per second; third, relying on wire rope traction, the elevator rises to the height of 579.78m at a speed of 8m per second. Behind the remarkable achievements, there were the wisdom and sweat of Shanghai Electric people.

Shanghai Mitsubishi Elevator Co., Ltd. ranked among the top 10 of elevator enterprises of “2020 List of Preferred Suppliers and Service Providers for Top 500 Chinese Real Estate Development Enterprises” and was crowned on the list for the 10th year in a row due to the brand selection rate of 19%. This was a tribute to their excelsior attitude in accomplishing the elevator installation work of the building. From Shenzhen Metro, Chongqing Metro, Tianjin Metro, to Shanghai Mart, Shanghai Jinmao Tower, Jinan Shandong Hotel, CCTV new site, Shanghai Tower... In so many remarkable projects, towering buildings and changing cities, you can find the marks left by Yu Jianmin and his team. Now, what makes Yu Jianmin prouder is that his apprentices have also become top talents in the industry. In his pursuit of a higher technical field, Yu Jianmin has maintained the same idea, "Keeping enthusiasm for work is the guarantee for my team to be successful. We always value customer service highly and strive to create a first-class service brand, thus providing safe and comfortable service for customers." "In our mind, in addition to the installation and maintenance of elevators, we have a dream to ensure the safety and comfort of each user." Every time when talking about his next goal, Yu Jianmin always says, "I will keep improving to work on the next magnificent project as a craftsman."

AN UNKNOWN HEATWAVE FROM AFRICA

Djibouti

By | **Wu Ying**



As general contractor, Shanghai Electric Power Transmission & Distribution Group played a key role in the contract Lot 2 of Ethiopia-Djibouti Railways power supply project, and the construction of substations in Doraleh and Goubet, Djibouti. These long-awaited and much-expected projects covered a wide area and entailed a daunting workload. Responding actively to "1 Belt 1 Road" initiative, Shanghai Electric Power Transmission & Distribution Group will spare no effort in every single project in Djibouti.

For most Chinese people, Djibouti is all Greek. Their knowledge of this East African country, where over 900,000 people inhabit an area as big as one and a half Beijing, is near zero. Not well known as its neighbors Ethiopia and Somalia, Djibouti, close to the Bab al-Mandab, guards the outlet to the Indian Ocean and connects at the same time with Africa, Asia and Europe. A vantage point like this undoubtedly draws global attention to this small country.

Along with the progression of " One Belt One Road" initiative, a great deal of Chinese companies landed in Djibouti to support the construction of local infrastructure. Against this backdrop, Shanghai Electric Group decided to get into Djiboutian power engineering market by signing with Djibouti National Electricity Company on the contract Lot 2 of Ethiopia-Djibouti Railways power supply project in 2014. This agreement also marks China's first power EPC project in Djibouti.

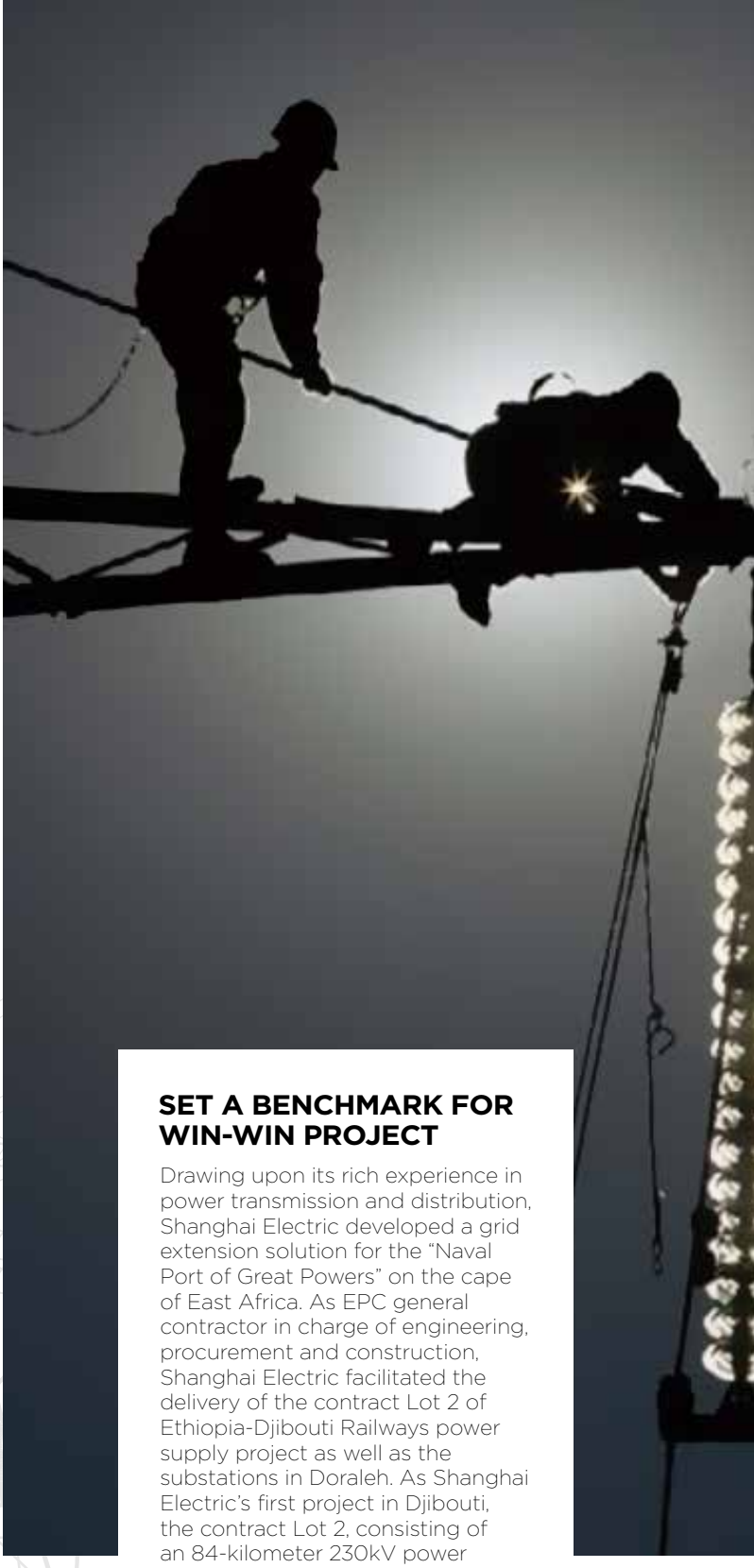
Two years ago, the project team of Shanghai Electric arrived in Djibouti and began a new journey of uncertainties and challenges on this unknown land. As its nickname "Boiling Steamer" suggested, every teammate was greeted with a sweltering wave of heat and our passion was kindled for the upcoming project in this new market.

From then on, as the veil of strangeness was gradually lifted, Djibouti has become our second home. When completed, the contract Lot 2 of Ethiopia-Djibouti Railways power supply project stood like a milestone of quality and reliability. It has built confidence of Djiboutian partners in Shanghai Electric and laid a solid foundation for our further development in local market of power transmission and distribution.

BUILD POWER TRANSMISSION GRID FOR A COASTAL COUNTRY

Djibouti, a small coastal country with a population of more than 900,000, feeds on its shipping ports and loanable military bases. As a strategic point in the " One Belt One Road " initiative, Djibouti has seen a surge of huge projects carried out by Chinese contractors since 2014, such as Doraleh Multi-purpose Port, Ethiopia-Djibouti Railways, Djibouti Free Trade Zone. As the capacity of the old national grid was way below the requirements of these grand projects, a much more powerful grid became a top priority for Djibouti's development.

Given the power demand from Electric Multiple Units (EMU) on the Djiboutian section of Ethiopia-Djibouti Railways and from the Port and the Free Trade Zone, it's best to build additional transmission and distribution grids and incorporate them into main grid. For this purpose, Shanghai Electric undertook as general



contractor of the contract Lot 2 of Ethiopia-Djibouti Railways power supply project and the building of Doraleh substations. Another group of substations in Goubet, now under construction, is intended for the northern area formerly off the grid. After incorporating local wind farms also under construction, the extended grid will cover the entire area.

These projects led by Shanghai Electric are improving and upgrading the national grid of Djibouti, and will ensure the power supply for its economic development in the future.

With huge projects came huge challenges: radical difference in legal system and engineering standards, difficulties in communication caused by language barrier, and harsh climate as well as environment: many places had temperatures in the forties during daytime with a record up to 57℃; malaria, and mosquitoes or bugs spreading virulent virus posed a constant threat to the crew. In some places, telecommunication was so poor that cooperation had to be carried out in a face-to-face way; in other places, drinking water and foodstuff must be ordered from somewhere several kilometers away.

Instead of flinching from hardships, Shanghai Electric, abiding by the principle of "Quality, Schedule, Service", paid assiduous attention to every step in the development of projects and established a special workflow for overseas project management over the period of nearly five years. As a result, Shanghai Electric has built up a well-deserved business reputation in Djibouti.

SET A BENCHMARK FOR WIN-WIN PROJECT

Drawing upon its rich experience in power transmission and distribution, Shanghai Electric developed a grid extension solution for the "Naval Port of Great Powers" on the cape of East Africa. As EPC general contractor in charge of engineering, procurement and construction, Shanghai Electric facilitated the delivery of the contract Lot 2 of Ethiopia-Djibouti Railways power supply project as well as the substations in Doraleh. As Shanghai Electric's first project in Djibouti, the contract Lot 2, consisting of an 84-kilometer 230kV power transmission line, an extension to a 230kV substation and three new traction substations, was aimed at supplying power for local EMUs. In the follow-up project in Doraleh, Shanghai Electric constructed a new 63kV substation, extended a 230kV substation, and connected the two substations with a

3.5-kilometer 63kV double-circuit power transmission line for the power supply of local port and the Free Trade Zone.
The projects of Djiboutian transmission and distribution grid also feature a wide cooperation between Shanghai Electric and domestic partners. From the procurement of concrete, steel bars and fuel to transportation, machinery leasing and land-leveling, a number of local companies joined forces and several hundreds of jobs were created for the residents. Moreover, employees of Djibouti National Electricity Company learned from the full cycle of project a lot about power engineering, and they would accelerate industrial upgrading in their own country. Through all these projects, Djibouti benefitted profusely from a kind of 1+1>2 synergy both on economic and technological level.
A majority of electrical devices used in these projects came from Chinese manufacturers, including subsidiaries of Shanghai Electric. As these products found a promising new market outside motherland, Made in China gained a wide popularity in Djibouti.
The success in the contract Lot 2 of Ethiopia-Djibouti Railways power supply project and the substations in Doraleh strengthened confidence of Djibouti National Electricity Company in Chinese teams and electrical devices, and thus set a remarkable benchmark for win-win project between China and Djibouti.

A POWER TRANSMISSION AND DISTRIBUTION PROJECT IN SCORCHING DESERT

In the Goubet project, the 230kV double-circuit power transmission line and the 230kV substation undoubtedly counted as a top priority. Their construction, however, were by no means an easy task. The building site was located in an arid, barren and blazing desert, where mobile signal was very poor and all necessary supplies and foodstuff must be ordered from the urban area 70 kilometers away.
The difficulty with Jabana's 230kV substation, which already underwent several rounds of extension and renovation, was that the project must be carried out according to the schedule and quality standards but without interrupting its

operation. After learning valuable lessons from the first two projects, Shanghai Electric team in its third Djiboutian project kept a keen eye on close communication with the proprietor.

Support from proprietors and local government was indispensable for any overseas project of transmission lines and substations. Land requisition, visas of Chinese crew, approval to design drawings, custom declaration for imported machinery, pouring of steel concrete shuttering and the acceptance inspection were all interlinked. Any flaw in one step would delay the whole project.

For mutual understanding of the latest development in the project and more efficient communication, Djibouti National Electricity Company, customs office, freight transportation companies and the construction site became popular destinations among project officers. Throughout the exchanges, Djiboutian partners were impressed by their passion, professionalism and sense of responsibility.

Since the project kicked off more than four months ago, Shanghai Electric team has encountered a series of situations which would probably delay the construction, including changes to design drawings demanded by the proprietor, custom declaration for imported vehicles and machinery, local dispute over the right to use the land for line towers, and all the necessary working certificates for Chinese crew. Each time the project officers responded very quickly by collecting relevant information and coming up with a suitable solution. Apart from design problems to be solved by their technical partners in China, other situations were analyzed on the basis of their own work experience in Djibouti and their knowledge of local laws. Then they discussed with the proprietor or local authorities about the feasibility of proposed solutions. Thanks to their efforts, all these risky situations finally disappeared and no delay ever happened.

As the proprietor gave formal approval to design drawings, the construction is going on smoothly. So far more than half basic processes on the circuit part have been completed; some elementary manufacturing and pouring in Goubet and Jabana's substations are underway. In the meantime, transportation of devices and materials has ramped up. Bundles of Angle steel and other tower materials have arrived at the warehouse; some materials and devices used in substations are waiting in a Djiboutian port for custom declaration. Within another month, more materials and devices are expected to land in Djibouti, and then the project will move from civil work to electrical installation.

For now, as the project team from Shanghai Electric and other subcontractors are working together with such a great passion as the powerful sun in Djiboutian sky, the substations in Goubet are taking form at an incredible speed. A power pipeline will run a long way from this desert site to every dark and cold corner of Djibouti. It will fuel a soaring Djiboutian economy with valuable wind power, and mark another great achievement from the partnership between China and Djibouti.

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