



Delta builds Taipower's largest energy storage system to facilitate energy transition and upgrade to a smart grid



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In the first half of the year, the world went through drastic changes. COVID-19 pandemic affects people in almost all aspects, including our daily life, work, and even commercial activities. Global exhibitions are a typical example that are severely impacted. In recent months, most exhibitions have been postponed or canceled, but Delta's brand communication did not stop. Instead, we actively cooperated with various units, introducing Delta products and solutions via diversified channels such as virtual exhibition, online presentation and webinar, etc. In June, we will launch the internet streaming of Computex Online Talks together with Taiwan External Trade Development Council (TAITRAwww). The theme of the talk, SMART WELL BEING, a combination of "smart" and "well-being", will be presented. In this issue's Brand News Bi-Monthly, we give you a sneak peek of the experience of smart healthy building that applies Delta's building automation, energy management and B2C consumer products. So do stay tuned!

In recent years, Delta has been committed to providing integrated solutions, entering the industry by combining core technologies of various business groups to satisfy customers and market demand. This issue's Special Report brings you the success story of Kinmen's Xiaxing Power Plant, an integrated project by EISBG, BABG and ESDBD, which is so far Taipower's largest energy storage system. The successful experience can be applied on more smart grid constructions in Taiwan in the future.

Facing the mega trend, energy transformation and carbon reduction will be the next wave. Delta pays close attention to market trends and customer demand, continues to research, and is committed to providing integrated solutions. In this issue's Brand People, we interviewed the GM of EISBG, Mr. JJ Chang, where he shared with us his experience in leading his team in embracing the new trend of energy, and establishing Delta's leading position in energy management, as well as his thirty years of experience and thoughts in Delta.

Delta has been focusing on environmental issues since a long time ago. On Earth Day, we launch a film dialogue and adaptation competition for the 8K film, Songs of Whales, to arouse the attention on the environment and ocean conservation through the participants' creativity. With the changes in the environment of manufacturing industry, Delta combines OT and IT in establishing a manufacturing system applicable to the industry, taking the first step in smart transformation. "Comprehensive Management System for Smart Archives" incorporates building control and application requirements to help Tianjin's Xiqing Archive in implementing smart monitoring. More stories await you in Brand Circle.

This issue's Delta Green Life brings you Community Resilience Planning and Clean Energy Initiatives, where 66 resilient cities all over the world turn global warming crisis into opportunities. In People & Product, we invited the team of Delta's B2C brand Innergie to share its brand value and brand activities that are close to consumers.

Brand Management Office



The largest energy storage system built for Taipower to facilitate energy transition and upgrade of smart grid

Delta builds Taipower's largest energy storage system to facilitate energy transition and upgrade to a smart grid

Text by EISBG, CPBG, BABG

Delta's energy storage solution has been successfully adopted by Taipower's Xiaxing Power Plant in Kinmen (Quemoy), making it the largest energy storage system for an outlying island, and for Taipower. This case was jointly completed by Delta's SESBU of the EISBG, ESDBD of the CPBG, and BASBU of the BABG, making it an all-new dispatch control tool for power supply that provides a complete integrated one-stop service for Taipower. The system can provide a backup power supply within 200ms when an emergency generator outage occurs, and can undertake the tasks of regulating frequency of the power grid and smoothing renewable energy during daily operations, which further improves power supply stability.

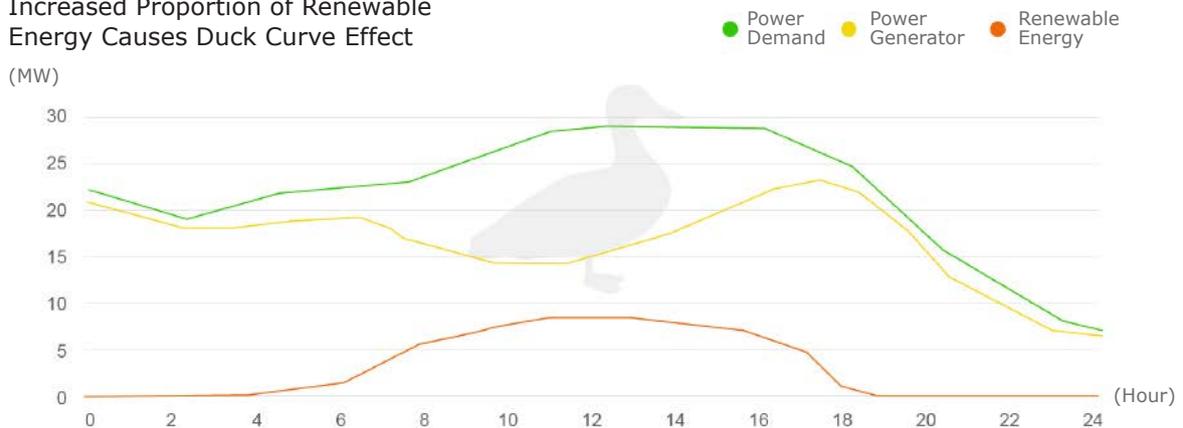




Provides fast and powerful backup power

Since the power system for Kinmen is not connected to the main island Taiwan, there is a problem of frequency fluctuations. The difference in power consumption between winter and summer can reach up to 35MW. In the event of an unplanned diesel generator outage at a power plant where the power cannot be resupplied immediately, a chain reaction of de-synchronization may cause a power outage over a large area. Although Kinmen continues to build wind and solar electric systems and the proportion of renewable power increases, the duck curve effect of the power grid becomes more obvious. Without the flexibility of frequency modulation and power dispatching, the power demand and system reliability may bring tremendous pressure.

Increased Proportion of Renewable Energy Causes Duck Curve Effect



Increase in proportion of renewable energy causes a duck curve effect

To stabilize the frequency of the power grid for Kinmen and reduce the impact of fluctuations on the power generation of renewable energy, Taipower decided to implement an energy storage system at the Xiaxing Power Plant in Kinmen. This created instant backup power. In addition, Taipower installed an energy management system at the Tashan Power Plant to monitor the operation of the Xiaxing Power Plant.



One-stop solution, with highly integrated PCS, battery, environmental monitoring and management software

Delta's energy storage solutions are composed of various devices: a PCS container that consists of two 1MW power conditioning systems (PCS), a 40-foot lithium-ion battery container of a Battery Energy Storage System (BESS) with a total capacity of 1MWh, a Delta energy storage management system (BEMS), and other surrounding step-up transformers. The integration of these components in the energy storage solution is implemented with Delta's technical capabilities. In addition to meeting the requirements of the power plant for energy storage systems, Delta also provided management units of Taipower with all the hardware and software products required to build the system in a single purchase, reducing the complexity of cumbersome communication and maintenance through a single service window and accelerating progress on the project.

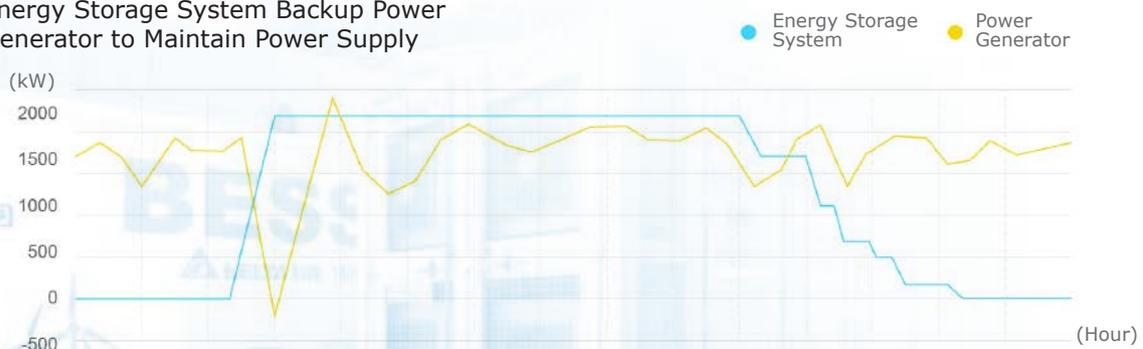


Delta builds Taipower's largest energy storage system at Taipower's Xiaxing Power Plant in Kinmen

The PCS1000 installed in a 20-foot container for the solution is a megawatt bi-directional power conditioning system that is responsible for controlling, converting, and regulating power. It features functions such as automatic adjustment for voltage and frequency, active and reactive power compensation, anti-islanding protection and independent operating mode, and control via a virtual synchronous generator (VSG), so it can effectively control power and process detection and supply power in 200ms, which is far faster and twice the speed required for the project.

Another component that plays an important role in the system is the container-level battery energy storage system, which uses domestically produced high-power P140 lithium batteries to instantaneously provide a high volume of power. The 40-foot container contains 462 battery modules with a total storage capacity exceeding 1,000 watts. Supplemented by a battery management system (BMS) and the FM200 automatic fire protection system, it can provide a multi-level safety protection mechanism to ensure the safe operation of the system through its functions of monitoring, active notification, and remote control.

Energy Storage System Backup Power Generator to Maintain Power Supply

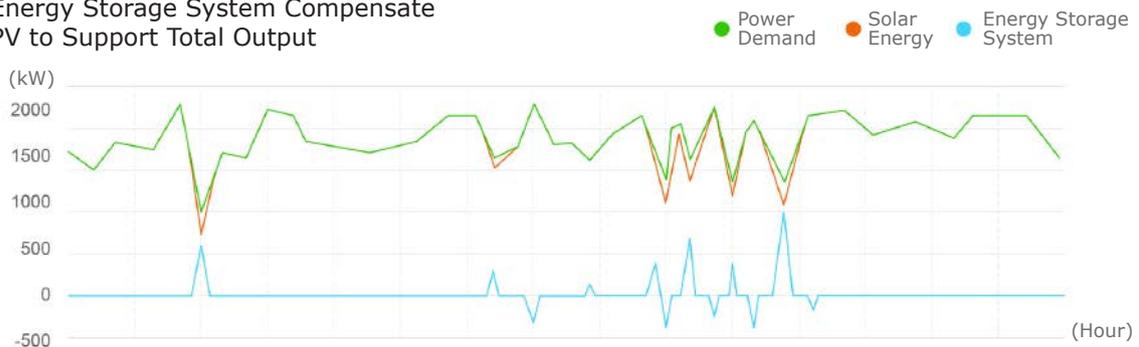


The energy storage system assists the generator in an emergency to maintain the overall supply of power



It is worth mentioning that the Delta energy storage system sets the required mode of operation via a web interface, which allows the dual mode to operate simultaneously. For example, the operation of F-P (Frequency-Watt) mode during daily operations regulates the utility frequency of the power grid to prevent excessive frequency variations. At the same time, the system is also in the real-time RoCoF (Rate of Change of Frequency) state of detection. Once an emergency occurs in which the speed of variation or range of frequency fluctuation on the grid exceeds the set threshold, the system will immediately auto-activate the response mechanism for tripping and send the full load of 2MW power to the grid within 200ms, so as to gain some buffer time to eliminate abnormalities.

Energy Storage System Compensate PV to Support Total Output



Energy storage system regulates solar power to reduce fluctuations on the grid

For renewable energy, this energy storage system can regulate solar energy by storing excess power or sending power back to the grid so that the balance of power supply on the grid can be maintained. In addition, the energy storage system can also regulate solar power, reduce variation and fluctuations, and allow renewable energy to be stably connected to the grid.

To ensure durability and fire safety, an automated management and control system was adopted to complement the energy storage systems. The building control solutions developed by the subsidiaries Delta Controls and LOYTEC were installed for this project to uniformly control the ambient air conditioning, lighting, fire protection, and equipment for detection of water accumulation in the containers. The solutions' real-time control replaced traditional manual operation to ensure that the container is maintained in an optimized environment with constant temperature and humidity.



The Building automation solution provides a real-time management platform to create the best environmental monitoring



A smart street lighting solution is built around the energy storage system to improve convenience utility and energy efficiency through remote control and automatic scheduling functions. In addition, Delta's LED smart streetlights are used for the lamp head, and VIVOTEK's network cameras are equipped to the poles as well. In addition to daily surveillance recording, it also features an invisible fence function. When an abnormality is found around the system, the managing personnel of the power plant can be notified immediately to handle the problem. Combined with smart lighting and security features, the solution strengthens the overall security around the place.



Stabilizes the power supply of power plants while energy transition is well under way

Operating with either conventional power generation or renewable power generation, the energy storage system can always take the leading role of regulating and safeguarding the power supply at any time, as well as providing rescue in an emergency. Delta is the leading supplier of energy storage systems in Taiwan, and has the capability to provide one-stop services. Its self-developed complete solutions have long been recognized by customers at home and abroad, such as the Kaohsiung Yongan Solar Power Plant and Japan's Ako Energy Park, where Delta's energy storage solution was adopted.

Delta once again won the favor of Taipower and introduced a more advanced energy storage system solution for Kinmen. After raising the system voltage of the discharge test to 11.4kV, it started to undertake the dispatching of the power grid. After taking on various challenges in engineering, control, and testing, Delta and Taipower's R&D and engineering personnel have completed the system setup together in 2020. For the future, Delta will continue to develop more powerful and faster-responding systems to provide vital help for stabilizing the power supply of power plants and to support the transition and progress of energy systems.



BESS

DELTA FOR THE



Mr. JJ Chang, the general manager of EISBG

Diligence with unchanging perseverance to create new trends in energy use

Interview with Mr. JJ Chang, the general manager of EISBG (Energy Infrastructure and Industrial Solutions Business Group)

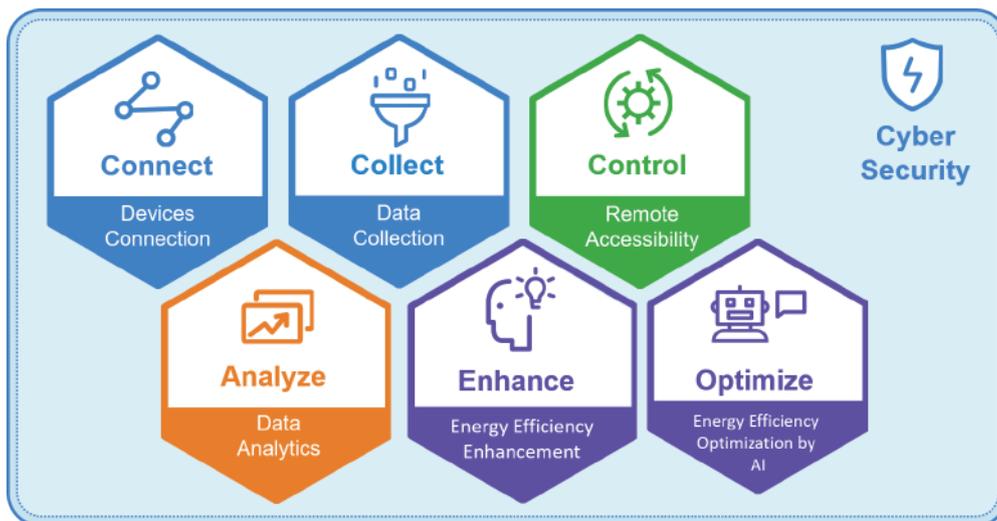
Text by Brand Management Office

Delta has extensive experience in power management solutions. However, following the trend of the general environment, energy transformation and carbon reduction will be the next wave of change. Delta pays close attention to this market trends and customer needs, and continues to develop and provides integrated solutions. In this issue of the Brand People, we have a special interview with Mr. JJ Chang, the general manager of EISBG (Energy Infrastructure and Industrial Solutions Business Group), who won the award of 30 year's seniority and outstanding contribution this year, and he was asked to share with everybody the blueprint and more than thirty years of experience and thoughts at Delta.



IoT-based smartness for efficient energy management, creating new trends in energy use

Before taking over EISBG, Mr. JJ Chang served as the general manager of PSBG (PC and Systems Business Group). He shared with us about how he shifted from the IT industry to the energy industry which is a vastly different experience for him. Delta has rich experience and technical capabilities, and has established a global leading position in the IT industry. As the awareness of the publics for energy use gradually increases, energy sustainability also becomes a major issue. The EISBG, which refers to Energy Infrastructure and Industrial Solutions Business Group, is composed of more than 10 business units that focused on brands and solutions. Its business scope extends to the fields of energy infrastructure and industrial applications. And for the future business plan of EISBG, General Manager Chang believes that by creating a solution of IoT-based smartness for efficient energy management, we will enter the power and energy industry, and effect a transition from the IT industry to the ET industry so that Taiwan can become a leader in the energy industry. Business models, such as offering highly integrated energy facility solutions, using background data analysis, and providing customers with the most humane and the most digitally advanced integration services, are important in the future.



"IoT-based smartness for efficient energy management" is the central focus of EISBG's continuous efforts to optimize efficiency of energy use with a highly integrated big data analytics solution

General Manager Chang, who has many years of sales experience, also shared with us EISBG's key business development and blueprints in recent years. "We focused on several areas of power application, including backup power sources for power plants, green power construction for large-scale electricity users, microgrids in industrial parks or a limited area, and ancillary services for the power grid. We are also committed to developing smart charging solutions to solve the problem of the EV overload" said Mr. Chang in his sharing.



In the market of power applications, EISBG established its market influence with fast and complete solutions. The Xiaxing Power Plant project at Kinmen is the application of backup power for the power plant, whereas the megawatt energy control / energy storage system for Changhua Normal University belongs to the categories of construction of green power grid for large-scale electricity users and the application of microgrids in industrial parks or a limited area. In addition, by making use of energy control technology, the integration of solar energy, energy storage, energy management systems and electric vehicle charging facilities can be integrated to optimize the efficiency of energy use for charging stations. The demonstration site for this solution at Ruiguang Building in Taipei has been completed and the charging station at the Fremont headquarters in the United States will be completed soon. At the same time, in the European and U.S. markets where electric vehicles are more popular, EISBG actively promotes a complete energy approach, in which the equipment, services, solutions, equipment maintenance, and big data analytics are all products that EISBG offers to customers, making it differ sharply from former products.



Setting a foothold in Taiwan and achieving business growth by thinking globally

Regarding marketing strategies, General Manager Chang also shared with us the business scope of EISBG, as well as opportunities and competitive advantages in various regions. "PV inverters, industrial power supplies, projectors, and charging piles have been sold in major global markets. On top of that, we have stepped up a significant amount of efforts on business expansion of new products such as LED Driver, Image (Medical Image), PCS (Power Conditioning System), etc. While EISBG strives to grow business in Taiwan, it also promotes suitable solutions based on practical needs in different regions. In U. S., we focus on power grids and commercial applications. In Europe, we provide integrated solutions that combine charging poles, energy storage, and energy management systems. In Northeast Asia, our major target customers are Japan's utility companies, automobile manufacturers, and manufacturers of fuel-cell power generation equipment. In China, our principle focuses are wind energy and energy storage."



Mr. JJ Chang (eighth from the left) has been devoting himself to product and technology development for many years. In the 12th Delta Innovation Award, a special award of Outstanding Patent Contribution was granted in recognition of General Manager Chang's contribution



As for the model for regional cooperation, EISBG hopes to accelerate the strength and speed of business development in regions through actual results. "We provided an integration platform for software and hardware systems, and then the regional business unit can offer solutions with a small-scale customization and added value according to customer needs. Power electronics is the core technology to implement these applications. Delta has top expertise in the industry in terms of technical capabilities, product design, and manufacturing. This is our competitive advantage. In order to strengthen our competitive advantages, EISBG will work with regions on this basis to expand the range of applications in the market, improve our control technology, build system platforms, and establish integration capabilities" General Manager Chang further explained.



Multi-partner consolidation to move forward and extend brand influence

Regarding Delta's integrated solutions in recent years, General Manager Chang also shared with us the business model of EISBG. "Through cross-BG cooperation, we entered various industries and baked a cake bigger for Delta. By combining respective capabilities and strengths of business groups, EISBG coordinates other BGs and provide products, system integration, and solutions that meet customer needs." Recently, the EISBG has successfully consolidated efforts with BABG and ESDBD in the project for Kinmen's Xiaring Power Plant, and in the meantime, they also worked with ICTBG and IABG. In the future, there will be more diversified sales models, such as extensions of product warranty, regular maintenance contracts, and equipment maintenance and operations at each project site, leasing and turnkey projects. These changes will test the BG's product development capability, organizational capability, and the ability to expand business for its products and solutions. In addition, regional cooperation also has to be close enough to grasp customer needs and implement diverse sales plans.

In terms of brand management, General Manager Chang used to lead Delta's B2C brand Innergie and helped Innergie's team to re-examine the brand positioning and formulate marketing strategies. The team focused on product development and the pursuit of excellence, which made Innergie repeatedly won domestic and international awards for product design. Whether operating a B2C or B2B brand, or being tasked with product development or promotional campaigns, he always worked hands-on with every aspect. "Everything in our business is customer-centric, thus we always strive to grasp customer needs, solve pain points for our customers, and build a profound customer experience." Product design and development start from the needs of customers. In addition to technical specifications and costs, we must consider every detail of customer's experience. Regarding brand communication, General Manager Chang also has a set of ideas: "EISBG will apply the value proposition of 'IoT-based smartness for efficient energy management.' After success stories happened one after the other, Delta will become a deeply rooted brand in the field of energy infrastructure. When you think of energy in Taiwan, you think of Delta."



Diligence with unchanging perseverance

General Manager Chang, who has been granted with the award of 30 year's seniority and outstanding contribution this year, has worked with different fields and brands from IT industry to ET industry, and has led different business units to move forward. General Manager Chang shared his thoughts along this journey. "When faced with different fields, the only way to success is to work hard, keep learning to find business opportunities, spend time to explore, and accumulate experiences. Both big and small things give you a chance of learning. Try to build a stage for others so that every professional can fulfill their full potentials. Delta offers a big arena. If you devote effort, you will obtain results. Do everything with diligence, be fully aware of what you are doing, and focus on it. It is a great thing to accumulate experiences bit by bit. "

At the end of the interview, the interview team asked General Manager Chang to give Delta colleagues some encouragement, but he said humbly that he has not been successful enough to encourage everyone. Perhaps it is this kind of diligence and humility that made General Manager Chang stay down-to-earth, keep on learning for 30 years and continue to challenge the next stage.



The 2020 commendation ceremony for senior and exemplary employees. Delta Vice Chairman Zixing Ke (sixth from left) and JJ Chang (seventh from left) joined the group photo



Delta helps Taiwan Excellence develop contactless IoT business opportunities

Delta helps Taiwan Excellence develop contactless IoT business opportunities

Text by DRC

The Covid-19 epidemic has changed the work and lifestyles of people around the world, and it has also brought new IoT business opportunities for enterprises. On May 7th in the Taiwan Excellence "Remote Video Online Press Conference" held by the Taiwan External Trade Development Council, Delta Electronics introduced the theme "A New Way of Work" to present two IoT products and solutions developed by Delta to hundreds of domestic and foreign media and buyers that will help enterprises meet today's new challenges.





Mr. Simon Wang, executive vice president of the Taiwan External Trade Development Council, mentioned in his opening speech for the online press conference that contactless business opportunities have grown significantly during the epidemic, and its output value will increase by 80%, to 16 trillion NT dollars in 5 years. The Taiwan External Trade Development Council, in conjunction with several Taiwanese telecommunications companies including Delta, also discussed the topic of "Video Conference and Distance Learning" at the online live press conference. The number of simultaneous viewers of the live streaming event exceeded 200, and the conference received an inquiry from NCN Magazine in India. The cumulative number of views at press time was nearly 2000, which demonstrated the popularity of distance/online learning topics.



Dr. Shihhan Chan (third from right) of the Delta Research Institute represented Delta to participate in the Taiwan Excellence "Remote Video Online Press Conference"

The products and solutions exhibited by Delta Electronics at the event were its wireless presentation and collaboration system "NovoConnect", which is a smart conference system, as well as the smart online learning platform DeltaKnEW Academy, which was launched in Singapore in 2018. From the aspects of work and online/distance learning, Delta helps enterprises and individuals adapt to new challenges with new ways of working.

The NovoConnect smart conference system, which won the Taiwan Excellence award in 2020, mainly focuses on mobile devices such as mobile phones and tablets. Since mobile devices have gradually become today's handy tools for work, they should also allow users to easily import cloud information during meetings and effectively construct enterprise conference rooms.

Going beyond today's projection products and conference tools that apply to a single device, Delta's NovoConnect system can be used for the collaborative projection of mobile phones, tablets, and computers, and is compatible with multiple operating systems such as Windows/ iOS/ Android/ Chromebook. NovoConnect also allows numerous people to present different cloud information from applications and services at the same time, and to achieve an interactive cooperation model that enables sharing, comparison, discussion and Q & A. These strengths of NovoConnect also help to improve the quality and efficiency of meeting communications, facilitate decision-making, and enhance the competitiveness of the team.





IoT SMART SOLUTIONS

DeltaKnEW Academy, a smart online learning platform developed by Delta Electronics, has web and mobile versions. Its content contains a variety of Industry 4.0 knowledge and skills contributions by Delta and global partners, which can help professionals and enterprises to re-skill and up-skill easily and adapt to changing times and business spheres.

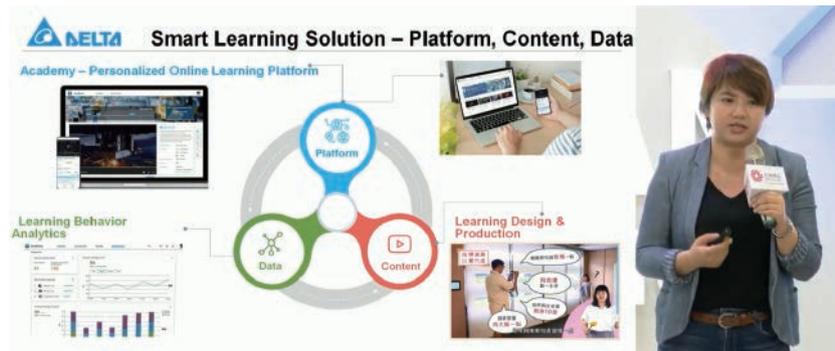
In particular, the platform has several patented functions specifically designed for online learning, such as a marker function that can be used as a digital bookmark. It not only allows lecturers to mark important paragraphs, but also allows students to "mark" key points for themselves. The chapter segmentation tool that applies to video is more convenient for users to quickly target the content. The users' data analysis is complemented by recommended personalized courses that magnify learning effects and optimize learner experiences.

After working with Nanyang Technological University, the DeltaKnEW Academy platform has also become a part of Singapore's SkillsFuture program since the end of 2018. Singapore citizens and permanent residents who apply for this series of courses can receive up to 90% of the course allowance, and the alumni of Nanyang Technological University can further use the alumni course allowance to apply for all courses. The platform helps enhance the competitiveness of talent in Singapore.

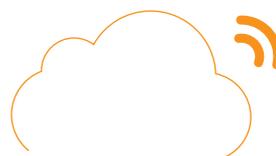
As an open platform, both schools and enterprises can join as partners and provide courses, teachers, and practical training on the platform. For content production, Delta also provides related solutions and tools to help partners produce online courses. From NovoConnect, a wireless smart conference system, to smart learning solutions and platforms, Delta's multi-IoT solutions can help enterprises and individuals enhance their competitiveness in this era of change.



The NovoConnect smart conference system supports numerous people using different platforms and devices, while sharing screen images and collaborating at the same time to improve communication quality and accelerate the process of reaching consensus and decision-making



The Smart Learning Solution, which includes three major aspects of platform, content and data, can assist enterprises and individuals to re-skill, up-skill, and strengthen their competitiveness





“Water with Life” wins a Gold Remi Award at the WorldFest - Houston International Film Festival

Text by Delta Foundation



(From left) Ms. Shan Shan Guo, vice chairman of Delta Foundation, Mr. Bruce Cheng, founder of Delta Group, and Mr. Wim Chang, CEO of Delta Foundation, share the Gold Remi Award conferred by WorldFest - Houston International Film Festival

The world's first 8K-resolution environmental documentary film “Water with Life”, produced by NHK Enterprises and sponsored by Delta Electronics Foundation, has won a Gold Remi Award-Shorts Documentary category in the 53rd edition of the WorldFest - Houston International Film Festival.

Ms. Shan-Shan Guo, vice chairman of Delta Foundation and project leader of the “Water with Life” film, said, “This documentary doesn't focus on criticizing the environment problems we are facing. On the contrary, it uniquely highlights the grace of Taiwan's water resources with groundbreaking 8K images. Each vivid 8K scene of this film was conceived to bring the audience's souls closer to those gorgeous places, so that we all cherish and protect the natural resources of our planet.”

Ms. Shan-Shan Guo added, “How mankind protects the environment is a main axis of this documentary film.

The wildlife rehabilitator for the Formosan landlocked salmon, the guide of Qilan Forest, and the young artists who created popsicles out of polluted water, are all captivating conservation stories within the film that have inspired every stakeholder to value our planet more. Also, the film includes several scenes reflecting culture elements related to water resources in Taiwan, such as dried persimmon making in Beipu, paper umbrella art in Meinong, traditional craft of hand-making paper in Puli, all put in place to highlight the joy of living in this treasure island. The way this film brings people and the environment together has certainly been a core feature valued by the jury of the Houston International Film Festival Awards.”

The WorldFest-Houston International Film Festival is one of the oldest and largest independent film and video festivals in the United States. This year, “Water with Life” was selected out of over 4,500 peer films as a Remi winner, thus, obtaining one more prominent international recognition since its broadcasting initiated on the NHK BS 8K channel in Japan last year.

“Water with Life” was sponsored by Delta Foundation and filmed by Japan's NHK Enterprises and a team of over 50 professionals that captured the beauty and diversity of Taiwan's water resources during the four seasons of the year, including scenes of Taiwan's beach area Kenting, as well as Japan's Hokkaido. Production of the documentary film took one year and nine months, as well as approximately one million US dollars. Delta Foundation is now supporting the filming of other two 8K environmental documentary films, one of them regarding humpback whales, and one regarding the effects of ocean warming on coral reefs.

NHK started broadcasting “Water with Life” in March 2019 on its BS 8K channel, and the film has been shown 41 times since then. In Taiwan, Delta has cooperated with large museums to hold non-profit screening events to display the film with its very own 37,000-lumen 8K projector. Unfortunately, the COVID-19 global pandemic has weighted on the film's exposure as well, but Delta Foundation intends to issue a 4K version in mid-2020 to expand its reach within the environmental education segment.



With many awards under belt in 2020, Delta brand as one of best companies to work for again gains recognition

Text by Human Resources Department



Delta garners "top award of 2020 CSR Happy Enterprise Group" sponsored by Global View Monthly. Group picture: Zhou, Zhi-Hong, Delta's sustainable executive and spokesman (second from right), Chen, Qi-Zhen, Delta's chief human resources officer, and Delta's team members

By aggressively allocating a variety of resources into building Delta brand as one of the best companies to work for, the human resources department has achieved successful outcomes. In addition to delivering a good performance by earning 13th place in "the 2020 Most Desired Enterprise by the New Generation" organized by Cheers Magazine (report link: <https://reurl.cc/xZvGWN>), Delta was, for the first time, also ranked the top 10 companies in high-tech industries freshmen most want to work for this year in the "survey of graduates' career planning and enterprises' new recruitments" conducted by yes123 (report link: <https://reurl.cc/exyEpm>). Other than these impressive results in Taiwan, Delta also has outstanding performance in China. It won its first "Human Resources Competencies (Goldman Prize)" hosted by Guangdong Human Resource Management Association.

For the past year, apart from aggressive deployment in Taiwan, the human resources department has further integrated resources from different regions, and gone to Europe, the U.S., Singapore, Malaysia, etc. to hold almost 100 on-campus recruitment activities at more than 50 prestigious schools, where almost 300 interns were recruited. Moreover, the department actively promoted digital social media marketing ideas. A series of video of "a day in the life of an engineer" were produced. And by using the function of "click to the like button" and "share", we have developed a closer relationship with students. Our fan group has also grown by 54% and we therefore have many awards under our belts, e.g. top award of the 2020 CSR Happy Enterprise Group sponsored by Global View Monthly, the 2019 Corporate Health Responsibility (CHR) prize sponsored by Common Health Magazine, sports business certification, premium health workplace, etc. All of these have enhanced Delta's workplace LOHAS image, and the volume of media coverage of relevant issues have therefore boosted by 90%. All inputs and outcomes have turned out to be the most important footstone for Delta to become one of the best companies to work for. We will continue to convert the brand popularity into actual effects, build a full research capacity and accumulate talent capital for Delta. In the end, we hope to jointly create limitless possibilities for future success with respective business units of Delta.



Delta obtains highest platinum rating for zero waste to landfill (UL 2799)

Text by Corp. Comm

The Delta Dongguan Plant has successfully obtained UL 2799 zero waste to landfill certification with a platinum rating. Platinum is the highest level of the certification, which confirms that none of the waste generated by the Dongguan plant goes to landfill. The plant has achieved 100% diversion, with 8% thermal processing with energy recovery. This honor not only commends and recognizes Delta's long-term efforts in waste reduction and management, but also Delta's specific actions to increase the chance of resources being reused and to improve the waste management system through certification.

Mr. Rock Huang, Delta's president of global manufacturing, highlighted, "Delta sorts waste generated as well as supervises, keeps abreast of, and tracks the process and processing results in line with its corporate mission 'To provide innovative, clean and energy-efficient solutions for a better tomorrow.'" In addition to requiring all departments to reduce the generation of waste, Delta actively strives not to generate waste, and to allow resources to be recycled effectively for environmental protection. This time the zero waste to landfill platinum rating obtained by the Dongguan plant recognizes that Delta has made tremendous progress in waste management. For the future, Delta will build on this certification achievement and continue to expand this model to all of its plants around the world.



Mr. Rock Huang, Delta's president of global manufacturing, stressed that this time the UL 2799 zero waste to landfill platinum rating obtained by the Dongguan plant recognizes that Delta has made tremendous progress in waste management

Delta pursues the sustainable utilization of resources and the prevention of resource depletion. In 2017, it passed a review by the internal Corporate Social Responsibility Committee and set a target of reducing waste intensity by 15% by 2020 with 2015 as the base year. At the end of 2019, a total of 187 waste reduction projects were implemented, saving 4,051.7 tons of waste. Waste reduction activities include the replacement of cartons with plastic rotary boxes, a closed loop of paper, secondary use of metal scraps, improved plastic utilization, and reduced waste plastics, which demonstrate Delta's specific achievements in waste reduction and management.

UL 2799 is a certification standard of zero waste to landfill. It requires all waste flows within an enterprise to be in regulatory compliance, inspected, and audited to confirm that waste has been properly reduced, recycled, and energy recovered, rather than landfilled or incinerated without energy recovery. Companies that achieve a diversion rate of 80 percent or greater qualify for the validation. Delta obtains the highest platinum level for zero waste to landfill with a 100% diversion rate – 92% from waste reduction and recycling, and 8% from thermal processing with energy recovery.



LED smart lighting solutions light up the Nankan riverside

Text by BABG

In recent years, while water quality improvement and waters management have been carried out, many new green spaces and riverside bicycle lanes were built along the bank of Nankan River in Taoyuan. With the functions of commuting, recreation and sports, the 22-kilometer Nankan Riverside Bike Path has become a very important living space for Taoyuan's residents. To provide it residents with a safe visit day and night and create an image of sustainability with lighting along the riverside, the Delta's BABG carried out the improvements of the lighting for the section of the Nankan Riverside Bike Path from Qingxi Bridge to Huiji Bridge, basing on the key principles such as enhancement on safety warnings, design with interactive lighting, and environment-friendliness and energy-efficiency to carry out improvements on the lighting of squares, observation points, and important landmarks. Combining the existing environment and taking into consideration the surrounding landscape and focus of vision, it aimed at creating a lighting environment that matches the local characteristics.

"There are four major design points in this project," project leader Guan Xianzong, who is also a senior lighting designer, said. "First, we must first establish a safe lighting environment, and then create a comfortable overall nighttime effect, and then enhance and emphasize the characteristics of key areas. Finally, from the perspective of users and maintainers, we applied design techniques and materials that are easy to maintain and manage." For the safe lighting environment in the design concept, it requires only sufficient lighting for traffic nodes or public rest platforms to ensure the warning function and road safety. The next step was to create a comfortable and warm white lighting, which matches the routines of the surroundings to minimize interference with ecology. Whereas, for the characteristic of the key areas, during weekends and holidays when there are more visitors, RGB color-changing lighting design and interactive lighting with simulated water patterns were incorporated to inject a lively yet leisurely atmosphere into Nankan riverside.

The renovation of LED landscape lighting in this project also made Nankan River a new landmark for Taoyuan's waterfront. With the "Tour Nankan River Project," people will be able to walk, jog, and cycle along the river bank during the day, and enjoy the lights and views at night, thereby turning Nankan River into the "river of life" in Taoyuan City.



The lively color-changing lighting design attracts residents for recreation and sport



LOYTEC integrated with iBMS to help an archive realize its intelligent building control

Text by DGC

Internet technology marked by advent of big data, mobile Internet, etc. has changed people's living habits, and also brought in new requirements and challenges for the construction and management of archives. One such case is Tianjin's Xiqing Archive that appeared under the spotlight now, thanks to LOYTEC's "comprehensive management system for smart archives" that helped it achieve smart management and control. Capable of integrating multiple types of information for various weak electronic systems across platforms, the system utilizes 3D modeling of the intelligent building management system (iBMS) to display the overall operation of the building. It can carry out functions such as device connection, logic processing, interface configuration, centralized monitoring, control, smart linkage, schedule control, historical record, event alarm, and others via a large screen, providing solutions in data sharing and mutual collaboration for various devices, subsystems, and applications, which in turn helps realize smart linkage and data analysis.



LOYTEC's "comprehensive management system for smart archives" with smart management and control to improve the level of intelligent services

Integrated management system and intelligent building management system (iBMS) for the smart archive

Combining building control and application requirements, the "integrated management system for smart archives" is able to integrate 15 subsystems such as equipment monitoring system, smart lighting system, energy management system, security monitoring system, and access control system for the archives. In addition, it created an intelligent building management system (iBMS) with 3D modeling. Connected via OPC XML-DA, the two systems carried out centralized equipment monitoring and operation management for the core subsystems of the building. Intelligent equipment of different communication protocols is connected through this platform to facilitate information sharing and linked control of various systems and improve the level of intelligent services.

Monitoring of equipment in the building

Delta integrates large electromechanical equipment such as new ventilation systems, multiple connections, air conditioners in the service room, air supply and exhaust fans, UPS, precision power distribution cabinets, and elevators in the archive, which improved efficiency of operation

Monitoring of environment for archive rooms

Delta set up a seven-in-one sensor to monitor the real-time temperature and humidity, air quality, and the concentrations of CO₂, PM_{2.5}, PM₁₀, and comprehensive volatiles in the area.

Smart lighting

Setting different scene modes, timing modes, and centralized control modes, the system offers intelligent management and control on the basis of energy efficiency.

Management of energy consumption

Through collection by the energy management system, complex data is analyzed and reported through visualized energy management system to help users accurately assess consumption of energy and take actions for energy conservation.



Delta integrates IT and OT for smart factories

Text by IABG

Over the past few years, the manufacturing industry has faced the impact of higher customer demands, labor shortages, trade wars, and more. Delta points to three key factors for building a digitalized smart factory:

1. Evaluate and set ROI (return of investment)
2. Integrate OT (operational technology) and IT (information technology)
3. Time the implementation

Of the three factors, integrating OT and IT is the most difficult in terms of time and money. Delta's EASBD is keenly focused on this part and has launched specific solutions.

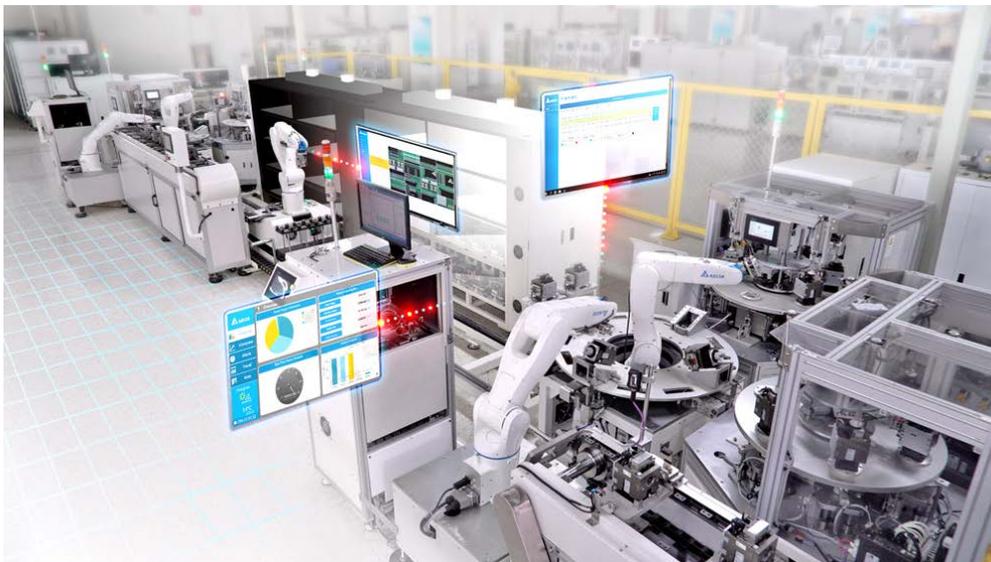
Seamless integration of OT and IT based on Delta's experience

Delta's electronics assembly solutions cover OT and IT. For OT, Delta's smart equipment features real-time and in-time functions. All the data generated is transmitted between equipment for inter-communication under an equipment networking architecture, bringing flexible production and fast changeover according to work orders. The equipment for OT is often connected to IT platforms, such as manufacturing execution system (MES) and enterprise resource planning (ERP), for seamless data exchange and analysis. This is the essence of smart manufacturing.

Thorough diagnosis for accurate planning of smart solutions and factory digitalization

"In terms of OT and IT integration and solution implementation execution, Delta's valuable experience can definitely help customers," said Ian Yang, Marketing Director of the EASBD. Delta's team can help with the on-site diagnosis and design new systems accordingly, as well as plan the implementation schedule and forecast the ROI for the company. Delta also provides smart equipment which applies a modular architecture for easy connection. This design allows fast production system building according to customer needs while shortening implementation time.

To manufacturers of electronics assembly, stability, intelligence and feasibility are crucial for greater competitiveness of the industry. The benefits above must be achieved through customized smart solutions that initiate successful factory digitalization. Delta's solid experience in this field and smart solutions and equipment can help all customers quickly step into the new era of digitalization.



Delta takes advantage of its own experience as a user in the electronics assembly industry and presents smart manufacturing solutions that integrate IT and OT systems for factory digitalization



Industrial robot and visual system improve the accuracy and efficiency of wet tissue cover

Text by DGC

In the wet tissue packet, there is a dust-proof cover, which can be repeatedly opened and closed, making it very convenient to use. In the fitting and assembly process of wet tissue packaging and the cover, because auxiliary materials vary in types and size difference and require high assembly accuracy, there exists a certain degree of difficulty. To meet the needs of a certain manufacturer, Delta customized a solution with SCARA industrial robot DRS60L series matched with visual software DMV-LIB as the core, which has improved the production efficiency.

In the traditional process of wet tissue cover, the early stage of production cannot meet the requirements of high-speed and high-precision. Delta has launched the customized solution with SCARA industrial robot DRS60L series matched with visual inspection software DMV-LIB as the core, which makes full use of the functions of the robot DRS60L series' synchronous tracking and automatic planning of movement track in machining and its good coordination with the machine vision system, so as to quickly locate and grab the wet tissue cover and increase speed and accuracy. This solution enables convenient, accurate and quick positioning of the wet tissue cover delivered by applying Delta's visual inspection software DMV-LIB and the powerful visual monitoring algorithm.



SCARA industrial robot DRS60L series can quickly locate and grab the wet tissue cover and increase speed and accuracy

Through the actual test of a wet tissue manufacturer, the solution can significantly increase the production accuracy and speed. Delta's comprehensive solution of "SCARA industrial robot + visual inspection system" has been widely applied. In the packaging industry, this solution can be used in different process links of the commodity production, such as assembly, transplanting and testing, and can assist the packaging industry in realizing the efficient and intelligent upgrading of the production line.



Delta shares experience in building factories at smart manufacturing webinar

Text by IABG

Delta's Industrial Automation Business Group (IABG) has just hosted three smart manufacturing webinars on April 17th, 24th, and 30th. The speakers from Delta IABG's Advanced Manufacturing Business Unit (AMBU) shared their practical smart manufacturing solution experiences in the live streaming event. The topics included Delta's MES system, quality management, and IIoT solution, and covered the fundamentals of building a complete smart factory.

The first webinar "MES for Smart Factory" was hosted on Apr 17th. Based on its abundant practical implementation experience, Delta presented tailor-made MES solutions for the electronic assembly, PCB manufacturing, and equipment assembly industries. After deep analysis of the pain points and applicable situations, Delta's solutions help customers embrace a hassle-free smart manufacturing transformation. On Apr 24th, Delta introduced the concept of quality management with a real example from its own factory. With the DIASPC Statistical Process Control system, Delta solves factory manager troubles for achieving "Top Quality with Great Process Control". The finale webinar on Apr 30th elaborated on the "3 Key Factors of IIoT" to achieve IT and OT integration. Building a standardized smart factory is quick, easy and worry-free using an ideal system and equipment. The three webinars encouraged 600 online attendees to interact live with the speakers.

In response to the positive feedback of April's webinars, Delta is going deeper into the smart manufacturing topics online. In May, there will be four webinars featuring smart green manufacturing, equipment preventive maintenance and alarm notification, modular IIoT construction, and exclusive tips for building a smart electronics assembly production line. For more information, please visit the website: <http://iacommunication.deltaww.com/webinar/index.html>

Delta shares experience in building factories at smart manufacturing webinar



The speakers from Delta IABG's AMBU, hosted three Smart Manufacturing Webinars on April 17th, 24th, 30th



Delta's data center POD solution receives the TIER III-Ready Award

Text by CISBU



Delta's POD (Point of Delivery) solution has been recognized with the TIER III Ready Award from the Uptime Institute, a prominent advisory organization for the global IT industry. The TIER III Ready certification, which entails rigorous uptime requirements and long-term viability for IT equipment, was evaluated based on a number of factors including N+1 architecture design, mechanical and electrical components, as well as environment conditions. Delta developed its POD solution by leveraging pre-engineered designs of in-house IT racks, aisle air containment, in-row precision cooling, modular UPS systems, a monitoring system, and redundant distribution to support the IT load.

Victor Cheng, Delta's senior vice president and general manager of its Information & Communication Technology Infrastructure Business Group said, "We see a growing demand for POD solutions. Since data centers provide the backbone of IT operations, the task of building a reliable and efficient data center is a major focus for most enterprises. In addition to receiving the TIER-Ready award for our POD solution, we have just helped our customer HTC-ITC, a subsidiary of Hanoi Telecom, to build a TIER III Uptime certified data center in the Hoa Lac High-Tech Zone in Vietnam. With our accumulated experience, we are confident that we can help enterprises save both time and money to build Uptime-certified data centers."

"We are pleased that Delta's POD solution has achieved Uptime Institute's TIER-Ready award. Pre-fabricated and POD solutions that display the TIER-Ready logo assure an enterprise that the design they are considering has been reviewed by Uptime Institute. They can trust the solution provider for their ability to deliver resilience and reliability for their data center," said Luca Beltramino, Senior Vice President Global Programs for Uptime Institute.

Uptime Institute is focused on improving the performance, efficiency, and reliability of business critical IT infrastructure through innovation, collaboration, and independent performance certifications. With over 1,600 certifications issued in over 98 countries around the globe, Uptime Institute's TIER Standard Certification is the industry standard for Design, Construction, and on-going Operations. Rigorous uptime requirements and long-term viability are usually the reason for selecting strategic solutions found in TIER III site infrastructure. TIER III solutions also have an effective life beyond the current IT requirement and are typically utilized by organizations that fully understand the cost of a disruption—in terms of actual dollars—and the impact to market share and continued mission imperatives.

Delta's POD solutions feature a fully modular design concept and flexibility to meet the needs of data storage. The solution includes Delta's DPH series modular UPS systems and precision cooling system with variable fan speed control. Delta's lithium battery systems enable power backup for data centers.

Delta's own eco-friendly data center at its R&D center facility in China became the world's first to receive the LEED v4 ID+C Gold certification in 2018, while its Taipei headquarters' data center obtained a LEED Platinum green data center in 2019.



Micro-module data center solution for scenic areas creates smart tourism

Text by DGC

A scenic area in Guizhou actively promoted the deployment of "Internet +" and digital service facilities to explore smart tourism and used new technologies such as cloud computing and Internet to enhance the tourist experience. The scenic area decided to join hands with Delta, using the Delta Smart Series micro-module data center solution to create a brand new service room.

After a meticulous survey of the site environment, the Delta technical team followed the principles of technological advancement, high reliability and durability, compatibility with other systems, scalability, and economic applicability to custom-make a complete set of small data center solutions. A set of 20kVA Smart Series micro-module data center provided by Delta just meets the needs of users.

Considering that the computer room established in the office area of a scenic area should be as simple and easy to operate as possible, when installing the Smart series, the only things required for quick installation and operation are power cords and data cables. In response to the possible needs of future expansion for smart tourism in scenic areas, the Smart Series also supports the possibility of on-demand expansion; and the software functions of power management, user management, and environmental monitoring provided by it also explain the need of users in multiple industries mentioned above to achieve reliable monitoring and smart management.

It is worth mentioning that the Smart Series micro-module data center has a mobile APP smart management mode. For the management of scenic areas, it needs no personnel to be on duty in the service room. Through the APP, it is convenient for the operation and maintenance personnel to keep track of the system operation information anytime and anywhere, reducing the tedious operation and maintenance work. At the same time, the main cabinet is equipped with standard access control. Even if the service room is installed in a public space, there is no need to worry about the improper operation by non-professionals on equipment such as UPS and air conditioners, which can result in system downtime. These features ensure the system security as well as the safety of video data.



Micro-module data center solution for scenic areas creates smart tourism



New generation HIFT modular UPS won the 2019 Best Product Innovation Award

Text by DGC



2019年度最佳创新产品奖

WWW.IT168.COM

New generation HIFT modular UPS won the 2019 Best Product Innovation Award



Delta's new generation HIFT 20-80 / 120kVA modular UPS, in the annual review of products by IT168, one of the most influential IT network media, stood out from nearly ten thousand new products and won the 2019 Best Product Innovation Award based on its leading technologies such as the pre-selection function of key devices, full module backup redundancy design, and 20kW/2U high power density design. The organizer commented that Delta's new generation HIFT 20-80 / 120kVA modular UPS comes with the latest technology today, which represents a high technical level for the power segment currently available in the industry. In the face of rapid development in big data and 5G, the new-generation HIFT will bring in a design trend of UPS that is greener, smarter and more efficient.

In terms of the appearance, the new generation HIFT 20-80 / 120kVA modular UPS features a maximum 10" full-screen touch screen with cellphone-like menus and a multilingual interface. The user-friendlier interface and easy-to-use design allow users to intuitively understand the operational status of key equipment, while the large storage capacity can record up to 10,000 entries of events locally without compromising any details.

As for functional design, the new generation UPS can support hot swap replacement. It also incorporates more intelligent designs to enable key devices to carry out self-detection. It also combines with AI self-learning function to make the daily operation and maintenance effortless and reliable.

Delta's extensive experience in the field of uninterruptible power supply (UPS) and its professional capabilities in R&D, design, and manufacturing of a complete UPS product series make it one of the leading brands in the global UPS market.



The efficiency of Delta solar inverters was the deciding factor for GreenRock Energy

Text by Delta EMEA

Project developer GreenRock Energy has installed a total of around 2MW of PV capacity on the roofs of three agricultural buildings in Remda. With the solar PV systems, the farmer wants to reduce his high electricity consumption and thereby lower his pig breeding operation costs. From the end of 2019, two of the PV plants will feed electricity back into the grid and the third plant will be used by the farmer for self-consumption.

In just six weeks, the three agricultural buildings with a total roof area of 15,000 square metres were equipped with 7,500 solar modules. Each of the modules supplies 275 watts from 60 cells. The assembly system for the solar modules consists of trapezoidal sheets and a substructure of 180mm aluminium rails supplied by the German company, Saytec.



The efficiency of Delta solar inverters was the deciding factor for GreenRock Energy

The installation also includes 32 string inverters from Delta Electronics. Three power classes were installed: the M88H, the M50A and the M30A. The combination of inverters of different sizes serves the purpose of taking the special features of each roof into account and making optimum use of the roof surface.

The M88H was specially developed for use in large solar parks and is available in two connection variants. It has a maximum efficiency of 98.5 per cent (EU value). "The M88H has one of the highest power outputs and is one of the most efficient string inverters on the market and ideal for large PV systems," says Martin Kofler, CEO of GreenRock Energy. GreenRock has gained good experience with Delta inverters in several projects.

The total weight of the Delta M88H inverter is only 84 kilograms. Transport and handling at the installation site do not require any special and expensive equipment. Also, its design concept, the terminal box with AC and DC surge arresters, terminals and DC disconnectors is already integrated into the device and can easily be disconnected from the power module. When the power module is replaced, the junction box with the entire cabling remains at the installation site, saving time and reducing maintenance and repair costs.

While two PV plants feed the electricity produced into the grid, the owner decided to use the third PV plant for self-consumption. Soltaro's lithium iron phosphate storage system uses an efficient high voltage of 1,000 volts DC and is controlled via the energy management system from Smart 1 Solutions. The system optimizes energy distribution for private consumption and grid feed-in. The owner of the PV plant receives electricity at a fixed price, which is ten percent below the tariff that the owner has paid to an energy supplier at the time a contract was concluded. The fixed price is valid for 20 years.

GreenRock Energy AG calls this model s-plus. "Our idea is that as many people as possible can benefit from the advantages of a photovoltaic system without having to make investments," says CEO Martin Kofler. This gives customers planning security for 20 years through a fixed electricity price. From the 21st year, they will also receive a share of the plant's income.

Through the project of providing the high-efficiency inverters for GreenRock, Delta creates the financial benefits by reducing customer's electricity bills and environmental benefits with clean solar electricity.

<https://solarsolutions.delta-emea.com>



Delta obtains its first certification of international standard IEC62443-4-1 for cybersecurity

Text by DRC

Under the wave of Industry 4.0, network devices and facilities along with systems in a factory will be more intensively connected, whereas the production capacity of a factory has been expanded through data analysis. Industry 4.0 has gradually rendered the conventionally closed environment to an open horizon, but it has also caused concern over the cybersecurity of a factory. In particular, as the data transmission and use of data at respective connection points became more and more complicated, it is more likely to have security flaws as a result of the lack of thorough considerations or negligence, which can be the potential weak points for hackers to attack.

To design a set of criteria which can meet the demand of customers, markets and statutory laws and regulations for secure development of connected product, Delta has specifically selected the international standards IEC62443 security for industrial automation and control systems. Different from the conventional secure development lifecycle which only puts focus on the development phase, the standards address the cybersecurity of the whole product life cycle of components and systems. Thus, certification of IEC62443 is the indicator for Delta to demonstrate its capability to implement quality assurance in the global market, and it is also an important milestone for Delta to further provide its customers with assurance, faith and sustainable operation.



Delta obtains its first certification of international standard IEC62443-4-1 for cybersecurity

The way that Delta could smoothly obtain its first certification of international standard IEC62443-4-1 Security for industrial automation and control system of the IECEE system has mainly relied on the full support from the Delta workforce, in which the cyber security experts, including the experts in the fields of IABG, ICTBG and EISBG, the SCP team as the major taskforce responsible for soft and firmware integration, and CPSS3C (Cyber-Physical System Security Solution & Service, which is the main undertaking of Delta's product security Center), jointly designed the guidelines suitable for Delta's security development lifecycle process. At the same time, educational training was also completed during the project period, for which a total of 45 colleagues received the IEC62443 training course provided by TUV NORD. Furthermore, to reduce the difficulty in future introduction and make it easy to adapt to varying workforces and products, Delta was regarded as the mainstay for the process certification this time, which successfully shortened the scheduled duration to garner the certification from one year to six months.

The IEC62443-4-1 certification issued by IECEE CB Testing Laboratory of TUV NORD, the only certification body acknowledged by IEC62443 in the Asian region, represents that the development of Delta's industrial automation and infrastructural facilities related products will be more well-rounded in terms of the mechanisms either in component security or control system security. Delta will also continue its commitment to reinforcing product security and quality, and build up customer trust on its products throughout the world.



DET awarded excellent score in Thaipat Institute's COVID-19 corporate health report

Text by DET

Delta Electronics Thailand(DET) received an "Excellent" score in the Thaipat Institute's Corporate Health Check Report on COVID-19 for its outstanding response and preventative measures to protect employees and stakeholders.

Established in 1999, the Thaipat Institute is a public-interest organization which aims to promote corporate sustainability and socially responsible practices in Thailand's business organizations. Thaipat Institute's Corporate Health Check Report on COVID-19 evaluated Thai companies with implemented measures for the recent COVID-19 situation affecting key stakeholders.

DET's total average score in Thaipat Institute's Corporate Health Check Report on COVID-19 is 4.42 out of 5 or 88.33%. The company received a 5/5 score for its measures to minimize negative impact on employees, customers, regulators and shareholders. Meanwhile, it received a score of 4 and 2.5 for its measures for suppliers and communities, respectively.

Since January 30, DET established a COVID-19 Task Force to ensure employee safety and control the epidemic while safeguarding critical operations. Delta Thailand has following preventative actions at all its Thailand locations:

1. Stopping all business travel and requiring all employees to report any travel to high-risk countries. Prohibiting any person arriving within 14 days from a high-risk country to company premises.
2. Conducting multiple daily temperature scans and health control for every employee at company transportation, factory gates and work stations.
3. Distributing new face masks to each employee at the start of each working day. Providing hand sanitizer stations and educational materials.
4. Increasing disinfection and disinfectant fogging during non-working hours.

DET's management and entire workforce stays vigilant during this unprecedented COVID-19 global crisis and commits to ensuring the safety of employees while working to contribute to Thai society.



DET practices COVID-19 preventative measures and social distancing at the annual general shareholders meeting 2020



Delta donates 10,500 DC blowers to help develop protective equipment for Thailand's COVID-19 medical workers

Text by DET

Delta Electronics Thailand(DET) donated 10,500 of its original high-efficiency DC brushless blowers to the Board of Investment (BOI) and the Thai government to support the domestic development and production of a Powered Air Purifying Respirator (PAPR) and Personal Protective Equipment (PPE) for Thailand's frontline COVID-19 medical personnel.

At a ceremony, representatives from DET, the Thai government and Chulalongkorn University announced the successful development of a new PAPR PPE for medical personnel treating COVID-19 patients. Mr. Jackie Chang, President of DET, represented the company to donate the 10,500 BFB1012EH-A model DC brushless blowers to Ms. Duangjai Asawachintachit, the Secretary General of the Thailand Board of Investment (BOI) and Dr. Suvit Maesincee, Minister of Higher Education, Science, Research and Innovation (MHESI).

During the development stage, Dr. Kittiphan Techakittiroj, Learning Innovation Center at Chulalongkorn University, requested Delta's high-efficiency DC blowers to use in the PAPR and PPE joint development project involving Chulalongkorn University, the Thai Subcontracting Promotion Association and Vajira Hospital. With close collaboration from Delta fan and blower designers located in Thailand, the joint development project selected Delta's BFB1012EH-A DC brushless blower with high satisfaction in its performance after rigorous testing and comparison with other leading global PPE brands.

Air provided by Delta's BFB1012EH-A DC blower passes through an H14 thickness 1.5 medical-grade high-efficiency particulate air (HEPA) filter to supply safe breathing air to medical workers wearing the positive-pressure mask type PPE in COVID-19 treatment wards. Delta's DC blower is powered by a USB power bank which is easy to charge anywhere. The superior performance of Delta's DC blower means medical personnel wearing the PAPR PPE are safer and more comfortable during their shift. Longer battery life and easier charging will also reduce interruptions and increase work efficiency at the treatment wards.

Speaking at the event, Mr. Chang said, "Delta supports Thailand with innovation in the fight against COVID-19. We appreciate Thailand's courageous frontline medical workers and we want to do everything possible to give them the protection they need. We want to thank the BOI, Chulalongkorn University and the Thai government for this opportunity to contribute and we commit to working with our partners for the best life-saving solutions as we strive to overcome this crisis together."

Dr. Suvit Maesincee said, "This top quality ventilation system is an important medical device developed with support from DET and the BOI. This is an excellent example of cooperation from all sectors in Thai society to turn crisis into an opportunity to develop know-how and produce critical equipment for our medical personnel."

Developed and produced in Thailand, Delta's DC fans and blower products are critical components for vital medical equipment used to fight COVID-19. Delta's investment in local R&D and manufacturing capabilities supports its business with top global customers and is an engine for innovation that contributes to Thai society.



Delta's DC Blowers selected for critical protective equipment used by Thailand's COVID-19 medical workers



Representatives from DET, BOI, MHESI and joint development project for a Thai PAPR and PPE



Delta donates 71 sets of fresh air systems to Hospitals in Guangdong Province, to safeguard the health of medical personnel

Text by Delta Electronics (Shanghai) Co., Ltd.

Since the outbreak of the COVID-19, the country has been working hard to fight the disease together. Delta, a global supplier of power management and cooling solutions, in the midst of actively resuming production, upholds the spirit of caring for the society by fulfilling its social responsibilities. It donated 71 sets of total heat exchangers to more than ten hospitals in Guangdong Province, including those in Guangzhou, Shenzhen, etc., for improving indoor air quality. Total heat exchangers use energy-efficient core technologies of DC motor, which will filter and add oxygen to improve the quality of entering air through purification efficiency as high as 98%. It simultaneously conserves energy and maintains healthy indoor air quality, which is dedicated to safeguarding the health of the frontline medical personnel.

General Manager of Fan and Thermal Management Products Business Group (FMBG), Wilson Huang said, Delta helps to fight against the pandemic and safeguard the health of medical care personnel. The energy-efficient DC motor can continuously operate throughout the year, catering to the need of regulating indoor temperature and humidity all year round, and reducing the load of air-conditioning engine operation. Its inverter technologies can conserve energy and electricity, saving up to 41% of electricity bill in summer when operating with air-conditioning.

In addition, the fresh air system filters outdoor air which could have been contaminated. It filters large particles of dust and filth and hair, effectively blocking particles such as PM2.5, pollens, dust, and dust mites, achieving purification efficiency greater than 98%. By eliminating factors that potentially threaten people's health in indoor environment, the product effectively improves air quality in the hospital, providing fresh air for people in the hospital, and supporting and caring for the hardworking medical personnel who take care of the patients.

Delta has been establishing itself in China since 1992, and has achieved significant results after two decades of development. In the midst of developing its business, Delta spares no effort in fulfilling its corporate social responsibilities. Delta continually makes specific contributions to the society and environment and has been repeatedly recognized for its work. For example, it has been named one of the top 10 foreign companies in "Blue Book Of Corporate Social Responsibility" published by the Chinese Academy of Social Sciences for 5 consecutive years (2015-2019), and awarded "CSR-Compliant Enterprise" by Shanghai Pudong New Area Government. In the future, it will continue to uphold the business mission of "To provide innovative, clean, and energy-efficient solutions for a better tomorrow", and face the difficulties and progress together with stakeholders.



Delta PM2.5 total heat exchanger installed in a hospital of Guangdong Province



Delta's Computex Online Talks to launch in June

Text by Brand Management Department

(From the left) Mr. Roland Chang, Ms. Shan-Shan Guo, and Mr. Richard Chiang will be sharing the concept and technology behind Delta's smart health building

Due to the impact of the pandemic, almost all the exhibitions worldwide have been put to a stop. The annual Computex exhibition held in June is one of the important events that Delta participates in every year. In order to overcome the regional restrictions as well as the impact from the pandemic, Delta worked actively with TAITRA to fully present the theme of "SMART WELL Being" via internet streaming of Online Talks. "SMART" represents the IoT-based smart technology and capabilities while "WELL" represents the humanistic architecture to pursue health and comfort. "SMART WELL" represents the ideal of improving comfort of buildings and the health and happiness of their occupants.

The theme of the exhibition also echoes current environmental issues, calling for people to act upon changes in a positive manner. Three speakers are invited to share their insights about the theme and their solutions through the online exhibition. We have a great lineup of speakers including Ms. Shan-Shan Guo, the Delta Chief Brand Officer and Vice Chairman of Delta Electronics Foundation, Mr. Richard Chang, the Senior Director of International WELL Building Institute and Mr. Roland Chiang, the Senior Director of Delta Building Automation Solutions Business Unit. The three speakers will introduce the concept of smart healthy building from various perspectives and share about Delta's long-term effort in promoting green buildings, and how Delta further went on focusing on the physiological health of the building users. The SMART WELL BEING exhibition presents the ways by which buildings can be both energy-efficient and comfort. And by combining Delta's own energy control technology with IoT-connected management platform, we can create a smart green building that complies with International WELL building standard.

Delta is excited to share the inspiring and useful information with you during Computex Online Talks at 1PM on June 3rd, please do not miss it!

For more Online Talks information, please visit Delta's facebook: <https://www.facebook.com/delta.taiwan>



Seeking storytellers to write dialogues for the mother and daughter humpback whales

Text by BMO

On Earth Day, April 22, Songs of Whales dialogue and film adaptation competition was officially launched in China and Taiwan. Delta sponsored the filming crew to film the humpback whales between equatorial regions with an 8K documentary. It aims to explain carbon capture potential of whales and to catch public's attention on marine conservation. Delta invites talents from all walks of life to participate in the documentary's dialogue production. We hope that participants can make use of their creative ideas to add dialogues or make adaptations to the video clips, instilling stories and life to the dialogue between the mother and daughter humpback whales. We also hope to attract more outstanding copywriters and multimedia talents, and support marine conservation and sustainability of environmental ecology.

Stunning presentation of the sight of humpback whales through detailed 8K image

Delta's Chief Brand Officer, Ms. Shan-Shan Guo said, "Delta has been promoting environmental education for years, and after the world's first 8K environmental documentary "Water with Life in Taiwan" in 2019, we'll be launching Delta's 8K video this year. This is about the story of how whales protect the earth environment for human beings. The filming crew travelled all the way to the Kingdom of Tonga in the South Pacific filming which lasted more than 3 months. Through Delta's 8K projection technologies, the film presents the journey in detail, on which the sight of humpback whales travelling thousands of kilometers from Antarctica to the equator to nurture their next generation. Besides the stunning images, we can also hear the mysterious and intriguing calls of humpback whales. In the global pandemic, we hope that participants can unleash their imagination, and bring relaxation and warmth through the dialogue between the mother and daughter humpback whales."

Director of "Songs of Whales", Mr. Nakagawa (中川西), shared, "This is my first attempt in filming humpback whales in the Kingdom of Tonga in 8K resolution. The size of the 8K video camera is large, making moving underwater more difficult. At the same time, we need to maintain an appropriate distance to avoid alarming the whales as well as to get a sharp focus, making the overall filming full of challenges. A baby humpback whale is about 5 meters in length. If we present it on a 300 inch 8K screen that is 6 meter wide, viewers can almost feel the actual size of the whale. We hope that through this spectacular image, the people can experience the rare sight of the ocean environment."

Marine conservation needs you and me

Humpback whales, one of the world's largest mammals, have considerable significance to the marine food chain, and are very good in carbon sequestration which helps to slow climate change. According to a study published by the IMF (International Monetary Fund), each whale can sequester an average of 33 tons of carbon dioxide during its lifetime. And that amount is equivalent to the capture potential of 3,000 trees per year. Through "Songs of Whales," Delta hopes to build the public awareness of the whales' contribution to the earth environment, and hopes the competition can also attract more talents into marine conservation.

For competition details, please visit the event website: www.delta-foundation.org.tw/humpbackwhale/



Delta's Chief Brand Officer, Ms. Shan-Shan Guo said, "We can hear the mysterious and intriguing calls of the mother and daughter humpback whales from the film. We hope that participants can unleash their imagination, and bring relaxation and warmth through the dialogue between humpback whales."



Innergie launched its new product 45H and held a pop-up retailing event at Syntrend in Taipei

PEOPLE

Innergie, a brand of Delta, creates the shortest distance between Delta and consumers

Text by Innergie

Innergie was founded in 2008. Because of Delta Group's technological capabilities for power products over the past 50 years, Innergie was able to develop its expertise in ultra-small power adapters and became a leading provider of consumer power solutions. Innergie is committed to creating eco-friendly and intelligent power products for individuals and families. It also leads the fashion trends, combining diverse styles and lifestyle with the products.

Innergie belongs to Delta Group's power and system business group and specializes in the development and manufacturing of consumer power products. Unlike other business units which use a B2B business model, Innergie is a B2C brand that launches Delta's most consumer-friendly product series. Being on the frontline facing consumers and the market, Innergie is thus able to clearly and directly communicate Delta's mission statement, "To provide innovative, clean and energy-efficient solutions for a better tomorrow," to the public when reaching out to the end consumers.



The charger trade-in activity that espouses the idea of environmental protection and energy saving

In addition to reaching consumers through online and physical distribution channels, Innergie also uses pop-up stores to display new products to the market. By adopting a thematic approach in planning of product display and sales space, Innergie brings consumers a situational experience for use of products. Adhering to the core spirit of environmental protection, charger recycling stations are established in the physical store; visitors are encouraged to bring the old chargers from their homes and recycle them to receive a discount on Innergie's products. Through the trade-in activity, not only the "sustainable living" issue is promoted, but also the idea of reducing electronic waste is communicated to the public, which further strengthen the public's impression that Delta Electronics and Innergie are dedicated to environmental protection.

Embrace team diversity to boost creativity

There are different types of consumers, therefore a brand also needs members with diverse backgrounds to adapt to the changing market conditions. The members of the Innergie team come from diverse backgrounds such as business management, engineering, art, electrical engineering, design, etc. The diversity in experiences, visions, and ways of thinking is the key factor to form a creative and dynamic team and to increase infinite possibilities for products.

If the team members come from similar backgrounds, it will cause a difficulty of finding problems from different angles, and it will be more difficult to think out of the box from old rules, and the focus and vision of the team's development will also become narrower. The Innergie team members have a wide range in terms of ages and academic experiences. Each of them can provide new information based on their field of expertise. To interact with people of different backgrounds in meetings and discussions, team members make good preparations in advance to exchange different opinions and views, and the consensus can only be reached with a lot of efforts.

Just like engineers and psychologists interpret products from different points of view, men and women also have different ways of handling things. The benefit of a diverse team is to give a more holistic approach to problem solving." Cooperating with members of diverse backgrounds is like throwing different types of balls at the same time. There will be catches and hits; there will also be surprises and bumps. In the process of tossing and catching the ball, creativity and possibility can be naturally created. While the members' vision and mind are expanded, problems that the brand and products are facing can be solved, and the direction for future development can be found.



The Innergie team's in-house brand strategy execution workshop



Break with tradition, think out of the box

As a consumer brand, the Innergie team often conducts workshop discussions of brand marketing or business strategy. Abandoning the conventional meeting method, image and text associations are used in the workshop, and theories are combined with practical operation, which helps team members to brainstorm and think about solutions for problems in a co-create way.



One by one, members presented and explained their business and creative ideas

Members from different departments and positions are mixed up and regrouped while making a team. These members are guided with main branding and marketing tools. First, in a spontaneous and free-flowing manner, team members share their imagination and expectations of the brand. These ideas are collected and then systematically generalized and organized. The team goes through countless arguments, opinions, speeches, discussions, persuasion (including being persuaded) and so on in the process; each member's old way of thinking is challenged, and then during the convergent phase, the conclusions agreed by the whole team can be reached.

In addition to allocating resources to solve problems based on the business needs of the team at the time, holding workshops also helps to unite the team, shape their consensus, implant the DNA of the brand value and corporate culture into members' hearts, and increase the centripetal force in the team.

Free innovation, delivering top performances

The Innergie team has a lively and free working atmosphere, and each member has her/his own specialization. The members interact and communicate intensively on a daily basis. In addition to the discussion of the work project, when they see interesting cases of brand strategy, they would immediately share with other members and discuss if there is any part that can be applied to the Innergie brand. The flat organization helps the team members communicate more directly and smoothly. Every member's opinions and ideas have the same opportunity to be listened to, discussed and carried out.



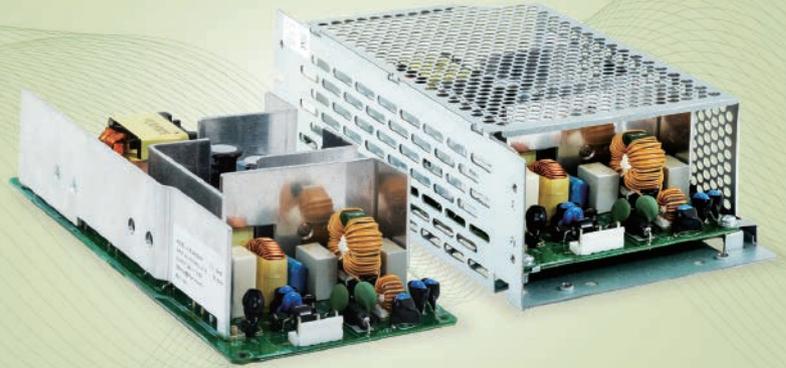
PEOPLE & PRODUCT

Adhering to the empathy and care for consumers and the environment, Innergie does not compromise on price competition in the market or using the approach of saturating the market by rapid releasing new devices. Instead, Innergie insists on providing the safest and most innovative world-class power products for consumers with the highest safety specifications and quality requirements. The five exclusive built-in security mechanisms of InnerShield™, including short circuit protection, over-load protection, overheating protection, over-current protection and over-voltage protection, ensures that every consumer is safe when charging. As a result, Innergie's high caliber technology has obtained several global patent certifications.



Innergie's dynamic and super creative members

Innergie pursues unlimited innovation; the goal of R&D and manufacturing is to create eco-friendly and energy-efficient design that meets the customers' need. Combining the user's perspective with Delta's leading technological capabilities for ultra-compact power adapters, Innergie's high-efficiency and lightweight power adapters can satisfy consumers' needs originated from business, leisure life and the use of mobile devices. With the promotion of team diversity, Innergie hopes to introduce truly high-quality products to more consumers so that the general public may find out: for charging, it is possible to pursue performance and environmental protection at the same time!



Delta introduces the new open frame power supply with 200% power boost

PRODUCT

New 300W open frame power supply with 200% power boost

Text by Delta Electronics (Thailand)

PJB-24V300W is part of the PJB series which offers a power boost of 200% for 10 seconds. This reserve power allows for reliable startup of electromechanical loads such as motors, pumps and actuators, thus eliminating the need for a higher power rated power supply, which is generally bigger in size and more expensive. There is built-in active PFC up to 0.99 and fulfills Harmonic Current Emission according to IEC/EN 61000-3-2. Other features include low leakage and inrush current. There is additional conformal coating on the PCBAs to provide protection against dust and chemical pollutants.

The product is certified for EMI standards according to EN 55032 and EMS according to IEC 61000-6-2. The product conform to major international safety standards according to IEC 60950-1/62368-1 standards and are fully compliant with RoHS Directive EU/2015/863 for environmental protection.

Highlights & Features:

- ▶ Universal AC Input voltage range
- ▶ Up to 93.5% efficiency
- ▶ Power Boost of 200% for 10 seconds
- ▶ High PF up to 0.99 and conforms to harmonic current IEC/EN 61000-3-2, Class A
- ▶ Conformal coating on PCBA to protect against common dust and chemical pollutants
- ▶ Versatile configuration options: Open Frame, L Frame, Enclosed
- ▶ Remote ON/OFF option for selected models
- ▶ Design to meet Japan DENAN(PSE) @ 100-240Vac



Delta introduces the new 120W & 150W AC/DC desktop adapters for industrial equipment

PRODUCT

Delta releases 120W & 150W AC/DC desktop adapters for industrial equipment

Text by Delta Electronics (Thailand)

ADT-120A / ADT-150A / ADT-150B are the newest models released under the ADT Series, with 120W/12V, 150W/12V and 150W/24V single outputs. They meet the US DoE (Department of Energy) Level VI and EU CoC (Code of Conduct) Tier 2 energy efficiency requirements with levels up to 92%. No-load power consumption of 0.15W @ 115Vac and 230Vac input.

ADT-120 and ADT-150 have a wide operating temperature range from -10°C to +60°C with full power up to +40°C. They conform to major international safety standards according to IEC/EN/UL 62368-1 and IEC/EN/UL 60950-1 approval for ITE. In addition, they also meet the EMI approvals to EN 55032 class B. Suitable applications include general industrial applications, telecommunication and Point-of-Sale equipment.

Highlights & Features:

- ▶ Meet efficiency DoE Level VI & CoC Tier 2
- ▶ No load power consumption < 0.15 W
- ▶ Efficiency levels up to 92%
- ▶ Fully enclosed plastic case
- ▶ Protection: short circuit / over voltage / overload/ over temperature



Delta develops a new generation of LED fishing lights

PRODUCT

Delta develops LED fishing lights, in an effort to environmentally, healthily and safely increase fishermen's catches

Text by BABG

Delta lighting business unit develops a new generation of LED fishing lights with features such as high luminous efficacy, long life span, recyclable etc., effectively decreasing the high cost of electricity and fuel for far-sea fishing boats on long voyages. The 600w and 1200w LED fishing lights are not only made to withstand vibration, high humidity and highly saline conditions while sailing on sea, but also do not produce UV radiation. They consume far less energy than traditional lighting and also reduce the risk of fire due to the use of lighting with high electrical current rating.

"After working with the fishing industry, we realized that fishing lights is indeed a serious business that requires a good conscience," said product manager of LED lighting business unit, Yen-Chih Lai: "Fishermen must suffer from winds, rain and sunburn while working at sea, which is hard enough as it is. If they use traditional HID lamps, it's as if they are working under bright sunlight at night as well, which is very harmful to their skin and eyes." "Delta LED fishing lights are not only energy-efficient, healthful and safe lighting, but also significantly increase the fishery landings." Chi-Chung Kuo the business director responsible for the promotion of LED fishing lights, said "The far-sea fishing boats installed Delta LED fishing lights ranked at the top out of a fleet with over 20 boats in terms of fishery landings!"

Delta LED fishing lights are made based on years of design and planning experience in industrial lighting. With Delta's world-leading power and fan technologies as the core, they are designed specifically for the harsh conditions on the fishing boats and integrated with lighting, mechanical engineering and electric technologies to maximize profits for the fishermen.



A boat is using the traditional fishing lights. The light is distributed mainly on the left and right side of the fishing boat. However, the lighting still feels much stronger on deck



Delta LED fishing lights do not generate strong lighting on deck. The lighting distribution is intended for the illumination above water and thus will not impact the human body



Human's health lies on soundness of the ecological environment

Humans vs. ecology: reflections on the pandemic

Text by Lun Lee, Delta Foundation

Right from the beginning of 2020, the world has been devastatingly hit with a stun bomb, COVID-19. Compiling the worldwide confirmed cases, the number has even topped several millions, and several hundred thousands of people around the world have unfortunately died of the disease. The International Monetary Fund (IMF) projected that the global economy would shrink by 3% this year amid the global coronavirus pandemic.



Such an astounding impact is simply unprecedented. Hence, a slew of stimulus measures is being provided by many countries in the hope of alleviating the damage brought by the epidemic. Nevertheless, while these countries are in a hurry to rescue their economies, have they ever thought of the impact of COVID-19 on Earth from an ecological angle?

A significant COVID-19 apocalypse - an appropriate social distance is also required between human and organism

It is undeniable that the rapid increase of the global population has made human's living environment getting closer and closer to wild animals. Like the COVID-19 erupted this time, its origin is still a mystery. But many related reports have all pointed to humans' eating and illegal sale of wild animals as the origin. While the boundary between human and organism is no longer clear, zoonosis (an infectious disease naturally spread between animal and human) is therefore more rampant.

In fact, over the past several decades, for those new infectious disease types often popping up on the headlines of media, almost 70% of their pathogens, including Ebola, avian flu, MERS, SARS, etc., came from animals. They posed a great threat to human's health and economies. The eruption of COVID-19 this time has reminded us again that we must respect animal's living environment and keep an appropriate social distance.

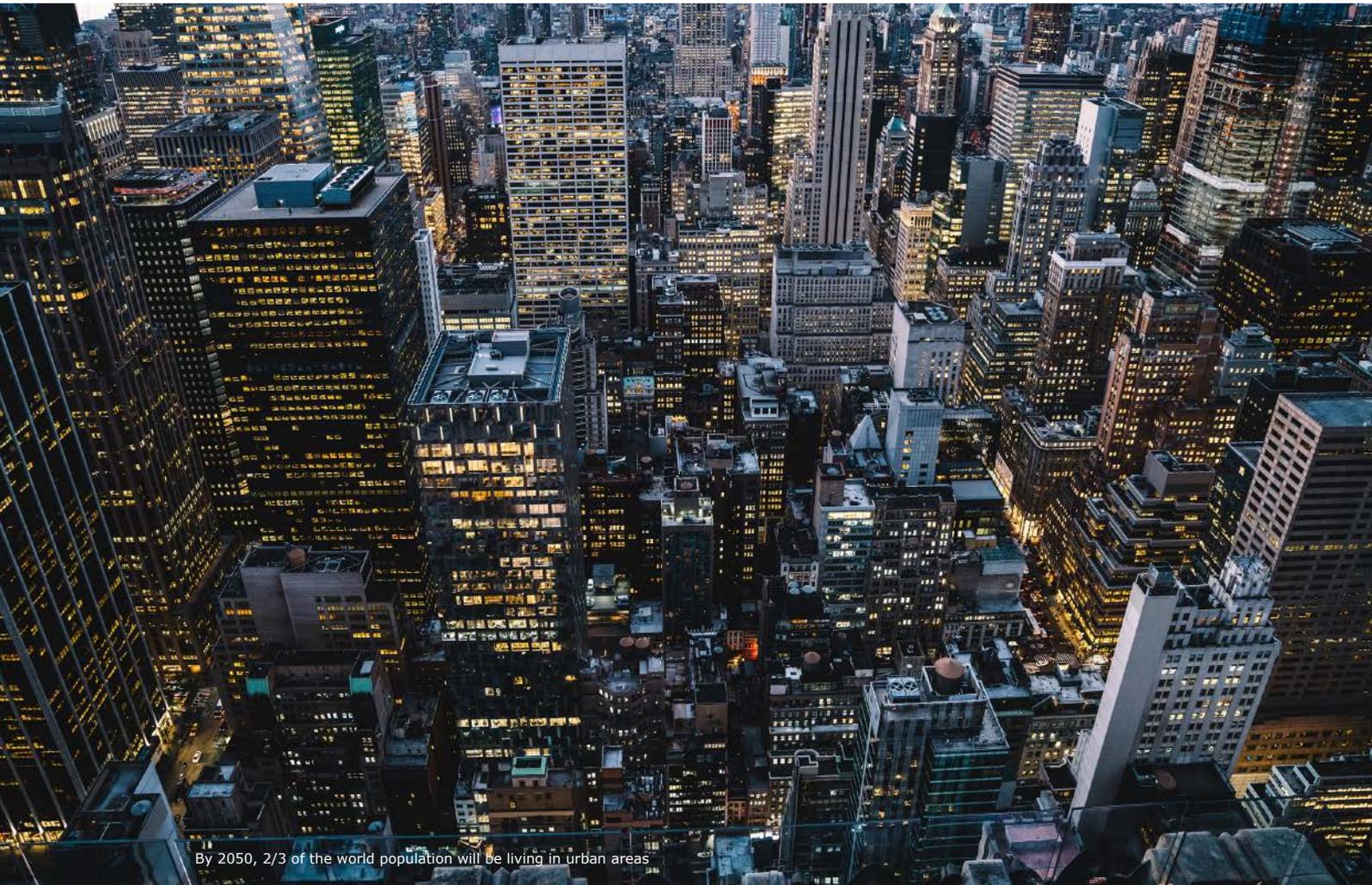
Human's health lies on soundness of the ecological environment

There is another apocalypse brought from the new coronaviruses this time, i.e. the environmental and natural conservation policy per se is one of the ways to prevent new types of infectious diseases.

In the past several months, many scientific experts have all indicated that human's destruction of the ecological system could substantially increase disease pandemics. It is especially so with the threat of increased climate change, which is resulting in rapid loss of biodiversity. When the overall ecological supply chain and environment are losing their balance, humans have become more incapable of controlling the diseases caused by animals.

Aptly, the epidemic has yielded a space for nature to take a break. Looking around the world, air quality, hydrology, beaches, and land pollution have been improved. Natural sounds and wild animals which were scared away by humans have come back in big cities and their surroundings. Apparently, with the reduction of economic and social activities, biodiversity has reemerged. Other than the control of zoonosis, humans have also regained precious treasures of fresh air, clean water, and an ecological wealth.

To sum up, human's health lies on soundness of the ecological environment. The Convention on Biological Diversity (CBD) originally scheduled to be held in October this year was planned to set out new targets for international biodiversity. It has currently been postponed because of the epidemic. However, the warning of "ecological protection" released due to COVID-19 has highly alerted each country. It is anticipated that the world can learn a lesson from this disease disaster, and, in the future, strong and robust targets and policies will be mapped out to make 2020 a critical year for natural environment and ecology.



By 2050, 2/3 of the world population will be living in urban areas

World's most resilient cities and how to become one

Text by Lun Lee, Delta Foundation

Do you live in the city? Have you ever wondered what it would be like 30 years later when almost 70 percent of the people around the world live in the city, as you do? As climate change accelerates, do our cities have the ability to recover?



The challenges posed by population growth and climate change seem to be inevitable. But don't be terrified! This January, Delta Foundation collaborated with the world-renowned think tank, American Council for an Energy-Efficient Economy (ACEEE) and produced a re-port that analyzes the urban resilience planning and the renewable energy initiatives of 66 cities around the world. By studying the measures taken by these exemplary cities, we will be able to turn this crisis into an opportunity!

Devising a perfect public transport networks to allow easy green travel

First of all, how should a city's public transport network be designed so that transportation can be eco-friendly and convenient and can also cope with its overwhelming numbers of passenger loads? One of the viable options is multimodal transportation, which is to establish various modes of transport in the city to effectively reduce traffic congestion and the environmental impact of road transport traffic.

Furthermore, transit-oriented-development (TOD) is also another avenue worth taking a look at. This concept originated in the U.S. and places a particular emphasis on how the government should not only consider the revitalization of a transport station during public transport planning, but also should promote the development of the neighboring areas and job creation. Also, the design ought to be pedestrian friendly as well as providing plenty of walking space. A comprehensive TOD strategy should include the following elements:

1. Giving priority to providing a good pedestrian infrastructure
2. Having the transport station as the center of the city in its urban planning
3. Developing a square in front of the transport station
4. Using a neighboring mixed-use zone (business, residential, and retail areas) as the transport hub (10-minute walk)
5. Public transport transfer options (light rail, bus, etc.)
6. Auxiliary tools for bicycles and scooters
7. Integrating the bicycle-sharing system and cycling network into the transport network of the station
8. Offering convenient amenities in the transport station (cafes, supermarkets, dry cleaning shops, etc.)
9. Reducing parking spaces within a 10-minute walk of the city center/transport station.

Item No.	Initiative	Resilient Cities	Targeted Environmental Impacts and Stress	Resilience Dividends
1	Multimodal Transportation: Enhancing the Role of Sustainable Transportation	Buenos Aires, Greater Miami, Honolulu, Louisville, Melaka, Mexico City, New York, Rome, Santiago	climate change, aging or malfunctioning infrastructure, poor air quality, and environmental degradation	<ul style="list-style-type: none"> • Reducing energy consumption and GHG emissions of the transportation sector • Providing alternative modes of transport during disasters • Improving the availability of fuel supply
2	Facilitating Transit-Oriented-Development (TOD) and Transport Infrastructure Efficiency Strategy (TIES)	Buenos Aires, Mexico City, Thessaloniki	climate change, aging or malfunctioning infrastructure, and poor air quality	<ul style="list-style-type: none"> • Reducing energy consumption and GHG emissions of the transportation sector • Maintaining the property values • Protecting locals from oil price fluctuations



Item No.	Initiative	Resilient Cities	Targeted Environmental Impacts and Stress	Resilience Dividends
3	Increasing the Number of Electric Vehicles (EV)	Honolulu	climate change, poor air quality, extreme weather, earthquake	<ul style="list-style-type: none"> •Reducing energy consumption and GHG emissions of the transportation sector •EV battery can provide backup power in the event of a power grid failure
4	Establishing Architecture Standards, Energy Audits for Buildings, and Improvement Requirements	Atlanta, Chicago, Dakar, Greater Miami, Honolulu, New York, Saint Paul*	climate change, aging or malfunctioning infrastructure, extreme heat wave, and power outage	<ul style="list-style-type: none"> •Reducing energy consumption and GHG emissions of buildings •Maintaining internal temperature during an outage •Strengthening buildings to withstand extreme weather conditions
5	Energy Conversion for Buildings and/or Electrification	New York, Alameda*	climate change, aging or malfunctioning infrastructure, poor air quality, extreme weather	<ul style="list-style-type: none"> •Reducing energy consumption and GHG emissions of buildings
6	Developing Micro-grids	Berkeley, Oakland	climate change, aging or malfunctioning infrastructure, extreme weather, extreme heat and environmental degradation	<ul style="list-style-type: none"> •Continuing power supply in the event of a power grid failure •Reducing energy costs
7	Formulating Policies on Efficiency of Municipal Buildings and Vehicles	Athens, Chicago, Dakar, Greater Miami, Honolulu, Rome, Vejle, Washington, DC	climate change, aging or malfunctioning infrastructure, extreme heat wave and power outage	<ul style="list-style-type: none"> •Reducing energy consumption and GHG emissions of municipal facilities •Permitting policy testing and planning within the entire city

List of Outstanding Initiatives for Energy Efficiency

(Source : ACEEE, Community Resilience Planning and Clean Energy Initiatives: A Review of City-Led Efforts for Energy Efficiency and Renewable Energy)

For example, the capital of Chile, Santiago, boasts the aforementioned designs. To encourage cycling and hiking, the Chile's government set up a 400 km-long multipurpose bike path in the surrounding agricultural district of the capital. Also, additional bike parking spots were installed and a pioneering movement that espouse multimodal transportation has been initiated. In the meantime, Buenos Aires in Argentina proactively adopts TOD. With the mixed-use areas as the center for development, Buenos Aires is planning to build a new 16km underground tunnel that is expected to connect the existing 800 km-long underground system in the city.



Stable power supply and energy-efficient architecture: prerequisites for urban resilience

Apart from transportation, stable power supply is also a major indicator for urban resilience. The report elaborates on the initiatives for renewable energy and distributed generation, which ensure alternative solutions in case of a power grid failure during natural disasters.

For instance, Los Angeles has already committed to transitioning its energy use for municipal utilities to 70% renewable electricity by 2030. What's more, it aims to go 100% renewable power by 2050. Currently, the city of Los Angeles has launched plans for solar energy and energy storage trials in municipal buildings. The ultimate goal is to promote "energy independence" to regions susceptible to natural disasters.

Item No.	Initiative	Resilient Cities	Targeted Environmental Impacts and Stress	Resilience Dividends
1	Targeting 100% Renewable Power	Atlanta, Chicago, Honolulu, Los Angeles, Malmö,* Washington, DC	climate change, aging or malfunctioning infrastructure, extreme heat, environmental degradation, power outage, and fire	<ul style="list-style-type: none"> •Decarbonization of the electricity grid
2	Increasing Local Wind Power	New York	climate change	<ul style="list-style-type: none"> •Decarbonization of the electricity grid
3	Increasing Deployment of Solar Energy and Related Energy Storage Systems	Berkeley, Honolulu, San Francisco	climate change, aging or malfunctioning infrastructure, extreme weather, extreme heat, and earthquake	<ul style="list-style-type: none"> •Providing backup power for buildings in case of a power grid failure •Providing local communities with year-round renewable energy •Reducing GHG emissions of buildings
4	Building Waste-to-Energy Plants	New York, Ramallah, Santiago	climate change, aging or malfunctioning infrastructure, environmental degradation, and power outage	<ul style="list-style-type: none"> •Serving as a coordinated strategy for waste management and sustainable energy •Providing locally generated energy for cities using unsafe energy
5	Cities to Implement and/or Purchase Renewable Energy	Amman, Chicago, Honolulu, Los Angeles, Melbourne, New York, Ramallah, Rio de Janeiro	climate change, aging or malfunctioning infrastructure, extreme heat, environmental degradation, power outage, and fire	<ul style="list-style-type: none"> •Decarbonization of the electricity grid •Providing locally generated energy for cities using unsafe energy

List of Outstanding Initiatives for Renewable Energy

(Source : ACEEE, Community Resilience Planning and Clean Energy Initiatives: A Review of City-Led Efforts for Energy Efficiency and Renewable Energy)



In addition, buildings with good exterior insulation against cold weather/heat are tremendously helpful during disasters. The main reason is that they can maintain a comfortable indoor temperature during disasters and act as a shelter for people. Moreover, these buildings are more energy-efficient in normal day-to-day life, which is conducive to reduce daily peak demand on an electrical grid and to prevent power outages. This is why many cities, including New York and Chicago, continue to demand that public and residential buildings to disclose their energy consumption information regularly and to renovate energy systems so that the energy consumption of buildings can be reduced and grid stabilization can be ensured.

It is worth noting that energy equality, an issue rarely raised in Taiwan, is also mentioned in the report. The best example of this concept is Honolulu. The local government discovered that the local transportation is 34% more expensive than that on the mainland United States. In order to offer low-carbon commuting for people with little or no access to energy services, Honolulu has begun a program for buying used cars with high carbon emissions and low efficiency from middle or low income residents, as well as offering discounts on electric vehicles and rewards for using public transport.

In the meantime, since the subtropical Taiwan is also threatened by extreme weather events, what should be done to make sure that the city's normal production and normal life of urban residents can be maintained? In fact, many actions can be taken. And the most important one is touched upon by the report, that is, Taiwan is often faced with landslides and power line damage due to extremely heavy rainfall. Therefore, to strengthen disaster resilience in communities and remote areas, the local governments ought to give priority to decentralizing power generation systems and developing micro-grids (renewable energy, energy storage system, EV, and vehicle to building technology).

