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Although it is now early fall, the weather is still hot and humid. People have been wondering how to conserve energy and reduce carbon emission, trying to control the global warming situation. Invited by the Kaohsiung City Government, the “Delta Green Building Exhibition” will open in Kaohsiung for the “EcoMobility World Festival and Congress 2017”. The Exhibition will once again show the world Delta’s commitment and accomplishment in reducing carbon emission.

In the “Delta 21 Green Buildings at COP21 Exhibition” held in Grand Palais, France at the end of 2015, Delta demonstrated its energy conservation results by the 21 green buildings it built. Two year since then, this Exhibition has been moved from Paris to Beijing and Taipei. The energy-saving results of the green buildings impressed its visitors. This time, we put things together again and come to Pier-2 Art Center, Kaohsiung City. It is the first time the theme of the exhibition integrates green buildings with low-carbon transportation and micro-grid to build a blueprint for low-carbon cities. It is hoped that, through a presentation that is close to our daily life, the visitors can understand the benefits of greening buildings and energy saving transportation. Let’s take a look at the “Eco Diary” in this issue. Of course, you are the most welcome to join us at the Pier-2 Art Center in Kaohsiung to visit the Exhibition.

Delta has always put green buildings in practice in its factories firstly, and the results are impressive. Applying many Delta’s energy-saving solutions, Delta Americas Headquarters is a LEED Platinum-certified green building. Recently, it won the honorable mentions for the livable building awards given by UC Berkeley’s Center for the Built Environment (CBE). Different from the past, the preferences of building occupants were included in the selection criteria this time. In addition to evaluating the energy-saving results in numbers, the user satisfaction was also valued. Moreover, Delta’s factory in Samutprakarn, Thailand, is listed as a green building and has received the LEED Gold certification. This is Delta’s first factory in Thailand to receive such an honor. Please do not miss out all the wonderful reports in the “Brand Circle”.

In addition to buildings, low-carbon transportation has become a trend. To reduce air pollution and save energy, the proportion of new energy buses in China’s first-class cities will be required to increase by regulation. The IA team has already aimed at the business opportunity and developed the electric vehicle air conditioning system market. Moreover, the IA team has established customized solutions to assist the customers in smart transformation. For the full report, please read our “Special Report”.

The “About DSM” takes you right back to the “Taipei International Industrial Automation Exhibition 2017” where Delta introduced its “High Flexibility Multi-tasking Smart Production Line” at the scene for the first time. It offers complete solutions with automation products, software, and systems while visualizing the management data to show the strength of high performance. Special gifts exclusively for the visitors were also made using the concept of flexible mixed production for each of the visitors at the exhibition area, gaining great feedback.

Have you tried working on a carton? This was exactly what they did during the pioneering period of DEJ. DEJ shares how they started from scratch and how they developed the competitive Japanese market in this issue’s “People”. Delta’s first proprietary solar plant, Delta Ako Energy Park, was completed and put in operation in 2016 to create a milestone for Delta in the renewable energy market. Let us get to know DEJ’s journey and its expectation for the future.

Brand Management Office

Ohan Ohan Giro
Delta automotive air conditioning solution makes new energy coaches more comfortable and energy efficient

Text by DGC

At a plant making coaches that use new energy, a fleet of electric buses, energy-efficient designs are neatly parked, ready to be shipped to cities all over the world for use as coaches or public buses. With rapid economic development and the pressures of energy and environmental crises in recent years, new energy vehicles are becoming more common in our daily lives. Once an occasional sight, vehicles such as electric buses are now regularly seen on the streets.

Compared to traditional gasoline vehicles, new energy coaches are more stable and make less noise. An air conditioning system maintains the internal temperature, humidity and air quality of the vehicle, giving passengers a more comfortable ride. Over the years, Delta has established close working relationships with industry-leading companies to develop air conditioning systems for new energy coaches. With an in-depth understanding of customer needs, Delta has now launched its 4th generation air conditioning system, and serves more than 70% of the market. Delta is continuously investing in new energy research and development to provide better system solutions for customers.
Focus on needs, and provide advanced drive and control solutions for coach air conditioning

At the end of 2015, China’s Ministry of Transport, Ministry of Finance and Ministry of Industry and Information Technology, jointly issued the "Evaluation Methods on New Energy Bus Promotion (Tentative)", as a policy guidance for the promotion of new energy buses. Among the public buses to be added and upgraded from 2015 to 2019 in Beijing, Shanghai, Tianjin, Jiangsu, Zhejiang, and others, 40% to 80% must be new energy buses, indicating that there is still excellent development potential for new energy coaches.

New energy coaches are more environmentally-friendly and provide greater riding comfort than traditional gasoline vehicles. As one of the coach’s main components, the air conditioning system plays an important role in passenger comfort. It is also the second most power consuming component of a new energy coach, which can reduce travel distance by 25% to 30% under normal usage. A new energy coach's air conditioning is powered by the vehicle’s battery; however, the energy of most electric vehicle batteries is far below basic range requirements. When developing a new energy coach, optimizing its accompanying air conditioning system is a necessity.

The basic principle of optimizing the design of an air conditioning system is making the system more efficient, which is always a huge challenge. Merely modifying the air conditioning of a traditional gasoline vehicle would not satisfy the requirements of new energy coach development. With this in mind, a new energy coach’s air conditioning system needs to have lower power consumption and excellent control to optimize the limited energy of the battery and provide the electric vehicle with a greater range. This requires developing a new type of air conditioning system for new energy coaches.

Traditional vehicle air conditioning systems are mainly powered by an open piston compressor, while a new energy coach uses an inverter for the highly efficient control of a scroll compressor or to control the start, stop and run of an AC evaporator/condenser fan. Catering to these requirements, Delta developed the VFD-E-BA, a dedicated inverter for vehicle air conditioning. This dedicated frequency inverter better complies with the requirements for vehicle air conditioning, and is equipped with control and drive functions, and it is also small in size and easy to maintain. In addition, considering actual applications, Delta uses flame retardant material for the body of the VFD-E-BA inverter, giving it excellent protection features. Today, Delta’s VFD-E-BA inverter is recognized as the first choice for new energy coach air conditioning systems by a large group of users.
One of the main factors affecting the development of vehicle air conditioning is limited space for installation. The device must be small, safe and reliable, and provide long-term stable performance. For the industry’s future needs the focus is on all-in-one devices equipped with an integrated electric control feature. The weight of the air conditioning system is also very important since it affects the range of new energy vehicles.

The trend for coach air conditioning systems is making small, lightweight and integrated products. Delta follows the philosophy of eco-friendliness and energy-saving. With its years of experience in automation and in-depth understanding of vehicle air conditioning, Delta has developed drive and control in the all-in-one dedicated VFD-BH and the three-in-one dedicated VFD-VH which occupies a smaller space and offers higher performance.

These two types of all-in-one dedicated products have changed the electrical configuration of air conditioning. They provide highly-efficient and precise control of an air conditioning system, enabling smart vehicle air conditioning that achieves the goals of energy saving and carbon reduction. The launch of these dedicated machines has been well received by users, making Delta the market leader in the rapid development of this application domain.

Recently, Delta has also researched and developed an all-in-one variable frequency drive compressor that caters to customers with special requirements. This integrates Delta’s inverter and sealed scroll compressor into an all-in-one machine to achieve an integrated solution of variable-frequency drive, pump and motor, that possesses advantages such as higher comfort, lower maintenance cost, higher lifespan, higher energy efficiency ratio, and others, and better complies with the high standards of new energy vehicle air conditioning.

In line with industry trends and to better meet customer air conditioning requirements, Delta has set up language localization teams to promptly meet the industry’s rapid changes. In addition, Delta’s branch offices and service networks provide an immediate guarantee of reliability for customers, facilitating the rapid development of the new energy coach industry.
Delta showcases complete software and hardware solutions for smart manufacturing at the 2017 Taipei International Industrial Automation Exhibition

Delta builds smart manufacturing capabilities based on practical experience

Text by Brand Management Office

The “2017 Taipei International Industrial Automation Exhibition” was held from September 6 - 9 at Taipei Nangang Exhibition Center, Hall 1. The exhibition which attracted 800 exhibitors and more than 2,500 booths was this year’s most important showcase platform for Taiwan in developing Industry 4.0 and smart manufacturing. Delta, with the theme “Digitalization and Flexibility, Ushering in a New Era of Green Smart Manufacturing”, showcased its fully interlinked and integrated automation products, software and system solutions, all set for smart manufacturing.
Flexible smart manufacturing: a future trend

CEO Cheng Ping believes, “With the arrival of the era of small-volume and large-variety production, Europe and America hope to shift their production, which has been concentrated in Asia and Southeast Asia, to areas with demand. This is why flexible smart manufacturing capabilities is becoming a global trend.”

As a leading electronics manufacturer responding to market demand, Delta provides industrial automation products and solutions, while facing the challenges of complex manufacturing processes and the short lifecycles of electronic products. Delta actively integrates its software and hardware products and its expertise in electronic product manufacturing to upgrade its factories for smart manufacturing with flexible production. Like this year’s “Smart Manufacturing” exhibition theme, this issue’s topic introduces Delta’s smart manufacturing business potential.

Building Delta’s smart manufacturing capabilities through practical experience

Delta’s latest flexible multitasking smart production line made its debut at the exhibition, integrating a Manufacturing Execution System (MES), equipment management system, Machine-to-Machine technologies, industrial robots, automated control solution, Production Management & Visualization Platform(DIAMMP), and more. It also allows the visualization of process/equipment management data, exhibiting its strength in highly efficient smart manufacturing.

General Manager of IABG Andy Liu, believes that “Due to favorable factors such as developments in equipment and IoT technologies, reduction in computing cost, and others, achieving smart manufacturing is no longer a dream. Among the world’s smart manufacturing solution providers, Delta’s greatest advantages are the completeness and integration of its solutions, and the smart manufacturing capabilities of its electronic product factories.”
According to Andy Liu, “We practice big data analytics for quality management at our own factories, collect various quality data into databases to build algorithms, and find out the root causes that affect quality. It makes us realize where we can improve quality. As the saying goes, ‘Half the people usually stop at 90% quality improvement because the last part is often the most difficult. Big data analytics gives us the opportunity to achieve that last 10% without incurring high costs.’”

The Intelligent Quality Diagnosis Solution showcased by Delta is based on the Big Data Analytics Platform developed by DRC. It is able to make use of technologies such as deep learning to build intelligent diagnostic models from production data. Differing from traditional univariate quality control methods, the solution is capable of assessing multiple variables concurrently, enabling the detection of quality anomalies in production. It can help examine a variety of factors such as human, machine, material, method, and environment, to identify root causes of these anomalies, thereby improving quality and efficiency of equipment or manpower. Modules, such as the Analytics Application and Automatic Optical Inspection (AOI), are applied for quality diagnosis, and can also promptly form cross-domain solutions based on customer requirements.

According to Delta’s CTO, Dr. Thomas Li, “Our software platform can provide many benefits to customers, which is the foundation for achieving the integration of our solution business. For example, the analytics platform leverages knowledge in fields such as statistics, mathematics, and operations research, and utilizes intelligent functions in technologies such as machine learning and big data analytics, in the cloud and on terminal equipment, to help customers diagnose quality issues that in turn improves quality. Through extendable and modular software functions, Delta is able to promptly provide cost-effective customized solutions.”
To promote Delta’s smart manufacturing theme, “Digitalization and Flexibility” and its capabilities in software and hardware integration, Delta’s Brand Management Office has created branding ads “On Building Blocks” and “On Chess Playing” to strengthen Delta’s brand positioning and awareness in smart manufacturing. With the commencement of the DSM project and the organizational transformation announced this year, Delta has pledged its commitment and future plans to automation.

Big Data Analytics Platform and analytics modules developed by DRC integrate production data and expert knowledge to perform intelligent data diagnosis, detect anomalies, and analyze root causes of anomalies. The analysis results can produce online warnings and offline diagnostic reports.

Laying a foundation for the future

To promote Delta’s smart manufacturing theme, “Digitalization and Flexibility” and its capabilities in software and hardware integration, Delta’s Brand Management Office has created branding ads “On Building Blocks” and “On Chess Playing” to strengthen Delta’s brand positioning and awareness in smart manufacturing. With the commencement of the DSM project and the organizational transformation announced this year, Delta has pledged its commitment and future plans to automation.

Delta’s eye-catching smart manufacturing branding advertisements “Playing Chess” and “Building Blocks” at the exhibition’s main entrance.
The Brand Management Office is focusing on the company’s transformation and strategic direction, and developing a brand campaign. It uses innovative methods to present Delta’s smart manufacturing capabilities in mixed production, software and hardware integration, plant planning, and others, to strengthen its brand image.

**On Building Blocks**

Through the metaphor of a robotic arm playing with building blocks and toy cars, this ad portrays Delta applying its domain process knowledge with smart manufacturing machines, as well as the trend of customization using mixed production for future manufacturing.

**On Chess Playing**

With the depiction of a robot arm playing chess, this ad presents Delta’s software capabilities in modularizing customer requirements and in rapid deployment. It links onsite production to establish an integrated software and hardware architecture.

**Blueprint**

As a blueprint is pulled away to uncover a production facility, this ad represents Delta with its years of experience in automation, integration technologies and smart manufacturing, providing customers with more cost-effective, whole plant planning, for standardized or customized production.
Delta announced today it has been honored with CommonWealth Magazine’s Top Excellence in CSR Award - Large Enterprises for the second consecutive year and for an accumulated fifth time. The Awards Committee granted Delta with the highest score in the “Social Participation” and “Environmental Sustainability” categories for its promotion of green buildings, its DeltaMOOCx online learning platform, its endeavors on sustainable development through solar power and smart energy management as well as for its overall energy-saving technologies. Mr. Bruce Cheng, Delta’s founder and honorary chairman, received the award at a gala with the presence of Ms. Shan-Shan Guo, executive director of the Delta Electronics Foundation, and Mr. Jesse Chou, Delta’s spokesperson.

Bruce remarked, “Receiving such a remarkable recognition for social participation is an honor for our Delta Electronics Foundation which has been actively nurturing environmental education and green buildings at a global scale for several years, including the publication of the “Building Green with Delta” book and mini-film.

Delta’s initiatives for environmental sustainability also have been carried out for several years. In 2009, the Company started its green manufacturing program which has already implemented more than 1,100 energy-saving practices in its own factories, thus, delivering a 50% reduction in electricity intensity by 2014 and with a 2020 target of a further 30% reduction. Delta has been actively sharing its expertise in energy conservation with its supply chain partners across the board.
Delta outperformed 37 leading global companies in the Electronic Equipment, Instrument, and Component sector of the 2017 Dow Jones Sustainability Indexes (DJSI), and was selected for the DJSI World Index for the seventh consecutive year. Placing among major global enterprises, Delta was also selected for the DJSI Emerging Markets Index for the fifth consecutive year. Delta ranked first among world-leading electronic equipment, instrument and component companies in the DJSI criteria of “Product Stewardship,” “Corporate Citizenship and Philanthropy,” “Labor Practice Indicators,” and “Materiality.” Delta Electronics (Thailand) Public Company Limited, an affiliate of Delta, is also ranked in the top five companies within the “ITC Electronic Equipment, Instruments & Components” sector on the world-renowned Dow Jones Sustainability Index (DJSI).

Delta is dedicated to fulfilling its corporate mission "To provide innovative, clean and energy-efficient solutions for a better tomorrow" through the development of sustainable technologies and solutions. Delta's high-efficiency products and solutions have contributed to a total savings of 20.8 billion kWh of electricity and a reduction of carbon emissions by about 11.07 million tons of CO2e for the past seven years.

Delta has always focused on global warming and environmental issues, while promoting environmental education and green buildings through the Delta Electronics Foundation. In 2015, Delta held an official side event with the theme of energy conservation during the COP21 conference in Paris. Delta also organized a green building exhibition at the Grand Palais to share its experience in creating energy-saving green buildings with climate change opinion leaders. In line with its company mission Delta held its green building exhibition in both Beijing and Taipei in 2016, and has also published journals, and produced micro movies on environmental issues. Delta's long-term, continuous efforts have received much favorable recognition from international evaluation organizations.

The Dow Jones Sustainability Indexes were launched in 1999 as the first global sustainability benchmarks. The indexes are offered cooperatively by RobecoSAM and S&P Dow Jones Indices. Each year, they invite the world’s 2,500 largest companies, measured by free-float market capitalization to report on their sustainability performance. The results of the Corporate Sustainability Assessment provide an in-depth analysis of economic, environmental and social criteria. The indexes serve as benchmarks for investors who integrate sustainability considerations into their portfolios, and provide an effective engagement platform for companies that want to adopt sustainable best practices.
Delta presents digitalization and flexibility for a new era of smart, green manufacturing

Text by IABG

Delta just unveiled its strategy for comprehensive “Digitalization and Flexibility for Smart, Green Manufacturing” at Smart Manufacturing Seminar and Press Conference held on the opening day of the Taipei Int’l Industrial Automation Exhibition 2017 (September 6th ~ 9th).

On September 6th, morning, Delta started the exhibition not only at its booth but also at the “Smart Manufacturing Seminar”. Andy Liu, General Manager of IABG, gave an opening speech to all customers who attended the seminar and said, “Delta’s aim is to help industrial clients build digital multi-tasking smart production lines to replace traditional production lines that rely on manpower for changeover. With complete automation products, software, and systems, Delta’s solutions cover nearly everything required for smart manufacturing, from smart robot workstations, sensors, internet of machines, and on-site equipment for data transmission, to manufacturing execution systems (MES), visualization, data analytics management, quality diagnosis, energy monitoring and analysis. We are ready to move on to smart manufacturing with our partners and customers.”

Later in the afternoon, CEO Ping Cheng and Andy Liu held a press conference and presented Delta’s strategy and achievement for smart manufacturing. Ping Cheng indicated that to respond to fast-changing market demands, smart manufacturing has become an inevitable trend as well as a new business opportunity. As a leading manufacturer of electronic components and parts, Delta actively applies its own products and the expertise gained at its factories to integrate IoT, big data analytics, and cloud-based technology platforms. Through the integration of software with automation equipment, Delta has developed smart machines, smart production, and smart logistics that enable quick changeover for flexible smart manufacturing. For the future, Delta intends to build complete automation systems and smart production lines for its clients.

Ping Cheng and Andy Liu took the media to visit Delta’s booth after the press conference and personally introduced Delta’s key displays, including: High Flexibility Multi-tasking Smart Production Line, Smart Manufacturing Solutions, Smart Machine Solutions, and Smart Quality Diagnosis Solution. Delta’s exhibits and capabilities of smart manufacturing impressed the media, who released many topic reports and attracted hundreds of visitors to Delta’s booth. The great success brought encouragement to Delta and its customers to persuade smart manufacturing.

Visitors who wants to learn more about smart manufacturing frequently crowds Delta’s booth during the exhibition.
If you are into fine porcelain and artistic home decoration, you must be familiar with quality goods of everyday life that Oculent State (OPS) acts as the agent for, such as German Meissen porcelain, Moser glassworks, and Spanish Soher bronze sculptures. As the Neihu Technology Park has numerous technology companies, it is hard to imagine that in the OPS Headquarters with seven floors above the ground and three underground floors, covering an area of about 16,519 square meters, there is an amazing modern home art museum of 18th-century Baroque-style, where fine furnishings that have never been exposed before are exhibited, which are specially ordered from abroad.

Various gorgeous European styles of furniture are collected on each floor, which create different home spaces, such as living room, study and dining room, making the layout at every corner unique. To facilitate interactions with guests and break the coldness of traditional shopping mall, in the splendid hall are held irregularly-scheduled wine tastings, concerts or marketing activities through the collaboration of different industries to improve Taiwanese appreciation of artistic furnishings. To increase the overall visual wonder, OPS especially entrusted Delta displays to take charge of the planning, in which fine pitch LED displays with choicest levels were selected, with 1.9 mm fine pitch and composed of 7 x 7 screens to build 4.2m x 2.4m video wall of resolution over 1080p. Its color is bright and vivid and color display is as great as its energy efficiency. The exquisite and gorgeous color and classical works in the hall complement each other. Visitors can experience the meticulous picture quality even when looking closely. In addition, OPS selected Delta for its design development of the overall environmental control. DSI team’s rich experience and development ability of overall design of numerous museums enrich the static display of fine furnishings.

After the completion of the fine pitch LED displays, a fashion show was held in the museum; against the trendy clothing on models, the overall effect was highly impressive. The LED displays integrate the hall lighting and the overall automation control of the electric curtains so that the classic craftsmanship is perfectly combined with technology, once again gaining the recognition of our client.

Delta’s fine pitch LED displays show the combination of classic craftsmanship and technology

Text by DSBU
Delta Display cooperates with Pingtan Comprehensive Experimental Area to build a digital business exhibition hall

Text by DGC

In response to the general trend of digital exhibition hall, recently, Delta DSI has cooperated with the Business Operation Center of Fujian’s Pingtan Comprehensive Experimental Area to select Delta’s fine pixel pitch LED products with P1.6 specifications and distributed vision control system (DVCS) for the exhibition hall, creating full HD picture quality of full screen 4560x1120, with the single screen specifications being 7.6m wide and 2.1m high and two large screens of fine pixel pitch LED in a total area of 31.2 square meters, which are distributed on both sides of the hall to play promotional videos, and display a variety of real-time data, including SZSE Composite Index, SSE Composite Index and GEM Index, highlighting the magnificent cross-strait financial and economic trends and becoming a wonderful scroll painting of Pingtan Comprehensive Experimental Area.

Delta’s fine pixel pitch LED has four prominent advantages, i.e. “modular structure”, “front-maintenance design”, “quick installation” and “long life cycle”. With the adoption of the modular structure of integrated aluminum die casting display cabinets, Delta’s fine pixel pitch LED can precisely control the physical seam between the control cabinets to ensure the flatness of the full screen, presenting to users with final comprehensive outstanding display pictures. With full consideration of the user’s requirements for maintenance space in indoor use, Delta’s fine pixel pitch LED adopts real front-maintenance installation design, in which displays modules as well as all the components and parts, such as the internal control system of the display cabinet and the power system can be maintained in front of the screen. The entire LED screen can be installed and maintained against the wall, eliminating the need of special maintenance passage at the back and saving a lot of space for the user. Through the pre-assembly, the installation time of Delta’s fine pixel pitch LED can be greatly shortened and the work load reduced. With Delta’s fast and efficient installation and commissioning, it took only two weeks to complete the installation.

At present, this set of fine pixel pitch LED large screen with the comprehensive solution provided by Delta has been formally put into use in the exhibition hall. Its superior display effect, convenient maintenance and powerful system functions have been fully recognized by the Business Operation Center of Pingtan Comprehensive Experimental Area.

Dispensing in the production of electronic products is usually carried out manually by hands. In the face of rising labor costs and labor shortage, some power supply unit manufacturer encountered the difficulty in attracting investment. To guarantee the smooth implementation of production, also due to the requirements of product quality and production speed, this company decided to build an automatic dispensing production line with steady performance to replace manual operation.

In response to the customer’s needs, Delta provided the customer with a 3C product dispensing solution by adopting DRS60L series of SCARA robots, in which machines replace manual work to effectively solve the manpower problem and at the same time improve the stability of products and production speed. The solutions include DRS60L series, PLC, HMI, smart camera etc. Due to the flexibility of the robots, these solutions also realize wick changeover and complete the operation without the assistance of the fixture.

Through intelligent data computation, DRS60L series of SCARA robots can determine the dispensing position and conduct the operation, automatically capture the information of product coordinates, and realize non-stop assembly line operation. As the products conveyed through the belt may be placed randomly, different angles of the products may lead to inaccurate dispensing position. When the visual inspection system with DMV series of Delta camera as the core is also used to focus on standard points, the controller will calculate and analyze the product speed for calculating coordinate offsets and locating dispensing positions, so as to realize the accurate tracking of the point position. Meanwhile, sound and light alarm can pick out products of dispensing miss and intercept nonconforming products, while automatically identifying and passing re-flowed products to avoid redundant operation.
On August 9-11, BUS EXPO 2017 was held in Shanghai. Delta exhibited integrated air conditioning system single unit solution, and integrated compressor solution and system solution. Delta’s bus air-conditioning solution features convenient operation, easy maintenance, high performance and energy efficiency, which attracted many professional participants of the exhibition.

“Based on reasons such as environmental protection and energy safety, the vigorous development of the new-energy automotive industry is the only way to solve serious problems of global energy and environmental system, and also the inevitable trend of the automotive industry technology and industry innovation.” Wen-Xiang Shi, Director of Delta Greentech Frequency Converter Product Development Division, expresses that as one of the core components of a pure electric bus, automotive air conditioning is of great significance to the comfort and safety of the vehicles. Lightweight, integration, and high performance of automotive air conditioning is the developmental trend in the future. “Regarding pure electric vehicle air conditioning, Delta has established close cooperation with major customers of the industry. By having in-depth understanding of customers’ needs and converting such needs into plans to satisfy customers, after years of hard work, Delta has launched four generations of products to provide services for more than 70% customers. In the future Delta will continue to invest resources in the new-energy vehicles and provide customers with better solutions from a systematic perspective.”

Recently, Delta has successfully established a highly reliable power supply assurance system for the Counterterrorism Center in a city of East China by adopting DPS series of UPS. To ensure the power supply security of the Information Center and to meet the needs of counter-terrorism information development, Delta has provided 6 sets of DPS series of 400kVA UPS to build 1 set of 2N double bus system for an uninterrupted power supply system. With the help of the double bus design scheme, a UPS system without the necessity of converting the load to the bypass mains can be established to eliminate every possible single-path failure point. The UPS system of such double bus configuration makes the reliability and availability of the system reach the highest level.

In addition to the system design of high reliability, a maximum of eight units of the DPS series of UPS adopted this time can be connected in parallel to reach a total of 4 MW source power, which meets the needs of large or ultra-large data center for electricity. In addition to high power, DPS series also features “light load and high efficiency”, which realizes 96% high efficiency only with over 30% load rate, saving a considerable amount of electricity cost.
Delta modular data center makes its debut at the Annual Data Center Branch Meeting

Text by DGC

The 23th annual meeting of the China Computer Users Association Data Center Branch (hereinafter referred the “Data Center Branch”) was held in Nanjing, China on September 12, 2017. With “Innovation, Development, and Striding Over” as the main theme, the latest results and progress of the data center infrastructure field were the focus at the meeting. Delta was invited with approximately 500 data center operators to share their forward-looking ideas and practical experiences regarding the construction and management of the data center. The newly launched Delta’s Modular Data Center (MDC) Micro Datacenter Series was also exhibited at the same time. With the advantages such as real modularized structure, growing on-demand ability, and smart management, it was approved and favored by many user experts.

Mr. Yan-He Zhang, technical expert of DGC, was invited to give a speech regarding “Global Trend and Case Study of the Prefabricated Modular Data Center” at the annual meeting. In his speech, Zhang pointed out that the advantages of “modularization” is quite obvious and has become the “new standards” in the data center industry, and has encouraged other companies to roll out similar solutions. After fully considering the design concept of “Adapting to Local Conditions”, the infrastructure solutions with different adaptability for the datacenters in different scale were launched. The MDC has three series: Micro Datacenter, Dynamic Datacenter and Cloud Datacenter. From micro scale to ultra-large scale, there are solutions corresponding to different size data center facilities. The MDC that is tailored to the data center scale and demand for application has better applicability and higher reliability, creating more value for customers.

Delta talks about the global datacenter trend at the 2017 Datacenter Infrastructure Forum

Text by DGC

The 2017 Datacenter Infrastructure Forum ended successfully in Shanghai on September 20. With “Fusion and Innovation” as the main theme, the way how the datacenter operators take the direction and improve as the time goes under the new technology trends was paid attention to and discussed at the forum. Delta was invited to the forum to talk about the global trend and successful cases of the MDC (modularized datacenter). Delta invited, and the representatives of datacenter user representatives were invited to visit the gold-level green datacenter in its Shanghai operation center.

A datacenter is the infrastructure of big data, cloud technology, and smart city. Mr. Yan-He Zhang, a technical specialist from Delta Greentech, gave a speech regarding the “Global trend and case study of the prefabricated modularized datacenter” in this annual forum. He introduced in detail about how the datacenter infrastructure solutions will satisfy the market’s changing demands in the mobile Internet era where people seek high performance, low power consumption, and easy expansion. After considering the idea of “Adapting to Local Conditions,” Delta introduced the infrastructure solutions with different adaptability for the datacenters in different scales. The MDC has three series: Micro Datacenter, Dynamic Datacenter, and Cloud Datacenter. From micro- to ultra-large-scale, there are corresponding solutions for data centers in different scales. The MDC that is tailored to the data center scale and demand for application has better applicability and higher reliability, creating more value for customers. Moreover, as high energy consumption is the focus of attention for the operation and maintenance of a datacenter, Delta invited nearly 200 datacenter user representatives to visit Delta personally to have close experience with and to observe Delta’s gold-level green datacenter with a PUE < 1.43.
The 2017 China Lighting Forum – Innovative Semiconductor Lighting Application and Smart Lighting Development Forum was held in Chengdu from September 7 to September 9. Dr. Paul Ai, Chief Technology Officer of Delta Greentech, attended the forum on behalf of Delta and shared Delta’s smart street lighting solutions at the main forum. As pointed out by Dr. Paul Ai, the greatest feature of Delta’s LED smart lighting control system is “smart,” as it consists of two parts, namely smart street light controller and city lighting smart control system (WEB, APP and PC-end). With the built-in monitoring unit, power monitoring system, and light pole, the light can be dimmed or brightened remotely using the GPRS module to save power; the CAN bus and redundant power supply module can be used for communication to upload the working status of the lighting control system to the platform, so the managing operator can control and adjust the system based on the use status and environmental changes to realize the remote signaling, testing, and controlling functions easily.

In addition to applying in street lighting, Delta’s LED DC smart lighting power control system can be widely applied in substations, tunnels, roads, parks and other outdoor scenes. This system was once applied successfully to control nearly 2000 lights in a tunnel. It saved over 65% of power for the tunnel lighting and effectively reduced the costs including those for the electricity and maintenance. It also saved more than 15% of the engineering cable cost for the customer. In addition, this system has applied the centralized DC power supply and digital control of smart dimming and brightening to the LED lighting field, which is the first successful application of Delta LED DC smart lighting solutions in the tunnel field, and also the first in the industry.

The 9th of the Shanghai International Electric Vehicle Supply Equipment Fair (EVSE 2017) was held at the Shanghai New International Expo Center. Delta displayed the latest EV charging solutions with efficient power-saving features, attracting participants from various industries.

DGC CTO Dr. Paul Ai indicated that, with its unique environmentally friendly advantages, electric vehicle (EV) gains the popularity among a massive consumer community, making it a new transportation choice of the public. Delta’s efficient power-saving EV charging solution is composed of the EV charging and Site Management System. Among which, the DC charging pile uses a HF soft switch technology and a module design to integrate the charge interface, the human–machine interaction, communication, and the meter, etc. into one. The AC charging pile has a compact exterior, with dust-prevention, damage-prevention, and water-proof design durable in use. The Site Management System conducts Internet-based instant monitoring and management over the charging piles. It supports various third-party interfaces and functions such as charge status monitoring, charging station operations, power supply management, charging equipment architecture, environment monitoring, and so on.

Delta developed its own DC charger with a rich set of R&D skills, including the 30kW wall-mounted DC charger and the 60kW ~ 120kW DC quick charger, etc. The chargers are equipped with a wide voltage input range, high power factor, high efficiency, lower-order harmonic, constant current/power output and other features, with an actual output power in certain voltage ranges being 20% higher than traditional EV charging. Delta’s DC chargers have received certifications of various national standards such as CNS/IEC/SAE/TUV/CHAdeMO, etc.

Delta’s EV Charging Solutions make its debut in ICPE 2017

Delta attends China Lighting Forum and shares Smart Street Lighting Solutions
DMX success story on energy management system integration

Text by Delta Electronics Mexico & CA (DMX)

DMX is excited to present the success story of one of our larger projects using our control solutions (PS and PLC) for an energy management company. DMX intervened providing a service of monitoring and managing the energy through a cloud solution based SaaS using business intelligence to provide operative performance plans, in order to improve operations and detecting and analyzing HACCP to implement continuous improvement for customers.

At that time, the customer was looking for an industrial controller, which met their requirements and he invited us to participate. Due to the business model being based on a cloud service, the main challenge of the application was not just to monitor and control the variables such as lighting, but also allow program updates into the controller remotely through their cloud service. The main issue was that the customer wanted to use their cloud to upload a file into a repository and then, automatically, each site along the country would take the file automatically and uploaded to the PLC.

This requirement was the most important because it became the factor for deciding to use Delta PLC. We won the spec over Schneider and other brands because we were able to find a way to program the PLC through the RS-232 port without using the program, create an instruction list using a TXT file (which was uploaded to the cloud) and then it was downloaded by a software in each site at the same time, executing the list of commands automatically reprogramming the PLC. We sold over 2000 sites installed all over Mexico.

Winning projects is really important for us, but the long term relationship with our customers could be a little bit more important. One of the key factors to build this kind of relationships is the post-sale service, this is critical to maintain and grow the relationship trust in the brand and its capability to support large scale projects. This project is also an example of support and teamwork not just inside Delta but also with our customers, demonstrating we are always there for our customers to support them.

One year after this project started running, we released a firmware version with some troubles on the temperature modules used that made the PLCs for this project stop, affecting the process of the customer and the analytics of the system. This was a critical problem detected in sites all over the country endangering our customer’s contracts and causing a big increment on the support cost which also endangered project continuity. We as DMX team worked together with the PLC BG and our distribution channel in order to solve it. We all worked together to pick the faulty units (over 1200 spread across all the country), upgrade them and replace them always trying to reduce the impact on the data collection of the system and without interrupting the end user’s operation.
In 2016, DPF employees took part in the Center for the Built Environment’s (CBE) Occupant Indoor Environmental Quality Survey. As one of the top scorers in the survey, Delta’s Americas headquarters was one-of-six facilities selected as a finalist for CBE’s Annual Livable Buildings Award.

This award serves as a mark of distinction for commercial buildings and is unique in that it includes the preferences of the building’s occupants in its selection criteria. This award has been given to buildings that demonstrate livability, which CBE defines as exceptional performance in terms of occupant satisfaction, resource efficiency, and overall design.

As a finalist, we were asked to provide an award submittal that would be reviewed by a jury of CBE industry partners, members of academia, and other building industry leaders. The submittal included a project narrative, photos, energy data, and comments from the design team.

At the end of July, we were informed that the jury had selected Delta’s Americas Headquarters as one-of-two Honorable Mention recipients for CBE’s 2017 Livable Buildings Award. It is a huge honor to be recognized by CBE and the jury for our efforts in creating one of the leading livable buildings in the world.

Delta America Headquarters utilizes many of Delta’s own technologies to elevate its sustainable operations and reduce energy consumption, such as its solar PV inverters, energy-savings variable frequency drives, elevator power regeneration technologies, a wireless outdoor LED lighting system, InfraSuite Datacenter infrastructure solutions, electric vehicle charging solutions, and building automation management and Delta Energy Online software. To conserve water, the facility also includes a 140,000-gallon rain water harvesting system, which has been discreetly implemented on the building’s property to collect water from the rooftops for irrigation.

“a building that achieves exceptional energy use is only made possible by the commitment and dedication of all parties involved, among them particularly the owner/user, to create a project that is efficient in its design, construction and operation. The recognition by CBE provides tremendous encouragement to the users, designers, and builders, as we keep moving forward together on the path to sustainability and green environment.”

Joshua Pan, FAIA / Principal, JJP Architects & Planners
Delta presented solutions for innovative data centers at the Data Center Dynamics Middle East conference in the UAE

On May 2017, the Data Center Dynamics (DCD) Middle East conference took place at the Madinat Jumeirah resort in the UAE. The IT vendors and industry experts took this opportunity to discuss the challenges data centers in the region are facing.

Delta showcased a number of technologies including its innovative DPH series, which can be used with the energy-saving RowCool system. These modular 75 kW UPS systems achieve AC-AC energy efficiencies of up to 96%. Delta’s DCIM platform serves as a capable complement to the DPH UPS family. Administrators use this central management solution to monitor energy efficiency (PUE-power usage effectiveness) and to control critical data center processes.

UAE officials expect a number of companies to start shifting their focus towards the UAE for data center investments from 2017 onward. The key considerations for the advanced data centers of the future are power supply and cost efficiency. With its proven solutions and cutting-edge portfolio, Delta is extremely well-positioned in all of these aspects.

Delta displays innovative power solutions of the future at GreenPower in Poland

Delta attended the GreenPower tradeshow in Poznań from May 23–25; it is the largest exhibition of the field in Poland. Delta focused on three issues at its exhibition stand:

1. Uninterruptible power supplies (UPS)
The main focus of Delta’s exhibition was the modular UPS DPH 500, the flagship of the Modulon DPH family. This high-performance UPS offers an outstanding 500 kVA power rating. The AC-DC-AC conversion achieves efficiencies of as much as 96.5% during normal operation and up to 99% in Eco mode.

2. Solutions for solar energy
Delta presented its solar inverters for use in commercial environments. The highlight here was the high performance RPI M88H inverter. This 88 kVA (output) transformer-less model achieves an efficiency of 98.8% and is thus particularly suitable for commercial applications.

3. Charging stations for electric vehicles
With a Tesla and a BMW EV at its exhibition booth, Delta demonstrated how this type of electric refueling station works in practice. The charging station boasts an output of 150 kW and can charge up to four vehicles simultaneously.

Together with partner Rubicon, Delta debuts UPS family at South Africa’s leading automation trade show

On June 2017, the Africa Automation Fair (AAF) took place in Johannesburg’s Ticketpro Dome. Delta was present at this important African automation convention and trade fair. This year was the first time Delta exhibited together with its new partner, Rubicon SA.

For Delta, participation in the South African Congress and Trade Fair was a first in two respects: The company presented the three-phase UPS from its innovative HPH 60 kVA UPS line for the first time there. Additionally, Delta announced in Johannesburg its collaboration with new partner Rubicon Electrical and Automation from South Africa.

“Rubicon’s energetic team is a perfect match for the Delta Group and our business philosophy,” said Ross Peringuey from Rubicon. “Just like at Delta, high-quality products, sustainability, and excellent customer service are high priorities for Rubicon. Thanks to our co-operation, we will be able to take advantage of synergies that will result in major benefits for customers in South Africa.”
Delta France 30 years EMEA meeting

Text by Delta EMEA

On July 4th, Delta France took advantage of EMEA 30 years anniversary to organize the first French country meeting under the patronage of country manager Andreas Hoischen. Our common goal was to know each other’s activities much better and find potential synergies between all BUs set up in France.

The first day meeting started with TPS, followed by MCIS, PVI, IA and Vivitek. The whole range of EPS/MP/CP/FM business and the latest LED products were also introduced to the partners. Then the last session of the day is EVC products introduction.

After the long 1st meeting day with very high temperature and no air-condition in the meeting room (34°C was reached at Lisses, France) we left for a splendid dinner on the famous Bateaux Parisiens glass-boat river cruise boats on the Seine in the heart of Paris. The evening was perfectly organized by Sarra Chtarra and gave us the chance to be known to each other, memorized by many very nice pictures.

The French team says many thanks to the Delta management for having sponsored the 30 years EMEA dinner. Everybody enjoyed the whole event and is looking forward to have more of such team-building events in France.

Delta awarded scholarships and bursaries for students in Northern Thailand

Text by DET

For 17 years, DET together with Delta Foundation (Taiwan) have been awarding scholarships and bursaries to students in Northern Thailand. Such assistance helps students from needy families who have done well academically to defray their cost of education. The recent award ceremonies were held at the Chiangmai Yunnan Association and The Yunnan Association of Thailand in Chiangrai on July 15 and 16, 2017, respectively.

270 primary school students and 171 high school students were awarded the bursaries. Six high school students with outstanding academic results were awarded scholarships with a total amount of 181,420 baht that included allowance and tuition fees. The 441 bursary and scholarship recipients came from 15 schools in Chiang Mai and 34 schools in Chiang Rai.
DET’s head office in Bangpoo, Samutprakarn has received the LEED (Leadership in Energy and Environmental Design) Gold certification in the EBOM (Existing Buildings: Operations and Maintenance) category. It is also the first factory in Thailand to have received the certification under the EBOM category. LEED is one of the most globally recognized green building certification programs developed by the non-profit U.S. Green Building Council (USGBC). The certification provides independent verification of a building or neighborhood’s green features, allowing for the design, construction, operations and maintenance of resource-efficient, high performing, healthy and cost-effective buildings.

The Gold certification was made possible with many enhancements made to existing facilities and several new installations. Delta had installed many of its own energy saving products and solutions including Delta’s solar energy solution which produces 4.4MWh from rooftop solar panels on the building and car park shelters; Delta’s photovoltaic inverter with high energy conversion efficiency at 98.5% which can generate over 8 million KWh of electricity per year; Delta’s energy saving Variable Frequency Drive (VFD) elevator, Delta’s data center solutions and the company’s proprietary energy management software and more.

In addressing water related issue, the company has saved 35% of water in 2016 with major projects like harnessing recycled water from waste water treatment and rainwater storage systems. For the enhancement of air quality and reduction in electricity consumption in the building, some key projects include choosing low emitting products, banning smoking inside the building, coating the roof with white color to achieve Solar Reflective Index (SRI) of 78 or higher; using Delta’s energy saving HVAC system, replacing conventional lighting with LED type and installing intelligent lighting system.

The company will continue to pursue Platinum certification in the coming months as part of its relentless sustainable development effort guided by the company’s mission- “To provide innovative, clean and energy-efficient solutions for a better tomorrow.”
Taking root in the neighborhood, looking forward to the Future
Delta Electronics Japan Headquarters

Text by DEJ

Tomohide Sakaguchi / Marketing Manager, DEJ

26 years ago in 1989, C.H. Ko, the General Manager of Delta Electronics Japan (DEJ), also known as "Ko San", who was designated by the Honorary Chairman Bruce Cheng, carried a suitcase and flew to Japan alone. After three years of hard work, he founded the Japanese subsidiary in 1991, and rented a 3-story building in Tokyo’s Ota District as the office and warehouse. The company employed a team of less than 10 people, and began Delta’s business in Japan.

At the time, DEJ employees must have the ability to "wear many different hats", and possess all kinds of skills. It is common daily occurrence where one minute, the staff is working in the office upstairs, and the next minute, they are gathered downstairs in the warehouse unloading goods. DEJ gradually thrives and grows under the devotion of the colleagues in the pioneering stages. The company now employs about 200 staff, and has expanded its products from the components, fans, and power supplies to solar inverters, building automation, industrial automation and other solutions and products.
In addition to the Tokyo office building located in Minato-ku Tokyo where the electronics companies are highly competitive, DEJ also purchased an 8-story building in Osaka, the main battlefield of home application, and established business offices in Nagoya in the middle of Japan, Iwate Prefecture in the northeast, etc. In 2016, DEJ started running the first self-operated solar power plant “Delta Ako Energy Park” in the Hyogo Prefecture, with a power generation capacity of 4.6MW, which is currently the largest distributed solar power plant employing ultra-high voltage in Japan.

Upholding the spirit of “giving back to the society”, DEJ not only expanded its business in Japan, it also regarded making contribution to the community and the society as the top priority. A few years ago, Tokyo experienced a rare snowfall. Besides clearing away the snow at the front door, DEJ also purchased additional snow shoveling tools and cleared away the snow on the whole street to prevent injuries of elder neighbors who live in solitude. It was a gesture that garnered a lot of praise from residents nearby. On March 11, 2011, the northeast region of Japan had the largest earthquake in Japan’s history, which resulted in tsunamis and the well-known nuclear power plant explosion. Under the circumstance of landline, Internet, and traffic paralyzed, and a difficult access to food and drinks, several tens of our employees were stuck at the Tokyo office. The staff started an autonomous fundraiser and collected millions yen in two weeks. Afterwards, the staff worked together and gathered resources; in April, Ko San led the officers to drive into the disaster areas several times for rescue where the Japan Self-Defense Forces have not yet reached. The staff saw shocking scenarios in the heavily devastated Ishinomaki, where the city officials who have survived told us that “After the earthquake, the first to arrive was Taiwan’s rescue team, and Delta was the next.” The “character” of DEJ that “cannot take a backseat” is evident in this case.

Standing on the shoulders of those before us, DEJ now has many departments and business teams. As everybody performs his or her own role, we work together like a family in harmony. Moving into the future, we will strive to offer the customer higher value, contribute more to the society, train talent, and continue to improve.
I joined DEJ in 1993, when there were less than twenty employees. Prior to my employment at Delta, I was working in a Japanese branch of a large Taiwanese company. There were distinct internal fractions in the company, and we had to deal with complicated personal relationships in addition to our duties. That is why I wanted to find new employment opportunities. I was interviewed by DEJ through a friend’s recommendation, and I decided to join the DEJ family after I discovered that Ko San was a genuine and kind person.

After being in charge of the businesses of EMI filters, fans, and transformers, I was assigned to the sales for CRT monitors. Delta was relatively unknown in the Japanese market at the time, and we were faced with closed doors everywhere, to a point where the CRT business was in crisis mode. However, the turning point came after Ko San led us to winning a large order from Fujitsu. We were subsequently awarded with orders from major Japanese companies such as NEC, Mitsubishi, SONY, Hitachi, etc.

The business development process was very difficult due to the severe demands of Japanese clients. I remembered clearly that clients would be stationed in Taiwan for half a year to participate in development; they could propose corrective actions in the evening meetings, and review the progress at the meeting in the very next morning. We could only stay up and work all night when the client was resting. Even though the client’s demands were difficult, but the humble learning corporate culture of Delta, made those demands a means of company growth. For instance, the biggest power supply client of DEJ is SONY. They requested a higher yield by factory automation, which indirectly pushed Delta into the path of industrial automation, built an irreplaceable trust between us and the client, and created our comprehensive services with high quality.

In over 20 years of joining Delta, what moved me the most is that we are not only a for-profit corporation, but a company with a higher purpose. I’ve heard Honorary Chairman Mr. Cheng mentioned several times that if we raise the energy efficiency by 1%, we can eliminate the use of one whole nuclear power plant. Our corporate philosophy makes me proud to call myself a member of Delta, and I consider my work very meaningful.

DEJ started from ICT related product sales to the current Data Center and other relevant products, and is moving towards solution plans and system integration. The transition comes with inevitable challenges, because every case is independent, and there are always a lot we could learn. Delta has a clear strategy for the future and offers many opportunities for everyone to shine. I hope to join all my Delta coworkers in our dedication towards Mr. Cheng’s corporate mission, “To provide innovative, clean and energy-efficient solutions for a better tomorrow.”
I joined DEJ in 2001, and I am the current Head of the Osaka office, mainly in charge of market development, the sales and after-sales services for renewable energy products. I was originally in charge of power supply design in another company which used Delta products such as transformers, etc. Every DEJ salesperson I had been in contact with were full of energy and responded quickly, which left a huge impression on me, so I joined Delta when DEJ was planning to establish the Osaka office.

In the start-up phase of the Osaka office, we had quite a difficult office environment. Everyone had to run outside to the convenience stores for photocopies, and the office phones were home wireless phones. We even put computers on top of delivery company cardboard boxes before the office tables arrived. Those memorable moments have now transformed into the hard-working characteristics of all the Osaka office employees.

In the beginning, I was in charge of the sales of transformers, CCFL inverters for LCD TVs, and other products. During the interactions with clients, I became familiar with the solar power business development and solar power inverter demands of a major renowned company. I took the opportunity to win inverter ODM orders, and began to develop the solar power market.

With our team’s hard work, Osaka office now has its own office building and is in charge of the management for Delta Group’s first self-operated solar power plant “Delta Ako Energy Park”. The experience of managing the solar power plant has also given us a great inspiration in the thinking of product sales, making us think more from a product user’s point of view, and from the system aspect, providing more customer-oriented services to meet their technical requirements.

Along the way from the establishment of the Osaka office, regardless of making products or brand management, our team has faced all kinds of challenges. “Never give up in the face of any challenge” has become my deep belief. As long as we adhere to providing our customers with values, it goes without saying that the brand value will be increased, and the value as being a human being is also upgraded. In a constantly changing environment, I expect that the team and I could clearly know the right direction and continue to provide product value.
Fans are generally considered as the most complementary and necessary, yet highly unwanted components in electronics, where market demand is still immensely growing every year. Why are fans unwanted: they have a relatively short lifetime compared to other electronic components, they consume power when mostly the power budget in design is gone already, they make noise, yet they have excellent cooling performance in a relatively small space. Delta has been successfully working on these topics in the past decade, to not only improve the cooling performance but to overcome these topics.

During the past 10 years electronic components have dramatically reduced in size while the capacity of the IC (Integrated Circuit) has been continuously growing. We see the immense requirements of thermal management these days.

To overcome these requirements, more and more combined solutions for heat dissipation are required. Fans in combination with heatsinks are already long-time available, your CPU cooler for instance, but nowadays more advanced solutions come into place: fans with heat pipes or with vapour chambers. The heat pipe in a mobile phone is a passive solution to move the heat from one spot to a place where there is more space or less critical components.

If we take a look at bigger systems like IT servers and telecom radio’s, these passive solutions cannot fulfil all the requirements so fans will be added to the system. This combination, that uses the passive part as a heat spreader and then uses the fans to get rid of the heat, will be the major usage in the coming years.
Delta FMBG is one of the few thermal management suppliers worldwide who can offer a broad range of solutions to the customers as a one-stop shop. We do not need external parties to help us co-design solutions for our customers. The businesses we are working in are: IT Telecom, Industrial, Automotive, HVAC, Home appliances.

**Delta FMBG Product Range:**
- DC Axial Fan & Blower: 17mm – 360mm
- EC Axial Fan & Blower: 120mm – 910mm
- Passive Cooling: heatsink, Vapour Chamber, Liquid Cooling
- CTSP Products: Air Conditioning/ Heat Exchanger/ Heater
Delta has launched the LNV series of LED driver with wide input voltage (180Vac – 528Vac) and constant current/constant voltage output. The series of LED drivers with 320W output power comes in models with 12V, 24V, 36V and 48V output voltages. Different combinations of features are designed into the LNV series to suit different application requirements and energy optimization needs. Options include externally adjustable output voltage and current levels, and adjustment of LED brightness via 3-way built-in dimming function. Every model in the series is solidly enclosed in full corrosion resistant aluminum casing, certified according to UL safety standards; and is compliant with Immunity/EMissions/Harmonic requirements.

Additionally, the products’ excellent specifications with high surge immunity (common mode: 6kV, differential mode: 4kV), MTBF > 700,000hrs and compliance with IP65/IP67, make the LNV series an essential part of an energy efficient LED lighting power solution for both indoor and outdoor applications.

**Highlights & Features**

- Designed for single phase (for L – N) or two phase (for L – L) wide input 180-528Vac
- Up to 94.0% efficiency
- 6kV common mode & 4kV differential mode surge immunity
- Active PFC. Meets IEC/EN 61000-3-2, Class C
- Adjustable voltage & current; dimming options available
- IP65 or IP67 options for indoor and outdoor applications
Travelling? Drained the battery power of your Apple Macbook USB-C when typing your latest blog? Or your iPhone by taking countless pictures when you are on an exciting trip? Then the Innergie PocketCell USB-C 6000 is for you! It will charge them safe & fast!

We solved this extensive energy consumption issue by implementing the PocketCell USB-C 6000 with USB/USB-C dual output ports to charge your mobile devices. From laptops to smartphones, game consoles to digital cameras, all you need is the PocketCell USB-C 6000 to charge them on the move. You can even extend the battery life of the Macbook USB-C powered series by 30%!

<table>
<thead>
<tr>
<th>Device</th>
<th>Charging Time</th>
<th>Extended Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPhone 7</td>
<td>1.7 Hrs</td>
<td></td>
</tr>
<tr>
<td>iPhone 6S Plus</td>
<td>2.5 Hrs</td>
<td>30% +</td>
</tr>
<tr>
<td>MacBook</td>
<td></td>
<td>1.8 Hrs</td>
</tr>
</tbody>
</table>

*Lab test results. Actual usage may vary.*
When USB-C INPUT Meets Power Bank Charging and Recharge

Our PocketCell USB-C 6000 revolutionary breakthrough sets a milestone in the history of recharging technology. With the speed of 3a input, you could recharge your power bank in just 1.8 hours, which is 2.5 times faster than usual. That means you can extend up to 30% battery life for your MacBook and the iPhone 7 can be fully charged within 1.7hrs.

Fast & Smart Charging : SmartBoost™

Innergie’s exclusive SmartBoost™ technology is the perfect combination to charge your device in best possible way. The PocketCell USB-C 6000 combines smart detection and fast charging.

The moment you connect your PocketCell USB-C 6000, the Smart IC in the SmartBoost™ fast charging technology can identify the type and brand of your device. With the use of Smart IC, the largest power applicable is detected for your USB-A port. Whichever 3C device you use, PocketCell USB-C 6000 provides the fastest and the most stable power to your devices.

Pass-Through Charging

The new power pass-through design allows you to charge both the PocketCell USB-C 6000 battery pack and your mobile device at once. That means you can take full advantage of your mobile device without the worry of running out of power. A new power pass-through design allows you to charge both the PocketCell USB-C 6000’s battery pack and your mobile device at the same time. PocketCell USB-C 6000 allows you to choose your preferred charging order. That means you would never need to disconnect your cables to charge devices. With only one action, but double your charging work.

Power Level Checks

One tap on the PocketCell USB-C 6000 smart five-stage LED capacity indicator button and you instantly know how much power remains. If you need to recharge it, please connect it to USB-C PD charger and within 1.8 hours your PocketCell USB-C 6000 is fully charged again.

InnerShield™ Protection

Innergie’s InnerShield™ has multiple safety mechanisms built-in to protect your device from risks such as overcurrent, overvoltage, overload, and short circuit; offering you a stable and reliable power source.

GreenSense™ Promise

Our promise comes from our mission to conserve energy. By improving our designs, we strive to optimize energy use and realize our sustainable green energy concepts. PocketCell USB-C 6000 is 100% energy-efficient when charging and discharging across an unlimited range of devices. Energy is never wasted.
Since it is expected that the summer of 2017 will be hot and possibly short of electricity, I have specially written the "Low-Carbon Lifestyle Blog" concerning climate change and energy, and have been writing a series of feature articles about "Summer with power shortage" since May to discuss the challenge of power shortage that Taiwan will face and coping solutions, including green building practices that all of us are most familiar with and the energy-saving system that is just introduced to Taiwan like demand response.

Unfortunately, my words have come true. On August 15th, from 16:21 PM to 21:40 PM, natural gas supply was stopped for two minutes without warning at Taoyuan Tatan Power Plant, which was originally hailed as the “relief pitcher” to relieve this summer’s power shortage crisis. Resulting in the tripping of all six units, consequently, 6.68 million households in 17 counties in Taiwan suffered from rotating blackout, the most severe power failure incident in Taiwan since the earthquake on September 21, 1999! In the evening of the incident, Chih-Kung Lee, Minister of Economic Affairs, resigned immediately, and a few days later Chin-De Chen, Chairman of CPC, resigned, too. Up to now, the subsequent effect still lingers on. To recall the summer of 2017, what the public remember most may be not the longest heatwave record in the history of 10 consecutive days with the temperature exceeding 36°C in Taipei City on August 5th-14th but the dark night of power blackout in Taiwan on August 15th.

Take a trip to Kaohsiung to see the future green buildings

Text by Evan Kao (Project Director of Delta Electronics Foundation)
**Start from building energy conservation to avoid the next blackout**

The August 15th blackout expose many key problems, besides blamed officials bowing out of office, it caused all sorts of inconveniences and economic losses, such as traffic chaos, discontinued industrial production and power brownouts in people's livelihood. The incident also sparked a lot of discussions from various sides about Taiwan’s power sources (nuclear power vs. green energy) and the security of the power grid.

Unfortunately, from the observation of the recent public opinion trend, “energy saving,” the most basic and the most effective means of power blackout prevention, is not only ignored by the media, but even "stigmatized"! Some people criticize by saying that energy saving is to force people to live a hard life or that it is an invalid policy with the effect of trying to put out a burning cartload of faggots with a cup of water. In early August, the government stipulated that public agencies shut off air conditioners for two hours from 13:00 to 15:00; virtually, this measure did not alleviate the crisis of power shortage at that time, and a few days’ peak power consumption even increased rather than decreased. (Some people say that the proponents of nuclear power turned on air conditioners intentionally madly by hoping that their actions could lead to power blackout and reverse of public opinions, and some people think that the air temperature was too high in those days, so the surge of power consumption could hardly be avoided.)

Many people may not know, at a moment before the occurrence of the August 15th blackout (13:58 PM), Taiwan had just hit a record high of 36.45 million kilowatts of electricity consumption, which means that our behavior of electricity use (and wasteful habits) really can’t “turn back”. Therefore, to get rid of the power shortage dilemma which cannot be solved in a short time, or help the power grid to have more surplus, first of all, efforts must be made to reduce the electricity demand. To make it clearer, what should be launched most vigorously is not to forbid turning on air conditioners in an "ascetic" way of energy-saving such as making steel with a backyard furnace, but adopt the approach of “smart energy saving”, assisted by the energy-saving design of green building and smart technology, to meet the above requirements.

In view of this, “Green Building Footprints - Delta Green Building Exhibition”, which returned to Huashan 1914 Creative Park in Taipei from Grand Palais in Paris last year, will return to Kaohsiung Pier 2 Art District in October this year for a month exhibition in response to the invitation of “EcoMobility World Festival” jointly organized by Kaohsiung City Government and Local Governments for Sustainability (ICLEI). The new theme will be “Green Living & Low-Carbon Transportation”. Besides the models of over 20 green buildings built by Delta since 2005, themes of "low-carbon transportation" and "green transportation" will also be incorporated for the first time, guiding visitors to imagine the brand new looks of the future low-carbon city.

**To implement the Paris Agreement, the construction sector has a significant responsibility**

![Graph showing the annual renovation rate of existing buildings](image)

The annual renovation rate of existing buildings has to reach 3% globally to reach the carbon reduction goal of the Paris Agreement

(Source: FROM THOUSANDS TO BILLIONS)
In fact, over 40% of the total global emissions of greenhouse gases are from the two major sectors “construction” and “transportation”, which are closely linked with the daily life of the general public. The influence of these two sectors are at least as great as that of “energy” and “industry”, and the former two sectors are also the areas where the public can make the greatest contribution to curbing global warming in their daily life.

According to the report “FROM THOUSANDS TO BILLIONS” just issued by World Green Building Council, to achieve the control goal of the Paris Agreement, i.e. global temperature rise remains below 2 degrees Celsius, the construction sector is responsible for 30% carbon reduction. All new buildings around the world must operate at net zero carbon from 2030. The entire construction sector has to accomplish the goal of net zero carbon by 2050!

We are only 13 years away from 2030. However, in terms of buildings that have achieved zero carbon standards at the moment, there are approximately 500 commercial buildings and 2,000 housing units world-wide, which account for a negligible proportion in the total construction area as vast as 223 billion square meters at present. How to make buildings more energy-efficient, lower carbon, and more climate-resilient? We shall tackle the issues without further delay. World Green Building Council reviewed the “Intended Nationally Determined Contributions” (INDC) of 193 countries submitted to the UNFCCC Secretariat and found less than half of the countries incorporated the construction sector into the national carbon reduction policy are less than 50%, showing that the driving force of public sector policies needs to be strengthened.

In this regard, “FROM THOUSANDS TO BILLIONS” suggests that, to achieve the long-term goal of net zero carbon by 2050, renovation rate of existing buildings must increase to 3% per year globally (less than 1% annually at present) from now on. If we apply this standard in Taiwan, according to the latest “National Statistical Bulletin” of Direcorate-General of Budget, Accounting and Statistics (DGBAS), there are 8.447 million existing housing units in Taiwan, in which as many as 87.6% of houses are over 10 years old. It means that 220 thousand old houses need to be renovated every year in order to keep up with the building carbon reduction standard stipulated in the Paris Agreement. Even if only houses over 20 years old are regarded as old houses, there are still nearly 180 thousand housing units that need to be renovated each year. It's a tremendous challenge.

It is often mistaken in the past that green buildings are the Green Mark sought after by newly built buildings or large public buildings, but has nothing much to do with ordinary private houses. However, by looking at the list of green buildings built by Delta, from Delta Electronics Taipei Headquarters situated in Neihu (being put into use in 1999, Taiwan's first existing building renovation diamond certification), History Museum of Taichung First Senior High School (originally built in 1937, the first announced historical building that has passed the building carbon footprint assessment), to Delta EMEA Headquarters Building which has obtained the Grade Authentication of “Very Good” issued by BREEAM (being put into use in 1987), all of them belong to the cases of revamping the existing buildings into energy-saving green buildings.
In terms of “distributed” energy vision, positive energy buildings are indispensable

After the incident of the August 15 power blackout, many people think that Taiwan must accelerate the construction of a “distributed” power generation system to avoid the failure risk of the centralized power grid. However, to accomplish the “distributed” power generation, in addition to a substantial increase in renewable energy, the “positive energy buildings” with triple benefits of energy conservation, energy generation and energy storage also need to be popularized at the same time, which will become an important part of the future energy network, guiding visitors to imagine the brand new looks of the future low-carbon city.
Positive energy buildings are buildings that can not only have environmental protection functions of energy conservation and carbon reduction, but also generate power for their own use, without continual dependence on mains electricity. When they generate electricity exceeding their demand, they can share the surplus power with neighbors or sell it to the power company. The R&D Center of Rocky Mountain Institute, the U.S. well-known environmental protection organization, can generate 117 thousand kilowatt-hours of electricity every year, which is more than their need, 88 thousand kilowatt-hours; therefore, the surplus goes to energy storage batteries, which can be used to help reduce the peak load pressure of local mains electricity. Delta Products Corporation Headquarters Building which has been put into use for two years not only uses ground source heat pumps to reduce 60% power consumption from air-conditioning, but relies on the solar photovoltaic system on the roof to provide a large amount of clean power. In July this year, the generated power exceeded the demand of the plant for the first time. It is expected to become the first “Net Zero Energy Building” in Fremont, California in the future.

Don’t think that the aforementioned scenes can only be found in advanced green buildings of European and American countries. In fact, there are also many cases of buildings with the potential of positive energy and net zero energy consumption Taiwan. For example, Kaohsiung’s World Games Stadium (today’s National Stadium) that was completed in 2009 with the assistance of Delta created the record of the “building-integrated photovoltaics” (BIPV) as the world’s first building with the scale exceeding MW, supplying millions of kilowatt-hours of green electricity every year to relieve the peak power pressure in summer.

The home of Delta’s “Low Carbon Expert” (Wim Chang, Deputy Executive Director of Delta Electronics Foundation) used a series of commercially available energy-saving equipment and smart designs to control the annual electricity bills to around NT$ 5,000 in the past. In his recent moving plan, “Low Carbon Household 2.0” renovated from the old house, he will add new energy storage devices, plus “Time-of-use rates” that he applies from the government, in the hope of providing a smart energy-saving approach which is more economical and eco-friendlier. These successful cases of green buildings developed in Taiwan can all be seen at the “Delta Green Building Exhibition” opening in October.

Exhibition Website: http://www.delta-foundation.org.tw/greenbuildings2017/
EcoMobility World Festival 2017 Official Website: http://www.ecomobilityfestival2017.org/
Thoughts on the 2017 Green-collar Design Workshop

Text by Tino Wang (Climate and Energy Planning Specialist of Delta Electronics Foundation)

Green buildings, also known as sustainable buildings, are usually thought of as buildings that are more environment-friendly than regular buildings, as the term suggests, but how "green" and in what ways? Some people think it is about installing solar panels on their roofs. However, since the adoption of EEWH green building assessment system and rules for the marking in 1999, there have been more than 6000 buildings in Taiwan that have been picked as candidates and acquired the marking. Many of them do not have solar panels installed indeed.

Solid courses to train more green-collar architects

For the questions above, not only common people have no knowledge of, even professionals in architecture and decor design do not quite have full understanding either. For this, Delta has been putting into full practice for itself after building its first green building plant (Tainan Plant Phase 1) in 2005. It also opened the "Green-collar architects training workshop" in 2009 which is entering into its 9th year, with close to 400 trainees from the total of 11 classes held. These frontline architects are expected to build more green buildings, and designers are expected to take into consideration the effectiveness in addressing environment concerns when renovating the older houses, with impact to the environment reduced as much as possible.
Held for the first half of 2017 was the "designers training" that lasted 8 weeks and 48 hours, with content that included practical course in design, visit of green buildings, and a practical workshop during the last week, making the training very solid and close-knitted.

The first-week introductory concepts were taught by Assistant Professor Sun Zhenyi of Land Economics Department from National Chengchi University. He went through every indicator for green buildings in one morning of lecture, making it enjoyable but too short. For instance, the raft foundation ditch for the building can be designed into a water reservoir, which reduces risk of flooding in the city during the down-pouring rain. The course on solar energy taught by specially-appointed Professor Yang Jinghuai of Construction Engineering Department from National Taiwan University of Science and Technology (NTUST) was moved to the solar cabin on the roof of a NTUST building, where students could eye-witness the application of thin-film PV glass (Building Integrated Photovoltaic, BIPV) and the practice implementation of the PV simulation software on-site.

The course on energy-efficient lighting by Managing Director Mr. Chen Chongron of Taiwan Green Collar Association, instead, emphasizes that adequate lighting in fact does not necessarily mean adding many lamps on the ceiling. Using desk lamps on work desks or using ceiling lamps to reinforce lighting will do. As he reminded, home is a place to have a good rest after work. Making it too bright creates some burden for the health.

In fact, principles behind the green buildings contain many "wisdoms from our ancessors". In ancient times, where there was no electricity and high-tech home appliances, people already knew about taking advantage of the local climate conditions to design houses into green buildings that were warm in winter and cool in summer with natural lighting and unobstructed ventilation. For instance, in introducing "Vernacular Architecture", we might wonder what is the reason behind the rectangular shape used for the pillars on those stilt houses in Southeast Asia? The answer is in fact it is designed for preventing snake bites (because they do not crawl on rectangular pillars), not for any technical consideration such as architectural structure or physical mechanics.
For the practice session during the last week of the class, the green-collar workshop of this year found a base in Bali for students to design their centers for education of waterfront geology utilizing techniques for creating green buildings according to the local climate and natural conditions. They were expected to put into their work as much as possible what they had learned in previous weeks, in areas such as green construction materials, energy-efficient exteriors, water conservation, geological ponds, ventilation and lighting, in-door ambiance, installation of renewable energy equipment, etc.

At the critique time, every group of students showcased their stunning design of innovation. Some students designed a green building with the shape of a green mussel shell because of their personal experience with the seafood from Bali area.

After the graduation of the “design development course” for the first half of the year, the foundation course (information on registration) for the “Green-collar architect development workshop” will be opened in Southern Taiwan for the second half of 2017 to continue nurturing “green brains” in architectural field that are more conscious about energy efficiency and know how to respect the environment and care for the ecology. They will be tasked with building more decent and green buildings for Taiwan that are energy-efficient and cozy to live in.
Campaigning against climate change and energy topics for so many years, Delta influenced not just environmental groups, government officials, media reporters, and general public, its own employees were also influenced in the way that they managed to make their own homes more environment-friendly and energy-efficient while still comfortable.

Photos and text by Tino Wang (Climate and Energy Specialist at DEF)

"Campaigning against climate change and energy topics for so many years, Delta influenced not just environmental groups, government officials, media reporters, and general public, its own employees were also influenced in the way that they managed to make their own homes more environment-friendly and energy-efficient while still comfortable."
As a long-time proponent of energy efficiency, Delta Electronics Foundation recently received a letter from Jimmy Liu, an engineer from Delta’s plant in Taoyuan, about how he managed to recycle kitchen waste and reprocess them into composts after his home-based studies and research. The foundation often received proposals from the outside. However, the proposal this time actually came from its own employee about his thoughts and ideas for energy efficiency, with no incentives such as award money or fund raising for a game. He only wanted to share about his personal experience. Thus, with a visit scheduled, the writer decided to go to his home to see for himself.

**Power meter catches power-consuming monsters; it is self-generated and used green energy**

Jimmy’s three members of family (including wife and child) live in a multi-story apartment in Taoyuan. Upon entering his home, the sensing LED light on the doorstep is lit immediately, followed in eyesight by the power meter under the main power switch box. He uses the company-made power meter to measure the daily power usage at his home, without the need to go downstairs to jot down the info from the central meter for the building. However, what Delta produced was the industrial power meter that might not be able to detect and measure if the power consumption is too small. Thus, another power meter was installed on the refrigerator.

Installing power meter saves electricity. Is it that simple? Jimmy showed his utility bill and said proudly that with power meter installed users would be able to pay attention to information on energy consumption, like he found out soon how come the power consumption in winter was higher than in summer. After some studying did he find out that "air conditioning" was not the most power-consuming but the "electric water heater" with power as high as 4,000 watts. To tackle this, he shortened the warm water routes and lowered the temperature setting for the heater from 70 to 50 degrees Celsius, with no more blending of warm and cool water. Once the temperature reaches the preset, he’d make his family go take shower and turn off the heater once done, in order to reduce power consumption due to temperature maintenance. It was worth the effort. The utility bill for February and June of this year all showed more than 1/3 of saving compared to the same period in the past. Now the average power usage per day for all three family members is only 4~5 degrees of electricity, which is half of the average of the power consuming household nationwide.

After the sharing, he toured me around his house, introducing his various approaches to energy efficiency, such as the small-size solar panel outside the balcony for the heat-absorbing room. It can store electricity to the battery through a transformer and can switch to city electricity via the "auto power switch", reducing reliance on central grid. (For those that experienced power outage on August 15, they must feel envious of us when reading this, perhaps.)
Reusing kitchen waste reduces trash and helps with vegetable planting

What is to be checked for balcony includes not only solar panel, but also a key mentioned since the beginning of this article: recycling of kitchen waste. Why did he want to use the kitchen waste for composting? His idea came from when he was studying abroad and seeing the so-called "iron stomach" every household had for processing kitchen waste (an equipment that shreds kitchen waste), so that they did not have to dispose them like trash.

What he is using right now is a power-consuming commercial model that is capable of producing fertilizers like soil in about two days. However, Jimmy admitted he was not familiar with the details of composting at the beginning and added too much kitchen waste such as shell fishes and meat that contain high level of nitrogen, causing bitter odor in the balcony that got him scolded by his wife. He went on websites of professional groups to gather some information and found out that the "carbon-to-nitrogen ratio" for the composts must be properly controlled. He got some coffee dregs to mix with the waste and managed to substantially improve the situation as a result. On the day of this visit, we could only smell a light coffee scent no matter if it is from inside the machine or the mature composts. Now, Jimmy takes the composts to his balcony for planting bok-choy. He’s also made a solar-powered auto water sprinkler system and LED growth illumination lamp.

Exemplifying the spirit of research with self-assembled equipment

Since entering into these energy-efficient endeavors by analyzing information on power usage and composting kitchen waste, with the example such as setting up the solar water sprinkler system mentioned above, Jimmy also conducted home-based experiment, assembling, and development of energy-efficient equipment ranging from sport equipment powered by bicycle-generated electricity and PLC auto control instrument to the timer-equipped quick-boiling kettle, almost everything we can think of. The most recent idea is to modify a bum steamer into a food dryer.

Seeing piles filled with electronic equipment, the writer was curious about when he, originally a mechanical engineering major, became a DIY electronics guru. Said with a smile, at the beginning he only thought about storing electricity generated by the solar panel to the battery, which turned out not working the way he wanted, making him quite frustrated. He even caused power outage for his home. It was unexpected that he gradually developed this interest and hobby after trials and errors, which made him want to continue to learn about the subject matter of automation and control. He even logged into the free online learning platform, DeltaMOOCx, created by Delta Foundation to learn more about automation through those professional courses.
Do not think that these passionate but "non-work-related and non-serious" experiment on energy efficiency would affect the work. In fact, working for Delta’s division for ventilation fans, Jimmy also managed to apply the spirit of research and the experience of problem solving to his daily work. Needless to mention, what was installed in his bathroom is the DC ventilation fan made by Delta. On the day of this visit, he also took apart the casing in order to explain to the writer the principle and working behind induced draft and fan operation. He also bought another brand of DC variable frequency fan to study about the fine differences between various fan blades.

Campaigning the climate change and energy topics for so many years, Delta influenced not just environment groups, government officials, media reporters, and general public, its own employees were also influenced in the way that they managed to make their own homes more environment-friendly and energy-efficient while still comfortable. At the time of continued rising of temperatures globally and Taiwan finding out its own approaches to transformation of energy use, more passionate engineers like Jimmy are expected to emerge, so they can teach people about many workable approaches to energy-efficiency that are indeed available in their daily living and are waiting for us to put into practice and application.