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From the Past to the Future

Chairman's Message Commemorating Hanwha's 67th Anniversary



Seung Youn Kim, Chairman

It's a new morning on the day of Hanwha Group's 67th anniversary.

Under the expansive skies of fall, you can almost feel the intensifying change of the season. Everything in the world changes as the law of nature intends. The same rings true in our lives and in our business.

The law of all things dictates that as we change, we grow through learning and experiences gained over the course of successes and failures. In the last 67 years, Hanwha has learned from its myriad of experiences and lessons. It has continuously evolved, stronger than before. Many companies can't weather great crises like the 1997 Asian Financial Crisis while Hanwha has emerged from it, ever stronger due in no small part to its enduring commitment to its employees and their remarkable resilience. The Hanwha of today was built upon its strength to rise from the darkness full of difficulties to embrace the light that is full of hope.

I would like to express my deepest gratitude to all of you at Hanwha. Over the years, you've been my faithful colleagues through the difficulties.

Now, we find ourselves, once again, amidst change that is sweeping the globe. This is the time to reflect on how those who've come before us have achieved success even during the most difficult periods. Let us draw strength and inspiration from them to step up and take an active role to address uncertainties in this rapidly changing economic climate that is sweeping the world. This is the time we must reawaken the spirit of our foundational days. We must inspire people's dreams, and elevate ourselves to be a company that gives strength to our society. As long as we believe that "the darkest night can be conquered by the faintest light," we can overcome these troubling times together.

Dear Hanwha Family!

We must be tireless in bringing about a new dawn for Hanwha.

Innovative start-ups are disrupting the existing industrial ecosystem. They are

using extraordinary ideas and technologies to usher in the digital age and redefine what success means in this global economy. In just one year, these companies may experience as much growth as other companies do in ten. Hanwha did this 67 years ago when we paved the path to a future no one could have imagined. The history of challenges—starting with locally producing gunpowder—which each of our business units have overcome, is a great source of pride and has laid the foundation for the Korean economy. We must do this once again and make history.

And to make this new history, it is imperative that we undergo a paradigm shift to change our ideas and perceptions to move forward in this new era. We must challenge the status quo and innovate as if we were pioneers in a new world. It all starts now, at the dawn of this new day. We will discover new business opportunities, open new markets, secure talent, and improve synergy between our businesses. The endless challenge to create new products, technologies, and value the world has never seen before will open up the future for Hanwha and make us an indispensable company.

Going forward, we must change from wanting to be the eternal victor to becoming the eternal partner.

Ultimately, we must move beyond beating the competition. Rather, let us and build an environment where everyone wins. We must hark back to Hanwha's original business philosophy of doing business for the good of all. We cannot regard customers and business partners simply as sources of revenue. After all, they are the very reasons we exist. Knowing this, we must implement our investment and hiring plans for the future without delay so that everyone may share in our prosperity.

Let's work together to do this. Please act with a renewed sense of commitment across all our businesses. Let us continue to excel in what we do across our aerospace business which is unwavering in its commitment to becoming self-reliant in its core technologies, chemical business that underpins much of

everyday life and industry, solar energy business which continues to be a global leader in sustainable energy, defense business that embodies the inherent right to national defense, financial business which enriches our customers' lives with value and wealth, and construction/services business that creates a social infrastructure while providing unique lifestyle experiences. As we seek to develop a sustainable future, we will remain steadfast to our commitment to show the world that we believe we can *Go Further Together*.

Finally, I ask you all to embrace a "safety first" culture fully with both your hearts and minds.

Going forward, safety must be of paramount importance at each of our Hanwha business locations. No matter how profitable, a business that cannot operate safely, should not exist at all. Every location must be thoroughly examined, adhere strictly to all operational safety rules and regulations and adopt a safety-first culture that seeks perfection. There will be no shortcuts to achieve safety. Not even a one-percent failure rate will be tolerated. Currently, our chemical affiliates are undergoing a digital transformation to create safer working environments while improving productivity. We hope that the safety levels they achieve will set the safety standards for other businesses to follow.

Dear Hanwha Family!

It is said, **"Sand may muddy a river, but it can't muddy the ocean. The wind may uproot a tree, but not a mountain."** No hardship or tribulation can stop Hanwha from advancing. However, let us not focus on short-term gains. Let us set our goal for the long-term and take the big leap forward while anticipating the changes of a new era.

Tomorrow is yet another day, and guaranteed to all. A brighter tomorrow, however, is only guaranteed to those who are prepared.

Thank you.

Seung Youn Kim
Chairman

October 9, 2019 ■

Hanwha Profile 2019

To download 2019 Hanwha Digital Brochure, please visit: <https://www.hanwha.com/en/2019hanwhaprofile> ■

Europe Technical Center Poised to Accelerate Hanwha Precision Machinery's Global Expansion

- The new technical center is built near Frankfurt, Germany, to showcase its top products
- Hanwha Precision Machinery becomes the first Korean machinery firm to setup a technical center for Surface Mount Technology(SMT) mounters and Swiss Turn(Swiss type Turning center) and Collaborative Robot in Europe
- Hanwha Precision Machinery is on a trajectory to become a global player through its world-class technologies and services



A ribbon-cutting ceremony to officially open the Hanwha Europe Technical Center

On September 3, 2019, Hanwha Precision Machinery's President Ki-Nam Lee announced the grand opening of the Hanwha Europe Technical Center near Frankfurt, Germany. This is part of the company's efforts to accelerate the company's growth in the European market.

This makes Hanwha Precision Machinery the first Korean manufacturer of Surface Mount Technology(SMT) mounters and Swiss Turn(Swiss type Turning center) and Collaborative Robots to open a technical center in Europe.

Hanwha Precision Machinery plans to use its new technical center as a base from which it will increase its global presence. The center is expected to attract new customers and large projects across Europe while offering local customers with world-class technologies and services including training programs, cycle time computations, and production demonstrations.

The Hanwha Europe Technical Center is a two-story structure with 711m² of floor space located in Mörfelden-Walldorf, ten minutes from Frankfurt. It features a showroom, training facilities, offices, and a conference room. The center will showcase and demo Hanwha Precision Machinery's main products(10ea), including Surface Mount Technology(SMT) mounters, machine tools such as Swiss Turn(Swiss type Turning center), and HCR collaborative robots.

The launch of this technical center is part of Hanwha Precision Machinery's expansion strategy to increase sales in Europe by at least EUR 30 million and make Europe account for more than 15% of its total sales.

A ceremony to celebrate the opening of the technical center was attended by the President of Hanwha Precision Machinery Ki-Nam Lee, the Managing Director of Hanwha Europe Jabong Ku, and other senior members from Hanwha's European network.

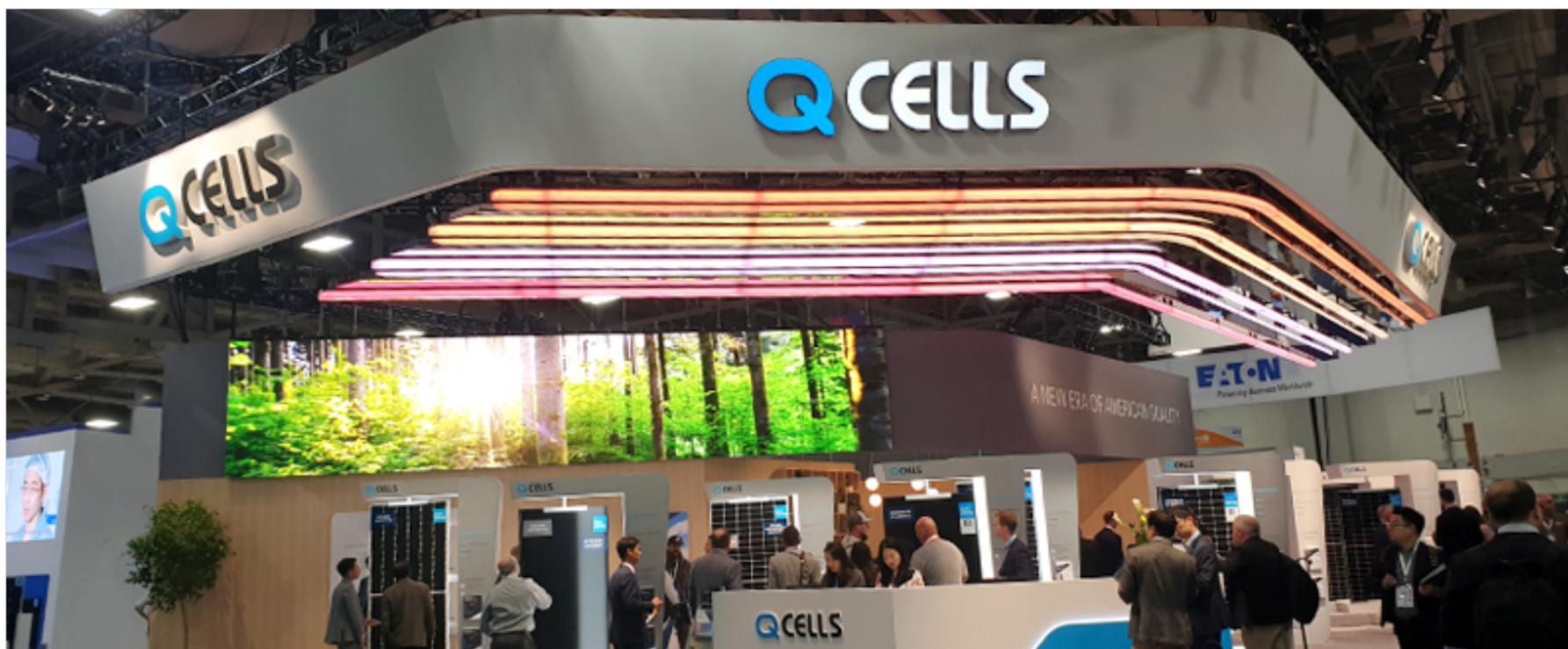
"We're very proud to be establishing this technical center in Germany, the home of the Fourth Industrial Revolution. This is where we'll begin accelerating our growth in the European market," said President Ki-Nam Lee. "Moving forward, we hope that the technical center will help increase our sales in Europe and create a synergy between Hanwha's business and technology behind precision machinery." ■



The Hanwha Europe Technical Center will be used as a base to expand Hanwha Precision Machinery's business across Europe

Hanwha Q CELLS to Reveal First Gapless Solar Modules at the 2019 Solar Power International Exhibition

· Gapless solar module prototypes, the Q.PEAK DUO BLK ML-G9 and the Q.PEAK DUO XL-G9.2, was exhibited as part of a range of Hanwha Q CELLS' high performance modules at Solar Power International, held in Salt Lake City, between September 24-26, 2019



Hanwha Q CELLS (or "The Company"), one of the largest solar cell and module manufacturers in the world, revealed prototypes of its first ever gapless solar modules at the 2019 Solar Power International (SPI) exhibition in Salt Lake City, Utah. With its high-performance premium solar modules, the Company is aiming to further strengthen its leadership position in the U.S. residential solar market.*

Hanwha Q CELLS to showcase its high-quality solar modules and new energy storage system

The Q.PEAK DUO BLK ML-G9 and the Q.PEAK DUO XL-G9.2 are Hanwha Q CELLS' first ever gapless solar modules, developed for greater power output and efficiency. The Q.PEAK DUO BLK ML-G9 is an all-black module composed of 132 gapless half-cells with 12 bus-bars. With the use of larger M4 wafers and a gapless design that enables the addition of 12 more cells than the usual 120 half-cells, the Q.PEAK DUO BLK ML-G9 can deliver maximum power output of up to 380 Wp, as well as industry leading efficiency of up to 20.2%. With high power and efficiency and sleek all-black aesthetics, this gapless module prototype is an ideal addition to Hanwha Q CELLS' portfolio as it seeks to build on its leadership position in the residential solar market.

Accompanying the Q.PEAK DUO BLK ML-G9 was its larger gapless cousin, the Q.PEAK DUO XL-G9.2 – a prime module for ground-mounted solar plants thanks to its 156 half-cell composition that delivers a maximum output of up to 455 Wp and efficiency of up to 20.6% with only a slight increase in module size.

Additional highlights of the Hanwha Q CELLS booth (booth no. 1419) was the Q.PEAK DUO BLK-G6+ with a guaranteed 25-year product warranty. Manufactured with M4 size larger wafers, the Q.PEAK DUO BLK-G6+ has a maximum output of up to 345 Wp and offers long-term reliability with one of the lowest degradation rates in the industry, which guarantees 85% initial performance in the 25th year of

performance. Furthermore, its all-black facade offers optimal aesthetic appeal that is ideal for the rooftops of residential and commercial and industrial buildings.

Also on display at SPI was the company's Q.PEAK DUO L-G5.3/BF, Hanwha Q CELLS' first bifacial solar module. This glass-glass module has a white grid and no mid rail to ensure the highest efficiencies and a power output of 400 Wp, making it a cost-effective solution for utility-scale solar plants.

Hanwha Q CELLS also unveiled its Energy Storage System (ESS) for the U.S. market with an all-in-one brand solution. Hanwha Q CELLS' hybrid ESS inverter system, the Q.HOME+ ESS HYB-G1, can connect ESS systems both in DC and AC-coupled configurations for new and retrofit projects. The system comes with a flexible modular battery, providing a range of 4.3 to 18.9 kWh energy capacity, which is able to cover most residential applications. The Q.HOME+ ESS HYB-G1 will solve one of the biggest challenges in troubleshooting solar module, inverter, and ESS failure by identifying sources of product malfunction from a single entity and service under Hanwha Q CELLS.

All of the solar modules and energy storage system showcased at SPI are ideal solutions for meeting the high performance demands of both the dynamic U.S. residential solar market and the growing commercial and utility-scale sectors. All of Hanwha Q CELLS' DUO half-cell modules boast optimized shading performance, which is a vital feature for many rooftop installations where space can be at a premium. The upper and lower sections of the module can operate independently, reducing the impact of shading and thereby increasing energy yields even on small rooftops. This range of solar modules also meets high-quality standards based on the Company's Q.ANTUM Technology, which includes excellent Anti LeTID (light and elevated temperature induced degradation), Anti LID (light induced degradation), and Anti PID (potential induced degradation) performance, as well as Hot-Spot Protect and traceable quality with Tra.Q laser identification to protect against counterfeiting.

Hanwha Q CELLS to secure its market leadership with Dalton facility in Georgia

In February 2019, Hanwha Q CELLS began production at its new Dalton facility in Georgia. The factory is the largest solar module manufacturing facility in the western hemisphere with 1.7 GW of module production capacity. Hanwha Q CELLS is planning to continue its effort to meet customer needs with the Company's high-quality solar modules assembled in the U.S.

Hee Cheul (Charles) Kim, CEO of Hanwha Q CELLS, said: "There is no doubt that the U.S. solar market will always be one of the largest solar markets in the

world and one of the most important markets for Hanwha Q CELLS. That is why Hanwha Q CELLS focuses so much effort on satisfying U.S. customers' needs, which is why SPI is an excellent opportunity for us to exhibit our residential solutions – in particular the Q.PEAK DUO BLK-G6+ and the new gapless prototype, the Q.PEAK DUO BLK ML-G9. Based on our new products and Dalton facility, Hanwha Q CELLS will continuously provide customers with better products and services in the U.S. as we continue to make every effort possible to strengthen our market leadership."

* Source: Wood Mackenzie Power & Renewables - U.S. PV Leaderboard – Q3 2019 ■

Press Release

Grand Opening of Hanwha Q CELLS in Georgia Spotlights Western Hemisphere's Largest Solar Panel Manufacturing Facility, Responsible for 650 Jobs and a Daily Output of 12,000 Solar Modules

Hanwha Q CELLS (or the "Company"), one of the largest solar cell and module manufacturers in the world, marked the grand opening of its Dalton, GA facility on September 20, 2019—the largest solar panel manufacturing factory in the Western Hemisphere — with Georgia Governor Brian Kemp, a representative

from President Trump's Commerce Department (Assistant Secretary of Commerce Jeffrey Kessler), local officials, regional economic development groups and company leaders including Hanwha Q CELLS CEO Hee Cheul (Charles) Kim in attendance.



Dignitaries celebrate the grand opening of the Dalton, Georgia facility - the largest solar panel manufacturing factory in the Western Hemisphere

The 300,000 square foot facility, which employs 650 local workers, signals a renaissance in U.S. solar manufacturing. Its annual production of 1.7 GW of solar module capacity is nearly equivalent to the peak power output of Hoover Dam, and the Dalton facility will be producing this each and every year. Georgia is currently the fourth leading state by solar installations in the country, and the Southern United States will be the leading regional source of solar demand for each of the next five years. The 12,000 Hanwha Q CELLS panels that will be produced every day in Georgia by the end of 2019 will go a long way towards satisfying the U.S. solar industry's growing demand.

Remarks from Governor Kemp and Hanwha Q CELLS CEO Hee Cheul (Charles) Kim follow:

"Dalton and northwest Georgia are now a hub for the manufacturing of clean, renewable energy sources. I thank Hanwha Q CELLS for their investment in this community and the opportunities that hundreds of hardworking Georgians will now have thanks to the local production of best-in-class solar. We're very proud that Hanwha Q CELLS is making Georgia their home." —Georgia Governor Brian Kemp

"Hanwha Q CELLS believes in the U.S. market and is dedicated to increasing the strength of American solar manufacturing here in Georgia, for the benefit of our customers around the country. With the capacity of this massive facility at work in the southeast, Georgia will continue growing in its standing as a national solar leader while adding hundreds of highly skilled manufacturing jobs. This vibrant facility marks major growth for the U.S. solar industry and overall solar adoption, and it also represents our investment in a cleaner, sustainable future for our planet." — Hee Cheul (Charles) Kim, CEO, Hanwha Q CELLS

Hanwha Q CELLS invested nearly \$200 million to build this facility with the express purpose of serving the U.S. market. From Georgia, Hanwha Q CELLS will supply high-performance, high-quality photovoltaic modules to American consumers, companies and facilities, including the new Facebook data center located east of Atlanta.

With the new facility, Hanwha Q CELLS is doubling down on its commitment to Georgia and the U.S. market by accelerating advanced manufacturing growth in a state that has rapidly become one of the largest solar markets in the country. The company continues to hire for key roles at the new facility. ■

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China



Hanwha Chemical (Ningbo)

Hanwha Chemical (Ningbo) Commemorates 11th Anniversary

In celebration of Hanwha Chemical (Ningbo)'s 11th anniversary, President Dong Seok Kim gathered employees in the company auditorium to present commemorative awards. Nine employees received awards for 10 years of service while fourteen others were recognized for excellent performance in 2019. Afterward, everyone gathered to take a group photo to remember the occasion.



Korea



Hanwha TOTAL Petrochemical Expands Production Capacity

Construction has wrapped on Hanwha Total Petrochemical's expansion project at its Daesan plant in South Chungcheong Province, Korea. Once fully operational, the KRW 540 billion cracking facilities will be able to produce 310,000 tons of ethylene and 130,000 tons of propylene annually.

The new production facilities expand the plant's annual production capacity to 1.4 million tons of ethylene and 1.06 million tons of propylene. Hanwha Total Petrochemical is projecting annual sales growth to KRW 590 billion as a result.

These facilities were designed with efficiency in mind. They share operational infrastructure, including steam, electricity, and water, with the Daesan Plant's pre-existing naphtha cracking center, which meant their construction costs were 25% lower than an entirely new build. The facilities also use LPG as raw material, which is cheaper than the naphtha used by other petrochemical processing facilities.

Hanwha Total Petrochemical will continue expanding its Daesan plant's production capacity to keep up with global demand. The company expects that it will have invested KRW 1.4 trillion into the plant by the beginning of 2021. This amount includes the construction of additional production facilities, as well as the plant's recently opened gas-decommissioning facility. The company also projects



that more than 1.2 million people will be employed in the plant's various expansion projects.

"When all our expansion plans are completed, we'll be able to expand our synthetic resin business and shift our product portfolio to high value-added products," says a Hanwha Total Petrochemical spokesperson. "We'll shift our focus from basic petrochemicals, such as styrene monomer and paraxylene, to synthetic resins. Then, Hanwha Total Petrochemical will be able to quickly respond to shifting industry trends and maintain a stable business."



United States of America



Hanwha Techwin America

Hanwha Techwin Unveils Cutting-Edge Products to Enthusiastic Audience at GSX 2019

Hanwha Techwin earned rave reviews at Global Security Exchange (GSX) 2019 in Chicago, Illinois, with its latest multi-sensor cameras and video management system.

GSX is an annual seminar and exhibition organized by ASIS International, the world's largest association for security management professionals. Each year, security professionals and security-solution providers from around the world share new technologies and trends in the realm of public and private security.

At GSX 2019, Hanwha Techwin premiered an array of multi-sensor cameras. These cutting-edge devices utilize two or more varifocal lenses that allow operators to control the image they are seeing from their control rooms precisely. These cameras come embedded with Wisenet WAVE 4.0, Hanwha Techwin's latest video management system. It is catching customers' eyes thanks to its flexibility, reliability, and ease of use.

Hanwha Techwin also demonstrated the capabilities of the Wisenet Q mini, a



retail-centric camera solution that can automatically monitor and track customer behavior and purchases to deliver marketing insights to store managers. Its small size makes it the ideal package for stores with limited floorspace.

"Hanwha Techwin's latest video surveillance products and solutions unveiled at GSX 2019 received an enthusiastic response from U.S. security industry officials," said a source at Hanwha Techwin. "It has served as an opportunity to reinforce our position as a trusted global security company in the U.S."



United States of America



Hanwha Q CELLS America Inc.

Local Community Shines Brighter Thanks to Hanwha Q CELLS America Inc.

Trade & Industry Development, a major publication that focuses on site selection for businesses, recognized Hanwha Q CELLS America Inc. for making a true community impact at its 2019 Corporate Investment/Community Impact Awards (CiCi Awards). The award was given in recognition of Hanwha Q CELLS America Inc.'s USD 150 million investment in Whitfield County, Georgia, and how the company revitalized the area by bringing hundreds of jobs to the local community through its 360,000-square-foot production facility in the city of Dalton.

Now in their 14th year, the CiCi Awards are bestowed annually by Trade & Industry Development to projects that help build communities across the United States. This year's 30 CiCi Award winners collectively represent USD 20 billion in community investments from 28 companies.

"We are excited by bring our technology leadership to Georgia," said James Choi, Vice President of Hanwha Q CELLS. "We look forward to building long-term relationships to expand our manufacturing base and contribute to



environmentally sustainable energy solutions further."

This CiCi Award is the latest in a string of accolades won by Hanwha Q CELLS America Inc. The company was also selected as one of North America's six best solar EPC companies by Solar Power World. This annual list of solar developers, subcontractors, and installers in both the commercial and residential markets is compiled based on how many kilowatts of solar power they installed the previous year. ■