

# Hanwha Newsletter

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# Hanwha Total Petrochemical's HDPE Resins for Bottle Caps Win a World-class Product Award



Hanwha Total Petrochemical has won a World-class Product award for its resin they use in plastic bottle caps. The award represents yet another recognition for the company's high value-added synthetic resins. In 2015, the company had previously proved its global competitiveness in the synthetic resins market by winning the World-class Product award for its EVA product for solar cells.

This year on February 9th, the company officially announced that it was the recipient of a World-class Product award for its HDPE<sup>1</sup>. The World-class Product award is an honor given to companies - conceived by the Ministry of Trade, Industry and Energy (MOTIE) and awarded by Korea Trade-Investment Promotion Agency (KOTRA).

The award is given to companies whose product(s) rank at least 5th or hold a minimum share of 5% in the global market and meet at least one of the following requirements:

- 1) global market exceeds \$50 million in size
- 2) annual revenue from exports exceeds \$5 million

The 2016 World-class Product award was based on Hanwha Total Petrochemical's accomplishments in 2015. The global market size that year was 810 thousand tons. And the company' HDPE resins for bottle caps held the largest market share both in South Korea and globally with 76% and 12%, respectively.

The award-winning HDPE resin for bottling is used to cap plastic bottles containing water, soda, or other drinks. Each bottle cap weighs only 1 to 4 grams but requires the combination of diverse technologies exclusively developed to address very challenging and even contradicting requirements to meet customer needs.

The bottle caps made with HDPE resins need to open easily under constant pressure and force; otherwise, they must remain properly sealed and leak-free. These same caps may also have to be durable enough to withstand internal pressure generated from hot liquids and carbonated drinks while satisfying exacting customer specifications to be tasteless, odorless, and safe to the human body.

"Plastic bottle caps vary widely in their quality with subtle differences in the material's property or specification although they are made from the same base material," a spokesperson for Hanwha Total Petrochemical said. "They are high value-added products that have to satisfy the diverse needs of our customers."

The prospect for synthetic resins for bottle caps remains very promising as the global beverage market continues to show an upward trend.

According to an industry analysis<sup>2</sup>, annual beverage sales has been sustaining a growth rate of about 10 percent every year since 2005 and in 2015, the industry recorded approximately 600 billion liters globally. And while Hanwha Total Petrochemical has maintained its solid lead in global market share, even amidst the explosively growing Chinese market since 2008, it has no plans to rest on its laurels. Hanwha Total Petrochemical will continue to strengthen its global competitiveness through hard work, ingenuity and product improvements.

"The award the company won again is the result of its tireless efforts to become the industry leader of diverse high value-added products," said the spokesperson. "Going forward, Hanwha Total Petrochemical plans to broaden the gap between the company and its overseas competitors by adding even greater value to all of its products." ■

<sup>1</sup> HDPE (High-density polyethylene)

A synthetic resin used in the production of films and plastic containers

<sup>2</sup> 2015 report by Markets and Market, a global market research and consulting company

## Business Highlights

# Hanwha Q CELLS Receives "Top Brand PV Seal 2017" from EuPD Research in Europe and Australia

- Hanwha Q CELLS ranked among top module manufacturers according to surveys by EuPD Research
- Installer's feedbacks confirm Hanwha Q CELLS' exceptional quality and service for the fourth time in a row in Europe and for the second time in Australia



Hanwha Q CELLS Co., Ltd. (NASDAQ: HQCL), one of the world's largest producer of solar modules with high quality in-house solar cells, has been awarded the "Top Brand PV Seal 2017" from EuPD Research for the fourth time in a row in Europe and for the second time in Australia based on surveys among installers in the respective markets. According to EuPD Research, the results from this year's Global PV Installer Monitor clearly show that "Hanwha Q CELLS continues to maintain an exceptional market position in the leading European PV markets like Germany, France, Italy and UK. Moreover, customers in Australia also confirm Hanwha Q CELLS' reputation as their first choice partner." The 2017 survey for the US market, where Hanwha Q CELLS achieved the award last year for the first time, has not been conducted yet.

EuPD Research emphasized that participating installers rated the products from Hanwha Q CELLS positively as compared to the competition. Furthermore, the scores for brand recommendation and unaided brand awareness were among the highest in the industry. Only a small number of manufacturers were honored with the Top Brand PV Seal, but rarely have companies qualified for a majority of the surveyed markets.

"We feel honored that our customers consistently put their trust in Hanwha Q CELLS," says Maengyoong Kim, Head of Module Sales in Europe at Hanwha Q CELLS. "Winning the seals for the fourth year in a row in Europe and for the second time in Australia spurs us to continue our work with the utmost commitment to offer our customers best quality and service," he emphasized.

"The PV module market remains highly competitive," said Markus A.W. Hoehner, CEO of EuPD Research. "Seals of approval do not just offer benefits for manufacturers; installers can differentiate themselves by proving that they are offering high-quality brands."

### TOP BRAND PV: How the Seal is awarded

Through regular surveys, market researchers and pollsters of EuPD Research identify the preferences of PV installers worldwide when recommending module brands. The independent TOP BRAND PV Seal is based on an annual multi-level analysis of qualified statements in regards to brand perception, brand management and market penetration from installers and intermediaries.

# Hanwha Core Values Essay Contest The Best Ambassador

Hanwha is looking for the ambassador of the Hanwha core values?

Wow! The winner is awarded with an opportunity of the PyeongChang 2018 Olympic Torch Relay runner?

Challenge · Dedication · Integrity!  
I have some experience with these values!

Hanwha Core Values  
Challenge · Dedication · Integrity!

Think about your experience related to the Hanwha's core values of 'Challenge · Dedication · Integrity', and share your story with us!

The 1st prize winner of the contest gets the opportunity to participate in the PyeongChang 2018 Olympic Torch Relay!

As an official sponsor of the Olympic Winter Games PyeongChang 2018, Hanwha Group will provide fireworks to be used at various events including the opening and closing ceremonies, as well as approximately 8,000 torches for the Olympic Torch Relay.



Check out how to be the part of Olympic history

## Theme

Describe your experiences or cases where you practiced Hanwha's core values at the workplace, or in your daily life.

[Stories at work]

- Hanwha principles in action: a story of your accomplishment at work while applying the core values of Hanwha (challenge, dedication, integrity)
- How Hanwha's core values have shaped your professional outlook

[Stories in daily lives]

- Give examples and describe how Hanwha's core values have affected your relationship with others
- Give examples of how practicing Hanwha's core values have led you to success- or brought about positive change
- Select one of the core values and describe how it effectively shaped your life and brought changes to the situation you were in

<b>Guideline</b>	<ul style="list-style-type: none"> <li>· The essay should have no more than 1,000 words in English or German, or 3,500 characters in Japanese, Chinese, or Korean.</li> <li>· You may include images/videos if they illustrate your story.</li> <li>· Write your essay in the Microsoft Word format provided.</li> </ul>
<b>Languages</b>	English, Chinese, Japanese, German, or Korean
<b>Deadline</b>	<b>April 5, 2017</b>
<b>Submission &amp; Inquiry</b>	Submit your essay to the person in charge at your office.

## Prize

1st : Be a runner for the PyeongChang 2018 Olympic Torch Relay

2nd (Two winners) : Trip to Seoul or Jeju

\* Winners will be announced in the newsletter for May 2017

\* For the 1st prize winner, round-trip flights to Seoul and 2-night stay at THE PLAZA are included

\* For the 2nd prize winners, choose one of the following options:

- 1) Round-trip flights to Seoul and 2-night stay at THE PLAZA
- 2) Round-trip flights to Jeju Island and 2-night stay at Hanwha Resort Jeju

\* Torchbearer requirements:

- 1) The winner of the first prize has to be a Hanwha employee at the time of the actual torch relay.
- 2) The winner shall meet IOC criteria for torchbearers. If reason(s) for disqualification are found, the IOC and PyeongChang Organizing Committee for the 2018 Olympic and Paralympic Winter Games (POCOG) may cancel qualification, and Hanwha Group has no control over such action taken.
- 3) If the first-prize winner cannot take part in the torch relay for reasons including the above, the runner-up gets the chance.



Seize the moment!



To help you get started, here are Hanwha's core values!

## Action principles of Challenge

1. Engage in active self-development towards being the best in your field.
2. Find opportunities and new ways of doing things through open-mindedness and creativity.
3. Set challenging goals and work towards achieving them with a can-do spirit.



## Action principles of Dedication

4. Put "us" before "me" and "our goal" before "my goal."
5. Treasure the promise with customers and continue to create customer value.
6. Trust in each other's abilities and collaborate based on a strong sense of unity.



## Action principles of Integrity

7. Do not be swayed by immediate gains. Be honest and stick to the principles.
8. Draw a line between business and personal matters. Be impartial and treat others based on their performance and achievements.



# Explore This Month's News of Hanwha and Its Affiliates, Taking the Initiative in All Corners of the World



## China



Hanwha Q CELLS

### Hanwha Q CELLS (Qidong) Co., Ltd.

#### Hanwha Q CELLS Q Series Solar Modules Receive Certification from China's "TOP RUNNER PROGRAM"

In January 2017, Q.POWER and Q.PRIME, the latest solar modules in Q series from Hanwha Q CELLS, have been officially certified for usage in "Top Runner Program" projects. Both modules passed the China Quality Certification Center's (CQC) strict tests for receiving the certification. The Top Runner Program of the Chinese National Energy Administration (NEA) was initiated in 2015 targeting to promote high-performance and high-quality modules in the Chinese PV landscape. With an installation target of 5.5 GW, participation in projects of the top-runner program is a key to being successful in China.

The polycrystalline Q.POWER and the monocrystalline Q.PRIME both use



6-busbar-technology in order to raise efficiency and reduce the risk of micro cracks. Thus, the modules with power ratings of 280Wp and 290Wp respectively perform very well in different weather conditions. In addition, Q.POWER and Q.PRIME show higher yields per surface area and lower BOS (balance of system) costs, which makes them suitable for a wide range of applications. Due to these technological features and advantages, the State Authority Organization confirmed the modules' conformity with the high standards of the Top Runner Program.



Hanwha Hotels & Resorts

### Foodist Food Culture (Shanghai) Co., Ltd.

In January 2017, Foodist Food Culture Shanghai opened its official WeChat account – the first in the Chinese food service industry. Subscribers or followers can now get a variety of daily news, on-site events, job postings, catalogs and the latest industry trends. And it just so happens that their curiosities can also more naturally lead them to learn about both the Hanwha Group and Foodist Food Culture. Furthermore, users will be able to opt in to get company news and information through social links and comments posted on Foodist's official WeChat page. And knowing people's propensity to share what they like with

friends, an option to share their account with friends is also available.

Foodist Food Culture Shanghai's official WeChat ID: 福迪食团膳(fúdishítuánshàn)

The social network service 'WeChat' is arguably an essential platform for Chinese companies and a mobile messenger app of choice for a huge number of users in China. WeChat accounts are commonly rebranded with sponsoring company logos as common marketing practice targeting the modern Chinese audience.



## Iraq



Hanwha Engineering & Construction

### Hanwha E&C Iraq Representative Office (BNCP)

On March 2, 2017, Ho In Kang, South Korea's Minister of Land, Infrastructure and Transportation visited Hanwha Engineering & Construction's representative office and the Bismayah New City Project construction site in Iraq – the location of the biggest ongoing housing project in Iraq. He met Kwang Ho Choi, the CEO of Hanwha Engineering & Construction, and discussed the progress of the construction project before conducting a hard hat tour of the construction site.



Kang's visit was warmly received by the employees and he offered words of encouragement to them in his speech: "What Hanwha has been doing has helped start a reconstruction revolution in Iraq. This city now symbolizes the dreams of the Iraqi people. As Korea's minister of Land, Infrastructure and Transportation, I am very proud that a Korean company like Hanwha is taking a

part in this revolution."

Later, Kang took another tour of the security system where he acknowledged the efforts of the security team. The tour concluded with a company dinner and Kang encouraged them again by saying, "I count on each and every individual to persevere in the successful completion of this project."



## Japan



### Hanwha Q CELLS Japan Co., Ltd.

Hanwha Q CELLS Japan held a series of product promotion events for over 1,000 "Q.PARTNERS" across six regions in Japan in late January and early February. The goal of the events was to launch and promote the new product line-up of Hanwha Q CELLS in Japan, including the new Q.PEAK module series for residential applications. The event focused on introducing brand new monocrystalline solar modules Q.PEAK-G4.1, Q.PEAK S-G4.1 and the all-black Q.PEAK BLK-G4.

The kick-off event in Tokyo invited media in order to increase distribution rate of the company's messages. A podium talk between environmental journalist Murata Kazuko and Maximilian Schrade, one of the R&D experts from Germany was the highlight of the press conference. Maximilian gave valuable insights on Hanwha Q CELLS' strong efforts and achievements in researching and developing leading technology products as well as ensuring the highest quality standards through quality management. Both have to go hand in hand in order to achieve high long-term energy yield for the customers. As an important example, Maximilian discussed Hanwha Q CELLS' outstanding Anti-LID (light induced degradation) technology, which prevents early degradation in monocrystalline solar modules.



Based on the research and development of new technologies in Germany, Hanwha Q CELLS Japan continuously develops systems of energy generation and sales, which are tailored to the needs of customers in Japan. The event series which served to promote the latest product portfolio was yet another opportunity to gain exposure for Hanwha Q CELLS and renewable energy in Japan.



## United States of America



### Hanwha Q CELLS America

#### Hanwha Q CELLS America Harvests GW-Level Deals

Earlier this year, Hanwha Q CELLS America managed to score gigawatt-level module supply deals with prominent organizations defying looming concerns over the future of the U.S. solar market.

According to GTM Research, the U.S. market is expected to have installed a record-breaking 14.8 GW in 2016. However, the market generally anticipates a slight year-over-year decline in demand due to a slowdown in residential solar growth rates in major state markets and over-procurement from utility offtakers resulting in installation projections of 13.2 GW in 2017. Additionally, the renewable energy industry is facing uncertainty surrounding U.S. energy policy under the Trump administration.

HQC America's achievements further illustrate that the only difference between stumbling blocks and stepping stones is how you use them. Moreover, these achievements are a testament to the quality and power of Q CELLS modules for the market that recognizes and demands such value propositions. As Albert Schweitzer once said, "One who gains strength by overcoming obstacles



*The Blythe Solar Center in California was commissioned last year for NextEra, the parent company of FPL*

possesses the only strength which can overcome adversity."



## Hanwha Azdel

On January 25th, Hanwha Azdel hosted a New Year ceremony to start off the new year. George Bondurant (Plant Director) and Mark Mason (Director of Technology) began the ceremony by sharing the successes from 2016, before outlining the key objectives for 2017. Justin Keum, CEO of Hanwha Azdel, followed with a speech that encouraged the employees to continue challenging not just the status quo but also one another to go above and beyond. He urged them to get involved in the activities that will contribute to the successes for the company.



## Hanwha Life Vietnam

### Hanwha Life Vietnam and Woori Bank Sign Agreement to Promote Bancassurance

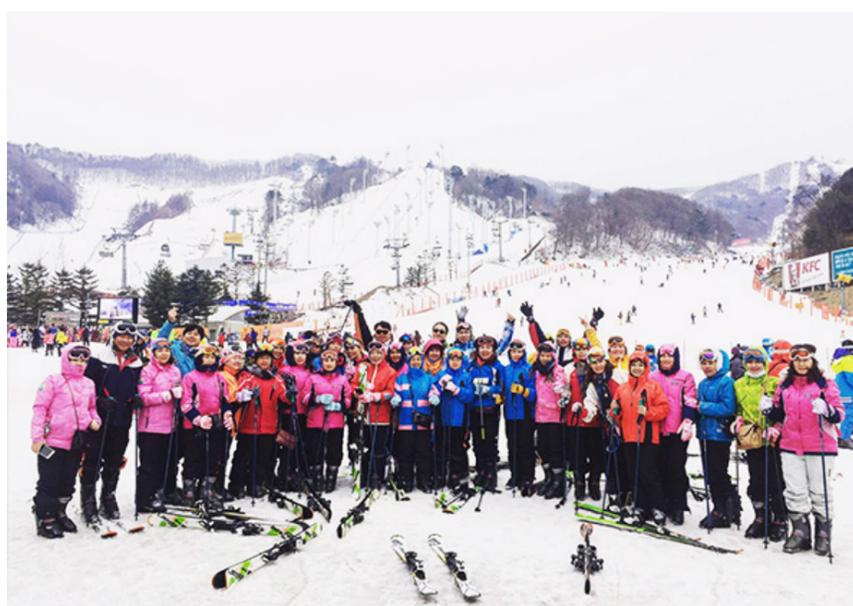
On February 13th, Hanwha Life Vietnam and Woori Bank—one of the leading investment banks in Asia—signed an agreement to promote bancassurance in Vietnam. With this strategic agreement, Hanwha Life Vietnam’s life insurance products will be distributed through various banking channels. “We believe that this comprehensive cooperation will help us to reach our potential while strengthening the bond between our two parties.” said Jong Kook Baek, the Chairman and General Director of Hanwha Life Vietnam. Baek added, “Through this partnership with Woori Bank, we can reach customers with high quality products and targeted services to customers through an expansive distribution network.”



After entering the market in 2009, Hanwha Life Vietnam has been growing and now has nearly 250 employees and 24,000 financial planners working in over 80 offices nationwide.

## Hanwha Life Vietnam

The company rewarded Hanwha Life Vietnam’s top financial planners (FPs) for their contributions by inviting them to Seoul from February 18th to 22nd. A total of 50 team members from Ho Chi Minh city was led by Mr. Luu Thai Thuan, the national sales director of Hanwha Life Vietnam. The visitors took the opportunity to experience various winter activities, including the Skiing and Stars Hanwha Life program at the Phoenix Hotels & Resorts. The FPs also explored the nightlife in Seoul and indulged in sightseeing famous landmarks in Seoul like the Seoul Tower and the 63 Building. They visited the headquarters office at the 63 Building and enjoyed shopping at Galleria Duty Free 63. More activities followed, yielding the special visitors lasting memories and a sense of pride in being part of a family and something great – the Hanwha Group. ■



# PyeongChang 2018 Unveils Olympic Torch and Torchbearer Uniform

*Olympic Torch for PyeongChang 2018 Olympic Winter Games, produced by Hanwha Corporation, was unveiled. The following is an article published by PyeongChang Organizing Committee for the 2018 Olympic & Paralympic Games (POCOG).*



*Olympic Torch Unveiled at the PyeongChang 2018 One-Year-to-Go Countdown Ceremony*

PyeongChang 2018 has seen another milestone in its countdown, with the unveiling of the Olympic Torch and torchbearer uniform at the One-Year-to-Go Countdown Ceremony in Gangneung where the ice sport competitions of the upcoming Olympic Winter Games will take place.

The torch was revealed at the Gangneung Ice Hockey Centre on Thursday by Yuna Kim, Olympic Figure Skating gold medalist, Magnus Kim, who won Korea's first gold medal in the history of cross-country skiing at the 2016 Youth Olympic Games, and five young local students. Wearing the PyeongChang 2018 torchbearer uniform, they showed off the torch at the One-Year-to-Go Countdown Ceremony.

The 700 mm torch represents the altitude of PyeongChang which is 700 meters above sea level. The white and gold tones, which are the main colors of PyeongChang 2018 Olympic Winter Games Torch Relay, represent the Olympic Winter Games – a global festival that is held on white snow and ice – and torch relay.

The shape of the flame has five prongs which is the form of “\*”— the symbol of PyeongChang. The symbol is also engraved around the bottom half and top of the torch. [Please refer to the attached press release to see the proper image of the PyeongChang symbol]

The five-angled shape in the middle of the cap represents the spirit of sports, which connects races, nations, religions, genders, cultures, and the five continents around the world united with passion. The flame will spark passion throughout the globe and connect us together while demonstrating the power of sport to unite and inspire people in a way that little else does.

The torch was designed by Korean designer Young Se Kim who believes design is about making people happy and creating something that people want. It is

also a local company who are producing the torch. The torches will be produced by PyeongChang 2018 Official Supplier, the Hanwha Corporation, who is very familiar with what is required, having also produced the Seoul 1988 Olympic Torch.

The torch is designed so that the flame will continue to burn in various weather conditions. In particular, considering the strong winds and heavy snow in Korea, when wind blows towards the flame, an air-tunnel is created which provides more oxygen which keeps the flame lit throughout the torch relay. There is also a pentagon shaped hole in the bottom of the torch so any water can drain to the bottom of the torch keeping the flame gleaming in rainy conditions.

The torchbearer uniform was also unveiled at the One-Year-to-Go Countdown Ceremony. It is produced by PyeongChang 2018 Official Partner The North Face. The design combined the colors of the white Olympic Torch and blue, yellow, black, green, and red from the Olympic Rings.

The uniform was also designed to be comfortable and practical for torchbearers who will run in different weather conditions. The back and sleeves are made of water-repellent fabric while the front and shoulders are made out of waterproof fabric. Hybrid material was used for the jacket fillings to keep the torchbearers warm in the cold.

POCOG President LEE Hee-beom said, “Unveiling the Olympic Torch at the PyeongChang 2018 One-Year-to-Go Ceremony represents the start of a countdown to a remarkable celebration. With its beautiful design and technical features, the PyeongChang 2018 Olympic Torch will become a symbol of excitement and inspiration of the Olympic Games. The Olympic Torch Relay will bring the spotlight to PyeongChang, sparking passion to connect the world together.”

IOC Coordination Commission Chair Gunilla Lindberg said, “I would like to congratulate POCOG on their beautiful Olympic Torch and torchbearer uniforms, which will play a major role in bringing the excitement of the Games to the whole of the Republic of Korea next winter. The Olympic Torch Relay is unique in its ability to unite people and to transmit the Olympic values. I am confident that a new generation of Koreans will embrace the Olympic Torch Relay, as happened ahead of the Olympic Games Seoul 1988, and that the world will appreciate this important symbol of Korean design.”

Together with the three Presenting Partners - Coca-Cola, Samsung, and KT, the torch will be carried by 7,500 torchbearers during the PyeongChang 2018 Olympic Torch Relay. ■

## Global Business Culture – Japan

### *Punctuality is the key to success when doing business with Japanese.*

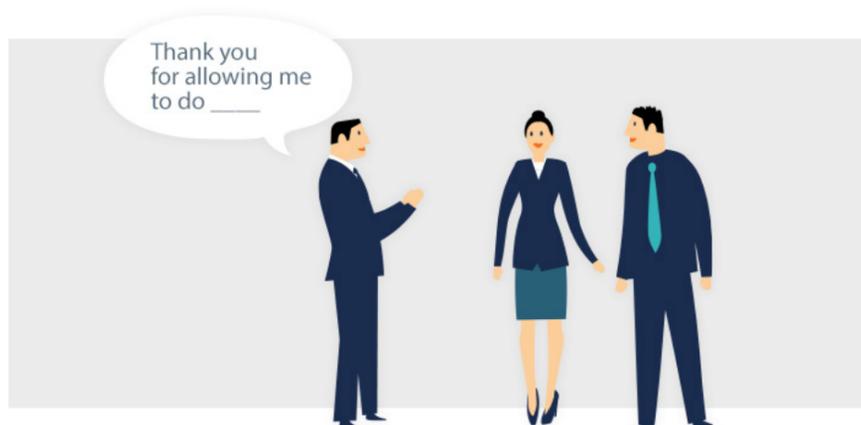
*Ms. A has made an appointment with a Japanese client. She knows that the Japanese value punctuality and so rushed out to the appointment in the morning. Ms. A arrived 30 minutes early and patiently waited for her client and when her Japanese client appeared, Ms. A started a conversation by stating that she had arrived 30 minutes before the appointment. However, the Japanese client was startled and told Ms. A that she should've rearranged the appointment.*

When doing business with Japanese clients, it is recommended to arrive at the venue prior to the appointment time because of the Japanese emphasis on punctuality. The Japanese are very conscious of any slight to their peers—real or perceived—so in instances such as the example above they would feel horrible about their own behavior. If the counterpart has arrived at the venue too early, this could cause the Japanese client to feel as though he made his counterpart wait for too long. Arriving 5 to 10 minutes early is suggested.



### Business in the Japan DOs and DON'Ts

#### DOs



*Humble yourself when interacting with Japanese partners. In general, it is better to say 'Thank you for allowing me to do \_\_\_\_\_' instead of 'I'm glad that I could do \_\_\_\_\_' when expressing gratitude.*



*Prepare a company brochure or a fact sheet to introduce your company during business meetings. Japanese partners are keen on their counterparts' reputation based on size and performance. So it is a plus to make your Japanese client aware of the company's size, successes, and financial status.*

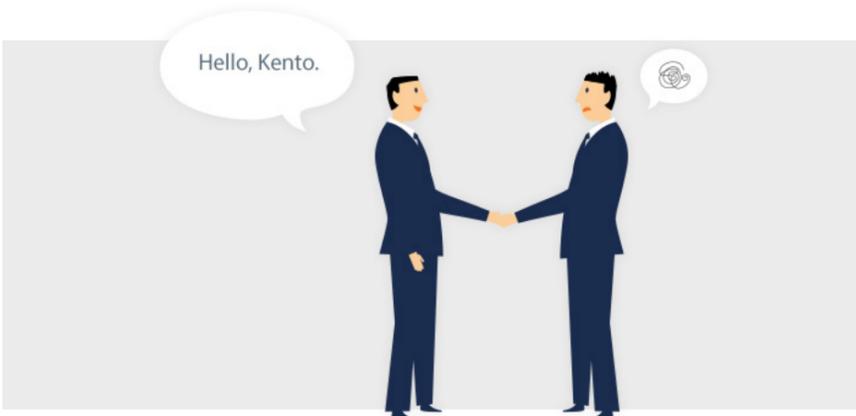


Familiarize yourself with 'Japanese English' for better communication with them. Japanese-style English is often used in casual conversation and features many loanwords.



Visit Japanese partners multiple times and have as many conversations as possible to build a strong relationship. Japanese will determine contract clauses depending on how trustworthy their partners are.

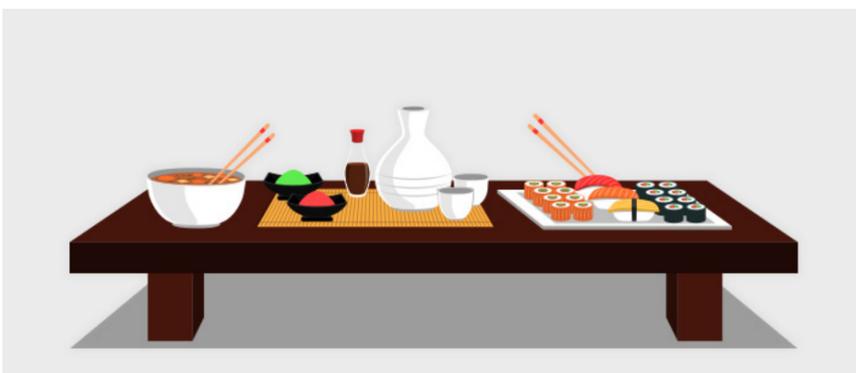
## DON'Ts



Do not call anyone by their first names unless you are close friends with them. In Japan, people usually call their friends using their first names but apart from this situation, it is important to add *さん* (San) after the name to show respect.



Avoid using *だいじょうぶです* (Daijobu desu), meaning 'It's okay' during business meetings. Japanese have very high standards and use that expression when everything is perfect.



When having business meals do not move dishes and pierce food with chopsticks or place them on top of your bowl.



Do not give gifts like handkerchiefs and knives as they symbolize the renouncement of a relationship. When giving gifts, make sure the number of gifts is not tallied up to 4 or 9 as these numbers represent death and agony respectively.

## Hanwha Affiliates in Japan



Hanwha companies in Japan include *Hanwha Techwin*, *Hanwha Chemical*, *Hanwha Total Petrochemical*, *Hanwha Q CELLS*, *Hanwha Life*, and *Hanwha Hotels & Resorts*. These six companies operate 6 offices across the country in Tokyo, Fukuoka and Nagasaki. ■

# Hanwha's Four Defense Companies Gear up for Global Expansion

· Hanwha Group's defense companies presented their first joint exhibit at IDEX 2017



The IDEX 2017 exhibit hosted by Hanwha's four defense companies

The International Defense Exhibition & Conference 2017 (IDEX) is the largest defense industry exhibition in the Middle East and North Africa. IDEX has been held biennially since 1993 and this year's 5-day exhibition from February 19th to 23rd took place in Abu Dhabi, the capital of the United Arab Emirates. Attendees included 100,000+ visitors made up of military personnel, defense & security experts, journalists, and world leaders who came to see the products from more than 1,200 companies from nearly 60 countries. At the world's largest and most strategically important defense mega conference, Hanwha's four defense companies operated a single exhibit as a way to present a united front and a more comprehensive offering of world-class defense and security capabilities. The four Hanwha companies – Hanwha Corporation, Hanwha Techwin, Hanwha Defense Systems, and Hanwha Systems each featured different products but they shared the common objectives to develop new export opportunities and expand into overseas markets as global defense contractors.

At the stand shared by the four Hanwha companies, their best products for the international markets were on display, including Hanwha Corporation's K-BATS (Korean Ballistic Aerial Target System), Hanwha Techwin's K9 self-propelled artillery, the K10 ammunition resupply vehicle, Hanwha Systems' latest reconnaissance & surveillance system, and Hanwha Defense Systems' K21 infantry fighting vehicle. Hanwha's presence at the show was part of its plan to segue to identify and seek out new business opportunities in the Middle Eastern and African markets.

## Hanwha Corporation showcases Chunmu to step up international marketing efforts

Hanwha Corporation has participated in numerous defense exhibitions and events in the Middle East because it had long considered the region a prime and strategic market. Previous exhibits had focused on tried-and-tested products

such as ammunition, which the company supplies to the Korean military. This year, however, the company showcased guided weapons, precision munitions and other cutting-edge weapons systems to draw attention to the company's current world-class defense technological capabilities.

Front and center at the exhibit was the Chunmu, the 230mm multiple launch rocket system (MLRS), designed to deliver longer range with more precision than ever before. The Chunmu was developed with Korean technology – the overall system and guided munitions were designed by the Hanwha Corporation while the launch platform and the ammunition carrier were built by Hanwha Defense Systems.

The Hanwha Corporation also displayed K-BATS, designed to simulate a ballistic missile for air defense missile testing. K-BATS' superior ballistic trajectory simulation capabilities has garnered strong attention and interest from militaries around the world – those who are prepared to develop or purchase air defense systems.

## Hanwha Techwin exhibits K9 artillery and the K10 ammunition carrier

Hanwha Techwin featured its K9 self-propelled howitzer (the actual gun along with two replicas) and the K10 ammunition resupply vehicle model, an integrated system that has revolutionized the concept of battlefield artillery operation.

The K9 has a maximum range of 40km and a maximum speed of 67km/h. It can place rounds on a target in 30 seconds while stationary or hit the target while maneuvering in 60 seconds, making it one of the world's most capable artillery systems. Export deals were signed with Turkey in 2001 and Poland in 2014. The company plans to launch an aggressive marketing campaign targeting Scandinavian and Middle Eastern countries to expand its overseas market share.

The K10 ammunition resupply vehicle is a robotic equipment that can automatically deliver ammunition to K9 self-propelled howitzers in the field. The K10 is equipped with the world's first "fully-automatic control system" that can resupply the K9 at a rate of over ten rounds per minute.

#### **Hanwha System looks to strengthen its position as a total solution provider**

Hanwha Systems' plan is to expand its presence overseas by strategically targeting exports to national markets around the world. This plan includes increasing marketing efforts to develop new business relationships and selling procurement projects in the UAE, Oman and other countries in the Middle East. And by coming to IDEX, Hanwha Systems could execute this plan by featuring its comprehensive defense systems that positions the company as a total solution provider.

To this end, Hanwha Systems showcased its range of electro-optical, radar, combat, and electronic warfare systems for military reconnaissance and surveillance. In addition, the company featured its Command, Control and Communication systems (C3S), which make up the brains of weapon systems.

The company also exhibited cutting-edge integrated surveillance systems including the TAS-815K thermal observation device, short and long-range radar systems that highlight Hanwha Systems' – a product that represents over 40 years of radar technology development experience.

Hanwha Systems will continue to focus on strengthening its technological capabilities in multipurpose radar systems and naval combat systems. The Company's strategy includes looking into other business areas while exploring and developing new businesses in unmanned systems and cyber security, stepping up the company's overseas marketing efforts and solidifying its position as a global defense total solution provider.

#### **Hanwha Defense Systems looks to expand its presence in the Middle East through targeted marketing**

Hanwha Defense Systems will continue to grow its influence in the Middle East market by leveraging its 40+ years of technological experience in ground weaponry and air-defense systems. The company plans to focus on the Vision 2030 project, Saudi Arabia's long-term national development plan, in order to both expand its business relationship with the kingdom as well as contribute to further strengthening the defense partnership between Korea and Saudi Arabia.

At this year's IDEX, Hanwha Defense Systems showcased a full-scale operational K21 infantry fighting vehicle (IFV) as well as five small-scale replicas including that of the lighter version of the K21 tank and other wheeled armored vehicles. The K21 IFV is armed with a 40mm cannon and is capable of fording streams without logistics support. An early-warning radar threat detection system on the K21 increases its survivability against attacks by enemy tanks or aircrafts.

Hanwha's exhibit also included the K21-105 Medium tank – the first lighter version of K21 but equipped with a 105mm gun turret. The K21-105, manufactured by CMI Defense, is faster and has better transport capacity than its heavier counterpart tanks. At the same time, these lighter tanks are capable of greater tactical mobility while being able to deliver formidable firepower on the battlefield.

Hanwha Defense Systems also exhibited the Hybrid BIHO, a new weapons system that combines the BIHO self-propelled anti-air artillery with the Shingung short-range anti-air guided missile system that allows the operator to select between cannons or missiles depending on the distance of the target. Military officials from India and the Middle East have showed considerable interest in this system. ■