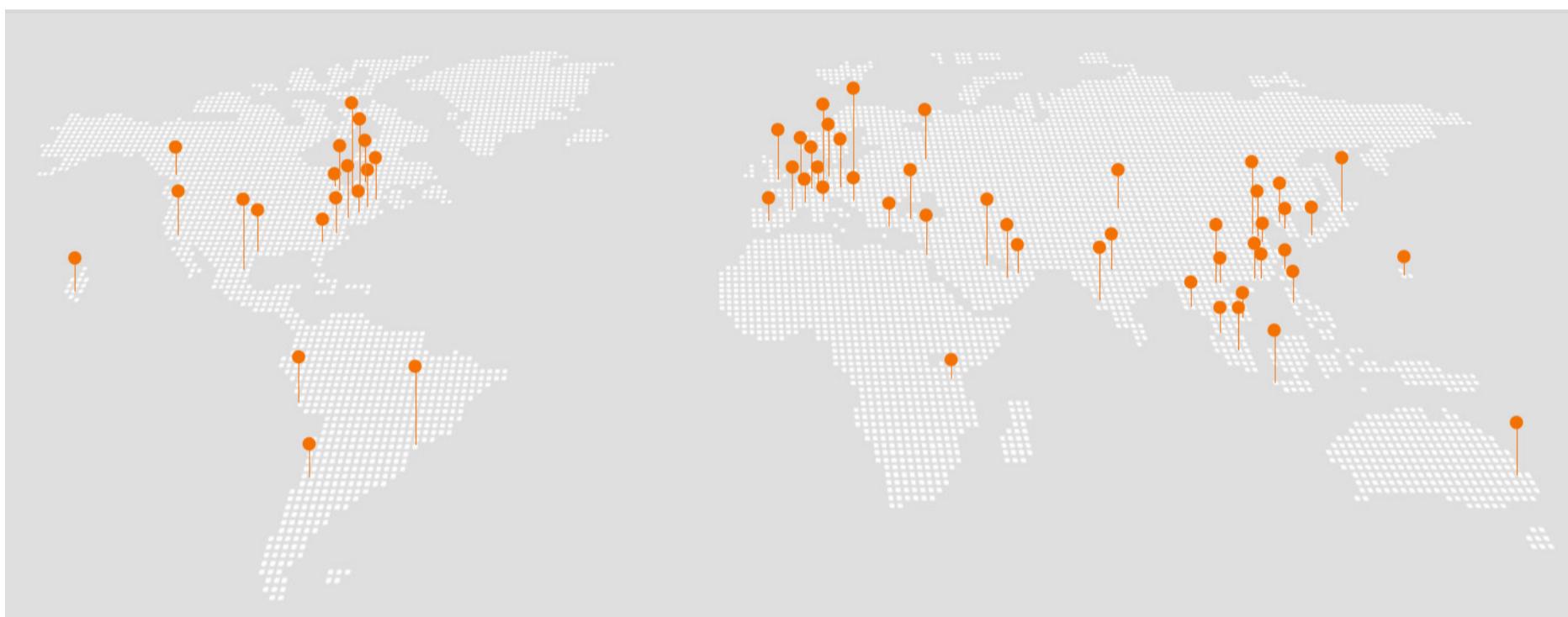


Global Presence

For more than 71 years, Hanwha has grown steadily to become a leading global enterprise. Today, it has 91 affiliates in South Korea and over 710 networks around the world. As it continues its journey, Hanwha is expanding its capabilities and venturing toward new business opportunities.

[The Americas](#)
[EMEA](#)
[Asia Pacific](#)
[United States](#)
[China](#)
[Vietnam](#)


Global Presence

The Americas

The Americas

Fast Facts about Hanwha in the Americas



33

Number of
Affiliates



3,500+

Number of
Employees



**4+ billion
USD**

Total Sales
in 2021

- **Hanwha Solutions' Qcells Division** is America's No. 1 residential and commercial solar power provider
- **Hanwha Advanced Materials** is ranked No. 1 in glass mat thermoplastics (GMT) and lightweight reinforced thermoplastic (LWRT) manufacturing and sales in the world

Since opening its first American office in 1982, Hanwha has rapidly expanded its presence in the Americas. It now has more than 30 affiliates located throughout Canada, Chile, Mexico, Peru, and the U.S.

Already the leading solar energy solutions provider in North America, Hanwha is building up its infrastructure holdings and expanding into the hydrogen-energy industry to become a recognizable regional supplier of green energy. It's also a valued player in the North American automotive industry, with its lightweight components being in high demand as automakers strive to reduce vehicle weight and boost fuel economy.

Looking beyond, Hanwha continues to innovate solutions for sustainable cities of the future. Investing in urban air mobility (UAM), Hanwha Systems has partnered with American personal air vehicle (PAV) manufacturer Overair to develop a 100% electric propulsion system for use in its air taxi, the "Butterfly."

Additionally, Hanwha is taking flight in the American aerospace industry, having made an important acquisition that allows it to better service customers such as GE and Pratt & Whitney. Hanwha products are also becoming a mainstay in the American security-surveillance market, winning many awards from respected security institutions for the company's cutting-edge capabilities. Furthermore, Hanwha is a leading industrial machinery and components manufacturer that offers products such as air and gas compressors and high-precision bearing systems.



102.5-MW solar farm powering Facebook's ninth data center in Georgia, U.S.A.

Hanwha Solutions' Qcells Division is a total energy solutions provider in solar cells and modules, energy storage, downstream project business and energy retail with operations in the U.S., Canada and Chile. According to the Q1 2022 U.S. PV Leaderboard report by Wood Mackenzie Power & Renewables, Hanwha Solutions' Qcells division continues to maintain the No. 1 market share in the U.S. residential and commercial solar markets with 24.1% and 20.6% of the market share, respectively. The company has also received its first Top Brand PV seal in the U.S. from EuPD Research. In Georgia, the company provided solar modules for a 102.5-MW solar farm that powers Facebook's ninth data center. It also operates the largest solar module plant in the Western Hemisphere, helping to meet the growing retail demand for renewable energy. Recently, Hanwha Solutions' Qcells division completed the construction of a 168-MW solar power plant in the United States. This solar farm, located in Texas, can power 30,000 homes and is one of only two solar power plants in the state with over 100 MW in capacity.

Hanwha Energy, a comprehensive-energy-solutions company, works with subsidiary 174 Power Global to operate and manage solar power plants and offer energy storage systems for residential, commercial, and industrial customers. The company now generates 364 MW of renewable power and operates 4 MWh of energy storage systems for customers, following the completion of several solar power-related projects in the Americas. In 2019, 174 Power Global began operating Chariot Energy, a Texas-based energy retailer. It also operates OnForce Solar, a New York-based solar power developer of retail and commercial & industrial (C&I) projects. In 2021, 174 Power Global signed a joint venture agreement with TotalEnergies, a broad energy company, to develop utility-scale solar and energy storage projects in the United States.

Hanwha Impact is driving positive change for the future through innovative technologies and continuous investments that shift the paradigm in the fields of eco-friendly energy, convergence technology, and mobility.

Hanwha Power Systems maximizes customer value with technology, experience and world-class production facilities accumulated through the production of various gas turbine generator and compressor packaging as well as incorporating "hydrogen to gas turbine technology," or H2GT to retrofit existing LNG-fired power plants' gas turbines.

Hanwha Advanced Materials manufactures materials for automotive applications at its facilities in Alabama, Michigan, North Carolina, and Virginia, as well as Mexico. The company is No. 1 in glass mat thermoplastics (GMT) globally.

Hanwha Azdel is a subsidiary of Hanwha Solutions with a plant in Virginia that produces a wide variety of lightweight reinforced thermoplastic (LWRT) interior and exterior car parts for various automakers such as General Motors, Hyundai Motors, Toyota, and Volkswagen. These LWRT products help improve fuel economy for their customers, contributing to sustainable development. The company leads the world in LWRT manufacturing and sales.

Hanwha International, located in Teaneck, New Jersey, was the first Hanwha business established in the Americas. It played a significant role in Hanwha's entry into the U.S. market. As Hanwha's trading arm in North and South America, it facilitates the global movement of chemicals, steel, and machinery produced by other Hanwha affiliates.



Hanwha Aerospace USA is a vital part of Hanwha Aerospace's expansion of its global operations

Hanwha Aerospace USA develops and produces advanced aircraft engine parts, with four state-of-the-art facilities in Connecticut. In 2019, it began supplying components for GE Aviation's most advanced engines that will power the Boeing 777X, which will have the capacity for 400 passengers, but reduce fuel consumption by as much as 12%. In early 2021, Hanwha Aerospace USA received the Supplier Gold Certification by world-renowned aircraft engine manufacturer Pratt & Whitney for flawless quality control.

Hanwha Vision specializes in video-surveillance systems with advanced optics and next-generation capabilities, such as AI, deep learning, and business intelligence. With clients ranging from Bank of America to Target and Mexico City, the company's products are designed to help protect people, property, and assets. In 2020, the company received the UL CAP (Cybersecurity Assurance Program) certification for its Wisenet7 camera series, meeting the programs stringent evaluation criteria in just three months. With such effort, the company won the Best Cyber Security Solutions award by ASTORS American Security Today for its Wisenet7 camera series.

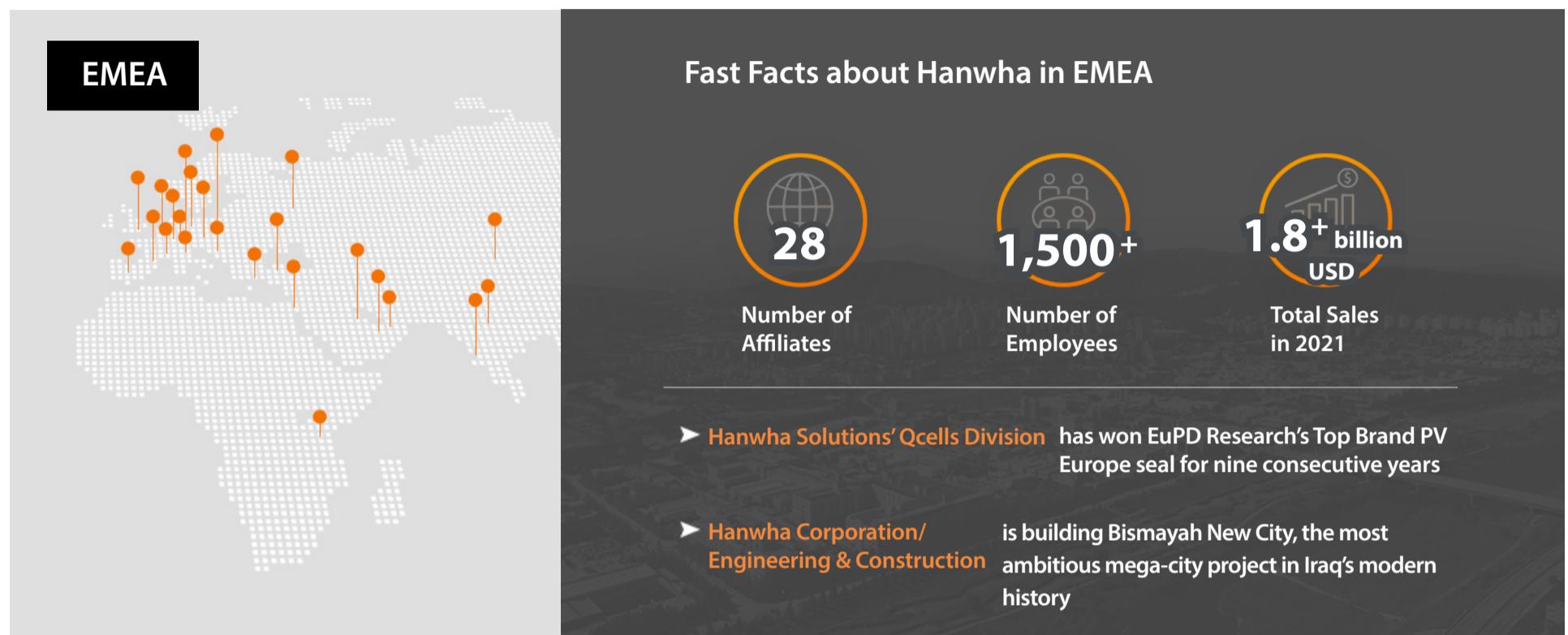
Universal Bearings is a leading manufacturer of high-precision bearings — specializing in needle and loose-needle bearings — used mainly in automotive and industrial applications. Its manufacturing processes are accurate to within 2-3 microns, or smaller than a microscopic speck of dust. Currently, the company offers almost 1,000 different types of bearing products. It continues to add new products to its portfolio to become a complete-bearing manufacturer.

Fast Facts about Hanwha in the Americas

- ✓ **Hanwha Solutions' Qcells Division** is America's No. 1 residential and commercial solar power provider
- ✓ **Hanwha Energy** generates 364 MW of solar power in North America
- ✓ **Hanwha Advanced Materials** is ranked No. 1 in glass mat thermoplastics (GMT) and lightweight reinforced thermoplastic (LWRT) manufacturing and sales globally
- ✓ **Hanwha Azdel** is the global No. 1 supplier of lightweight reinforced thermoplastics (LWRT), a material that helps lower fuel consumption and carbon emissions, used by automakers such as General Motors, Hyundai Motors, Toyota, and Volkswagen
- ✓ **Hanwha Aerospace USA**'s advanced engine parts will help the all-new Boeing 777X fly more fuel efficiently
- ✓ **Hanwha Vision** is ranked second in network-camera manufacturing and sales in North America (as of 2020)
- ✓ **Hanwha Power Systems'** "hydrogen to gas turbine technology", or H2GT, can be retrofitted to existing LNG-fired power plant's gas turbines, allowing them to run on hydrogen fuel.

Global Presence

EMEA



Hanwha has over 25 affiliates spread across Europe, the Middle East, and Africa. They offer solar energy solutions that contribute to sustainable development, surveillance technologies, and advanced material applications, as well as infrastructure engineering and large-scale-construction capabilities.

Its solar-technology R&D hub in Germany develops some of the world's most-advanced solar energy solutions. Hanwha also established the Europe Technical Center on the outskirts of Frankfurt, Germany, to showcase its high-precision products and technologies to potential European customers.

Hanwha focuses on researching next-generation technologies such as deep learning, AI, and business intelligence. Many of these advances are applied to Hanwha's surveillance products, making it a go-to supplier for security solutions in EMEA. It is also in the final stages of constructing a brand-new city just outside Baghdad, Iraq, improving the lives of over a million people.

Hanwha Europe is Hanwha's hub on the European continent. Based in Germany, Hanwha Europe paves the way for solar-power products, chemical products, high-precision industrial machinery, automotive parts, and agricultural machinery to move in and out of Europe.



In March of 2019, this house powered by Q CELLS' solar panels in Augsburg, Germany, received the Federal Prize for Outstanding Innovative Achievements from the German Federal Ministry of Economics and Technology for achieving carbon neutrality through eco-friendly construction.

Hanwha Solutions' Qcells Division is a total energy provider in solar cell and module production, energy storage, downstream projects, and energy retail with global R&D headquarters, manufacturing, and sales operations in the region. It is developing a 940-MW solar portfolio in Spain that will generate enough clean electricity to meet the annual power needs of more than half a million households when completed. Construction has also begun on a new 50-MW solar PV project in Las Majadillas—creating 200 jobs in the local community. To the northeast, Hanwha Solutions' Qcells Division has partnered with local solar equipment enterprises and organizations in Berlin as a part of the city's "Solarcity Masterplan." The company also garnered EuPD Research's Top Brand PV Europe seal for nine years running and won the top prize in the solar category of the Life & Living Awards in Germany for a third consecutive year in 2022.

Hanwha Energy is helping to expand solar power adoption across Europe. Currently, the company conducts 1.4 GW of solar power projects in Spain and Italy through the Hanwha Energy Corporation Europe S.L.U. In addition to developing, constructing, and selling a 50-MW solar power plant in Seville, Spain, the company has signed a memorandum of understanding (MOU) with Korea Midland Power to jointly develop a Spanish solar business. Hanwha Energy is also operating a 120-MWh frequency-regulation energy-storage system in Ireland. The system provides customers with a steadier flow of electricity as the country adopts more renewable-energy sources. In Turkey, the company runs a 32-MW solar power plant. Further strengthening its position, Hanwha Energy launched Imagina Energía in October 2020. Imagina Energía is a power-retail and solar-distributed-power-generation business for commercial and industrial use of 100% eco-friendly power at home.

Hanwha Solutions' Chemical Division is the first Korean company to enter the Middle Eastern petrochemical market. With Saudi Arabia's Sahara International Petrochemical Company (SIPCHEM), it jointly operates such as International Polymers Company (IPC) and Gulf Advanced Cable Insulation Company (GACI). IPC specializes in the production of low-density polyethylene (LDPE) and ethyl vinyl acetate (EVA), while GACI is the first Middle Eastern company to produce composite resins for electric wires.

Hanwha Advanced Materials is a leading manufacturer of materials for mobile phones, automobiles, photovoltaic energy systems, and other eco-friendly products. In Germany, the company offers a diverse portfolio of high-strength, lightweight parts for automobile structures and interiors, from bumpers to seatback frames for BMW and Audi, which help improve fuel economy of vehicles, contributing to sustainable development.

Hanwha Corporation is innovating industry-agnostic robotics. The Hanwha Collaborative Robot Advanced (HCR Advanced) series and a collaborative-robot-solutions package are building Hanwha's momentum in the growing collaborative robot (cobot) market. Pairing Hanwha's AI technology with mobility, the company seeks to satisfy the diverse needs of customers worldwide. The HCR Advanced Series retains the excellent design and versatility of the original HCR cobots while boosting speed, consistency, and accuracy to provide better productivity and increased workplace safety.



Hanwha Corporation/Momentum provides smart factory solutions that drive the development of automation technologies and collaborative robots for the manufacturing industry. In 2019, the company opened Hanwha Europe Technical Center in Germany, offering state-of-the-art technologies, services, training programs, cycle-time computations, and production demonstrations.

The Hanwha Europe Technical Center is a base to expand Hanwha Corporation/Momentum's business across Europe

Hanwha Vision specializes in video-surveillance systems with advanced optics and next-generation capabilities, such as AI, deep learning, and business intelligence. In 2020, the company introduced new ultra-high-definition 4K AI cameras equipped with deep learning video analytics that offer a high level of detection accuracy. The company also introduced network video recorders embedded with 3G and LTE modems specialized for the Middle Eastern market. And the company's most recent AI city solution features traffic detection, accident detection, littering detection and more, all overarched to tackle down EMEA's typical city challenges. The company is ranked third in HD-camera manufacturing and sales in EMEA as of 2020.

Hanwha Impact is driving positive change for the future through innovative technologies and continuous investments that shift the paradigm in the fields of eco-friendly energy, convergence technology, and mobility.

Hanwha Power Systems provides turbo machinery via direct and aftermarket sales to oil & gas, petrochemical, and power-sector customers throughout the Middle East. The company is an approved vendor of air and gas compressors to Saudi Aramco and Abu Dhabi National Oil Company (ADNOC). It also became an approved service provider to ADNOC after setting up a compressor workshop to deliver dedicated aftermarket support.



Bismayah New City is a 100,080-unit residential-housing project located 10 kilometers southeast of Baghdad, Iraq.

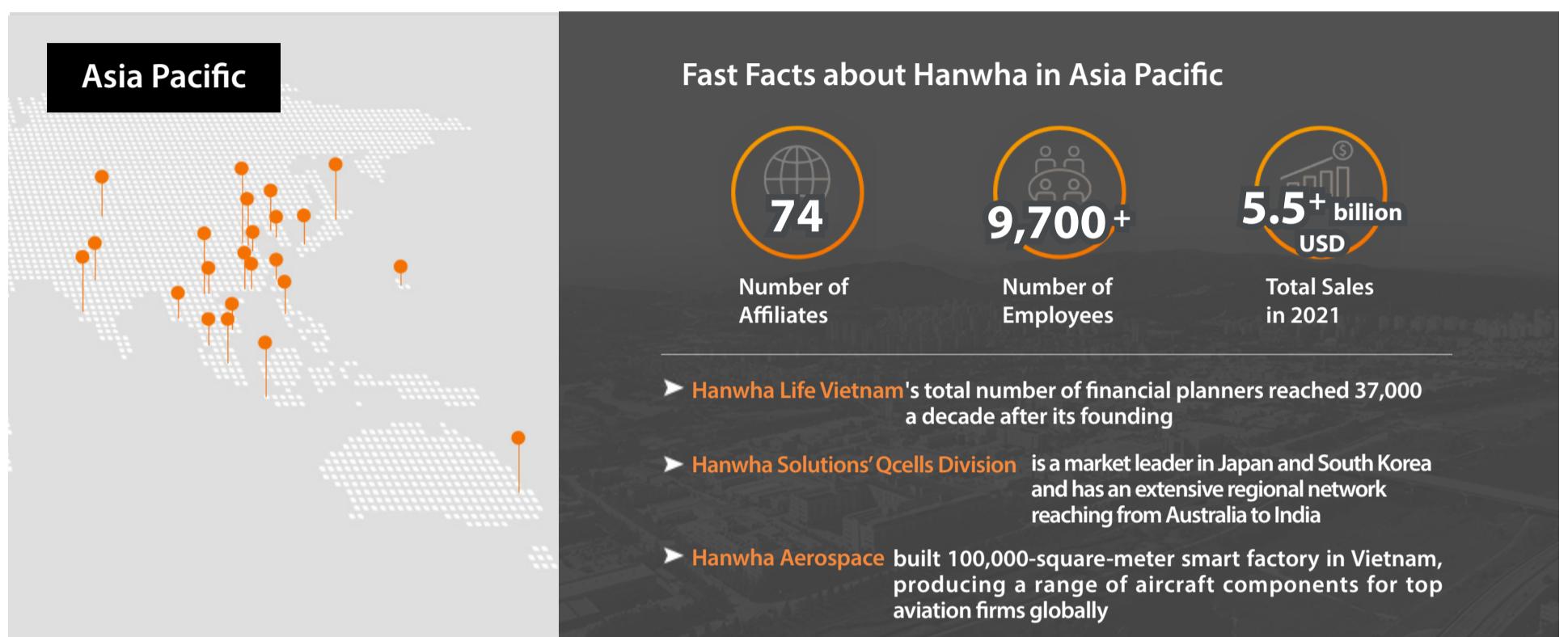
Hanwha Corporation/Engineering & Construction is a global engineering, procurement, and construction (EPC) contractor. Its diverse project portfolio includes housing, commercial buildings, industrial plants, and city development. In 2013, the company started work on the Bismayah New City project near Baghdad, Iraq. When completed, the brand-new city will cover 1,830 hectares, eight districts, and 59 street blocks that will include 834 apartment complexes with 100,080 residential units. The company is also constructing Saudi Arabia's Yanbu Phase 2 Expansion MED Seawater Desalination Plant, which will produce 15 million gallons of fresh water per day.

Fast Facts about Hanwha in EMEA

- ✓ **Hanwha Solutions' Qcells Division** has won EuPD Research's Top Brand PV Europe seal for nine consecutive years
- ✓ **Hanwha Advanced Materials**'s high-strength, lightweight parts for partners including BMW and Audi to help lower fuel consumption and carbon emissions, thus helping protect the environment
- ✓ **Hanwha Power Systems**' "hydrogen to gas turbine technology", or H2GT, can be retrofitted to existing LNG-fired power plant's gas turbines, allowing them to run on hydrogen fuel.
- ✓ **Hanwha Corporation**'s latest HCR Advanced Series retains the excellent design and versatility of the original HCR cobots while boosting speed, consistency, and accuracy
- ✓ **Hanwha Vision** is ranked third in HD-camera manufacturing and sales in EMEA (as of 2020)
- ✓ **Hanwha Corporation/Momentum**'s new Europe Technical Center opened in 2019, offering next-level technology and services for smart factories
- ✓ **Hanwha Corporation/Engineering & Construction** is building Bismayah New City, the most ambitious mega-city project in Iraq's modern history

Global Presence

Asia Pacific



Throughout the vast Asia-Pacific region, Hanwha offers both highly localized services and a brimming portfolio. Its chemical refineries and petrochemical processing plants in the region produce raw materials used in industrial, commercial, and household goods around the world. It also develops and manufactures high-tech products such as solar power solutions, aircraft engines, video-surveillance solutions, and collaborative robotics for manufacturing applications.

Hanwha is one of the largest foreign life-insurance providers in China and Vietnam. It also provides securities services in Vietnam and asset management services in China and Singapore. As a fintech pioneer, Hanwha backs start-ups that disrupt how financial services are delivered.

In the leisure sector, Hanwha operates several vacation destinations where people can enjoy their holidays, including resorts and golf courses in Saipan and Nagasaki, Japan.

Hanwha Solutions' Chemical Division is a considerable presence in the Asian petrochemical industry. With subsidiaries in China, India, Malaysia, and Thailand, it is one of the world's largest manufacturers and suppliers of petrochemical products, including synthetic resins such as caustic soda, polyvinyl chloride (PVC), and polyethylene (PE). The company places great emphasis on developing new products and manufacturing techniques to best address the shifting needs of the global petrochemical market. It is also very focused on commercializing products that are more sustainable and safer for the environment.

Hanwha Advanced Materials develops and manufactures lightweight composites, films, sheets, and thermoplastics for use in the automotive and electronics industries. It also maintains a plant that produces materials used in high-performance solar modules. In China, the company manufactures lightweight composites at plants in Beijing, Chongqing, and Shanghai for global automakers like General Motors, Hyundai Motors, Toyota, and Volkswagen. These composites are also used to meet the needs of China's growing electric vehicle market.

Hanwha TotalEnergies Petrochemical specializes in the sustainable development, production, and sales of polymers, base chemicals, and energy products. In Asia, the company has business operations in China, Japan, and Singapore. In China, it is a market leader for many synthetic resin products, coatings, and photovoltaic sheets. The company is the global market leader in encapsulants for solar batteries. Hanwha Total Petrochemical recognizes that safety, health, environment, and quality are the key factors for social good as well as its own prosperity and growth. It has achieved numerous certifications in line with its commitment — from KOSHA 180001 to ISO 4001 to ECO YHES.

Hanwha Solutions' Qcells Division, a total energy solutions provider in solar cell and module production, energy storage, downstream energy projects, and energy retail, is a market leader with operations in China, Japan, Korea, and Vietnam. Since being acquired, the company's manufacturing plant in Qidong, China, has almost quadrupled its production capacity from 1.3 GW to 5 GW annually. In Vietnam, Hanwha donated two solar-powered boats to the Clean Up Mekong campaign. Powered and propelled by the company's Q.PEAK solar modules, the boats collect up to 500 kg of waste daily in the Mekong River without emitting any greenhouse gases or other pollutants.

Hanwha Qcells Japan is an umbrella organization that provides customers with solar power solutions, chemical products, surveillance solutions, and trade services.

Hanwha Energy is expanding its presence in the Asian and Oceanic energy-retail markets by pursuing commercial and industrial power-generation projects and signing new power purchase agreements. In Australia, India, Japan, and Vietnam, it operates solar power plants that supply local consumers with clean, renewable electricity. In 2020, Hanwha Energy advanced its position in the Australian market by establishing Nectr, an energy retailer that operates solar farms and works to decentralize electricity generation. Overall, the company is constructing additional solar power plants in Australia, Japan, and Malaysia to make solar power more widely available to consumers in the region.



Hanwha Aero-Engines factory in Vietnam

Hanwha Aerospace develops and manufactures a range of aircraft components and gas turbine engine solutions. In 2017, the company built a 100,000-square-meter factory in Vietnam to produce parts at competitive prices for GE Aviation, Pratt & Whitney, and Rolls-Royce. The company looks to increase its engine part sales for civil aircraft to lead the aircraft parts processing industry by 2025.

Hanwha Vision specializes in video-surveillance systems with next-generation capabilities, such as AI, deep learning, and business intelligence. In 2017, the company built a state-of-the-art factory in Bac Ninh province in Vietnam to produce CCTV security products, including network cameras and recording devices. The facility supports Hanwha Vision's growing customer demand in North America, Europe, and the Middle East where its technology helps protect people, property, and assets.

Hanwha Corporation is a global manufacturing and trading company that has three divisions: Global, Defense, and Machinery. In China, the company's machinery division operates a manufacturing plant that produces machine tools and powertrains to meet increasing demand from Chinese customers. Where demand for industrial explosives is on the rise, the company's mining business is thriving. As of 2021, Hanwha has two industrial explosives manufacturing facilities in Australia alone. They have the combined capacity to produce up to 100,000 tons annually. In Indonesia, Hanwha has a production facility capable of producing 40,000 tons of industrial explosives annually as of 2021. In 2019, the company's Machinery Division started selling cobots (collaborative robots) through partner Wipro PARI's industrial network to meet rising demand for automation in India.

Hanwha Power Systems designs and manufactures turbo machinery for customers around the world. Its product catalog includes industrial air compressors, fuel-gas compressors for power plants, and boil-off-gas compressors for liquefied-natural-gas terminals and plants. The company also develops technologies like turbo-expander generators, supercritical-carbon-dioxide (sCO₂) engines, and oxy-fuel-gas turbines that will make power generation much more efficient in the future.



The grand opening of a public health center constructed and donated by Hanwha Life Insurance Vietnam in Cao Phong, Vietnam

Hanwha Life is a leading insurance company that offers innovative products and services to meet a wide range of customers' needs. It is meeting increased demand for insurance coverage in China, Indonesia, and Vietnam as standards of living rise in Southeast Asia, using big data to understand customers' needs and offer localized policies. The company is also one of China's largest foreign insurance providers and received the "Best Value for Investment Insurance Product Award" at the prestigious China Innovation Insurance Awards in 2019. In Vietnam, the number of financial planners has grown significantly, reaching 37,000 since its founding 10 years ago. In 2015, Hanwha Life constructed and donated public health centers to provide healthcare services to residents in a remote, rural region in Vietnam and donated life insurance policies as part of the company's "Love Life" service campaign.

Hanwha Investment & Securities launched Pinetree Securities in Vietnam in 2019 to help customers take advantage of digital investment opportunities in the local market. The company also has an affiliate in Singapore. Hanwha's financial businesses are investing in fintech companies in Southeast Asia that help low-income people get access to funds. In 2020, **Hanwha Asset Management**'s Singapore-based affiliate facilitated a USD 5 million endowment

in iSTOX, a Singapore-based capital markets platform. Hanwha Investment & Securities also staked USD 10 million in Bangkok-based Lightnet, which provides easier and safer remittance services in Southeast Asia.

Fast Facts about Hanwha in Asia Pacific

- ✓ **Hanwha TotalEnergies Petrochemical** is the global leader in solar battery encapsulants
- ✓ **Hanwha Solutions' Qcells Division** is a market leader in Japan and South Korea and has an extensive regional network reaching from Australia to India
- ✓ **Hanwha Aerospace** built 100,000-square-meter smart factory in Vietnam, producing a range of aircraft components for top aviation firms globally
- ✓ **Hanwha Vision**'s state-of-the-art factory in Vietnam produces high-tech CCTV security systems to meet rising global demand
- ✓ **Hanwha Corporation** is supplying India's growing manufacturing sector with automation cobots
- ✓ **Hanwha Life Vietnam**'s total number of financial planners reached 37,000 a decade after its founding
- ✓ **Hanwha Investment & Securities** led USD 31.2 million investment in Lightnet, a Bangkok-based fintech company offering global remittance service using blockchain technology

Global Presence

United States

Prospects abound in the U.S., where Hanwha first established its presence in 1982. Hanwha's American businesses are major players in the manufacture, sale, and support of a wide variety of products. These include solar power solutions, aircraft engines, automotive parts, industrial equipment, security systems, and chemicals. Because of this, Hanwha is making a push to further expand its American operations, focusing on disruptive high-tech and sustainable enterprises as well as finance and start-up incubation.



10.86-MW Maywood Solar Farm in Indianapolis (Left) and 5-MW Kalaeloa Renewable Energy Park in Hawaii, U.S.A. (Right)

Hanwha Solutions' Qcells Division is a total energy solutions provider in solar cells and modules, energy storage, downstream project business and energy retail with operations in the U.S., Canada and Chile. According to the Q1 2022 U.S. PV Leaderboard report by Wood Mackenzie Power & Renewables, Hanwha Solutions' Qcells division continues to maintain the No. 1 market share in the U.S. residential and commercial solar markets with 24.1% and 20.6% of the market share, respectively. The company has also received its first Top Brand PV seal in the U.S. from EuPD Research. In Georgia, the company provided solar modules for a 102.5-MW solar farm that powers Facebook's ninth data center. It also operates the largest solar module plant in the Western Hemisphere, helping to meet the growing retail demand for renewable energy. Recently, Hanwha Solutions' Qcells division completed the construction of a 168-MW solar power plant in the United States. This solar farm, located in Texas, can power 30,000 homes and is one of only two solar power plants in the state with over 100 MW in capacity.

Hanwha Energy is a comprehensive energy solutions company. Through its subsidiary 174 Power Global, the company is involved in all aspects of the North American solar energy market—from power financing to power plant operations. It provides clean solar energy through 364 MW of Power Purchase Agreements with utility providers in various states. The company generates 364 MW of renewable energy and operates 4 MWh of energy storage systems under active development for customers in North America. In 2019, 174 Power Global acquired Chariot Energy, a Texas-based energy retailer. It also acquired OnForce Solar, a New York-based solar power developer of retail and commercial & industrial (C&I) projects. In 2021, Hanwha Energy signed a joint venture agreement with TotalEnergies, a broad energy company, to develop utility-scale solar and energy storage projects in the United States.

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Hanwha Power Systems maximizes customer value with technology, experience and world-class production facilities accumulated through the production of various gas turbine generator and compressor packaging as well as incorporating “hydrogen to gas turbine technology,” or H2GT to retrofit existing LNG-fired power plants’ gas turbines.

Hanwha Advanced Materials and **Hanwha Azdel** develop and produce a wide range of reinforced thermoplastics interior and exterior parts for automakers. The former is No. 1 in glass mat thermoplastics (GMT) in the world, while the latter is No. 1 in lightweight reinforced thermoplastic (LWRT) manufacturing and sales globally. When used in automotive manufacturing, these materials help produce stronger and safer automobiles. They also help reduce vehicle weights, leading to lower fuel consumption and carbon emissions, thus helping protect the environment.



Hanwha Advanced Materials America

Hanwha International is a trading company that facilitates the import of chemicals, steel, and machinery produced by other Hanwha affiliates into North and South America. Located in Teaneck, New Jersey, it is also the first Hanwha business to have been established in the Americas and played a crucial role in Hanwha's entry into the U.S. market.



Hanwha Aerospace USA's team members develop and produce cutting-edge aircraft engine components for manufacturers like GE and Pratt & Whitney

Hanwha Aerospace develops and produces advanced aircraft engine parts and acquired EDAC Technologies to create Hanwha Aerospace USA in 2019. With four state-of-the-art facilities in the state of Connecticut, the company specializes in the development and production of aircraft engine components, such as engine cowlings and integrally bladed rotors. In early 2021, Hanwha Aerospace USA received the Supplier Gold Certification by world-renowned aircraft engine manufacturer Pratt & Whitney for flawless quality control.

Hanwha Systems develops smart technologies in defense electronic systems and information infrastructure. In 2019, the company invested USD 25 million in Overair, US-based air taxi start-up, with the aim of bringing the Butterfly, a cutting-edge electric air taxi to market by 2025.

Recently, the company invested in OneWeb, a global leader in LEO satellite communications company, in order to expand its business to the global satellite communications sector and to join the field as a global supplier of LEO satellites and satellite terminals.

In addition, Hanwha Systems established Hanwha Phasor by acquiring business and assets of Phasor Solutions, a U.K.-based satellite communication antenna developer in 2020 and also made a USD 30 million equity investment in Kymeta, a global mobile satellite-cellular connectivity company.

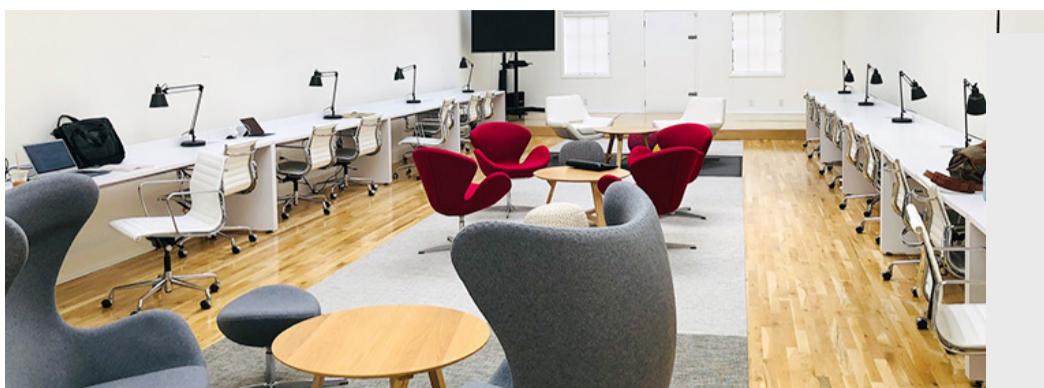
By leveraging such technologies, Hanwha Systems plans to provide multi-layered, hyper-connectivity solutions that connect all the communication satellites and observation satellites in the outer space.

Therefore, providing high quality satellite internet services as well as communications with the urban air mobility and autonomous driving vehicle can be possible, which will continuously generate more demand.

Hanwha Vision provides a wide selection for residential, commercial, and industrial surveillance applications. The company's ultra-high-definition cameras, cloud-based recording systems, and analytical software are widely deployed. They have also won numerous awards from American security-trade organizations, including Platinum in the network-video-surveillance-camera category at the 2021 Govies Government Security Awards presented by Security Today. The company is ranked second in network-camera manufacturing and sales in North America as of 2020. In 2020, the company received the UL CAP (Cybersecurity Assurance Program) certification for its Wisenet7 camera series, meeting the program's stringent evaluation criteria in just three months. With such effort, the company won the Best Cyber Security Solutions award by ASTORS American Security Today for its Wisenet7 camera series.

Universal Bearings is a leading manufacturer of high-precision bearings that specializes in needle and loose-needle bearings used mainly in automotive and industrial applications. Its manufacturing processes are accurate to within 2-3 microns, or smaller than a microscopic speck of dust. The company currently offers almost 1,000 different types of bearing products and continuously works to expand its portfolio to become a complete-bearing manufacturer.

Hanwha Corporation's offer smart factory solutions for manufacturing customers, with automated systems like Computer Numerical Control (CNC) machines and collaborative robots (cobots) that autonomously handle repetitive tasks that require precision. The Hanwha Collaborative Robot Advanced (HCR Advanced) Series retains the excellent design and versatility of the original HCR cobots with boosted speed, consistency, and accuracy to provide better productivity and increased workplace safety.



Hanwha Life's DREAMPLUS San Francisco Center serves as a vital springboard for American start-ups looking to expand into the Asian market. Companies accepted into the accelerator program receive access to workspaces and the chance to participate in networking events and pitch opportunities.

DREAMPLUS operates an incubator in San Francisco for U.S.-based start-ups looking to enter the Asian market

Fast Facts about Hanwha in the U.S.

- **Hanwha Solutions' Qcells Division** is America's No. 1 residential and commercial solar power provider
- **Hanwha Energy** generates 364 MW of renewable energy under active development for customers in North America
- **Hanwha Advanced Materials**'s high-strength, lightweight parts for cars help lower fuel consumption and carbon emissions, thus helping protect the environment
- **Hanwha Azdel** is No. 1 in manufacturing and sales of lightweight reinforced thermoplastics (LWRT) in the world
- **Hanwha Aerospace USA**'s advanced engine parts will help the all-new Boeing 777X fly high
- **Hanwha Systems** has invested in US-based air taxi start-up with the aim of bringing electric air taxis to market by 2025
- **Hanwha Vision America** is North America's No. 2 in network-camera manufacturing and sales (as of 2020), and received the UL CAP (Cybersecurity Assurance Program) certification for its Wisenet7 camera series
- **Hanwha Corporation's** smart factory solutions are advancing automation in America
- **Hanwha Life** DREAMPLUS incubator serves as a vital springboard for American start-ups with offices in California's Silicon Valley

Major Affiliates

- Hanwha Corporation
- Hanwha International
- Universal Bearings
- Hanwha Aerospace
- Hanwha Corporation/Momentum
- Hanwha Vision
- Hanwha Power Systems
- Hanwha Solutions Qcells Division
- Hanwha Solutions Advanced Materials Division
- Hanwha Azdel
- Hanwha Impact
- Hanwha Life
- Hanwha Asset Management

Global Presence

China

China occupies an important position in Hanwha's global operations. Hanwha chemical refineries and plants produce raw materials exported around the world. Other plants produce solar power products and lightweight composite materials. Hanwha also manufactures industrial machinery and high-precision chip mounters. Beyond manufacturing, Hanwha is one of China's largest foreign insurance providers, offering a variety of products and services to meet the wide-ranging needs of its customers.



Hanwha Solutions' Chemical Division's plant in Ningbo, China

Hanwha Solutions' Chemical Division first entered the Chinese market in 2003, opening a regional headquarters in Shanghai. It also has regional offices in Beijing and Guangzhou. It is a total solutions chemical company with streamlined production systems for polyethylene (PE), polyvinyl chloride (PVC), and chlor-alkali (CA). Hanwha opened a PVC manufacturing facility in Ningbo, Zhejiang Province, in 2011. Improvements to the plant's equipment and workflow have allowed it to expand its annual production capacity to 500,000 tons of ethylene dichloride (EDC), 400,000 tons of vinyl chloride monomer (VCM), and 400,000 tons of polyvinyl chloride to meet growing demand for a range of consumer products.

Hanwha Total Petrochemical specializes in the sustainable development, production, and sales of polymers, base chemicals, and energy products. The company established two business operations in China in 2008 and 2009, with offices in Beijing, Hong Kong, Shanghai, and Shenzhen, and a plant in Dongguan. It is a market leader for many synthetic resin products, coatings, and photovoltaic sheets. It also is China's No. 1 bottle cap material supplier. With a reputation for outstanding quality and spotless safety record, the company's China operations continue to leverage its technological prowess in innovative product development, contributing to the company's global tally of 900 patents.

Hanwha Solutions' Advanced Materials Division manufactures materials for various products, including automotive components at its plants in Beijing, Chongqing, and Shanghai. These manufacturing subsidiaries specialize in the production of lightweight composite materials for global automakers like General Motors, Hyundai Motors, Toyota, and Volkswagen. These plants are working hard to meet the needs of China's growing electric vehicle market.

Hanwha Solutions' Qcells Division, a total energy solutions provider, manufactures solar-power products in Qidong, Jiangsu Province. Acquired in 2010, its facility has almost quadrupled its production capacity from 1.3 GW to 5 GW annually, helping the company maintain its position as a global leader.



Q.PEAK solar modules of Hanwha Solutions' Qcells Division installed in Qinghai Province and Tongshan County, China

Hanwha Life is a leading life-insurance company that provides customers with high-quality services through constant product development. In 2012, the company entered the Chinese insurance market by forming Sino-Korea Life Insurance in partnership with ZHEJIANG ORIENT FINANCIAL HOLDINGS GROUP CO., LTD. Sino-Korea Life Insurance is establishing itself as a premium insurance company that covers every aspect of customers' lives through smart asset management and health-related insurance products. Its services—covering general insurance, pensions, health insurance, accident insurance, and more—are targeted to meet customer needs precisely and provide security to both individuals and families. In 2019, the company's "Fu Duo Duo" insurance package, which combines pension and health insurance, received the "Best Value for Investment Insurance Product Award" at the 14th annual China Insurance Innovation Awards.

Hanwha Corporation, which specializes in industrial machinery, set up its first Chinese manufacturing plant in Zhangjiagang, Jiangsu Province, in 2014. The plant was 100% funded by Hanwha to produce machine tools and powertrains to meet increasing demand from the Chinese market.

Hanwha Power Systems provides direct sales services and aftermarket support for turbo-machinery customers. In China, the company supplies gas and air compressors to local steel manufacturers, air-separation plants, and chemical refineries.



Hanwha also conducts social impact activities throughout China. Hanwha Happy Sunshine donates solar power systems to schools, communities, and social projects to help them achieve energy independence through sustainable photovoltaics. Hanwha Solar Forest's reforestation project in Ningxia region achieved a global milestone when it became the first-ever reforestation project to power a seedling nursery 100% via solar power. The United Nations Convention to Combat Desertification (UNCCD) cited this as a best practice and urged other reforestation projects to follow its example.

The UNCCD commended Hanwha's donation of a solar power plant to this seedling nursery in Ningxia, China, which marked the first time ever that a reforestation project was powered solely by solar energy.

Fast Facts about Hanwha in China

- **Hanwha Solutions' Chemical Division** produces 1.3 million tons of petrochemical products per year
- **Hanwha TotalEnergies Petrochemical** is a market leader for synthetic resin products, coatings, and photovoltaic sheets
- **Hanwha Solutions' Qcells Division**'s facility in Qidong has almost quadrupled its production capacity since 2010
- **Hanwha Corporation**'s plant in Zhangjiagang produces machine tools and powertrains to meet increasing demand
- **Sino-Korea Life Insurance Co., Ltd** (Hanwha Life) won its fourth consecutive Social Responsibility Brand Award in 2019

Major Affiliates

- Hanwha Corporation
- Hanwha Power Systems
- Hanwha Solutions Chemical Division
- Hanwha Solutions Qcells Division
- Hanwha Advanced Materials
- Hanwha TotalEnergies Petrochemical
- Hanwha Life
- Hanwha Asset Management

Global Presence

Vietnam

With its large workforce and business-friendly environment, Vietnam is a linchpin in Hanwha's global operations. It made significant investments and continuously expanded to become one of Vietnam's largest insurance providers. It also operates in the Vietnamese asset management and securities industries. The country is a manufacturing center for Hanwha, with purpose-built facilities that produce state-of-the-art aircraft engine components and cutting-edge video-surveillance solutions. Furthermore, Hanwha is helping Vietnam become less reliant on fossil fuels through solar power and liquefied-natural-gas (LNG) power.



Hanwha Life Vietnam's head office in Ho Chi Minh City

Hanwha Life, a leading insurance company that offers innovative products and services to meet a wide range of customers' needs, debuted in the Vietnamese insurance market in 2009. It was the first Korean company to set up a wholly owned subsidiary locally without a Vietnamese partner. Within a decade, Hanwha Life Vietnam's business has grown over 15-fold. It is now rated Vietnam's seventh largest insurer, with 37,000 financial planners and nearly 160 locations across major cities such as Ho Chi Minh City, Hanoi, Da Nang, and Can Tho. In recognition of its success, Hanwha Life Vietnam has received seven consecutive Golden Dragon Awards for Best Products and Services from the Vietnam Economic Times.

Hanwha Asset Management, a financial services company, made a 2018 investment in Vingroup JSC, Vietnam's largest conglomerate. Together, they are pursuing opportunities in fintech, automobile component materials, solar power system installation, and security. In 2019, **Hanwha Investment & Securities** launched Pinetree Securities, a securities brokerage that is now working to expand throughout Southeast Asia and move into investment banking. It actively partners with fintech firms and start-ups, helping customers take advantage of digital investment opportunities.

Hanwha Aerospace, which develops and produces advanced aircraft engine parts, opened an aircraft-engine-component plant near Hanoi to meet growing demand from companies such as GE Aviation, Pratt & Whitney, and Rolls-Royce. The 100,000-square-meter facility leverages the company's technology and experience to produce high-quality aircraft engine components in large volumes.



Hanwha Aero-Engines in Hanoi, Vietnam

Hanwha Vision is a surveillance technology company with next-generation capabilities, such as AI, deep learning, and business intelligence. It invested in a state-of-the-art manufacturing facility in Bac Ninh Province to produce cutting-edge video-surveillance solutions. The facility supports the company's growing sales in North America, Europe, and the Middle East. It also represents a major logistics breakthrough in the region. By collaborating with the Vietnamese government, Hanwha Vision secured an extensive supply chain to make sure the plant receives the

materials it needs.

Hanwha Energy is an energy retailer that provides customers with downstream-electricity-generation services. In Vietnam, the company is introducing energy sources that have less of an environmental and economic cost than hydroelectric, coal, and nuclear-power plants. This includes a 100-MW solar power plant in Khanh Hoa Province. Additionally, in 2019, Hanwha Energy began the development of liquefied-natural-gas (LNG) infrastructure in central southern Vietnam. The construction of LNG-power plants and terminals for LNG imports will help make up for electricity-generation shortages in the region.

Hanwha Power Systems provides Vietnamese customers with aftermarket support for industrial air compressors, including fuel-gas compressors for power plants, and boil-off-gas compressors for liquefied-natural-gas terminals and plants.

Hanwha is also engaged in numerous social impact activities in Vietnam. By end of 2020, Hanwha Life Vietnam had donated 53,570 health insurance cards to the underprivileged, including many children and elderly people, enabling them to receive treatment at government hospitals. Additionally, Hanwha has constructed free health clinics in poorer areas to ensure that people don't have to travel long distances to receive adequate healthcare. In acknowledgment of these efforts, the company was presented with a Certificate of Merit by the Ho Chi Minh City People's Committee and the Sponsoring Association for Poor Patients.



Hanwha has also launched "Clean Up Mekong" campaign to address the pressing issue of serious pollution on the Mekong River. The campaign raises public pollution awareness and scoops floating waste off the river's surface with solar-powered boats equipped with Q.PEAK DUO solar modules of Hanwha Solutions' Q CELLS Division. It received one gold award and five bronze awards at the New York Festivals 2020 Advertising Awards.

A solar-powered boat donated to Vietnam as part of the "Clean Up Mekong" campaign

Fast Facts about Hanwha in Vietnam

- **Hanwha Life**'s total number of financial planners reached 37,000 a decade after its founding
- **Hanwha Investment & Securities** launched Pinetree Securities Corporation in 2019 to help customers take advantage of fintech opportunities
- **Hanwha Aerospace**'s factory in Vietnam is supplying advanced aircraft engine parts to top-flight aviation firms, including GE Aviation, Pratt & Whitney, and Rolls-Royce
- **Hanwha Vision**'s factory in Bac Ninh Province produces advanced surveillance systems to meet growing global demand for state-of-the-art security
- **Hanwha** donated two solar-powered boats to clean up pollution in the Mekong River, which won awards at the New York Festivals 2020 Advertising Awards

Major Affiliates

- Hanwha Aerospace (Aero-Engines)
- Hanwha Vision
- Hanwha Power Systems
- Hanwha Energy
- Hanwha Life
- Hanwha Investment & Securities