

Hanwha Estate

Challenge · Dedication · Integrity

Real Estate Consulting

Construction Security

Facility · Property Management

Green building and Energy Efficiency

www.hanwhaestate.com

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At Hanwha Estate, our real estate consulting team examines our clients' specific needs, requirements, and the type of realty they seek before presenting them with the best investment opportunities.

Our Services

From real estate consulting to construction, security solutions, facility and property management, and optimizing energy efficiency, Hanwha Estate offers a full range of realty services that can increase your property value.

Efficient management of your building/property, maximizing your operating revenue and asset value.

Diverse and integrated real estate facilities management.

Increase property valuations by building improvement projects.

Safety management and security services to protect your building and facilities.

Green building and energy efficiency practices with eco-friendly products and services.



Overview



Team of Experts working for you

Real Estate Consulting

1 2 6

- Investment Advisory
- Transaction Advisory Services (buying and selling)
- Lend-lease consulting

We're experts in the real estate market. We analyze and find the best ways to help you get the most out of your real estate investments.



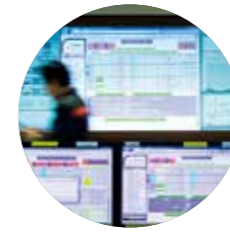
Build, manage space, and secure

Construction Security

3 5

- Interior construction
- Digital security
- Comprehensive IoT security

We employ proven technologies and experts to provide a one-stop service for your interior and exterior construction and security needs.



Deep experience, innovative technology

Facility · Property Management

4

- Property management
- Lend-lease consulting Facility Management
- Energy Management
- Safety Management

We make sure the necessary infrastructure for your properties are in place to ensure their security and safety. And by leveraging technologies developed in-house, our high-level facility management professionals excel at working with all types of facilities including offices, laboratories and department stores.



Optimized Energy Efficiency

Green building and Energy Efficiency

5

- Energy Consulting
- Smart grid
- New and renewable energy

We offer energy-saving and eco-friendly products and services managed efficiently by a team of experts so our clients can get the most out of their real estate investment and the best possible outcome for the environment.



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Challenge

We challenge the status quo and innovate for a better future

Through continuous research and development, Hanwha Estate is working hard to innovate for a sustainable future that is good for both people and the environment.

Dedication

We dedicate ourselves to our clients

Hanwha Estate's Management embodies Hanwha Group's spirit of Trust, Respect, and Innovation, bringing out the best in us to deliver the best to our clients.

Integrity

Integrity is key: do good for society, do what's right

Hanwha Estate helps people in need, improves the environment and actively engages in social responsibility projects to demonstrate what we care about, the world and its people.



From Our Beginning

To Beyond, Together

1988

2019

Beginning

Growth

Expansion

Preparations for Beyond

1988 - 2004

2005 - 2010

2011 - 2015

2016 - 2019

- 1988.02** Hankuk Bangho Co., Ltd is established
- 1988.03** License for comprehensive services (property and facility management) is acquired
- 2000.03** Corporation name is changed to SNS Co., Ltd.
- 2000.06** Is appointed as agency for electricity safety management And license for information and communication construction is acquired
- 2000.07** Autonomous mechanical security services is launched, Kyeongnam branch is established
- 2001.06** Seoul branch for autonomous security services is established
- 2003.07** Central branch for autonomous security services is established

- 2005.04** Corporate Headquarters is relocated to Yeoksam-dong, Gangnam-gu, Seoul) Changed corporate name to SNS Ace Co., Ltd.
- 2005.06** Is registered to operate as detection service of illegal wire-tapping equipment (No.13)
- 2005.08** Is registered as software service provider
- 2006.12** Is ISO 9001 Certified (DNV GL)
- 2007.09** License is acquired to provide private security service

- 2011.04** Headquarters is relocated to Yeouido-dong in Seoul
- 2011.09** License is acquired to provide professional construction service (interior design, facility maintenance and management)
- 2011.10** New and renewable energy equipment installation service is launched
- 2011.11** License is acquired to offer heating and electrical construction services
- 2012.10** Is registered to operate as a green energy business
- 2014.11** License is acquired to offer construction specific to groundwater development
- 2015.08** License is acquired to offer real estate development service

- 2016.01** Corporate name is changed to Hanwha Estate Co., Ltd.
- 2016.04** License is acquired to operate as a professional construction company (machinery construction, landscape planting construction)
- 2016.05** License to offer housing rental & management services, and realty investment consulting services
- 2016.09** Patent is granted for 'Compensated geothermal heating system using water storage tank and geothermal heat source' Obtained license for integrated construction service (architectural service)
- 2017.10** Is registered as OHSAS 18001:2007 (BSI)
- 2018.02** License is acquired to offer Fire administration facility services
- 2018.04** Is registered to operate as a smart grid service provider
- 2018.05** Safety and support program (Korea Occupational Safety & Health Agency) is certified

Accolades

- 1996** Building Energy Winner Award Minister of Trade, Industry and Energy Award at Electrical Safety Promotion Conference
- 2003** Tin Tower Order of Industrial Service Merit (Energy Saving)
- 2004** Grand Honor, The Best Korea Awards (Korea Management Association Consulting) Minister of Trade, Industry and Energy Award for Gas Security

Accolades

- 2006** Minister of Environment Award for Environmental Preservation
- 2008** Minister of Interior Safety Award for Outstanding Fire Service Administration
- 2010** Presidential Award for Labor-Management Cooperation

Accolades

- 2015** Awarded for its patent (Compensated Geothermal Heating System using water storage tank and geothermal heat source) and recognized as an outstanding eco-mileage organization
- 2016** Commendation for contribution to Energy field by Mayor of Seoul

Licenses

- Interior architecture
- Facility maintenance and management service
- Best-in-class heating systems construction
- Electrical systems construction
- Information and communication systems construction
- Groundwater development and construction

At Hanwha Estate, we're experienced experts.
Our work is of the highest quality and our services work for any environment.

Focus on Qualitative Growth | Integrated Realty Service Provider

Integrated Services to build, operate and deliver quality

Dramatic savings, growth and profit through efficient communications

Single source accountability from start to finish



Hanwha Estate

Established on	February 2, 1988
Capital	5 billion won
Sales	100 billion won (as of 2018)
Number of employees	1,038
Business type	Independent auditor
Services provided	Real estate consulting, Facility and Property management, Construction · Security, Green Energy products and services
Credit rating	A-
Miscellaneous	Real estate investment consulting (Registration No. 2016-57 at Ministry of Land, Infrastructure and Transport)
Address	63-ro 50 13F Yeongdeungpo-gu, Seoul (Yeouido-dong, Hanwhasaengmyeong 63 building)

Acquired certificates

Certificates	Number(people)	Classification	Number (people)
Real estate agent	10	Engineer	1
CCIM	2	Master mechanic	3
CPM	2	Architect	120
Professional real estate developer	1	Industrial engineer	74
Professional property manager	3	Technician	295
Total	18	Total	493

Professional workforce in each field

Field	Technician	Architect	Industrial engineer
Machinery	-	18	19
Construction	1	10	-
Fire administration	-	-	1
Safety management	-	7	6
Energy	-	13	6
Electrical	-	66	30
Total	1	114	62

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Hanwha Estate

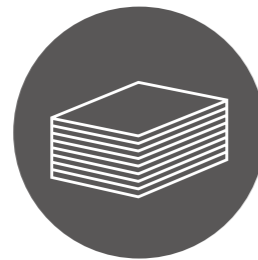
Real Estate Consulting

We treat every client as unique and this means our solutions are customized for your real estate needs. Our in-depth real estate market analysis will give you clear insights so you can make optimal decisions to maximize your profit from your investment.

Core Competencies



Know-how on both income-producing and non-income producing real estate investments. Whether you want to invest in a business or build for the future, our professionals can provide the expertise.



Professional data collection, storage, analysis and continuous market research



Access to huge database and powerful marketing channels through a vast global network of Hanwha affiliates and partners



Top-notch professionals in the real estate industry

Investment Advisory

We provide in-depth market analysis with which you can make optimal and informed decisions as well as develop short and long-term investment growth strategies.

- Real estate market (lease/sale) analysis
- Property valuations and investment feasibility review
- The highest and the best use of property recommendations
- Client-tailored market research and analysis
- Consultations – business review of development projects

Commercial real estate market research	<ul style="list-style-type: none"> • Office space market trends and prospects • Analysis of commercial real estate market trends and sales case studies • Indirect real estate investment market (REF, REIT) trend analysis
Strategy to increase property efficiency	<ul style="list-style-type: none"> • Environmental analysis • Strategies to improve property values • Strategies to improve retention/sales/development
Investment feasibility review	<ul style="list-style-type: none"> • Target investment site and market environment analysis • Profit analysis of investment using various financial techniques • Profit analysis by approximating with fair rent estimates and maintenance costs

Transaction Advisory Services

We have access to a wealth of information through Hanwha Group's network. We leverage this information and make it available in our consultations and to help our clients during their buying and selling processes.

- Strategies for real estate sale/purchase
- Analysis and valuations
- Attracting investors and marketing
- Sales/purchase Negotiations
- Sales/purchase contract and deal closing

<p>Sales/purchase of corporate real estate</p> <hr/> <p>Of office buildings, industrial factories/warehouses, corporate property liquidations for corporate restructures/insolvencies</p>	<p>Sale/purchase of investment real estate</p> <hr/> <p>For commercial use (office, retail) investment property such as REF, REIT financial analysis and market research</p>
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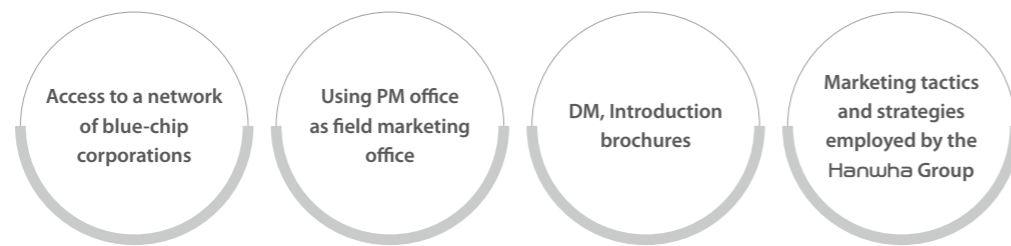
Lend-lease consulting

We offer superior lending/leasing strategies and management know-hows that are best for your business needs.

- Estimating the most appropriate rent price
- Optimal MD for buildings
- Securing prospective tenants

Lend-lease management

By utilizing the same marketing strategies commonly employed by the Hanwha Group and other domestic and international companies, we can attract leaseholders from the same network of blue-chip corporations. This is a standard practice that essentially translates to a competitive edge that we can offer to ensure the maximum satisfaction levels for leaser/leaseholders.



Phased-approach marketing strategy for leasing

We plan and execute promotion campaigns to build brand awareness, utilize marketing strategies and various channels in every phase.

- STEP 1. Pre-Marketing**
 - Consultation in planning and executing marketing plans and strategies to deliver the best results to our clients
 - Produce promotional materials (e-brochures, e-mails, blogs)
 - Assemble a list of all core tenants in the Seoul Metropolitan area and adjacent provinces
 - Leverage our marketing partners to develop marketing strategies

- STEP 2. Strategy Implement**
 - Establish marketing activities that align to specific strategies
 - Develop a comprehensive marketing strategy with emphasis on growing marketing networks
 - Assess, produce, and use marketing tools & channels
 - Face-to-face marketing to target tenants

- STEP 3. Strategy Consulting**
 - Craft cogent and comprehensive strategies to help clients achieve their defined goals
 - Attract more tenants with better real estate marketing strategies and tactics
 - Provision and promote multiple benefits to prospective commercial tenants
 - Proactive marketing and consultation for target tenants

Lend-lease / Investment Advisory

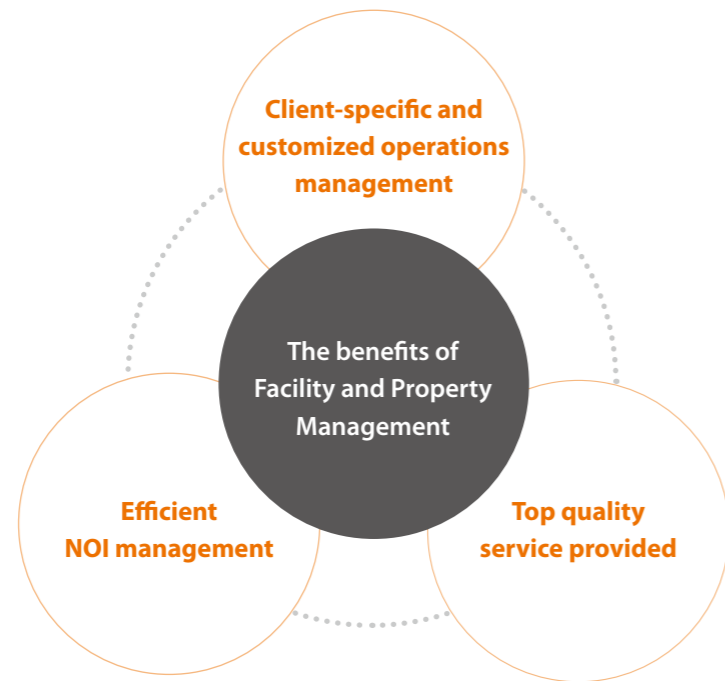
- 2018**
 - Consultation for SIT's integrated office space in Dongtan area
- 2017**
 - Leasing agent for Hanwha Life Insurance at Shinhan Wall office building
 - Leasing agent for Hanwha Life Insurance at Gangnam Nonhyeon building
 - Lending agent for Seoul Baum Dental Clinic at Seosomun Hanwha building
 - Lending agent for We Trust Coffee at Seosomun Hanwha building
 - Lending agent for Space Dream (shared space) at Seosomun Hanwha building
 - Lending strategy consultation for office facilities at KT&G Sejong Complex building
 - Sales Consultant for KT Incheon Mansu office
 - Sales Consultant for KT Buk Ilsan office
- 2016**
 - Lending agent for Samsung Fire & Marine Insurance at Gangneung Hanwha Life Insurance building
 - Lending agent for Dream Life Plan at Seosomun Hanwha building
 - Lending agent for Sun Technologies at Hanwha General Insurance's Yeouido Financial Center
 - Leasing agent for Hanwha Energy at Sejong Media Center, Sejong city
 - Leasing agent for Hanwha System at Samsung Fire & Marine Insurance, Pangyo office building
 - Consultation for land purchase of Hanwha Energy in Sejong city

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Hanwha Estate

Property Management

We evaluate the space each of our client's best interest in mind and work hard to maximize value of the property. We can increase your property values and manage them securely with our state-of-the-art technologies and with experience - acquired over the years from having managed and secured a wide range of facilities.



Client-specific, customized operations management

- Analysis of client needs for each building
- Client-centric on-site operation and service support

Efficient NOI management

- Profit management taking into account local characteristics, site features, tenants, and real estate market trends
- Strategies to generate new profit (parking, venue rental)
- Increasing property values by reducing FM costs

Premier services

- Standardized reports
- Counsel from consultant team with ongoing meeting cadence to form and execute operation strategies
- On-demand real-time status report system
- Additional strategies to increase property value

Property Management

We provide an array of management services to ensure that you maximize the operations and performance of your property.

Financial management

- Property valuation management / Financial income and outgo management and analysis / Administrative practice / Accounting, tax affairs

Lease consulting

- Analysis of market environment / Analysis of potential lease item / Evaluation of standard lease price / Lease marketing strategies / Attracting tenants / Lease contract support / Post-lease management support

Property management

- Business plan strategy / Lease management (LM) / Facility management (FM) Client management / Space management / Administrative management

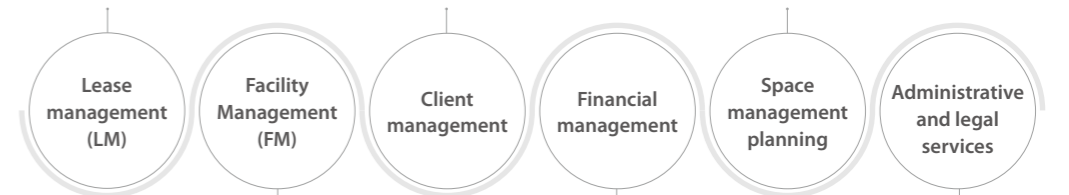
Lending consulting

- Lending commission and understanding client needs / Information provided for target item / Risk evaluation for target lending item / Analysis of lending contract conditions and offering optimal conditions / Lending contract support / Post-lending management support

Range of PM Services

As the agent for the proprietor, we address all issues that arise during building management.

- Market analysis and understanding tenant trends
- Response to tenants and their complaints
- Consultation for contract renewal
- Efficient use of space
- Lessee/tenant management
- Negotiations
- Contract management
- Visual Merchandising Display planning and Retail Location planning
- Management operations planning and reporting
- Efficient utilization of space



- Energy optimizations
- Repairs, Operations, and Custodial services
- Outsourcing relationship management
- Safety management (disaster/injury prevention)
- Miscellaneous (Repairs Costs, CAPEX)

- Budget planning
- Accounting/tax management
- Financial income and outgo management and analysis
- Insurance management
- Property value management (data and account books)

- Venue space rental & services
- Construction/building permits
- Contract services (e.g. purchase agreements, deeds, leases, transfers)
- Risk management
- Educational courses (lawsuits, dispossessions, credit management)

Maximizing leases via CRM/CSS channels

Our services include lease management, facility management, tenant management, financial management, space planning, administrative services and legal services. And to ensure all tenant needs are met, we monitor tenant satisfaction levels and address their service needs with our readily available customer service specialists and through our CRM/CSS channels.

CRM (Customer Relationship Management)

In addition to continuous monitoring to address issues, we make regular scheduled visits to check and respond to tenant needs and resolve issues

Customer Service Phone HOT Line for immediate resolution

- Tenant appreciation (move-in presents, perks, etc. to build rapport)

CSS (Customer Satisfaction Survey)

- Regular surveys to gauge tenant satisfaction and needs
- Detailed plan to improve tenant satisfaction

- Address sources of tenant dissatisfaction
- Create/build a pleasant environment for tenants
- Build rapport with tenants

Facility Management

We leverage our know-how and experience in facilities management to help you achieve maximum energy efficiency. Our high-quality facility management services ensures the security and safety of your real estate.

Facility Management

Scheduled and unscheduled maintenance / Subcontractor management
 Defect management and resolutions / Construction management and supervision
 Responding to business leasing complaints / Mandatory education and training (as required by law)

Energy Management

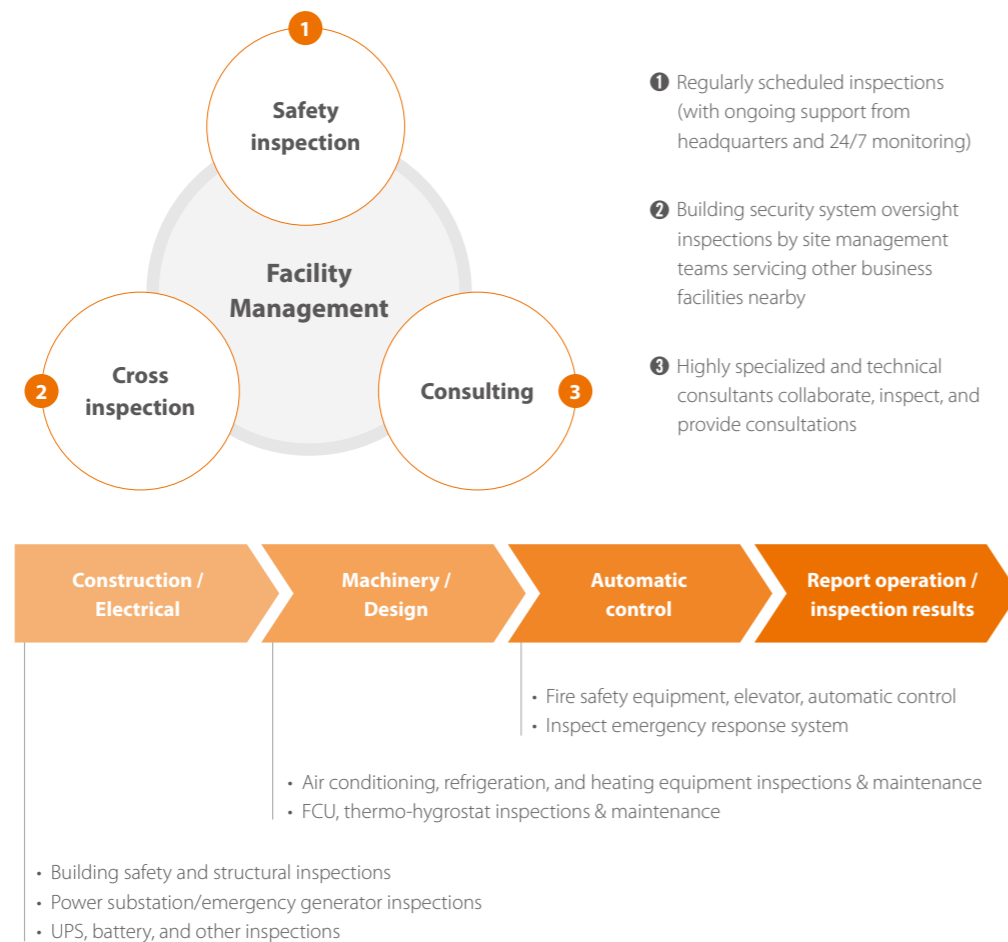
Energy-saving strategies / Energy consumption monitoring
 Energy consumption analysis / Green energy management / ESH activities

Safety Management

Set up contingency plan manual and Emergency drills to respond effectively to possible situations
 Comprehensive and detailed safety inspections

Facility Management

We employ the best security systems, provide technical consultations and install measures and oversight to cross-check and ensure safety across building constructions, electricals, machineries, and to prevent fire in cooperation with numerous departments and site management teams.



Property Management

Managed Properties

Office Buildings

- 2018 Comet Network, Geonwa Building
Seoyeong Building, Bundang
- 2017 Nexon Korea
Innisfree Myeongdong office building
- 2016 Seosomun Hanwha Building
- 2015 - Office buildings of Hanwha General Insurance in Daejeon and Seonhwa
Seosomun Hanwha Building
- 2009 - Office buildings of Hanwha General Insurance in Ulsan, Daegu, and Gwangju
- 2007 - Office buildings of Hanwha General Insurance in Sinseol-dong, Busan, and Cheongju
- 2006 - Office buildings of Hanwha General Insurance in Seocho and Daejeon
- 1988 - Office buildings of Hanwha General Insurance in Seosomun

Complex (Resort, department store)

Industrial complexes

- | | |
|--|---|
| 2014 - Hanwha Aqua Planet Ilsan
Hanwha Hotel and Resort
banquet hall facility management | 2017 Cheonan factory, Korea NSK |
| 2013 - Seosan Ballpark for the Hanwha Eagles | 2016 Jincheon factory, Hanwha Q Cells
Seosan Solar Venture Complex, Hanwha Q Cells |
| 2012 - Golden Bay/Jade Palace at Hanwha Resort
Hanwha Aqua Planet Yeosu | Hanwha Systems Research Institute (formerly Thales) |
| 2010 - 2013 Hanwha Galleria Dongbaek Branch | Hanwha Aerospace Pangyo R&D Center
and Factory (formerly Techwin) |
| 2006 - Hanwha Resorts Kyeongju/
Pyeongchang/Yangpyeong/Yongin | Hanwha Future Technology
Research Center Co., Ltd. |
| 2001 - Hanwha Resort Haeundae | Landscaping for Daesan factory for Hanwha Total |
| 2000 - Daejeon Ballpark for the Hanwha Eagles | 2015 TDI factory, Hanwha Chemical
Ulsan factory, Hanwha General Chemical |
| Hanwha Galleria Time World | 2013 Poly-silicon, Hanwha Chemical |
| 1999 - Hanwha Resort Jirisan
Hanwha Galleria | 1998 - 2015 Hanwha Explosives in Gwangju, Cheonan,
Donghae, Jecheon, and Taebaek |
| Suwon Branch/Luxury Hall | 1993 - Bugang factory, Hanwha L&C |
| 1998 - Seoul Station | Hanwha Polydreamer in Cheonan |
| Hanwha Resort Daecheon | 1990 - Changwon factory, Hanwha TechM |
| 1997 - Hanwha Resort Seorak | Hanwha Chemical Central Research Institute |
| | 1988 - Yeosu/Ulsan factory, Hanwha Chemical
Yeocheon NCC |

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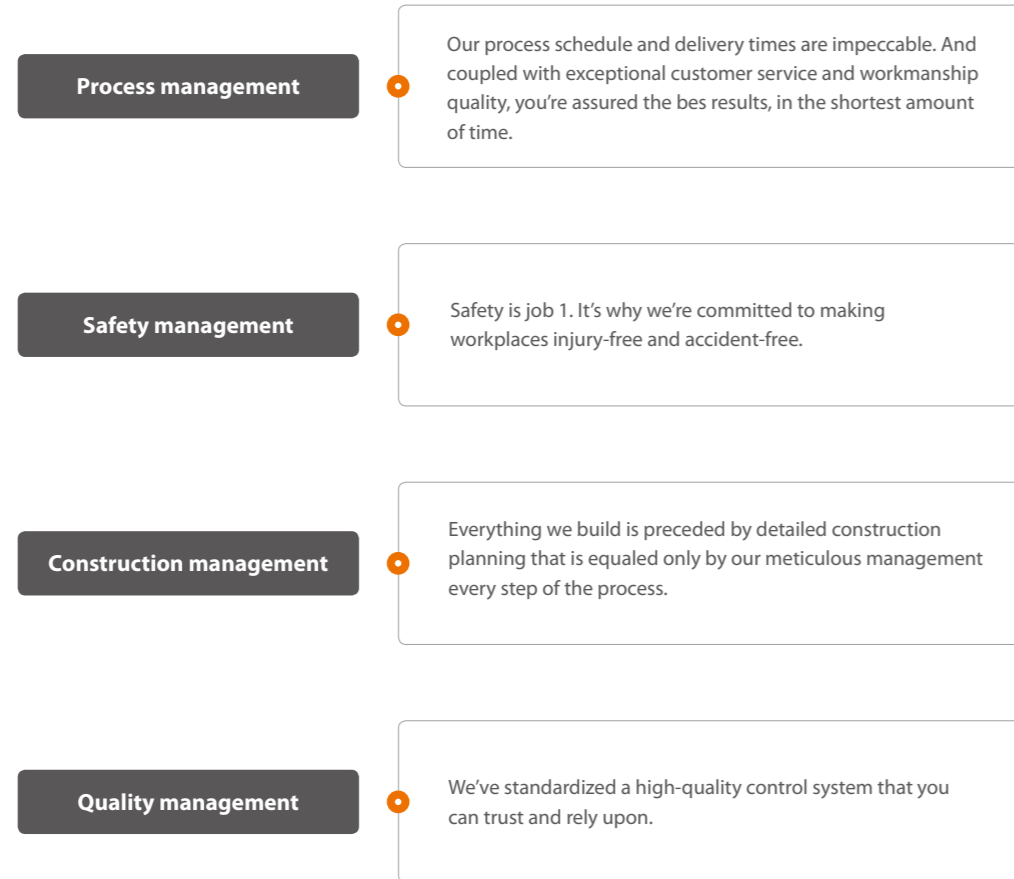
Hanwha Estate

Construction - Security Solution

As a construction developer, we can extend the life and profitability of buildings. And as a premier security management company, we can protect them.

Fundamental Rules in Construction Management

We guarantee high quality services the best in safety, construction, and maintenance. And then we take it a step further to help you get the most out of your investment.



Construction management

Anyone can build but we build to last. We're further distinguished by our technologies and project management expertise. Our work represents a new paradigm in construction.

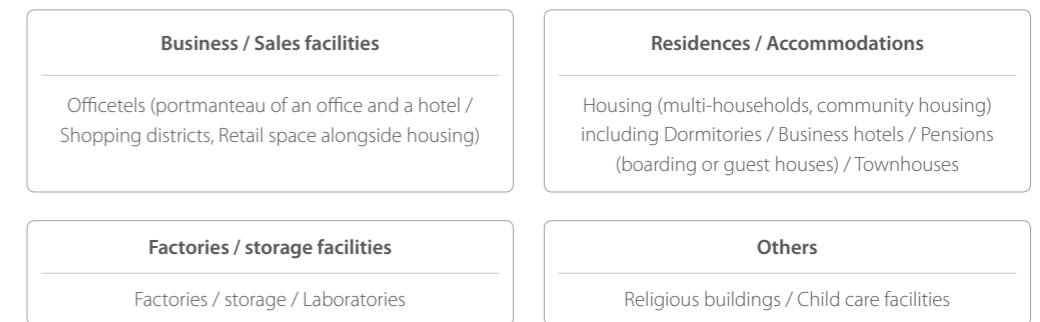
- Comprehensive construction**
New construction / Remodeling
- Remodeling and Interior design and construction**
Consulting / Planning / Design / Engineering / Post management

Comprehensive construction service

Our work starts with expert consulting specific to the real estate type. We can manage and supervise the complete construction of the building or building complex from start to finish.

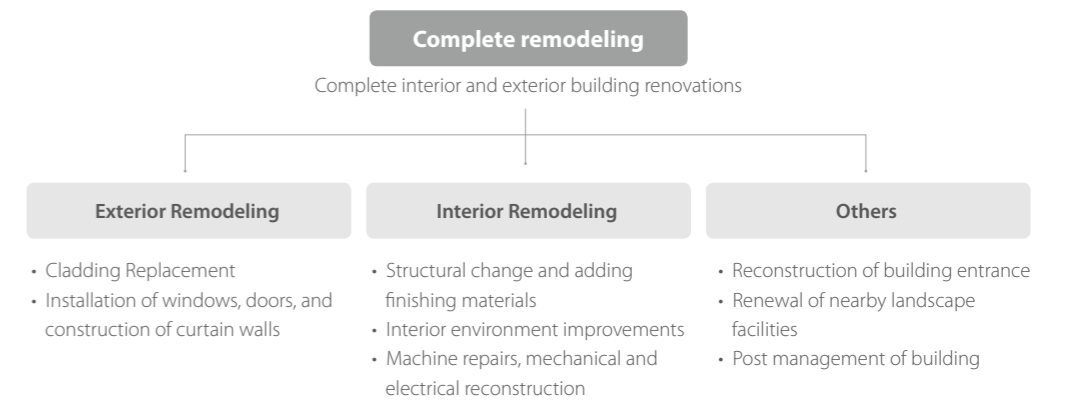
New construction

From the site planning stage to project completion, we manage every step of the process. Quality workmanship is always at the forefront of our work while construction costs are minimized to ensure 100% client satisfaction.



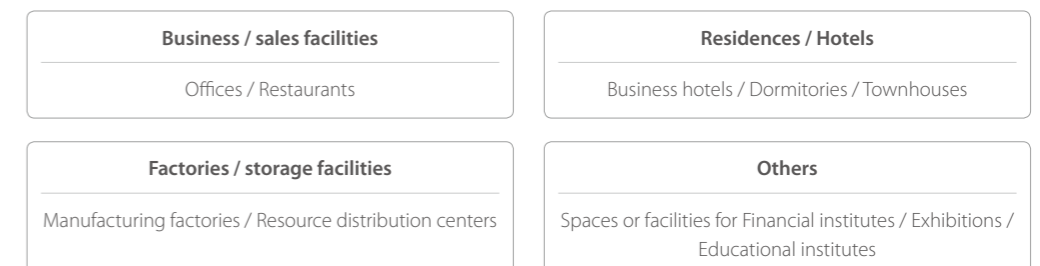
Remodeling

We perform extensions, reconstructions, and major repairs on buildings to improve spatial efficiency and can even create new spaces to increase the building's value.



Interior construction

Interior designer and architect provide efficient planning for interior space.



Security solution

We offer a comprehensive set of security solutions that when combined with our systematic approach to management, can provide unparalleled protection that meet or exceeds the needs of our clients.

Digital security

Access Control
Communications security

Comprehensive IoT security

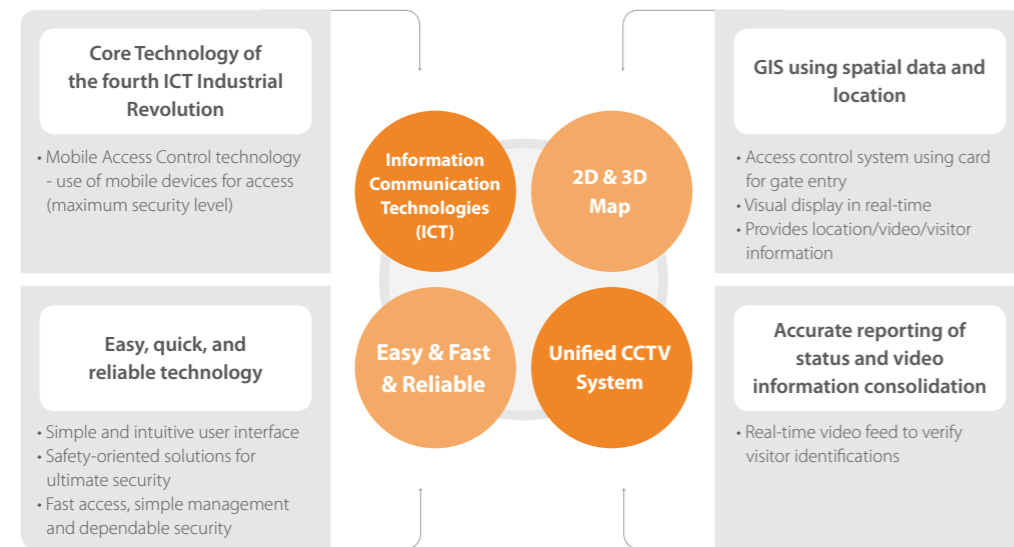
Safety security management system
Multiple recognition access management system

Digital security

We continuously improve our technology to develop digital security for tomorrow. This means we can offer easy-to-use security solutions that provide safety for today.

Access security

We provide a comprehensive security system for access control (entrance and exit, video, trespassing surveillance, detection), ICT convergence technology-based mobile video confirmation, hierarchical and role-based access control system.



Communications security

We protect vulnerable and sensitive information of individuals and all our corporate clients. We research, develop and operate real-time wiretapping (prevention) system.

Real-time control system against wiretapping and spy cameras

Prevent laser and wireless wiretapping

Comprehensive IoT security

Real-time management to improve security and safety reliably using smart tags to track anything.

Safety security management system

- Security management of risky/unauthorized areas
- Track and Monitor vehicles coming into factories and restricted areas
- Alarm service for entries and exits
- Location control of emergency evacuees with smart tags

Multiple recognition access management system

- Multi-user access management using multiple recognition systems installed on commuter buses
- Smart tag pass management

Construction · Security Solution

List of Major

Category	Year	Project Details
Construction Projects	2018	Hanwha Defense: Construction of the research center and precision processing factory Hai Di Lao: The construction of Chinese restaurant branch in Yeongdeungpo Branch
	2017	Hanwha Land Systems: New construction of material warehouse Hanwha Total: Office renovation and infrastructure improvements
	2016	Hai Di Lao: Construction of Chinese restaurant branch in Gangnam
Interior constructions	2018	Hanwha 53 city office Hanwha Estate office Hanwha Trade office Hanwha Machinery's Pangyo Future R&D Center office Hanwha G Office relocation
	2017	Hanwha Total: Hangeong-dong auditorium renovation Hanwha Techwin: 7-8th floor offices in the Hanwha Building Hanwha Q Cell Korea: 5th floor in the Hanwha Building Hanwha Defense office Hanwha Systems office Hanwha Overseas Strategy Headquarters office
Security	2018	Hanwha Advanced Materials: Surveillance system installation to monitor & prevent environmental accidents
	2017	Hanwha Techwin: Access system installation at Changwon No. 2 Site Hanwha Chemical: Crash barriers and perimeter security solution installations with biometric vehicle security access control systems at Hanwha Chemical Yeosu
	2016	Hanwha S&C: Provides comprehensive crime prevention equipment installations at Pangyo P-project ibs Hanwha Chemical Central Research Institute: Security system installation including CCTVs and access systems. at Hanwha Chemical laboratory A Hanwha Total: Installation of security system at Daesan factory

4

Hanwha Estate

Energy Efficiency

By using our eco-friendly models, buildings can achieve significant energy efficiency, reducing expenses. Our changes lead to improvements to the environment that ultimately enrich lives.

The benefits of energy efficiency



Energy Efficiency

As a specialized energy consulting business, we provide ways to achieve energy efficiency usage with eco-friendly solutions.

Energy Consulting

Energy diagnosis (Usage pattern analysis) / Offering the most efficient model

Smart grid

ESS (Energy Storage System) Business / Energy demand management

New and renewable energy

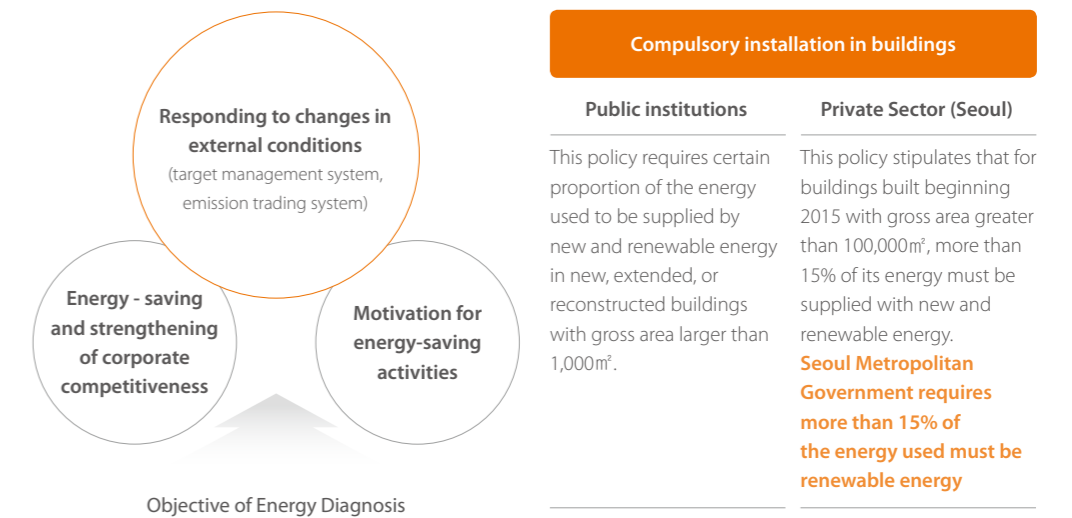
Geothermal heat / Fuel cells / Solar energy

Energy Consulting

We analyze energy-use patterns and can present energy saving options.

Energy Diagnosis

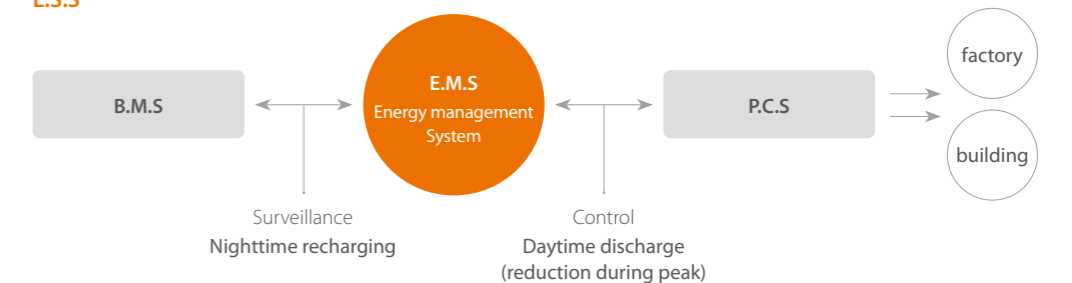
Energy diagnosis requires a technical evaluation by an expert institution that leverages technology and employs professionals who can analyze energy usage, find how energy is lost, and can recommend ways to save energy. At Hanwha Estate, we have the experts and advanced technology with which we can apply the optimal energy convergence model to buildings that require new and renewable energy. The result is clear energy savings and higher efficiency, all in accordance to government policies and building codes.



Smart grid

ICT is integrated into the existing electrical grid, so that suppliers and demanders can exchange information bidirectionally. This next-generation power infrastructure system will enable smart demand management, access to new and renewable energy, and the ability to recharge electric vehicles.

E.S.S

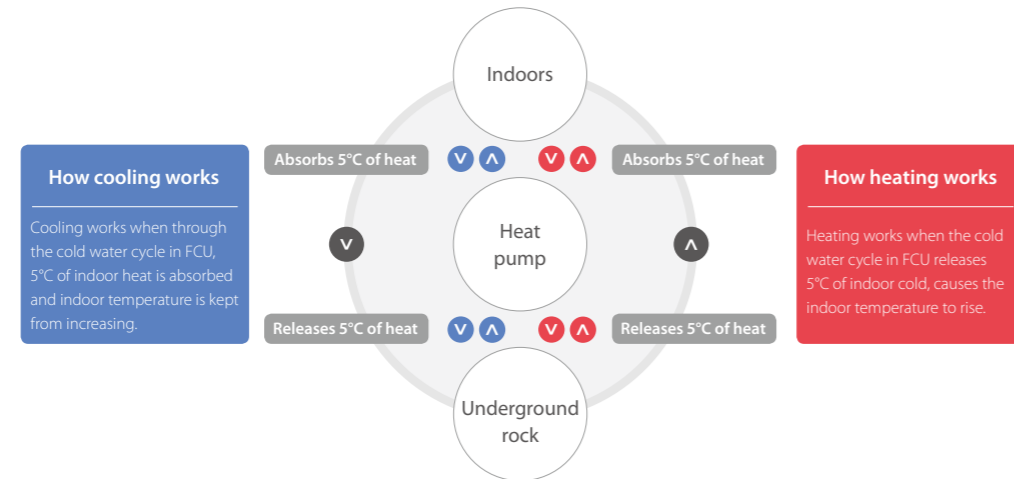


New and renewable energy

You can experience the efficiency of clean, new and renewable energy, in addition to other special services.

Geothermal heat

Geothermal heat is a power system that uses the temperature difference between water, groundwater, and underground heat for cooling and heating.



Hanwha Estate's Patent for Compensated Geothermal Heating System

Patent Title	Compensated geothermal heating system using water storage tank and geothermal heat source
Description of Patent Invention	The geothermal cooling and heating system is an energy-saving device that can extract geothermal heat from the ground during the winter for heating, and reversely, extract heat from the building to the ground during the summer. By moving heat to the ground where the temperature is lower, cooling efficiency is greatly improved as less energy is required. Its limitation, however, exists in efficiency because over time, its drops if it is used beyond a certain set amount of time.
Objective of Patent Invention	Hanwha has found a solution to address the limitation of the geothermal cooling and heating system. Our solution does not lose efficiency over time by installing a plate-type heat exchanger to transfer the heat between the water from a storage tank and the underground heat exchanger. In so doing, we compensate for the temperature of heat source water and the system efficiency is significantly improved, providing a compensated geothermal heating system from a geothermal heat source.
Expected Results	Cooling: Reduction by at least 27% in operation costs Between seasons: No cooling costs (only power for circulation pump necessary) Heating: Reduction by at least 8% in operation costs Hot-water supply during cooling: Improvement in operation efficiency and reduction in hot-water costs

Fuel cells

The fuel cell system is made up of cells grouped together in stacks (fuel reformers). When hydrogen-rich fuel such as natural gas passes through these stacks, it becomes hydrogen that when reacted with oxygen in the air, produces electricity and heat energy. Water is also produced from the use of these fuel reformers. The direct current power created from fuel cell stacks pass inverters and is converted into AC power of 380V/220V, 60Hz, which is a high-efficiency power system with a gross energy efficiency of 80~90% (generator efficiency: 30~40%, thermal efficiency: 50%).

Solar energy

Using solar panels and inverters, solar power systems convert light energy from the sun directly into electrical energy without the aid of generators.

Energy Efficiency

Projects

2018	Convergence Support Project in Daegu (Solar power, fuel cell) Convergence system construction at Dongjak Tinsia Reconstruction Project (Solar power, geothermal heat, fuel cell) Convergence system construction in Jeungsan 5 District (Solar power, ESS) ESS Installation for Peak Management at Galleria Center City
2017	Convergence Support Project in Daegu/Jecheon (Solar power, fuel cell) Convergence System Construction at Gaepo Siyeong Reconstruction Project (Solar power, fuel cell) Convergence Support Project in Jecheon/Hongseung (Solar power, solar heat, geothermal heat) Gupyeong Golf Club Fuel Cell Installation
2016	Convergence Support Project in Jecheon/Hongseung (Solar power, solar heat, geothermal heat) Gupyeong Golf Club Fuel Cell Installation
2015	Convergence Support Projects in Seoul/Goyang/Jeongseon (Solar power, solar heat, geothermal heat) Contract service for Han River Special Energy Project
2014	Convergence Support Project at Asan Police Housing Complex (Solar power, geothermal heat) Songdo Hanok Village geothermal heat installation
2013	Housing/building Support Project (geothermal) Sheraton Hotel waste heat installation

At Hanwha Estate, we've welcomed the practice of open management because we believe not only in transparency but breaking down barriers. Our collective approach to gather ideas and feedback results in better decisions and innovations that we know can only lead to sustainable development and a better future.

Ethical management

Our ethical workplace culture at Hanwha promotes compassion, tolerance, honesty and loyalty in the treatment of our customers and employees. It goes without saying that we pursue profit but it is only through ethical business practices and by giving priority to employee rights, equal pay and promotions that are deserved. We've established a code of ethics to guide the conduct of our employees and to hold them accountable to the highest standards expected of professionals and our company's core values.

Cyber Ombudsman To ensure a fair and transparent corporate culture, we've established online ombudsman to resolve complaints and unfair practices.

Environmental, safety, and health management

Founded on Hanwha Group's environmental, safety, and health guideline, ECO YHES*, Hanwha Estate continues to minimize its impact and risk on the environment with its business activities, products, and services. We are the leading company renowned for building safe working environments that are pleasant and at the same time, contribute to the local community.



* ECO YHES
ECO YHES represents Hanwha's commitment to sustainable corporate development and social responsibility. The Y in HES stands for "Yes" and the HES stands for health, environment, and safety. The logo shows a forest, representing the environment.

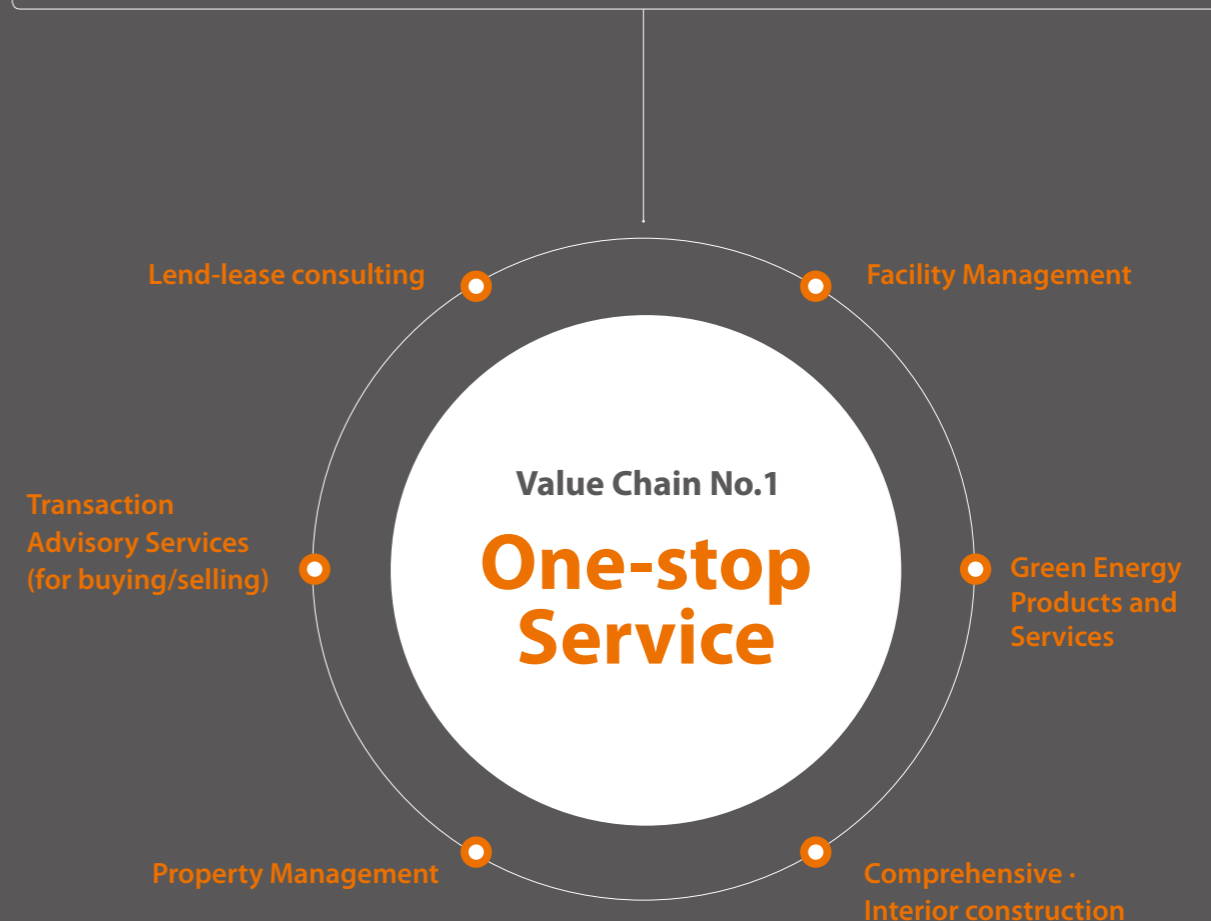
ESH (Environment/Safety/Health) Guideline

The importance that Hanwha Estate places on the environment, safety, and health are reflected in its management practices as follows.

Keeping People & Property Safe	<ul style="list-style-type: none"> In everything we do, we're coordinating, monitoring and adhering to HSE construction requirements, safety regulations and health codes to protect people and property.
Improving our observances of relevant laws	<ul style="list-style-type: none"> We observe and abide by international rules and local regulations, as well as organizational guidelines to improve the environment, safety, and our health.
Efficient usage of resources and energy	<ul style="list-style-type: none"> While we can help you use the resources and energy more efficiently, our aim is to reduce usage, create a low-carbon society, and curtail the release of pollutants.
All-member Participation in Environment/Safety/Health Management	<ul style="list-style-type: none"> All employees and partners are encouraged to participate in environment safety and health management. Relevant training will be offered on an on-going basis.

Hanwha Estate

With a team of highly experienced multidisciplinary property management experts and an extensive database, our value chain serves as a one-stop service for all your real estate needs.



Nationwide Network

Discovering and promotion of potential real estate values

Core work forces and specializes teams for sales/purchases, consulting, PM, FM, LM, construction, and new and renewable energy

Generating business synergy and smooth, cooperative working environment

Offering one-stop-service customized for each client

We focus on quality and our clients' success.

Hanwha Estate knows that in every aspect of real estate management, the clients' satisfaction and success are what matters most. Our aim is to create value.

Our **Realty Consulting** professionals work hard to find the best solution for our clients. Our **construction and security** experts will find the best solutions to build and secure your investments while **Properties and Facilities** and **Energy Efficiency** services will manage your space most efficiently. As a one-stop real estate services company, we're committed to providing you with the highest value and a complete range of development and investment services for your commercial, residential and retail needs.

Integrated Realty Service Provider  Hanwha Estate

Property · Facility
Management
82.2.789.6360

Real Estate Consulting
82.2.789.6379

Construction
82.2.789.6423

Security Solution
82.2.789.6533

Energy Efficiency
82.2.789.5319