

We will prepare a happy future for our customers

# HD HYUNDAI PLASPO COMPANY PROFILE

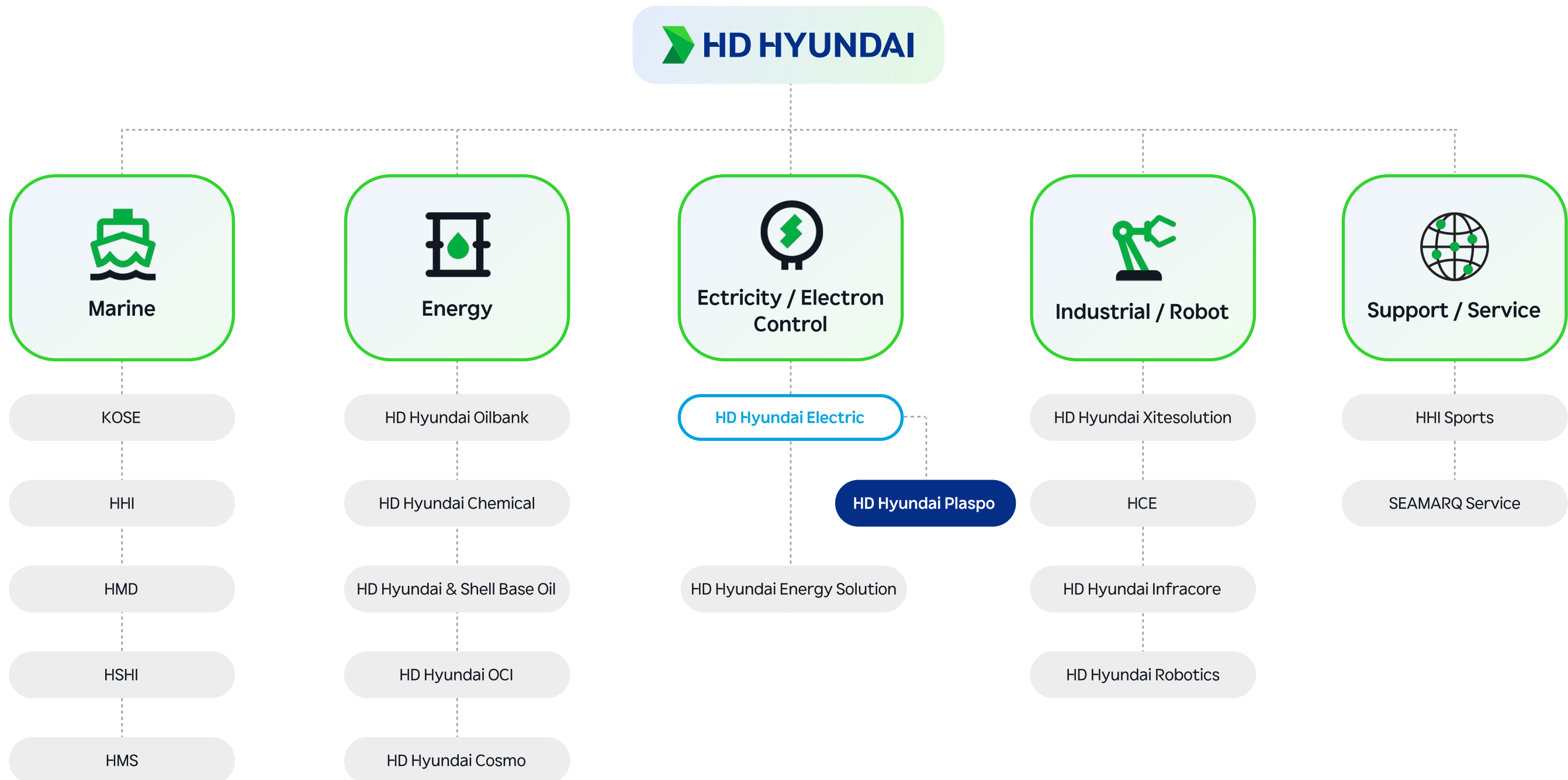
**Carbon Neutral Leading Company**

<http://www.hd-plaspo.com>



# HD HYUNDAI PLASPO

The center of renewable energy power conversion technology, **HD Hyundai Plaspo**.  
**HD Hyundai Electric** became the largest shareholder making it a subsidiary of HD Hyundai Group.





# Empower Your Business

## (HD Hyundai Electric)



### Power Solution

Providing equipment and systems for the power grid, including generation and transmission

- Utility (State-Owned Power Generation and Transmission Companies)
- IPP (Private Power Generation and Transmission Companies)
- Power generation EPC companies
- **AC/DC Hybrid Power Distribution (HD Hyundai Plaspo)**

### Industrial Solution

Providing devices and systems for industrial plants and general industry

- General EPC companies
- General industry (steel, high-speed rail, etc.), petrochemicals

### Marine Solution

Providing power, electronics, and control systems for ships and offshore installations

- Shipyard, Shipping Company, Maritime Equipment Firm
- Offshore Plants (including FPSO), Petrochemical
- **Environmentally Friendly Ship Power Conversion (HD Hyundai Plaspo)**

### Energy ICT Solution

Providing solutions for energy efficiency and utility asset management.

- General Industrial Energy Consumer
- Energy-related governments Local governments
- **Renewable power generation, energy storage and water electrolysis solutions(HD Hyundai Plaspo)**

**Power Energy  
Supply for the  
Entire Industrial  
Sector**

**4.4**  
trillion won

Revenue on a consolidated  
in 2023 to June 2024

**46years**

Korea's first power  
utility company

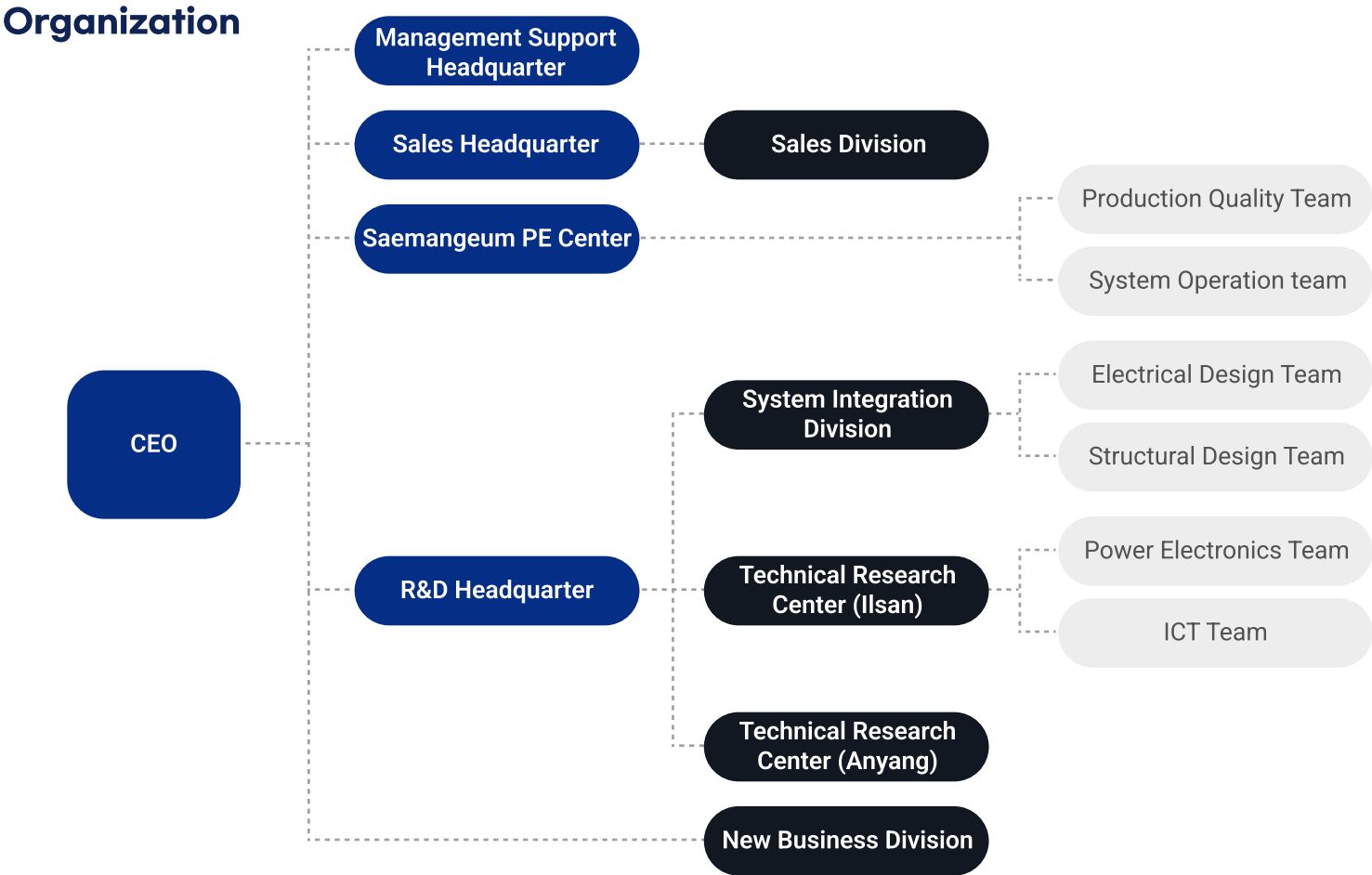
**1,200GW**

Transformer cumulative  
installed capacity

**7**

World-class products

Overview	Company Name	HD Hyundai Plaspo Co., Ltd.
	CEO	Sang-Hun, Park
	Date of Establishment	December 11, 2001
	Corporate Type	Small and Medium-sized Enterprise (External Audit Corporation)
	Capital	1.372 billion KRW
	Employees	65
	Business Field	New & Renewable Energy Total Solution
	Products / Service	Power Converter, O&M, Engineering Services
	Head Office, R&D Center	Ilsan Technotown #1005, 138, Ilsan-ro, Ilsandong-gu, Goyang City, Gyeonggi-do
	Factory	Saemangeum PE Center : 347, Saemangeum Industrial Complex 3-ro, Gunsan-si, Jeollabuk-do, Republic of Korea  Paju Factory : 104-10, Sanggol-gil, Paju-si, Gyeonggi-do
	Homepage	<a href="http://www.hd-plaspo.com">http://www.hd-plaspo.com</a>





**HD Hyundai Plaspo** is making a leap from a specialized company in power conversion devices for renewable energy to the top-tier company in the **Energy Solution** sector.

## Internal growth phase



### 2001 ~ 2015

- 2001. Establishment of the company / Development of Plasma Power Supply**
- 2003. Factory establishment in Goyang / Establishment of dedicated R&D department
- 2004. Development and localization of Wind Power Inverter
- 2005. Precision Power Converter development / Application in Nuclear Research Institute
- 2006. Establishment of corporate research institute**
- 2009. Development of Inverter for Fuel Cells
- 2010. Development of Grid Simulation Test Equipment
- 2013. Development of High-Speed Inverter for Power Generation
- 2014. Development of PCS for Energy Storage Systems (ESS)

## Business leap phase



### 2016 ~ 2018

- 2016. Factory relocation (Paju)
- 2017-2018. Rapid increase in sales of PCS for Energy Storage Systems (ESS)
- 2018. Development of Inverter for Solar Power Generation
- 2018. Factory expansion (Paju)**



## Business expansion period



### 2019~

- 2019. Completion of the 1st and 2nd Solar Power Plants (Gimpo, Paju)**
- 2019. Entry into Solar Power Generation (IPP) business
- 2019. Entry into Solar, Fuel Cell, and ESS EPC projects
- 2020. Establishment of small-scale Microgrid (EMS/PMS)
- 2020. Full-fledged entry into O&M business including integrated control
- 2021. Factory expansion (Saemangeum Industrial Complex, Gunsan, Jeollabuk-do)**
- 2022. Change of corporate name to Hyundai Plaspo Co., Ltd.**
- 2023. Shin Namwon / Yeasan KEPCO FR Contract (418MW)
- 2023. Change of corporate name to HD Hyundai Plaspo Co., Ltd.**
- 2024. Establishment of Anyang R&D Center**

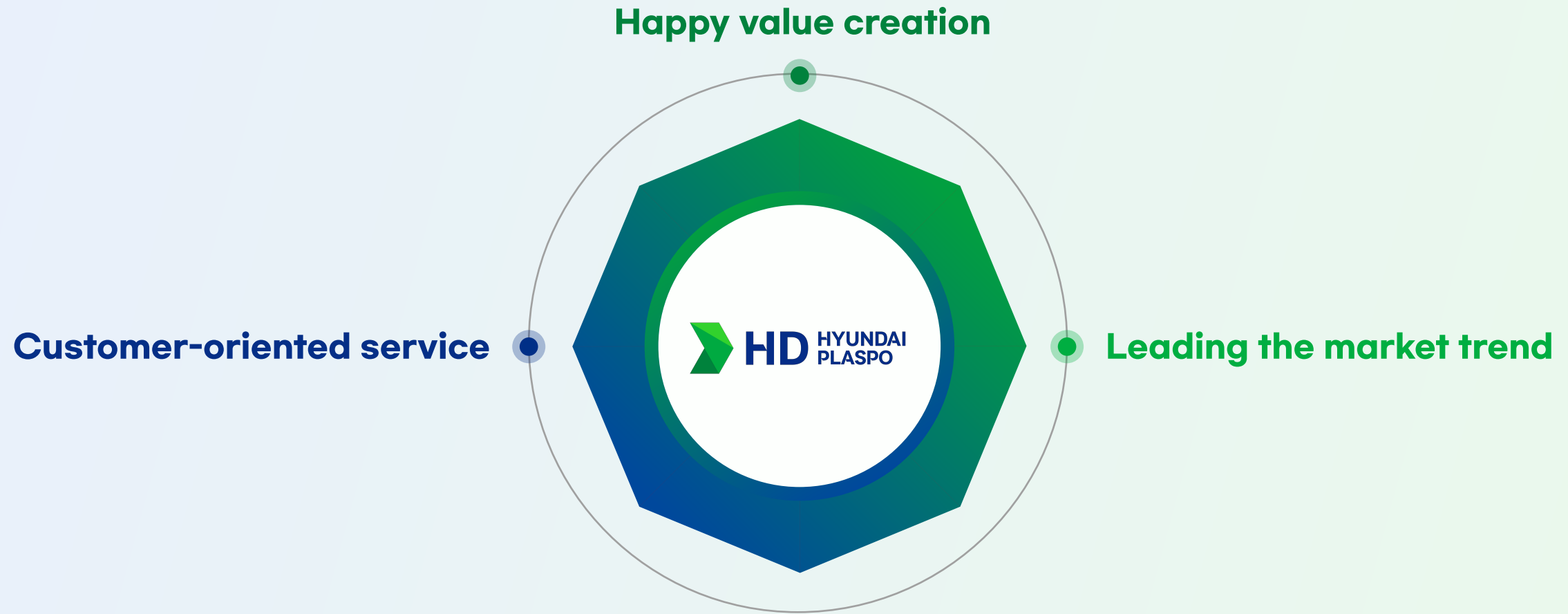


2001

2016

2019

2023



### Customer-oriented service

- Trust & mutual growth with customers
- Customer-oriented management
- Product development & service according to customer needs
- Customer's first priority with top quality and best service



### Happy value creation

- Improvement of technology quality through a happy workplace
- Members sense of unity
- Creation of synergy through work-life balance
- Cooperation with colleagues



### Leading the market trend

- Leading company of market change
- Continuous growth & list management
- Future-aimed thinking and innovation
- Steady effort and challenge







## Establishment of **Business Infrastructure** Centered around the Headquarters



### Paju Factory

- Area : Land 3,699m<sup>2</sup>, Building 1,944m<sup>2</sup>
- Location : Sanggol-gil, Paju-si, Gyeonggi-do
- **Production Capacity : 750MW annually (Based on 2 MW units)**



### Technical Research Center (Anyang)

- Area : dedicated 136.33m<sup>2</sup>
- Location : Dongnae-gu, Anyang-si, Gyeonggi-do



### 1st Solar Power Plant (Gimpo)

- Area : Land 3,699m<sup>2</sup>, Building 1,944m<sup>2</sup>
- Location : Gochoen-eup, Gimpo-si, Gyeonggi-do
- Facility Capacity : 399.6kW



### 2nd Solar Power Plant (Paju)

- Location : Sanggol-gil, Paju-si, Gyeonggi-do
- Facility Capacity : 70.2kW



### Head office

- Area : 174m<sup>2</sup> (Exclusive)
- Location : Ilsandong-gu, Goyang-si, Gyeonggi-do



### Technical Research Center (Ilsan)

- Area : 174m<sup>2</sup> (Exclusive)
- Location : Ilsandong-gu, Goyang-si, Gyeonggi-do



### Sales Headquarter

- Area : 192m<sup>2</sup> (Exclusive)
- Location : Ilsandong-gu, Goyang-si, Gyeonggi-do

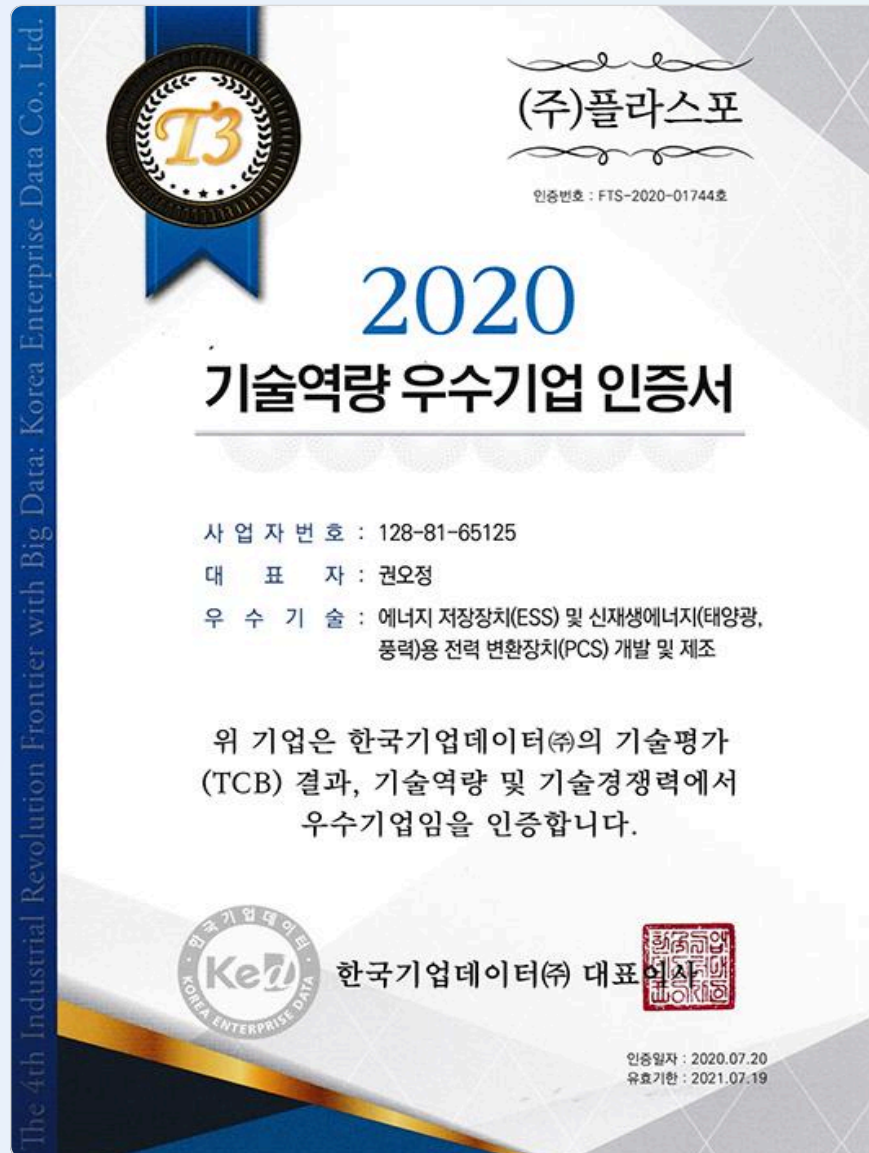


### Saemangeum Industrial Complex in Gunsan, Jeollabuk-do

- Land Area: 16,500m<sup>2</sup> (5,000 pyeong)
- Floor Area: 3,787m<sup>2</sup> (1,146 pyeong)
- Main Facilities
  - 1) **Manufacturing and Testing Equipment :**  
FRT Test Equipment 12MW, Wind Power 8MW, Solar/ESS 3MW, Fuel Cell 300kW
  - 2) **Solar Power Generation Facility (Planned) :**  
600kW, Testing and Generation
- **Production Capacity :**  
1,000MW annually (Based on 1MW PCS)



# Technical and quality competencies



## Technical Competence

Technical Evaluation (TCB) **T3 Grade**

**Top 10%** Technology Competency and Technology Competitiveness

Excellent Company Certification



## 협력회사 품질경영시스템 평가결과 보고서

**MSRT**

Management System Risk Evaluation Tool

Korean Ver. for 2nd Party Audit

Company :	주식회사 플라스포
Code :	I00E7
Address :	경기도 고양시 일산동구 일산로 138, 1005호
Audit date :	2018.10.04 ~ 10.05am
Auditor :	Kyu Jun, Hwang (황 규 준)



### Confidentiality :

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**DNV GL Business Assurance Korea**

Rev. 0.0 (2018.02)



## Management System Risk Evaluation Tool (MSRT)

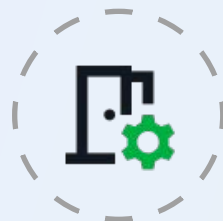
Quality Management System Evaluation Grade by **DNV-GL**

Recognized as a **Top 19%** Excellent Product Quality Management Company



## HD HYUNDAI PLASPO

HD Hyundai Plaspo's **Total Energy Solution** delivering the latest technology, highest efficiency and optimal prices, will further upgrade your competitiveness.



PCS Total number  
of installations

**925**



ESS PCS

**812** MW



Fusion Energy  
Field

**1,900** MW



ESS Battery

**2,030** MW



Wind Power  
PCS

**20** year



Delivery  
performance

**2,885** MW

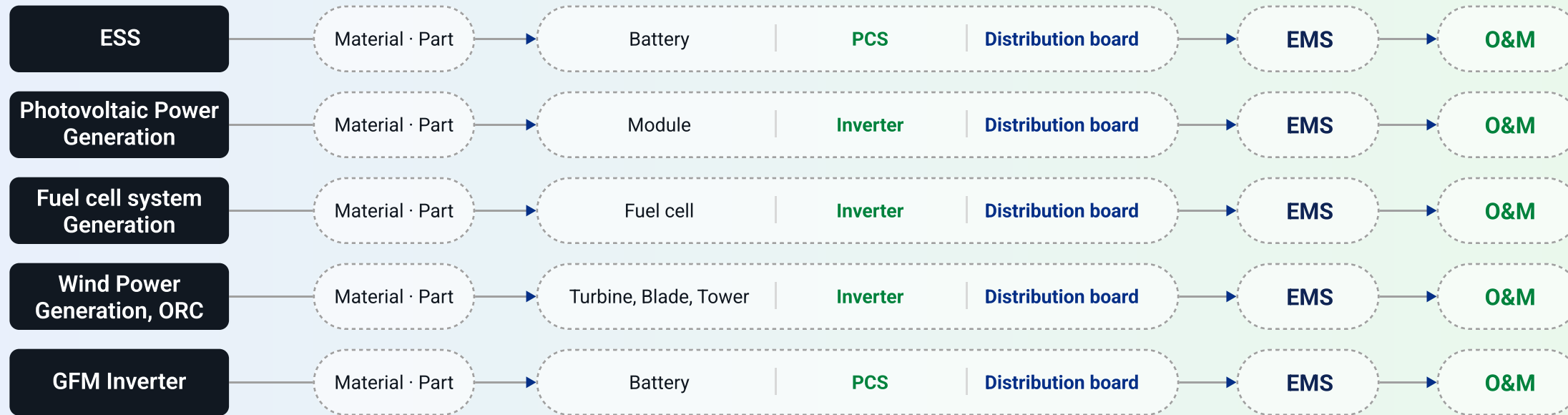




## Business Field

From power converter to O&M, Build a **Total Solution portfolio**

### Business in Value chain



#### PCS

- PCS for ESS
- PV Inverter
- Fuel cell Inverter
- Wind Power Inverter
- Inverter for high-speed blower
- GFM Inverter
- Power supplies for semiconductor equipment
- FRT Test Container
- Rectifier for Green Hydrogen

#### Renewable Energy Development (IPP)

- Solar Power Generation
- Fuel Cell Power Generation
- Energy Superstations

#### Engineering Services

- Integrated O&M Service
- Grid Interconnection Compatibility Assessment Consulting GCC Certification (LVRT)

#### EV Charger

- Slow / Fast / Ultra-fast
- Custom specification charger HW & SW OEM development

#### UPS

- AC UPS
- Battery Charger
- AVR
- Rectifier
- Instantaneous power outage compensator (DVC)



## Introduction to R&D

### System Integration Division

#### Electrical Design Team

We lead the development of new products through continuous research and testing of topologies and control circuits for power conversion devices.

#### Structural Design Team

We utilize CAE and CFD analysis techniques to design the internal structure of power conversion devices.

### Technical Research Center (Ilsan)

#### Power Electronics Team

We lead continuous research and development of new products in power conversion devices focusing on the latest control algorithms, topologies and control circuits.

#### ICT Team

We take the lead in integrating power conversion technology with ICT, utilizing MFC, C#, ASP.NET, Android app development and IoT technologies.

### Technical Research Center (Anyang)

We lead ongoing research and new product development of the latest control algorithms, topologies and control circuits for power conversion devices.

## Intellectual Property Rights / Certification / Development Achievements

### Intellectual Property Rights

7 patent registrations



2 design registrations



### Certification

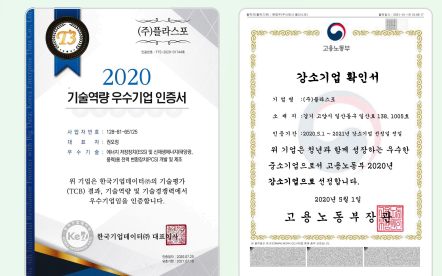
2 quality (specification) cases (ISO9001, ISO14001)



26 products (CE, UL, etc.)



Other 2 cases (other than certification as a Technology Leadership Company)



### Development Achievements

Technology commercialization

3 cases (last 3 years)

Technical Development

4 completed, 5 in progress (last 3 years)

Commercialize your product

7 cases (last 3 years)



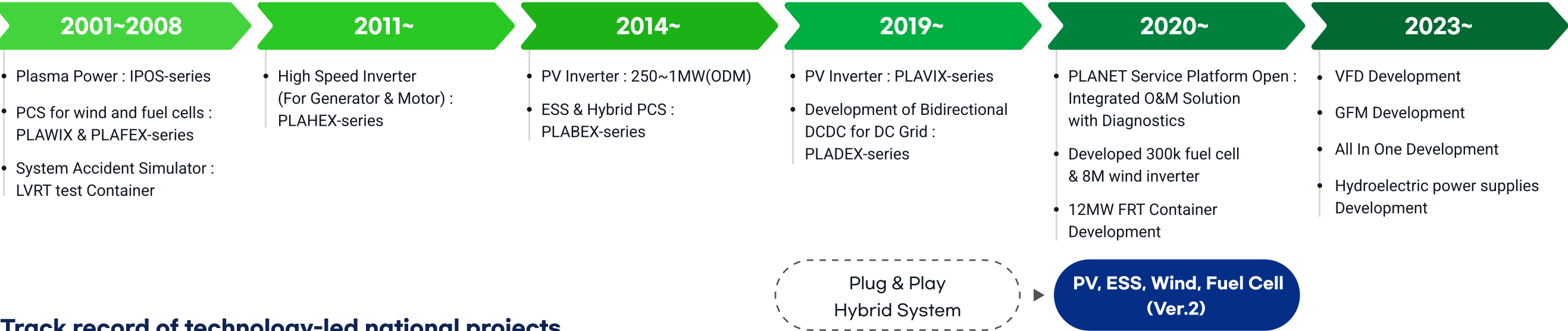
# R&D History and National Accomplishments

R&D History

985MW in renewables and ESS, 1,900 MW in fusion energy

ESS PCS 10 years, PV 10 years, Wind 20 years, Fuel Cell 15 years

Track Record



## Track record of technology-led national projects

Collaborate with leading research institutions to develop new technologies and products

Project Title	Development Period	Project Cost	Participating Organizations
MVDC national project	2022. 09 ~ 2027. 08	10.0 billion KRW	HD Hyundai Plasp, HD Hyundai Electric, DONGWOO ELECTRIC, Korea Electronics Technology Institute, KIST, HANYANG UNIVERSITY ERICA
Development of Medium and Low Temperature Solid Oxide Fuel Cell System for Power Generation of 200 kW or higher	2020. 05 ~ 2024. 04	27.6 billion KRW	5 institutions including HD Hyundai Plasp, Doosan, Korea Hydro & Nuclear Power Co., Ltd. (KHNP)
Development of Power Quality Control Technology of Modular Structure for Large Capacity 8MW Wind Power	2020. 05 ~ 2023. 12	7.6 billion KRW	7 institutions including HD Hyundai Plasp, Gwangju Institute of Science and Technology(GIST), Korea Institute of Energy Technology
Development of 12MVA Low/High Voltage (LVRT/HVRT) Test Equipment and System-linked Conformance Test Technology for Super Large Wind Turbines	2019. 05 ~ 2022. 03	7.5 billion KRW	4 institutions including HD Hyundai Plasp, Korea Institute of Energy Technology, Hanyang University Industry-Academic Research Institute.
Development of machine learning-based simulation modeling technology for optimal design and efficientoperation/management of renewable energy - generation systems for industrial facilities	2018. 11 ~ 2020. 12	2.4 billion KRW	HD Hyundai Plasp, Gridwiz, Korea Electronics Technology Institute
Development of MW class ESS reliability, stability improvement technology and field evaluation technology	2017. 05 ~ 2020. 04	10.9 billion KRW	7 institutions including HD Hyundai Plasp, Hanwha Energy, Korea Testing Research Institute
Development of IoT power independent fuel cell, photovoltaic power, and wind hybrid power generation technology	2015. 10 ~ 2018. 09	6.2 billion KRW	8 institutions including HD Hyundai Plasp, KICT, Korea Electronics Technology, Korea University Industry-Academic Research Institute
Development of 28MW BESS System Demonstration Application and Integrated Operation Control Technology	2014. 12 ~ 2018. 09	50.2 billion KRW	14 institutions including HD Hyundai Plasp, LG Electronics, LS ELECTRIC, Seoul National University Industry-University Research Institute

Partner Organizations

Specialized research institute

KIER, GIST, KERI, KETI, ETRI, Korea University, Kwangwoon University, Seoul National University, Seoul National University of Science and Technology, Hanyang University etc.

Private research institute

Korea Hydro & Nuclear Power Co., Ltd. (KHNP), Doosan, Doosan fuel cell, Hanwha Energy, UNISON, Gridwiz, KEA, LG Electronics etc.



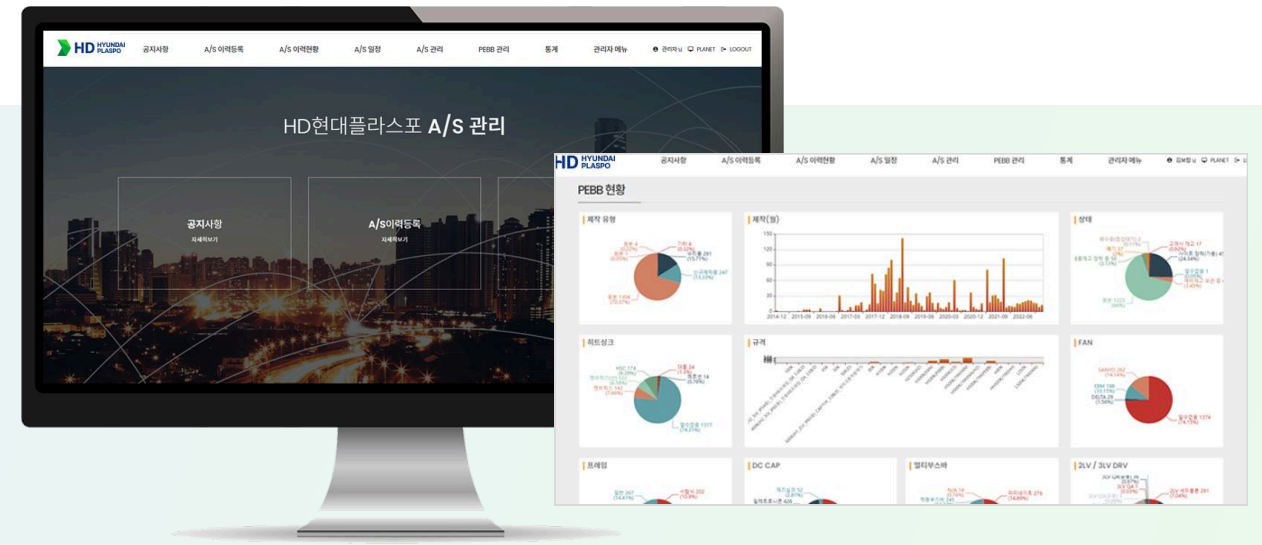
## PLANET Service Platform

HD Hyundai Plaspo's **integrated O&M service platform** created through know-how of operating over 500 sites



### Integrated control, Individual monitoring And Performance evaluation/Diagnostic services

- PMS/EMS solution
- Prediction of Internal Component Life span and Optimal
- Operating Conditions for the Product
- Observation of Operational Trends and Reporting on Efficiency Changes
- Network Diagnosis and Faliure Trend Prediction



### A/S Service Management System for Effective Product

- Throughout the Product Lifecycle
- A/S management
  - Manage inventory
  - Customer management
  - Statistical analysis

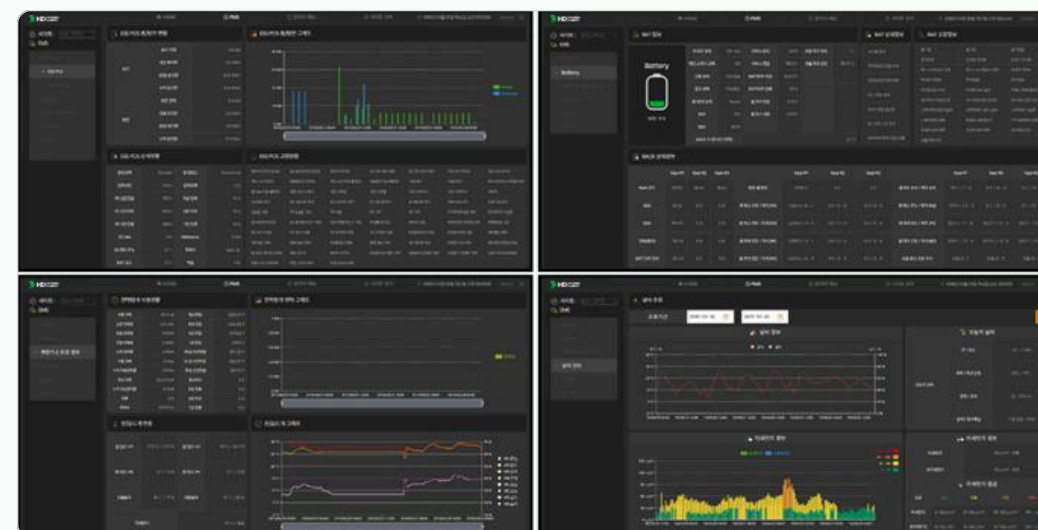
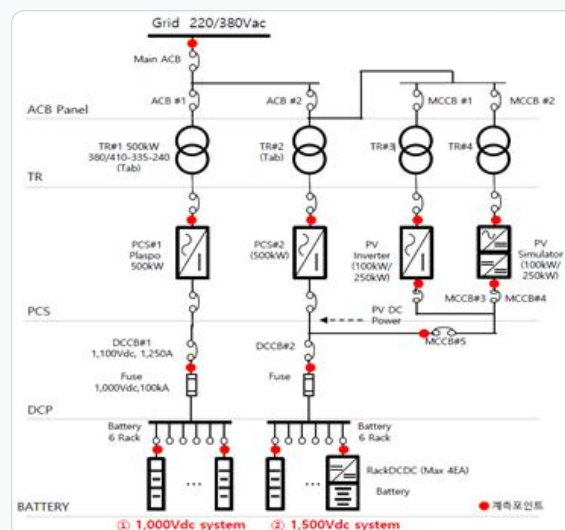
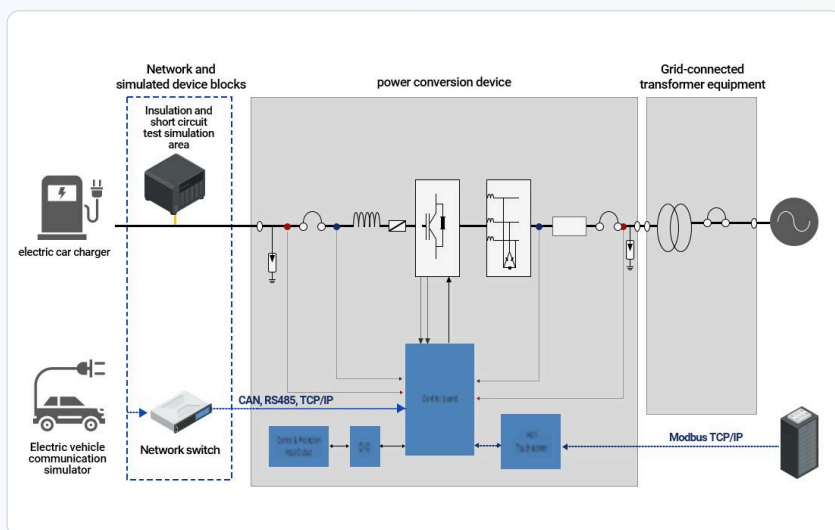


The culmination of 20 years of accumulated technology and know-how, **ESS PCS**



< PLABEX-H1M-V2, IP54 >

- **The largest line-up in Korea with 27 types**  
(Various selection features: HSCB/DCCB, Black Start, Standalone, Emergency Power Generator Interconnection)
- Utilizing the One-Way Direct Cooling method (**Smallest/lightest PCS**)
- Implementing the best power quality and efficiency with various topologies and the latest power semiconductors (Hybrid SiC IGBT)
- **Providing domestically developed and validated LVRT (Low Voltage Ride Through) & grid protection functions for the first time in the country**
- With a track record of over 16years based on the 15years design lifespan of wind power system inverter
- **Built-in PMS (Power Management System)** supports various networks, robust error debugging capabilities, and assists in designing an efficient operational system
- **0.5 ~ 2%** higher efficiency than competitors, **10%** more competitive pricing



## ESS PCS Domestic Market share 25%

Highest efficiency in Korea proven by years of operation at over 500 sites, The PCS for ESS, which boasts the highest reliability, provides clear analysis data for unexpected accidents.



PLAONE-80kT3



PLABEX-100K



PLABEX-H250k



PLABEX-H500K



PLABEX-H1M



PLABEX-H1.5M



PLABEX-H2.01M



PLABEX-2.3MH2



PLABEX-H2M



PLABEX-H2.5M



PLABEX-4.5MH



**With a delivery record of 2.9 GW and 23 years of experience!**  
The expertise of HD Hyundai Plaspo makes a difference

**PV Inverter PLAVIX-Series**



HPC-060HL-V1/V2/V3-OU



HPC-125HL-V1/V2/V3-OU



HPC-250HL-V1-OU



PLAVIX-1.0MH254  
PLAVIX-1.0MH265



PLAVIX-2.0MH254  
PLAVIX-2.0MH265



PLAVIX-3.0MH254  
PLAVIX-3.0MH265

**Hydroelectric Power Supplies  
PLAGEN-Series**



PLAGEN-2.2M Rectifier

**Fuel Cell Inverter  
PLAFEX-Series**



PLAFEX-60K  
300K: PLAFEX-60K x 5 Parallel

**LVRT& HVRT Test Container**



LVRT-10MVA, UL/CSA Version



12MVA HVRT Equipment

**EV Charger**



HDP-EPB-200K

**UPS**



Sample Model

# Thank You.



Head Office : 138 Ilsan-ro, Ilsandong-gu, Goyang-si, Gyeonggi-do

Factory1&2 : 104-10 Sanggol-gil, Paju-si, Gyeonggi-do

Saemangeum PE Center : 347 Saemangeumsandan 3-ro, Gunsan-si, Jeollabuk-do

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