



Future of Driving

One of the world's leading automotive parts companies.
A maker of automotive electronic management systems.
Safe, economic, and green automobile life,
That's KEFICO.



A white car is shown from the rear, driving on a dark asphalt road that curves through a lush green valley. The background features steep, grassy hills under a clear sky. The car's rear light and side mirror are visible on the right side of the frame.

HYUNDAI KEFICO,
THE BEST EMS
TOTAL SOLUTION SUPPLIER

Overview

Overview

Hyundai KEFICO Corporation



Foundation
Sep, 1987



Employees
3,638 (Sep, 2022)



Sales
1.8 Bil.US\$ (FY21)



Parts Supplier
87th out of Top 100



<Head Plant & R&D Center in Gunpo, Korea>

Business Sector

Powertrain

HEV/EV

FCEV

EV 2Wheeler

Blue Plug



Milestones

1990s

- 1989 Gunpo Plant Established
- 1992 **R&D Center Established**
- 1996 Application Center Established

Start of Production
- Fuel Injector, ECU

R&D Infrastructure



2000s

- 2005 Reliability Center Established
- 2009 **China Plant** (Beijing, Rizhao)
- 2010 **Vietnam Plant** (Hai Dong)

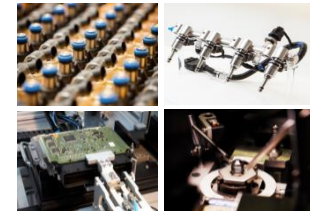
**Global Expansion
& Diversification**



2010s

- 2014 R&D Center Renovated
- 2017 **Mexico Plant** (Monterrey)
- 2019 Vietnam 2nd Plant Expansion

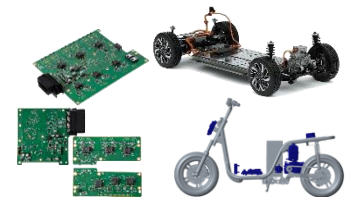
**Technology
Enrichment**



2020s

- 2020 Electrification (EV 2W & 4W)
- 2021 **EV 2W SOP** (Mobilgo-7 : 7kW)
- 2022 Sales Offices (Shanghai, Indonesia)

**Shift to
Electrification**



Global Footprints



Korea Gunpo



China Beijing



Vietnam Hai Duong



Mexico Monterrey

Global Production Sites

South Korea

Gunpo (Plant, R&D Center)

1,558 Employees
(Office : 1,072)

Design, Development, Validation,
Verification, Calibration, Manufacturing



China

Beijing, Rizhao

61

Module

100%

Vietnam

Hai Duong

1,756

Control Unit, Sensor, Actuator

100%

Mexico

Monterrey

280

Module

100%

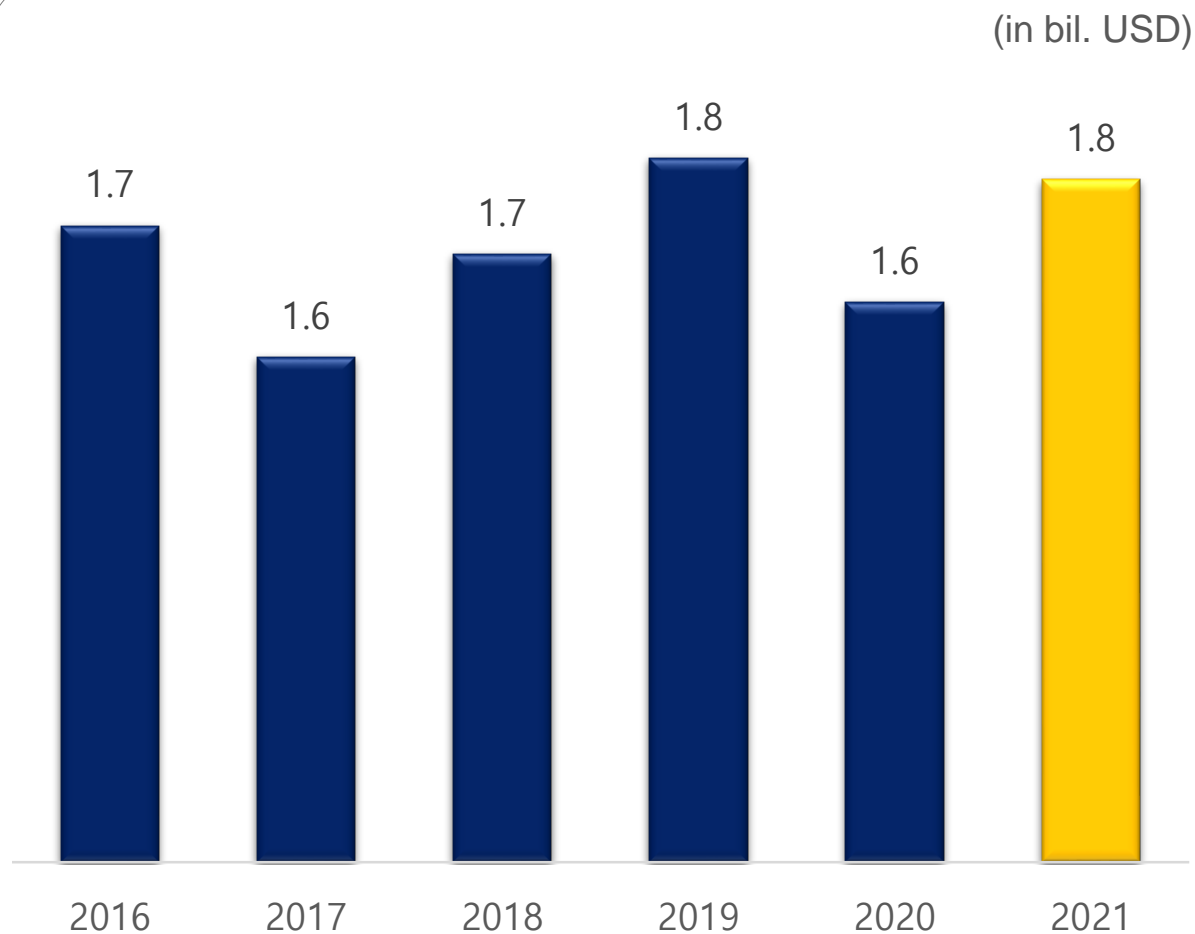
Location

Employee

Product

Share

Sales Figures



■ **Exportation** 73%

■ **Domestic** 27%



■ **Control Unit** 29% ■ **Module** 23%

■ **Actuator** 29% ■ **Sensor** 19%

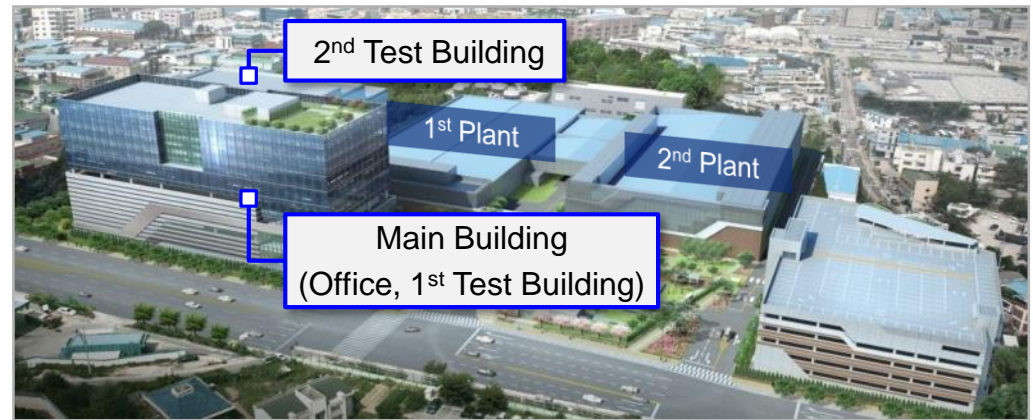
A close-up photograph of industrial machinery, likely a robotic assembly line. The machine features various metal components, including a blue base plate with a circular hole, a green plastic part, and a blue sensor or camera module. The background shows more of the machine's structure, including a black frame and a green plastic part. The lighting is bright, highlighting the metallic surfaces.




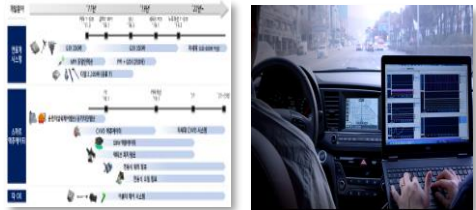
HYUNDAI KEFICO,
*PIONEER OF
THE AUTOMOTIVE INDUSTRY*

PRODUCT &
R&D CAPABILITY

R&D Capability Overview

R&D Engineer	603 (57%)
Organization	21 Teams (4 Centers & 1 Group)
Function	Design & Development + Validation & Verification
Location	Main Building (8 Fl.), 2nd Test Building (5 Fl.)



Design & Development	Validation & Verification	Calibration	R&D Support
<ul style="list-style-type: none"> Product Design <ul style="list-style-type: none"> - Sensor, Actuator, Module - ECU H/W & S/W Simulation (CAE etc.) 	<ul style="list-style-type: none"> Validation & Verification Proto Sample Shop Material Development 	<ul style="list-style-type: none"> Engine / Vehicle calibration <ul style="list-style-type: none"> - System Validation Advanced Research 	<ul style="list-style-type: none"> R&D Planning & Support Project Management
			




Powertrain (ICE)









Actuators

MPI Injector	GDI Injector	High Pressure (GDI) Pump	Electronic Throttle Valve	Purge Control Solenoid Valve	VFS Solenoid Valve
					

Control Units

ECU (Engine Control Unit)	TCU (Transmission)
	
	

Sensors





Crank Position Sensor	Cam Position Sensor	CVVL Position Sensor	Boost Vacuum Sensor	Speed Sensor	Transmission Range Sensor
					

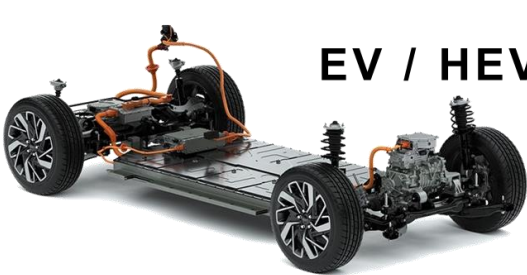
Modules

Fuel Delivery Pipe Module	Air Fuel Module System (Intake Manifold)	Manifold Absolute Pressure Sensor (+ Temperature)	Differential Pressure Sensor	Fuel tank Pressure Sensor	High Pressure (GDI) Sensor	Oil Pressure Sensor
						



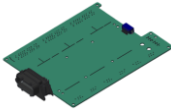

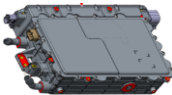



xEV Products

HEV

Battery Management System (BMS)	Hybrid CU	Motor CU (Gate drive)	Motor CU (Invertor controller)
			










EV

Battery Management System (BMS)	Vehicle Control Unit (VCU)	Motor CU (MCU)	Vehicle Charging Management System (VCMS)	Integrated Converter & Charger Unit (ICCU) (OBC+LDC)*	V2L Converter (Vehicle to Load)	Shift-by-wire Control Unit (SCU)	Shift-by-Wire Actuator (SBW)
							

*OBC : On Board Charger
*LDC : Low DC-DC Converter

FCEV

Battery Management System (BMS)	Fuel-cell CU (FCU)	Stack Voltage Monitor (SVM)	H2 Storage Managmnt. Unit (HMU)	Air Cut-off Valve (ACV)	Air Pressure Control Valve (APC)	H2 Detection Sensor (Leakage)
						

EV Products for Two Wheeler

High Power, High Voltage with Liquid cooled EV 2Wheeler; “Replacement of 125~150cc”

- Customer's requests; High speed/power + Long drivable distance + System safety

1 Motor(incl. Reducer)



- 3 Phase PMSM
- High torque density
- Minimize noise
- Liquid cooled

2 MCU (Motor Control Unit)

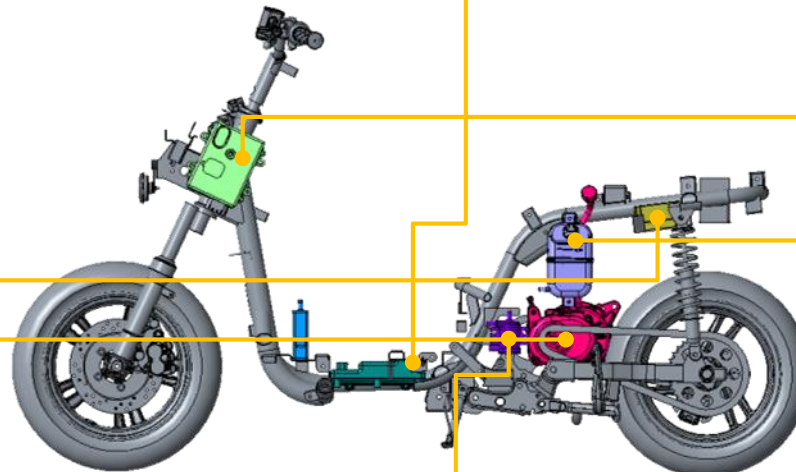


- 3 Phase inverter
- 32bit CPU applied
- Part diagnosis
- Liquid cooled

3 VCU (Vehicle Control Unit)



- 32bit CPU applied
- Torque control
(system status check)
- Monitor system fault



4 DC/DC Converter



- EMI/EMC compliant
- Soft start function
- Voltage protection
(Under/Over voltage)

5 EWP (Electrical Water Pump)



- Enable soft start & constant speed
- Compact design & Lightweight

6 Radiator & Reservoir



- Optimize design for high cooling efficiency

R&D Facilities and Infrastructure

Test Facilities	
Engine Test Room	14 EA
Vehicle/Transmission Test Room	14 EA
Component Test Stands (Performance / Durability / Reliability Test Equipment)	219 EA
Material Research Test Stands	35 EA

**Advanced
Research &
Development**



**Comprehensive
Testing System**

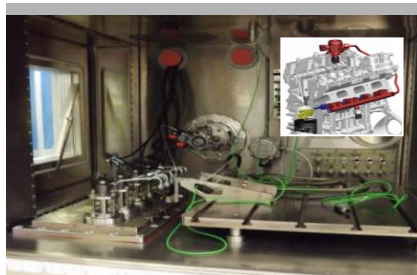
Testing & Validation Capability

Component Test



- Performance
- Susceptibility (Electromagnetic waves)
- Endurance

System Test



- Fuel System
- Vehicle Simulation Test

Engine Test



- System Matching
- Engine Control Performance
- Engine Endurance Test

Vehicle Test



- Vehicle Performance
- Emissions
- Fleet Test



Calibration Capability for Control Units

Mapping

- Air Charge Modeling
- Torque modeling
- Knocking



Drivability

- Drivability
- Hot/Cold Startability
- Shift Quality Control



Emissions

- Air Fuel Ratio Control
- Oxygen Sensor Heating Control
- Purge Control



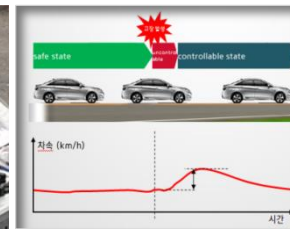
Diagnosis

- Electric Error
- Engine Misfire
- Evaporation Gas



Safety Monitoring

- ETC
- Engine Torque
- CPU



Performance
Optimization



Drivability

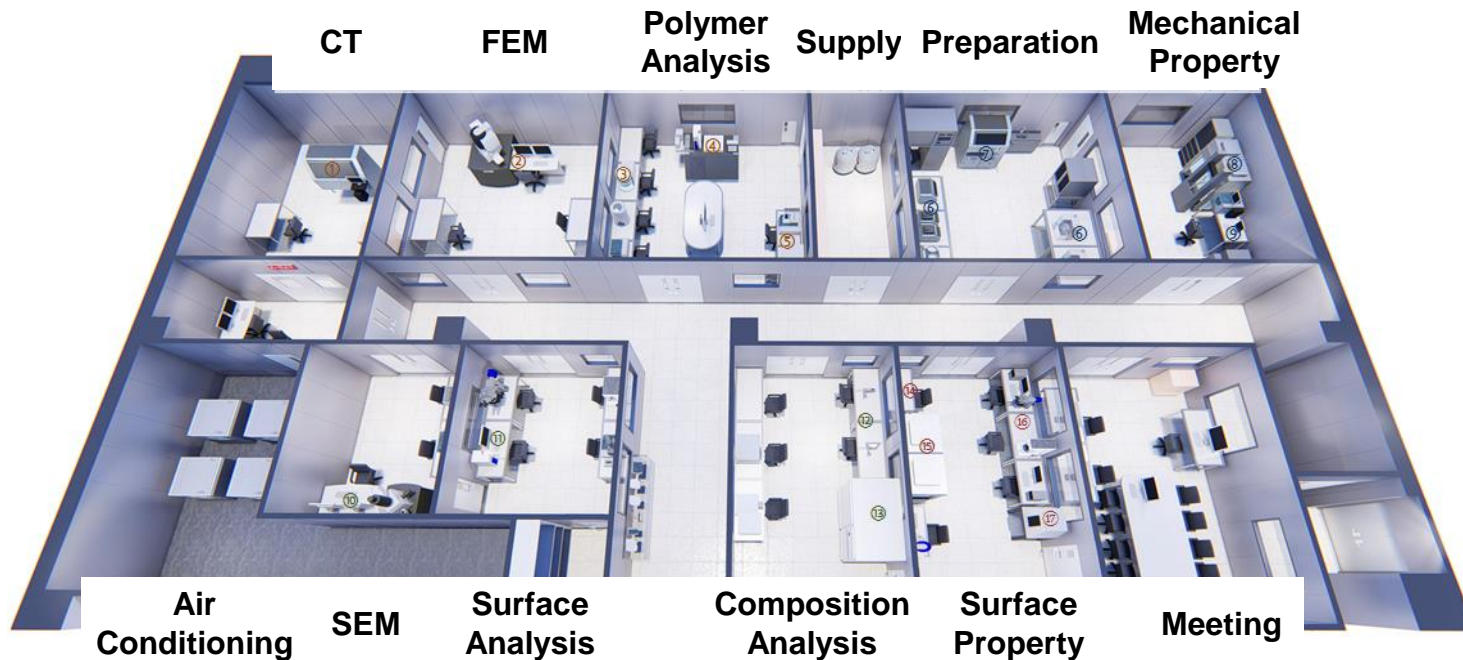


Fuel Efficiency



Low Emission

Material Research Lab



Main Equipment									
	Micro Nano CT	FE-SEM	TGA	GC-MS	FTIR-Microscope	Medium cutter	Tensile Testing	Fatigue Testing	SEM-EDX
									
	3D Confocal	LIBS & XRF	GD-OES	Vickers Harness	High temp. Friction/Wear	Scratch Testing	Nano Indenter	Specimen Preparation	

Customers



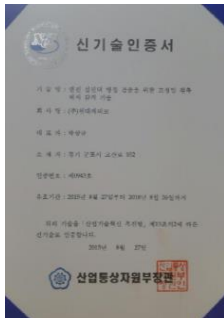
Awards / Certification

R&D

■ CMMI level 4



■ NET (New Excellent Technology)



■ Technology 5 Star

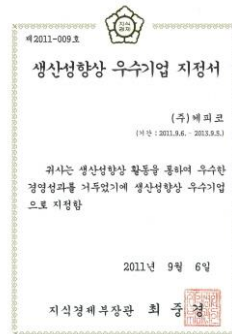


Quality / Productivity

■ IATF 16949 (Quality Management System)



■ Outstanding Company in Productivity Improvement



Others

■ ISO 14001 (Environment)



■ OHSAS 18001 (Safety)



■ ISO 27001 (Information Security)



■ \$ 1 Billion Export Tower Prize





THANK YOU.

감사합니다.

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KEFICO

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