Each institute and its activity's introduction

Korea Automobile Testing & Research Institute(KATRI)

Contents

I Introduction

Your safety is our priority

Location

Samjon-ro 200, Songsan-myeon, Hwaseong-si, Gyeonggi-do

- Seohaean (West Coast) Highway
  Bibong I/C ⟶ about 20km
- Pyeongtaek-Siheung Highway
  Songsanmado I/C ⟶ about 5km

Major vehicle manufacturers are within 60km radius

- Hyundai Kia R&D Center – 14km
- Kia Motors – 40km
- GM Korea – 56km
- SsangYong Motors – 63km
- Renault Samsung Motors – 55km

Mission & History

Mission

- Reduce casualties resulting from traffic accidents
- Protect rights and properties of customers
- Provide government with technical support for implementation of vehicle policies
- Support domestic vehicle industries with expertise

History

1980's

- May 15, 1987 Established KATRI
- Sept 21, 1987 Appointed as a Vehicle Safety Testing Institute (MOLIT)
- Sept 28, 1987 Established vehicle performance test and verification inspection guideline (MOLIT)

1990's

- Jan 1, 1994 Extended test items of the vehicle safety test(6→38 items)
- Nov 6, 1996 Completed construction of 7 Indoor Testing Institute Facilities
- Jan 1, 1998 Entrusted with Vehicle Type Approval Work (MOLIT)

2000's

- Dec 23, 2002 Completed phase 1 of the construction of the Proving Ground
- Jan 15, 2003 Appointed as a Performance Test Institute (MOLIT)

2010's

- May 27, 2013 Hosted the 23rd International Technical Conference on the Enhanced Safety of Vehicles (ESV)
- Nov 30, 2013 Completed the construction of 4 advanced test tracks

Organization

TS
Korea Transportation Safety Authority

- Planning& Coordination Division
- Management Support Division
- Road Safety Division
- Railroad& Aviation Safety Division
- Advanced Transportation& Information Technology Division
- Vehicle Inspection Service Division
- Korea Automobile Testing and Research Institute
  - Research Planning Office
  - Compliance & Defects Investigation Office
  - Certification Inspection Office
  - Advanced Safety Assessment Office
  - Driving Assessment Office
  - Environmental Friendly Vehicle Assessment Office

Ⅱ Main Duty

The world's best and most trusted Vehicle safety agency

Investigation of the manufacturing defects of vehicles and parts

If the vehicles (parts) that are sold fail to comply with safety standards or to have safety related defects, manufacturers must make corrections

1. Compliance Investigation

Vehicle manufacturers(including two-wheeled vehicle), assemblers and importers need to assure(self-certification) that their vehicles are compliant with the rules on safety standards by themselves

Compliance test procedure

Checking whether the sold automobiles meet vehicle safety standards through the self-certification system

Randomly selecting test vehicles in the market and purchasing them

Checking whether they comply with vehicle safety standards and disclosing the results to public

Investigation of the manufacturing defects of automobiles and parts

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If the vehicles (parts) that are sold fail to comply with safety standards or to have safety related defects, manufacturers must make corrections

2. Defects Investigation

Collection and analysis of all defects, with investigation of any defect found to pose safety concerns
If a defect that poses a safety concern is found, all affected models must be recalled

Procedure	Collect & analyze information on defects	Defects Investigation	Recall	Remedy for Recall
	KATRI	KATRI	MOLIT	Manufacturer

Reporting Defects

www.car.go.kr
080-357-2500
TS vehicle inspection stations around the country

Info on Recall

Recall alarm service
(This service provides you with recall information via text message/e-mail)

New Car Assessment Program(NCAP)

To provide customers broader selection and induce car manufacturers to produce safer vehicles

Goals of the NCAP

Execution of NCAP
- Provision of information on safety of vehicle

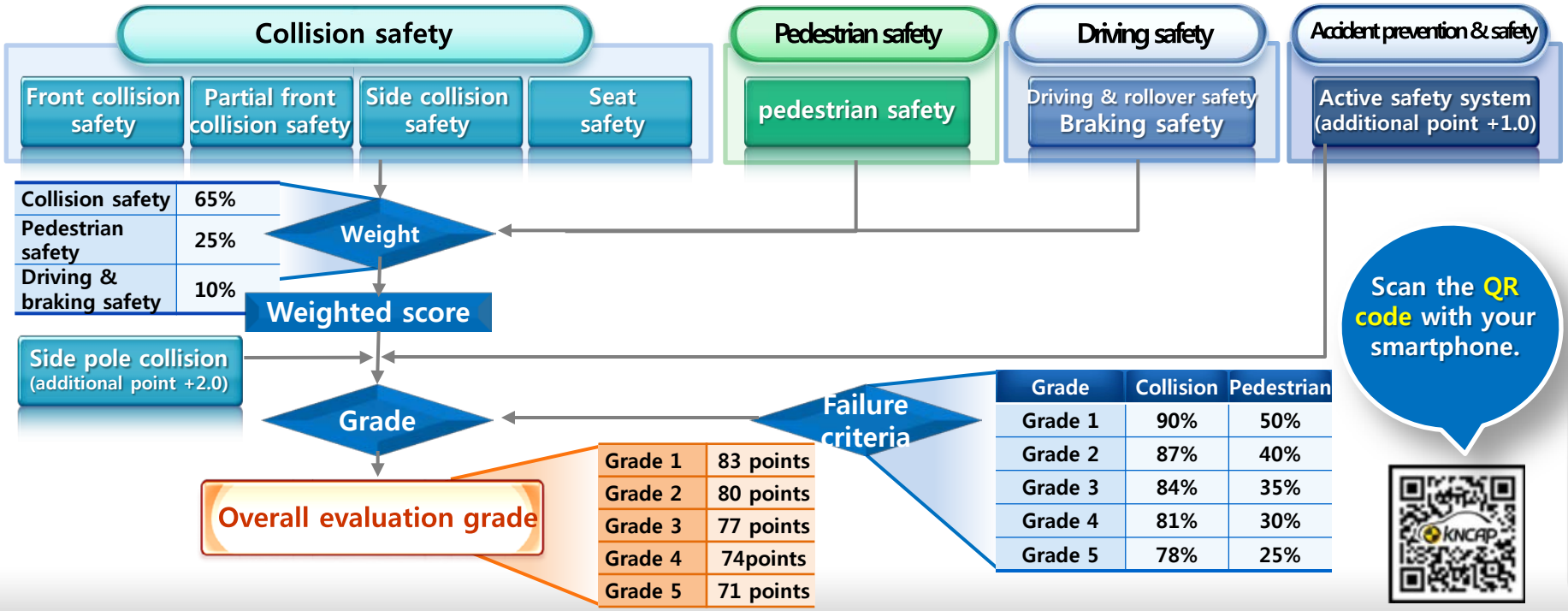
Vehicle Manufacturer
- Induction to Manufacture More Safe Vehicle
- Improving safety technology

KNCAP
Korean New Car Assessment Program

Vehicle Consumer
- Reference in Purchasing Vehicles
- Advocasy of Safely Awareness

Strengthening National Competitiveness
- Reduction in Damage by Vehicle Accident with the Supply of Safer Vehicles
- Reduction in cost of social Responsibility

New Car Assessment Program



Overall safety grade

Collision safety(65 points+2 points)					Pedestrian safety (25 points)	Driving safety(10 points)		Accident prevention & safety (+1)			Overall safety grade (100 points)
Front collision	Partial front	Side collision	Seat	Sid e pole	pedestrian	Driving & rollover safety	Barking safety	Front collision	Lane departure	Safety belt	
00.0 points					00.0 points	0.0 points		0 points			Grade 1 00.0 points

Internationalization of vehicle safety standards

① Selectively increasing harmonization between international standards including UN regulations and domestic safety standards

② Leading international trends to improve vehicle safety and reinforce competitiveness

③ Active participation in conferences related to the establishment and revision of international standards including UN/ECE/WP29 and APEC, etc.

Purpose of Internationalization Researches

1 Protecting consumers

- Protecting human life and property by ensuring vehicle safety

2 Reinforcing export competitiveness

- Through cross-certification in line with wider int'l harmonization efforts related to vehicle safety standards, achieving reductions in development period and cost

3 Reinforcing the position of major global vehicle producing countries

- As a WP29 member country, KATRI will take an active part in the establishment and revision of international standards, e.g. the development of new automotive technologies to lead int'l standards and enhance national prestige

4 Reducing friction in international trade

- Preventing trade conflicts by ensuring international harmonization of safety standards and reinforcing international cooperation efforts

Major Government Policy R&D

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2009 ~ 2017

R&D of advanced safety vehicle assessment technology

2013 ~ 2016

R&D of commercial vehicle integrated terminal standard platform and safe driving support technology

2013 ~ 2016

R&D of automobile tuning part certification standards and performance evaluation technology

2013 ~ 2015

R&D of driver information display technology for Green Drive

2013 ~ 2014

R&D on management standards for the inflow of exhaust gas within the cabin of new vehicles

Government Commissioned Business

Technical review and safety inspection

- Certification for Small volume manufacturers and importers

Construction equipment type approval and confirmation inspection

- Checking documentation for construction machinery and conducting verification

Road safety facilities performance evaluation

- Evaluating performance by conducting collision tests for roadside safety features

III Facilities

We have state-of-the-art facilities
and best engineers

Layout


Total area: 2,146,383㎡
• 7 test buildings : 29,464㎡
• Proving ground : 1,650,000㎡
• Administrative building and others: 466,919㎡

Research & test building

Crash test building

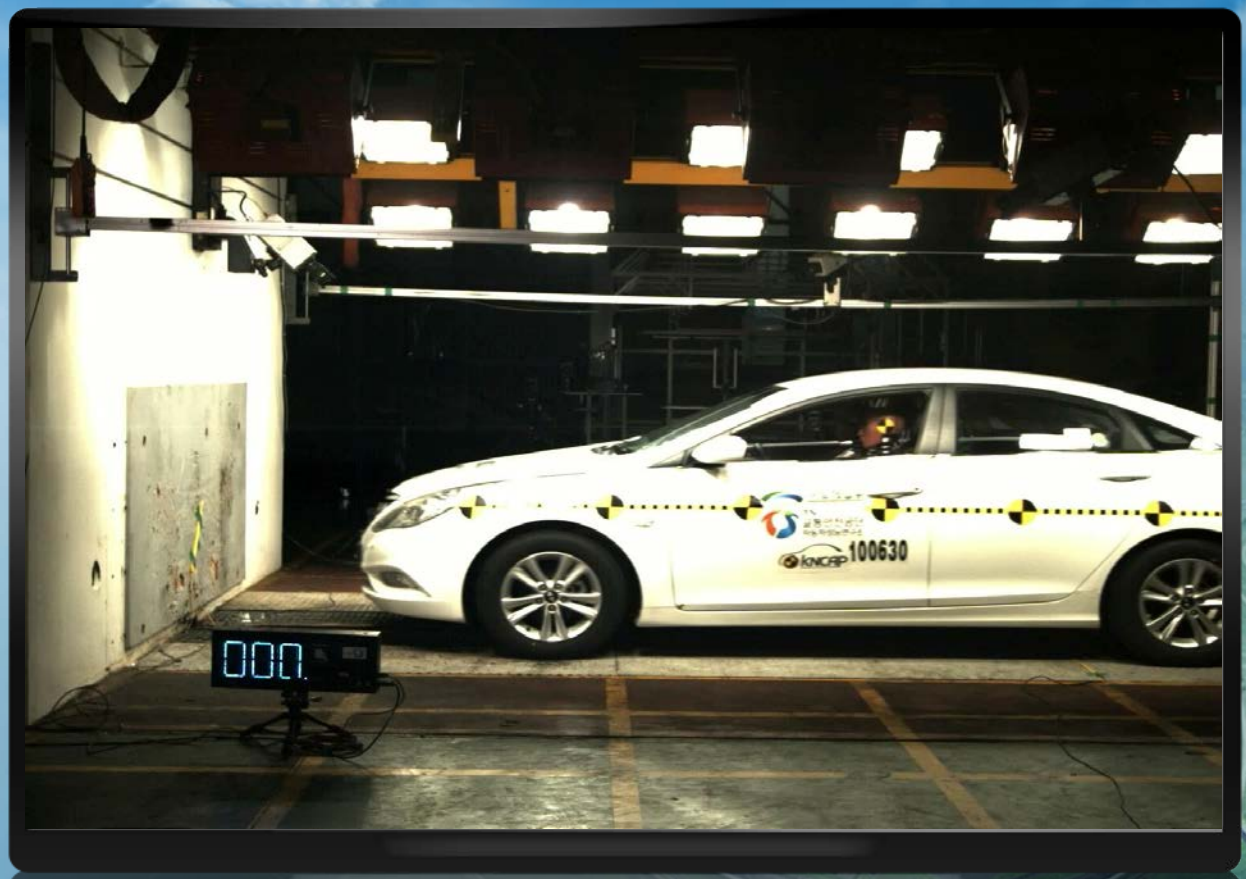
- Vehicle safety assessment front crash safety
- 56km/h concrete fixed wall front crash
- Dummies for front crash in the driver's seat and the front passenger seat

Frontal Crash test

Offset Frontal Crash test

Side Impact test

Pole Side Impact test



Crash test building

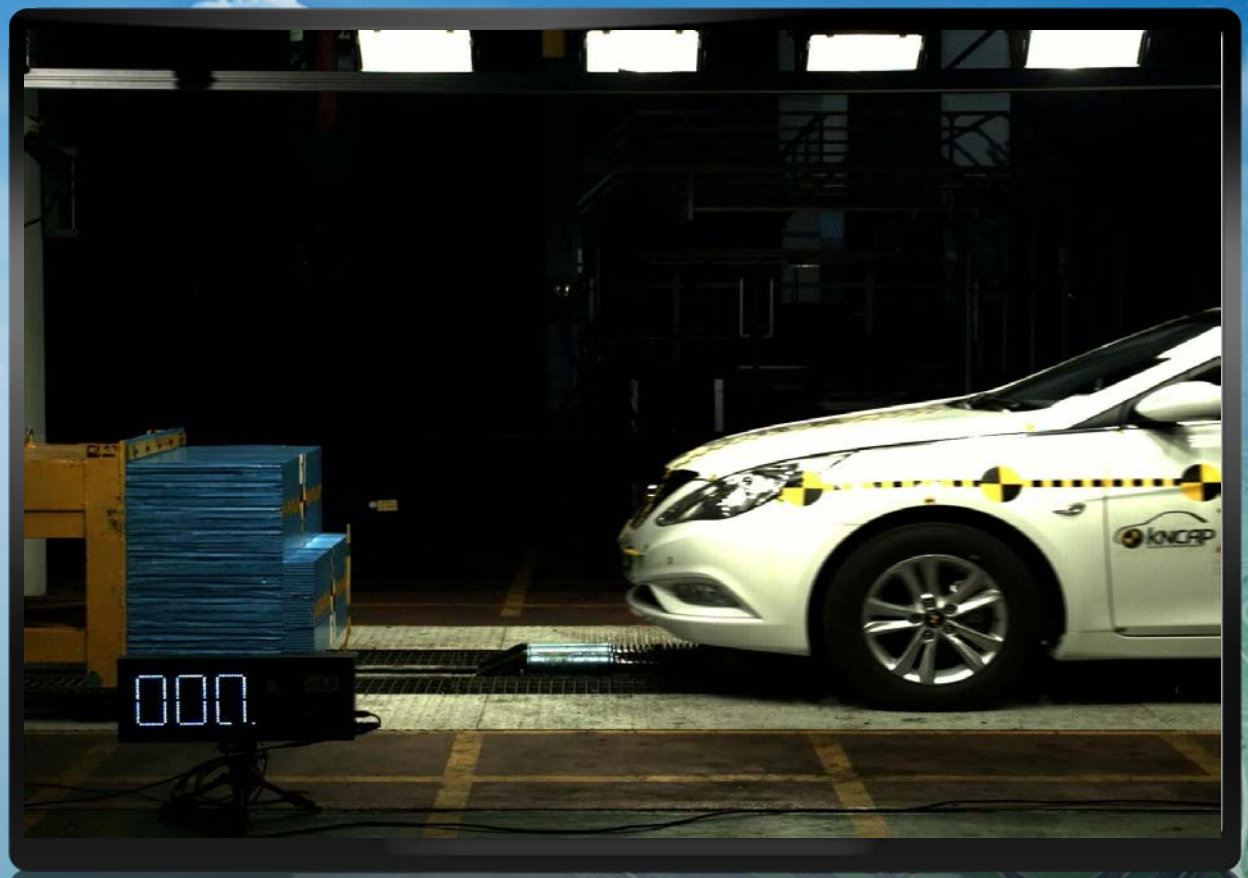
- Vehicle safety assessment partial front collision safety
- 64km/h 40% partial front collision
- Dummies for front collision in the driver's seat and the front passenger seat

Frontal Crash test

Offset Frontal Crash test

Side collision test

Side pole collision test



Collision test building

- Vehicle safety assessment side collision safety
- 55km/h moving wall vertical side collision
- Dummy for side collision in the driver's seat

Front collision test

Partial front collision test

Side collision test

Side pole collision test

Collision test building

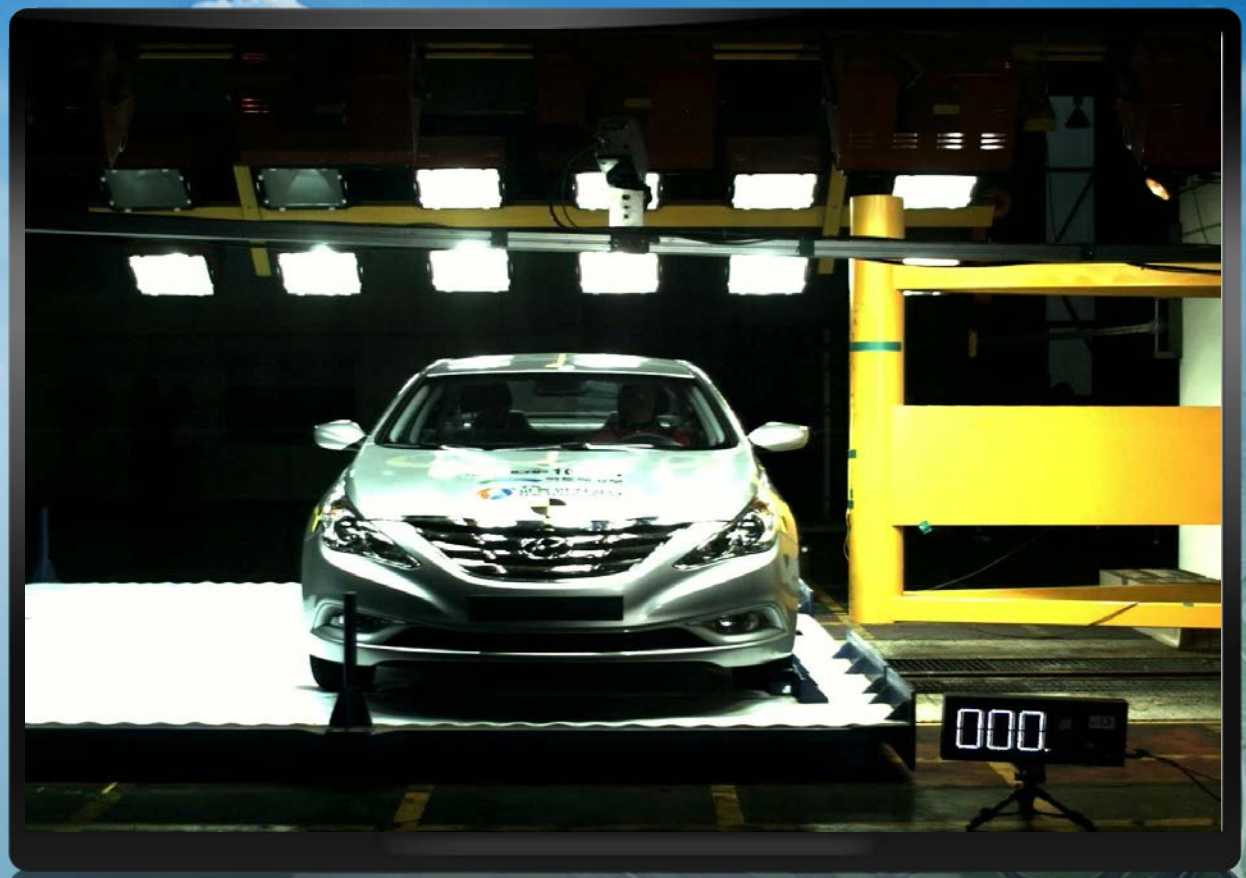
- Vehicle safety assessment side pole collision safety
- 29km/h vehicle moving cart side pole collision
- Dummy for side collision in the driver's seat

Front collision test

Partial front collision test

Side collision test

Side pole collision test



Impact test building

- Vehicle safety assessment seat safety assessment
- Fastening the component seat on the collision simulation test equipment and 16km/h rear-end collision
- Dummy (Bio RID Ⅱ) for rear-end collision

Collision simulation test

Internal impact test

Pedestrian test

Seat belt test

Roof strength test

Side door strength test

Impact test building

- Steering impact absorption test
- Steering model collision at 24km/h

Collision simulation test

Internal impact test

Pedestrian test

Seat belt test

Roof strength test

Side door strength test

Impact test building

- Vehicle safety assessment pedestrian safety assessment
- 11m/s adult/child headform impact test 6 times
- 11m/s upper/lower legform impact test 3 times

Collision simulation test

Internal impact test

Pedestrian test

Seat belt test

Roof strength test

Side door strength test

Impact test building

- Seat and locking system test
- Fastening the test device in the seat back, cushion and center of gravity and applying loads as applicable

Collision simulation test

Internal impact test

Pedestrian test

Seat belt test

Roof strength test

Side door strength test

Impact test building

- Roof strength test
- Applying loads with a rectangular test device (width 180cm or more and length 75cm or more)

Collision simulation test

Internal impact test

Pedestrian test

Seat belt test

Roof strength test

Side door strength test

Impact test building

- Side door strength test
- Applying loads with a circular or semi-circular steel test device with a diameter of 305mm

Collision simulation test

Internal impact test

Pedestrian test

Seat belt test

Roof strength test

Side door strength test

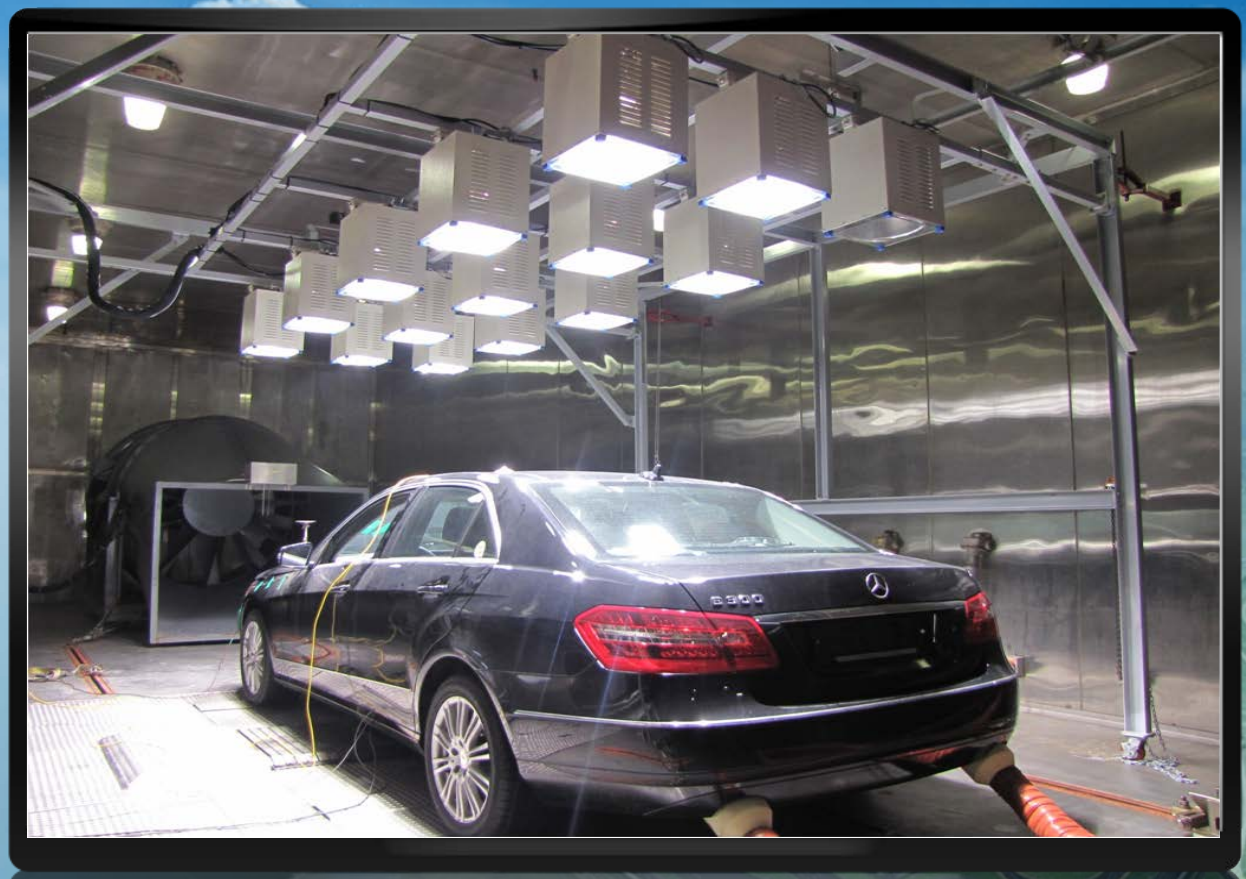
Environment test building

- Environment test room
- Reproducing high-temperature and low-temperature environmental conditions, and controlling humidity, wind velocity and solar heat
- Evaluating the automobiles and parts' ability to adjust to environmental changes and investigating manufacturing defects

Environment test

Engine test

Exhaust test



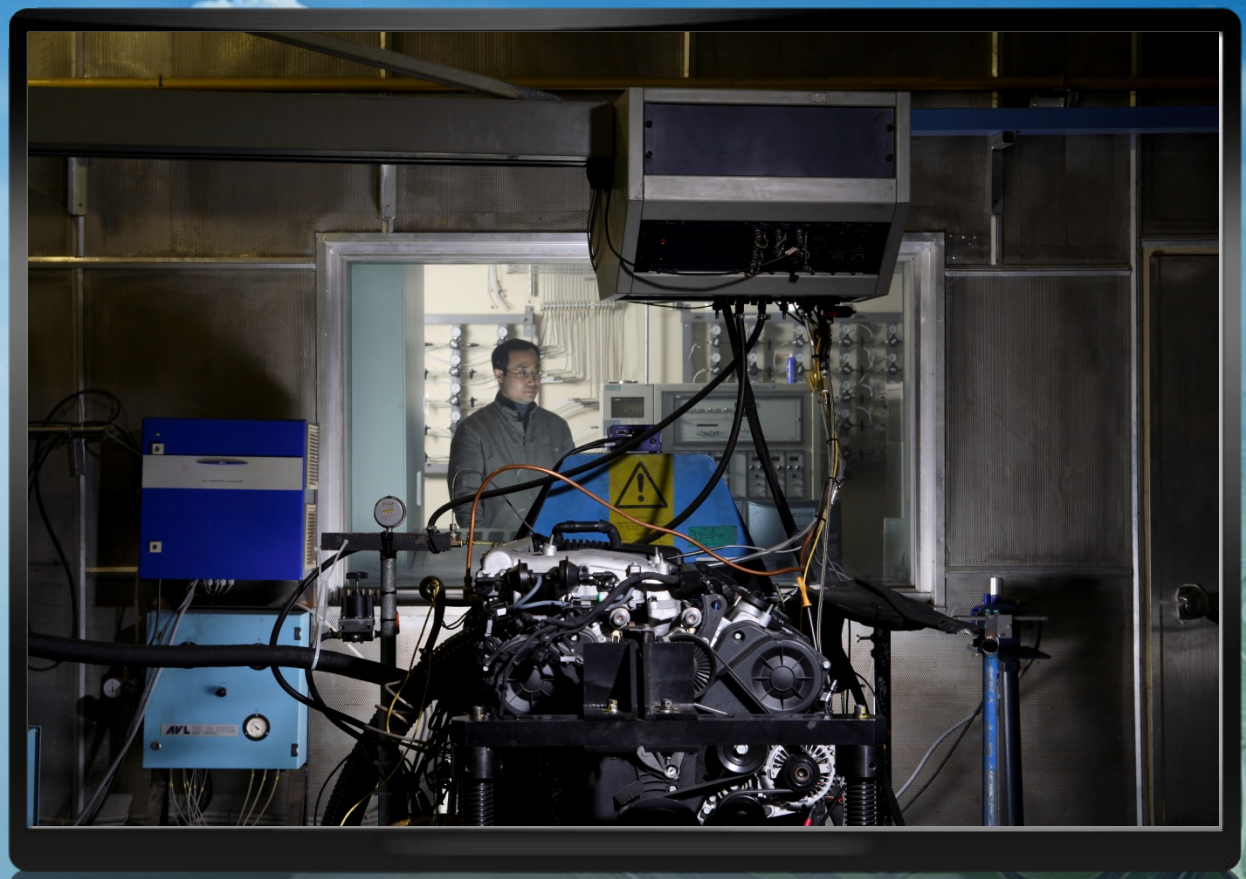
Environment test building

- Engine test room
- Measuring the engine output performance of automobiles, fuel consumption, as well as exhaust gas and greenhouse gas emissions

Environment test

Engine test

Exhaust test



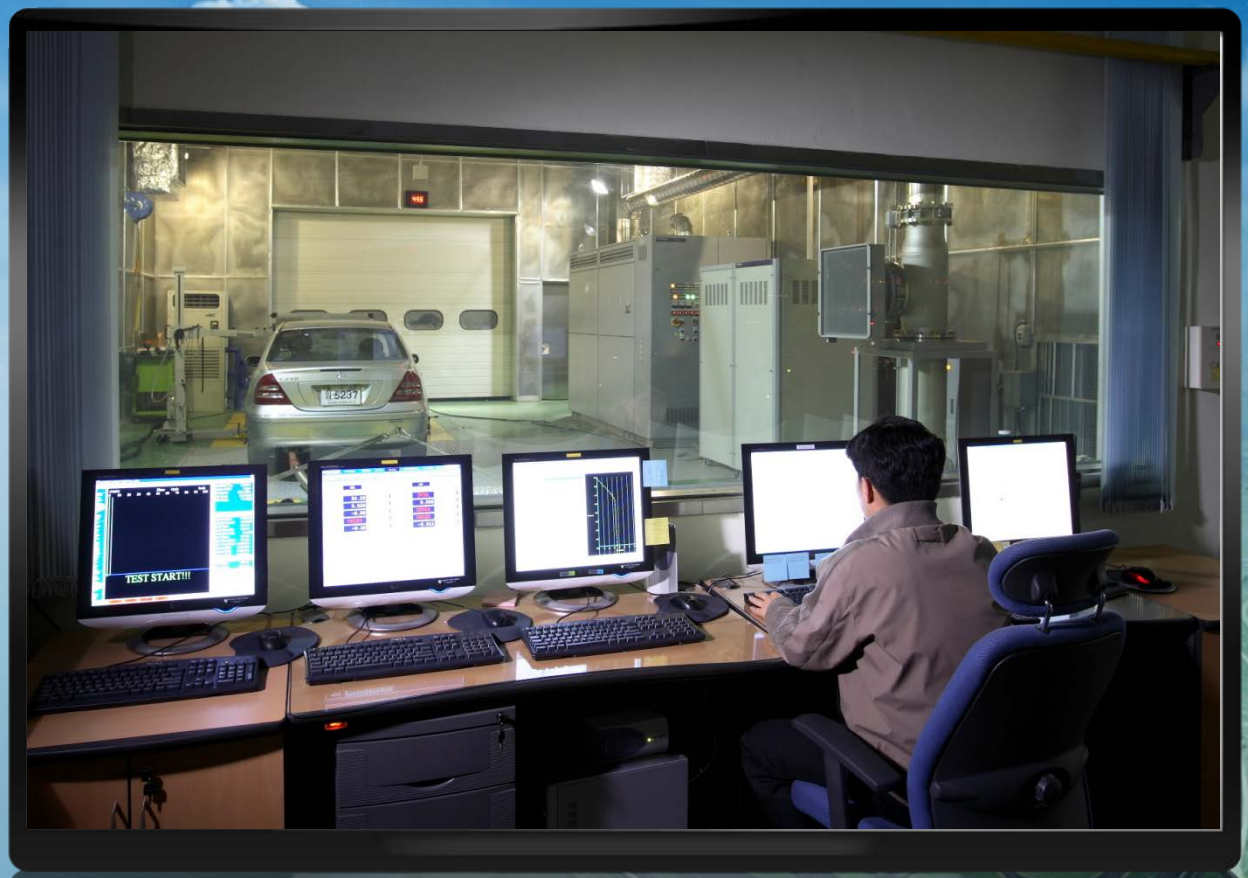
Environment test building

- Exhaust test room
- Measuring the concentration of automobile exhaust gas emissions and city fuel consumption, and evaluating the indoor air quality of new cars

Environment test

Engine test

Exhaust test



Noise & EMC Compatibily test building

- Noise test room
- Investigating and conducting research related to automobile noise certification, development and manufacturing defects

Noise test

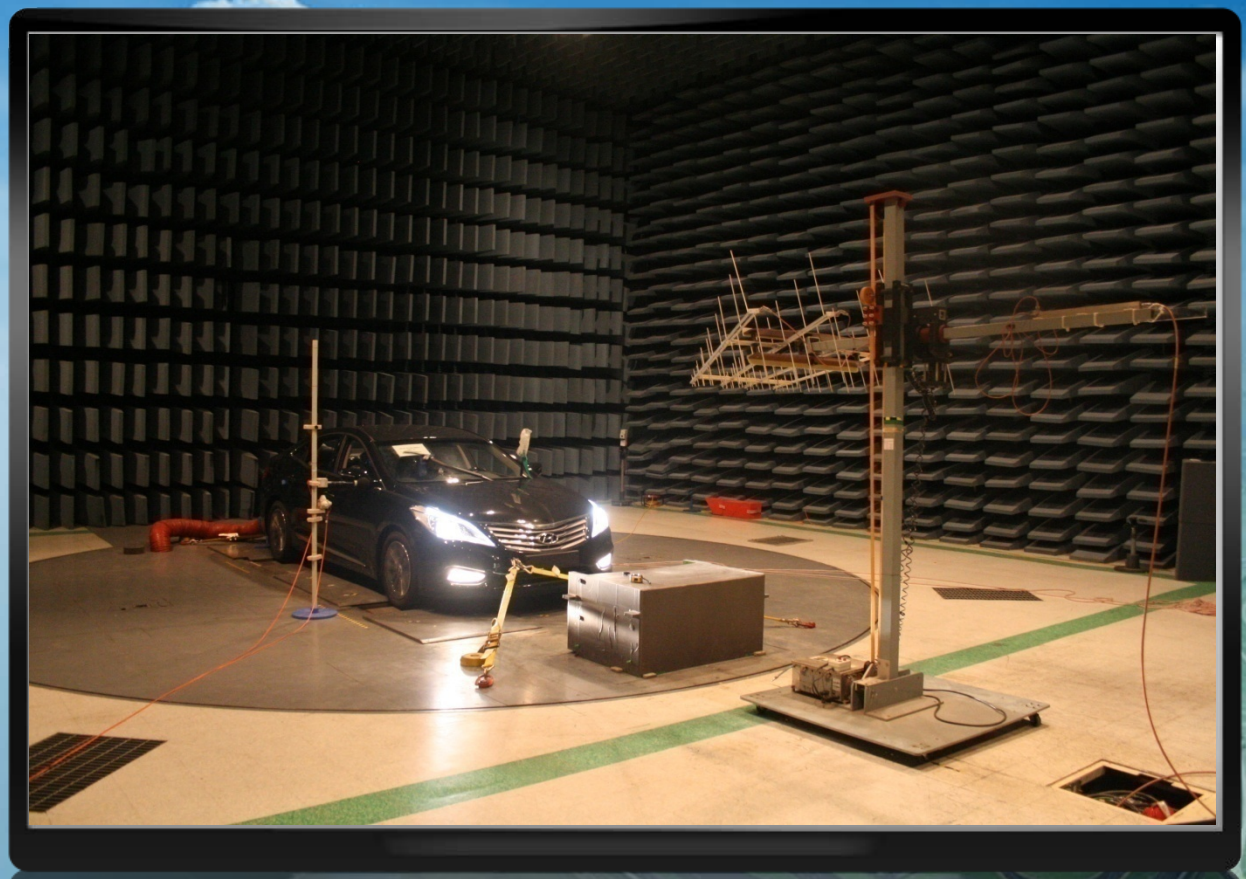
Electromagnetic Compatibily test

Noise & EMC Compatibility test building

- Electromagnetic compatibility test room
- Measuring the electromagnetic radiation of automobiles and parts, evaluating electromagnetic compatibility development and investigating manufacturing defects

Noise test

Electromagnetic Compatibility test



General test building

- General inspection
- Certification for securing special vehicle safety

General inspection

Lighting system test

Field of view test

Flame-resistance test

General test building

- Lighting system test
- Testing all lamps in the car, including headlamps, brake lights and turn signals

General inspection

Lighting system test

Field of view test

Flame-resistance test

General test building

- Field of view test
- Test to secure the front and rear field of view for passenger cars and light-weight vans

General inspection

Lighting system test

Field of view test

Flame-resistance test

General test building

- Ignition resistance of interior materials
- Testing the ignition resistance of interior materials like seats, backs, safety belts, roofs, floors and mats

※ Ignition resistance: the disposition to suppress the combustion while making sparks when the object catches fire

- General inspection
- Lighting system test
- Field of view test
- **Flame-resistance test**

Future car test building

- Hybrid electric vehicle power evaluation room
- Evaluating the output performance, fuel efficiency and exhaust gas of internal combustion engines, hybrid cars, electric vehicles and hydrogen fuel cell vehicles

HEV Test

Electric Motor

Traction Battery

Fuel Cell

Combination Environmental Chamber

EV Monitoring Business

Hydrogen Filling System

Future car test building

- Electric motor room
- Evaluating the output performance of the electric motors of hybrid and electric vehicles and conducting development tests

HEV Test

Electric Motor

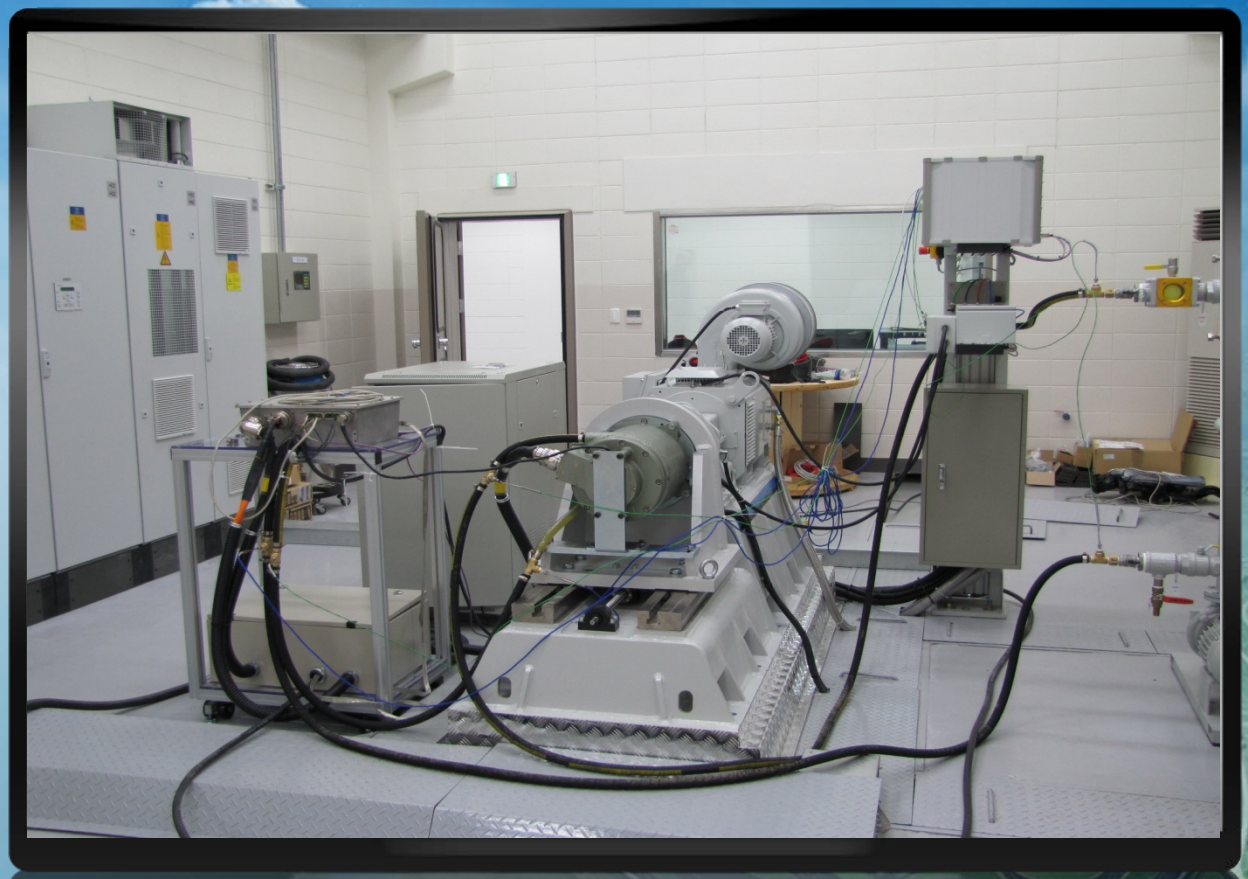
Traction Battery

Fuel Cell

Combination Environmental Chamber

EV Monitoring Business

Hydrogen Filling System



Future car test building

- Traction battery safety assessment room
- Testing and evaluating the performance, reliability and safety of the traction battery of hybrid and electric vehicles

HEV Test

Electric Motor

Traction Battery

Fuel Cell

Combination Environmental Chamber

EV Monitoring Business

Hydrogen Filling System

Future car test building

- Fuel cell test room
- Measuring and evaluating the output, current and voltage of the fuel cell stack of hydrogen fuel cell vehicles

HEV Test

Electric Motor

Traction Battery

Fuel Cell

Combination Environmental Chamber

EV Monitoring Business

Hydrogen Filling System

Future car test building

- Combination environmental chamber test room
- Evaluating the environmental adaptability of the parts under testing by reproducing high-temperature and low-temperature environmental conditions

HEV Test

Electric Motor

Traction Battery

Fuel Cell

Combination Environmental Chamber

EV Monitoring Business

Hydrogen Filling System

Future car test building

- Rapid charging system
- Facilities for rapid charging of electric vehicles

HEV Test

Electric Motor

Traction Battery

Fuel Cell

Combination Environmental Chamber

EV Monitoring Business

Hydrogen Filling System

Future car test building

- Hydrogen filling station
- Facilities for transporting and storing hydrogen gas, operating control and filling hydrogen gas to secure a safe hydrogen supply

HEV Test

Electric Motor

Traction Battery

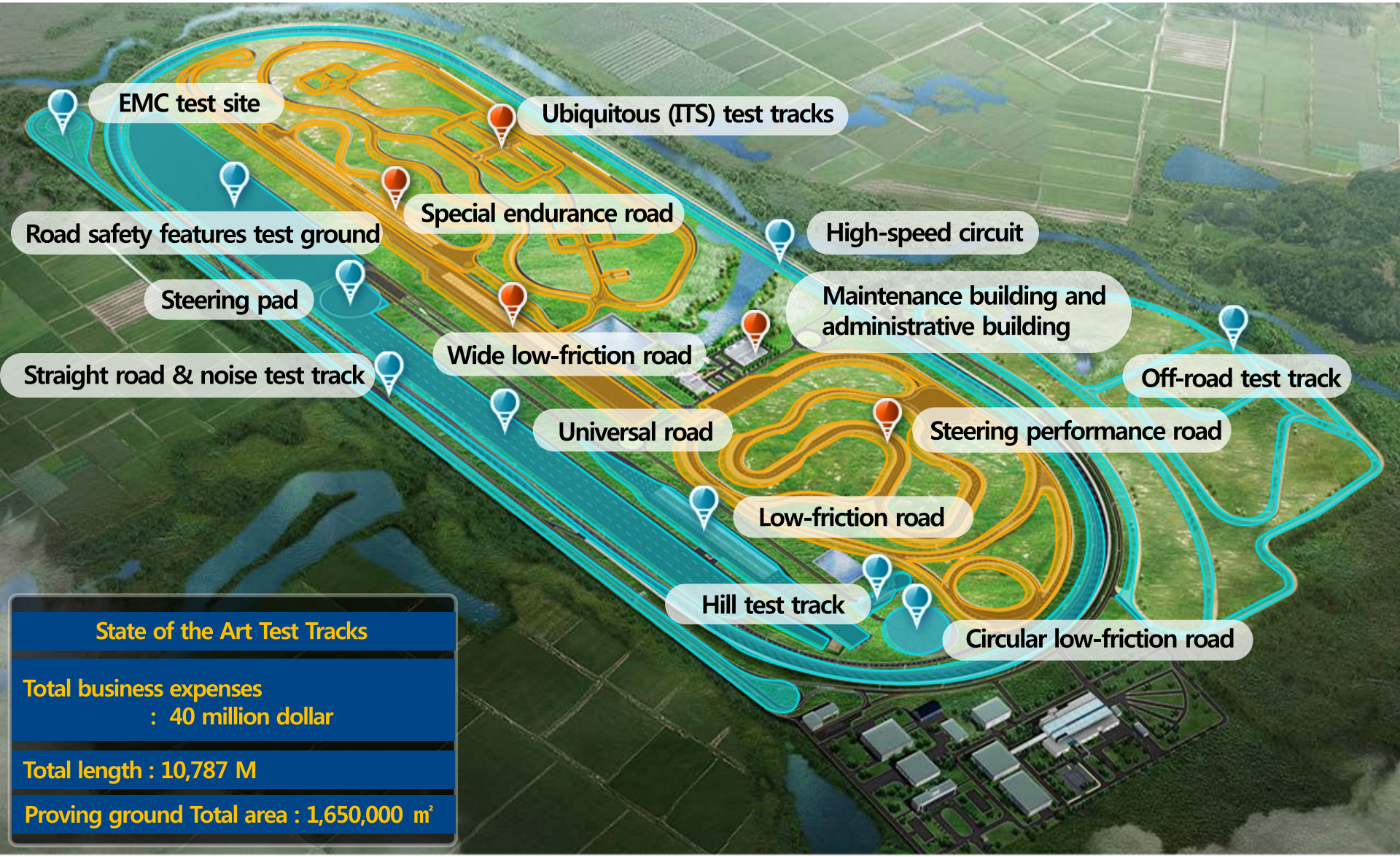
Fuel Cell

Combination Environmental Chamber

EV Monitoring Business

Hydrogen Filling System

Proving ground



Proving ground

High-speed circuit

- High-speed circuit
- The girth of the oval test track is about 5km. 4 asphalt lanes.
- The inclination of the end of the curve is 42° and the maximum design speed is 250km/h.

Proving ground

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JARI

EMC test site

Straight road & n

oad test track

ion road

Braking safety test

- Vehicle safety assessment braking safety assessment
- For vehicles with the ABS system, 100km/h
- Straight flat asphalt dry surface/ wet surface braking

Proving ground

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EMC test site

Straight road & n

oad test track

ion road

Driving & rollover test

- Vehicle safety assessment driving & rollover safety test
- 55, 65, 70, 80km/h quick turn of the steering wheel
- If the rotating inner wheels are more than 50mm off the road at the same time, it will be considered "lift-off."

Proving ground

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EMC test site

Straight road & n

oad test track

ion road

Safety barrier test

- Safety barrier side 15° collision test 80km/h

※ Safety barrier Grade : 1~7Grade

Passenger car : collision speed 60~120km depending on grade

Truck : collision speed 55~80km depending on grade

Ⅳ Future plans

We will become the world's most trusted vehicle safety organization

Future plans

Reinforcing government policy support to improve vehicle safety

- Reinforcing to investigate vehicle defects and conduct the New Car Assessment Program (NCAP)
- Reinforcing research on internationalization of safety standards to fulfill FTA
- Reinforcing policy support for consumer protection legislation related to vehicles

Becoming a research institute that leads global vehicle safety

- Reinforcing R&D to improve vehicle safety
  - Developing of advanced safety vehicle assessment technology, etc.
- Participating in international activities related to vehicle safety and expanding interaction with international vehicle safety related agencies

Finding new businesses to reinforce transportation safety

- Reinforcing R&D related to smart mobility
- Trying to find new businesses related to existing facilities, e.g. verifying the safety of military vehicles, etc.

Thank you for your attention.

Sung Bok Eom

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Korea Transportation Safety Authority
Korea Automobile Testing & Research Institute