Traffic Safety Policy for Accidents Reduction in Korea

2019.12.5

Korea Transportation Safety Authority(KOTSA)

Korea Automobile Testing & Research Institute (KATRI)

Organization Structure & Major Work

MOLIT
(Ministry of Land, Infrastructure and Transport Republic of Korea)

KOTSA
(Korea Transportation Safety Authority)

Mission: Decrease traffic accident fatalities
Fatalities per 10,000 vehicles: '13(2,2/5,092)
⇒ '16(1,6/4,292) ⇒ '18(1.4/3781) ⇒ '22(less than 2,000)

KATRI (Korea Automobile Testing & research Institute)

- Headquarter Research Institute (KATRI)
- 3 Certification Support Center

01. New Vehicle Safety

1) New Car Assessment Program (NCAP)
2) Autonomous Vehicle
3) Harmonization of Vehicle Regulation
4) Vehicle Defect Investigation

Automobile Inspection Division

- Vehicle Inspection Sites (59offices, nationwide)

02. In-use Vehicle Safety

1) Vehicle Safety Inspection
2) Comprehensive Inspection
3) Inspection Development

Traffic safety Division

- Regional Headquarters (14offices, nationwide)
- 2 Training Centers

03. Driver Training

1) Digital Tachograph Analysis System (eTAS)
2) Transportation Safe driving Training Center (TSTC)

CONTENTS

01. New Vehicle Safety

1) New Car Assessment Program
2) Autonomous Vehicle R&D
3) Harmonization of Vehicle Regulation
4) Vehicle Defect Investigation

02. In-use Vehicle Safety

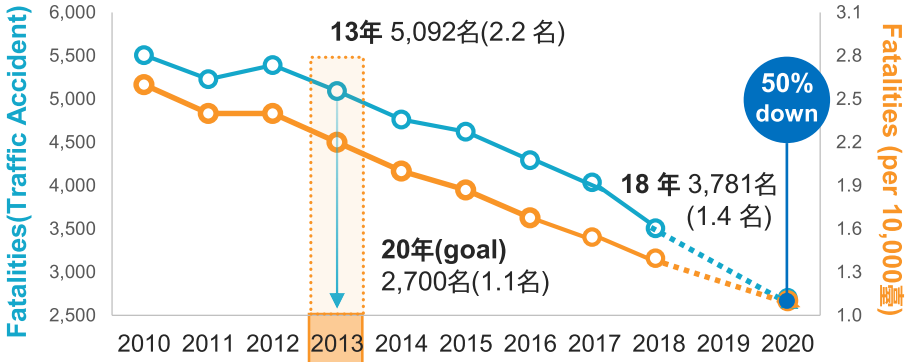
1) Vehicle safety Inspection
2) Comprehensive Emission Vehicle Inspection
3) Autonomous Vehicle Inspection Development

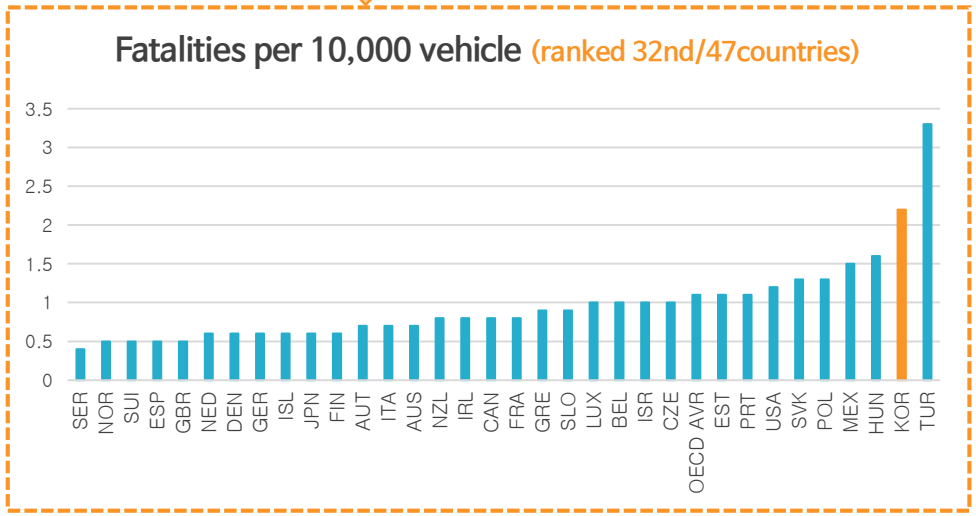
03. Traffic Safety

1) Digital Tachograph Analysis System (eTAS)
2) Transportation Safe driving Training Center (TSTC)

Traffic Accident Reduction Target and Traffic Accidents

Traffic accident death toll

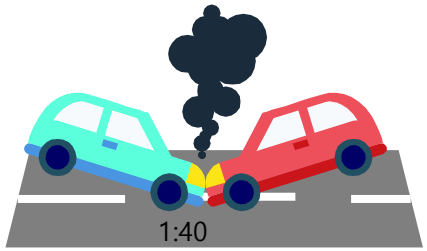




※ Traffic Accident Death Reduction Target
- It was 3,781 in 2018, and the goal is to reduce it to 3,286 by 2019.
- By 2022, target number will be reduced to less than 2,000.

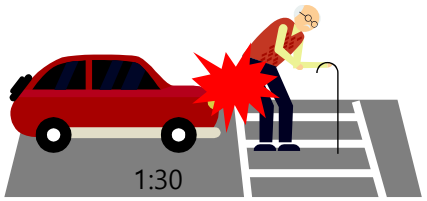
'17 → '18years

'18 Traffic Accident Types (4,185 → 3,781)



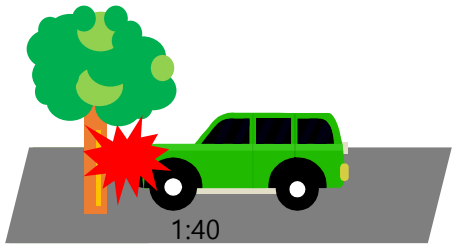
Vehicle To Vehicle

1,727→1,505 persons



Vehicle To Pedestrian

1,617 →1,443 persons



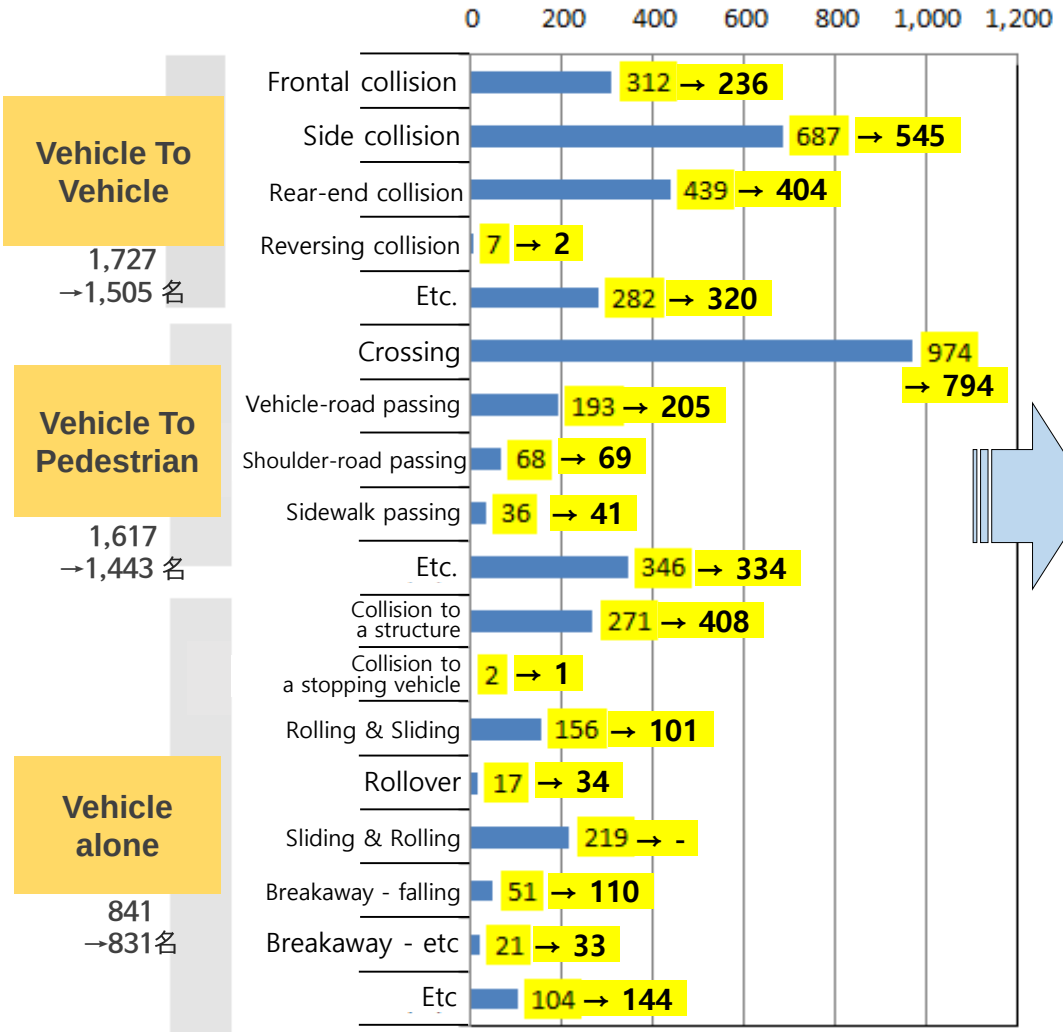
Vehicle alone

841→831 persons

Traffic Accident and ADAS

'17 → '18years

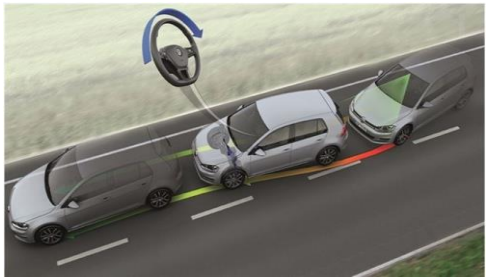
Deaths by Traffic Accident Type (4,185→3,871名)



ADAS for reducing traffic accidents

LDWS

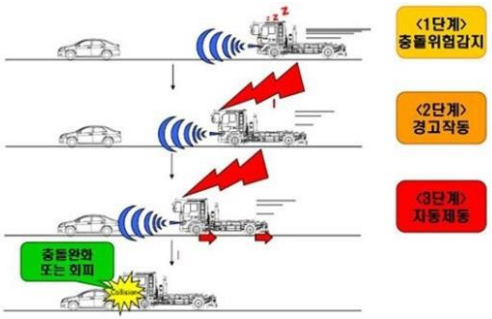
LKAS



FCWS

BSD

AEBS



ISA

NCAP (New Car Assessment Program)

To provide customers with information on the safety of vehicles and encourage car manufactures to make safer vehicles, TS assesses the safety of vehicles and announces the results to the public.

New Car Assessment Program

- Provision of information on safety of vehicle

Manufactures

- Encourage manufactures to make safer vehicles
- Improve of safety technology

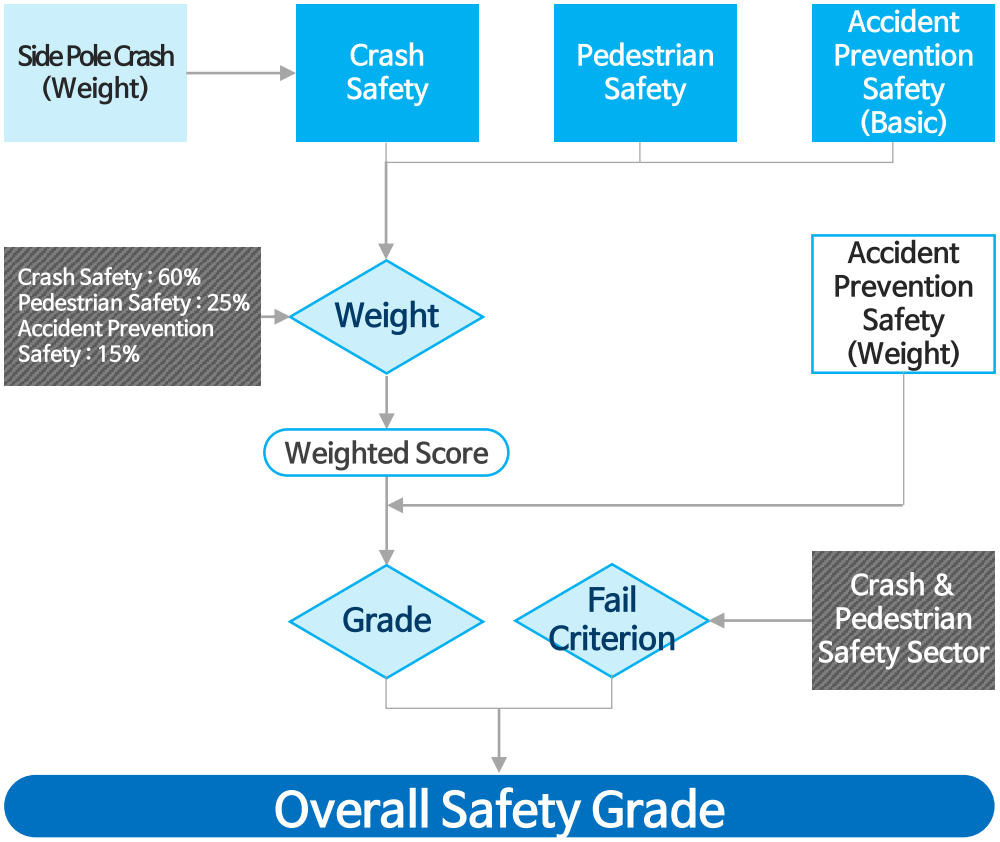
Consumers

- Information for purchasing cars
- Increase of safety awareness

Strengthening national competitiveness

- Reduction of car accident by providing safer vehicles
- Improvement of safety technology

Assessment process

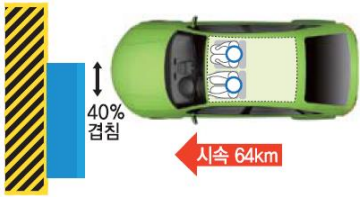


1) New Car Assessment Program

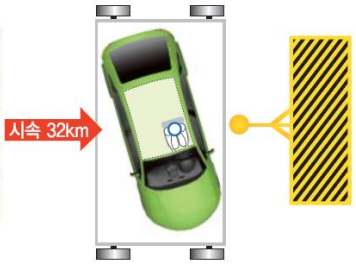
Passive safety

Frontal Impact

Frontal Offset Impact



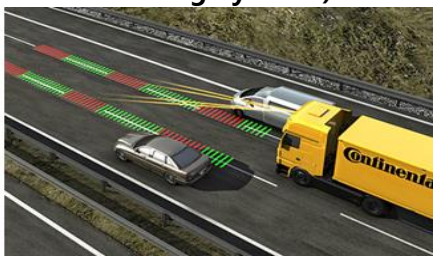
Pole Side Impact



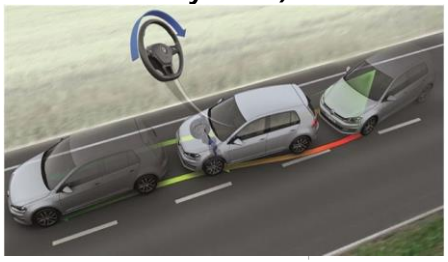
Side Impact

Active safety

LDWS (Lane Departure Warning System)



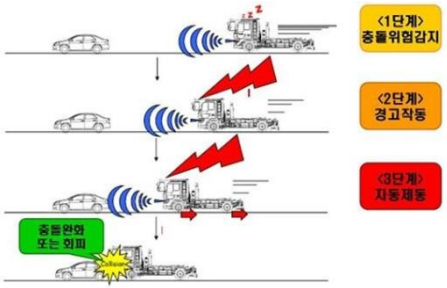
LKAS (Lane Keeping Assistance System)



BSD (Blind Spot Detection)

FCWS (Forward Collision Warning System)

AEBS (Autonomous Emergency Braking System)



ISA (Intelligent Speed Assistance)

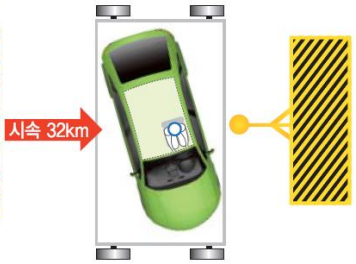
1) New Car Assessment Program

Passive safety

Frontal Impact

Frontal Offset Impact

Pole Side Impact



Side Impact

Active safety

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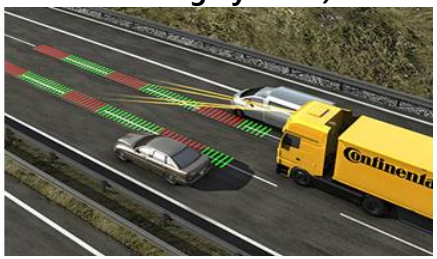

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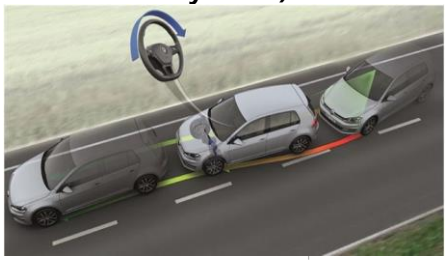


BSD (Blind Spot Detection)

NCAP Event Promotion Video

[redacted]

1) New Car Assessment Program

Passive safety

1999	2001	2003	2005	2007	2008	2009	2010
Frontal Crash	Frontal Crash Braking	Frontal Crash Braking Side Crash	Frontal Crash Braking Side Crash Roll Over	Frontal Crash Braking Side Crash Roll Over Pedestrian	Frontal Crash Braking Side Crash Roll Over Pedestrian Whiplash	Frontal Crash Braking Side Crash Roll Over Pedestrian Whiplash Offset Crash	Frontal Crash Braking Side Crash Roll Over Pedestrian Whiplash Offset Crash Pole Side

2017 ← 2013

- **ADAS (Active Driver Assistance System)**
  - ACC (Adaptive Cruise Control)
  - LDWS (Lane Departure Warning System)
  - LKAS (Lane Keeping Assistance System)
  - FCWS (Forward Collision Warning System)
  - AEBS (Autonomous Emergency Braking System)
  - ABSD (Active Blind Spot Detection)
  - ISA (Intelligent Speed Assistance)

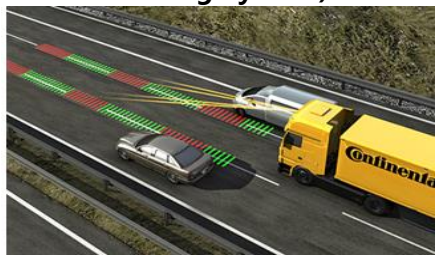
Active safety

2) Autonomous Vehicle

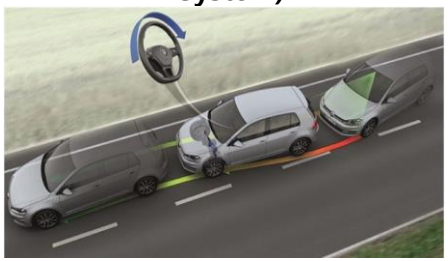
(ADAS → Autonomous Vehicle)

Advanced Driver Assistance Systems

LDWS (Lane Departure Warning System)

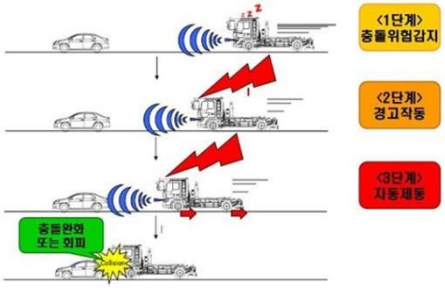


LKAS (Lane Keeping Assistance System)



FCWS (Forward Collision Warning System)

AEBS Autonomous Emergency Braking System)



BSD (Blind Spot Detection)

ISA (Intelligent Speed Assistance)

ADAS Distribution Status

- Passenger car: NCAP Assessment Vehicle mounting rate of 85%
  - ACC, LDWS, LKAS, FCWS, AEBS, BSD, ISA, ASLD, SBR, ESC, TPMS, RCTA, CMS, etc.
- Requirement for Commercial Vehicles: Annual application of new models
  - ESC, TPMS, LDWS, AEBS, SBR

Advanced Driver Assistance Systems

Autonomous driving tech. KIA 2016

2) Autonomous Vehicle

(Level 2 → Level 4)

Application Schedule of Autonomous Vehicle Safety Standards

➢ **Level 2:** Automobile standard with driver assistance advanced steering system

✓ Auto Command Steering Function **(ACSF)** standard**:** Auto parking, Lane keeping, Change lane

- Europe**: "ECE/324/Rev.1/Add.78/Rev.3" (1 Apr 2018)**
- **KOREA: Article 98 paragraph 2 of Motor Vehicle Safety Standards (in effective 1. Jan 2020)**

Lv2: Jan 2020 -

➢ **Level 3:** Safety Standards for Autonomous Driving Systems

✓ New definition of autonomous driving system**:**

- **Level 2 (**Partial autonomy**), Level 3 (**Conditional autonomous driving**), Level 4 (**Full autonomy**)**

✓ Level 3 Established performance standard of autonomous driving system

✓ Legislative notice (- 7 Oct ´19) → judgment (~ Nov ´19) → notification(Dec ´19) → enforcement (Jul ´20)

Lv3: July 2020 -

➢ **Level 4 : ……**

✓ Autonomous driving system **…….** :

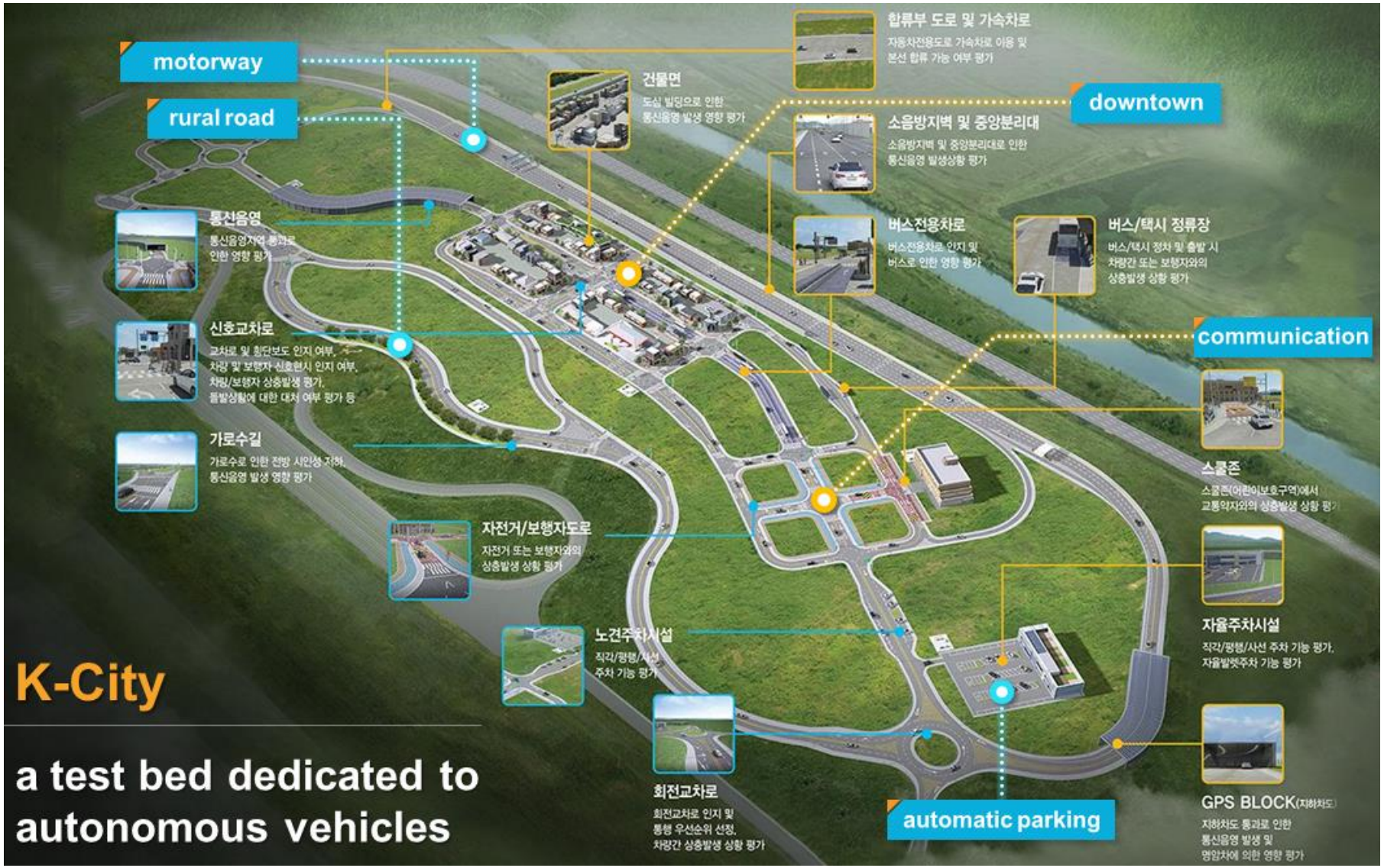
- **Level 4 …….기준**

Lv4: Jan 2024-

2) Autonomous Vehicle

(Test bed)

Autonomous vehicle test bed (K-City)



3) Harmonization of Vehicle Regulation

UN

ECE
Economic Commission for Europe

ITC
Inland Transport Committee

WP.29
World Forum

Working Parties

Lighting (GRE)
- CMS
- Light-Signaling Device(LSD)
- Road illumination Device(RID)
- Retro-Reflective Device(RRD)

Autonomous Connected (GRVA)
- ACSF
- Validation Method AD
- Functional Requirement
- Cyber Security / Over the Air
- Data Storage System

Collision safety (GRSP)
- Seat Belt Reminder
- Popup Pedestrian protection system
- Child Restraint system & School Bus Structure
- Hydrogen Veh. Safety
- Frontal Crash Scope research

General safety (GRSG)
- Panoramic Sunroof
- Windshield Grass
- Rear detection & vision
- Functional Switch
- E-Call
- Child Restraint system & School Bus Structure

Pollution & energy (GRPE)
- Vehicle Interior Air Quality
- Worldwide Motorcycle Emission Test Cycle
- Hybrid Vehicle Power
- Pure power test Procedure
- Motorcycle emission Test
- Real Driving Emissions

Noise & Tire (GRBP)
- Quiet Road Transport Vehicle
- Rear detection & vision
- Child Confirmation Alert System
- In-use Tire performanc in wet road

Enforcement Regulations-Korea Motor Vehicle Safety Standard

- **Based on Article 29 of Automobile Management Act**
- **Consist of 170 Articles in 5 Chapters**

1. General Rules
- Purpose
- Definition Structure
- Equipment Safety

2. Safety Standard of Vehicle & Motor cycles
- Length, width and height
- Gross vehicle weight, etc.
- Driving devices
- Control devices
- Lighting devices

3. Safety Standard of Manufactured Vehicles
- Scope
- Acceleration control device
- Brake device
- Collision impact protection device
- Pedestrian safety

3-2. Vehicle parts
- Brake hose, Seatbelt, Lighting Devices 13items

Supplementary Provisions
- Enforcement date
- Interim measures

4. Supplementary Rules
- Passenger capacity, Maximum loading capacity
- Special case of criterion application
- Tolerance of dimension
- Notification of test method

International Harmonization of Safety Standards in Korea (Oct '19)

- Harmonized 104 items among 153 UN standards (68% completed)
- 13 of the 20 UN GTRs are reflected in national standards
  - ❖ Step-by-step implementation taking into account of domestic traffic environment and the technology level and conditions of car manufacturers
  - ⇒ 100% harmonization of UN and domestic standards by 2023

			Number of items	Plan for feasibility study and harmonization				
				'19	'20	'21	'22	'23
UN standard	Reflect after study	**New UN R.**	2		**① R136**	-	-	**① R129**
		Existing **UN R.** Revision	14	**① R55, ② R111 ③Large bus(R14, 16, 66, 80, 107)**	**① R29, ②UN R35, ③ R62, ④ R105, ⑤ R126, ⑥Large bus(R14, 16, 66, 80, 107)**	**① R93, ② R102, ③ R26, ④ R61**	**① R34**	
	Domestic reflection	**New UN R.**	2		**① R142**	**①UN R134**	-	
		Existing **UN R.** Revision	17	**① R10, ② R23, ③ R46, ④R48, ⑤ R64 ,⑥ R79, ⑦ R87, ⑧ R100,⑨ R121, ⑩ R125**	**① R28 ② R30**	**① UN R43(② UN R134**	**① R85 ② R131**	**① R144**
UN GTR	Domestic reflection	**New GTR**	1	**①GTR 20**		-	-	
		Existing **UN R.** Revision	7	**①GTR 1, ②GTR 8, ③GTR12**	**①GTR 3**	**①GTR 6, ②GTR 9, ③GTR 13**		
Reflect after study			16	3	7	4	1	1
Domestic reflection			27	14	4	6	2	1
SUM			**43**	**17**	**11**	**10**	**3**	**2**

4) Vehicle Defect Investigation

Find out vehicle defects through scientific investigation

Defect reports

www.car.go.kr

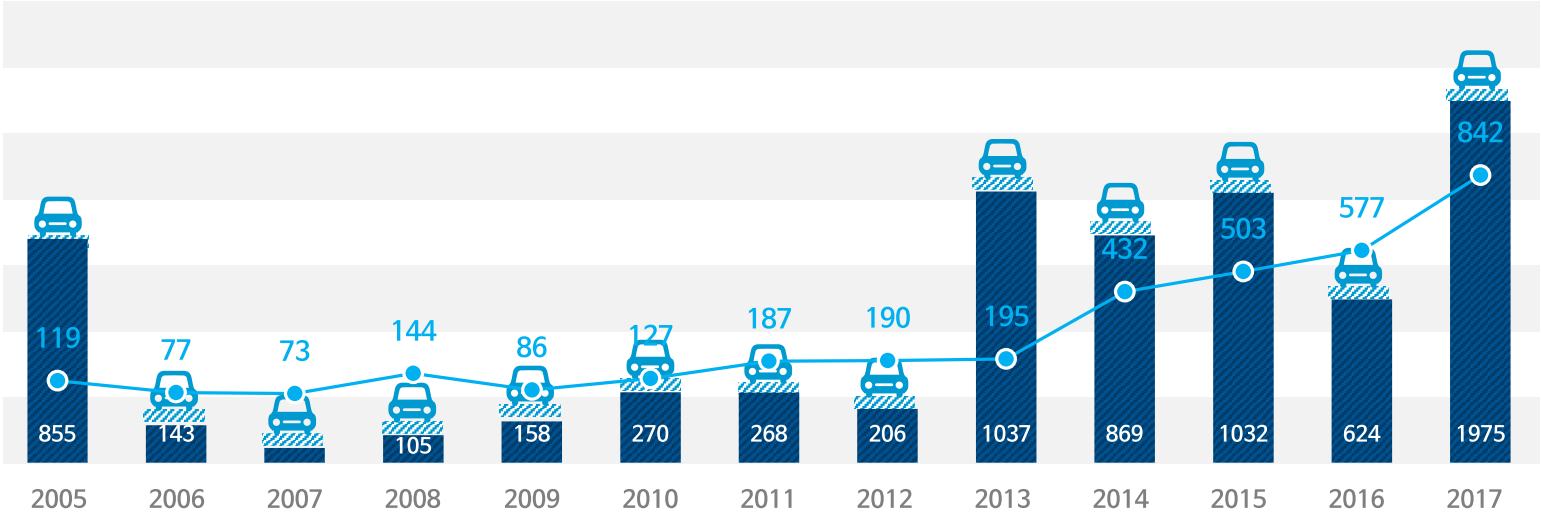
080-357-2500 Any TS vehicle inspection station in Korea

Recall information

Recall notification service

Send text/email on recall to service subscribers

Annual recall status through vehicle defect investigation



4) Vehicle Defect Investigation

1) Defects investigation

If defects are discovered by collecting and analyzing vehicle defect information, recall all vehicles of the model

※ Vehicle defect investigation system

When an automobile or auto part fails to meet safety standards or has any defect that compromises safe driving, make manufacturers take corrective action.

Procedures

01 Collect and analyze vehicle defect information
KATRI

02 Conduct vehicle defect investigation
KATRI

03 Issue a recall order
MOLIT

04 Recall and correct defects
MANUFACTURER

2) Self-certification

Randomly purchase self-certified vehicles and machinery parts, and assess their compliance with the safety standards

※ Self-certification

A program under which manufacturers, assemblers or importers of automobiles (including two-wheeled vehicles) can certify by themselves that their vehicles or parts conform to the Rules on the Performances and Standards of Korean Motor Vehicles and Parts

Procedures

01 Assess the conformity of self-certified vehicles

02 Select vehicles to assess, after thorough analysis of newly released and popular vehicles

03 Check its compliance with the safety standards and **release the results to the public**

04 Randomly select and **purchase test car** from market

1) Defects investigation

➢ **Main task**

- Collect and analyze consumer complaints
  - Collecting complaints of consumers about defects in cars
  - Car Recall Center(www.car.go.kr) or Defect Report Phone (☏080-357-2500)
- Management of information related to car recalls and warranty
  - Recall by Maker (Corrective Action) & Manage and provide information related to warranty

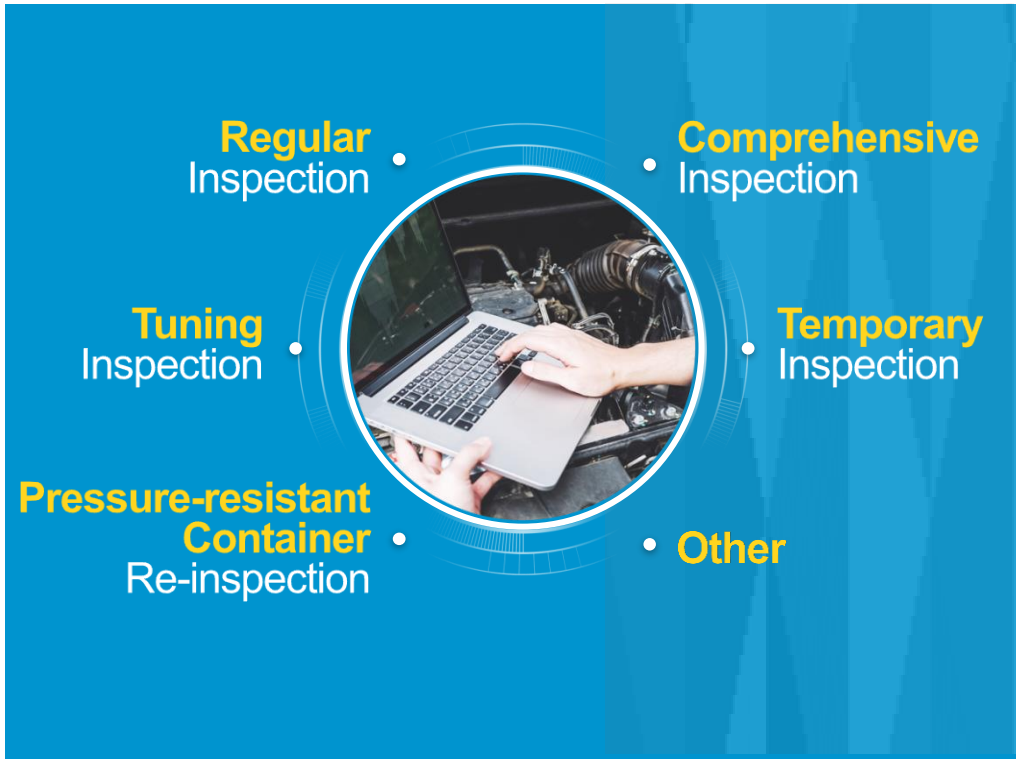
2) Self-certification

Safety standard conformity investigation, Test items

NO	Test items	NO	Test items
1	Occupant crash protection	28	Motorcycle Brake
2	Steering control rearward displacement	29	Trailer Brake system
3	Fuel leakage in collision	31	Anti-lock Brake system
4	Windshield Mounting	34	Tire Rupture
5	Windshield zone intrusion	35	Steering effort
6	Seating systems	36	Speed limiter
7	Head restraints	37	Speedometer
8	Door locks and door retention parts	37	Motorcycle Speedometer
9	Instrument panel impact	38	Flammability of interior materials
10	Seat back impact	39	Door locks and door retention
11	Armrest impact	40	Child seat anchorage
12	Sun visor impact	41	Electro-magnetic compatibility
13	Bumper impact	42	Horn noise
15	Steering impact	46	Pedestrian Protection
16	Side Structure Strength	47	High Voltage electric safety
17	Roof Strength	48	Electric Energy Storage System Safety
18	Seatbelt assembly anchor Strength	49	Glazing Materials
19	Towing devices	50	Stability Control System
20	Rear Under-run protection	51	Tire pressure monitoring system
21	Lighting and signaling system	52	Motorcycle Fuel system integrity
22	Driver's visibility	53	Motorcycle external protrusion
23	Engine Power	54	Motorcycle Handle Bar impact
24	Device for securing driver's visibility	55	Motorcycle Engine Power
25	Accelerator recovery performance	56	Pneumatic Tires
26	Noise Prevention Devices	58	Seat Belt Reminder
27	Fuel Efficiency	59	Commercial Vehicle Side impact guard
28	Passenger car Brake	*	Dimension Measurement

1) Vehicle Inspection Types and Organizations

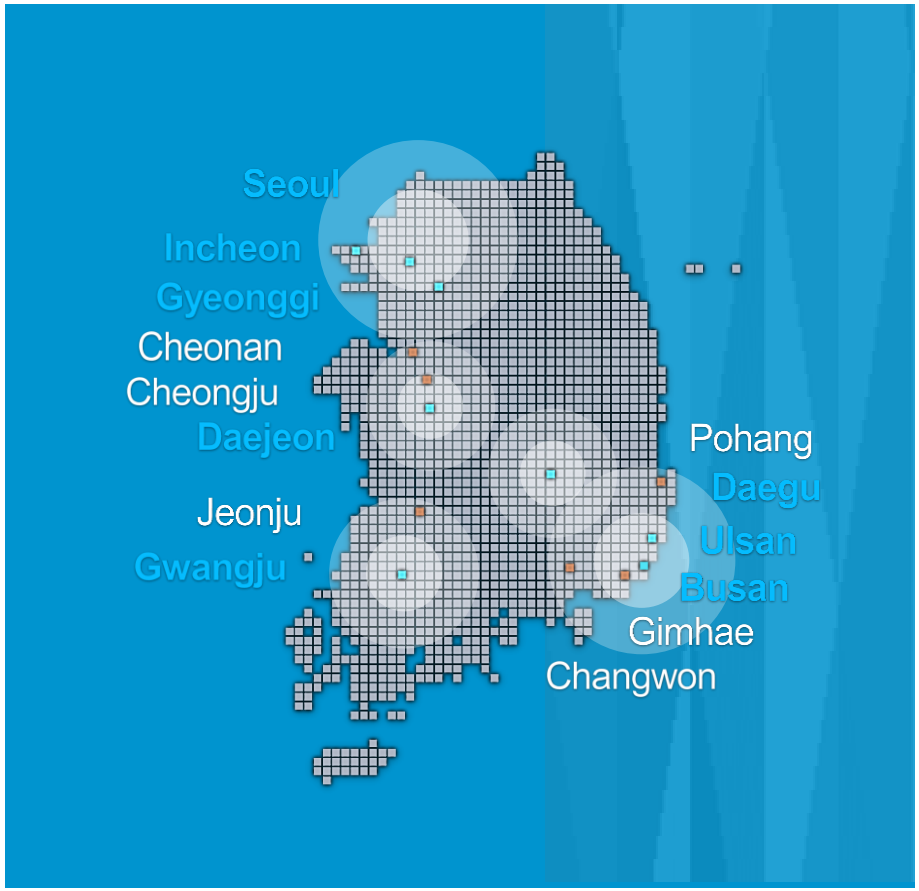
Inspection Types



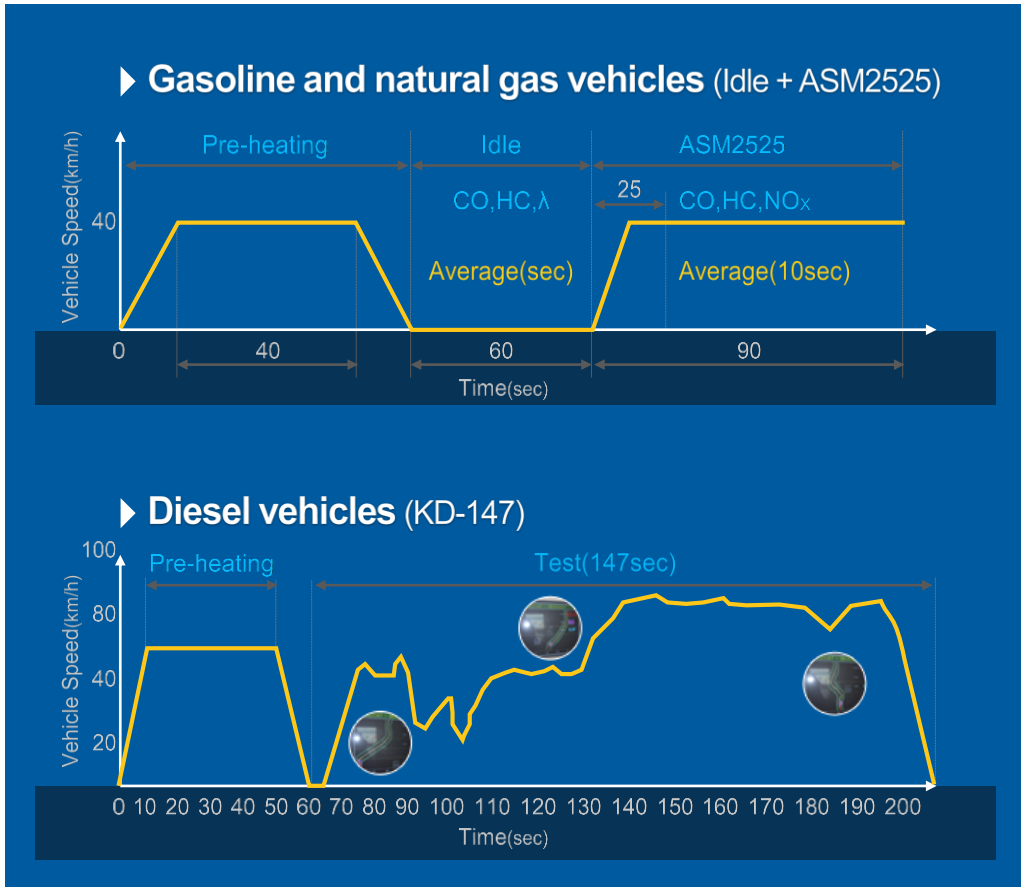
Inspection Organizations in Korea

- Inspection Types : Regular safety inspection, Comprehensive inspection, tuning inspection,,
- Inspection organization : 59 inspection stations, two types of mobile inspection facilities, and 40 field inspection sites.

Comprehensive Inspection Sites



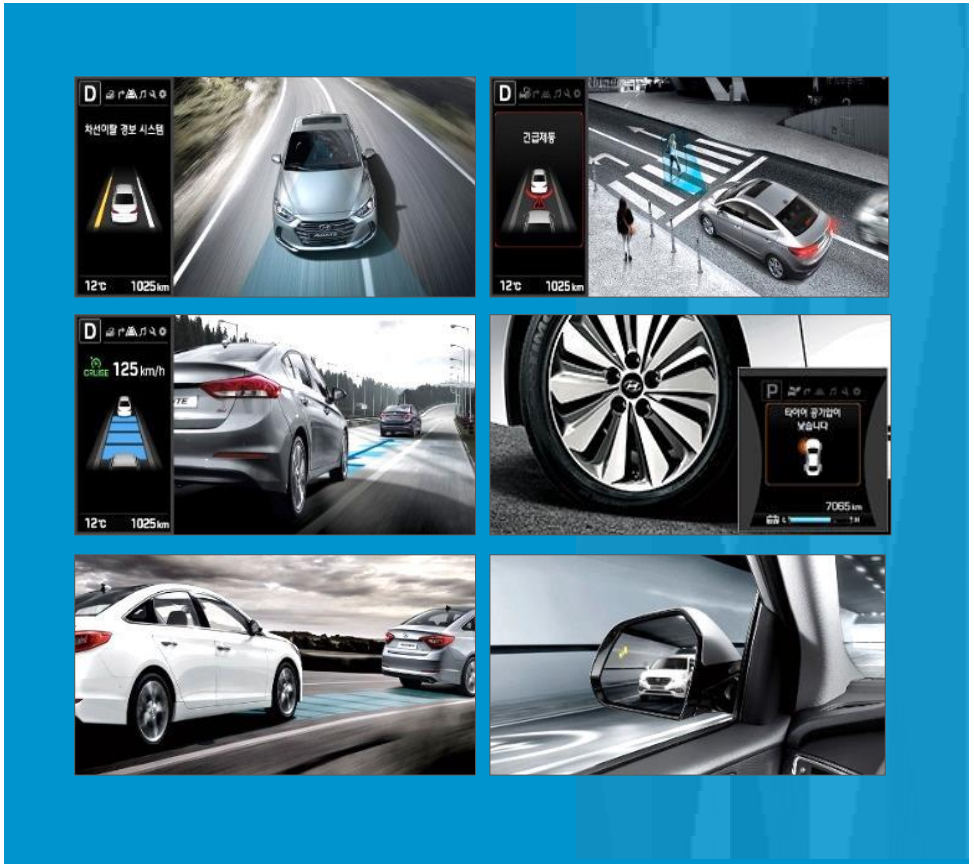
Comprehensive Inspection Modes



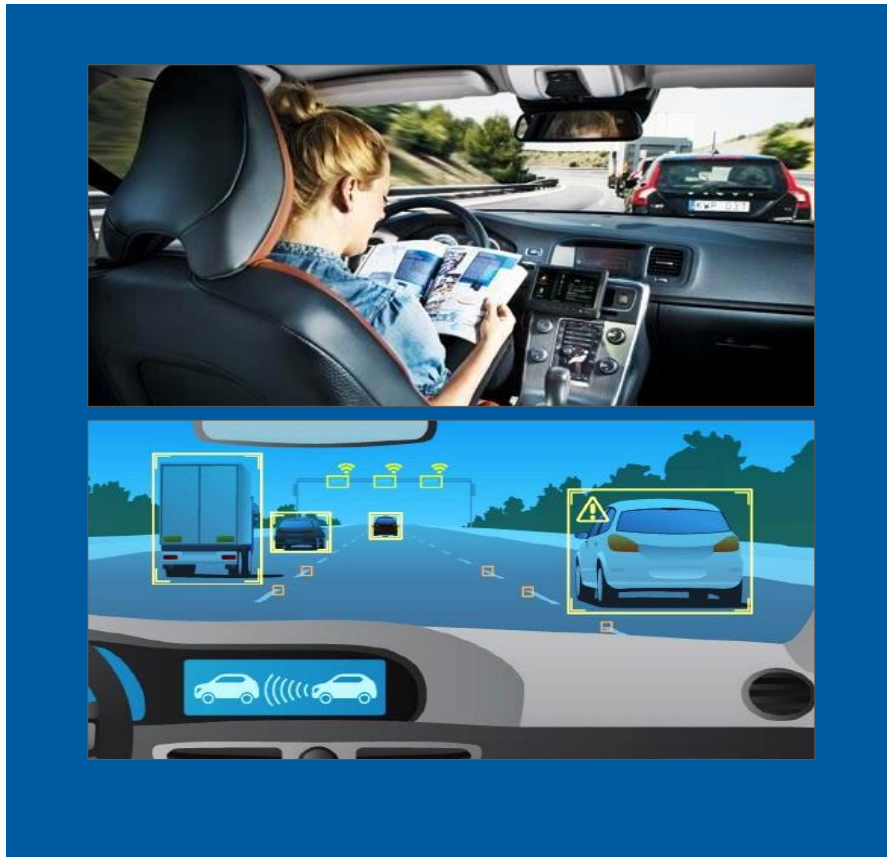
- Area of severe air pollution : the load test on the chassis dynamometer.
  - Gasoline and gas-powered vehicles test mode : Idle + ASM2525
  - Diesel vehicles test mode : KD-147

3) Autonomous Vehicle Inspection Development

State-of-the-art Assistance Devices for Safe Driving

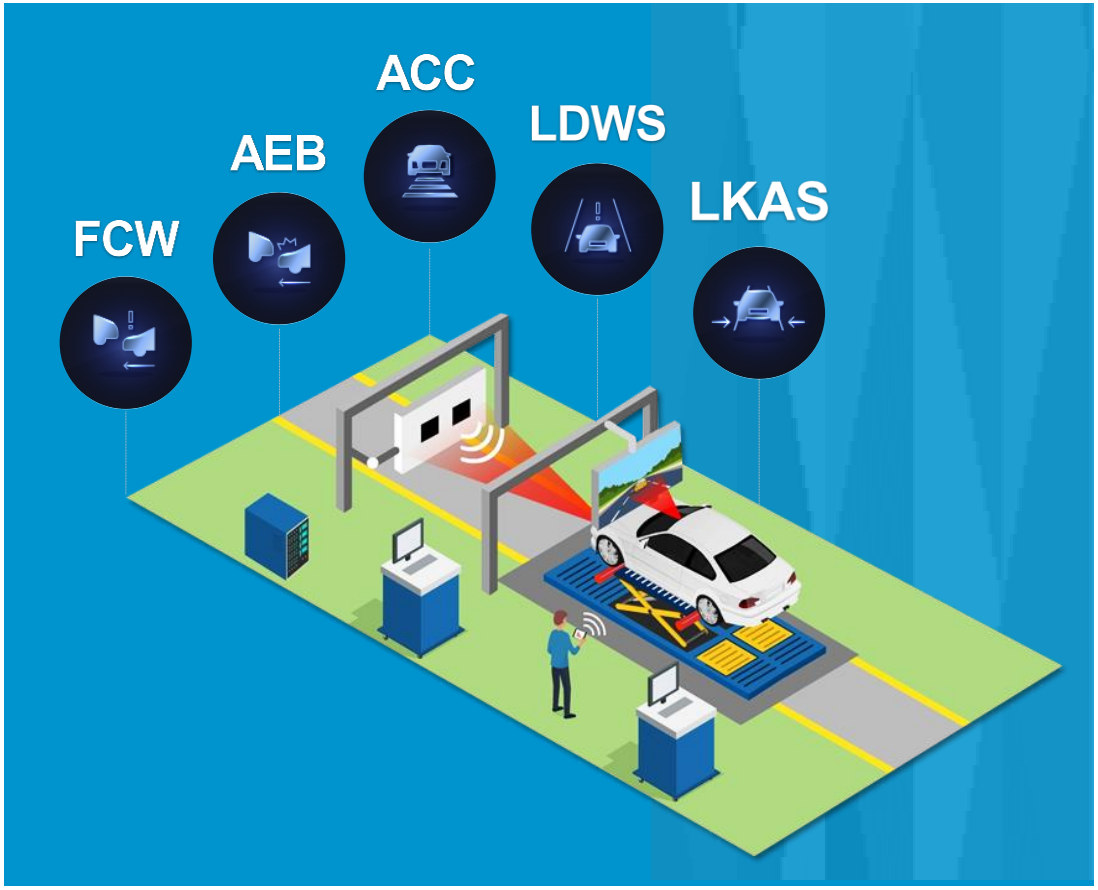


Autonomous Vehicles



- ➢ ADAS : Passenger car: NCAP Assessment Vehicle mounting rate of 85%
  - • ACC, LDWS, LKAS, FCWS, AEBS, BSD, ISA, ASLD, SBR, ESC, TPMS, RCTA, CMS, etc.
- ➢ Requirement for Commercial Vehicles: Annual application of new models
  - ▪ ESC, TPMS, LDWS, AEBS, SBR

Development Concept of Autonomous Vehicle Inspections



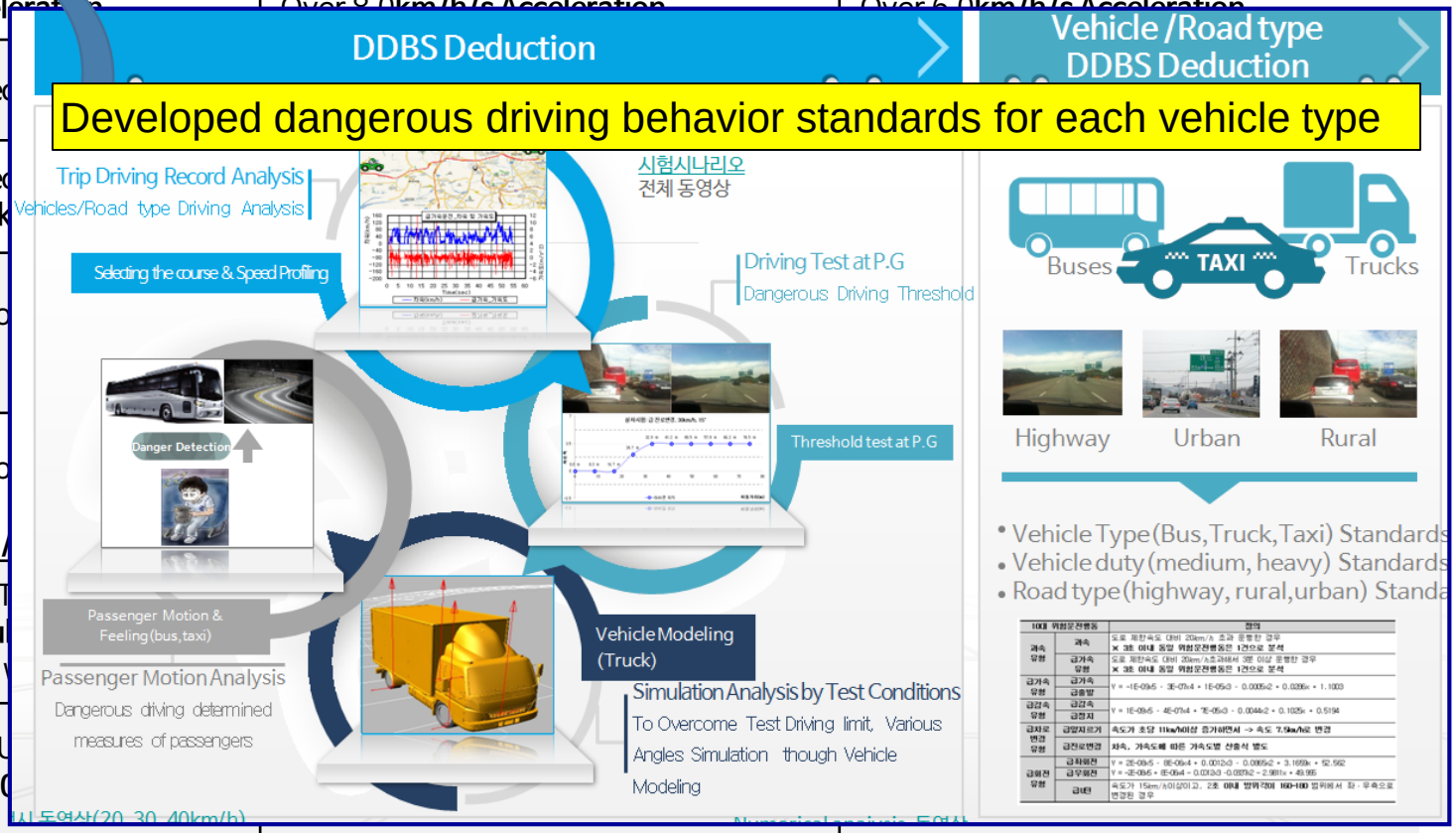
- Level 3 Safety standards : Notification(Dec ´19) → Enforcement (Jul ´20) in 2019
- Development of inspection technology that can be used for autonomous vehicle inspection.

1) Digital Tachograph Analysis System (eTAS)

- Require to mount Digital TachoGraph (DTG)
  - Law: Article 55 of Traffic Safety Act (Installation of Tachographs, Use of Tachographs Records, etc.)
  - C/V that duty mounting the DTG is 610,000
  - ❖ Prevention of traffic accidents through scientific analysis of aggressive driving habits such as speeding, rapid acceleration and braking

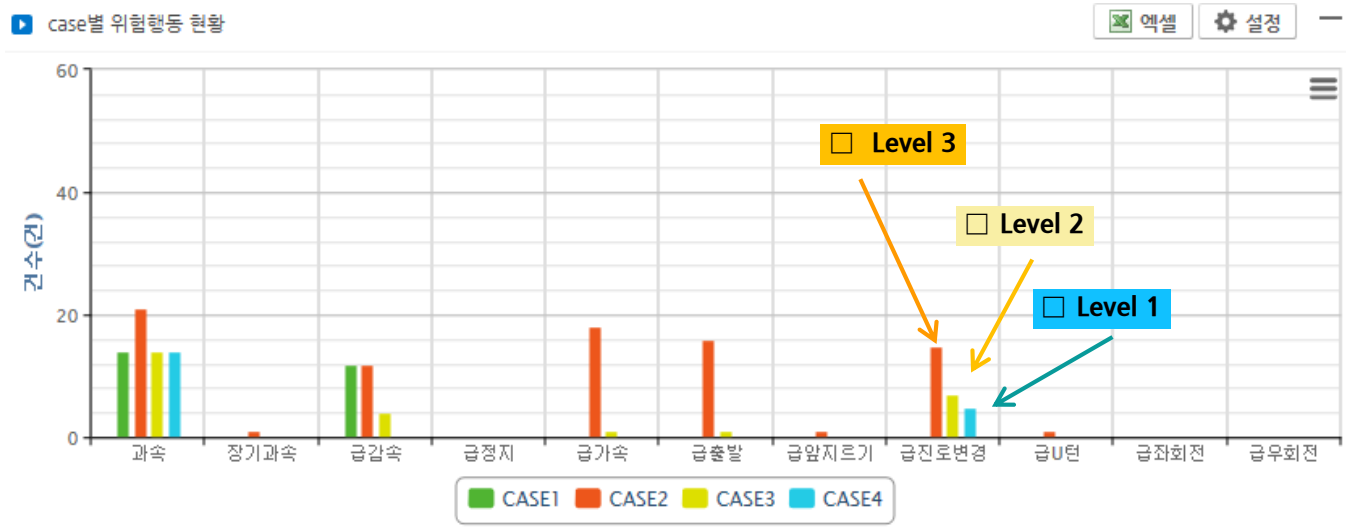
➢ Dangerous Driving Behavior Standards (DDBS)

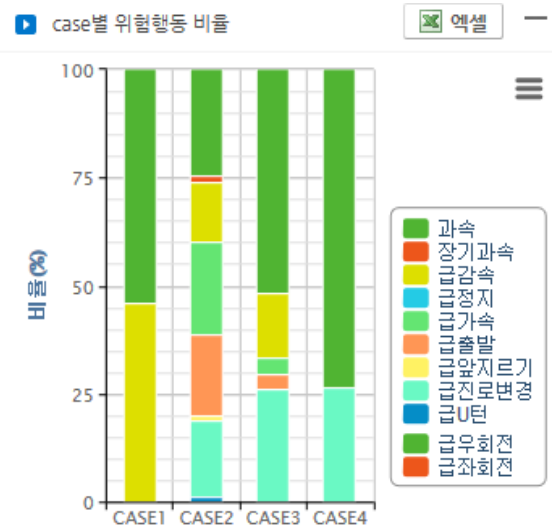
Dangerous Driving (Threshold Standards)		Level 1 Passenger car	Level 2 Seat Bus, Light-duty Truck	Level 3 Standing Bus, M/Heavy-duty Truck
Rapid Acceler-ation Type	Rapid Acc	**Over 10.0 km/h/sec** Acceleration	**Over 8.0 km/h/sec** Acceleration	**Over 6.0 km/h/sec** Acceleration
	Sudden Start	**Start at "Less than 5km/h"** Over 10.0km/h/s Acceleration	**Start at "Less than 5km/h"** Over 8.0km/h/s Acceleration	**Start at "Less than 5km/h"** Over 6.0km/h/s Acceleration
Rapid Deceler-aton Type	Sudden Dec	Over 14.0**km/h/sec** Dec		
	Sudden Stop	Over 14.0**km/h/sec** Dec and than "Less than 5k		
Rapid Lane Change Type (Turning Angle/s)	**Rapid Lane Change (Steady)**	At over 50**km/h,** Driving way is changing to 3° **/sec** **Acc/Dec less ± 3km/h/sec**		
	Rapid Overtaking (Acc/Dec)	At over 50**km/h,** Driving way is changing to 3° **/sec** **Acc/Dec over ± 10.0km/**		
Rapid Turning Type (Accumul ate Turning Angle)	Rapid Turning (60~120°)	Over **30km/h,** Sudden T Left/Right side **Accumul Angle**(60~120°rages)		
	Rapid U-Turing (160~180°)	Over **25km/h,** Sudden U left/right side (160~180 6sec		



➢ Case: Heavy duty truck (KATRI – Pohang)

☐ Base ☐ Level 3 ☐ Level 2 ☐ Level 1





확대보기[새창] CASE1 CASE2 CASE3 CASE4

시도	시군구	도로명	제한속도	위험행동
경북	포항시남구	일반국도 제7호	60	과속:0, 장기과속:0, 급감속:1, 급정지:0, 급가속:0, 급출발:0, 급앞지르기:0, 급진로변경:0, 급U턴:0, 급좌회전:0, 급우회전:0
경북	포항시남구	일반국도 제7호	80	과속:0, 장기과속:0, 급감속:1, 급정지:0, 급가속:3, 급출발:2, 급앞지르기:0, 급진로변경:2, 급U턴:1, 급좌회전:0, 급우회전:0
경기	화성시	국가지원 지방도제 84호	60	과속:0, 장기과속:0, 급감속:0, 급정지:0, 급가속:1, 급출발:1, 급앞지르기:0, 급진로변경:0, 급U턴:0, 급좌회전:0, 급우회전:0
경기	용인시기흥구		60	과속:0, 장기과속:0, 급감속:0, 급정지:0, 급가속:0, 급출발:0, 급앞지르기:0, 급진로변경:1, 급U턴:0, 급좌회전:0, 급우회전:0
경북	경산시	고속국도 제1호	100	과속:0, 장기과속:0, 급감속:1, 급정지:0, 급가속:0, 급출발:0, 급앞지르기:0, 급진로변경:1, 급U턴:0, 급좌회전:0, 급우회전:0
경북	포항시북구	일반국도 제31호	40	과속:0, 장기과속:0, 급감속:0, 급정지:0, 급가속:1, 급출발:1, 급앞지르기:0, 급진로변경:0, 급U턴:0, 급좌회전:0, 급우회전:0
경북	포항시북구		40	과속:1, 장기과속:0, 급감속:0, 급정지:0, 급가속:0, 급출발:0, 급앞지르기:0, 급진로변경:0, 급U턴:0, 급좌회전:0, 급우회전:0
경북	경주시		80	과속:10, 장기과속:0, 급감속:1, 급정지:0, 급가속:0, 급출발:0, 급앞지르기:0, 급진로변경:0, 급U턴:0, 급좌회전:0, 급우회전:0
경기	화성시		30	과속:1, 장기과속:0, 급감속:0, 급정지:0, 급가속:0, 급출발:0, 급앞지르기:0, 급진로변경:0, 급U턴:0, 급좌회전:0, 급우회전:0

➢ Cases : buses (Progress steps)

Vehicle driving data collection and safe driving guidance device

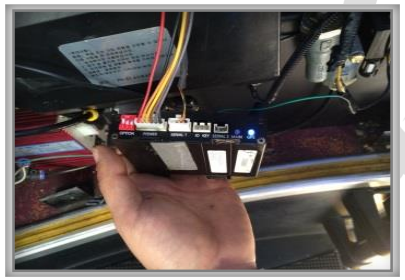
Data logger installation:

Educate driver:

- Violation Indication: sudden acc, dec, turn, over speed
- F/E information: fuel amount, efficiency, cost, etc.
- Evaluation for drivers' pattern, routes, other analysis results

Progress step

1st step (2 months)



Install the Data Logger for logging trips

2nd step (2 months)

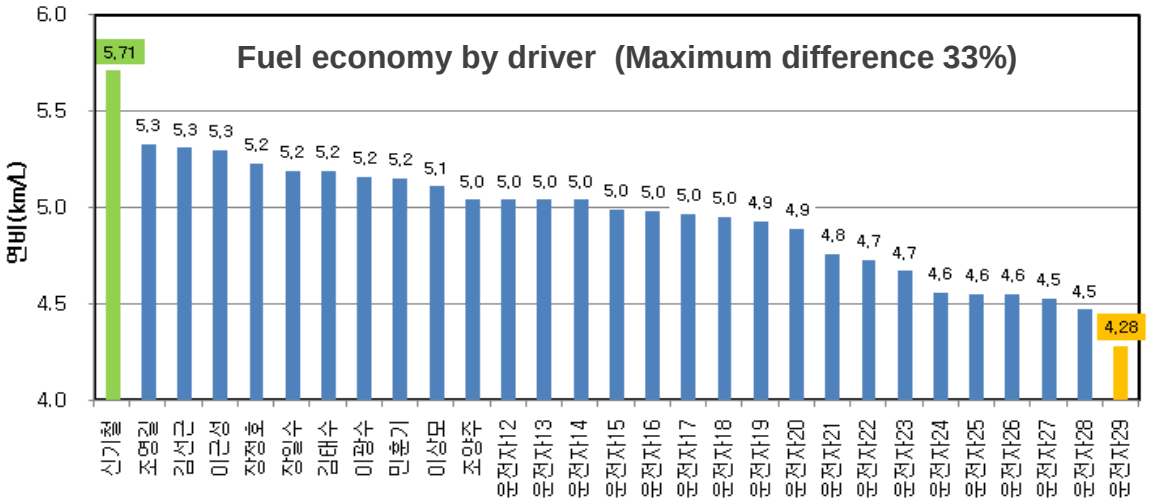
Guider setup and educate it to drivers

3rd step (3 months)

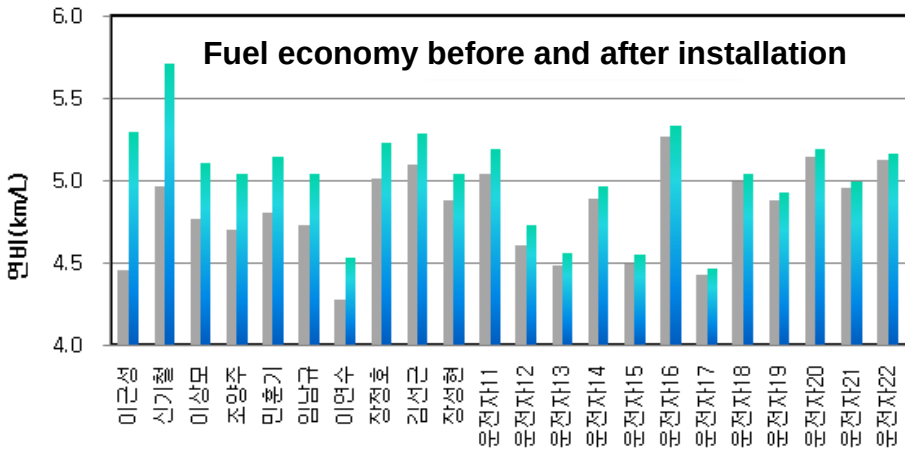
Evaluate the violations guider setup or not, Index, F/E

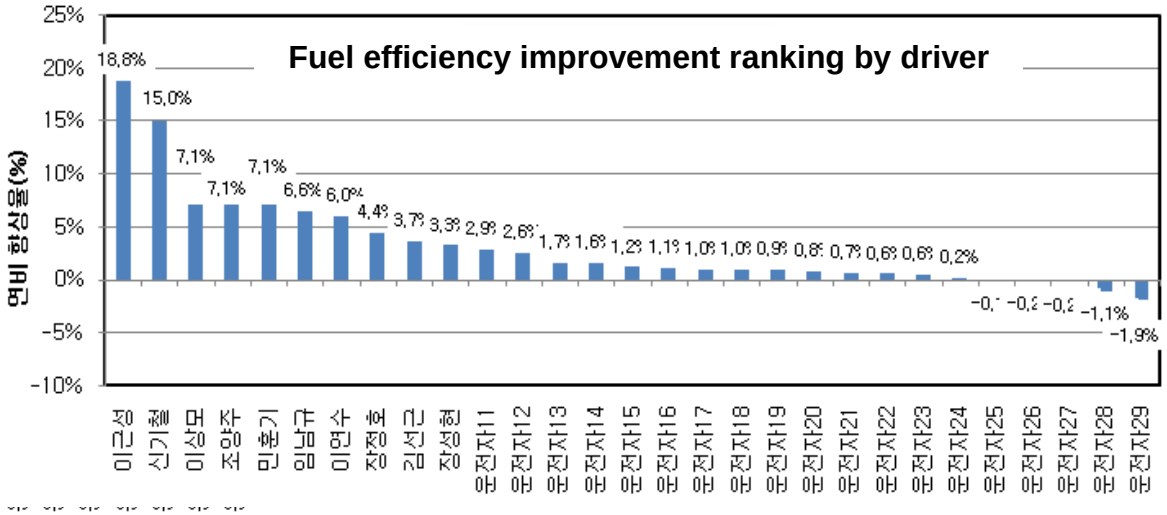
➢ Driver monitoring result (Personal evaluation)

F/E Improvement Rate & Violations of Each Drivers



- Up to 30% fuel economy difference for each driver on the same route
- By safe driving, the driver has improved fuel economy by more than 18%.

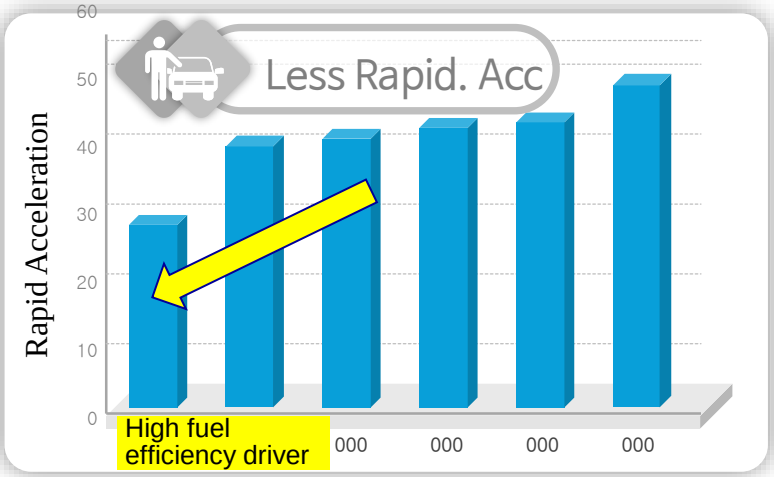


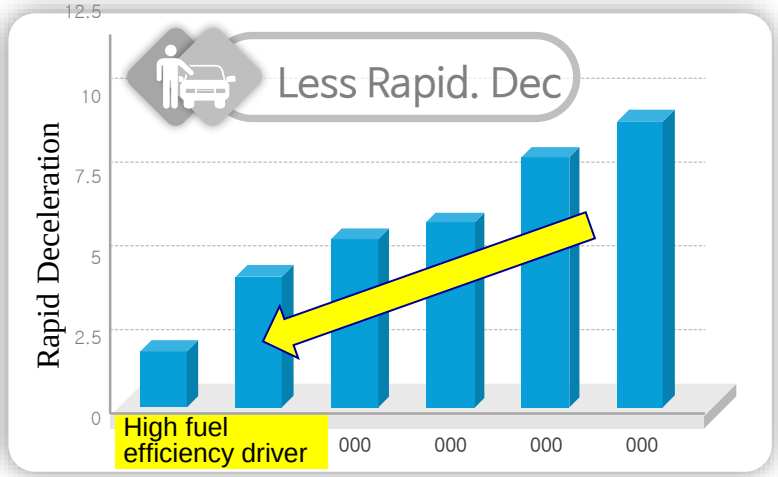


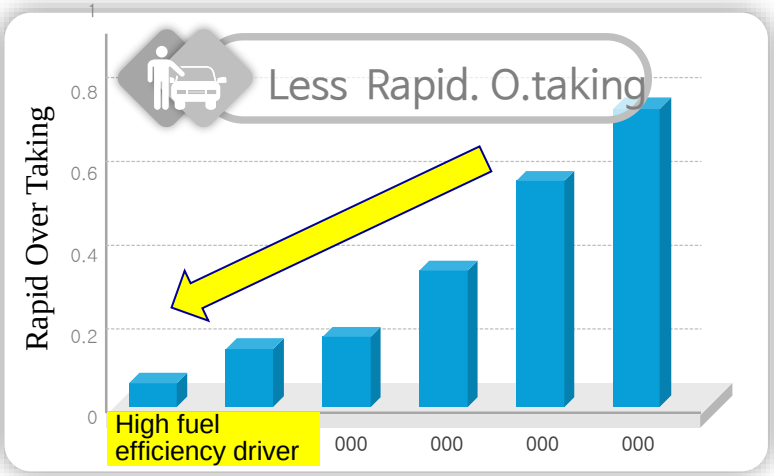
➢ Applying to transportations (Personal evaluation)

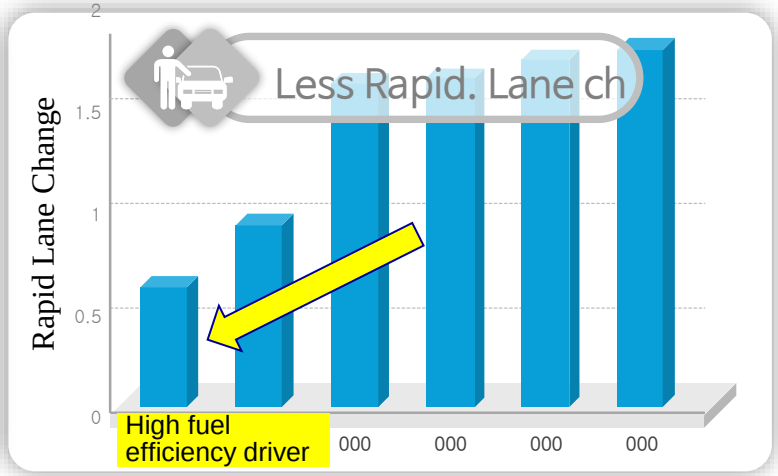
Fuel efficiency and number of dangerous driving by driver
High fuel efficiency drivers have low risk driving behavior

Improve Rank	Drivers	Improve Rates (June)
1	이근성	18.83%
2	신기철	15.01%
3	이상모	7.13%
4	조양주	7.12%
5	민훈기	7.07%
6	임남규	6.55%
7	이연수	5.96%
8	장정호	4.39%
9	김선근	3.73%
10	장성현	3.28%







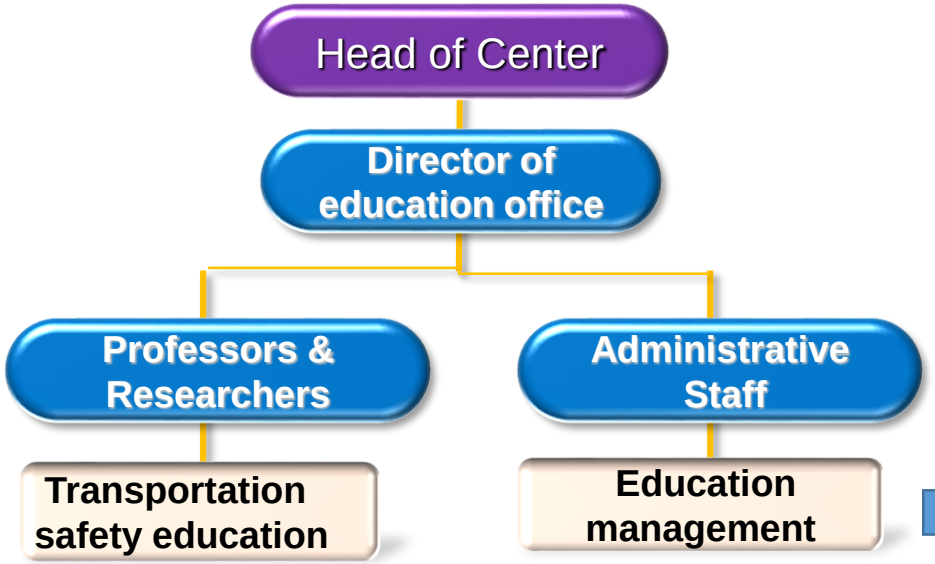


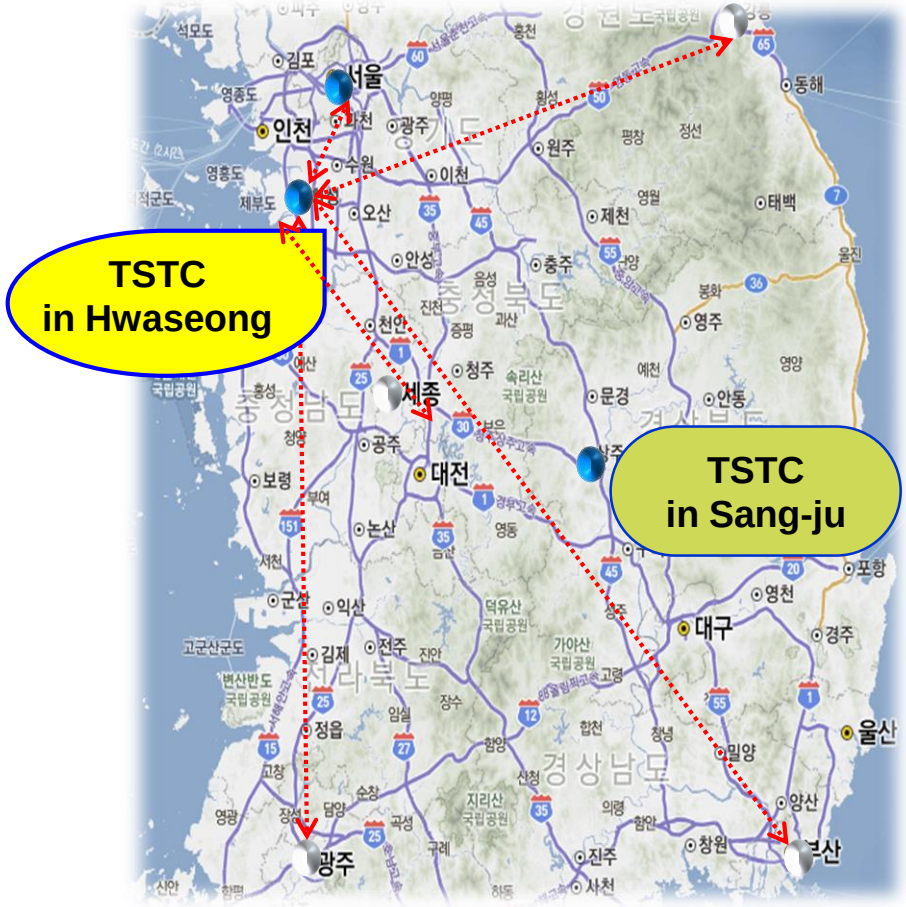
2) Transportation Safe driving Training Center (TSTC)

➢ Purpose & basis

- **Increase traffic safety and driving skills of drivers based on education in practice**
- **Reduce traffic accidents caused by commercial vehicles**
- **Transportation Safety Law Article 56**

➢ Purpose & basis (TSTC in Hwaseong)



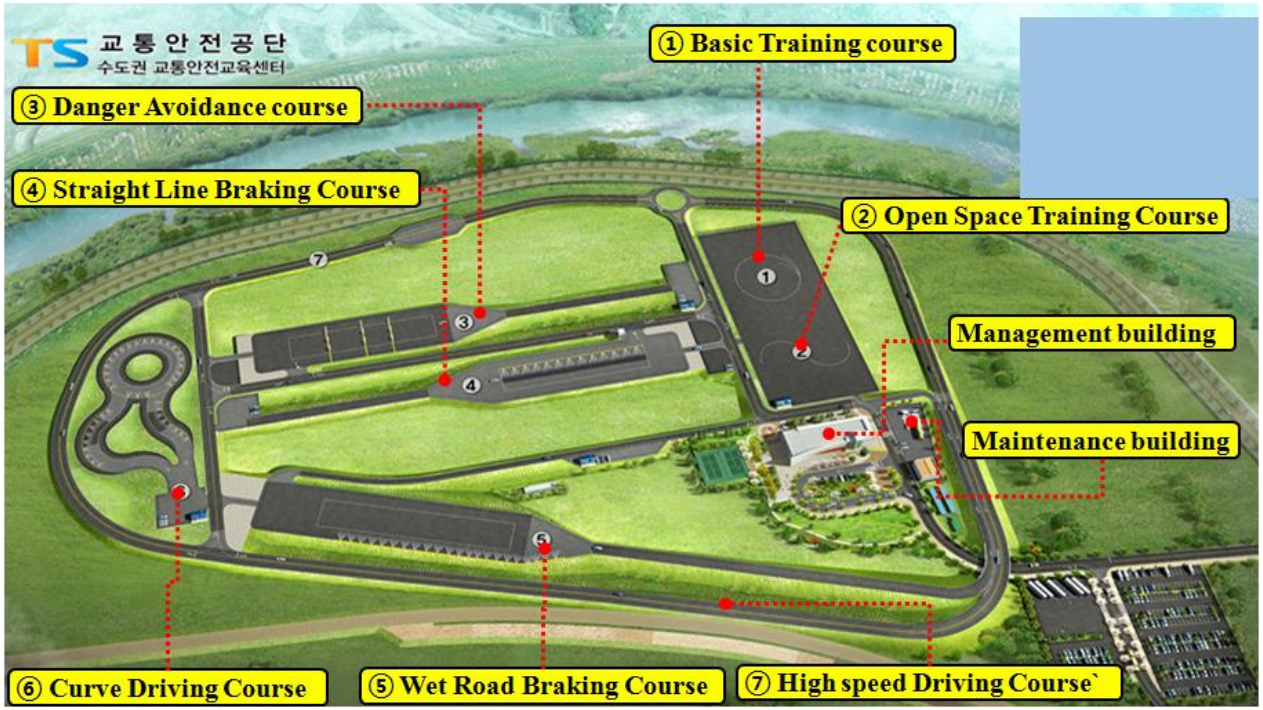


- 12 professors train drivers, and the maximum number of trainees are 90 to 100. (4 classes per a day)

➢ Training Facility (7 outdoor courses)

③ Danger Avoidance Course
Limits of driving during emergency or unexpected situation, and ways to avoid danger

④ Straight Line Braking Course
- Features and limits of vehicle due to sudden braking
- Danger of driving on a straight course and the importance of steering safety



① Basic and Open Space Training Course
Basic training for safe driving and knowledge about vehicle

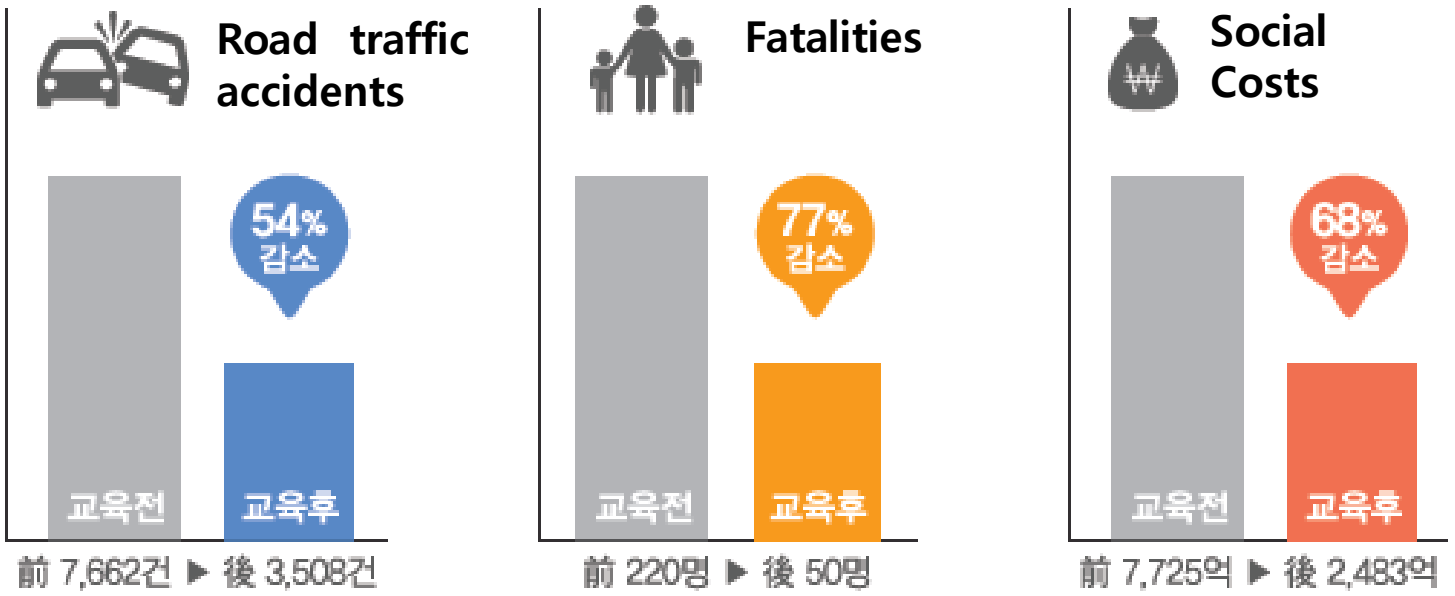
⑥ Curve Driving Course
Experience the limit of cars due to sudden brake, danger of driving on curved road and steering safety

⑤ Wet Road Braking Course
Experience hydroplaning, steering and braking on a wet road at low and high speed

⑦ High Speed Driving Course
· Experience drivers' visibility and sense of speed while driving at high speed

➢ The effectiveness of training

- According to the traffic accidents data of 50,181 trainees who trained from 2009 to 2014, the education has been highly effective.



구분	Road traffic accidents		Fatalities		Social Costs	
50,181 trainees	▲ 54%		▲77%		▲ 68%	
	7,662	3,508	220	50	77,253,218	24,830,880

Layout

Proving Ground

Advanced tracks

Total cost
$1.242bn

Total length
28.5km

1. High Speed Circuit
2. Straight Road/Noise Test track
3. EMC Test Site
4. Road Safety Features Test Ground
5. Steering Pad
6. Universal Road
7. Low Friction Track
8. Skid Pad
9. Hill Test Track
10. Wide Low Friction Track
11. Handling & Stability Track
12. Durability Track
13. K-city
14. Off-road Test Track

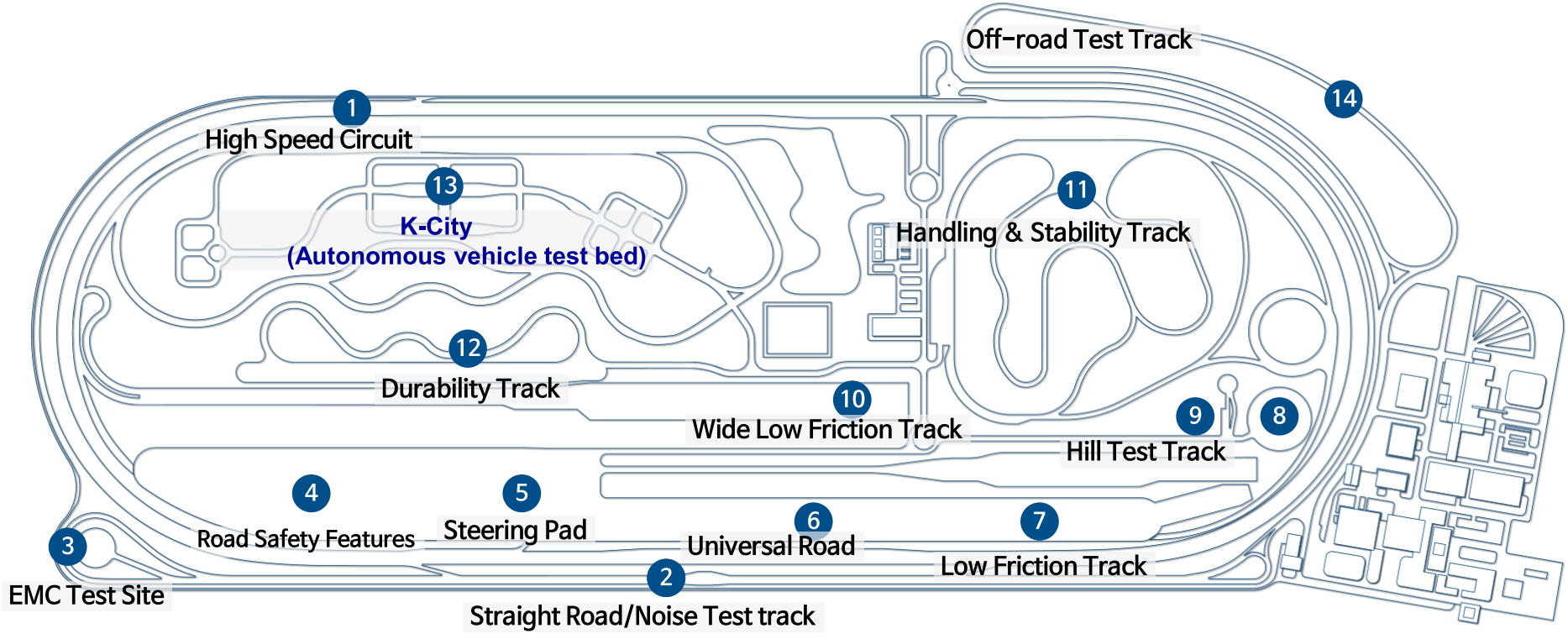
Test Facility

10 of Laboratories

1. Crash Test Facility
2. Impact Test Facility
3. Advanced Vehicle Test Facility
4. Environmental Test Facility
5. Noise & EMC Test Facility
6. General Test Facility
7. Driving and Braking Test Facility
8. Tire Assessment Test Facility
9. Construction Equipment Safety Defect Test Facility
10. Construction Equipment Inspect Facility

04 Facility : KATRI

Proving Ground



1 High Speed Circuit

2 Straight Road/Noise Test track

3 EMC Test Site

4 Road Safety Features Test Ground

5 Steering Pad

6 Universal Road

7 Low Friction Track

8 Skid Pad

9 Hill Test Track

10 Wide Low Friction Track

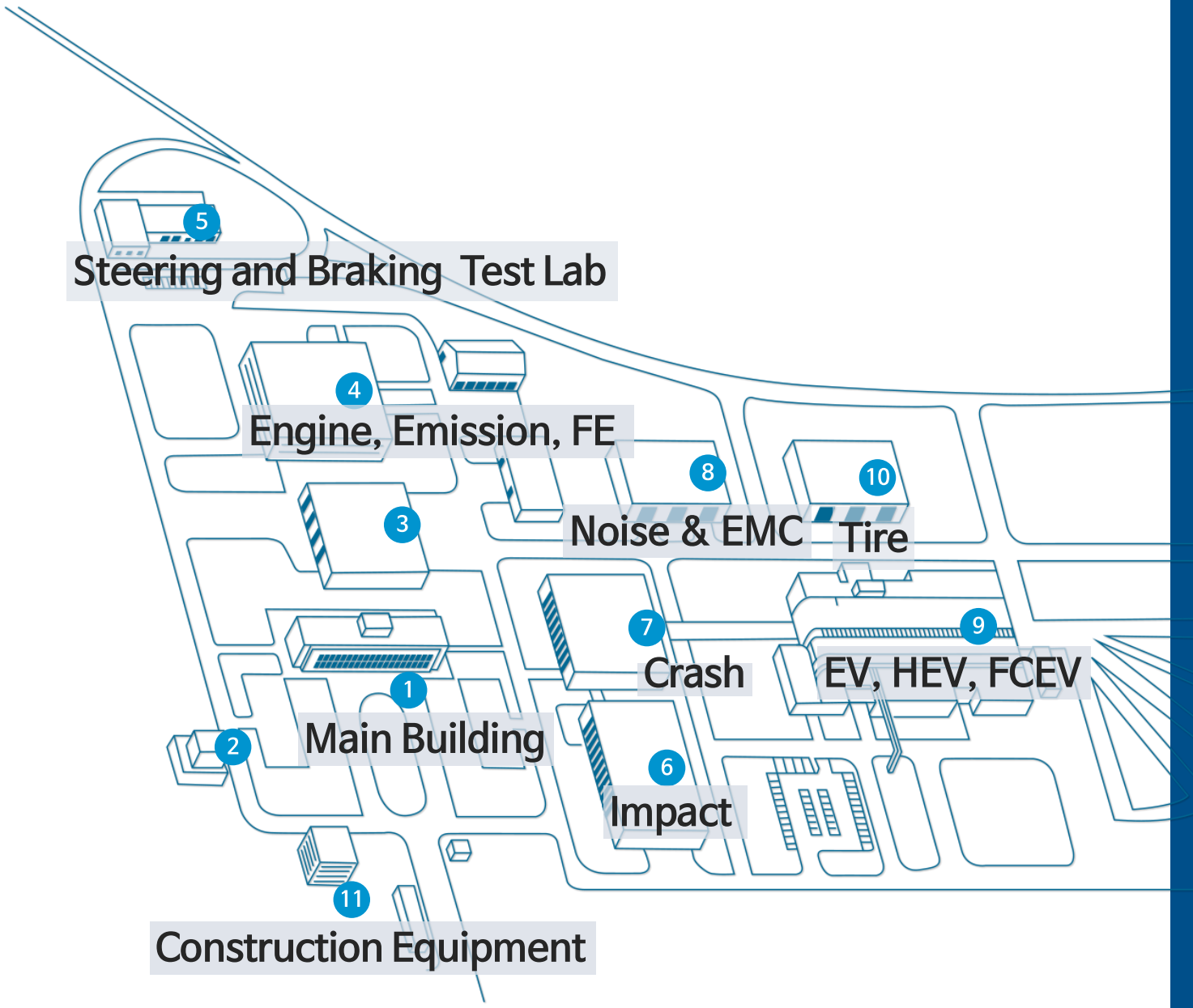
11 Handling & Stability Track

12 Durability Track

13 K-city

14 Off-road Test Track

Laboratories



1 Main Building

2 Construction Equipment Inspect Facility

3 General Test Facility

4 Environmental Test Facility

5 Driving and Braking Test Facility

6 Impact Test Facility

7 Crash Test Facility

8 Noise·EMC Test Facility

9 Advanced Vehicle Test Facility

10 Tire Assessment Test Facility

11 Construction Equipment Safety Defect Test Facility

Korea Vehicle Safety Standard

- **Based on Article 29 of Automobile Management Act**
- **Consist of 170 Articles in 5 Chapters**

CHAPTER Ⅰ. GENERAL PROVISION (ARTICLE 1~3)
- ARTICLE 1. Purpose
- ARTICLE 2. Definition
- ARTICLE 3. Structure and Ensuring Safety of device

CHAPTER Ⅱ. SAFETY STANDARDS FOR MOTOR VEHICLE AND TWO•WHEELED MOTOR VEHICLE

SECTION 1. SAFETY STANDARDS FOR MOTOR VEHICLE (ARTICLE 4~58)
- ARTICLE 4. Length・Width ・height
- ARTICLE 12. Driving system
- ARTICLE 14. Steering system
- ARTICLE 15. Braking system
- ARTICLE 15-3. Advanced emergency braking system

SECTION 2. SAFETY STANDARDS FOR TWO•WHEELED MOTOR VEHICLE (ARTICLE 59~85)
- ARTICLE 59. Length・Width ・height
- ARTICLE 64. Driving system
- ARTICLE 66. Steering system
- ARTICLE 67. Braking system
- ARTICLE 75. Head light

CHAPTER Ⅲ. SAFETY STANDARDS OF MANUFACTURED MOTOR VEHICLE (ARTICLE 85-2 ~ 111)
- ARTICLE 85-2. Scope of application
- **ARTICLE 89. Steering system (Lv2 Amended) → Attached table 6-2**
- ARTICLE 90. Braking system → Attached table 7
- ARTICLE 90-3. Advanced emergency braking system → Attached table 7-8
- ARTICLE 102. Passenger protection in collision → Attached table 14

CHAPTER Ⅲ•2. SAFETY STANDARDS OF COMPONENTS (ARTICLE 111-2~112-6)
- ARTICLE 112-2. Brake hose → Attached table 30-4
- ARTICLE 112-3. Seat safety belt system → Attached table 16
- ARTICLE 112-4. Lamp system → Attached table 6-3
- ARTICLE 112-5. Rear reflection system → Attached table 6-7
- ARTICLE 112-6. Rear safety panel system → Attached table 13
- **ARTICLE 113. Autonomous driving system(Newly inserted_Lv3)**
  → Attached table 52
  (Performance standards of Partial Autonomous driving system)

CHAPTER Ⅳ. SUPPLEMENTARY PROVISION (ARTICLE 113~116)
- ARTICLE 113. Limitation of passenger capacity
- ARTICLE 114. Special cases of standards application
- ARTICLE 114-2. Special cases of standards for devices
- ARTICLE 115. Allowance range of specification
- ARTICLE 116. Notification of test methods

ADDENDA
- Enforcement date
- Interim measure

ATTACHED TABLE
- Attached table 1 ....
- .....
- Attached table 47

- Vehicle must be satisfied the safety standards
- KATRI conducts a safety standard conformity investigation

Safety standard conformity investigation, 59 Test items

NO	Test items	NO	Test items
1	Occupant crash protection	28	Motorcycle Brake
2	Steering control rearward displacement	29	Trailer Brake system
3	Fuel leakage in collision	31	Anti-lock Brake system
4	Windshield Mounting	34	Tire Rupture
5	Windshield zone intrusion	35	Steering effort
6	Seating systems	36	Speed limiter
7	Head restraints	37	Speedometer
8	Door locks and door retention parts	37	Motorcycle Speedometer
9	Instrument panel impact	38	Flammability of interior materials
10	Seat back impact	39	Door locks and door retention
11	Armrest impact	40	Child seat anchorage
12	Sun visor impact	41	Electro-magnetic compatibility
13	Bumper impact	42	Horn noise
15	Steering impact	46	Pedestrian Protection
16	Side Structure Strength	47	High Voltage electric safety
17	Roof Strength	48	Electric Energy Storage System Safety
18	Seatbelt assembly anchor strength	49	Glazing Materials
19	Towing devices	50	Stability Control System
20	Rear Under-run protection	51	Tire pressure monitoring system
21	Lighting and signaling system	52	Motorcycle Fuel system integrity
22	Driver's visibility	53	Motorcycle external protrusion
23	Engine Power	54	Motorcycle Handle Bar impact
24	Device for securing driver's visibility	55	Motorcycle Engine Power
25	Accelerator recovery performance	56	Pneumatic Tires
26	Noise Prevention Devices	58	Seat Belt Reminder
27	Fuel Efficiency	59	Commercial Vehicle Side impact guard
28	Passenger car Brake	*	Dimension Measurement

Test Facility

- The KATRI test facility are used to conduct safety standard compliance test.

Technical Tour & Training Programs in KATRI

시 간	Items (WP29)	Morning(09:00 ~ 12:00) Theoretical education		Afternoon(13:00 ~ 18:00) Test bed education		
		Regulation (UNECE, kMVSS,..)	**Technology**	**Test Procedure**	**Test facility**	
Day 1 (Mon)	Energy & Pollution (GRPE)	Engine power : R85 Emission : R49 Fuel consumption : R83	Internal combustion, EV, Hybrid, Hydrogen	Engine Power Test Emission Test Battery Test	Engine dynamometer Chassis dynamometer Fuel consumption...	
Day 2 (Thu)	Lighting, General safety (GRE, GRSG)	Head light, Lamp,…. Reflection, ….	CMS, Light-Signaling Device(LSD) e-Call, Child Restraint system			
Day 3 (Wend)	Collision Safety (GRSP)	Passive safety…. Safety in collision… Structural Safety,….	NCAP			
Day 4 (Thu)	Autonomous (GRVA)	Active safety…. Steering, Braking …. LKAS, AEBS….	Active safety Autonomous			
Day 5 (Fri)	Noise & Tire (GRBP)					

- **Transportation Safe driving Training Center (TSTC) tour**

Thank you very much