Advancing the Next Generation of Occupant Protection

Brian Latouf
Chief Safety Officer
Hyundai Motor North America
VEHICLE FATALITIES

Passive Safety Reaching Its Limits

Automotive industry successful in constantly reducing vehicle fatalities, but passive safety benefits reaching its limit; active safety a critical next step in reducing vehicle fatalities.

Fact: An extra 1/2 second of warning can mitigate 60% of front to rear crashes.
US and EU regulators pushing NCAP at rapid pace

US NCAP
- 1979: NCAP established for frontal impact testing program
- 1994: Five-star rating system established
- 1997: Added testing and rating for side impact protection
- 2001: Added rating for rollover resistance based on static measurement
- 2004: Added dynamic testing to rating for rollover resistance
- 2007: Manufacturers must place NCAP star ratings on the Monroney label
- 2011: Added side pole testing, different sized dummies, collecting more crash data, Overall Vehicle Score

EU NCAP
- 1980
- 1990
- 2000
- 2005
- 2010
- 2011
- 2013
- 2014
- 2015
- 2016
- 2020

1. Automated Emergency Braking at low speeds.
2. Child restraint systems.
3. Child dummies with advanced biomechanical and anthropometric characteristics.
4. Pedestrian Legform Impactor.
5. Pedestrian test to assess impact on upper leg and pelvis at 40km/h.
6. Vulnerable Road User or pedestrians with disabilities or reduced mobility and orientation.
7. SAS = Speed Assistance Systems (i.e. Intelligent Speed Assist), SBR = Seat Belt Reminder.
8. Automated Emergency Braking at high speeds.

Source: Expert Interviews, Euro NCAP website, public search
HYUNDAI/GENESIS SAFETY ACCOLADES

- Hyundai is among leaders in the industry with 10 TSP/TSP+ accolades and growing as new products are currently under evaluation with IIHS

2021 GENESIS GV80 EARNs TOP SAFETY PICK+ AWARD (March, 2021)

1. Hyundai Palisade – TSP+
2. Hyundai Nexo – TSP+
3. Hyundai Veloster with optional front crash prevention and specific headlights – TSP
4. Hyundai Sonata with specific headlights – TSP
5. Hyundai Kona with optional front crash prevention and specific headlights – TSP
6. Hyundai Tucson with optional front crash prevention and specific headlights – TSP
7. Hyundai Venue with specific headlights – TSP
8. Genesis GV80 - TSP+
9. Genesis G70 – TSP+
10. Genesis G90 – TSP+
ADVANCED SAFETY TECHNOLOGIES

Hyundai SmartSense:
- Forward Collision-Avoidance Assist w/ Pedestrian & Bicyclist Detection
- Blind-Spot Collision-Avoidance Assist
- Rear Cross-Traffic Collision-Avoidance Assist
- Lane Keeping Assist & Lane Following Assist
- Safe Exit Warning & Rear Occupant Alert

- Driver Attention Warning
- Highway Driving Assist
- Smart Cruise Control with Stop & Go
- Parking Distance Warning – Forward & Reverse
- Parking Collision-Avoidance Assist - Reverse
- Blind View Monitor and Surround View Monitor

Refer to vehicle Owner's Manual for full descriptions.
Way-Forward Technologies

Beyond...
ADAS & Automated Vehicles

Consumer Information

Is there an opportunity to use learnings from current AV technologies to prevent future crashes and fatalities; automated intervention?
Imagine a driver that becomes disengaged during a driving task – how can a vehicle help? Or a driver under the influence of drugs or alcohol?

Eyes on the road.

Consider taking a break
Automated Driver Systems... Keeping the driver safe

**GENESIS ACTIVE SAFETY CONTROL**

**Driver Attention Warning (DAW)**
To prevent traffic accidents, DAW detects careless driving patterns caused by driver's fatigue/inattentive driving and calls the driver's attention with cluster indication, alarm sound and vibration.

- **Sensing / Analyzing**
- **Pop-up warning / Audible alert**
  - Analysis of driver's state with chassis sensors (lane departure and lane crossing)
  - Induce drivers to rest
  - Leading vehicle departure notification

**Forward Attention Warning (FAW)**
If it is determined that the driver is not looking ahead, the cluster will display a warning and sound an alert.

- **Sensing / Analyzing**
- **Pop-up warning / Audible alert**
  - Monitoring of driver's eye direction with interior view camera
  - Display warning messages on the cluster and output an alert sound

Available with 3D Cluster Display
Hyundai Digital Key and BlueLink

**Hyundai Digital Key**

- Customers will be able to use their Android smartphone or a Near Field Communication (NFC) card to unlock and operate the vehicle
- Digital Key is tied to User Cloud Profiles to sync vehicle settings to the vehicles’ individual drivers
- Digital keys can easily and securely be shared to other drivers to give access to their vehicle

**Hyundai BlueLink Enhancements**

**Remote Vehicle Status**
- Fuel Level
- Battery Health
- Window / Sunroof Open
- Vehicle Health check
- Unlocked Door / Open Window reminder
- Remote Trunk unlock / open

**Remote Start**
- Remote Heated & Ventilated Seats
- Automatic profile selection & loading
- Integrated Memory System activation w/ profiles

**Remote Driver Profile Management**
- User settings are saved to Blue Link cloud and can be remotely updated and pushed to the vehicle
  - Navigation Setting (locations, searches)
  - Multimedia Settings (radio / presets)
  - USM Setting (cluster menu settings)
  - Profile name/picture

→ Future ability to carry over settings from one vehicle to your next new Hyundai model
VALUE OF SENSING TECHNOLOGIES

Lifesaving technology - Rear Occupant Alert & Safe Exit Assist

Rear Occupant Alert

The system monitors the rear seats using a sensor that detects the movements of children and makes visual and auditory warnings to reduce child heat hazards.

01 It reminds drivers to check the rear seat with a message on the center cluster when deactivating and exiting the vehicle.

02 Ultrasonic sensor detects movement in the rear seats after the vehicle is parked and locked.

03 If the sensor detects the movement, it will honk the horn, flash the lights. It also sends a text message to driver’s smartphone using Blue Link telematics.

Refer to vehicle Owner's Manual for full descriptions.
Please buckle-up!
Seat belts save lives every day. Always wear seat belts and use appropriate restraints for all child passengers.