KYB

The Future of Suspension

SEPTEMBER 2026

automechanika
FRANKFURT

The Vehicle is Changing…
So is Suspension.

Electrification

EVs are 10 - 20% heavier, with battery packs adding 300 – 700kg of mass. Increased weight challenges vehicle dynamics, driving OEM adoption of semi-active and active suspension.

Comfort

Ride comfort is now a key differentiator, with quieter electric vehicles making noise and vibration more noticeable.

Control

ADAS and vehicle dynamic systems are requiring greater precision and consistency from suspension components.

Intelligence

Software-defined vehicles are driving the shift from passive to adaptive suspension.

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KYB
Behind the Technology
CONCEPT • DEVELOPMENT • VALIDATION • PRODUCTION

CONCEPT

The Future
Starts with an Idea...

Across our global network of technical and research centres, KYB investigates future vehicle requirements and emerging mobility trends, helping shape the next generation of suspension technologies.


Technical Centre
ZHENJIANG, CHINA
Technical &
Research Centre
TOKYO, GIFU, JAPAN
Technical Centre
INDIANA, USA
Technical &
Research Centre
SPAIN & GERMANY
Technical Centre
BANGKOK, THAILAND

DEVELOPMENT

Turning Ideas into **Solutions**

Combining simulation tools, engineering expertise and prototype development allows KYB to transform research findings into production ready technologies.

Turning Ideas into **Solutions**

3 fully equipped mobile labs in Europe.

6 Teams: each team has 1 Tuning Engineer + 1 Technician

2 Fixed Labs: 1 in Munich and 1 in Pamplona, Spain

Overseas:

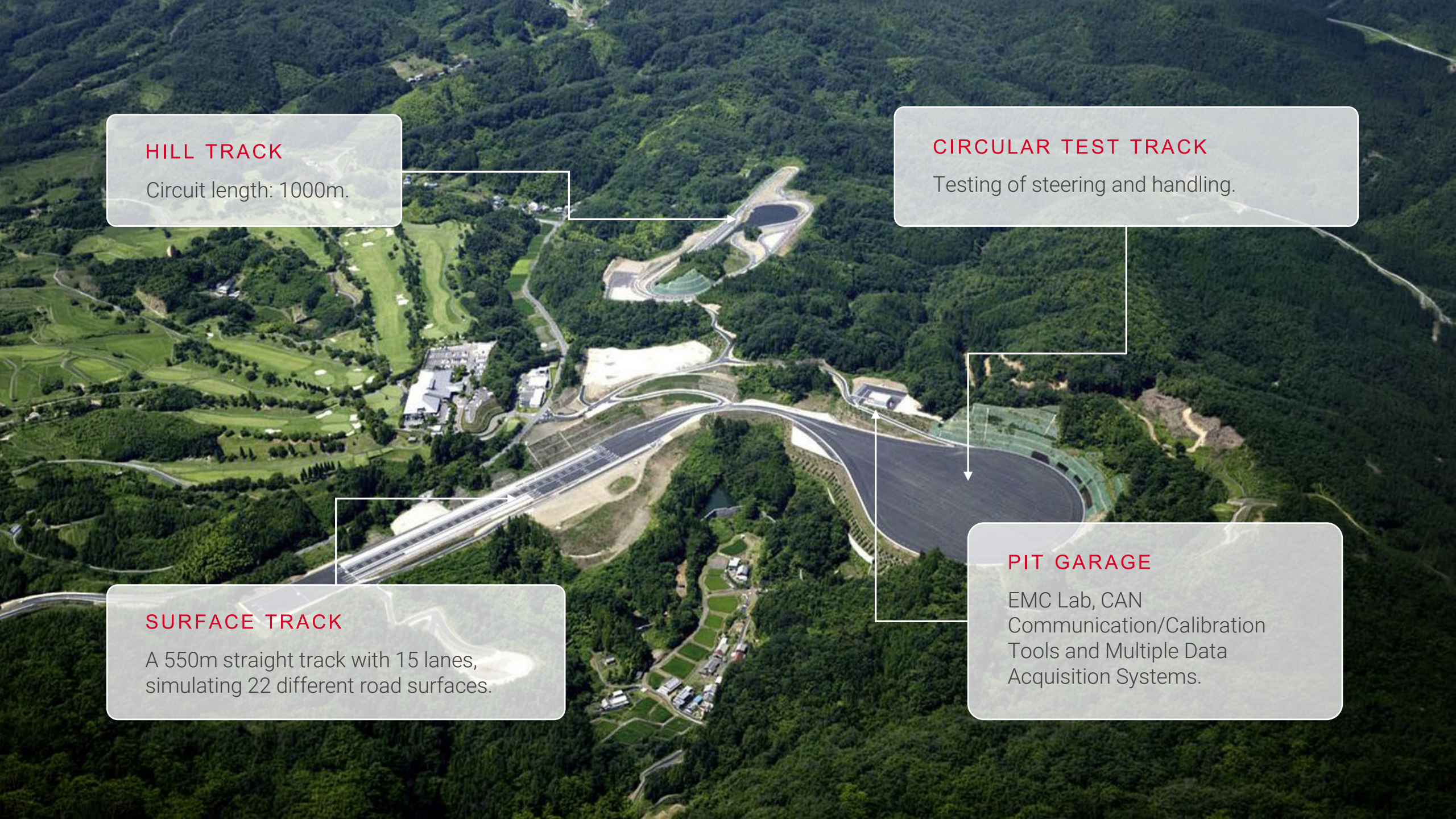
Additional mobile labs in China, USA, Thailand and Japan

VALIDATION

When **Theory** **Meets Reality**

Before any technology reaches production, it must prove itself under real-world conditions.

Located in Japan, KYB's **Developmental Centre** allows engineers to validate suspension performance in real-world conditions before vehicles reach production.



HILL TRACK

Circuit length: 1000m.

CIRCULAR TEST TRACK

Testing of steering and handling.

SURFACE TRACK

A 550m straight track with 15 lanes, simulating 22 different road surfaces.

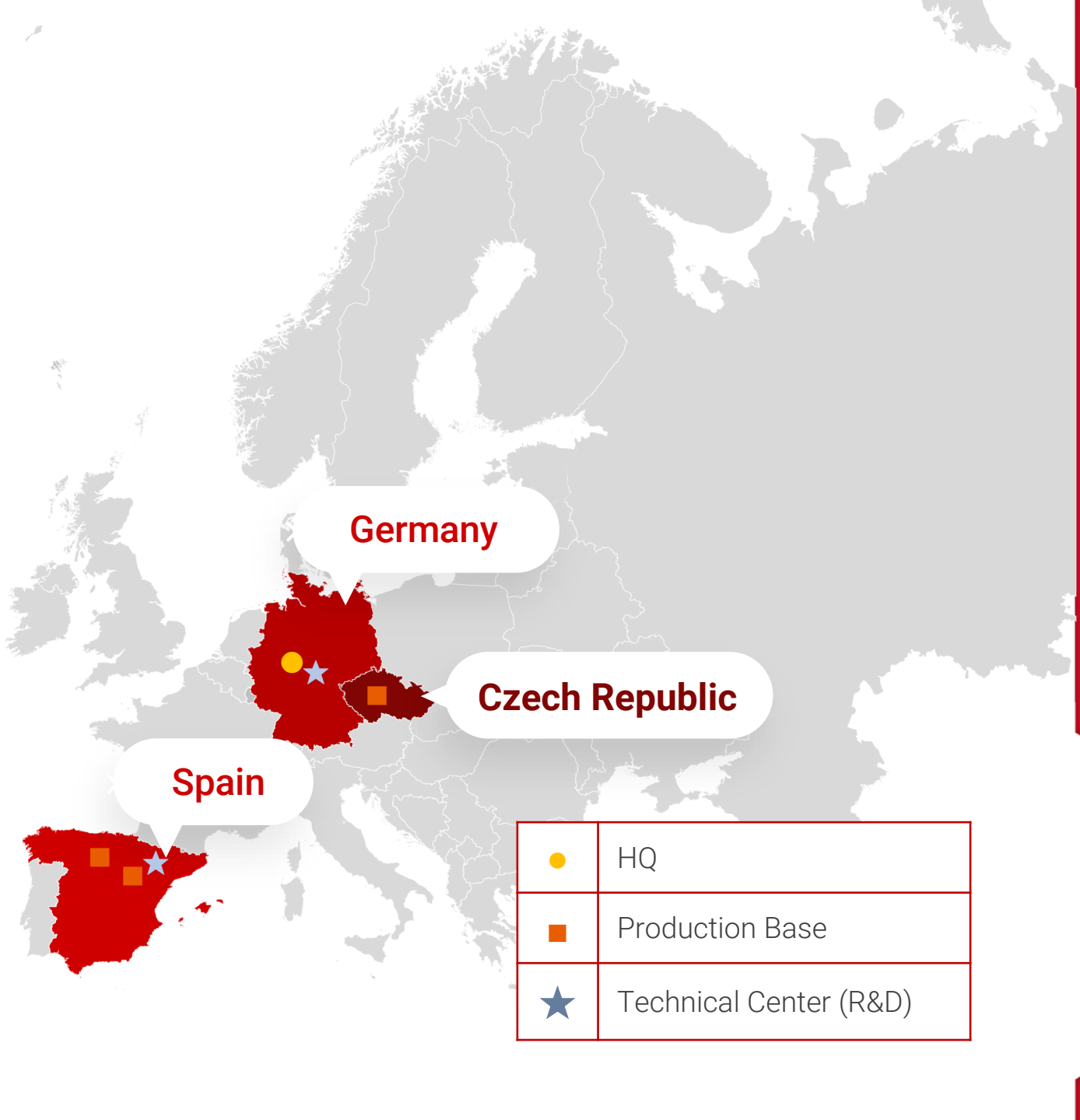
PIT GARAGE

EMC Lab, CAN Communication/Calibration Tools and Multiple Data Acquisition Systems.

A European Manufacturing Network

Once validated, innovation must be transformed into consistent, high-quality production at scale.

KYB Europe delivers localised production for key OEM and Aftermarket customers across Europe.



Current KYB Technologies

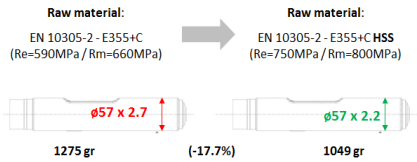
KYB TECHNOLOGIES:

Weight Reduction Solutions

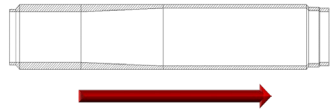
As electrification increases vehicle mass, suspension systems must become stronger, smarter and more efficient.

KYB is developing lightweight suspension technologies that help offset vehicle weight while maintaining the durability and comfort expected by OEMs.

High Tensile Strength Steel



Variable Tube Thickness



Composite Spring Seats

Around 0,5kg reduction/vehicle

KYB TECHNOLOGIES:

Suspension Solutions

Prosmooth

Friction is reduced by using newly developed materials for sliding parts, providing superb handling and cornering.

Swing Valve

A highly sensitive valve that reacts to low-speed movement, responding more effectively to small movements, improving comfort and stability.

ADC (HARMOFREQ)

Automatically changes damping force depending on frequency of road vibrations for increase in ride comfort.

TOYOTA
COROLLA

TOYOTA
PRIUS

TOYOTA
CAMRY

LEXUS
ES

LEXUS
LM

KYB TECHNOLOGIES:

Double Hydraulic Stops

With extra damping at both ends of the piston rod, DHS aims to reduce harsh impact and improve ride comfort.

When the suspension reaches the limits of its movement, DHS absorbs energy progressively, delivering **a smoother, more controlled ride.**

Developed in partnership with PSA Group.

The Evolution of **Suspension**

Changes to vehicles are driving changes in suspension systems - as they become more sophisticated, suspension must also evolve.

Passive

FIXED DAMPING CHARACTERISTICS

Performance is set during design and is the same regardless of driving conditions. Reacts naturally to piston speed.

Advanced Passive

MECHANICALLY ADAPTIVE DAMPING

Internal valve technologies optimise comfort and control without electronics.

Semi-Active

REAL-TIME ADJUSTMENT

Sensors and software adjust damping force to suit driving characteristics.

Active

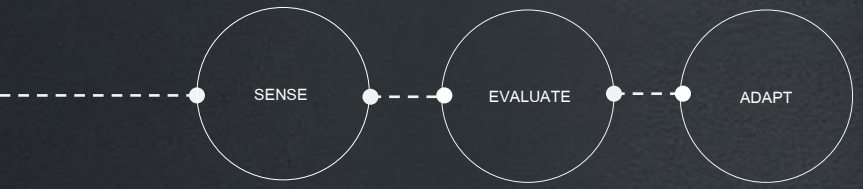
ACTIVE MOTION CONTROL

Suspension generates force on demand, adapting continuously to road conditions.

KYB SEMI-ACTIVE SUSPENSION:

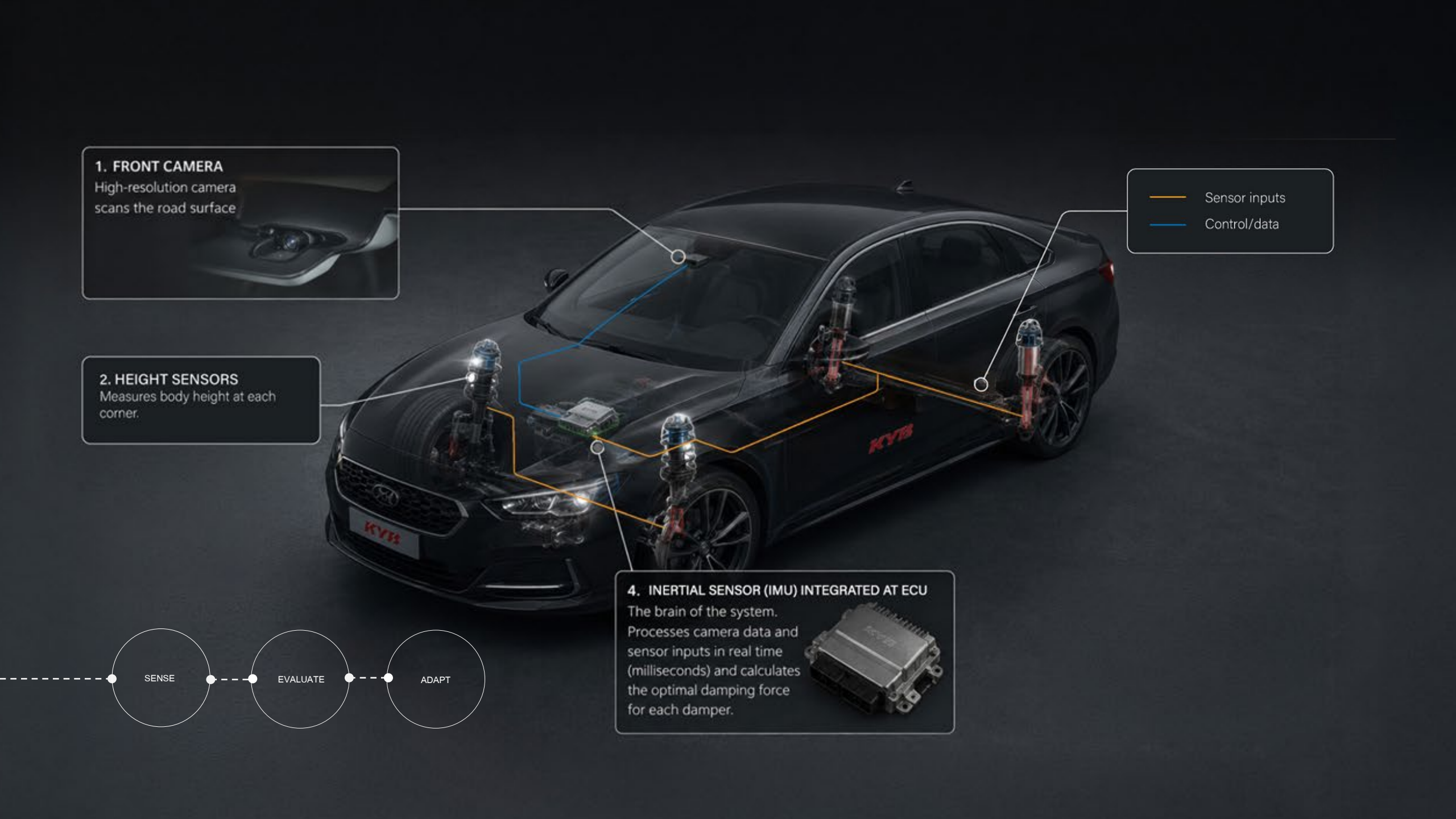
Intelligent Damping Control (IDC)

IDC:
How Does it Work?




SENSE


1. FRONT CAMERA
High-resolution camera scans the road surface
2. HEIGHT SENSORS
Measures body height at each corner.
Sensor inputs
Control/data
SENSE
EVALUATE


1. FRONT CAMERA
High-resolution camera scans the road surface
2. HEIGHT SENSORS
Measures body height at each corner.
Sensor inputs
Control/data
4. INERTIAL SENSOR (IMU) INTEGRATED AT ECU
The brain of the system. Processes camera data and sensor inputs in real time (milliseconds) and calculates the optimal damping force for each damper.
SENSE
EVALUATE
ADAPT

From IDC to **IDC-2e**

There are currently two types of IDC available on the market: IDC and IDC-2e

IDC

- Introduced in 2016
- Single valve design
- Manages both compression and rebound together through one unified electronic command.

IDC-2e

- Introduced in 2023
- Dual valve design
- Rebound and compression are controlled separately, providing faster response time and smoother handling.

IDC Applications

TRUSTED BY LEADING VEHICLE MANUFACTURERS

Europe

DS

DS7

DS9

DS4

NO7

NO8

PEUGEOT

208

CITROEN

C5

LANCIA

GAMMA

Japan

TOYOTA

CROWN

AVALON

LEXUS

LS

LC

IDC-2e Applications

TRUSTED BY LEADING VEHICLE MANUFACTURERS

Europe

VOLKSWAGEN

TIGUAN

PASSAT

TAYRON

AUDI

Q3

SKODA

KODIAK

SUPERB

CUPRA

TERRAMAR

Click to view
IDC video

Future KYB Technologies

KYB TECHNOLOGIES:

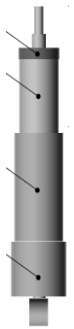
The Future is **Active Suspension**

SEMI-ACTIVE → ACTIVE

2016	2023	2027/8	2027/8	By 2030	By 2030
IDC	IDC-2e	IDC-i	IDC-ECO	IDC-2I	FULLY ACTIVE





KYB TECHNOLOGIES:

Future Mobility: **Moyori**

Moyori is a prototype of KYB's vision of future mobility, enabled by fully **active suspension and advanced chassis technologies.**

Unlike passive or semi-active systems, fully active suspension generates force on demand, actively controlling vehicle motion to deliver exceptional comfort, stability and accessibility.

- Fully Active Suspension
- Steer-by-Wire
- Adaptive Ride Height
- 4 Wheel Steering

Click to view
Moyori video

KYB TECHNOLOGIES:

SustainaLub™

Sustainalub™ is KYB's environmentally conscious hydraulic fluid technology, engineered to deliver the performance of a conventional suspension oil with significantly lower environmental impact.

- Naturally derived base oil
- Carbon-neutral formulation
- Recyclable hydraulic fluid
- Up to 60% biodegradable
- Optimised viscosity stability for consistent damping performance across a wide temperature range

A more sustainable approach to suspension technologies.

Coming to the Aftermarket in FY27.

TOSHIHIRO ARAI

ALL JAPAN RALLY CHAMPIONSHIP

> "It’s completely different. The road holding is just on a whole other level. Even on poor road surfaces, the car feels as though it’s clinging to the road, which makes driving incredibly easy."

YUNA KANEMATSU

ALL JAPAN RALLY CHAMPIONSHIP

> "I was surprised to find that simply changing the oil made such a difference. The response was much better, the way it handled bumps improved, and the overall handling was so much better."

KYB TECHNOLOGIES:

ActRide

A **Smartphone-Connected** Semi-Active System

ActRide™ is KYB's electronically controlled suspension system that allows drivers to adjust and control a vehicle's damping characteristics **via a smartphone.**

It uses an ECU and six-axis IMU sensor to detect vehicle behaviour in real time to control damping force.

The Road Ahead for the **Aftermarket**

As suspension systems evolve from passive to intelligent, new opportunities and requirements emerge for the Aftermarket

Smarter Systems

Sensors, ECUs and electronic controls are becoming part of the suspension system – and therefore, part of the repair process.

New Skills

Tomorrow's technician will need more than mechanical expertise. Diagnosis, calibration and electronic systems will become more important.

New Opportunities

Heavier EVs place demands on suspension systems, increasing the importance of maintenance and replacement throughout the vehicle lifecycle - creating new opportunities for the aftermarket.

As a suspension specialist, KYB training will evolve as the Aftermarket needs demand.

The suspension technologies being developed today will become the aftermarket opportunities of tomorrow.

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