

22-23 JUNE 2016

BITEC • BANGKOK
THAILAND

AUTOMOTIVE **SUMMIT 2016**

A part of:



In collaboration with:



Co-organized by:





SAFE BRAKING WITH MOTORCYCLE ABS

Takatashi Tagawa, Sales manager,
Automotive Technologies

Robert Bosch

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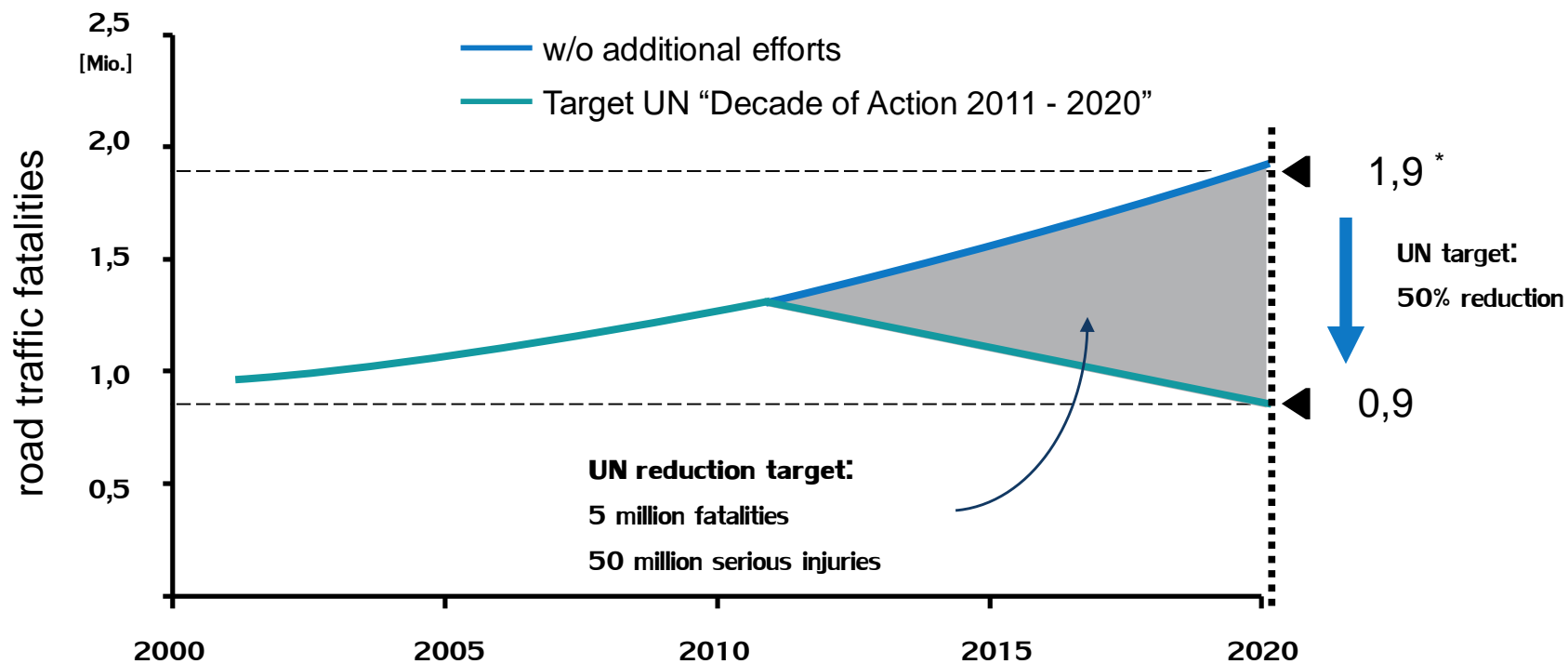


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Action for world wide road traffic fatalities

Worldwide road traffic fatalities are forecast to rise



* United Nations estimate

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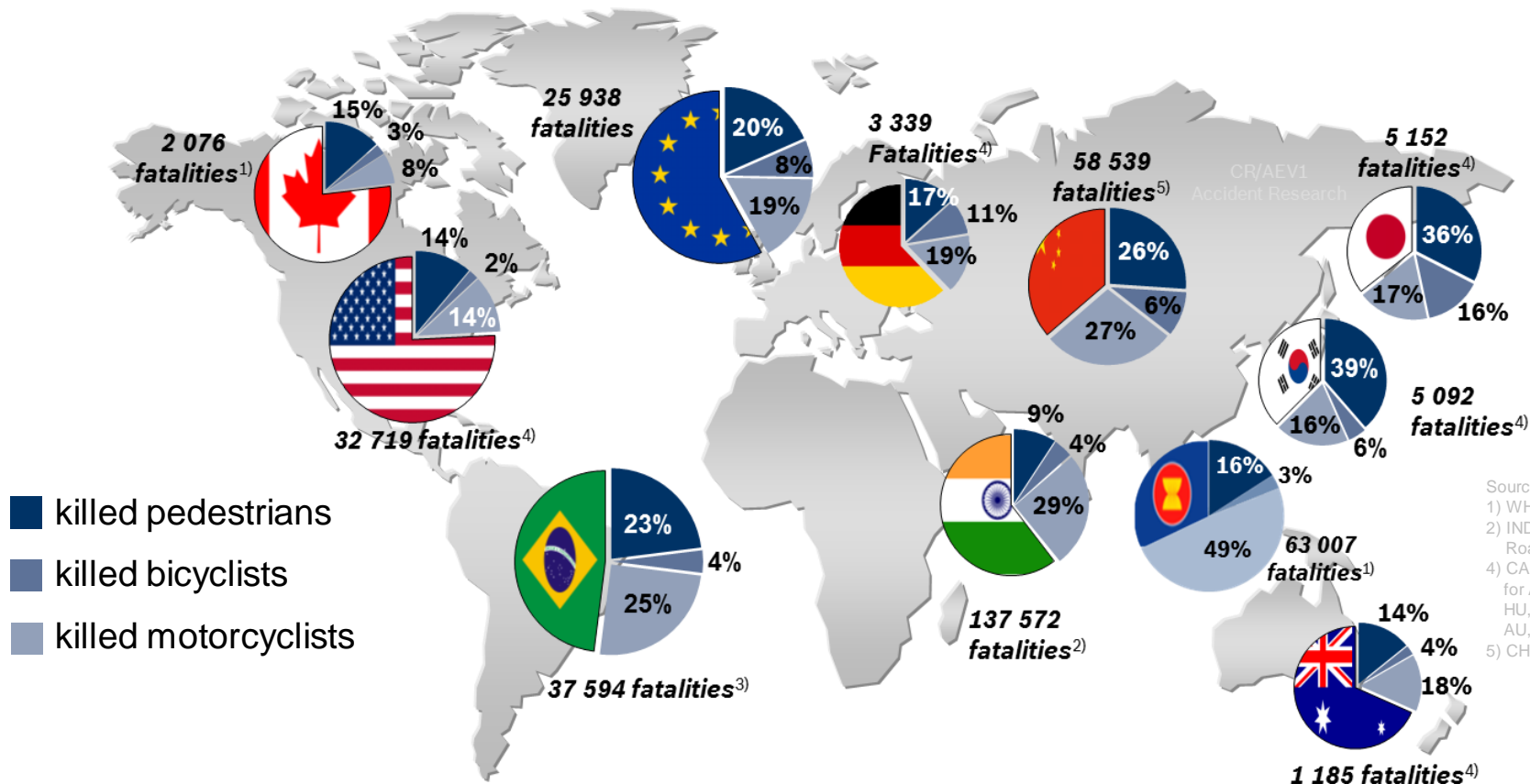
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Status of road safety worldwide

Every 4th fatality used motorized two- or three-wheeler



Sources:
 1) WHO Report 2013
 2) INDIA MORTH 2013 Road Accident Report
 4) CARE database, IRTAD 2012/2013 (data available for AT, BE, CZ, DE, DK, ES, FI, FR, GR for 2012, HU, IE, IT, LU, NL, PL, PT, SE, SI, UK, US, JP, AU, KR)
 5) CHINA Traffic Accident Annual yearbook 2013

1.24 million people die per a year, thereof 285,200 users of motorized two- or three-wheeler^[1]

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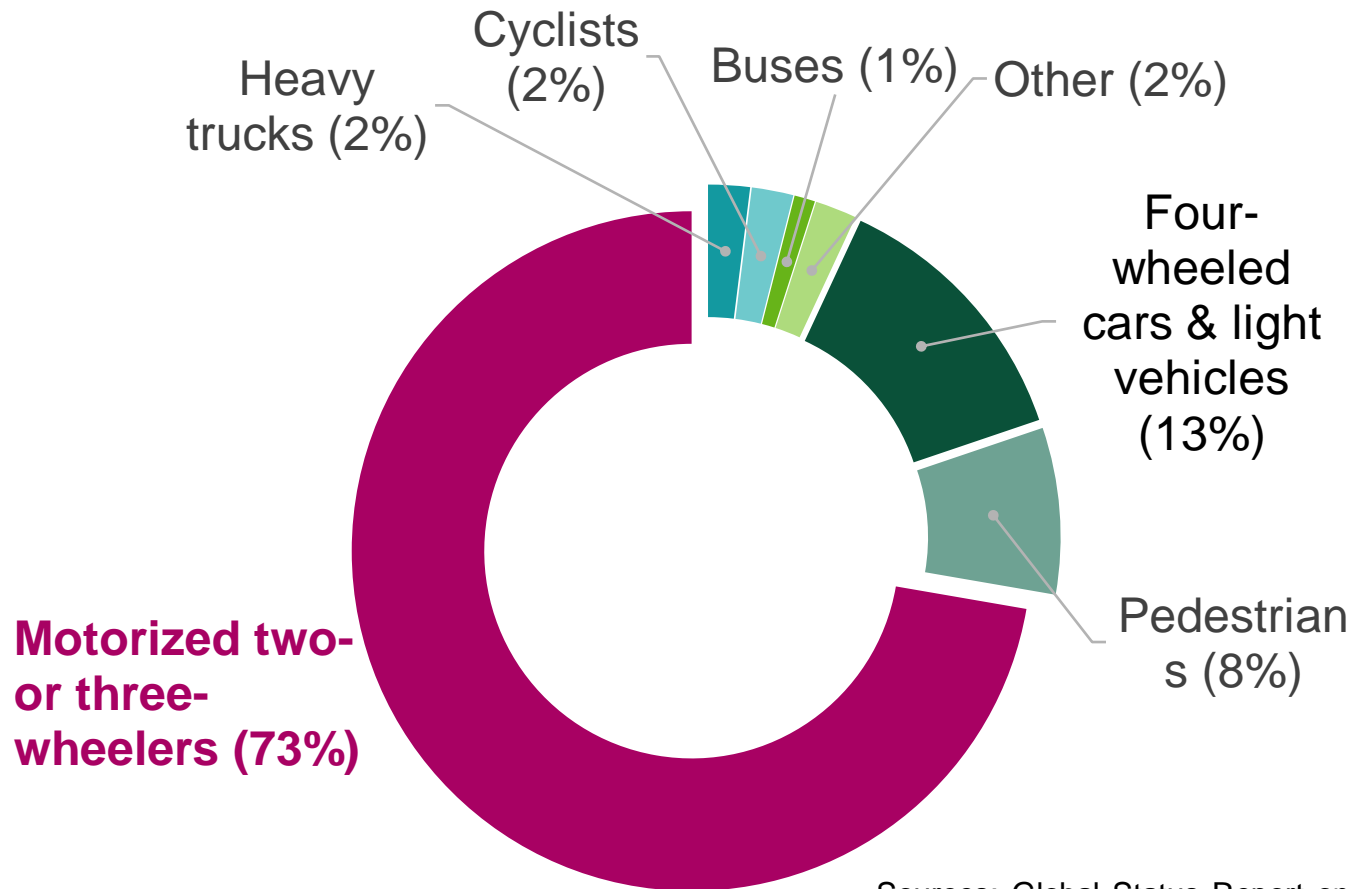


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Fatalities by road user category in Thailand

Third-quarter of road traffic fatalities used two- or three-wheelers



Sources: Global Status Report on Road Safety, WHO (2015)

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**Our goal is to make riding safer.
Safe braking with motorcycle ABS.**

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Motorcycle ABS System component



Master cylinders



Calipers



ABS systems for two-wheelers

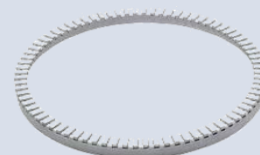
ABS Unit



Wheel-speed sensors



Tone wheels



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Motorcycle ABS

How does it work?

Function:

Rider applies full brake



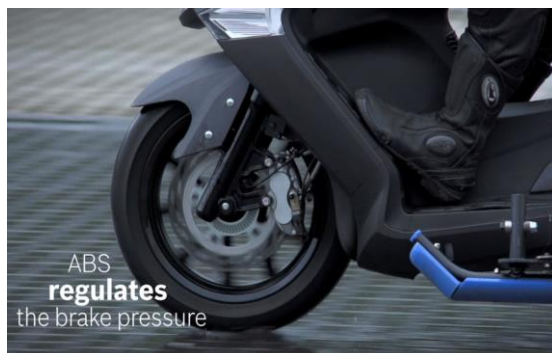
Wheels lock



Detection (wheel-speed sensor)



ABS reduces brake pressure



Wheel-lock and falldown are prevented



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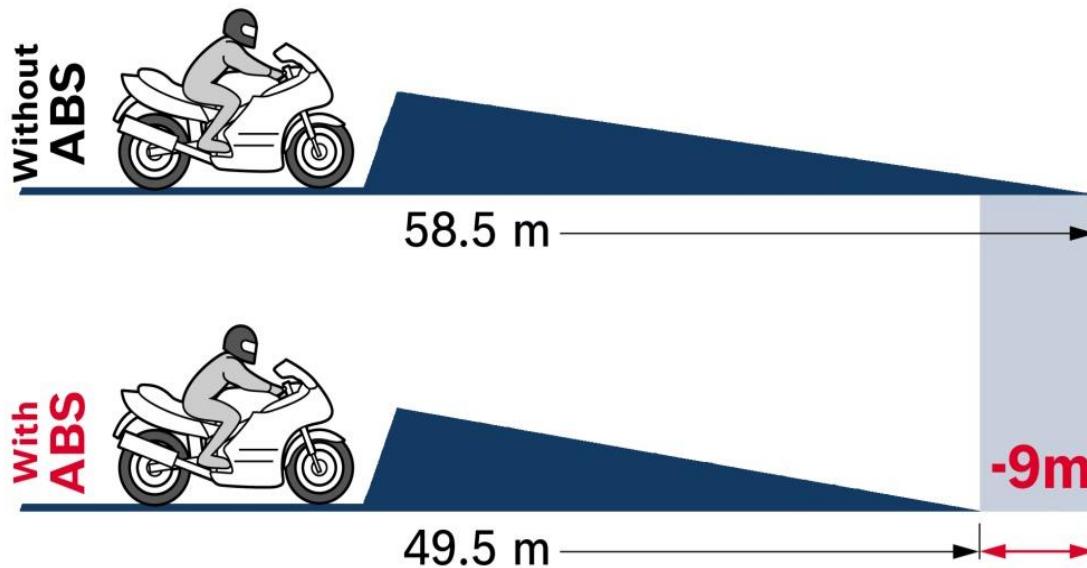


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Motorcycle ABS benefits

Safe braking with motorcycle ABS



Benefits

- ▶ Increased riding stability
- ▶ Shortened stopping distance
- ▶ Reduced danger of fall down

Source: Austrian Road Safety Board, 2002
Average rider, starting speed 100kph



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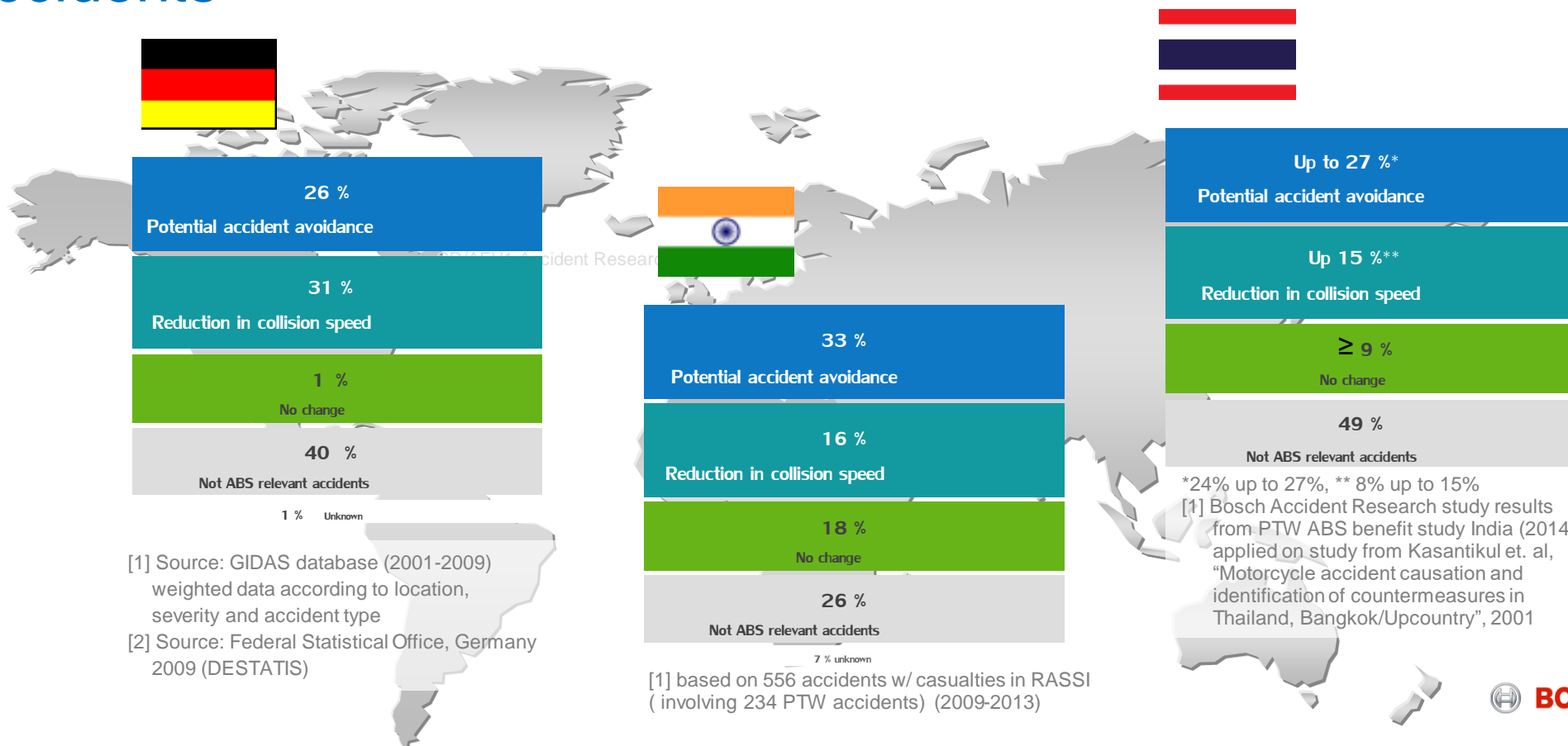


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Motorcycle ABS benefits worldwide

ABS can avoid more than 1/4th of motorcycle accidents



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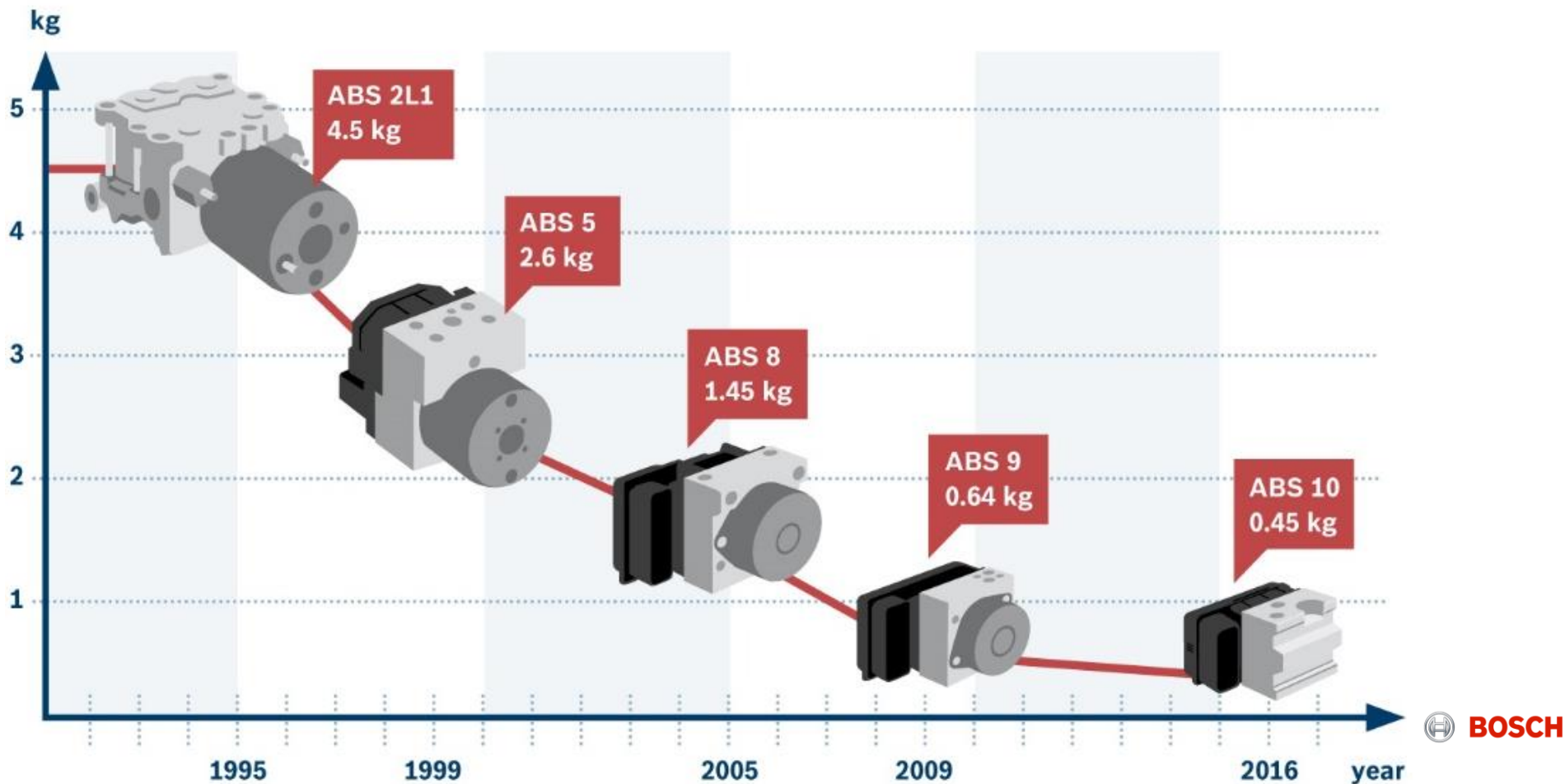


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Bosch motorcycle ABS

Technical evolution of motorcycle ABS



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New Bosch motorcycle ABS 10 Smaller and lighter for emerging market



Up to **30 percent lighter**
and
up to **45 percent smaller**
than current ABS 9



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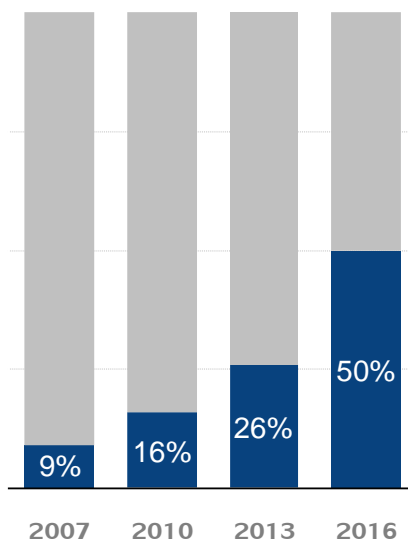
Motorcycle ABS installation rates: Increasing rapidly in the last 10 years



In the year 2020
ABS will be
standard equipment on
two-wheelers in many
markets world-wide.



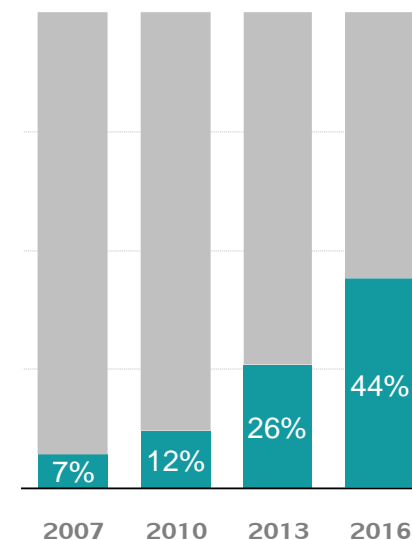
ABS installation rate EU



with ABS



ABS installation rate JP



with ABS



Motorcycle ABS legislation in 2016

ABS will become standard in many markets by 2020

EU

ABS for all new vehicle types > 125 cc as of 01/2016*
ABS for all existing vehicle types > 125 cc as of 01/2017*
* > 50 cc: ABS or CBS¹⁾

Japan

ABS for all new vehicle types > 125 cc as of 10/2018*
ABS for all existing vehicle types > 125 cc as of 10/2021*
* > 50 cc: ABS or CBS

U.S.

Motorcycle ABS on political agenda

India

ABS for all new vehicle types > 125 cc as of 04/2018*
ABS for all existing vehicle types > 125 cc as of 04/2019*
* < 125 cc: ABS or CBS

Australia

Motorcycle ABS on political agenda

Brazil

ABS for all existing vehicle types \geq 300 cc ramp up from 2016-2019*
* < 300 cc: ABS or CBS

Taiwan

ABS for all new vehicle types > 125 cc as of 01/2019*
ABS for all existing vehicle types > 125 cc as of 01/2021*
* > 50 cc: ABS or CBS

1)CBS: Combined braking system



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For further safety, we are developing the innovative technologies to open the new era of assistance systems for two-wheelers.

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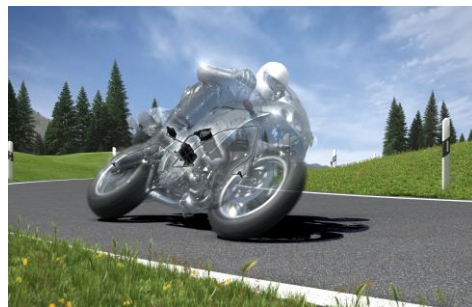


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Bosch vision for two-wheeler safety:

Technological innovations beyond ABS



Motorcycle stability control (MSC) for **safe riding in all situations**



Connectivity systems for greater safety and comfort



Motorcycle ABS: Safe braking instead of locking



Side view assist: World's first ARAS (Advanced rider assistance systems)



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SAFE RIDING. MORE FUN.



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