Electromobility has a bright future.
Make it happen with Bosch.

Markus Schmidt, Robert Bosch GmbH,
Executive Vice President Sales Automotive Electronics

Megatrends: e-mobility

Urbanization

Energy

Climate Protection

Technology

Resources

Demography

Energy Storage

Electric Scooter

eBike

Electric Vehicle

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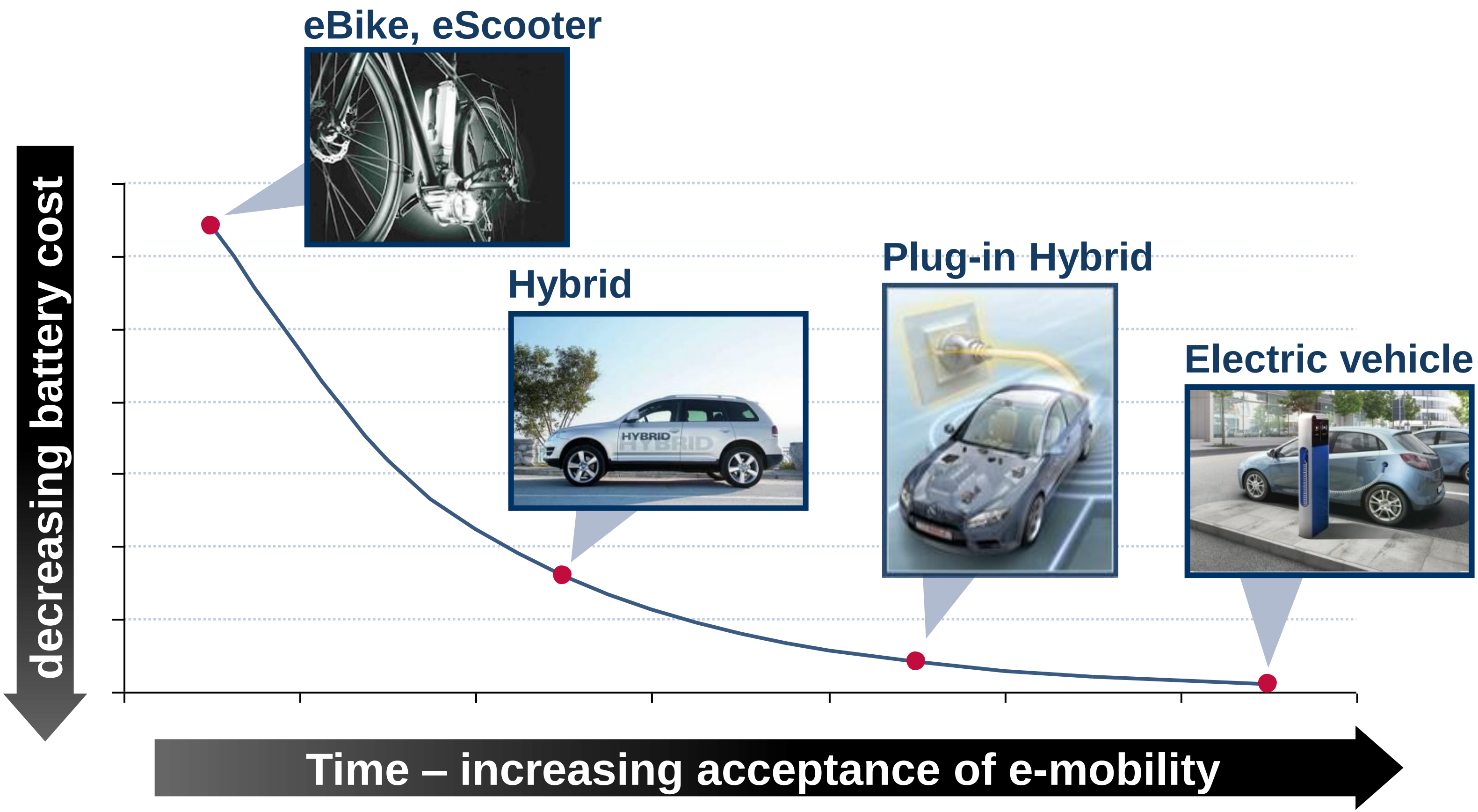
Evolution: electric driving

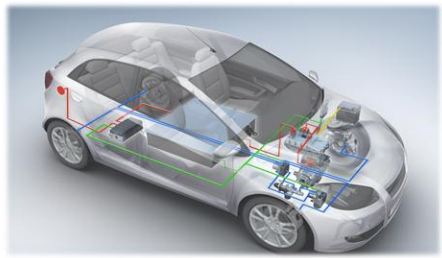


Our portfolio covers a wide range

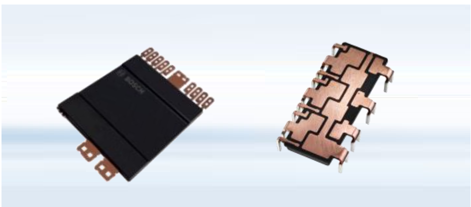
Ecological energy harvesting

Intelligence for infrastructure

Efficient systems for eMobility

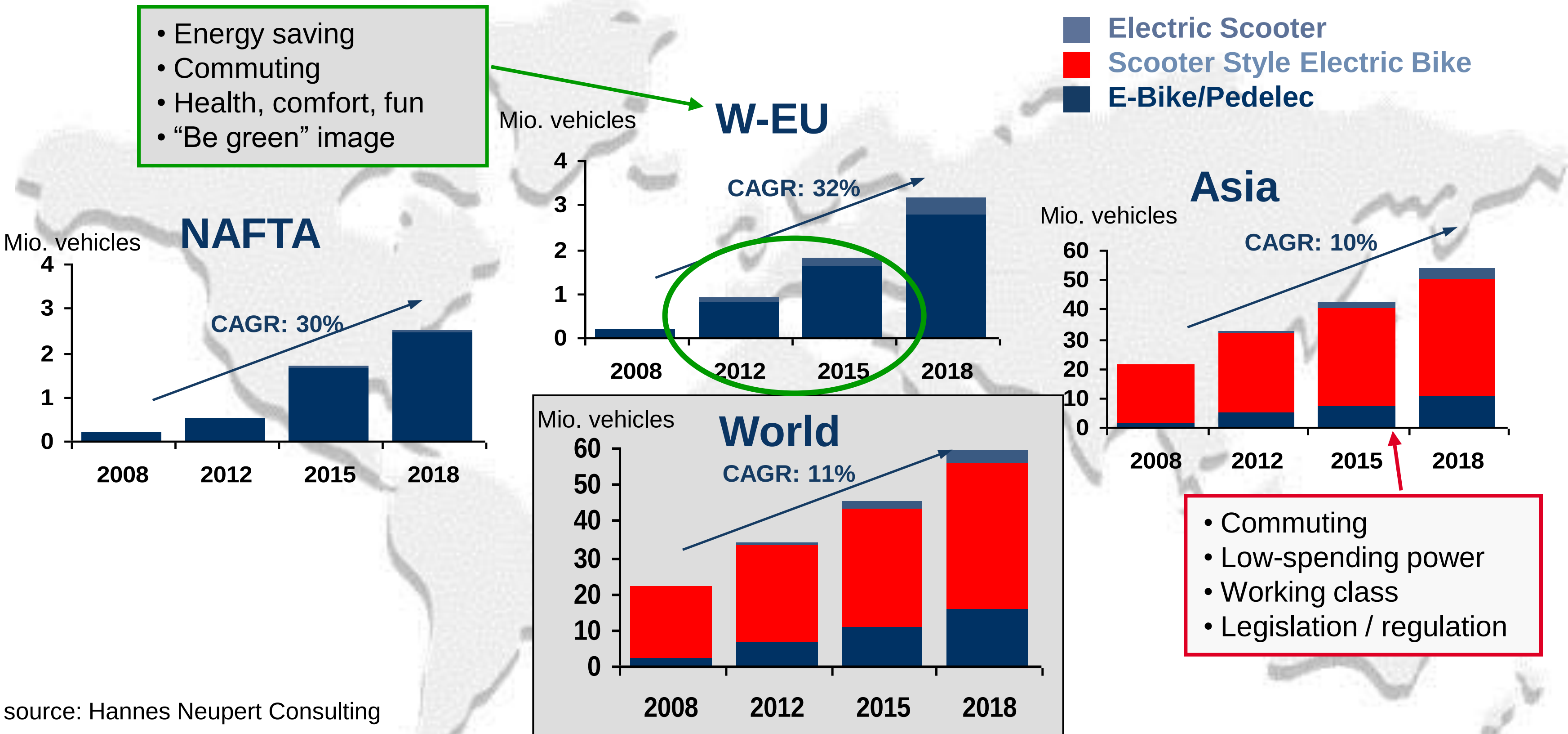


High tech components



Reliable complex subsystems

Market Volume: Sales per year, annual growth



source: Hannes Neupert Consulting

- Asian markets dominate with „Scooter Style Electric Bike“;
- W-EU and NAFTA dominated by E-Bikes/Pedelecs

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Drivers of Powertrain Electrification

Oil-Reserves & fuel price

Urban traffic limits / Megacities

Business model

Taxes

CO_2-Legislation

Soft factors

Bridging Technology

Internal combustion engine → Hybrid vehicle → Plug-in Hybrid → Electric Vehicle

Base: Progress in Battery Technology and Charging Infrastructure

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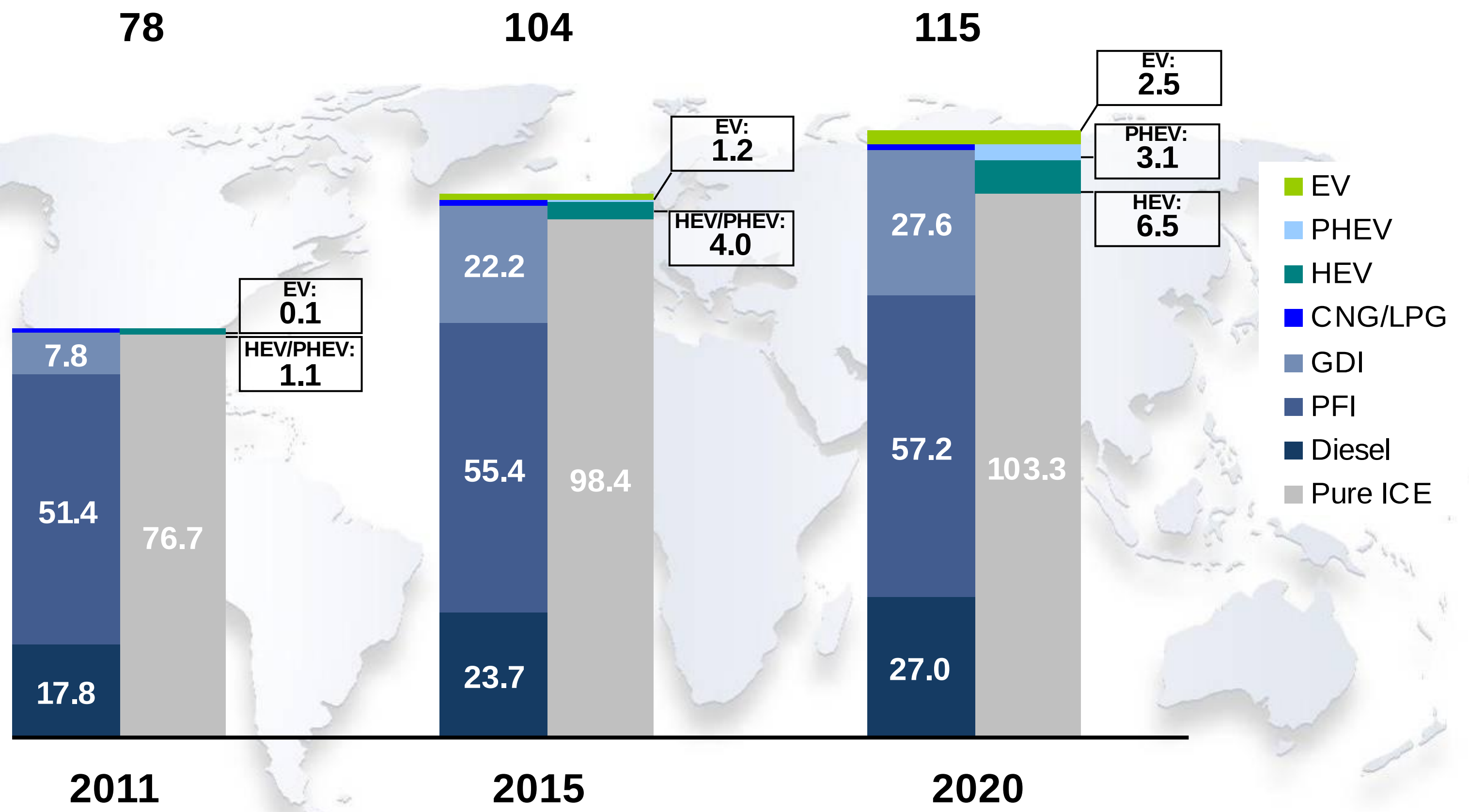
Market Development

Sales PC & LCV<6t (mio. vehicles) *

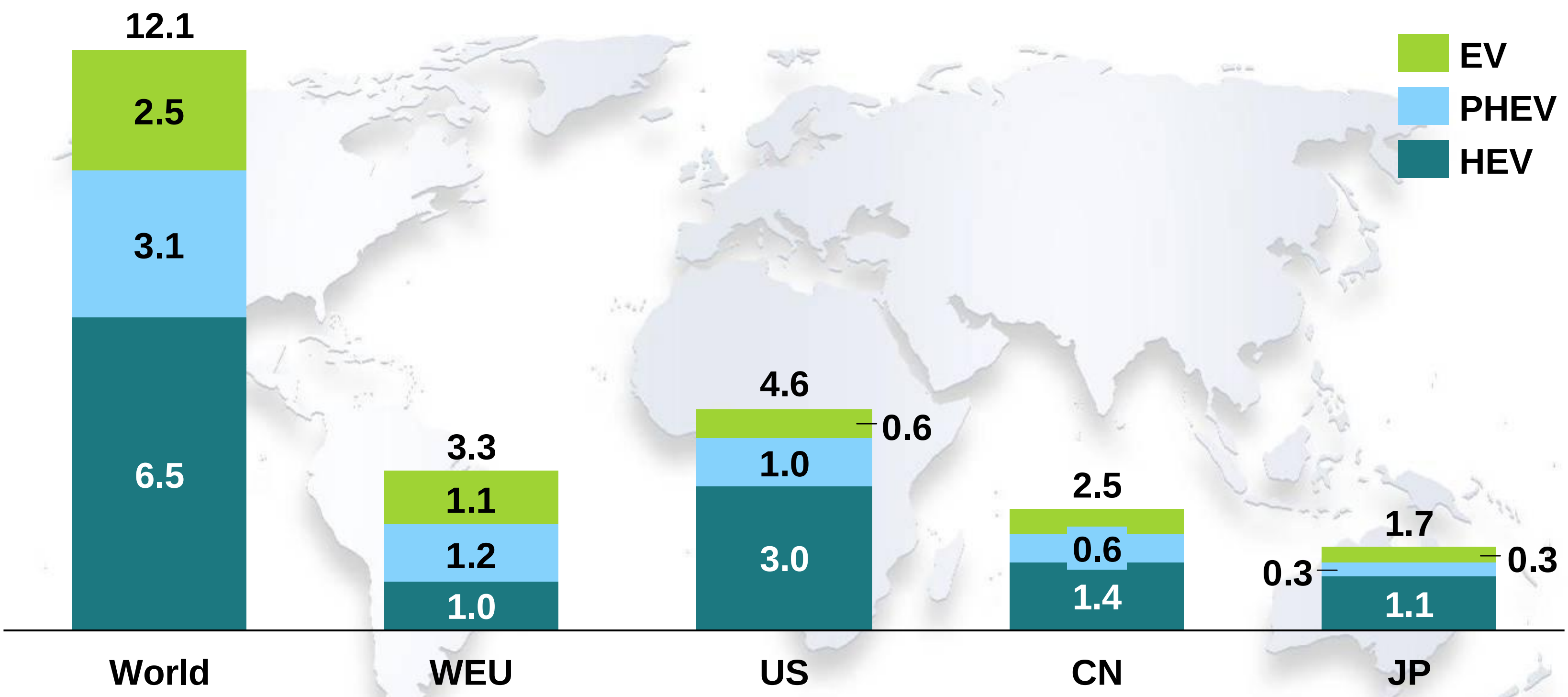


* Prognosis RB

HEV = sHEV & mHEV, thereof ca. 90% sHEV

Market Development – Electrification

Sales PC & LCV<6t (mio. vehicles) *



2020
total vehicle sales 115 mio.

* Prognosis RB

HEV = sHEV & mHEV, thereof ca. 90% sHEV

Regional Trends

Europe

- Main systems: Parallel Hybrids, electric Axle drives (Hybrids, EVs)
- High volume prognosis for EVs+PHEV
- High willingness to pay of end customers for real inner city e-driving

→ Electric driving is fun

Japan

- 20% Hybrid vehicle share in 2012*
  5 top selling vehicles are Hybrid only / have hybrid option
- Hybrids B and C-segment
- End customer focus: cost & technology

→ Desire for new technologies, fuel efficiency

NAFTA

- Main systems: Powersplit Hybrids
- Plug-In Hybrids+ EVs remain niche markets
- CAFE regulation is main driver.
- Influence of gasoline price decreasing due to small vehicle introduction

→ Fuel economy (MPG!)

China

- Government focus: independence of oil
  → main systems: Plug-in Hybrids, EV
- New Energy Vehicle legislation released: high volume targets for 2015/2020
- Dynamic market, many players

→ Market drivers influenced by government

*YTD 09/2012 EV: Electric Vehicle CAFE: Corporate Average Fuel Economy

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(e)Mobility Software Products and Solutions

- Provision and Management of Charging Infrastructure Network

- The **eMobility Starter Package** as a software solution for Service Provider, running and managing a charging infrastructure for electric vehicles.
- Integrates users, service providers, vehicles, charging stations and services on a cloud-based software platform.
- Customers can charge the vehicle on different locations

- **Brokering Service** to establish Mobility ecosystems (connected intermodal mobility on demand)
- Solution for Mobility Provider, also different branches like OEM, Broker of Rental Cars, Bike-Sharing and public transportation, to mutual share their services.

Summary

Trend towards Light eMobility

- eBike in Europe for individual commuting, energy saving, health and fun
- eScooter very successful in Asia because of commuting, affordable product and legislation. Governmental support still missing in Europe.

Trend towards electrification of Passenger Cars

- Combustion engine still dominating
- Electrification is coming driven by Fuel price, CO_2 Legislation and Megacities

Bosch well prepared for all kind of electrification:

- Battery
- Electric motor
- Power electronics
- Photovoltaic inverters
- Drive systems
- Software backbones
- Power electric vehicle infrastructure

eMobility: Attractive opportunity for Bosch

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Thank you!