



Capital Markets Day 2016

Rheinmetall Automotive

Düsseldorf, 9 December 2016

Horst Binnig, CEO Rheinmetall Automotive



Key facts

Pick up CMD 2015, expectations for 2016

Markets and Customers:

- Expected stable growing market conditions
- Increasing demand for efficient engines with lower emissions
- **Enlargement of non-LV-business** with selective growth



Performance and Products:

- Continue to implement best cost processes
- Lead in innovative products for efficiency and low emissions



China:

- Profitable growth with shared risk of joint ventures
- 100%-subsidiaries moving from start-up to growth phase



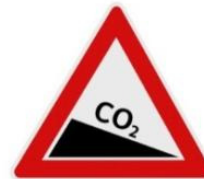
Megatrends

The world is changing

Mobility

Automotive

Disruption



Urbanization

New micro-mobility products

Legislation

Fuel savings & emissions

Autonomous driving



New urban mobility business models

Interconnected wireless world

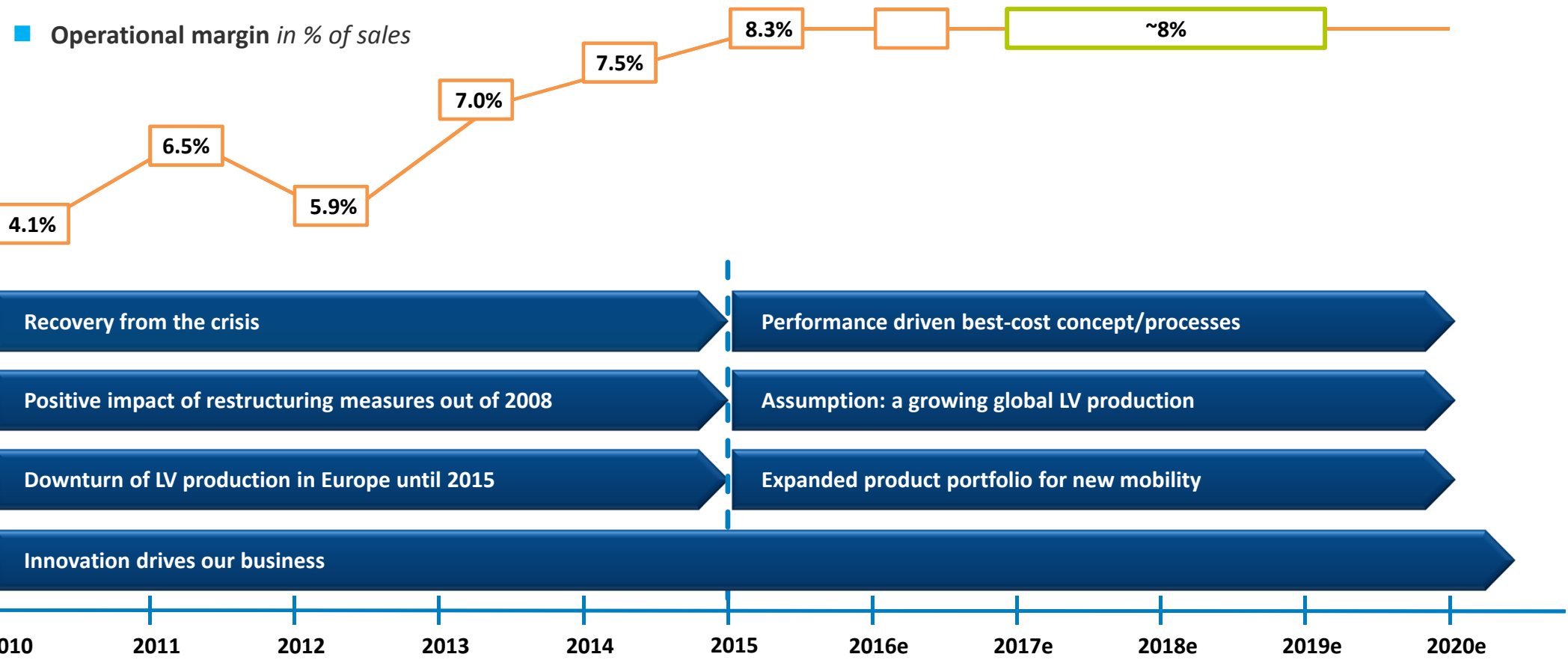
E-Mobility

Weight savings

Sustainability and environmental protection

Automotive in a ten year view

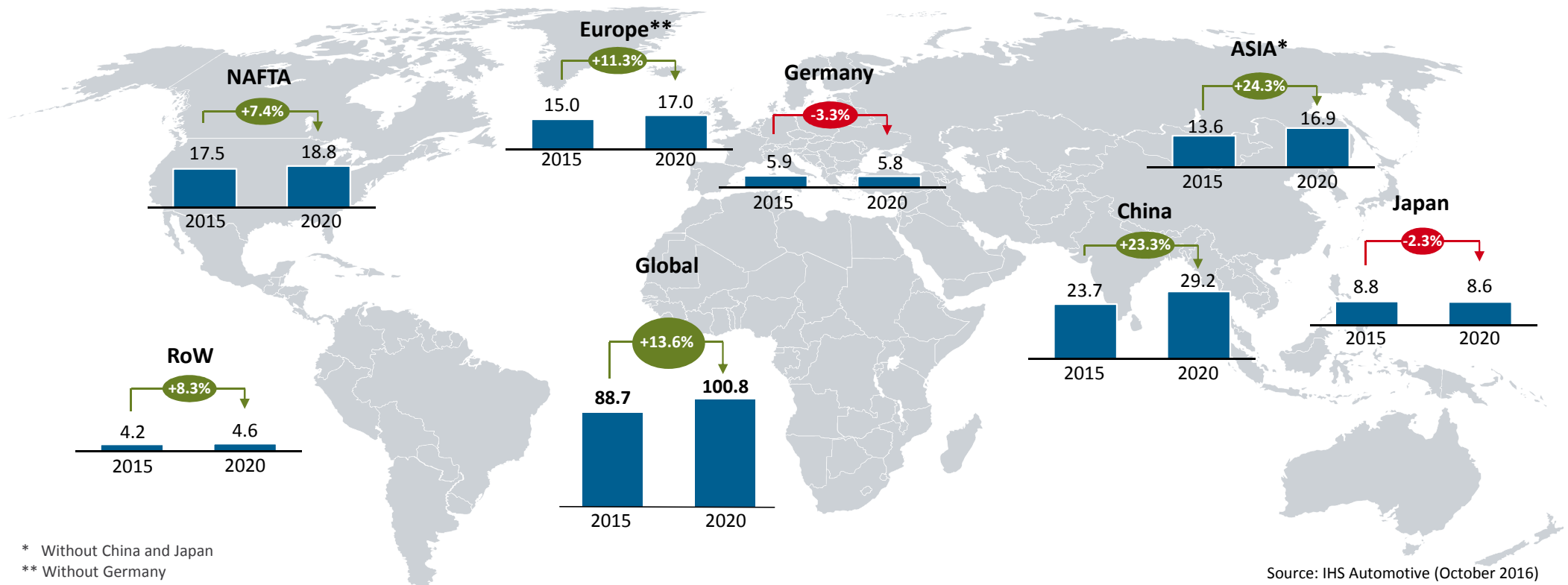
Achieving and maintaining the target margin level



Growing market for mobility

Aggregated LV production by region/country

■ Global LV production *in million units, change in percent*



* Without China and Japan

** Without Germany

Source: IHS Automotive (October 2016)

Three mainstreams for future mobility



New
Technologies

Electrification

Efficiency

Three mainstreams for future mobility



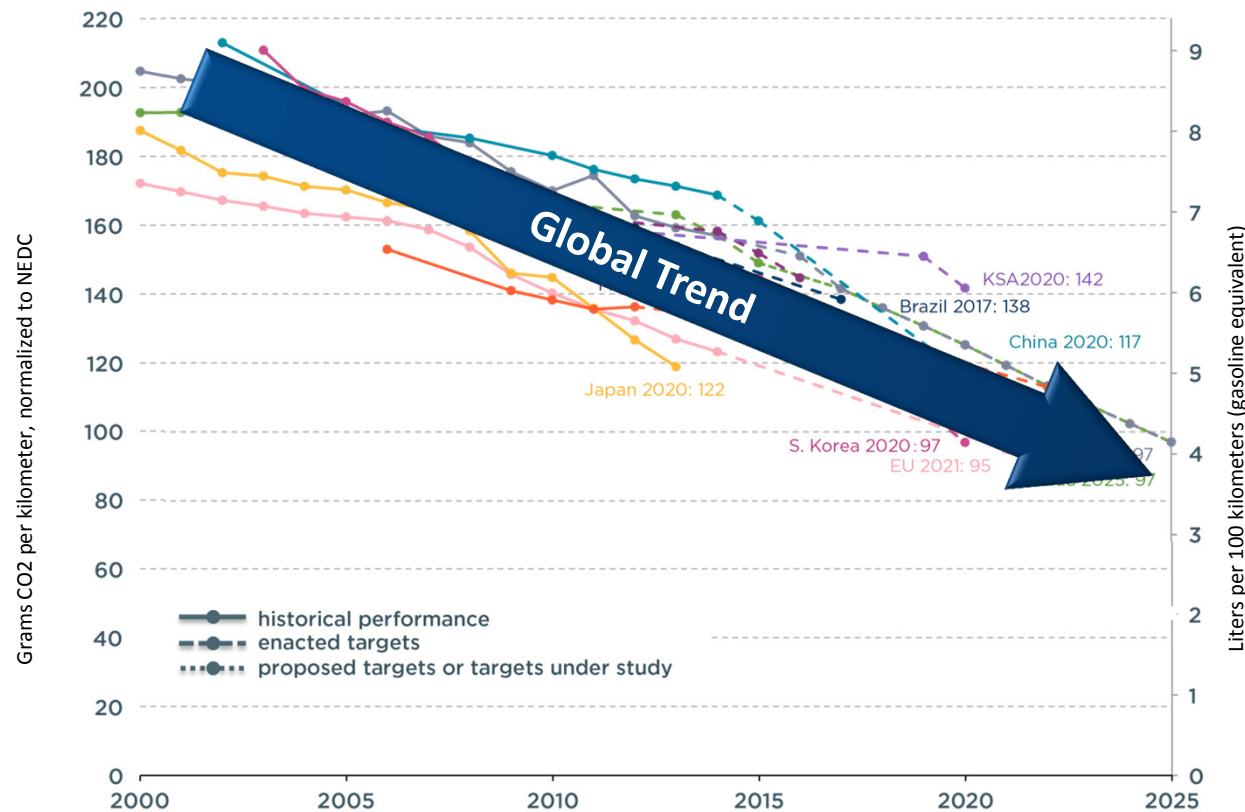
New
Technologies

Electrification

Efficiency

Efficiency-drivers

CO₂ emission regulations of important markets



CO₂ emission in grams per kilometer

*Note that Japan has already exceeded its 2020 statutory target, as of 2013 Source: ICCT

Efficiency: reduction of fuel consumption

Rheinmetall Automotive's Road to 95



Description vehicle model (Basis)

1.4L 4-cylinder SI engine
with DI and one-stage
turbocharging (115kW)

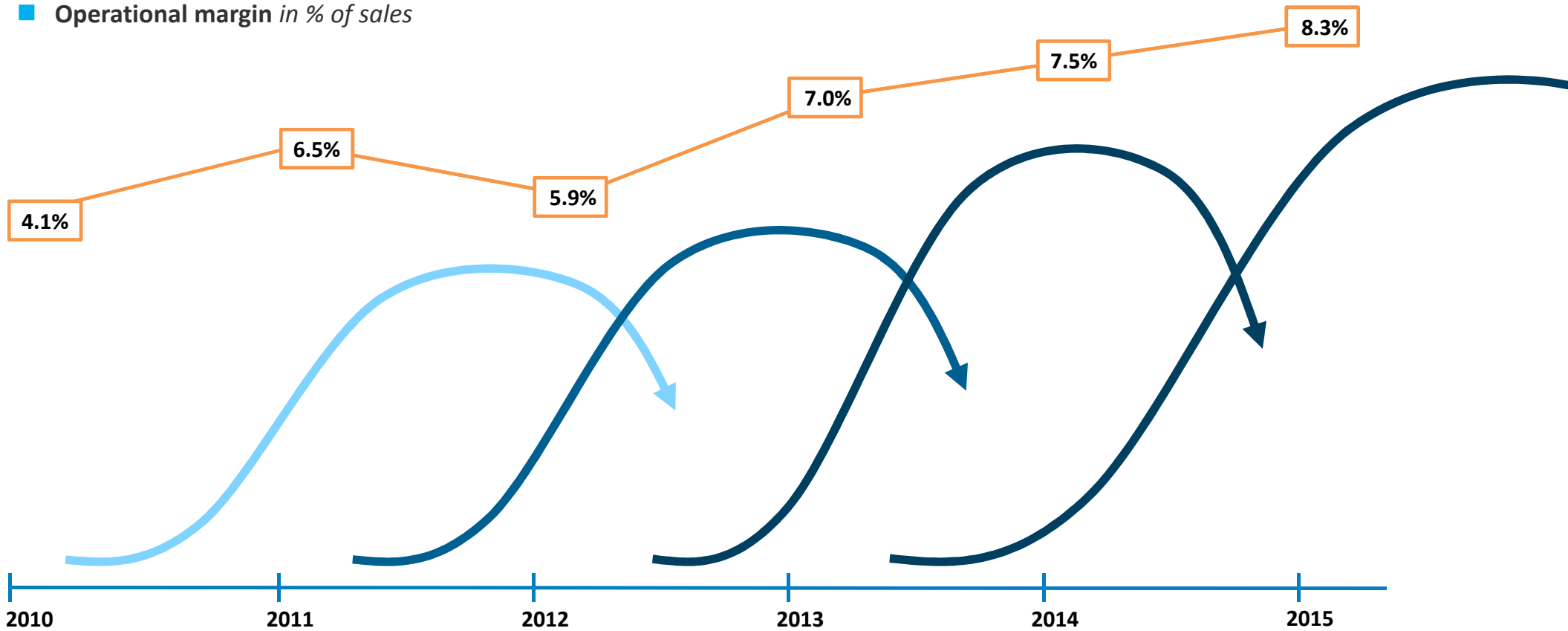


Rheinmetall Automotive products

-1 g CO ₂ /km	-3 g CO ₂ /km	-3 g CO ₂ /km	-7 g CO ₂ /km	-2 g CO ₂ /km	-2 g CO ₂ /km
Variable oil pump	Tribo-system	Var. cool. pump	Var. valve train	El. low-press. EGR	Light-weight structural parts

Electrification Product live cycle Automotive (2010 to 2015)

■ Operational margin *in % of sales*

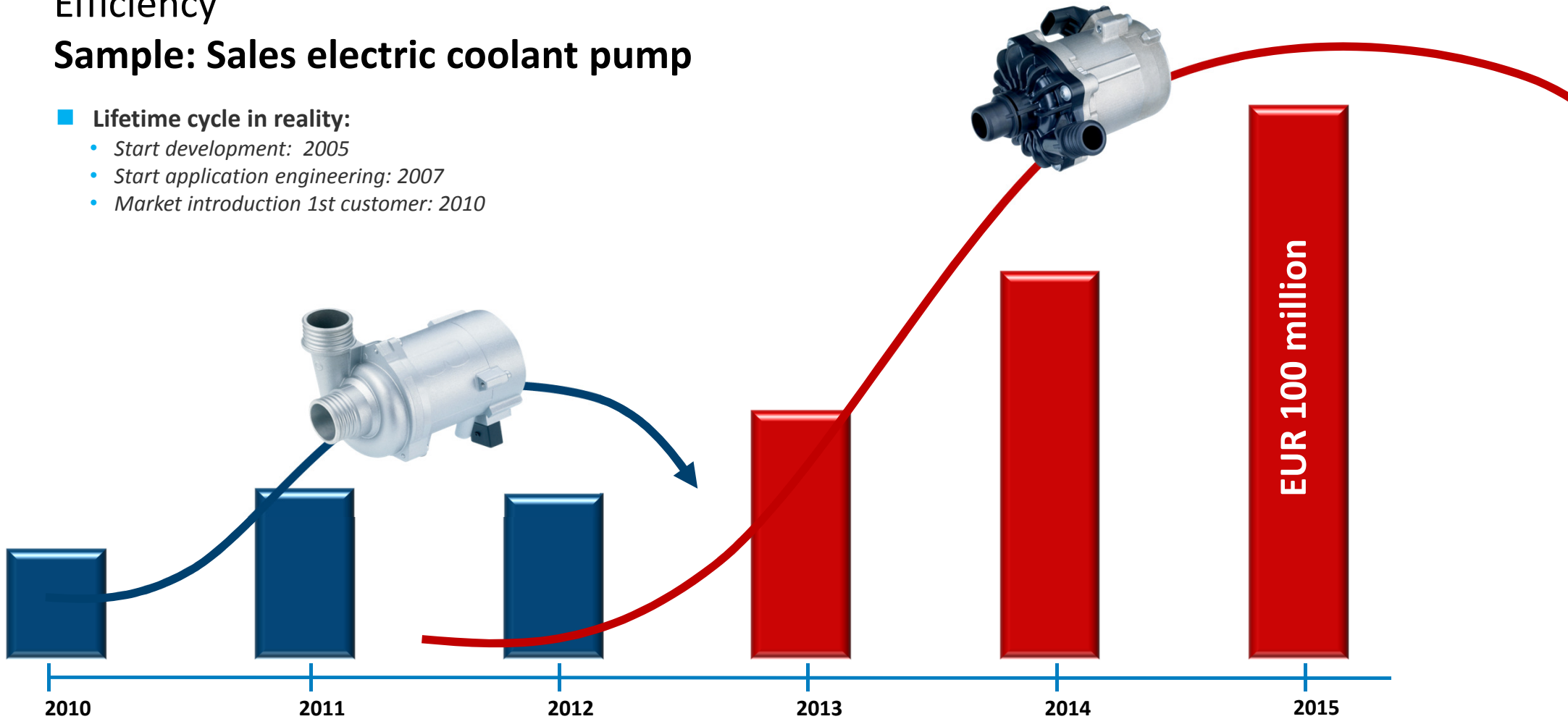


Efficiency

Sample: Sales electric coolant pump

■ Lifetime cycle in reality:

- Start development: 2005
- Start application engineering: 2007
- Market introduction 1st customer: 2010



Looking forward

Preview 2015 to 2020

■ Operational margin *in % of sales*



- ▶ Performance driven best-cost concept/processes
- ▶ Assumption: a growing global LV production
- ▶ Expanded product portfolio for new mobility
- ▶ Innovation drives our business

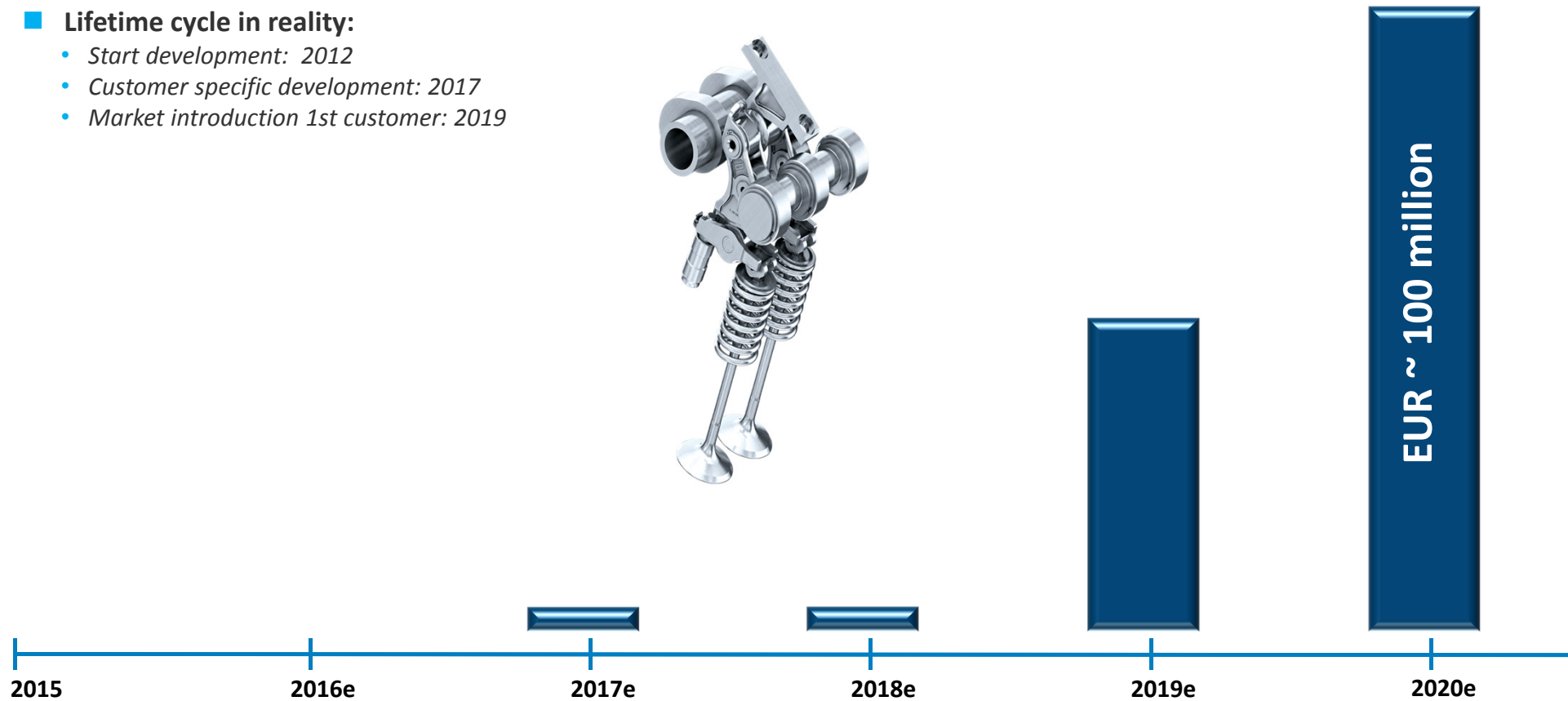


Efficiency

Sample: Variable Valve Train

■ Lifetime cycle in reality:

- Start development: 2012
- Customer specific development: 2017
- Market introduction 1st customer: 2019



Three mainstreams for future mobility



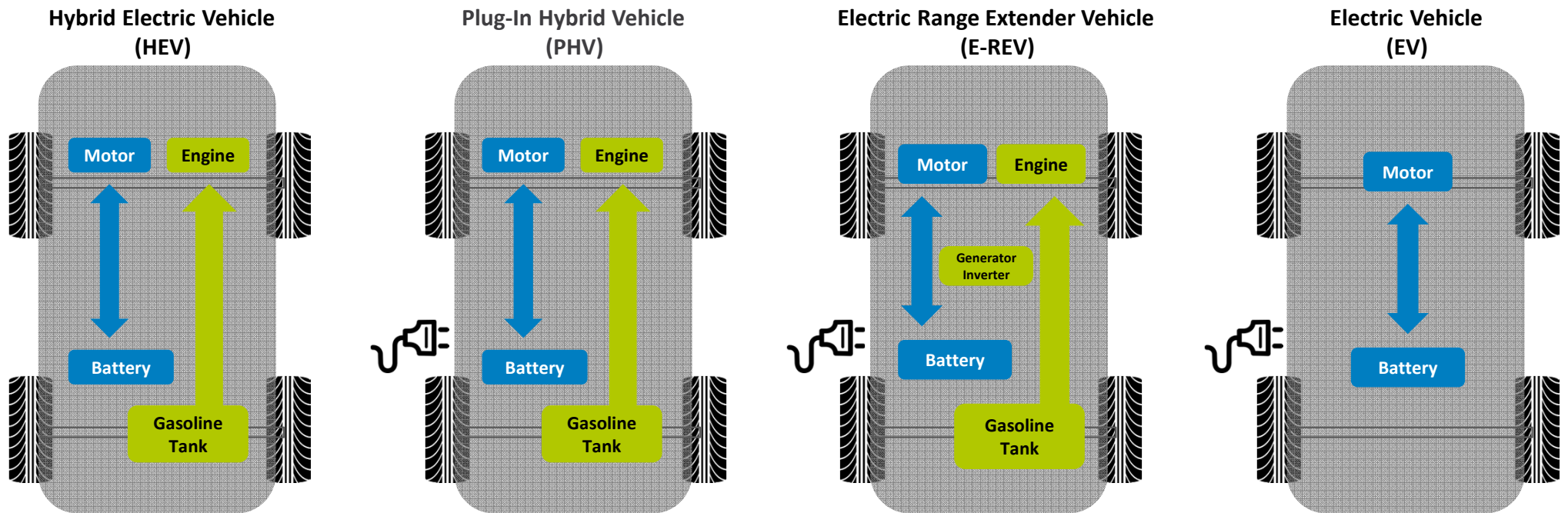
New
Technologies

Electrification

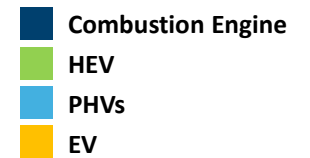
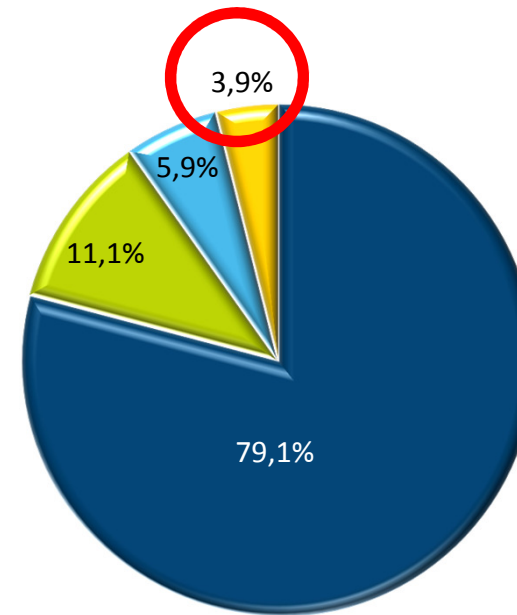
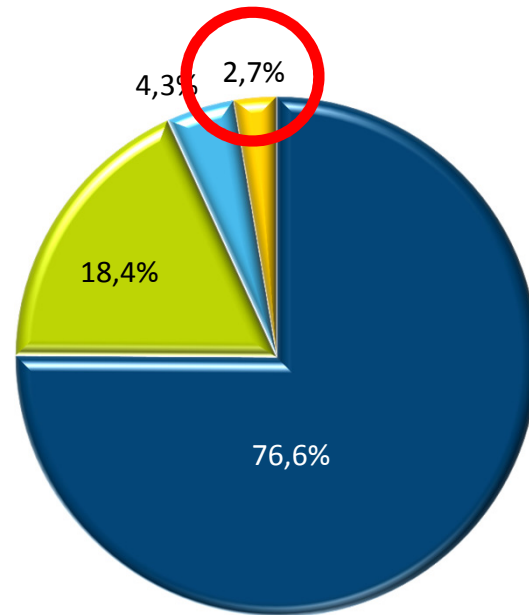
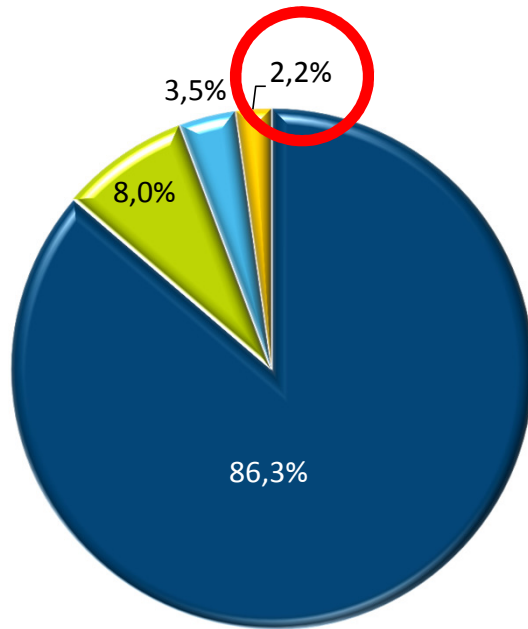
Efficiency

Electrification

Structure of HEV, PHV, E-REV and EV



Prognoses 2025



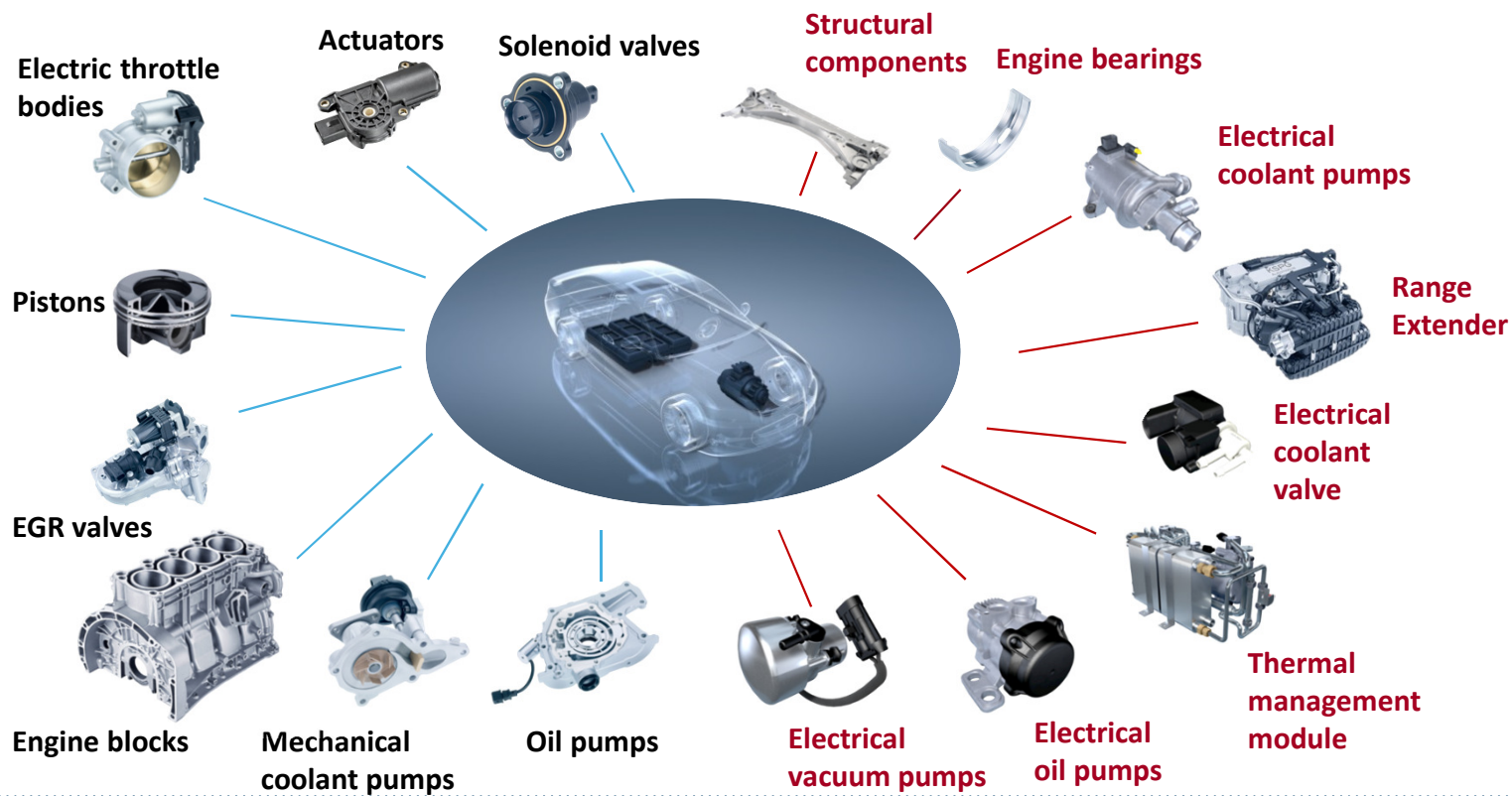
(All studies 2016)

Electrification: higher content per car by hybridization

Trend of hybridization opens potential for more Rheinmetall products

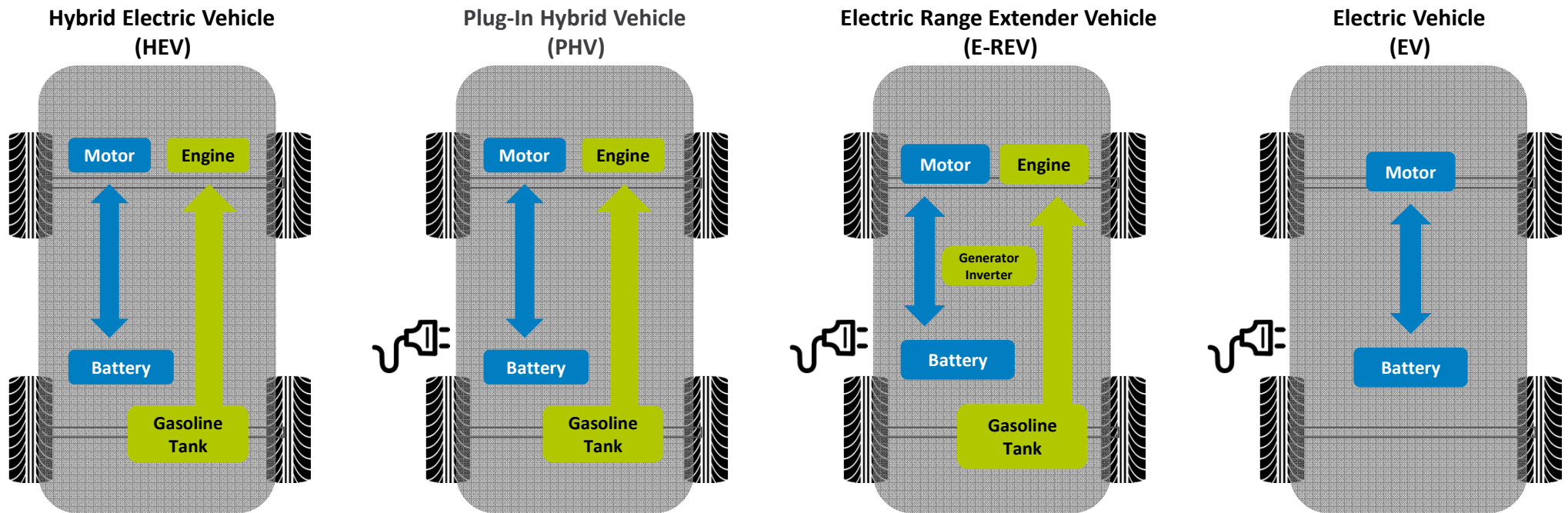
Enlarging the traditional product portfolio for combustion engines ...

... by products for hybrid and electric engines



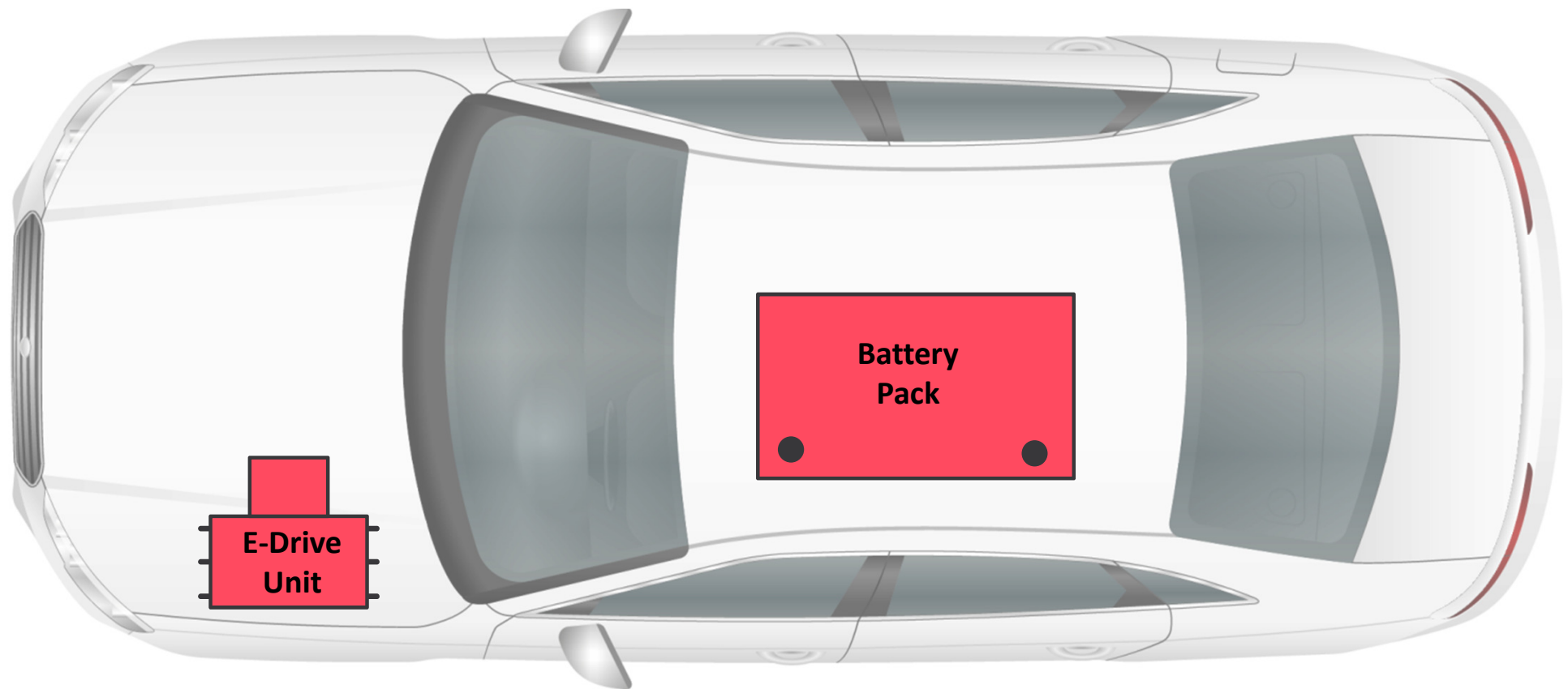
Electrification

Structure of HEV, PHV, E-REV and EV



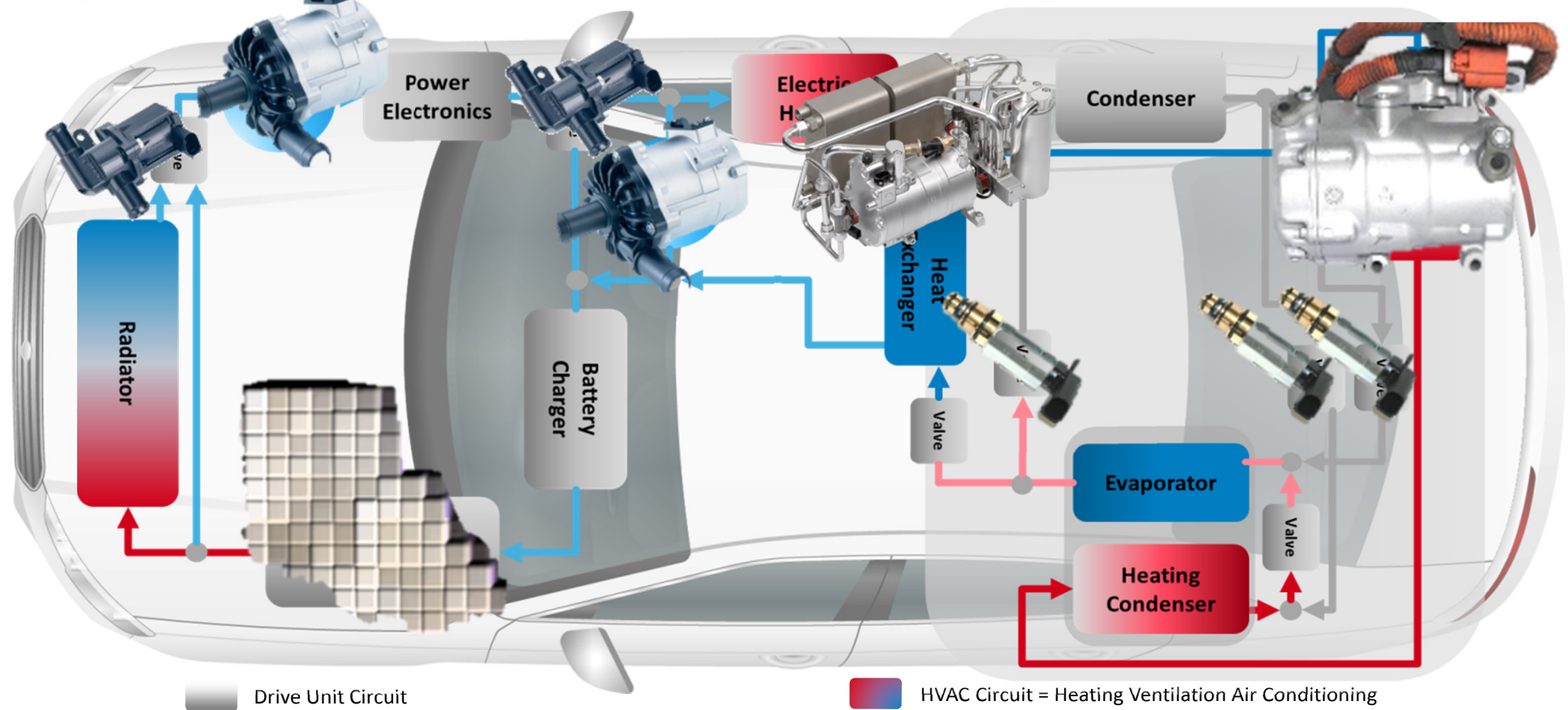
Electrification

Battery Electric Vehicle



Electrification

Battery Electric Vehicle – the system offers much more potential!

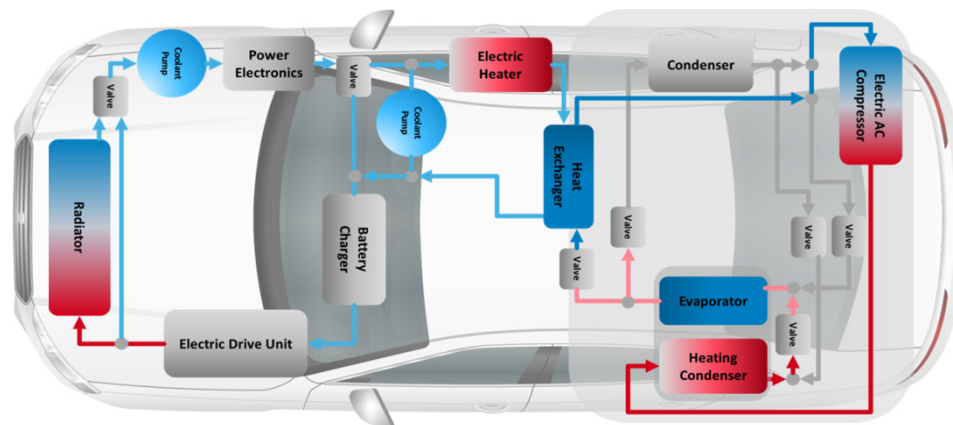


Electrification

Battery Electric Vehicle – the system offers much more options!

Powertrain

- Coolant Pump (2) ✓✓✓
- Radiator (1)
- Charge air cooler
- Coolant Module
- Switch valve (coolant) (2) ✓✓
- Oil pump (1) ✓✓✓
- Oil cooler
- Cabin heater (1)
- Casting parts
 - Batt.-Housing ✓
 - EM-Housing ✓✓
- Battery charger (1) ✓
- Battery module (1) ✓
- Electric drive unit (E-motor) (1) ✓
- Power electronics (1)



HVAC*

- A/C compressor (elect. HV) ✓✓
- On/Off valve (3) ✓
- Expansion valve (3) ✓
- Condenser (2)
- Evaporator (1)
- Liquid to liquid heat exchanger (1)
- Electrical heater (1) ✓
- Electrical blower (1) ✓

Legend:
 in production ✓✓✓
 in development ✓✓
 potential product ✓

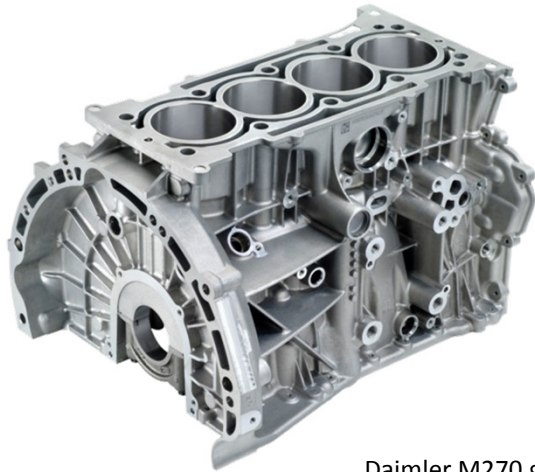
Value of items in RHA production = ca. 100-150 EUR (estimated) ✓✓✓

Value of items in RHA development = ca. 200-250 EUR (estimated) ✓✓

* HVAC= Heating, Ventilation and Air Conditioning

Electrification

Housings combustion engine vs. E-engine

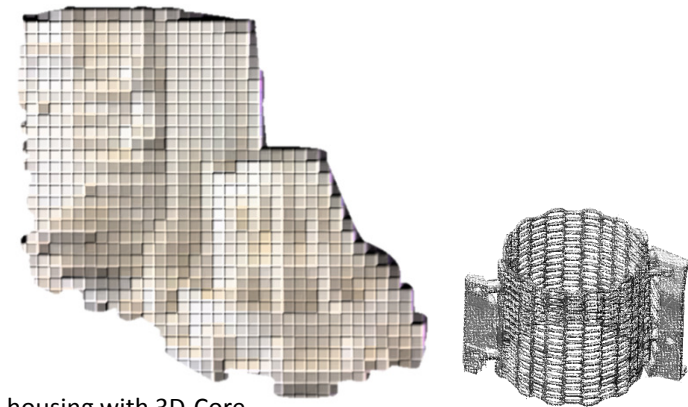


Daimler M270 gasoline 4-cylinder

Raw casting weight: about 22.5 kg

Finished part: about 19.2 kg

Dimensions: 430 x 339 x 285 mm



E-engine housing with 3D-Core

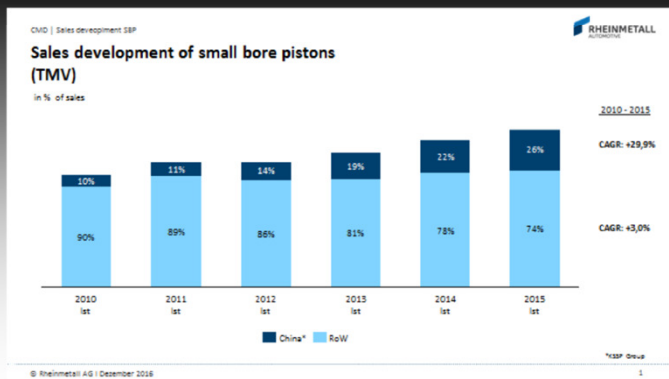
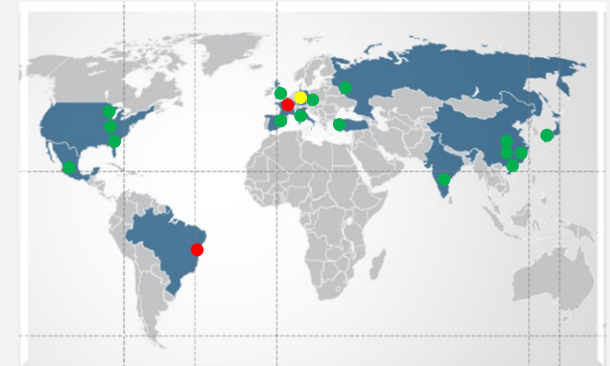
Raw casting weight: about 23.9 kg

Finished part: about 20 kg

Dimensions: 525 x 345 x 330 mm

Strategy

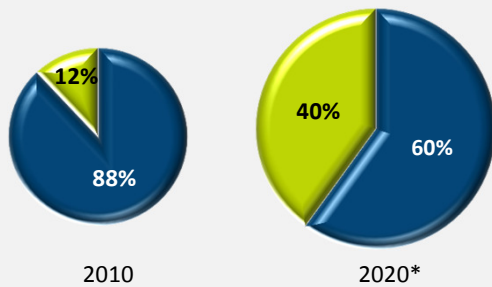
Strategic direction Hardparts



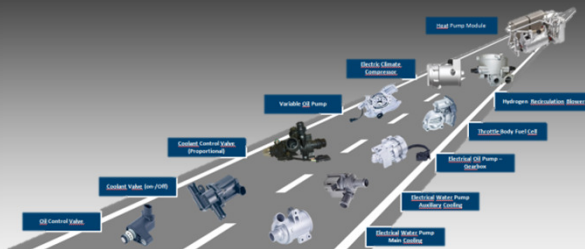
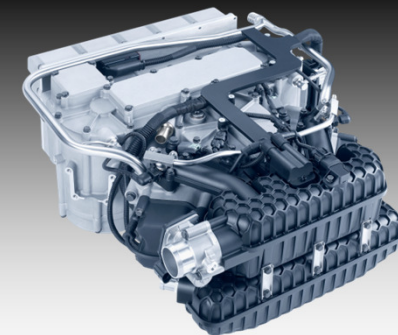
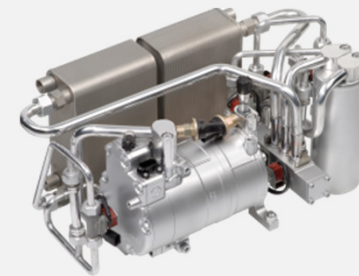
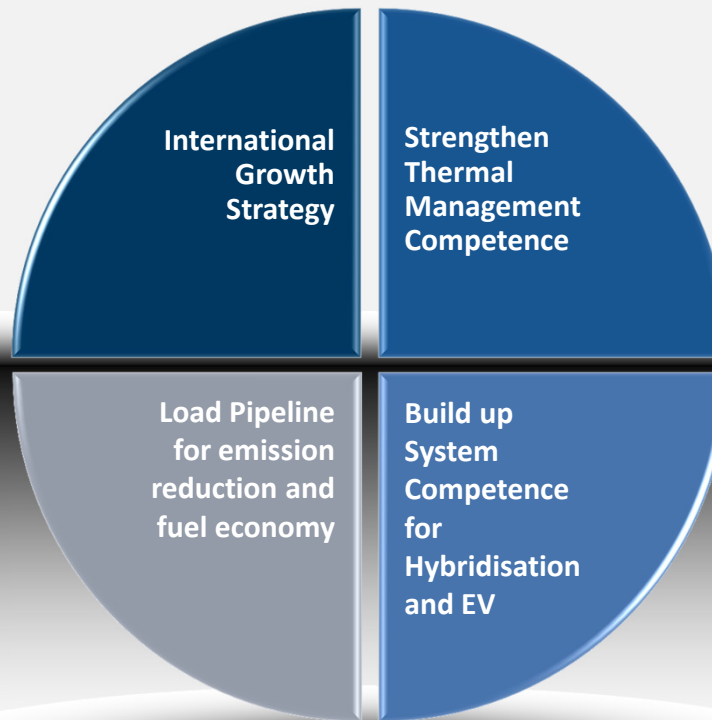
Strategy

Strategic direction Mechatronics

Sales



■ Europe (incl. Germany) ■ RoW

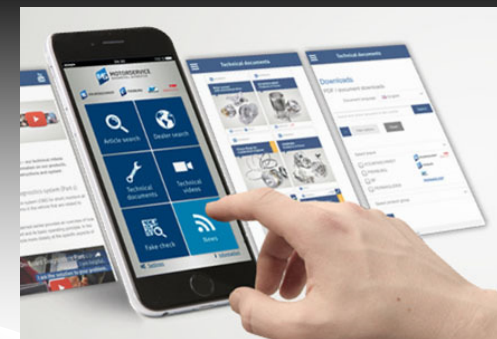
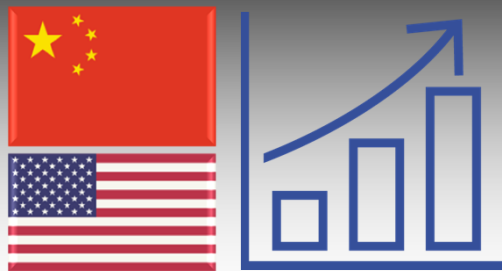
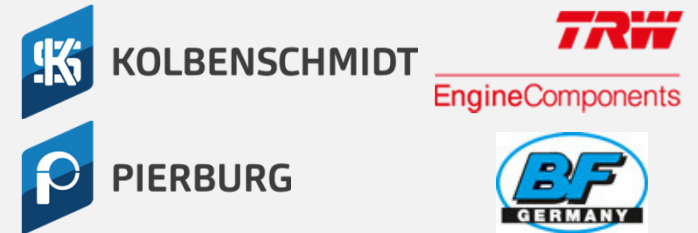
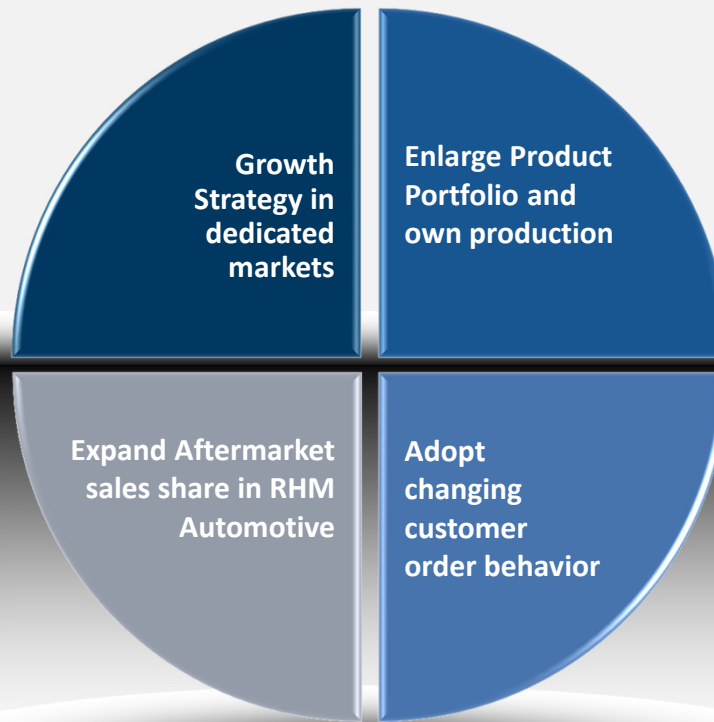
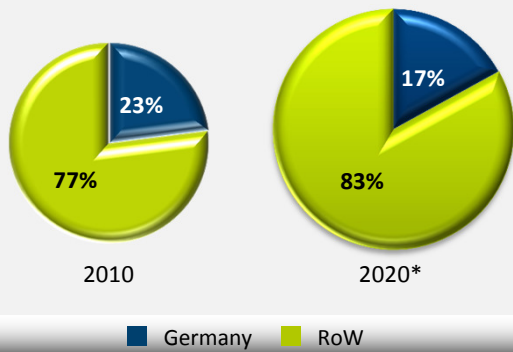


* Projection

Strategy

Strategic direction Aftermarket

Sales

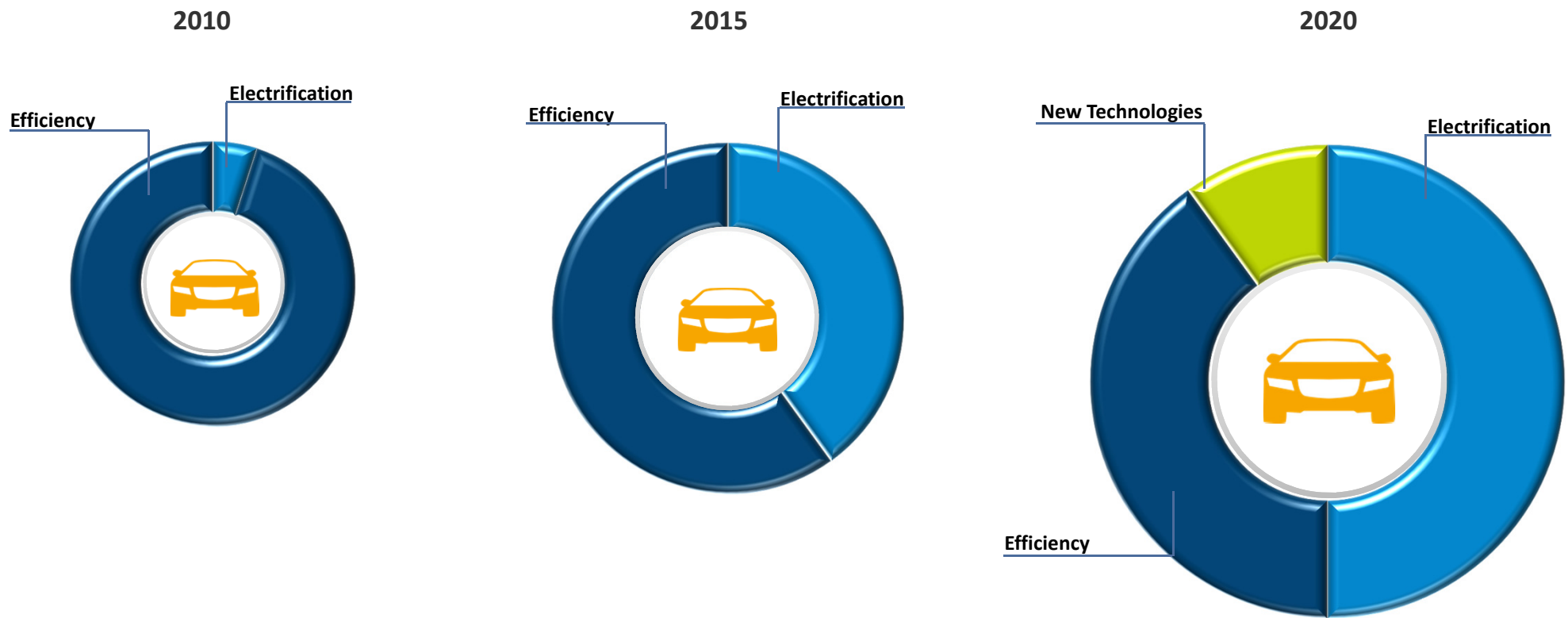


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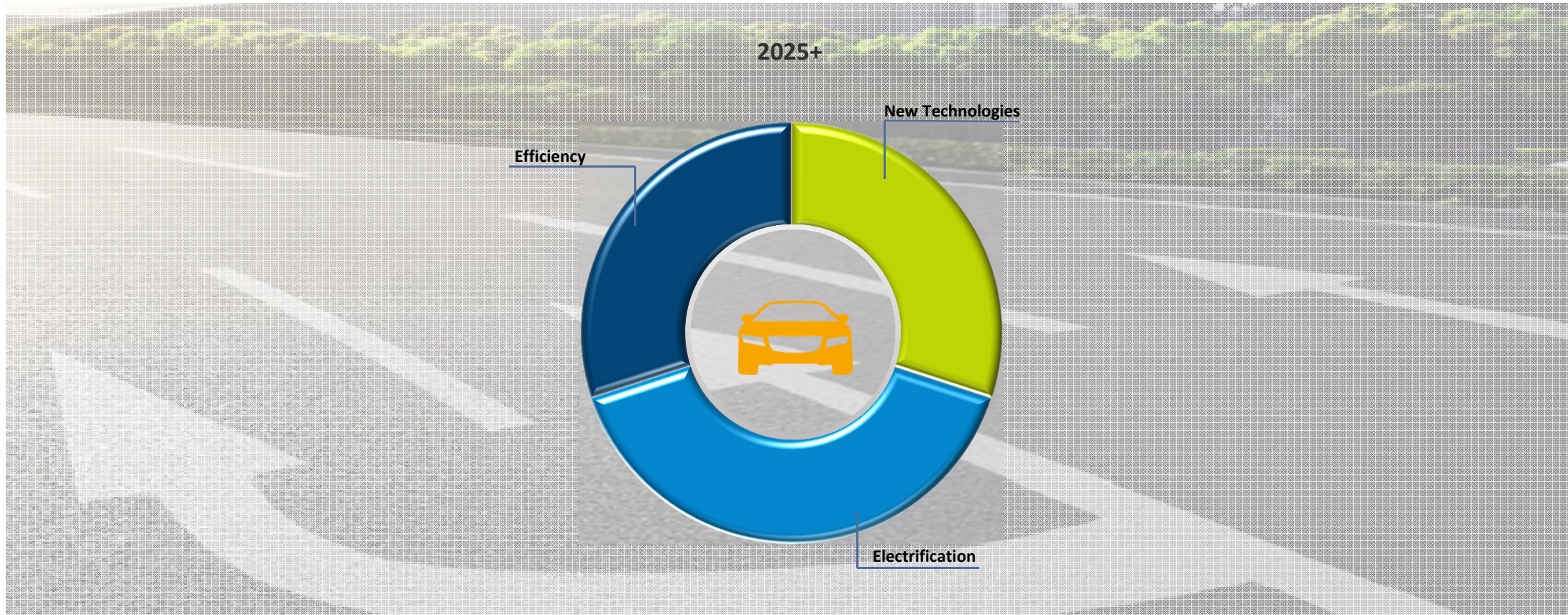
Three mainstreams for future mobility



Sales growth for New Technologies Outlook 2020



Sales split RHM Automotive Vision 2025+



Summary:

Rheinmetall Automotive is well prepared

Markets and Customers:

- We expect a stable market with lower growth rates
- China will be the growth driver, Europe and NAFTA might weaken
- Brazil seems to have left the worst behind



Performance and Products:

- Mechatronics will be the growth driver in the next years
- Hardparts will streamline the global footprint to optimize assets and cost structure
- Aftermarket will return to former profitability after ramp-up of own production facilities



New Mobility Concepts:

- Hybrid cars and e-cars are offering chances for new products and higher content per car
- We have to refocus our R&D spending to enlarge the product portfolio
- The product pipelines are filled for every type of powertrains within the next years



„It is not a matter of correctly predicting the future, but of being prepared for it.”

(Based on Perikles)

MOBILITY. SECURITY. PASSION.