



Automotive

Matthias Zink
CEO Automotive

July 20, 2017
Capital Markets Day 2017
Bühl



Matthias Zink (48)

CEO Automotive

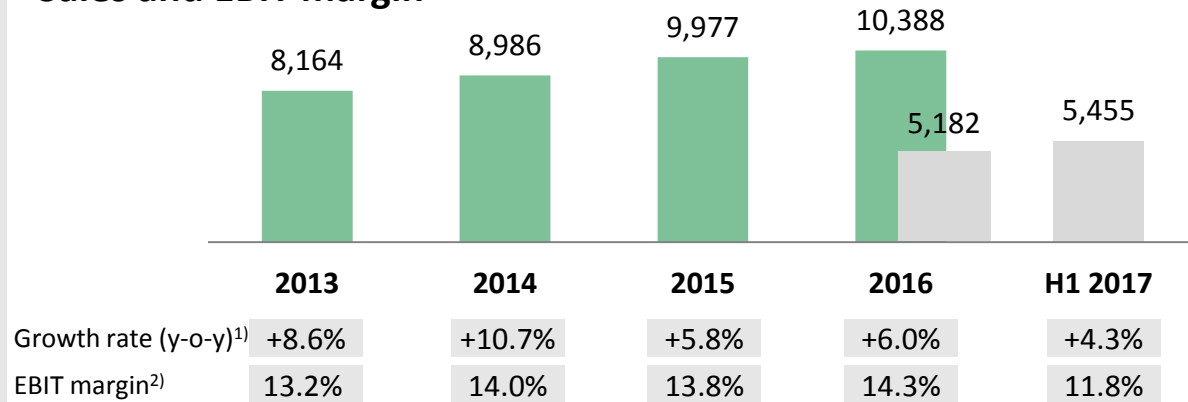
- ▶ 1994 Joined the Schaeffler Group as research engineer at LuK in Bühl
- ▶ Until 2006 Various leadership positions within the Business Division Transmission Systems
- ▶ 2006 – 2012 Head of the Business Unit Clutch Systems
- ▶ 2012 – 2014 Head of Schaeffler Automotive Asia/Pacific
- ▶ 2014 – 2016 Head of the Business Division Transmission Systems
- ▶ Since 2017 Member of the Executive Board of the Schaeffler AG as CEO Automotive

Executive Board Sponsor of E-Mobility at Schaeffler

23 years with Schaeffler

Automotive division – At a glance

Sales and EBIT margin

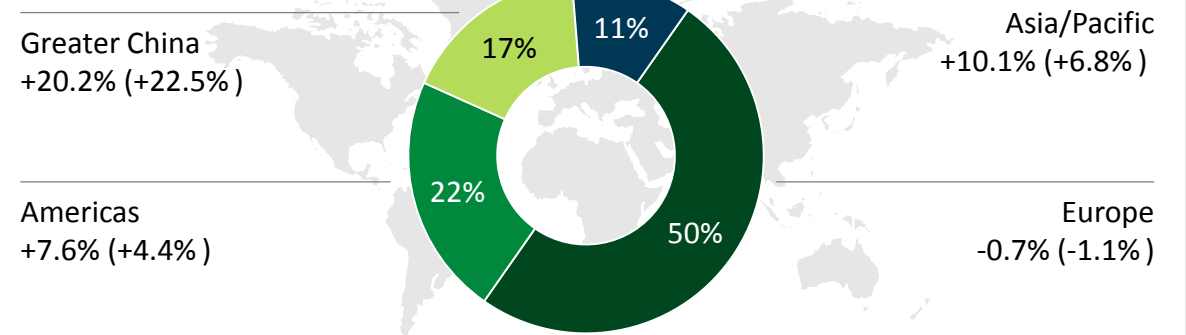


	2013	2014	2015	2016	H1 2017
Growth rate (y-o-y) ¹⁾	+8.6%	+10.7%	+5.8%	+6.0%	+4.3%
EBIT margin ²⁾	13.2%	14.0%	13.8%	14.3%	11.8%

¹⁾ FX adjusted ²⁾ adjusted & before one off effects

Automotive sales by region H1 2017

y-o-y growth (FX adjusted)



Sales H1 2017: EUR 5,455 mn

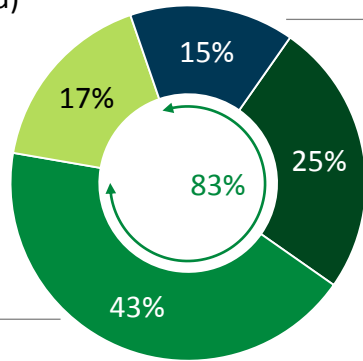
Automotive sales by Business Division H1 2017

y-o-y growth (FX adjusted)



Aftermarket
+2.3% (+0.8%)

Transmission
+7.1% (+6.3%)



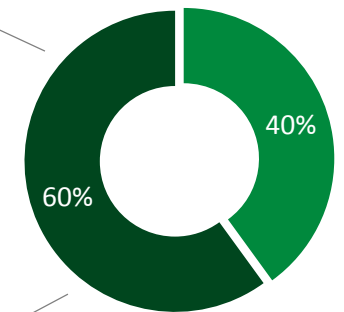
Chassis
+3.0% (+1.7%)

Engine
+5.7% (+4.8%)



Sales split by customer mix H1 2017

Top 10 customers

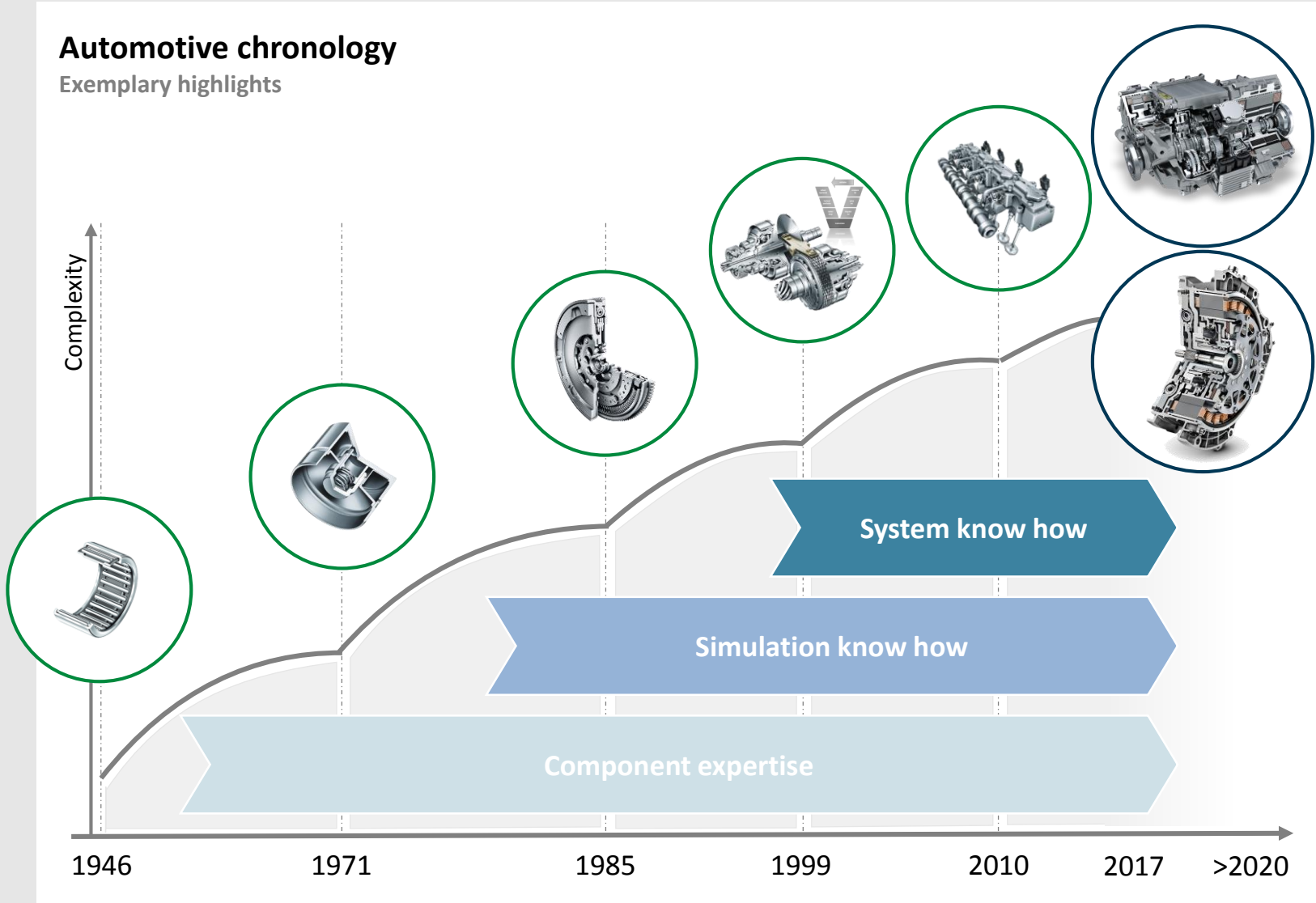


■ Top 10 automotive customers
■ Other customers

Automotive chronology – Innovation driven success

Automotive chronology

Exemplary highlights



Unique selling points

- ▶ Global R&D network and exceptional innovative spirit
- ▶ System expertise with outstanding powertrain and simulation competencies
- ▶ Strong mechanical background with a high degree of vertical integration
- ▶ Operational and manufacturing excellence with a global production footprint



Key market drivers



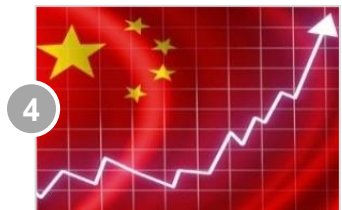
1 CO₂ and emission legislation



2 E-Mobility



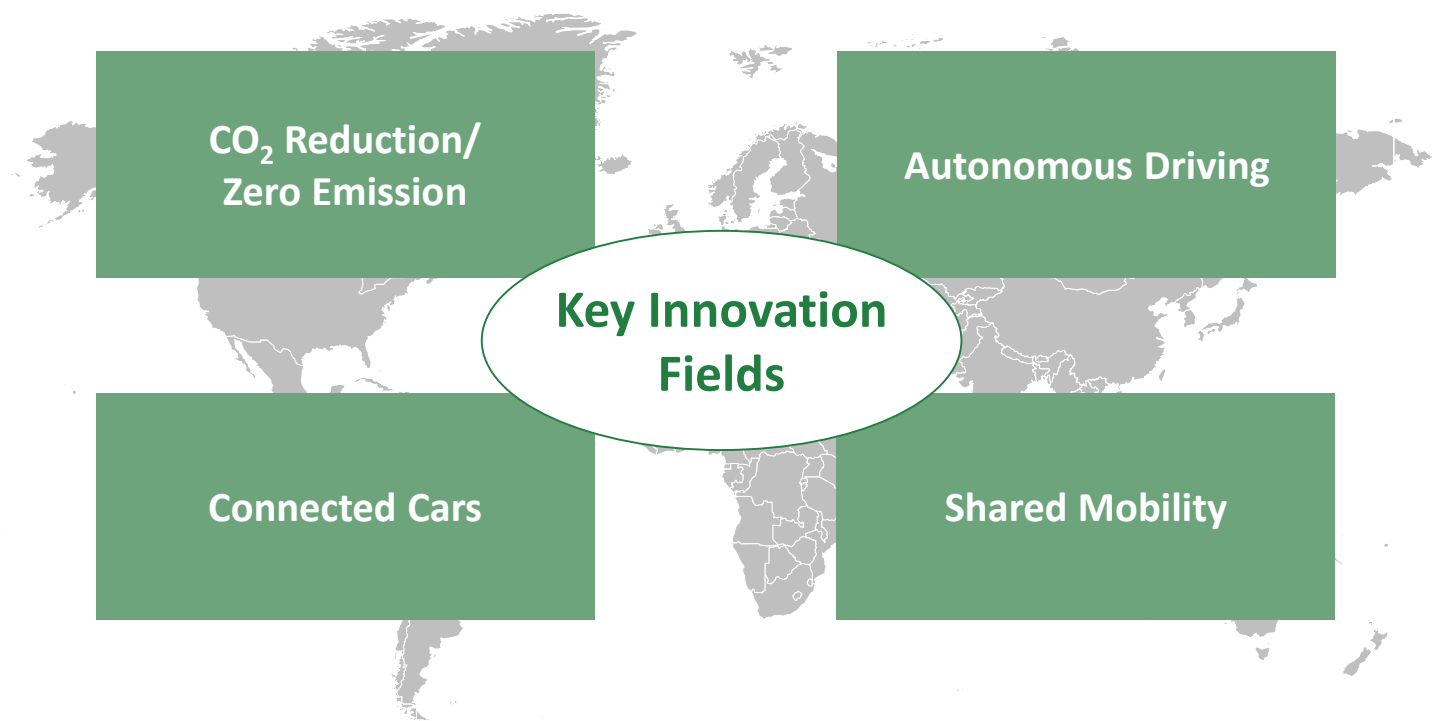
3 Fierce competition & affordability



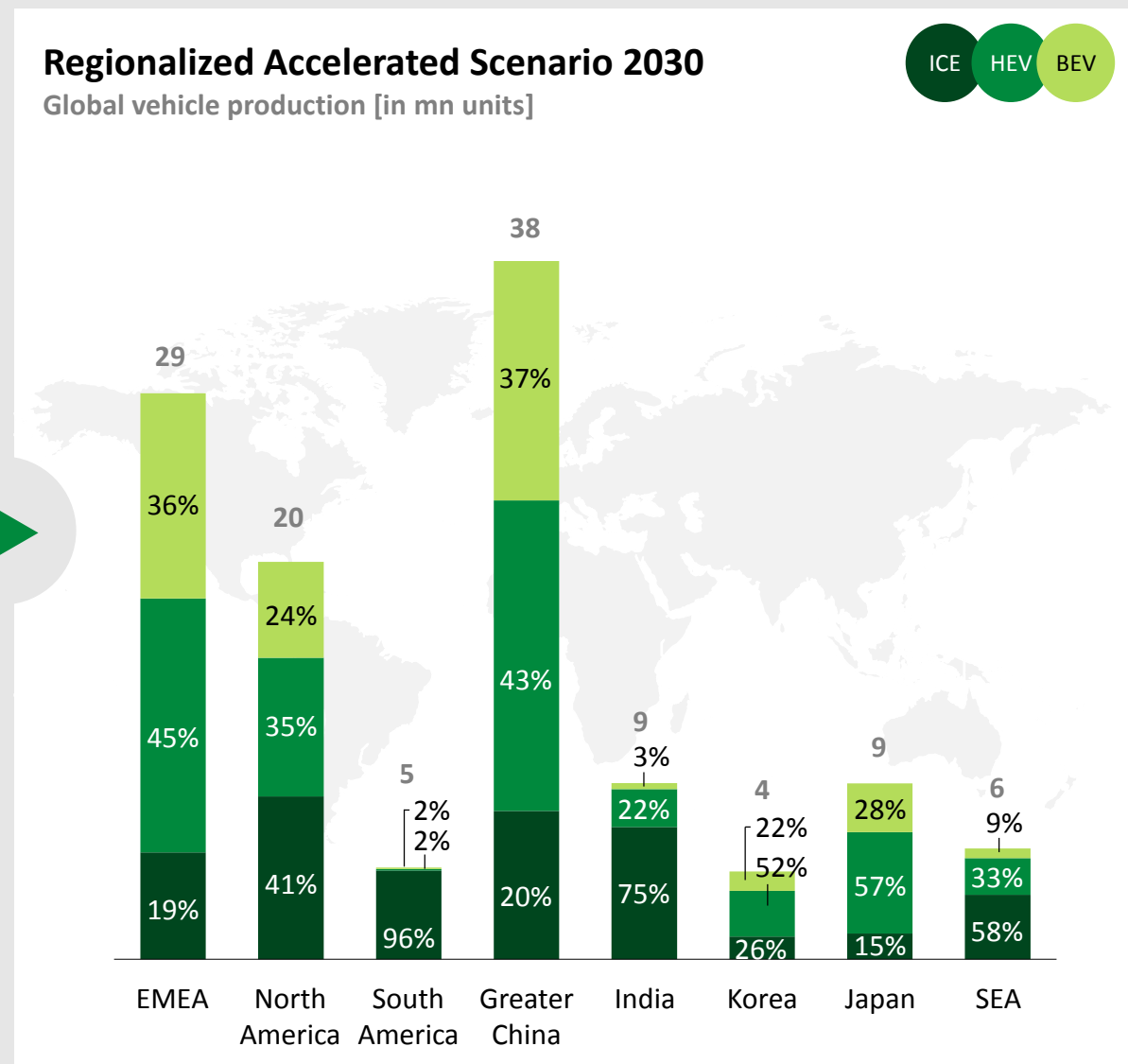
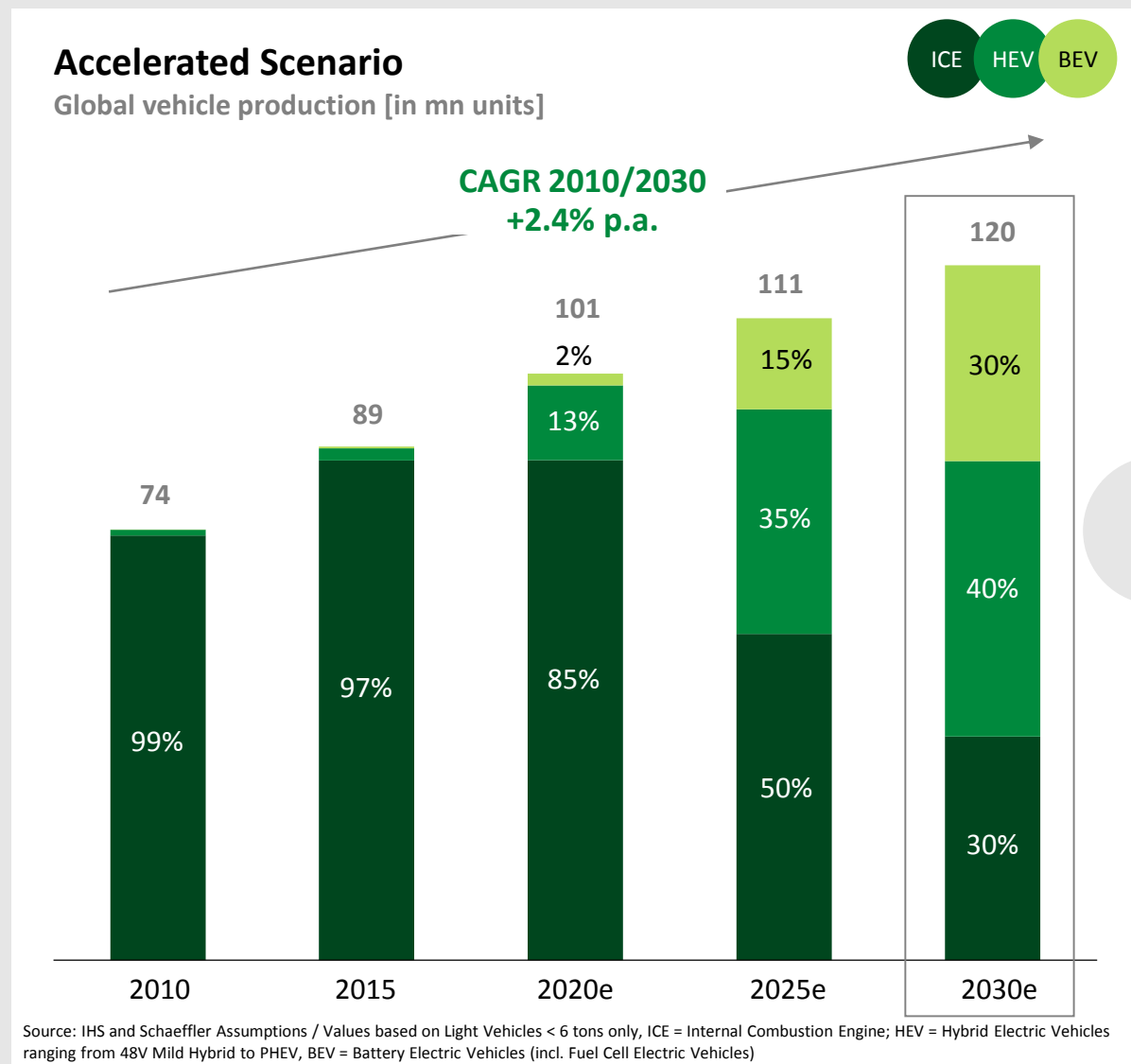
4 Regional & urban trends



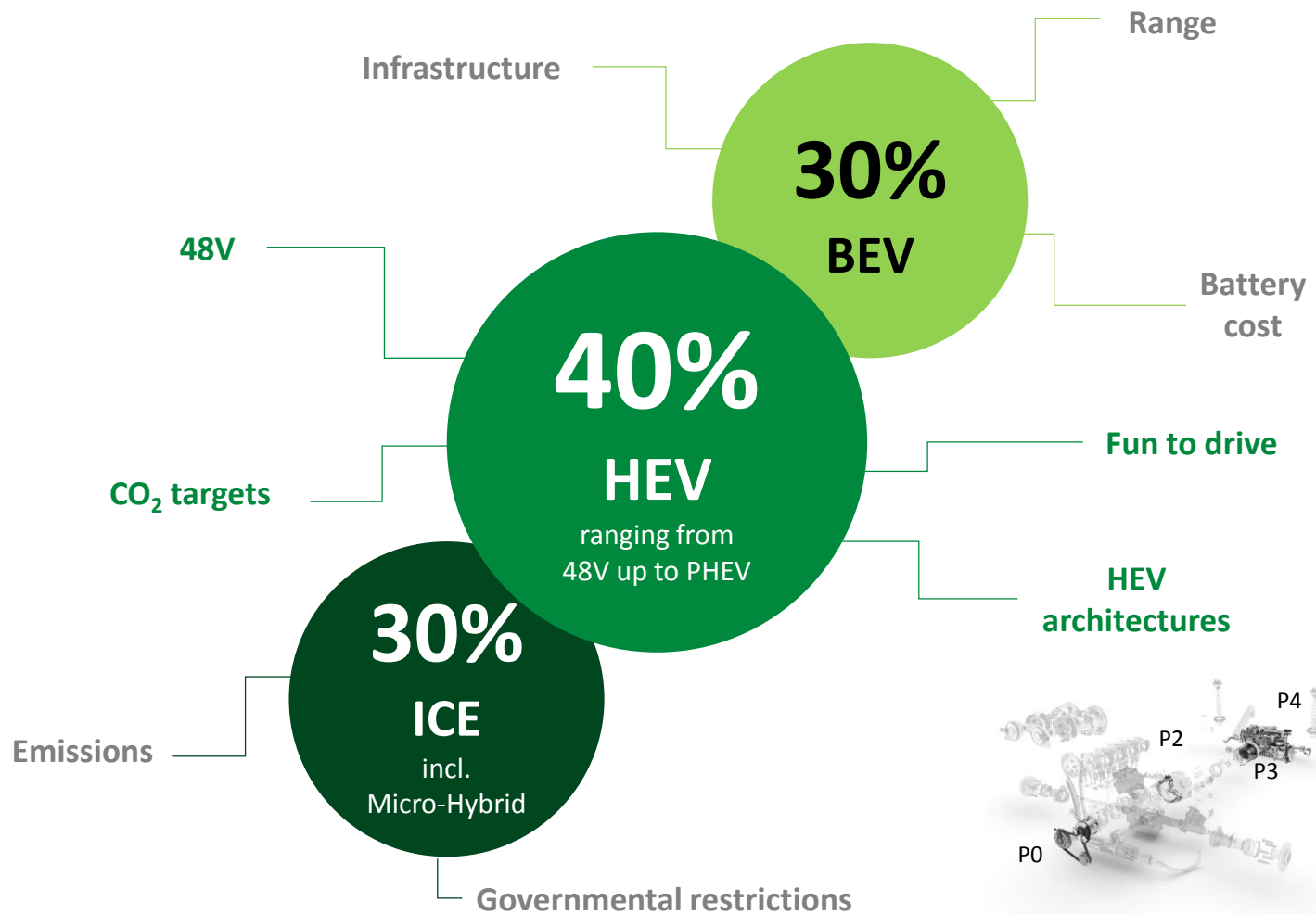
Four Automotive mega trends



Powertrain scenario – The market is moving towards the accelerated scenario



Accelerated Scenario 2030



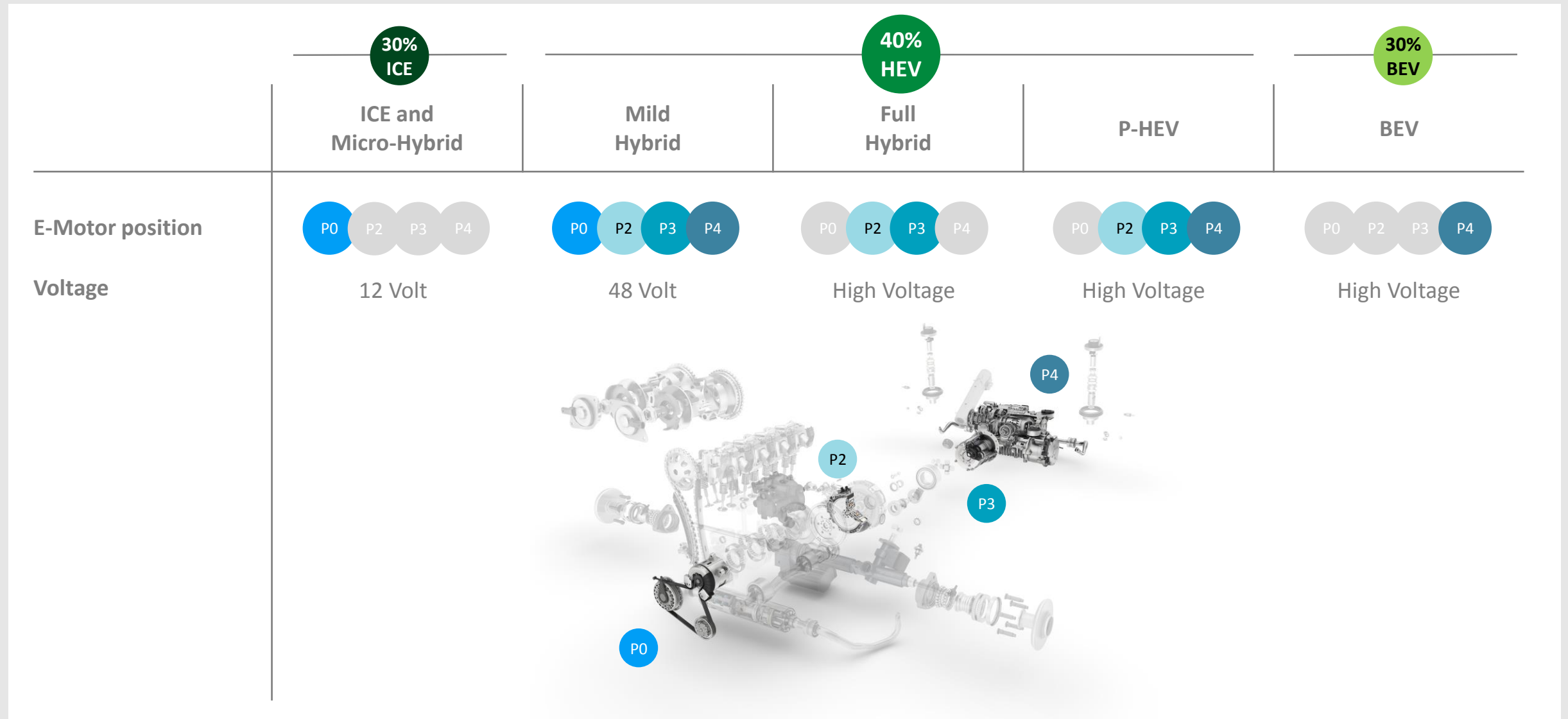
Drivers of HEV

- HEV**
 - ▶ Several **HEV architectures** ranging from cost efficient 48V solutions up to highly electrified Plug-In Hybrids
 - ▶ **48V** solutions with high benefit to cost ratio
 - ▶ Necessity to keep up with mid-term **CO₂ targets** and legislation
 - ▶ **Fun to drive** – the best of both worlds, less emission with more power and range

Constraints of pure ICE and BEV

- ICE**
 - ▶ **Emission** target compliance requires more technology and drives powertrain cost with worse cost/benefit compared to HEV
 - ▶ **Governmental restrictions** e.g. localized ban of Diesel engines
- BEV**
 - ▶ Limited charging **infrastructure** for BEV
 - ▶ Reduced driving **range**
 - ▶ **Battery cost** and battery production capacities


Powertrain concepts and electrification levels – Wide variety of hybrid solutions



E-Mobility as our key growth driver – 8 series contracts and >20 ongoing customer projects



North America



**Hybrid Module
with integrated Torque Converter**
Tier 1
SOP Q4/2018

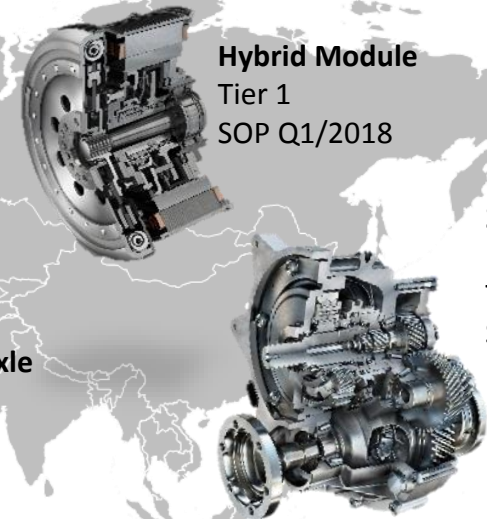
Europe



1-Gear Electric Axle
Front + Rear
Tier 1
SOP Q3/2018

1-Gear Electric Axle
Front
Tier 1
SOP Q3/2019

Greater China

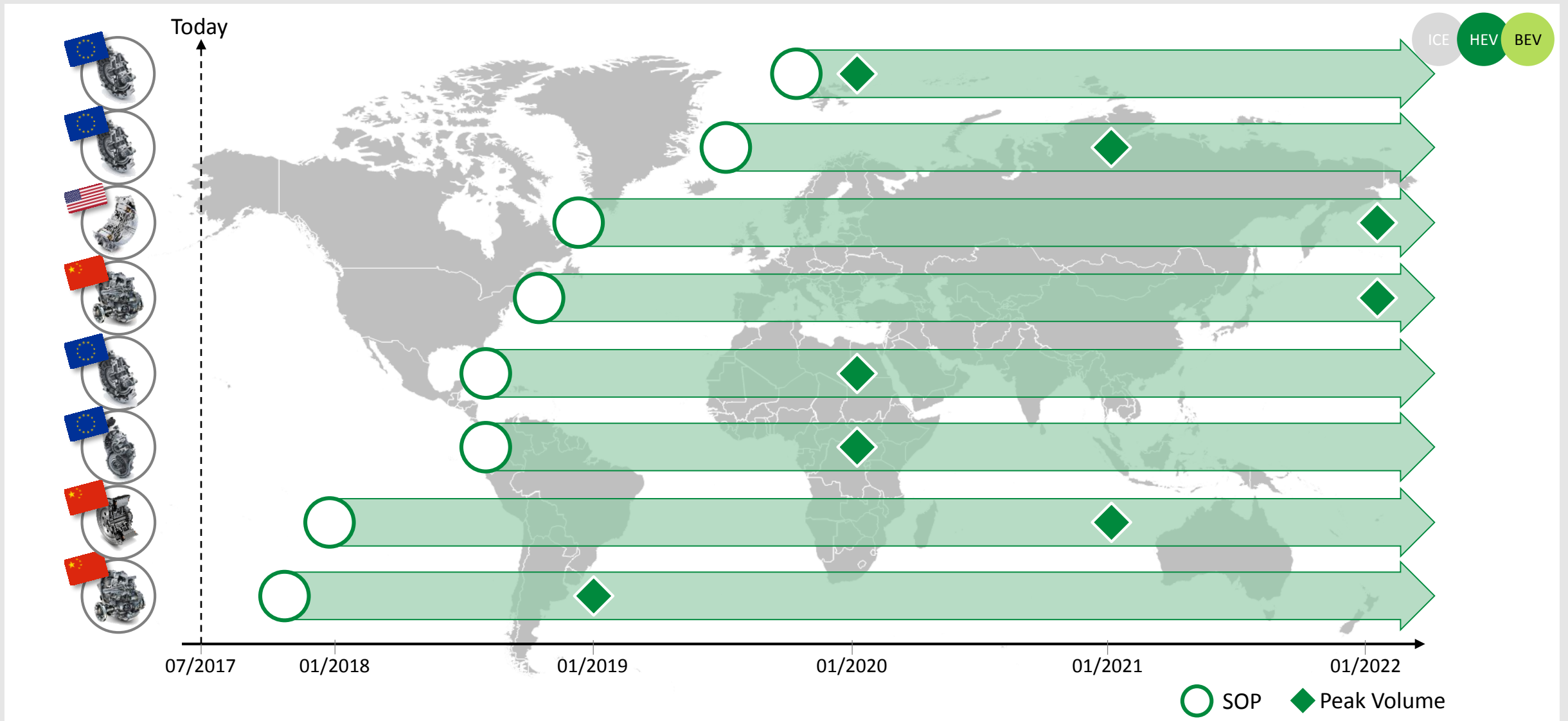


Hybrid Module
Tier 1
SOP Q1/2018





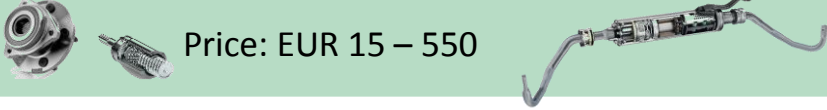
2-Gear Electric Axle
Rear
Tier 1
SOP Q4/2017

Hybrid Module	E-Axle
▶ 2 series contracts	▶ 6 series contracts
▶ More than 10 ongoing customer projects	▶ More than 10 ongoing customer projects

E-Mobility – How we ramp up



Powertrain concepts – Product highlights

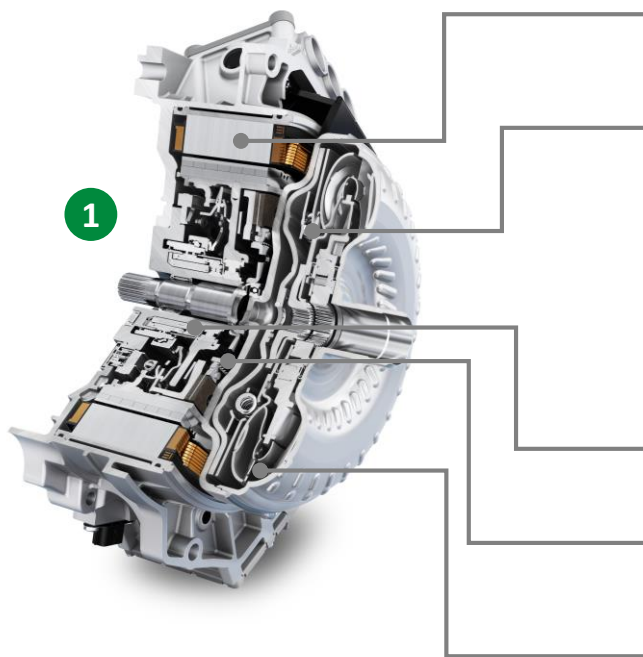
	30% ICE	40% HEV			30% BEV
	ICE and Micro-Hybrid	Mild Hybrid	Full Hybrid	P-HEV	BEV
A Hybrid Module		 Price: EUR 700 – 1,300			
B E-Axle		 Price: EUR 800 – 1,600			
C Thermal Management Module	 Price: EUR 40				
D E-Clutch	 Price: EUR 110 – 260				
E Chassis Systems	 Price: EUR 15 – 550				

Hybrid Module product portfolio



1 System solution (Tier 1)
 Potential content range:
EUR 700 – 1,300

2 Component & modular solution (Tier 1 & 2)
 Potential content range:
EUR 50 – 500



Electric Machine

TC Damper &
 Lockup Clutch

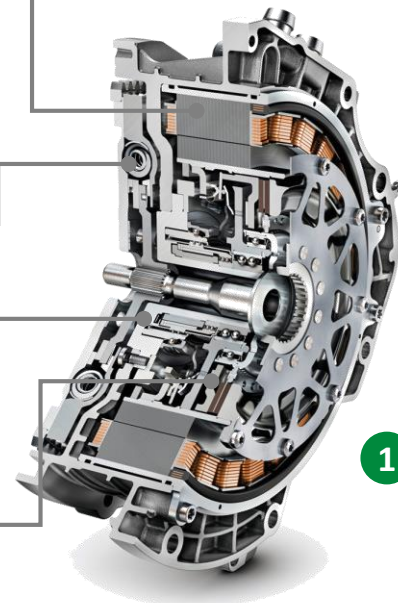
Dual Mass
 Flywheel

2

Clutch
 Actuator

Clutch K0

Integrated Torque
 Converter



Our USPs

- ▶ Compact design with integrated & electro-mechanical/hydraulic clutch actuation
- ▶ Reduced axial space requirements due to packaging solutions
- ▶ Possibility to integrate power electronics unit

Key aspects

- ▶ Available as 48V & high voltage solution
- ▶ Adaptable to all transmission types & optimized to perfectly fit our customers' distinct powertrain requirements

Car-segments and regional facts

- ▶ From 48V entrance hybridization to high voltage Plug-in solutions
- ▶ For all segments and regions applicable

Concept car



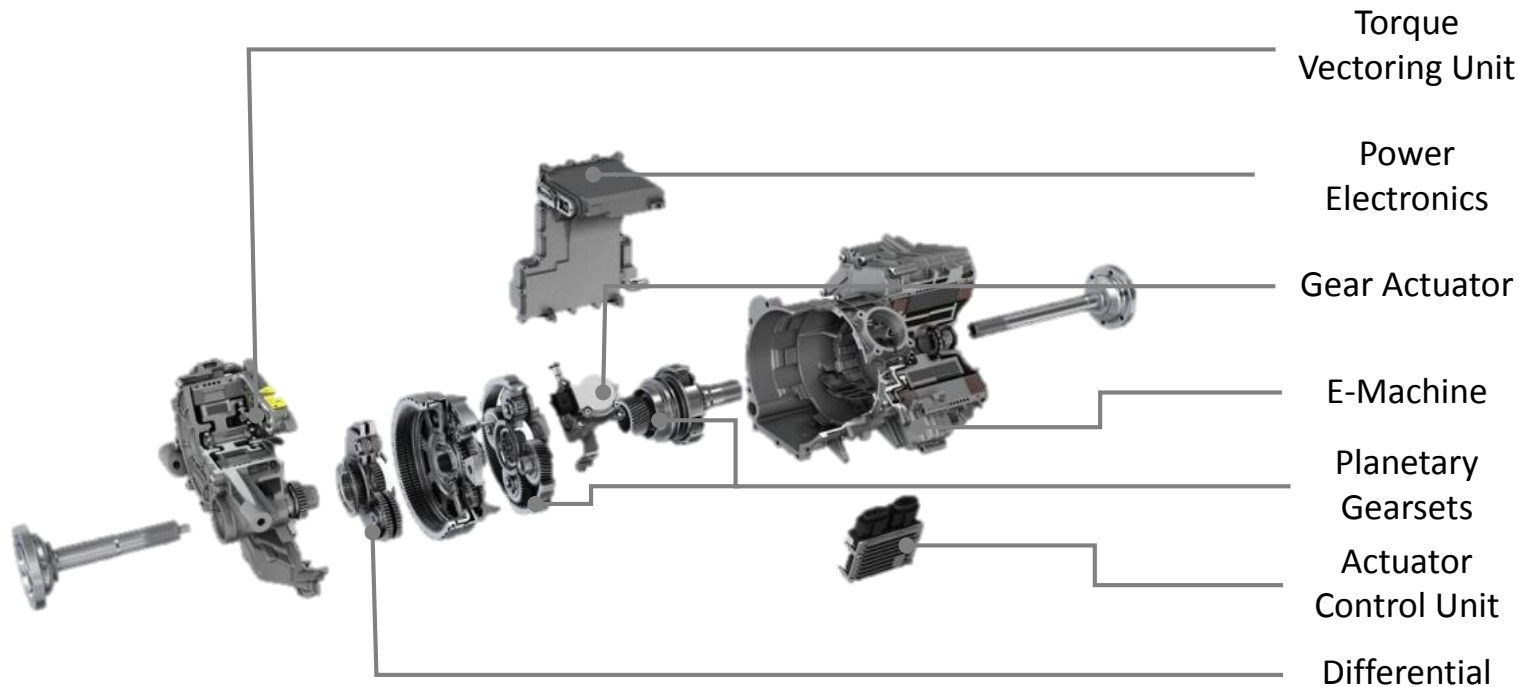
B E-Mobility – E-Axle

E-Axle product portfolio



1 System solution (Tier 1)
 Potential content range:
EUR 800 – 1,600 (per E-Axle)

2 Component & modular solution (Tier 1 & 2)
 Potential content range:
EUR 50 – 800



Our USPs

- ▶ Best-in-class power density
- ▶ Highly adaptable solution for 48V and High Voltage applications, with 1- or 2-speeds and in parallel or coaxial design
- ▶ With optional Torque Vectoring unit for improved driving dynamics

Key aspects

- ▶ Acquisition of Compact Dynamics (E-Machine)
- ▶ Cooperation initiated with Semikron (Power Electronics)

Car-segments and regional facts

- ▶ E-Axles as electrical all-wheel drive interesting for hybrids in all segments
- ▶ Due to highly modular concept, applicable to BEV in all segments and regions

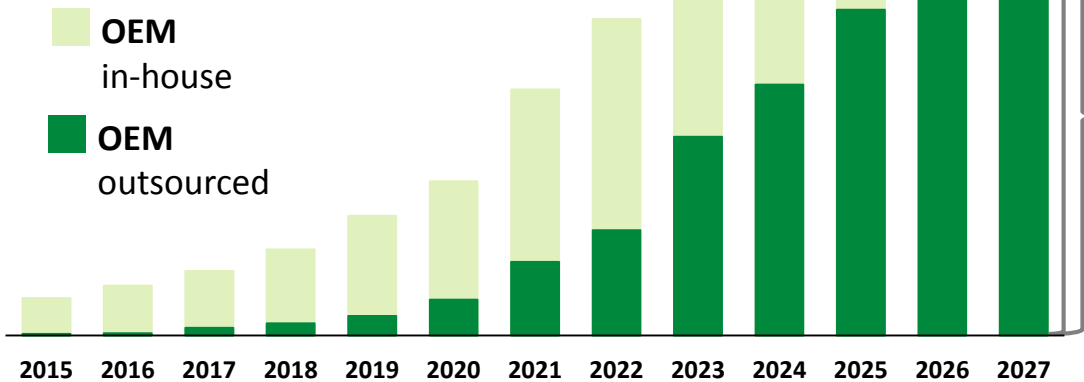
Concept car



Key aspects

- ▶ OEMs have the option to in- or outsource their E-Mobility solutions
- ▶ Outsourcing OEMs can use Schaeffler as a Tier 1 supplier of systems or a Tier 2 supplier of components and modular solutions
- ▶ Insourcing OEMs can rely on components & modular solutions by Schaeffler

E-Mobility Market Volume¹
2015 – 2027



¹Schaeffler estimated E-Mobility Market for Powertrain systems

2 Component & modular solution (Tier 1 & 2)



Potential content range:
EUR 50 – 800

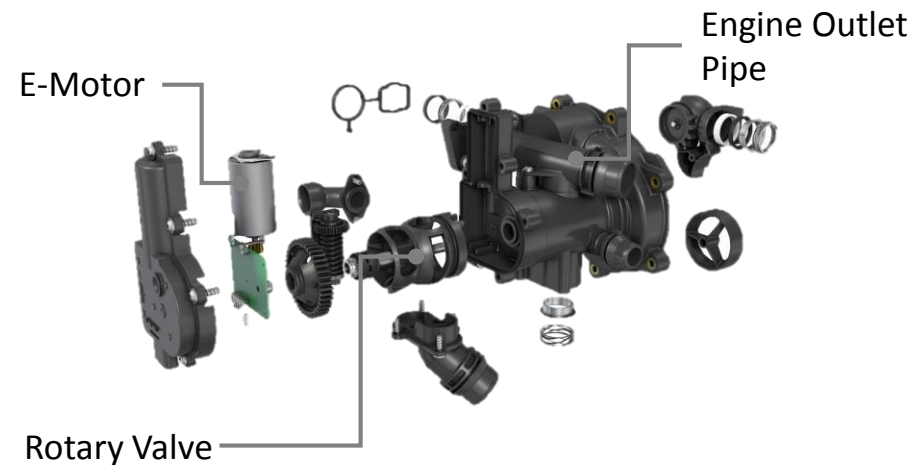
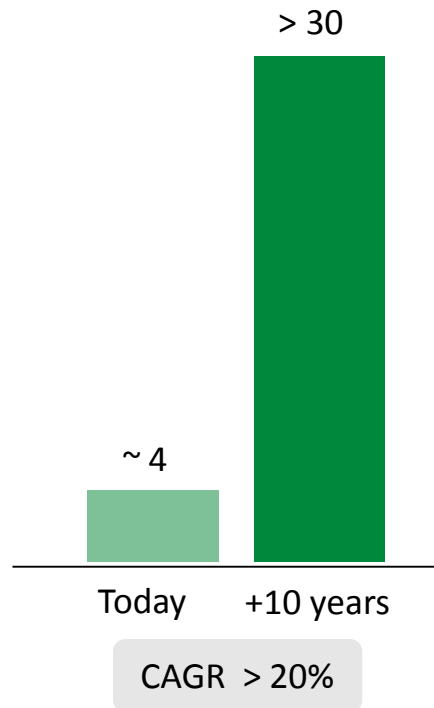
1 System solution (Tier 1)



Potential content range:
EUR 700 – 1,600

Thermal Management Module product portfolio

Market forecast [mn units]



- ▶ Average Price: **EUR 40**
- ▶ In series production

Key aspects

- ▶ Schaeffler's best in class & highly integrated Thermal Management Module already in series production with large OEMs
- ▶ Impressive market growth for thermal management solutions far beyond 2020 with a CAGR of > 20% over the next 10 years
- ▶ Thermal management for HEV/BEVs provides even further market opportunities (e.g. for battery and power electronics cooling)

Car-segments and regional facts

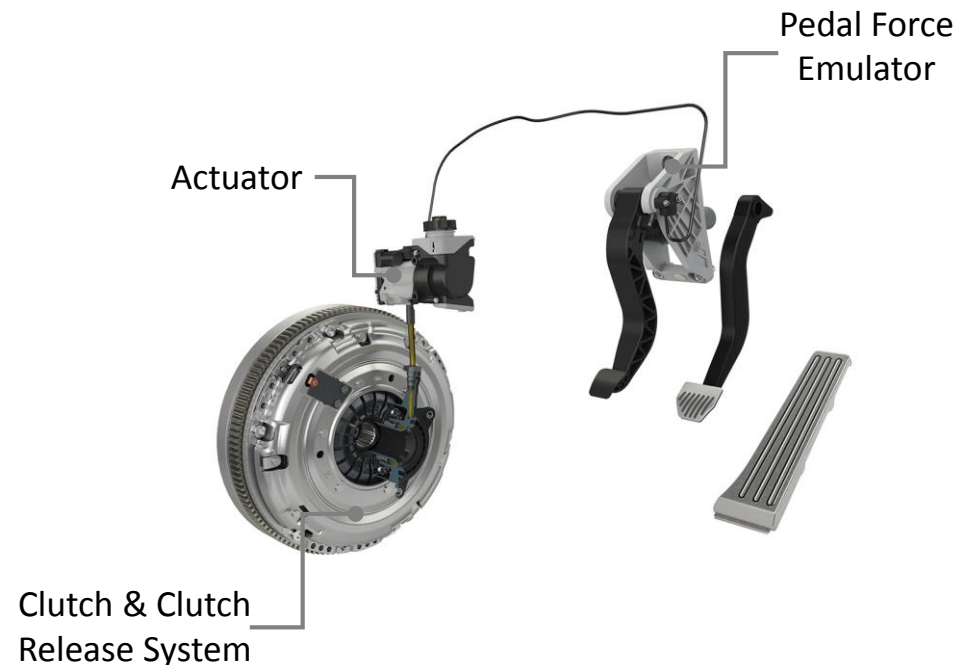
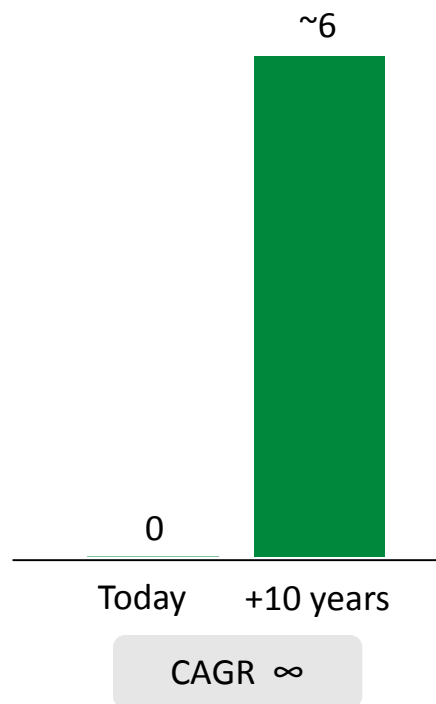
- ▶ Relevant for all regions & segments
- ▶ Car-segment specific differences in complexity of thermal management

Concept car



E-Clutch product portfolio

Market forecast [mn units]



- ▶ Price range: **EUR 110 – 260¹**
- ▶ First SOP: 05/2018

Key aspects

- ▶ E-Clutch enables coasting with Manual Transmissions (MT) and saves up to 8% CO₂
- ▶ Highly suited for mild hybridization of the powertrain
- ▶ Accelerated Scenario predicts high volume of Manual Transmissions in 2025 (>36 mn)
- ▶ Strong market growth of E-Clutch over the next 10 years expected (> EUR 1 bn)
- ▶ Avg. content per MT will increase by ~30%
- ▶ Market share target 2022: ~45%

Car-segments and regional facts

- ▶ Focus Car Segments: A - D (Small-Mid-Size)
- ▶ Focus Regions: China and Europe

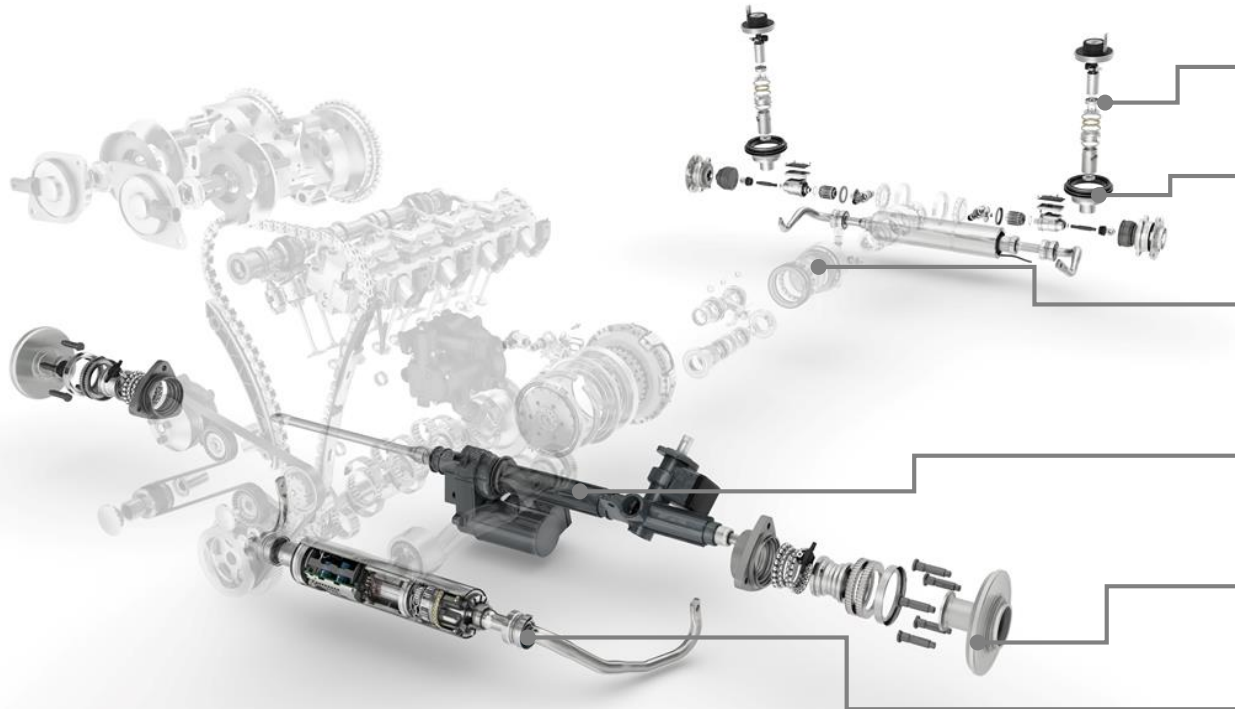
Demo car



¹ Depending on actuator type and E-Clutch concept

E Chassis Systems – Various products independent of the powertrain

Mechanic components & mechatronic systems



Strut Bearings

Mechatronic Ride Height Adjustment²⁾

Drive Shaft Bearings

Ball Screw Drives for Steering & Braking Systems

Wheel Bearings

Mechatronic Active Roll Control (iARC)

▶ Price range: **EUR 5 – 550¹⁾**

▶ In series production

¹⁾ Depending on product

²⁾ Incl. in Demo Car; not in series production

³⁾ Noise, vibration, harshness

Key aspects

- ▶ Chassis components and systems are independent of powertrain concept
- ▶ Main applications are suspension, steering, braking, wheel modules and Mechatronic Active Roll Control
- ▶ Stricter requirements in electrified Vehicles provide further market opportunities (e.g. NVH³⁾, weight and friction)
- ▶ Increased requirements for comfort in automated driving provides additional potential business (e.g. Actuation)

Car-segments and regional facts

- ▶ For all segments and regions applicable

Demo car



Our growth formula – Why do we believe in continued outperformance?

SCHAEFFLER

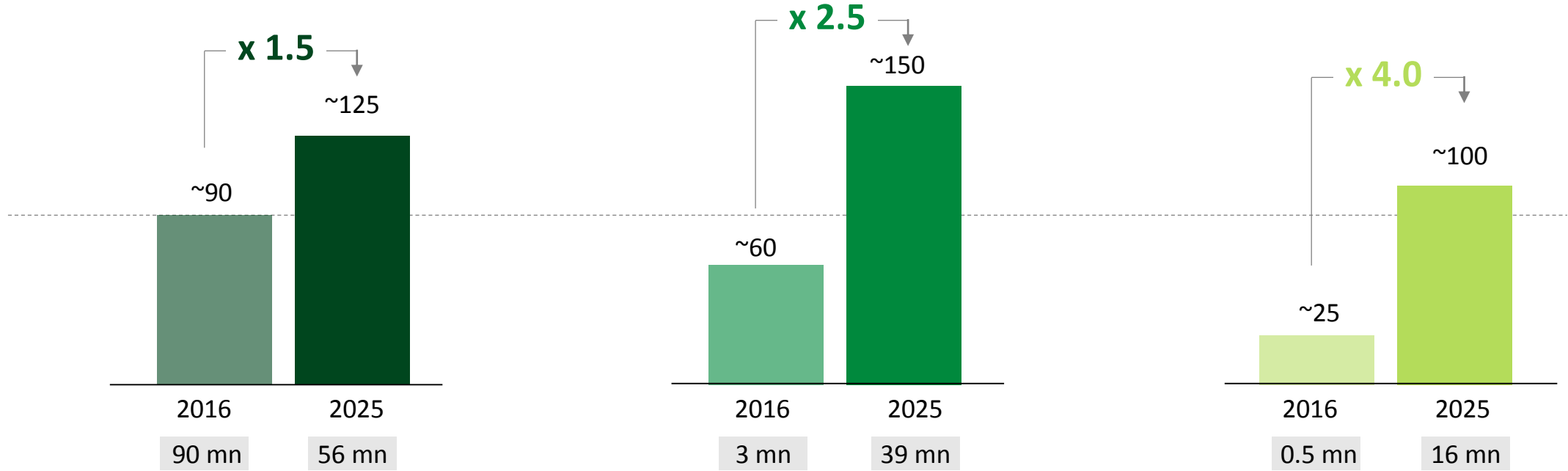
excl. Aftermarket, Heavy Duty & Motorcycles

Content per Vehicle ¹⁾ in EUR

1 ICE

2 HEV

3 BEV



Average Content per Vehicle 2025
~EUR 130 ²⁾
~6% CAGR ³⁾

- mn No. of light vehicles²⁾

¹⁾ Average Schaeffler Content per light Vehicles produced world wide (excluding Aftermarket, Heavy Duty & Motorcycles content) ²⁾ according to Schaeffler Accelerated Scenario ³⁾ Market Growth 2016-2025: 1.8% (Source: IHS; July 2017) + Content per Vehicle growth ~4%

E-Mobility dashboard – Monitoring transition

Status as of Q1 2016
currently under review

	2016	H1 2017	
Market development¹⁾ in mn Vehicles	▶ BEV	0.5 (0.6%)	0.4 (0.8%)
	▶ HEV	2.7 (2.9%)	1.6 (3.3%)
	▶ ICE	89.9 (96.5%)	45.3 (95.9%)
Sales in mn EUR	▶ BEV	14 (0.2%)	12 (0.3%)
	▶ HEV	170 (2.1%) ³⁾	105 (2.4%)
	▶ ICE	7,880 (97.7%) ³⁾	4,160 (97.3%)
Order Book⁴⁾ HEV/BEV	▶ Projects ⁵⁾	23	28
	▶ Series Contracts	→	8
	▶ Lifetime Sales	~EUR 750 mn	~EUR 1,150 mn
Resources	▶ Capex	EUR 29 mn	EUR 40 mn ⁶⁾
	▶ R&D Invest	EUR 35 mn	EUR 38 mn ⁶⁾
	▶ ΔHCO	+259	+254

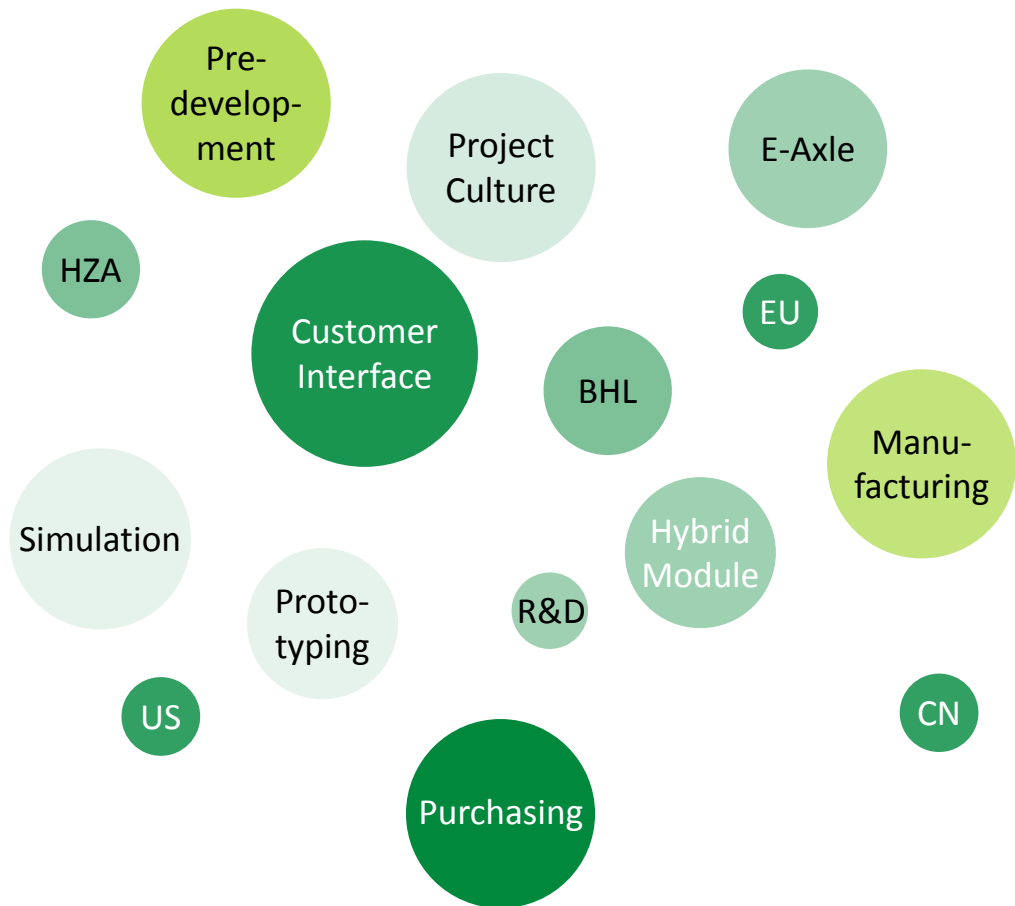
w/o AAM, HD & MC²⁾

Target 2020	
# BEV	> 2,000
1 # HEV	> 13,000
in Vehicles '000	
2 HEV + BEV Sales	> 15% of total sales of Schaeffler Automotive ²⁾
3 Resources	EUR 500 mn add. invest add. 1,200 ΔHCO

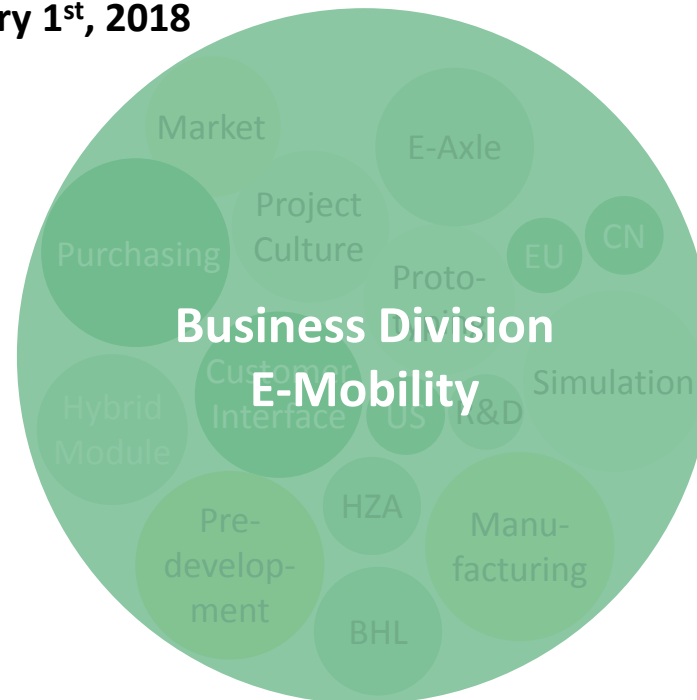
Acceleration of market change
will lead to additional resource
committed

¹⁾ IHS Light Vehicle Production Forecast, July 2017 ²⁾ Excluding Aftermarket, Heavy Duty & Motorcycles ³⁾ Adjusted due to Reclassification of HEV-Vehicles ⁴⁾ Only Hybrid Modules and E-Axes ⁵⁾ Only ongoing Customer Project ⁶⁾ Ytd Estimates

Today



As of January 1st, 2018



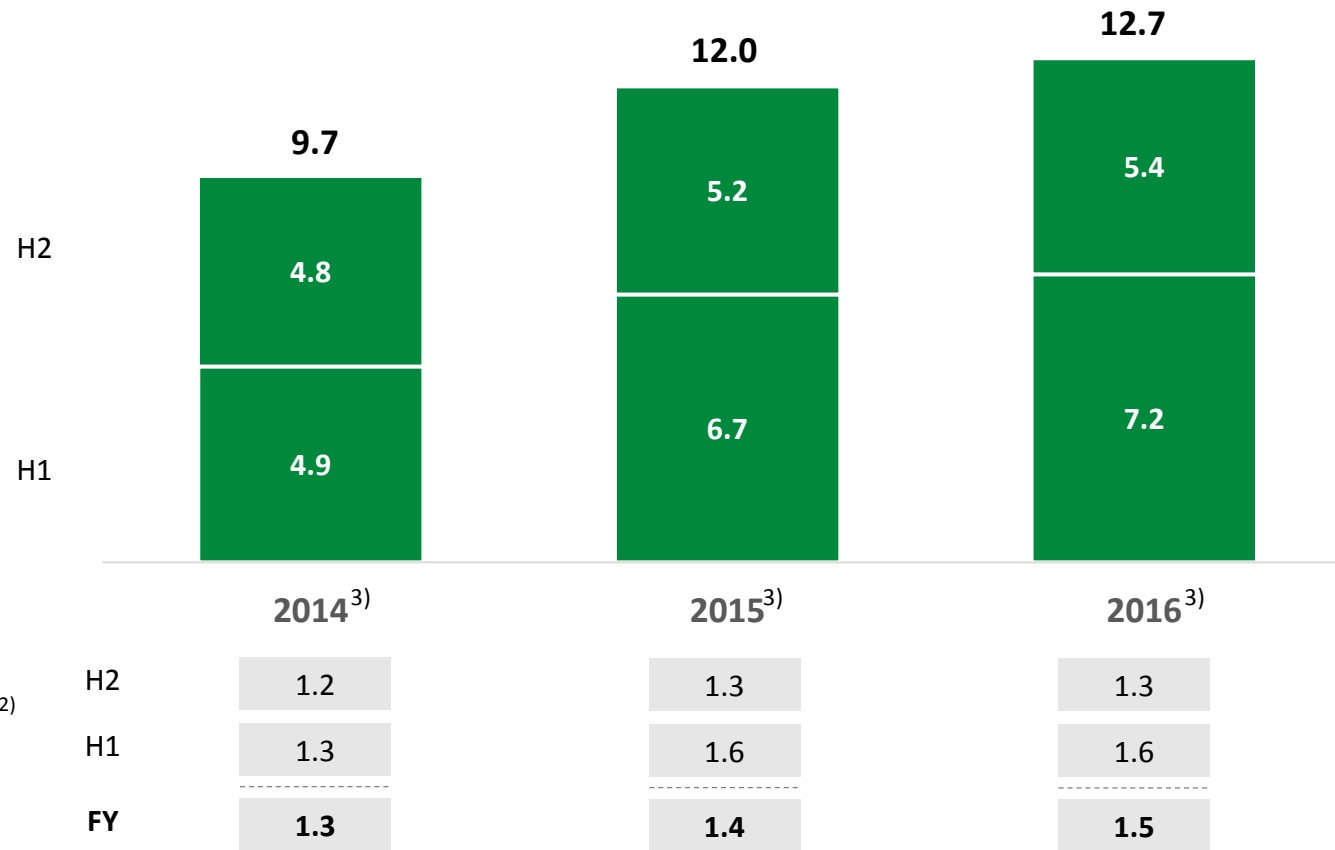
Bundling of the E-Mobility activity at Schaeffler to advance the transition towards E-Mobility by:

- ▶ Presenting one face to the customer
- ▶ Creating R&D synergies
- ▶ Quicker decision making processes
- ▶ A unified controlling to monitor progress

New order intake – Continuous strong growth

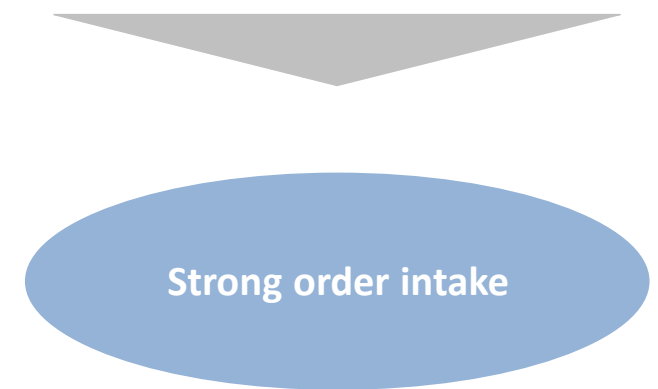
Automotive OE Order Intake¹⁾

in bn EUR



Key aspects

- ▶ Introducing the Schaeffler Order Intake – the orders taken by the Automotive Division⁴⁾ in a given time period
- ▶ It will be released in half-yearly intervals from 2018 onwards
- ▶ The last three years were recreated before system change and show strong order growth
- ▶ Schaeffler estimates the Order Intake to convert to the annual Net Sales in ~5 years

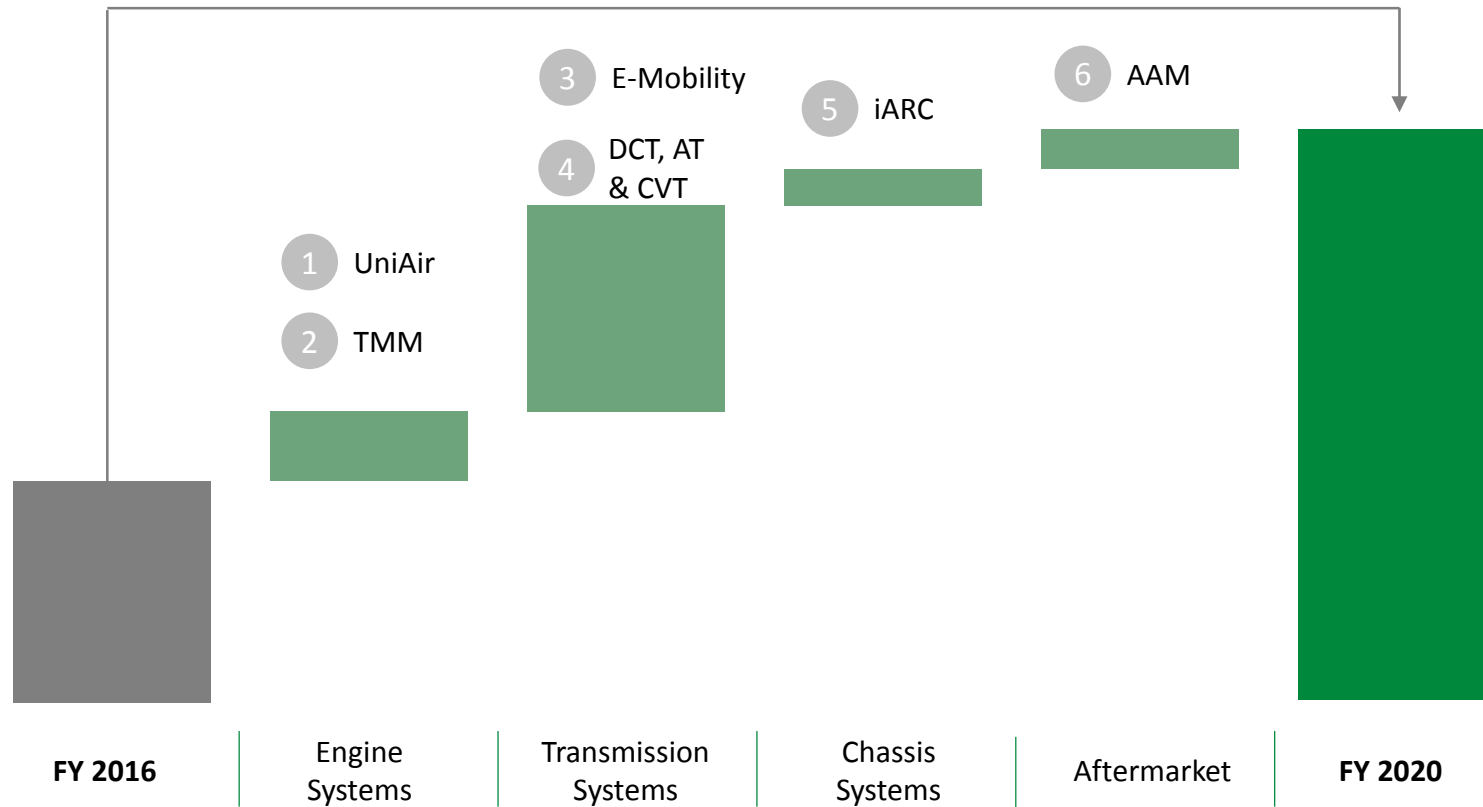


¹⁾ Received orders in given time period ²⁾ Order Intake/Net Sales ³⁾ Estimates due to system change ⁴⁾ Excluding Automotive Aftermarket

Outperformance 2020 – 4%-pts. above Market until 2020 confirmed

Sales Growth until 2020

> +4%-pts
above market¹⁾



¹⁾Market Growth 2016-2020: 2.2% (Source: IHS; July 2017)

Key aspects

- ▶ In 2020 > 95% are either booked business or customer projects that are already initiated

Key growth drivers

- 1 Fully variable valve train system UniAir with several OEMs e.g. Jaguar Land Rover
- 2 Thermo Management Module in several large programs
- 3 Ramp-up of several large E-Mobility projects worldwide
- 4 Large projects for Automatic and CVTs. Double-Clutch Transmission projects with local OEMs and Joint Ventures in China
- 5 Mechatronic Active Roll Control (iARC) with several Premium OEMs e.g. BMW
- 6 Increasing demand for Aftermarket repair solutions

1 Market is **shifting towards an accelerated scenario** with a strong hybrid powertrain share; **Ramp up of eight E-Mobility series contracts** plus over twenty ongoing customer projects

2 Diverse product portfolio for all powertrain concepts with **an expected Content per Vehicle growth from EUR 85 to EUR 130** over the next 10 years

3 Newly founded **Business Division E-Mobility will align key activities, streamline decision making and create synergies** in the market transition

4 Strong order intake supports our **out-performance of the global market by at least 4%-pts** until 2020 with expected **profitability remaining at a high level**

**Profitable growth
above market
expected to
continue**