2.1 Automotive OEM

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CEO Automotive OEM

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Agenda

1. Automotive OEM at a glance
2. Growth strategy Automotive OEM
3. Conclusion
1 Automotive OEM at a glance

Automotive OEM at a glance – Above market growth continues

Sales and EBIT margin

- **in EUR mn**
- **2016**
  - Sales: 8,525
  - EBIT margin: 12.9%
- **2017**
  - Sales: 8,991
  - EBIT margin: 10.7%
- **H1 2016**
  - Sales: 4,528
  - EBIT margin: 10.7%
- **H1 2017**
  - Sales: 4,587
  - EBIT margin: 9.2%

**Sales split by customer mix H1 2018**

- **Top 10 automotive customers**
- **Other customers**

**Automotive sales by Business Division H1 2018**

- **E-Mobility**
  - y-o-y growth (FX adjusted): +6.3% (+7.7%)
  - Chassis
    - y-o-y growth (FX adjusted): -0.6% (+2.4%)
  - Engine
    - y-o-y growth (FX adjusted): +1.7% (+5.7%)
  - Transmission
    - y-o-y growth (FX adjusted): +1.3% (+5.2%)

**Automotive sales by region H1 2018**

- **Greater China**
  - y-o-y growth (FX adjusted): +9.6% (+13.4%)
- **Americas**
  - y-o-y growth (FX adjusted): -5.6% (+3.7%)
- **Asia/Pacific**
  - y-o-y growth (FX adjusted): -0.4% (+4.0%)
- **Europe**
  - y-o-y growth (FX adjusted): +1.6% (+2.4%)
1 Automotive OEM at a glance

Challenging environment – Dynamic Automotive Market

**Vehicle test cycle**
- Vehicle registration difficulties due to the new WLTP-cycle

**Trade environment**
- Risk of new trade wars rising

**China**
- Economic growth slow down

**Macroeconomic environment and risks**

**Market has become more challenging**

**Electrification**
- Paradigm shift in technology leading to a transformation of the industry

**Autonomous driving**
- Evolution of new mobility solutions creates new market opportunities

**Industry-specific development**

**Price pressure**
- OEMs need to compensate increased investment costs

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1 Automotive OEM at a glance

Dynamic Automotive Market – Short-term impact

- High localization rate to counteract market uncertainties
- Global production footprint facilitates flexibility
- Minor sales impact with some German OEMs
- Temporary Q3-effects with expected compensation in Q4
- Strong regional outperformance despite market slowdown
- Current situation monitored closely

Vehicle test cycle

- Vehicle registration difficulties due to the new WLTP-cycle

Trade environment

- Risk of new trade wars rising

China

- Economic growth slowdown
- Economic growth slow down
- Economic growth slow down
1 Automotive OEM at a glance

Dynamic Automotive Market – Long-term trends

**Electrification**
- Paradigm shift in technology leading to a transformation of the industry
- Enhanced Powertrain Strategy with focus on electrification
- Deep Dive by Dr. Jochen Schröder to follow

**Autonomous driving**
- Evolution of new mobility solutions creates new market opportunities
- New Chassis Strategy towards a full chassis integrator
- Deep Dive by Dr. Dirk Kesselgruber to follow

**Price pressure**
- OEMs need to compensate increased investment costs
- Further develop process and manufacturing excellence
- Expand technological leadership

Industry-specific development
1 Automotive OEM at a glance

Global Footprint – Strong regional positions to counteract market uncertainties

**Americas**

- **Region facts**
  - 10 production plants
  - 512 employees in R&D
  - 73% localization rate
  - E-Mobility R&D Center located in Wooster (USA)

- **Regional driver**
  - Tariffs

**Europe**

- **Region facts**
  - 35 production plants
  - 3,604 employees in R&D
  - 96% localization rate
  - E-Mobility R&D Centers located in Bühl, Herzogenaurach and Starnberg

- **Regional drivers**
  - WLTP
  - Diesel
  - E-Mobility

**Greater China**

- **Region facts**
  - 7 production plants
  - 569 employees in R&D
  - 81% localization rate
  - E-Mobility R&D Center located in Anting

- **Regional drivers**
  - Opening markets
  - E-Mobility
  - Governmental guidance

**Asia Pacific**

- **Region facts**
  - 4 production plants
  - 231 employees in R&D
  - 39% localization rate
  - SHARE institute for smart mobility devices in Singapore

- **Regional drivers**
  - Opening markets
  - JOEM decision-making hub
Automotive OEM Product Portfolio

- Innovative component, subsystem and system supplier along the whole powertrain and chassis
- Strong mechanical background with a high degree of vertical integration
- In a continuous transition to mechatronic powertrain and chassis systems

Strong mechanical base is a prerequisite for electrification/autonomous driving
Automotive OEM Strategy

- Innovative history and strong track record with new technologies
- Global R&D network to adapt to market challenges and changes
- Operational and manufacturing excellence with a global production footprint

Innovation chronology

- Component expertise
- Simulation know how
- System know how
- Complexity

Sustainable & profitable growth through innovation
Vision Powertrain
Global vehicle production [in mn units]

<table>
<thead>
<tr>
<th>Year</th>
<th>ICE</th>
<th>HEV</th>
<th>EV</th>
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<tbody>
<tr>
<td>2017</td>
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Source: IHS and Schaeffler Assumptions / Values based on Light Vehicles < 6 tons only, ICE = Internal Combustion Engine; HEV = Hybrid Electric Vehicles ranging from 48V Mild Hybrid to PHEV, BEV = Battery Electric Vehicles (incl. Fuel Cell Electric Vehicles)
Vision Powertrain
Global vehicle production [in mn units]

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Powertrain Pyramid

- System Understanding
- Mechatronic Systems
- Mechanical Systems
- Components

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2 Growth Strategy Automotive OEM

Engine Systems – Emission reduction offers new business potential

**Powertrain Pyramid**

- System Understanding
- Mechatronic Systems
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- Components

**Vision Powertrain**

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**Market Drivers**

- Real Driving Emissions
- Efficiency
- Hybridization

- Variability
- Thermal
- Friction

**ICE**

- HEV
- EV

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Engine Systems – Emission reduction offers new business potential

Powertrain Pyramid

System Understanding
Mechatronic Systems
Mechanical Systems
Components

Vision Powertrain

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Market Drivers

Real Driving Emissions
Efficiency
Hybridization

Variability
Thermal
Friction

Schaeffler potential Content per Engine for 48 V P0 25% higher than conventional ICE
2 Growth Strategy Automotive OEM

Transmission Systems – Higher technical requirements drive business potential

**Powertrain Pyramid**
- System Understanding
- Mechatronic Systems
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**Market Drivers**
- Real Driving Emissions
- Automatization
- Hybridization

- Damping
- Intelligent Shifting
- Space
- Friction
2 Growth Strategy Automotive OEM

Transmission Systems – Higher technical requirements drive business potential

Powertrain Pyramid

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Market Drivers

- Real Driving Emissions
- Automatization
- Hybridization

- Damping
- Intelligent Shifting
- Space
- Friction

Schaeffler potential Content per Transmission is 90% higher in automated transmission
# Vision Chassis

Global vehicle production [in mn units]

<table>
<thead>
<tr>
<th>Year</th>
<th>≤L2</th>
<th>L3</th>
<th>L4</th>
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Source: IHS Autonomy and McKinsey / Values based on Light Vehicles < 6 tons only
L0 = No Automation, L1 = Driver Assistance, L2 = Partial Automation, L3 = Conditional Automation, L4 = High Automation, L5 = Full Automation
2 Growth Strategy Automotive OEM

Mobility for Tomorrow – Our Chassis Strategy

Vision Chassis
Global vehicle production [in mn units]

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Stages of automation

- Autonomous
- Fully automated
- Highly automated
- Partially automated or less

Vision Chassis
Global vehicle production [in mn units]
2 Growth Strategy Automotive OEM

Mobility for Tomorrow – Our Chassis Strategy

Vision Chassis
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Chassis Pyramid

- System Understanding
- Mechatronic Systems
- Mechanical Systems
- Components
### Automotive OE Order Intake

<table>
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<tr>
<th></th>
<th>H1</th>
<th>H2</th>
<th>Total</th>
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<tbody>
<tr>
<td>2016</td>
<td>7.2</td>
<td>5.4</td>
<td>12.6</td>
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<tr>
<td>2017</td>
<td>4.7</td>
<td>6.6</td>
<td>11.3</td>
</tr>
<tr>
<td>2018</td>
<td>8.3</td>
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**Book to Bill Ratio**

<table>
<thead>
<tr>
<th></th>
<th>H2</th>
<th>H1</th>
<th>FY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>1.3x</td>
<td>1.6x</td>
<td>1.5x</td>
</tr>
<tr>
<td>2017</td>
<td>1.5x</td>
<td>1.1x</td>
<td>1.3x</td>
</tr>
<tr>
<td>2018</td>
<td>-</td>
<td>1.8x</td>
<td>-</td>
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1) Received orders in given time period
2) Lifetime Sales / Current period revenue

### Order Intake Highlights July/August (Q3)

**Planetary Transmission**
- First nominations of a planetary transmission for hybrid vehicle
- Order intake EUR 90 mn

**Dual-mass Flywheel**
- Nomination by European OEM
- Order intake EUR 200 mn

**Thermal Management Module**
- Additional nomination in North America
- Order intake EUR 100 mn
3 Conclusion

Opportunities and Headwinds (until 2025)

### Top Line Drivers
1. Strong order intake in H1 – in E-Mobility and in classic Business Divisions
2. E-Mobility Division to account for ~10% of total sales in 2020
3. All four Business Divisions remain on a strong growth path for the next years

### Top Line Challenges
1. Decreasing market for ICE-related technologies expected from 2025 onwards
2. Market uncertainties (possible tariff risks, emotional public discussions about vehicle emissions) could negatively impact market perspective
3. Increasing system share triggers higher exposure from fewer OEMs/vehicle programs

### EBIT Margin Drivers
1. E-Mobility starts to gain critical mass and E-Motor offers a further level of vertical integration
2. Operational excellence leads to improvement of margin quality beyond 2020
3. Increasing level of maturity and experience in mechatronic and system products improves margin quality in these segments

### EBIT Margin Challenges
1. High market penetration and limited market growth leading to market saturation in component segments
2. Mix and price pressure in traditional powertrain business
3. Ramp-up costs for complex systems in E-Mobility and classic Business Divisions (e.g. Chassis Systems)

Note: Green indicating positive, grey indicating neutral and yellow indicating negative development