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**
- Urbanization
- New micro-mobility products
- New urban mobility business models

**Automotive**
- Legislation
- Fuel savings & emissions
- E-Mobility
- Weight savings

**Disruption**
- ALWAYS ON
- Interconnected wireless world
- Sustainability and environmental protection

Source: Rheinmetall Automotive
Automotive in a ten year view
Achieving and maintaining the target margin level

- Operational margin in % of sales

Recovery from the crisis
Positive impact of restructuring measures out of 2008
Downturn of LV production in Europe until 2015
Innovation drives our business

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Operational Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>4.1%</td>
</tr>
<tr>
<td>2011</td>
<td>6.5%</td>
</tr>
<tr>
<td>2012</td>
<td>5.9%</td>
</tr>
<tr>
<td>2013</td>
<td>7.0%</td>
</tr>
<tr>
<td>2014</td>
<td>7.5%</td>
</tr>
<tr>
<td>2015</td>
<td>8.3%</td>
</tr>
<tr>
<td>2016e</td>
<td>~8%</td>
</tr>
<tr>
<td>2017e</td>
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<td>2018e</td>
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<tr>
<td>2019e</td>
<td></td>
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<tr>
<td>2020e</td>
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</tbody>
</table>
Growing market for mobility
Aggregated LV production by region/country

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

<table>
<thead>
<tr>
<th>Region</th>
<th>2015</th>
<th>2020</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAFTA</td>
<td>17.5</td>
<td>18.8</td>
<td>+7.4%</td>
</tr>
<tr>
<td>Europe**</td>
<td>15.0</td>
<td>17.0</td>
<td>+11.3%</td>
</tr>
<tr>
<td>Germany</td>
<td>5.9</td>
<td>5.8</td>
<td>-3.3%</td>
</tr>
<tr>
<td>ASIA*</td>
<td>88.7</td>
<td>100.8</td>
<td>+13.6%</td>
</tr>
<tr>
<td>RoW</td>
<td>4.2</td>
<td>4.6</td>
<td>+8.3%</td>
</tr>
<tr>
<td>China</td>
<td>23.7</td>
<td>29.2</td>
<td>+23.3%</td>
</tr>
<tr>
<td>Japan</td>
<td>8.8</td>
<td>8.6</td>
<td>-2.3%</td>
</tr>
</tbody>
</table>

* 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

Global Trend

*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

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

- Description vehicle model (Basis)
- Variable oil pump
- Tribo-system
- Var. cool. pump
- Var. valve train
- El. low-press. EGR
- Light-weight structural parts

Rheinmetall Automotive products

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Electrification

Product live cycle Automotive (2010 to 2015)

Operational margin in % of sales

2010 2011 2012 2013 2014 2015

4.1% 6.5% 5.9% 7.0% 7.5% 8.3%
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

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<th>Year</th>
<th>2015</th>
<th>2016e</th>
<th>2017e</th>
<th>2018e</th>
<th>2019e</th>
<th>2020e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin</td>
<td>8.3%</td>
<td>~8%</td>
<td>~8%</td>
<td>~8%</td>
<td>~8%</td>
<td>~8%</td>
</tr>
</tbody>
</table>

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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

- Combustion Engine: 86,3%
- HEV: 3,5%
- PHVs: 2,2%
- EV: 8,0%

- Combustion Engine: 76,6%
- HEV: 4,3%
- PHVs: 2,7%
- EV: 18,4%

- Combustion Engine: 79,1%
- HEV: 11,1%
- PHVs: 5,9%
- EV: 3,9%

(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

- Electric throttle bodies
- Actuators
- Solenoid valves
- Structural components
- Engine bearings
- Electrical coolant pumps
- Engine blocks
- Mechanical coolant pumps
- Oil pumps
- Electrical vacuum pumps
- Electrical oil pumps
- Range Extender
- EGR valves
- Pistons
- Solenoid valves
- Engine bearings
- Electrical coolant pumps
- Engine blocks
- Mechanical coolant pumps
- Oil pumps
- Electrical vacuum pumps
- Electrical oil pumps
- Range Extender
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

<table>
<thead>
<tr>
<th>Year</th>
<th>Europe (incl. Germany)</th>
<th>RoW</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>88%</td>
<td>12%</td>
</tr>
<tr>
<td>2020*</td>
<td>40%</td>
<td>60%</td>
</tr>
</tbody>
</table>

*Projection

International Growth Strategy

Strengthen Thermal Management Competence

Load Pipeline for emission reduction and fuel economy

Build up System Competence for Hybridisation and EV

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Strategy

Strategic direction Aftermarket

Growth Strategy in dedicated markets

Enlarge Product Portfolio and own production

Expand Aftermarket sales share in RHM Automotive

Adopt changing customer order behavior

* Projection

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Three mainstreams for future mobility

New Technologies  Electrification  Efficiency
Sales growth for New Technologies

Outlook 2020
Sales split RHM Automotive
Vision 2025+

- Efficiency
- New Technologies
- Electrification

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.