Operations

Oliver Jung
Chief Operating Officer
Agenda

1 Overview
2 Production excellence
3 Flagship initiative "Factory for tomorrow"
4 Outlook
5 Summary and key statements
1 Overview

Global integrated manufacturing footprint

Key aspects

- 66,800 production staff worldwide at 74 plants in 23 countries
- High vertical integration with up to 65% internal added value
- Schaeffler Production System concentrating on quality and efficiency

Integrated approach – Internal bearings supplier for both divisions

Best-in class manufacturing technologies

- Forging
- Machining processes
- Forming methods
- Plastics technology
- Heat treatment
- Grinding and Honing
- Coating and Phosphating
- Assembly

Capex

EUR mn

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>773</td>
<td>860</td>
<td>572</td>
<td>857</td>
<td>1,025</td>
</tr>
<tr>
<td>in % of sales</td>
<td>7.2%</td>
<td>7.7%</td>
<td>5.1%</td>
<td>7.1%</td>
<td>7.7%</td>
</tr>
</tbody>
</table>
Key aspects

- Uniform organizational structure in all regions
- High degree of standardization
- Speed in industrialization
- Early involvement and deep influence in product development
- Own competencies in special machinery building
- Integration of external and internal added value (with Purchasing)
1 Overview

Global integrated production network

- Germany
  - Bühl
  - Elfershausen
  - Eltmann
  - Gunzenhausen
  - Hamm/Sieg
  - Herzogenaurach
  - Hirschaid
  - Höchstadt (2)
  - Homburg (3)
  - Ingolstadt
  - Kaltennordheim
  - Lahr
  - Luckenwalde
  - Magdeburg
  - Morbach
  - Schweinfurt (2)
  - Steinhagen
  - Suhl
  - Unna
  - Wuppertal
  - Hungary
  - Debrencen
  - Szombathely
- Austria
  - Berndorf-St. Veit
  - Italy
  - Momo
  - Czech Republic
  - Lanskroun
  - Spain
  - Elgoibar
- Portugal
  - Caia da Rainha
  - Great Britain
  - Llanelli
  - Plymouth
  - Sheffield
  - Switzerland
  - Romanshorn
- France
  - Calais
  - Chevilly
  - Haguenau (2)
  - Romania
  - Brașov
  - Slovakia
  - Kysucké Nové Mesto
  - Skalica
- Canada
  - Stratford (2)
- USA
  - Cheraw (2)
  - Danbury
  - Fort Mill (2)
  - Joplin
  - Spartanburg
  - Troy
  - Wooster
- Mexico
  - Irapuato
  - Puebla
- Brazil
  - Sorocaba (2)
- South Africa
  - Port Elizabeth
- India
  - Hosur
  - Pune
  - Vadodara (2)
- South Korea
  - Ansan
  - Changwon
  - Jeonju
- Vietnam
  - Bien Hoa City
- Thailand
  - Rayong

37 Automotive plants
8 Industrial plants
29 Operations plants
74 plants worldwide

1) Production for both Automotive and Industrial division
1 Overview
High localization rates with further potential

In the region, for the region

Europe
Sales
- 2010: 96% produced in the region, 4% produced outside the region
- 2015: 96% produced in the region, 4% produced outside the region

EUR 2.9 bn in 2015

Americas
Sales
- 2010: 70% produced in the region, 30% produced outside the region
- 2015: 71% produced in the region, 29% produced outside the region

EUR 7.0 bn in 2015

Greater China
Sales
- 2010: 38% produced in the region, 62% produced outside the region
- 2015: 68% produced in the region, 32% produced outside the region

EUR 1.9 bn in 2015

Asia/Pacific
Sales
- 2010: 42% produced in the region, 58% produced outside the region
- 2015: 41% produced in the region, 59% produced outside the region

EUR 1.4 bn in 2015

1) Market view
1 Overview

Our strategic concept "Mobility for tomorrow"

Key mega trends

Society trends
- Urbanization
- Population growth

Technology trends
- Increasing complexity
- Digitalization

Environmental trends
- Renewable energies
- Availability of resources

Economic trends
- Globalization
- Affordability

4 focus areas

Eco-friendly drives

Urban mobility

Interurban mobility

Energy chain
Key challenges ...

Higher complexity leads to ...

... adaption of production technologies to secure cost competitiveness

... new concepts for assembly

... risk of lower value add through a more balanced product mix of components and systems

... and how we meet them

1. Improving efficiency in existing operations
2. Industrializing complex mechatronic products and systems
3. Controlling and increasing internal value add of complex mechatronic products and systems
2 Production excellence

Improving efficiency in existing operations

Value add: 70%

- New "Two in One" production for tapered roller bearings
- 50% of material saving and 30% reduction of process steps
- Increases output from <10 parts per minute to 60 ringsets per minute
- Increases competitiveness in high volume market for standard bearings

Solid formed tapered roller bearings

Waste material = inner ring
2 Production excellence

Industrializing complex mechatronic products and systems

Value add: 25%

- High purchase content
- Contains high performance materials tooled and produced inhouse
- New manufacturing plant for Thermal Management Modules in Czech Republic

Thermal management module

New building in Svitavy, Czech Republic
Controlling and increasing internal value add of complex mechatronic products and systems

- Management of complex purchasing and logistics processes
- Production of gears increases value add:
  - Purchase of gears in the past, now own production
  - Development of new groundbreaking production technology for cogwheels
  - New production technology (forming instead of cutting) leads to 80% reduction of process time and 20% higher fatigue strength
Concentration on quality, cost and delivery performance

**Quality**
No. of customer complaints

*7.7 ppm in 2015*

-33% improvement from 2010 to 2015

**Manufacturing Costs**
Indexed (2010=100%)

-6% improvement from 2010 to 2015

**Delivery Performance**
in %

+22% pts. improvement from 2010 to 2015
Schaeffler’s Digital Agenda comprises entire vertical and horizontal value chain

- **Customer**
- **Digital Business Models**
  - **Products**
    - Development of products that are able to generate signals (sensorized bearings)
  - **Machines**
    - Industry 4.0 machines
  - **Processes**
    - Plug & Produce System
  - **Analytics & Simulation**
  - **Digital User Experience**

**Digital Platform**

- SCHAEFFLER
- DIGITAL AGENDA
3 Flagship initiative "Factory for tomorrow"

The future of our factories

Innovation and efficiency in operations

- 18 months from contract to start of production
- Implementation of the Schaeffler Production System

Improvement of the OEE\(^1\) from 70% to 85%

- More than 60 sensors per machine
- Improvement of organizational and technological downtime
- Development of partly autonomous machines

Consequent modularization
- Plug & Produce Systems
- Integration of supplier into the Schaeffler Production System
- Attractiveness to employees

Capex ratio: 7-8% of sales

Continuous construction of best-in-class factories

Industry 4.0 machine parks

Factories for Tomorrow

\(^1\) Overall Equipment Effectiveness

July 20, 2016

4 Outlook

New plant and plant extensions in 8 countries until 2020

- **Germany**
  - Bühl
  - Elfershausen
  - Eltmann
  - Gunzenhausen
  - Hamm/Sieg
  - Herzogenaurach
  - Hirschaid
  - Höchstadt (2)
  - Homburg (3)
  - Ingolstadt
  - Kaltennordheim
  - Lahr
  - Luckenwalde
  - Magdeburg
  - Morbach
  - Schweinfurt (2)
  - Steinhausen
  - Suhl
  - Unna
  - Wuppertal
  - Hungary
  - Debrez
  - Szombathely

- **Austria**
  - Berndorf-St. Veit
  - Italy
  - Momo
  - Czech Republic
  - Kysucké Nové Mesto
  - Slovakia
  - Lanskroun
  - Spain
  - Elgoibar
  - Switzerland
  - Romanshorn

- **Portugal**
  - Cais da Rainha
  - Great Britain
  - Llanelli
  - Plymouth
  - Sheffield
  - South Africa
  - Port Elizabeth
  - India
  - Hosur
  - Pune
  - Vadodara (2)

- **South Korea**
  - Ansan
  - Changwon
  - Jeonju
  - Thailand
  - Rayong

- **Canada**
  - Stratford (2)

- **USA**
  - Cheraw (2)
  - Danbury
  - Fort Mill (2)
  - Joplin
  - Spartanburg
  - Troy
  - Wooster

- **Mexico**
  - Irapuato
  - Puebla

- **Brazil**
  - Sorocaba (2)

- **Expansion**
- **New Plant**
Key messages

1. **Integrated production approach** for both divisions with Global Operations organization and Bearing Component Technologies as internal supplier for roller bearings business

2. We will further **enhance our global network** of strong plants and production technology – localization rates are expected to further increase from current high level

3. Our capex ratio is expected to **remain stable at 7 – 8% of sales** until 2020

4. We will **pioneer solutions** for digital production processes and focus on "factories for tomorrow" as part of our Digital Agenda