Greater China

Dr. ZHANG Yilin
Regional CEO Greater China

July 20, 2017
Capital Markets Day 2017
Bühl
1 Introduction

Dr. Yilin Zhang - Today’s Greater China speaker

Dr. Yilin Zhang (54)
Regional CEO Greater China

- 1994/2005: Dr. Zhang received a doctorate in mechanical engineering from Hannover University in specializing in automotive dynamics (1994) and an EMBA degree from Arizona State University (2005)
- 1994 – 1998: Head of the China business development project for ITT Automotive Europe
- 1999 – 2004: Chief representative and CFO of Continental Teves’ branch in China and Board Director of a joint venture of Teves
- 2004 – 2014: President Automotive at Schaeffler Greater China
- Since 2014: Regional CEO Greater China at Schaeffler

13 years with Schaeffler
Sales development 2013 – H1 2017

Sales split by division H1 2017

Key aspects

- 22 years presence in China since 1995
- 9 plants, 1 R&D center, 22 sales offices
- 12,000 employees
- Provides Automotive & Industrial products/solutions for both OEM and Aftermarket
- “Top Employer China” since 2015

Key customer
Overview Greater China

Strong footprint in the region – 9 plants, 1 R&D center, 22 sales offices

Our locations

Our plants

- Yinchuan
- Taicang
- Suzhou
- Nanjing
- Xiangtan – new campus
  (Building 1 ready in 2019)
- R&D center, Shanghai Anting
2 Overview Greater China
Schaeffler China – A global company with local presence

Sales development
in mn EUR

CAGR 2008–2017E
21%

Footprint

1990 ► INA Bearing China, Hong Kong
1995 ► INA Bearing China, Taicang
1997 ► Raybesto Friction Products, Suzhou
2001 ► Ningxia FAG Northwest Railway Bearings, Yinchuan
2005 ► Schaeffler Holding China, Shanghai
2005 ► Schaeffler Trading Shanghai, Shanghai
2006 ► Headquarter and R&D Center, Anting
2007 ► Schaeffler Taiwan, Taipei
2011 ► Schaeffler Nanjing, Nanjing
2014 ► Schaeffler Greater China has become an independent region
2016 ► Schaeffler Xiangtan officially registered

Sales development


380 545 845 963 1,098 1,190 1,540 1,898 2,053

Achieved 1 billion EUR
Achieved 2 billion EUR

CAGR 2008–2017E
21%


380 545 845 963 1,098 1,190 1,540 1,898 2,053

Achieved 1 billion EUR
Achieved 2 billion EUR

Capital Markets Day 2017 – Greater China
**Made in China 2025**

Aim to transform China from manufacturing giant to a world leading manufacturing power

**Industrie 4.0**

- Digitalization
- Connectivity/Internet of Things
- Artificial intelligence

### 10 strategic industrial sectors in 13th Five-Year Plan

- Numerical control tools
- Aerospace equipment
- High-tech ships
- Railway equipment
- Medical devices
- Power equipment
- Energy saving
- Agricultural machinery
- New Material
- New Information Technology

**The Belt and Road Initiatives**

The Silk Road Economic Belt and the 21st-century Maritime Silk Road

- 64 countries
- 63% world population
- 40% world GDP
- 1400 billion USD investment

**Capacity cooperation**

<table>
<thead>
<tr>
<th>Raw Materials</th>
<th>Infrastructure construction</th>
<th>Machinery</th>
<th>Production of textile/food</th>
<th>Automobile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**High Technology export**

- High Speed Rail
- Nuclear Power
- Advanced Equipment
- Telecom
- Aerospace & Ocean
3 Automotive Greater China
Automotive China – Growing significantly above market

**Light vehicle production volume**

- **in mn vehicles**

- **China CAGR 2000–2010** 22.7%
- **China CAGR 2010–2017** 6.6%

- CHN 14.0%
- EU 0.8%
- N.A. 0.4%
- Others 6.3%
- JPN/KOR 0.1%

Source: IHS and Schaeffler China Market Intelligence

**Automotive Sales**

- **in bn EUR**

- **CAGR 2007–2010** approx. 40%
- **CAGR 2010–2017** approx. 25%

- 2007: 0.1
- 2008: 1.7

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Share</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
<td>8%</td>
<td>9%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>Ratio</td>
<td>56%</td>
<td>58%</td>
<td>57%</td>
<td>61%</td>
<td>68%</td>
<td>77%</td>
<td>78%</td>
<td>77%</td>
<td>81%</td>
<td>84%</td>
<td></td>
</tr>
</tbody>
</table>

July 20, 2017
Key success factors – Technology leadership and cost competitiveness

Products for CO₂ reduction and fuel economy:
- Valve Train, Cam Phaser, Thermo Management
- Dual Mass Flywheel, Dampers
- Hybrid module, etc.

USP on traditional ICE

Balanced Customer portfolio
- Automotive sales structure reflects the OEM market performance
- As of H1 2017 37% of Automotive Sales with Local OEMs

Localization of competence

Success Factors

Proactive Cost optimization
- Economic scale of production
- Productivity improvement
- Local supplier development
- Localization ratio from 56% (2007) to 84% (2017)

Local production
Local R&D
Local supplier base
Local management
Top 5 car models China

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2010</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hyundai Elantra</td>
<td>BYD F3</td>
<td>SGMW Hongguang</td>
</tr>
<tr>
<td>2</td>
<td>GM Excelle</td>
<td>VW Lavida</td>
<td>GWM H6</td>
</tr>
<tr>
<td>3</td>
<td>VW Santana</td>
<td>Hyundai Yuedong</td>
<td>VW Lavida</td>
</tr>
<tr>
<td>4</td>
<td>VW Jetta</td>
<td>GM Excelle</td>
<td>SGMW 730</td>
</tr>
<tr>
<td>5</td>
<td>Chery QQ3</td>
<td>VW Jetta</td>
<td>GM Excelle</td>
</tr>
</tbody>
</table>

Note: The models in green name are Chinese local brands
Source: IHS and Schaeffler China Market Intelligence, SD

Car production by OEM origins

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.Korea</td>
<td>16%</td>
<td>11%</td>
<td>12%</td>
</tr>
<tr>
<td>JAPAN</td>
<td>12%</td>
<td>15%</td>
<td>16%</td>
</tr>
<tr>
<td>USA</td>
<td>22%</td>
<td>21%</td>
<td>20%</td>
</tr>
<tr>
<td>Europe</td>
<td>43%</td>
<td>45%</td>
<td>46%</td>
</tr>
<tr>
<td>China</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Note: Passenger Vehicles only

Schaeffler sales by OEM origins

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.Korea</td>
<td>6.5%</td>
<td>6.1%</td>
<td>4.4%</td>
</tr>
<tr>
<td>JAPAN</td>
<td>14%</td>
<td>14%</td>
<td>16%</td>
</tr>
<tr>
<td>USA</td>
<td>43%</td>
<td>41%</td>
<td>33%</td>
</tr>
<tr>
<td>Europe</td>
<td>34%</td>
<td>37%</td>
<td>44%</td>
</tr>
<tr>
<td>China</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Note: Passenger Vehicles only

3 Automotive Greater China

Balanced customer portfolio – Sales shares with OEMs mirroring market

Chinese OEMs take more market share from 2015, mainly driven by balanced product portfolio & quality improvement

European OEMs keep around 20% market share due to their strong position in sedan

Japanese OEMs recovered

Local OEMs: In line with the market, more requirement for noise improving and fuel saving products

European OEMs: Sales growth in line with market growth

US OEMs: New projects nominated for next generation of powertrain
**Content per vehicle**

<table>
<thead>
<tr>
<th>Year</th>
<th>Joint Ventures</th>
<th>Local OEMs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>2016</td>
<td>1.3x 75</td>
<td>4.5x 10</td>
</tr>
<tr>
<td>2020E</td>
<td>2.1x 105</td>
<td>2.1x 45</td>
</tr>
</tbody>
</table>

**Key aspects**

- Main growth drivers are the technology driven products such as P2 hybrid module, E-Axle, thermal management, double clutches, CVT, damper technology, etc.

- Content per vehicle (CPV) with local OEMs catch up quickly with CPV of JVs due to local OEMs' forward development and balanced/updated product portfolio (turbo engine, automated transmission, noise improvement and friction reduction for SUV/Sedan/Van)

---

1 Light Vehicle view; sales of AAM excluded

---

SCHAEFFLER

3 Automotive Greater China

Balanced customer portfolio – Content per vehicle with local OEMs to increase significantly

Capital Markets Day 2017 – Greater China

July 20, 2017
China as the leading market for E-Mobility – Strong investments from all players

1. Numerous participants
Over 200 Chinese local players are applying for New Energy Vehicle (NEV) production licenses.

JVs + LOEMs + Start-ups
All have detailed plans on NEV market.

2. The biggest investment ¹)
NEV Investment until 2020 (bn EUR)

- Other Locals: 8
- Start-ups: 15
- Local OEMs: 18

³ Source: China Times

3. Powerful government support
- Financial support
- Policies and regulations
- Consumption incentives
- Infrastructures

4. Schaeffler Accelerated Scenario
in mn Vehicle

<table>
<thead>
<tr>
<th>Year</th>
<th>BEV</th>
<th>HEV</th>
<th>ICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>17</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>24</td>
<td>99%</td>
<td></td>
</tr>
<tr>
<td>2020e</td>
<td>31</td>
<td>86%</td>
<td>3%</td>
</tr>
<tr>
<td>2025e</td>
<td>35</td>
<td>44%</td>
<td>16%</td>
</tr>
<tr>
<td>2030e</td>
<td>38</td>
<td>43%</td>
<td>37%</td>
</tr>
</tbody>
</table>

CAGR 2010/2030: +4.0% p.a.

Source: IHS and Schaeffler Assumptions / Values based on Light Vehicles < 6 tons only, HEV ranging from 48V Mild Hybrid to PHEV

¹) Source: China Times

July 20, 2017
Schaeffler China strongly positioned for E-Mobility – 3 series contracts with local OEMs

Nominated projects

ChangAn
P2 Hybrid Module:

Vehicle data: 60km E-range, 8s (0~100kph), 1.6L/100km Fuel consumption
Involved Products: P2 hybrid module, Valve Train, VCT, OAP, WPB, Timing Chain, Bearings
SOP: 2018

Greatwall (WEY)
E-Axle:

Vehicle data: 50km E-range, 6.9s (0~100kph), 2.1L/100km Fuel consumption
Involved Products: eAxle, Valve Train, RSTM, VCT, WPB, DCT damper, Bearings
SOP: 2017

Nominated project schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>P2</th>
<th>eAxle1</th>
<th>eAxle2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key aspects

- Currently, almost all international OEMs in China have in-house solutions, Schaeffler focuses on the sub-system and components
- For local OEMs, Schaeffler will provide complete systems like P2 hybrid module and E-Axle
- We have 3 nominated mass production project and 7 potential projects on-going
- We are working on building up full local competence in order to ensure quick reaction and cost optimization
China bearing market – Growth rates expected to pick up from 2017

Key aspects

- Ten years booming market from 2001 to 2010, all players benefited from 5 times market expansion
- Market adjustment and vibration since 2011, both global and local players face the challenges from overcapacity, serious price competition, service upgrades, channel adjustment, etc.
- Moderate market increase forecast from 2017 until 2020, with the upgraded requirement of quality, cost and availability, which require Schaeffler to undertake localization activities to guard current market share and achieve further development

China bearing market development

in mn EUR

CAGR 01–10: 20%
CAGR 11–16: 2.7%
CAGR 17–20: 2.1%

Source: The 13th Five-Year Plan of China bearing industry
Chinese bearing market size is around 5.6bn EUR

- We have a high reputation in the Wind and Railway sectors in which we generate approx. 45% of our sales (despite its relatively small market size)

- 50% of the bearing market today is Power Transmission and Industrial Automation where we currently have below-average market shares

- Positive growth outlook drives our expansion strategy into Power Transmission and Industrial Automation

- Wind and Railway sectors will continue to grow above-average
Industrial Greater China  

Business Model – Reflecting overall strategy in Industrial Capital Markets Day 2017 – Greater China

**Portfolio**

- Industry 4.0 services
- Mechatronics
- Mechanical Systems
- Components

**Our value proposition**

- 1. Efficient Bearing Expert
- 2. Innovative Solution Partner

**Our strategy**

1. **Efficient Bearing Expert**
   - Synergy of Automotive and Industrial demands
   - Strong knowhow of production technology
   - Continuous improvement & ongoing localization

2. **Innovative Solution Partner**
   - Technology leadership with local R&D
   - Focus on strategic partnerships with Key Accounts

3. **Service business**
   - Focus on innovation (e.g. new business model, e-commerce, digitalization)
   - Quick reaction capability

---

*July 20, 2017*
**Focused application:**
- E-motor
- Home appliance
- Powertools
- Textile machinery

**Schaeffler solutions:**
- Top class noise level on China market
- Low friction to save energy
- Extend bearing life with better sealing design

**Local plant & Production equipment:**
- Automatic line with 100% online noise inspection
- Dedicated line with high productivity (14 million products/line/year)
- Precision devices with best surface quality

**Gen-C**
Discover the Change
### Vestas 3.0MW main shaft assembly

**Customer problem:**
- Higher reliability requirement
- Higher quality requirement
- Professional assembly service

**Schaeffler solution:**
- Profiled roller bearing
- Wind Power Standard (WPO)
- Higher dimension specification

**Additional value added:**
- Assembly service
- Capacity and technical advantage

### NGC bore grinding

**Customer problem:**
- Outer ring slippage
- Downsizing design
- Bore grinding of planet wheel

**Schaeffler solution:**
- Integrated bearing design
- Wind Power Standard (WPO)
- X-life quality
- Durotect® B coating

**Additional value added:**
- Bore grinding service on planet wheel
Service business – Leveraging Schaeffler know-how

Service portfolio

- Lubrication
- Condition Monitoring
- Reconditioning
- Mech. maintenance

Chinese Customers

Railway Condition Monitoring System

Customer problem:
- High safety risk
- Low maintenance efficiency
- Unsatisfied current condition monitoring system
- Lack of railway predictive health management

Schaeffler solution:
- Development according to China Railway standard
- Advanced digital signal processing methodology
- Schaeffler bearing know-how integration
- Bearing life time forecast
Automotive opportunities

- Powertrain
  - Fuel / emission reduction
  - Automatic Transmission
  - NVH optimization

- Hybrid and BEV technology
  - P2 hybrid module
  - E-Axle
  - In-Wheel drive

- Automotive aftermarket
  - Vehicle population
  - Vehicle age

Industrial opportunities

- Components
  - Industrial Automation
  - Power Transmission

- Mechanical Systems
  - Railway
  - Wind Energy
  - Aerospace

- Industry 4.0
  - Condition Monitoring
  - Mech. maintenance
  - Industrial automation
  - Other services
Schaeffler Greater China – Approximately EUR 5 billion revenues in 2025 expected

Main growth drivers

- China auto market growth
- Automation of transmission
- Hybrid and E-Mobility
- Industrial sectors, e.g. Wind Energy, Railway, Power Transmission and Industrial Automation
Our content per vehicle with local OEMs will more than double by 2020.

China will be the leading market for E-Mobility going forward. We are best positioned with already 3 E-Mobility contracts with local Chinese OEMs.

We are aiming to further increase our localization rate for the Industrial business to gain additional market shares, especially in standard bearings.

China revenues are expected to reach EUR 5 billion by 2025.