KUNDENBEGEISTERUNG IN SERIE:
WE DRIVE MANUFACTURING TO EXCELLENCE.

PRODUCTION@BMW

DR FRANZ DECKER
HEAD OF PRODUCTION NETWORK STRATEGY.
PREMIUM OEMS HAVE TO MANAGE SOPHISTICATED CUSTOMERS, INDIVIDUALIZATION OF PRODUCTS AND DYNAMIC MARKETS.

1. **Sophisticated customers** and **quality** claim.

2. **Increase** of **number of derivatives** and **customizing elements**.

3. **Uncertainty** because of **volatility** regarding **customer / segment** structure, **regional demand and market** behavior.

Source: BMW
BMW GROUP SUCCESSFULLY APPLIES FOUR CORE ELEMENTS TO ITS ONE GLOBALLY ALIGNED NETWORK.

BMW Group is best in managing customers' individual needs in production

Our instruments:

A Flexibility management

B Complexity management

BMW Group balances global growth and optimizes risks.

Our instruments:

C Production follows market

D Management of cost & capital structure

...and all as ONE GLOBALLY ALIGNED NETWORK
WE MANAGE OUR FLEXIBILITY WITH VARIOUS INSTRUMENTS AT NETWORK, STRUCTURE AND EMPLOYEE LEVEL.

**FLEXIBILITY MANAGEMENT**

**BMW Group success stories**

- **Fast reaction to** global automotive crisis and Euro crisis
- **Production and sales volume at new record in 2014**
- **Stable achievement of margin targets**
- **No production stop** after Japan Tsunami
- **Integration of BMW i production**
- **Short term reaction swop of Russia production volume to US**

**Levers**

<table>
<thead>
<tr>
<th>Network</th>
<th>Architecture: Product and process modular system</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Splits of derivatives</td>
</tr>
<tr>
<td></td>
<td>3rd party manufacturer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structure</th>
<th>Make vs. buy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Derivatives per line</td>
</tr>
<tr>
<td></td>
<td>Reaction time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employee</th>
<th>Operating shift model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Labor model and accounts</td>
</tr>
<tr>
<td></td>
<td>Qualifications</td>
</tr>
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</table>
MODULAR PRODUCTS, LEAN SYSTEMS AND EFFICIENT PROCESSES ENABLE STRONG COMPLEXITY MANAGEMENT.

COMPLEXITY MANAGEMENT

BMW Group success stories

• Broad market coverage through high number of derivatives
• Almost **endless number of options and equipment variants**, i.e. BMW 7 Series at Plant Dingolfing, with theoretically up to $10^{32}$ possible configurations
• **165** customer relevant **options**
• BMW **Individual process and broad brand spread**
• **Changes up to six days prior to the start of assembly possible**
• Built-to-order-approach
• Launch as new normal

Levers

- **Modular product & production strategy**
- **Integrated product & production process design**
- **Standards & lean production**
- **Customer oriented retail & production process**
INVESTMENTS OUTSIDE EUROPE AND THIRD PARTY MANUFACTURER ARE STRATEGIC ELEMENTS FOR BALANCED GROWTH.

Global production allocation

- Third party manufacturer
- RoW
- China
- NAFTA
- EU

Global sales

- Third party manufacturer
- RoW
- China
- NAFTA
- EU

Our activities:

- Production follows market
- Recent and ongoing investments outside Europe:
  - All new production plant roll-out in San Luis Potosí (150,000 units, SOP 2019)
  - SOP in Brazil Araquari plant in 10/2014 (30,000 units, MINI countryman, BMW 1series 3dr/5dr, 3ser. Sedan, X1, X3)
  - Production increase in Spartanburg (X7, X4, 800 new jobs)
  - Extension of existing China facility (Dadong) (Expansion to six models (from 3 currently))
  - New engine plant in China (Tiexi)
- Third party manufacturer as strategic element for flexibility and profitable growth
**OUR MOTIVATION FOR INVESTMENT INTO NAFTA US IS MARKET PENETRATION, RISK HEDGING AND BRAND SHAPING.**

**US sales, 1990 – 2014**

- Sharp increase of sales after local SOP
- +7%

**Invest NAFTA – USA – Spartanburg**

- Market penetration of growing US market.
- Dollar hedging for financial optimization.
- Shape customer brand awareness by being cultural trendsetter.
- South Carolina: Good business environmental and infrastructural parameters; beautiful, climate pleasant state.

Plant Spartanburg as X-hub for the production network; biggest automotive export plant / company within the US.

**Source**: BMW

**Production**: BMW Group, March 2015
FURTHER INVESTMENTS INTO MEXICO AND BRAZIL ARE BASED ON SALES AND COST ARGUMENTS.

- Further NAFTA market penetration due to increasing sales figures.
- Realization of production cost advantages.
- Extension of production base.

- Marketability to South American market.
- Local content due to protectionism and high import taxes.
- Exploitation of market by other OEMs.

Start of site preparation

Assembly start in 10/2014

Source: BMW
OUR CORE ELEMENTS ARE EVEN VISIBLE AT EVERY STEP OF OUR VALUE CHAIN.

**FLEXIBILITY MANAGEMENT**

**BODY SHOP**
- Up to 9 derivatives per line\(^1\)

**PAINT SHOP**
- Continuous innovation to meet **sustainable production** claim (e.g. IPP\(^2\))
- Use of high-tech, sustainable finish

**SUSTAINABILITY**

**INNOVATION**

**ASSEMBLY**
- **Smart automation** of line production
- Productivity and quality increase through human-robot-collaboration

**LOGISTICS**
- **Just-in-time logistics** for efficiency and productivity
- Continuous improvement

**LEAN PRODUCTION**

**CAPITAL PRODUCTIVITY**

**PRESS SHOP**
- “Buy” decision to ensure best **capital efficiency**

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Production@BMW Group, March 2015

1) Including M derivatives; 2) Integrated Paint Process

Source: BMW
BMW GROUP IS BEST PREPARED TO APPLY FUTURE TRENDS AND TO MEET FUTURE RISKS IN PRODUCTION.

- **Value Oriented Production System**
- **Global Balanced Growth**
- **Market / Customer Flexibility**
- **Global Supply Chains**
  - Outsourcing to low-cost areas.
- **Connectivity & Industrial Internet**
  - New data processing and usage.
- **Technological Changes**
  - Increasing speed of technological changes.
- **Sustainability**
  - More environmentally friendly production and vehicles.
- **Volatility**
  - Changing customer/segment structure, regional demand and market behavior.
- **Trade Regulations**
  - Increasing localization regimes.
- **Complexity Management**
- **Proven Innovative Track Record**
- **Automation Experience**

Trends & risks in future production:
- Increasing speed of technological changes
- Increasing localization regimes.
- Changing customer/segment structure, regional demand and market behavior.
- More environmentally friendly production and vehicles.
- Outsourcing to low-cost areas.
- New data processing and usage.

Source: BMW

Production@BMW Group, March 2015
SUMMARY:

BMW Group production acts as one global network with smart allocation of value creation.

We apply flexibility and complexity management to efficiently provide individualization for our customers.

Success factor is coherence of architecture, sourcing and production at all levels.

Mexico & Brazil will add strong pillars for our production network to foster sales.

BMW Group is best prepared to master future trends and to meet risks in production.