LIGHTWEIGHT FOR TOMORROW

Innovations in Injection Moulding and Additive Manufacturing

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SENIOR SALES MANAGER LIGHTWEIGHT

Lightweight-Forum Industrial Supply
Hannover, 1.4. – 5.4.2019
FACTS AND FIGURES

- Headquarters in Germany on approx. 171,000 m²
- Consolidated turnover 2017: EUR 698 million
  2018: EUR 750 million
- Export share ~70 %
- ~3,000 employees worldwide
MODULAR PRODUCT PORTFOLIO

- Modular Injection moulding machines
- Industrial additive manufacturing systems
- Flexible robotic systems
- Turnkey production cells
- Integrated Machine control system
- Efficient production management

INDIVIDUAL SOLUTIONS

PART DESIGN
- Simulation
- Recycling
- Process-driven Construction
- Material Substitution
- Individualization

INJECTION MOULDING
- Fibre Direct-Compounding
- Material Selection
- Thermoplastic Composites
- Physical Foaming

LIGHTWEIGHT CONSTRUCTION

ADDITIVE MANUFACTURING
- Rapid Prototyping
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- ARBURG Host Computer System

ADDITIVE MANUFACTURING
- Rapid Prototyping

HOLISTIC APPROACH TO FIBRE REINFORCED PLASTICS

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>CUSTOMER BENEFIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBT substituted with PP- LGF</td>
<td>Parts 30% lighter</td>
</tr>
<tr>
<td></td>
<td>Shortened cycle time</td>
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<table>
<thead>
<tr>
<th>PROCESS</th>
<th>CUSTOMER BENEFIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard LGF-process substituted with fibre-direct compounding (FDC)</td>
<td>Better mechanical properties</td>
</tr>
<tr>
<td></td>
<td>Material cost savings</td>
</tr>
<tr>
<td></td>
<td>Flexible material selection</td>
</tr>
<tr>
<td></td>
<td>Lower CO₂-footprint</td>
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HOLISTIC APPROACH TO FOAMED PLASTICS

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<tr>
<th>MATERIAL</th>
<th>CUSTOMER BENEFIT</th>
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<tbody>
<tr>
<td>Compact PC substituted with foamed PC (ProFoam)</td>
<td>Parts 30% lighter, Lower CO₂-footprint</td>
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<tr>
<th>PART DESIGN</th>
<th>CUSTOMER BENEFIT</th>
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<tr>
<td>Process allows part design optimization</td>
<td>Reduced wall thickness, Higher part quality (sink marks)</td>
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<tr>
<th>PROCESSES</th>
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<tr>
<td>Dynamic mould heating</td>
<td>Good surface quality</td>
</tr>
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HOLISTIC APPROACH TO HYBRID PARTS

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<tr>
<th>MATERIALS</th>
<th>CUSTOMER BENEFIT</th>
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<tbody>
<tr>
<td>Foamed PP-LGF + TCS</td>
<td>Hybrid lightweight part</td>
</tr>
<tr>
<td></td>
<td>Lower CO₂-footprint</td>
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<th>HYBRID PROCESSES</th>
<th>CUSTOMER BENEFIT</th>
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<tr>
<td>Substitution of thermoplasts with TCS</td>
<td>Maximal weight reduction</td>
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<tr>
<td></td>
<td>Part strength adjustable to work load</td>
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OPTIMISING PART DESIGN FOR LIGHTWEIGHT PARTS

- Lightweight structures are possible
- Design and process optimised for weight and materials
- Stability and strength at the same time

ARBURG freeformer
Integrated Lightweight Plaza
Halle 5, Stand B18
PROTOTYPES – FAST TRACK TO MARKET MATURITY

- Magura GmbH und Co. KG
- Material
  - PA 10
  - Desmopan
- Speed up the development process
- Functional testing with prototypes

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- Individualisation
- Recycling
ORDER-BASED PRODUCTION OF EQUIPMENT – SINGLE-UNIT BATCHES

- Individually adapted gripper systems
  - Tailored to product properties
  - Manufactured directly on anodised metal plate
- Integrating freeformer into automated production cell

ARBURG AM Factory
Halle 6, Stand J10

LIGHTWEIGHT – NEW PATHS OF INNOVATION

- Cost-effective lightweight construction – intelligent choice of material and process
- Holistic approach – targeted optimization of the whole process
- Your partner – ARBURG constantly develops new solutions
- Requirement – get involved with the technologies