Opportunities and Limits of 2k-Injection Moulding

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Preamble

- Multi-component parts have become increasingly important in recent years. Whether it is in the automotive, sanitary, medical or domestic sectors, composite systems are standing for innovative products and economically efficient production.

- Multi-component injection molding and In-mould assembly are opening up new horizons for the processing of materials.

- Processes like “Sequential moulding, Overmoulding, Co-Injection (Sandwich moulding), In-mould fitting of seal and gaskets, Component manufacturing,……” broaden the possible scope for creative design and versatility of function and application.
Agenda

Opportunities of 2k-Injection Moulding

- Process Versions
- Mould Concepts
- Materials
- Benefits of 2k-Injection Moulding
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Opportunities and Limits of 2k-Injection Moulding

Process Versions

- multi coloured parts
- lsr / lsr composites
- thermoplastic / lsr composites
- component manufacturing
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Opportunities of 2k-Injection Moulding

Mould Concepts

origin: "Engel / Combimelt"

transfer system
Opportunities of 2k-Injection Moulding

Mould Concepts

origin: „Engel / Combimelt“

rotary table system
Opportunities of 2k-Injection Moulding

Mould Concepts

origin: "Engel / Combimelt"

index plate system
Opportunities of 2k-Injection Moulding

Mould Concepts

origin: „Engel / Combimelt“

sliding split system
Opportunities of 2k-Injection Moulding

Mould Concepts

reversing slide system

origin: „Engel / Combimelt”
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Opportunities of 2k-Injection Moulding

Materials / Benefits of Silicone as Soft Component

- Very good heat resistance up to 180 °C: no melting or creep
- Cold flexibility: down to –50 °C
- Chemical resistance:
  suitable for seals immersed in coolants, hot water, engine oils, etc.
- Aging resistance: resistant to UV, heat, x-rays
- Unlimited pigmentability
- Compression set lower than that of TPE’s
- Medical grades available
- No toxic combustion products
- Excellent environmental compatibility
- Free of plasticizers
### Opportunities of 2k-Injection Moulding

**Materials / Self Adhesive LSR for 2k-Injection Moulding Process**

<table>
<thead>
<tr>
<th>product name</th>
<th>properties</th>
<th>details</th>
<th>adhesion</th>
<th>adhesion after storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>LR 3070/30,40,50,60</td>
<td>Standard</td>
<td></td>
<td></td>
<td>Hot-Air</td>
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<tr>
<td>LR 3071/30,40,50,60</td>
<td>FDA, BfR-compliant</td>
<td></td>
<td></td>
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<td>LR 3072/30,40</td>
<td>Oil Bleeding</td>
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<td></td>
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<tr>
<td>LR 3074/60</td>
<td>Improved Coolant Resistant</td>
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<tr>
<td>LR 3076/70</td>
<td>Improved Oil Resistant</td>
<td></td>
<td></td>
<td>Motor Oil</td>
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<tr>
<td>SILPURAN® 6700/40,50,60</td>
<td>Bio compatible according</td>
<td>USP class VI, ISO 10993</td>
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</tbody>
</table>
Opportunities of 2k-Injection Moulding

Materials / Good Adhesion on PA, PBT, PET, PEEK, PMMA Can Be Achieved with Self Adhesive LSR

- High performance plastics: PEEK, LCP, PEI, PES, PPS
- Engineering plastics: PC, PET, PBT, PMMA, ABS, PA, POM
- Commodities: PS, PVC, PE-HD, PE-LD

- Good adhesion with LR 307X grades
- No bonding

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Opportunities of 2k-Injection Moulding

Benefits of 2k-Injection Moulding

Using state-of-the-art machine technologies, mould systems and materials in various processes it is possible to manufacture components featuring a whole spectrum of properties.
Opportunities of 2k-Injection Moulding

Benefits of 2k-Injection Moulding

- parts with **integrated functions** (e.g. sliding bearings)
- **multi-layer** parts (e.g. sandwich moulding)
- **components in-mould assembled** from transparent and non-transparent parts
- **component manufacturing** (by selecting materials which do not adhere to one another, it is possible to produce articulated parts, for example hinge or knuckle joints, ready-assembled in the mould, thus waiving the need for downstream assembly)
Opportunities of 2k-Injection Moulding

Benefits of 2k-Injection Moulding

- less production steps
- shorter period between order and delivery of parts
- higher reproducibility and increased productivity
- high reliability of production process
- simplified logistics

- cost reduction
Opportunities of 2k-Injection Moulding

Benefits of 2k-Injection Moulding

- **excellent bonding** between components
- **design** (colour combinations, information brokerage, marketing possibilities)
- **soft touch** or **non-slip coverage** (to obtain certain grip control or for ergonomical reasons)
- **sealing functions** (closeness against dust and condensation water, compactness versus various fluids)
- **rigide/flexible composites** (with good damping characteristics)
Opportunities of 2k-Injection Moulding

Benefits of 2k-Injection Moulding
Thank You For Your Attention