PU – Plastic Overmoulding Technology

YC KO
Senior Consultant, Smart Manufacturing Division
15 Sep 2020
1. Applications
2. Product features and process
3. Solution and technical advantages
Applications

- Soft-touch and leather-like appearance on rigid base layer

![Door panel](image1)
![Switch panel](image2)
![Instrument panel](image3)
![Head rest](image4)
Existing Problems and Limitations

• Leather mounting or in-mould decoration
  • Poor yield rate
  • Wrinkles at the corners, post processing work is required to fix it
PU-thermoplastic Overmoulding Product Features

• **PU top layer**: soft-touch leather-like feeling and appearance
• **ABS base layer**: rigid support
• **Various colour choices**
PU-thermoplastic Overmoulding Injection Moulding Process

1. Manufacture ABS base layer by injection moulding
2. Transfer the ABS base layer to another mould cavity
3. Inject PU on top of the ABS base layer
System Setup

- Injection Moulding Machine
- PU Dosing System
Injection Moulding Machine
PU Dosing System

- Tanks for two-component PU materials
- PU mixing head
- Metering motor
- Electrical control
Injection Mould – Transfer Core

- ABS cavity
- PU cavity
- Moving core
- Ejector
- Hot runner

Mould cavity side
Mould core side
Final Products

ABS Base Layer

PU Skin Layer (White) Over ABS Base Layer

PU Skin Layer (Beige) Over ABS Base Layer

ABS Base Layer
Technical Advantages

• Quality
  • Comparing with traditional man-made leather mounting method or in-mould decoration method
    ✓ Soft-touch leather-like parts even with undercut or sharp corner without wrinkles
    ✓ Flash-free PU products – no post-process to trim excess material
Technical Advantages

• Quality
  • Comparing with traditional man-made leather mounting method or in-mould decoration method
    ✓ PU layer with variation in wall thickness
    ✓ Reproduction of mould surface textures
Liquid Silicone Rubber – Plastic Overmould Technology

YC KO
Senior Consultant, Smart Manufacturing Division
15 Sep 2020
1. LSR material characteristics
2. Applications
3. Solution
**LSR – Plastic Overmould Technology**

**LSR material characteristics**

**HTV**: high temperature vulcanising

**LSR**: Liquid silicon rubber

**RTV**: room temperature vulcanising

![Diagram showing LSR material characteristics](image.png)
LSR – Plastic Overmould Technology

LSR material characteristics

**Characteristics**

- Excellent elasticity (elastic limit up to 600%)
- Broad range of operating temperature (-50°C to 280 °C)
- Maintain good properties even at high and low temperature
- Outstanding electrical properties
- Good physiological compatibility
- Excellent environmental compatibility
LSR – Plastic Overmould Technology

Applications

Baby care

Automotive

Electrical appliances

Medical
LSR – Plastic Overmould Technology

Applications

Two-component applications
LSR – Plastic Overmould Technology

Solution

- LSR dosing system
- Injection moulding

~25°C
>150°C

20-30°C
140-220°C
LSR – Plastic Overmould Technology Solution

Overall configuration

LSR Injection unit

Turn-table

Aux. plastic injection unit
LSR – Plastic Overmould Technology

Solution
LSR – Plastic Overmould Technology

Solution

TK: High temperature- LSR
TT: low temperature- plastic
TK+TT: integrated mould temperature
LSR – Plastic Overmould Technology

Solution

Overmoulding LSR on plastic
# Technical Support and Technology Transfer Services

<table>
<thead>
<tr>
<th>One-stop consultancy service</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Injection moulding machine and auxiliary equipment</td>
</tr>
<tr>
<td>• Product design</td>
</tr>
<tr>
<td>• Mould design and fabrication</td>
</tr>
<tr>
<td>• Injection process technique</td>
</tr>
<tr>
<td>• Training</td>
</tr>
</tbody>
</table>

**YC KO**

Senior Consultant, Smart Manufacturing Division  
Hong Kong Productivity Council  
Tel: 2788 6130  
Email: ycko@hkpc.org