Online Process Monitoring in Hybrid Injection Overmoulding

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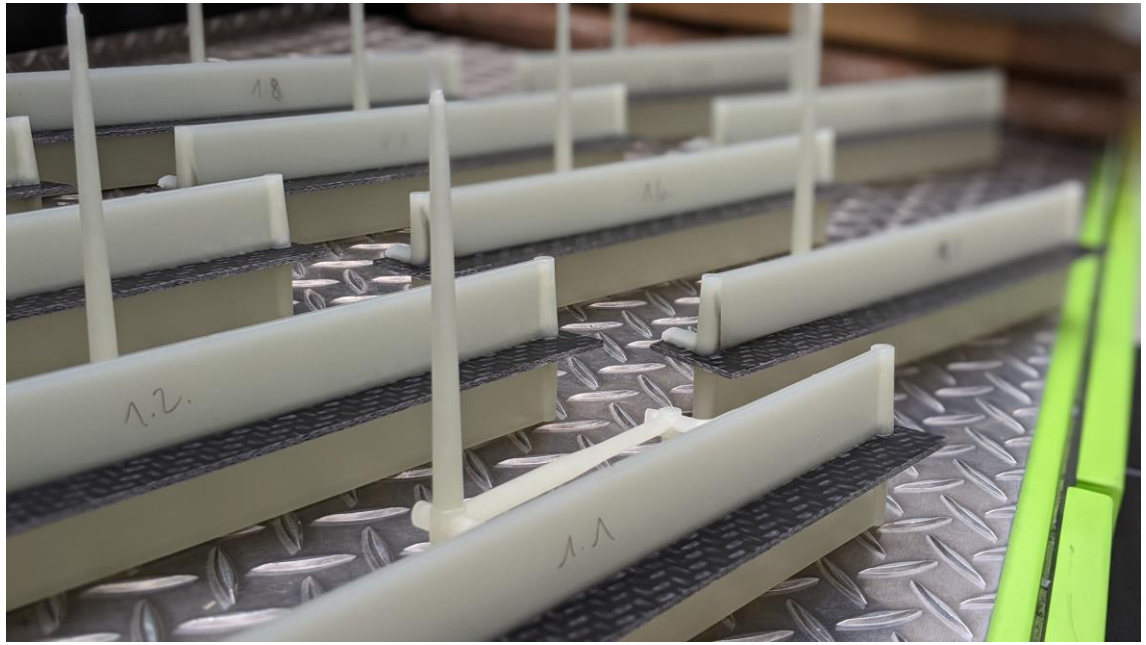
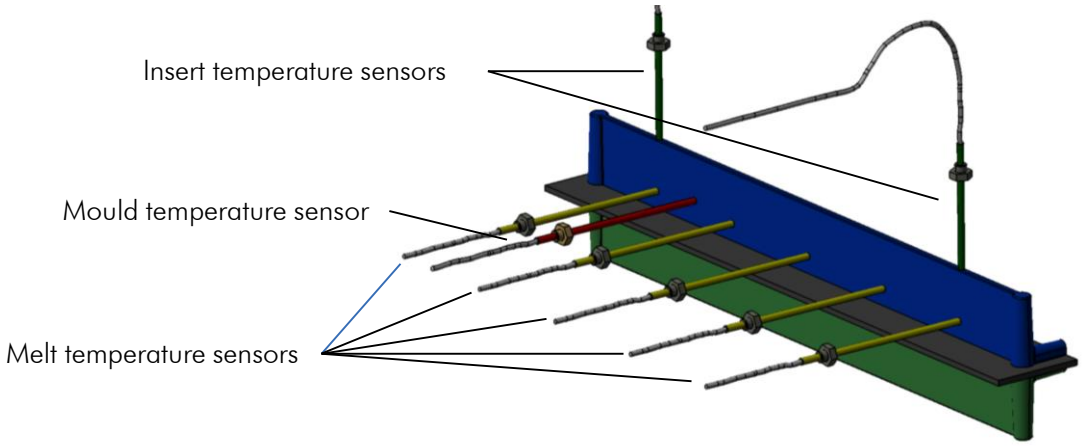
Hybrid Injection Overmoulding

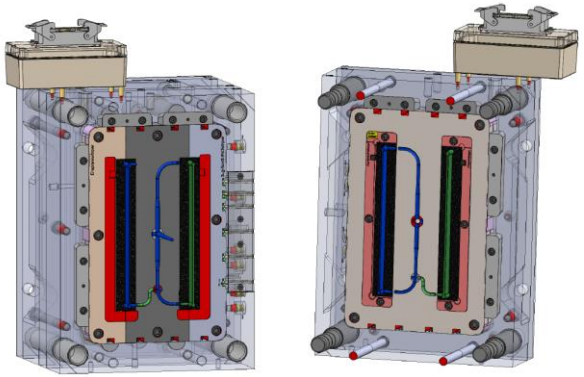
- Combines properties of organosheets and injection moulding:
  - Excellent mechanical properties
  - High degrees of geometric freedom
  - Short cycle times
- Strength of hybrid structures determined by the interface between insert and injection moulding compound
- Incomplete understanding of process and lack of quality insurance

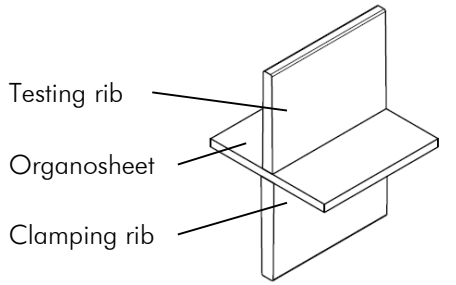


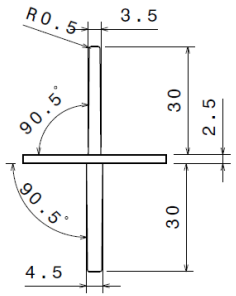
Online Process Monitoring

- Overmoulding tool for interface bonding specimen
- Sensor system for in-situ process monitoring inside the tool
  - Insert temperature
  - Melt temperature
  - Mould temperature
  - Melt front speed
- Definition of a process window for complete bond formation



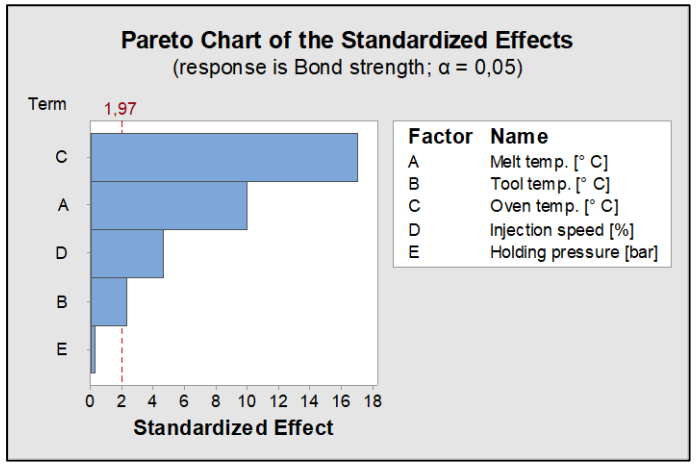


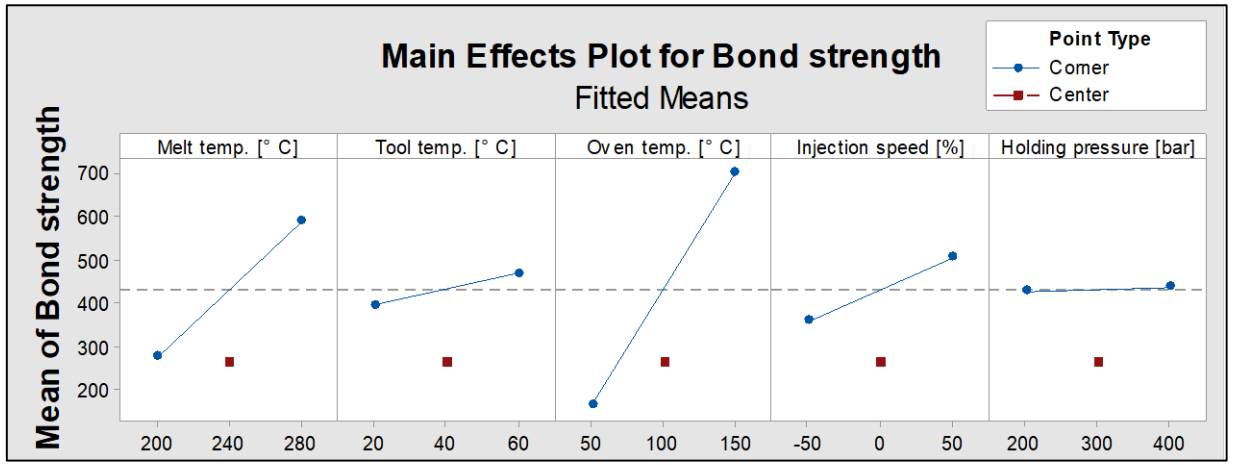


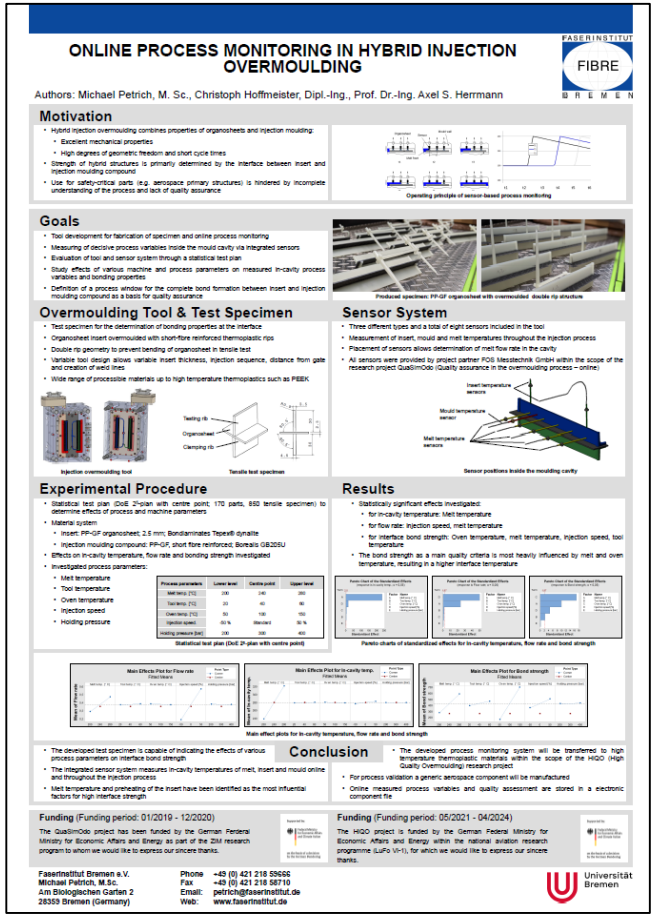


Results

- Sensor system measures in-cavity temperatures online and throughout the injection process
- Study of the effects of various process parameters for PP-GF material system
- Interface bond strength most heavily influenced by:
  - Insert temperature
  - Melt temperature







Thank you for your attention!

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