Induction heating in the injection moulding process

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Background and Basics

Variotherm tool temperature control

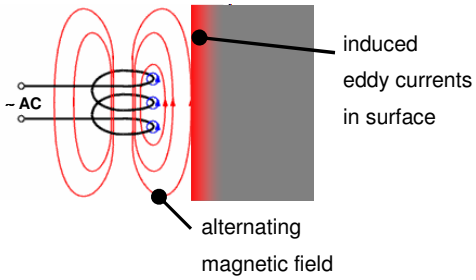
For several applications a dynamic mould heating may improve the injection moulding process:

- Processing of highly filled compounds
- Generation of high-gloss surfaces without joint lines
- Realization of parts with high aspect-ratio

Induction heating

A high-frequency alternating current generates a magnetic field which induces eddy currents in ferromagnetic conductors. These eddy currents lead to Joule heating.

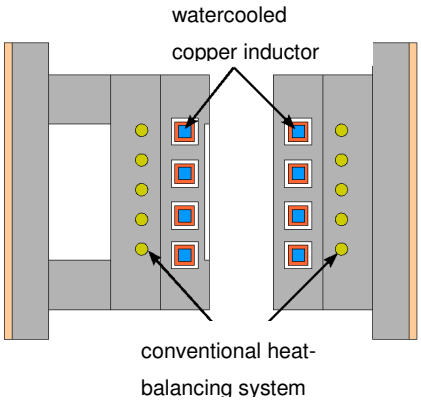
- Surpassing power density allows short heating cycles



Concept and Solution

High performance ceramics and induction heating

- Tool integrated induction heating coil
- Ceramic coatings for electrical insulation
- Machinable ceramics for structural moulding tool elements
- Temperature dependent closed-loop control for process reliability



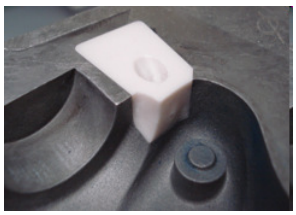
Status and Outlook

Diversification of application range

- Currently only small moulding tool parts armoured with ceramics
- Complete cavity area made of high performance ceramics intended

➡ "Electromagnetic windows" for induction heating

➡ New chances for variotherm process with increased energy efficiency due to reduced heating volume



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