**Injection Moulding – Optical Components**

Optical systems made of transparent polymers are one of the key-technologies of the 21st century. Technological advantages in polymer processing allow increasing substitution of glass optics. Injection moulding and injection-compression moulding allow a comparatively cheap one-step-manufacturing of high precision optical polymer lenses.

**Fields of Activity**
- Thermal, mechanical and rheological design of injection and injection-compression moulds
- Injection and injection-compression moulding of optical polymer parts
- Quality analysis of optical polymer parts regarding geometrical, optical and inner properties

**Cycle time reduction**

Optical components are often thick-walled. In order to reduce the high cycle times, the multilayer injection moulding has been introduced. A pre-moulded layer is overmoulded with the same material to reduce the cycle time without a loss of quality or even with an increase in optical performance.

A mould design for the replication of multilayer moulded lenses has been developed at the IKV.

![Diagram of multilayer injection moulding techniques](image)

**Possibilities of cooperation**

We provide you an offer for the solution of your questions within the fields of:
- Injection moulding and injection-compression moulding of optical components
- Process optimisation of injection moulding / injection-compression moulding
- Determination of geometrical and optical quality criteria of plastic optics
- Process design of injection and injection-compression moulding of optical components

**Equipment**
- Injection moulding machine Engel e-Motion 180/440
- Modularly designed injection and injection-compression moulds for manufacturing of lenses and lightguides with different geometries
- Optical bench for determination of optical parameters like resolving capacity and distortion
- Contact-free measurement for determination of the surface topography of optical parts (Microglider, FRT)
- Camera-based measurement system for defect detection (OPAL, Intego)
- Shack-Hartmann-Sensor for determination of the optical performance of lenses (Optocraft)
- Autocollimator for centering-error measurement (OptiCentric MOT 2R, Trioptics)
- 3D-Laserconfocal-Microscope for surface inspection (VK-X200, Keyence)

**Contact**

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