



1 Multi-chamber hybrid reflector.
2 Hybrid lens holders.

Class A surfaces with laser-based hybrid material composites

Motivation

To fulfill certain needs in production – lightweight construction and increased functionality, to name just two trends – the industry will need to combine different dissimilar materials in photometrical applications. The requirements of LED technology can be met by combining the good thermal conductivity of die-cast components with the high surface quality of injection molded components. In the NRW Form-LIGHT project, a plastic-metal hybrid composite with a Class A surface was developed.

NRW project Form-LIGHT

Within the project, Fraunhofer ILT examined how an undercut structure could be inserted into the light metals aluminum and magnesium. A part of its investigation was to compare different focal lengths as well as to vary the laser power, the scanning speed, the number of passes and the structure arrangement. Using cross-sections, the institute considered and evaluated the effects of varying these parameters, and it selected the parameter settings based on this evaluation for the subsequent process. In it, plastic is injected into the structures by means of back injection to generate a positive locking fit.

Advantages for the automotive industry

The project demonstrated that the combination of plastic and light metal can reduce the limitations of each material and harness the advantages of both for automotive applications such as headlamp systems.

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