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Design of a Multifunctional Injection Mold

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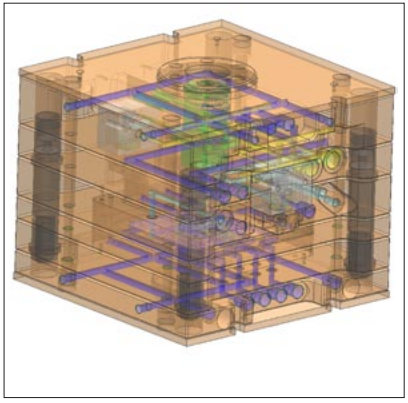
Subject Area	Construction and System Technology

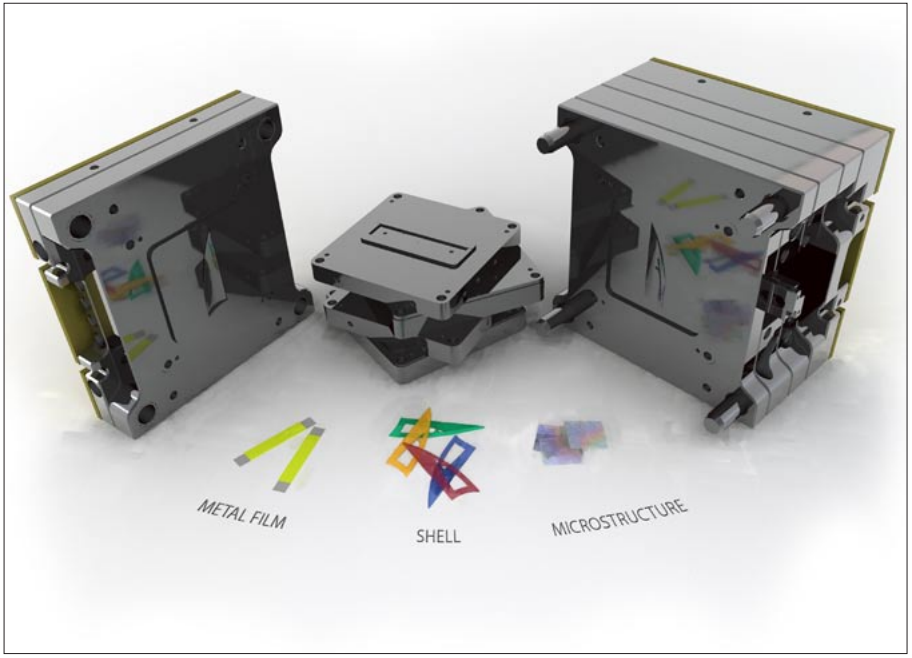


CAD Overview

Task: An approved way to analyze and evaluate innovative technologies is to mold simple demo parts for research purposes. The IWK (Institute of Material Science and Plastics Engineering) prefers to work with a multifunctional mother mold, to keep the mold manufacturing costs on a low level. This mother mold will be able to include different inserts for appropriate research purposes.
A new multifunctional mold has to be designed to analyze new tempering technologies (dynamic cavity tempering) to release the major injection mold machines and to use the new Arburg 25t vertical injection mold machine frequently.

Project Goal: The goal of this thesis was the design of a complete, multifunctional mold, according to the required research purposes, which includes the design of the plastic components, the rheological, thermal and mechanical design and the entire construction/drawing of the mold in Unigraphics (CAD-Software).
The following research purposes were defined beforehand:

– Research on the effects of a dynamic cavity tempering system on metal film adhesive. Analysis of the adhesion between metal film and plastic with defined peeling tests.



Visualisation of the mold, inserts and plastic components

– Molding of microstructures in combination with a dynamic cavity tempering system (optical communication, holographic or design applications).
– Research on high quality surfaces (improve surface quality of fiber reinforced materials, polished surfaces, high finished surfaces, avoid of appearance of weld lines, etc.)
– Research on blanking stainless steel films (optionally with mold integrated embossing)

Result:

– Complete UG NX5 CAD Model of the multifunctional mold, including 3 inserts fulfilling the required purposes.
– Complete set of drawings and bill of material
– Design concept of an additional mold integrated embossing system.