

## Press Release



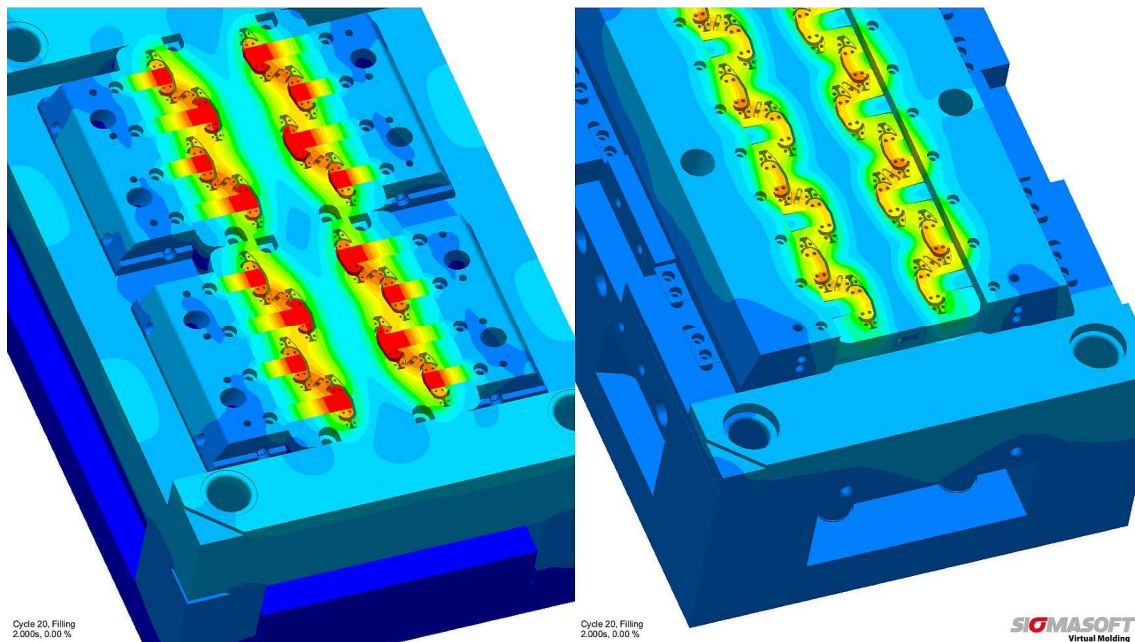
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### **SIGMASOFT® Virtual Molding Optimizing the Mold before Cutting the Steel**

*SIGMASOFT® Virtual Molding, presented by SIGMA Engineering (Hall 13/B31), is a revolutionary method to carefully evaluate the performance of an injection mold. It allows identifying weaknesses and optimization potential early, thus reducing production costs and quality issues during production.*



*Figure 1 – SIGMASOFT® Virtual Molding enables early mold optimization: left – initial mold design and temperature distribution, right – mold temperatures with the optimized design*

## **Optimizing the Mold before Cutting the Steel**

**Aachen, October 19<sup>th</sup> 2016** – SIGMASOFT® Virtual Molding, from SIGMA Engineering GmbH (Hall 13, Booth B31) is a revolutionary method to systematically assess the performance of a given mold design. It allows validating different mold concepts and understanding potential optimization opportunities. Therefore, it enables early mold, part and process optimization, which can be done before even cutting the steel.

SIGMASOFT® Virtual Molding works as a virtual injection molding machine. The mold with all its components is included in the simulation. The exact same injection molding process as in the molding machine is defined, and several production cycles are “run” one after each other, to reproduce the same physical effects found in reality. It is thus possible to anticipate possible part defects or improvement opportunities to reduce cycle time.

The company F. & G. Hachtel GmbH & Co. KG worked with SIGMASOFT® Virtual Molding to optimize a new mold. In this case, the objective was to produce parts with minimum warpage. Initially, a first mold concept was tried. The cores designed allowed for very few cooling channels, and after several molding cycles residual hotspots had developed, which increased both cycle time and part warpage, as seen on the left side of Figure 1.

A new core geometry was proposed with improved tempering. Under the same production conditions, a new “virtual production trial” was run in SIGMASOFT® Virtual Molding. The presence of more tempering channels in the core substantially reduced the temperature in the cavity, as seen on the right side of Figure 1, and thus decreased the thermally induced stresses in the part, responsible for the resulting warpage.

SIGMASOFT® Virtual Molding helps the user to early reveal weak spots in the mold concept and to optimize the initial tool design. This virtual optimization is done easily within hours, and reduces the need to rework the tool during production trials, thus reducing risk and costs when delivering a new project.

SIGMA® ([www.sigmasoft.de](http://www.sigmasoft.de)) is 100% owned by MAGMA® ([www.magmasoft.de](http://www.magmasoft.de)), the world market leader in casting process simulation technology based in Aachen, Germany. Our SIGMASOFT® Virtual Molding technology optimizes the manufacturing process for injection molded plastic components. SIGMASOFT® Virtual Molding combines the 3D geometry of the parts and runners with the complete mold assembly and temperature control system and incorporates the actual production process to develop a turnkey injection mold with an optimized process.

At SIGMA® and MAGMA®, our goal is to help our customers achieve required part quality during the first trial. The two product lines – injection molded polymers and metal castings – share the same 3D simulation technologies focused on the simultaneous optimization of design and process. SIGMASOFT® Virtual Molding thus includes a variety of process-specific models and 3D



simulation methods developed, validated and constantly improved for over 25 years. A process-driven simulation tool, SIGMASOFT® Virtual Molding provides a tremendous benefit to production facilities. Imagine your business when every mold you build produces required quality the first time, every time. That is our goal. This technology cannot be compared to any other simulation approach employed in plastics injection molding.

New product success requires a different communication between designs, materials, and processes that design simulation is not meant for. SIGMASOFT® Virtual Molding provides this communication. SIGMA® support engineers, with 450 years of combined technical education and practical experience, can support your engineering goals with applications specific solutions. SIGMA® offers direct sales, engineering, training, implementation, and support, by plastics engineers worldwide.

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