

Press Release

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**Elastomer Processing:
SIGMASOFT® Virtual Molding Predicts Material Degradation**

Rubber degradation is an important topic in elastomer processing. High temperatures and long dwelling times lead to an irreversible damage of the material. In an upcoming release of SIGMASOFT® Virtual Molding the prediction of degradation damage will be even more reliable.

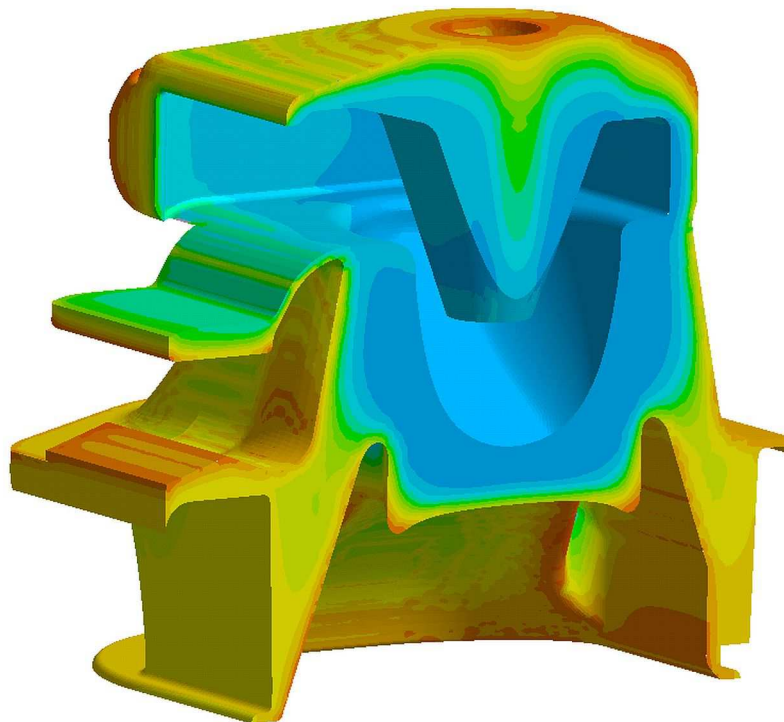


Figure 1 – Probability of elastomer degradation: red areas show the part damage due to material degradation

SIGMASOFT® Virtual Molding Predicts Material Degradation

Aachen, June 29th 2015 – At high temperatures, polymers experience thermal damage, due to the rupture of molecular chains. This degradation is particularly relevant in elastomers, if long dwelling times happen together with high temperatures. High temperatures, which are needed for a fast curing reaction, may actually lead to degradation if the dwelling time is too long (Figure 2). Once the curing degree of 100% has been reached the degradation of the elastomer starts. Thus, long heating times contribute to a larger scrap production.

At the DKT/IRC 2015, SIGMA Engineering GmbH, Aachen, will present an upcoming release of its simulation tool SIGMASOFT® Virtual Molding, which predicts the thermal degradation of elastomer materials. In this way, the processor can recognize early enough in the development stage if the planned process may cause thermal damage in the part, and can take the necessary actions to avoid it.

The probability of damage occurrence may now be predicted via two new results, available to calculate the potential for degradation and the extent of the exposure at high temperatures. Once this understanding is gained, it is possible to determine which is the maximum permissible mold temperature, as well as the heating time, to thus minimize the cycle time without compromising the robustness of the process. Through this optimization, the processor saves costs in later serial production and increases the process productivity.

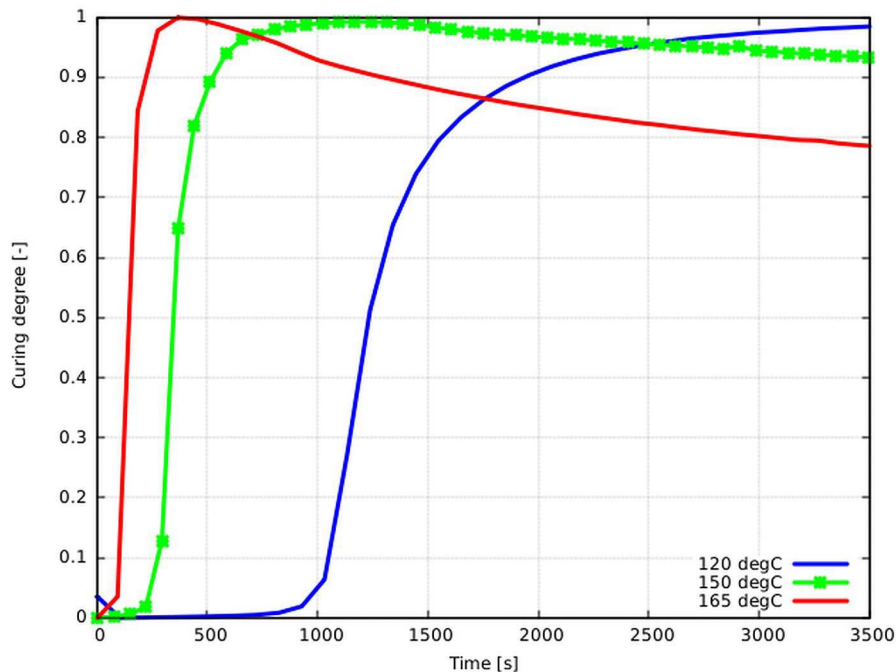


Figure 2 – Curing curves of a natural rubber. After the required curing material degradation starts; the higher the temperature, the faster the degradation starts.

SIGMA® (www.sigmasoft.de) is 100% owned by MAGMA® (www.magma-soft.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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