

Press Release

Springback Effects – Mühlhoff Ensures Production Reliability with AutoForm

Zurich, Switzerland, September 24, 2008: Mühlhoff Umformtechnik GmbH ensures the production reliability of complex stamping parts with AutoForm simulation. Mühlhoff knows from experience that stamping parts with springback effects represent a high risk for the company, both with regard to costs and lead times. This cautious approach was again proven during the tool development for the roof reinforcement of the Volvo model.

Mühlhoff was working on a project for Volvo Cars Body Components. The goal was to design a die for a long, narrow stamping part, which showed considerable springback effects. There was no doubt for Mühlhoff that AutoForm simulation was the right choice to ensure production for this stamping. The first simulation result showed an insecure form stability caused by the insufficient stretching of the material. Taking the clamping and fixing points into account, the springback results showed a deviation of several millimeters compared to the target geometry. It was possible to compensate the springback, however the stable production of the stamping part was not yet ensured. Noise variables, such as material gauge thickness were the root cause. Subsequently, the whole process was analyzed with AutoForm-Sigma under the influence of fluctuating manufacturing parameters, in order to design it robustly. Springback compensation can be successfully performed and leads to a dimensionally stable stamping part, only if the process is robust. The tool compensation was realized using the findings of the AutoForm-Sigma analysis, and after four compensation loops the result was in accordance with the geometric specifications. The compensated CAD data generated by AutoForm software were directly used by Mühlhoff for milling.

Mühlhoff was able to save three tryout loops, which corresponds to the work-load of four weeks and its appropriate cost reduction. In addition, the planning reliability was much better, because parallel projects were not interrupted as frequently. For Mühlhoff, it is very important to ensure the production reliability of critical stampings with AutoForm simulation. AutoForm software delivers fast and significant insights which are crucial for successful springback calculation and compensation.

About Mühlhoff Umformtechnik GmbH

The Mühlhoff Umformtechnik GmbH was founded 1832 with its headquarters in Uedem. Today, the company has over 360 employees and manufactures complex formed body and assembly parts, as well as engine and drive line components for the automotive industry. The company forms steel and aluminium, using ultramodern forming and joining technologies. Mühlhoff is a full service supplier; it delivers cost savings solutions, develops and builds tools, manufactures stamping parts, offers all of the procedures for surface refinement and assembles various products with additional components to form ready to be installed modules. Tool construction belongs to the most important competencies of Mühlhoff. The company is certified according to ISO/TS 16949 and ISO 14001. For detailed information please visit: www.muehlhoff.de

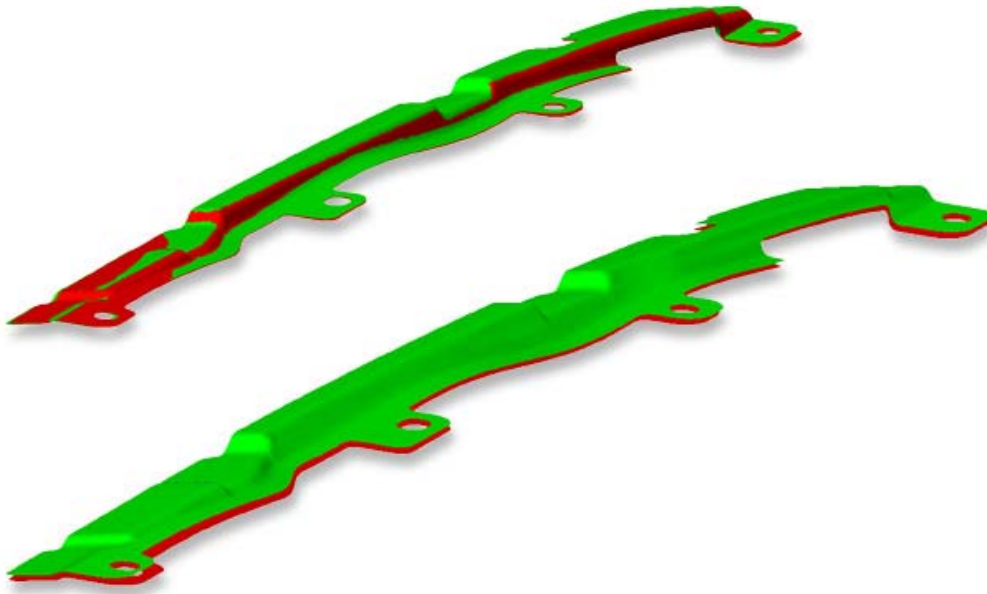
About AutoForm Engineering GmbH

AutoForm offers software solutions for the die-making and sheet metal forming industries along the entire process chain. With over 200 employees, AutoForm is recognized as the leading provider of software for product manufacturability, tool and material cost calculation, die face design and virtual process optimization. All of the Top 20 automotive OEMs and most of their suppliers have selected AutoForm as their software of choice. Besides its headquarters in Zurich, AutoForm has offices in Germany, The Netherlands, France, Spain, Italy, USA, Mexico, India, China, Japan and Korea. AutoForm is also present through its agents in more than 15 other countries. For detailed information please visit: www.autoform.com

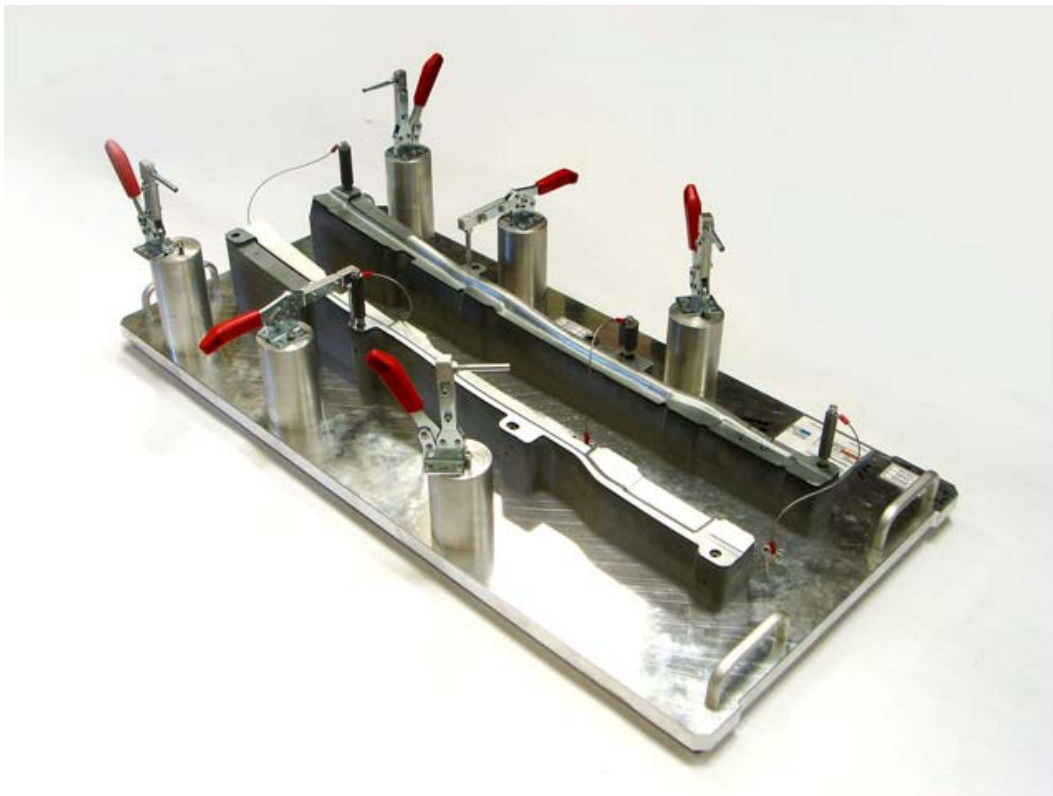
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Comparison of part geometry (red) with reference geometry (green) before springback compensation (top) and after springback compensation (bottom).



The gauge fixture (including the clamping and fixing points) is used for checking the dimensional accuracy of the stamping.

If you need a high resolution image, please contact us.