

Press Release

Stamping Simulation with AutoForm Cuts the Number of Correction Loops in Half

Zurich, Switzerland, January 19, 2010: AutoForm Engineering Deutschland GmbH, on a project in collaboration with Schuler Cartec GmbH & Co. KG, has demonstrated how to successfully apply springback compensation on a routine task. Springback simulation has achieved such good results that its implementation in industry is beyond question. Springback compensation is the next logical step. Both companies worked together analyzing a tricky side member for Daimler's E-Class model.

With its curved shape in all three axial directions, the side member is a complex stamping part. Bent flanges add additional stresses to the part and numerous add-on parts demand a high level of accuracy. The part is made of ZStE 340 which is a high strength, widely-used but challenging material. What is remarkable about this part is that not only one, but three operations are individually compensated, which therefore increases its complexity. In addition, there are tolerance bands, to some extent single-sided, which are only some tenths of a millimeter.

Using AutoForm Tooling and Tryout Solution, Schuler Cartec validates the process layout and the draw die design, carries out a trim analysis and optimizes trim lines. AutoForm Engineering broadens the analysis. After the springback calculation has been made, the results are used to compensate the die faces with the help of AutoForm-Compensator. In the final validation stage, AutoForm-Sigma demonstrates the robustness of the forming process and springback under real manufacturing conditions, i.e. with variations of material and process parameters. The consideration of these parameters already during the design phase ensures a robust manufacturing process. This is how springback compensation leads to dimensionally stable parts. A great benefit is that the only possible expense up to this point is attributed to the simulation effort since production has not yet started.

Besides the robustness analysis by AutoForm-Sigma which considers inherent variations, AutoForm Engineering uses a sensitivity analysis to determine the influence of design parameters such as initial blank, binder force, friction coefficient and drawbeads. The influence of the first three parameters is unremarkable. Two drawbeads, however, show a high, locally limited influence regarding material failure. The effect of the two other drawbeads is similarly strong, but more extensive and in an unexpected area of a part. The simulation shows that these parameters have a great influence on the material failure. The new insight gained by using AutoForm software prevents unnecessary correction loops which represent serious costs in the tryout press.

The tryout phase in the tryout press begins after the manufacturing of tool components and tool assembly. The first correction loop is followed by the next one, however only after an additional compensation in particular areas was made. The results are convincing. Instead of the usual three to four correction loops, the dimensional specifications of the parts are achieved even after just two of them. Helmut Gründler, Assembly Manager and responsible for the tryout, experiences an immediate benefit. He explains: "Just a few years ago, I would have considered a part with such tolerance bands as not feasible. Today, we can produce such parts even when using challenging, modern materials."

The increased software usage at the starting phase of this project, which included springback compensation and final validation of tools, has proven itself by demonstrating immediate benefits. In addition, a time savings of eight weeks is achieved.

About Schuler Cartec GmbH & Co. KG

Schuler Cartec GmbH & Co. KG is the world leader in forming technology for metal working. Schuler Cartec represents the Schuler Werkzeugbau with locations in Göppingen and Weingarten. Schuler Werkzeugbau develops and manufactures challenging tool systems of all sizes, which are used, for example, for sheet metal body parts, hot forming parts and parts for transmission. The core competencies in the Weingarten plant lie in the development and planning as well as engineering, tool manufacturing and tryout. Process simulations are standard in order to optimize the manufacturing and material usage. For detailed information please visit: www.schulergroup.com

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 Switzerland, 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

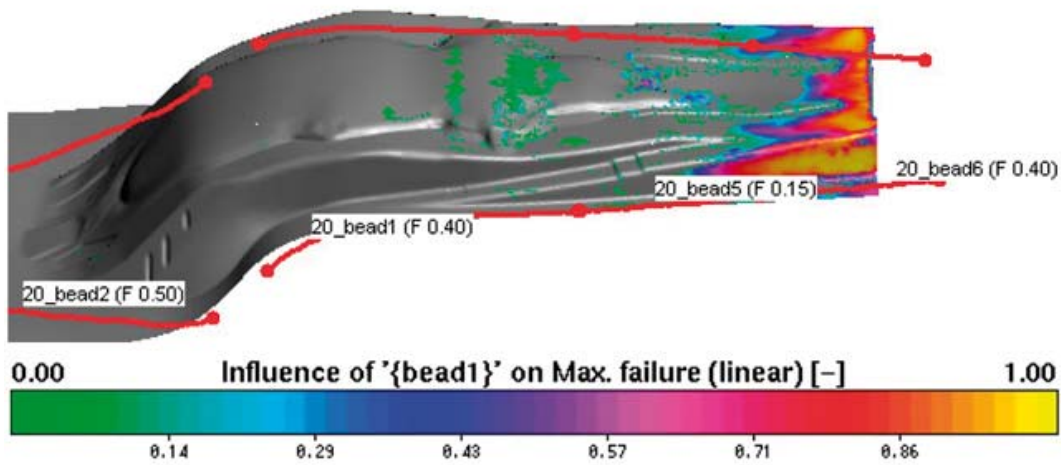
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The figure shows the influence of a drawbead (bead 1) on a specific output value after the sensitivity analysis is carried out by AutoForm-Sigma.



Trim line development is based on trim analysis by using AutoForm Tooling and Tryout Solution.

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