

STAMPAK

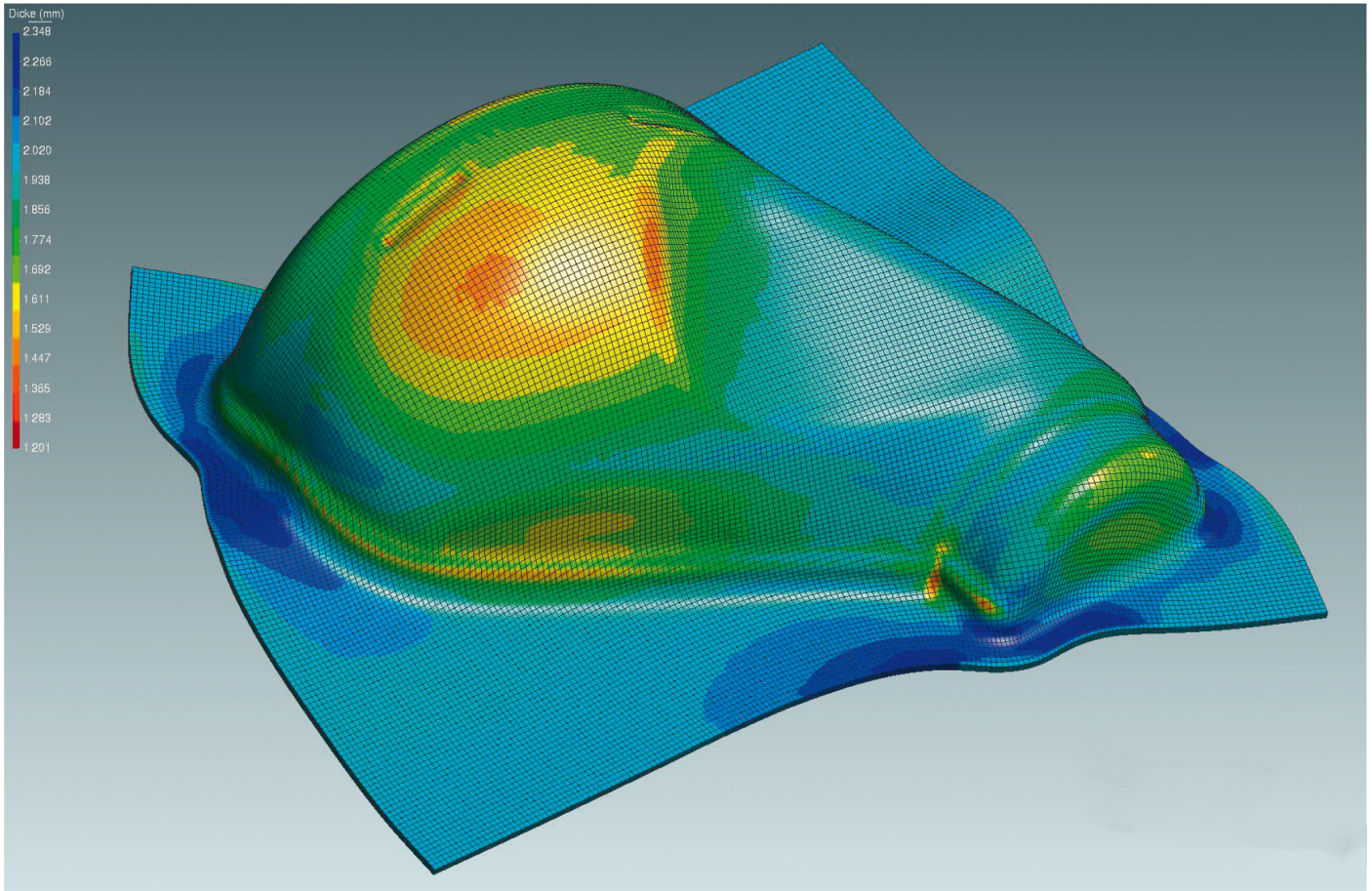
FORMING SIMULATION

Case Study

Fütterer Werkzeugbau GmbH

*- Volume simulation for sheet metal forming -
"Total control"*





No problem even with thick-walled sheet metal: Stampack calculates multi-stage forming processes completely in volume. Here is the simulation of an exhaust system component (© Fütterer)

Fütterer Werkzeugbau is an expert for transfer, deep-drawing and progressive die tools. For difficult forming operations, the Baden-based toolmakers play it safe by utilizing Stampack simulations.

“It is becoming increasingly difficult to find employees who are familiar with the design and simulation of tools”, says Christian Fütterer. He is the managing director of Fütterer Werkzeugbau GmbH and someone who can count himself among the professionals in this field. Fütterer learned the toolmaking profession in his parents’ business before studying mechanical engineering. While working in a CAD/CAM software house, he developed a soft spot for tool design. In 2001 he returned to the family business, initially to introduce software. In 2007 he took over management of the company, which today employs 35 people.

“Analyze, simulate, optimise”

What is the core competence of the toolmakers in Baden? “Clearly in method planning and tool design”, says Christian Fütterer. “Customers often come to us with the initial idea of a component. We then offer the entire range: Product development, feasibility analysis, forming simulation, optimisation. The most important thing for customers is reliable information about material consumption and stroke rates. We consider how the part can be produced. How many steps are required, which operations are

performed in which order, how large the required panels must be and what strip width is required.” Since a lot of know-how and a lot of designer hours are already spent in the phase before the quotation is prepared, Fütterer often issues an invoice for complex tools when the quotation is prepared, which is invoiced when the order is placed.

“Clear case: I want it in-house”

Christian Fütterer has been using Stampack simulation software for two years now. Initially, the forming simulation was purchased as a service from Men at Work. The two companies have been working together for more than 20 years ‘every now and then’ in the field of tool design. After using Stampack for the first time, Fütterer quickly became enthusiastic and wanted to have the system in house. “The main reason for purchasing the software was that I no longer wanted to outsource the know-how contained in our designs. I don’t want to pay other people money for giving them my knowledge,” says the company boss. Further benefits of the simulation software:

Flexibility: The software makes calculations for sheet thicknesses from 0.4 to 6 mm.

Element technology: Stampack provides both 3D shell and 3D solid simulations.

Analysis: Forecasting of material flow, formability, folds and surface defects.

Optimisation: Determination of springback with compensation calculation for tool adaptation.

Efficiency: “Using the software has saved us at least two modification loops per tool”, says Fütterer.

More partner than supplier: Men at Work

Men at Work had previously distributed the Stampack software, but eventually decided to take over the 6-person software company last year (refer also to the interview box on the back). Back to the toolmakers: “To be honest, I didn’t look at any other program before I purchased the Stampack license”, says Fütterer. “We have valued Men at Work as a reliable partner for a long time”, another advantage is its proximity:



Forming a long partnership: Christian Fütterer, Werkzeugbau Managing Director (left) and Frank Hornung, Managing Director of Men at Work. (© Hanser/Schröder)

Our buildings are only 5 km away from each other. “After three days of training, an experienced designer can handle Stampack”, says Frank Hornung, Managing Director of Men at Work. How did the commissioning process go at Fütterer? “We had a special way of doing this”, says the company boss. “Like training on the job. A software developer from Men at Work, who had never held a piece of sheet metal in his hands before, came to our office for two weeks. On the basis of two concrete projects, he learned how a tool works - and I learned how the software works. A win-win scenario for both sides.”

Fütterer delivers 95% of the tools ready for series production. Merely the induction training and the finishing take place at the customer premises on the series press. Where is Stampack used during an order? “At first in the method planning. That is our basis for calculation”, says Fütterer. The development of the method planning can take up to two weeks, usually in the teamwork of the three in-house designers. How many steps are required on the tool? Can forming be carried out in one operation? Does the method work? How large will the tool be? Which press will be required?

Fütterer Werkzeugbau GmbH

The family business founded in 1986 in Elchesheim-Illingen near Karlsruhe produces around 30 tools per year. Depending on size and complexity, the lead time of a tool can be up to 24 weeks. The tools, which weigh up to 10 tons, are tested on our own test press. Turning, milling, grinding, wire EDM and die sinking are carried out in-house, only hardening is carried out externally. Customers hail from the automotive, construction (e.g. concrete moulds for drainage), household appliance and electrical industries. The tools produced by Fütterer process sheet metal from 0.4 to 5 mm. Fütterer is also active as a contract service provider, from CNC lathed parts to single part production to forming simulation.

Simulation with Stampack takes place in two steps:

Stampack is used for testing with a preliminary simulation, initially only in the shell simulation. Fütterer: "It's a kind of quick-and-dirty variant that doesn't take so much computing time and gives me a rough idea of whether the motion sequence works. For critical areas I build it up again and then simulate in volume. Then I'm absolutely certain." After the first orders, Christian

Fütterer was so enthusiastic that he now also offers simulation as a service for customers. A license is currently in operation at Fütterer Werkzeugbau, which is used by the boss himself. A further license and training courses for the designers are planned for this year in order to increase capacities.



"Simulation detects problems before they hurt."

- Dr. Luca Hornung: Co-founder of Stampack GmbH -

Stampack GmbH, based in Bietigheim, Germany, was founded in 2018 and took over the Stampack software product line for forming simulation from Quantech ATZ in Barcelona, and the associated development team as well as the entire operative business of this division.

The Spanish company Quantech is the inventor of the Stampack software. How did the takeover in 2018 come about?

Stampack's origins lie in finite element research at the University of Barcelona. Quantech was a spinoff that made the code available to non-academic users. The owners were looking for a successor due to their age.

Men at Work has been distributing the software in German-speaking countries for ten years ...

... and is convinced of Stampack and its potential. The takeover by the children of the Men at Work founders was therefore a logical step. Men at Work also offers simulation as a service. Many customers first purchased the service - and were then interested in installing the software in house.

How difficult is Stampack to operate?

Experience in sheet metal forming is of course helpful, but knowledge of finite elements is not necessary. With Stampack, a toolmaker or designer can save himself many modification loops and trial tools.

Can software really replace a skilled worker?

Ultimately, the knowledge of proper tool design will not automatically be passed on to the next generation. In this instance, Stampack provides a good aid for backing up tool designs without having to build a test tool. It can be said that the know-how of the software replaces the good feeling of the designer. This is invaluable, especially for less experienced colleagues.

What is so special about your software?

We not only master shell simulation, but also volume elements that physically and accurately map the sheet thickness. That's an enormous improvement especially with thicker sheets and when metal will be coined/ironed.

Which processes can Stampack be used for?

A wide range: Deep drawing, round draws, stretch forming, progressive dies, hand insertion tools, coining/ironing, etc. In doing so, we offer an interface for all common CAD systems..