

Left: Dr. Markus Thomma, Corporate Marketing Director of AutoForm Engineering GmbH: "Our focus clearly remains on our core competence, sheet metal forming. We strive to rank among the top leaders in this sector."

"Automotive trends currently favour lighter, high-strength materials which place greater demands on forming tools and simulation software"



AN INTEGRATED APPROACH

Dr. Markus Thomma, Corporate Marketing Director of AutoForm Engineering GmbH, discusses new sheet metal forming software and his view on current and future market developments with ISMR

ISMR: How have you been affected by the global economic slowdown and when do you feel markets will improve?

MT: I expect to see an improvement in markets by the end of next year - my belief is that automotive OEMs will pick up first, as they start to develop new cars or re-animate automotive projects, but this will take time to filter through the supply chain. There are already signs of improvement - the financial industry has already picked up, some banks are already making profits and giving out bonuses. The automotive industry will follow. However, we have also, tragically, seen a lot of automotive industry knowledge seep away as tool and die shops have closed down in the recession or staff have been laid off.

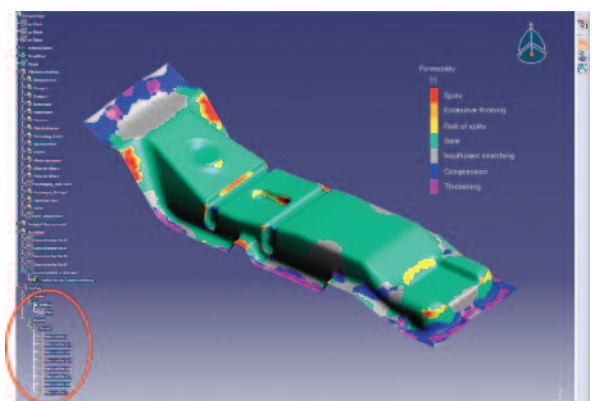
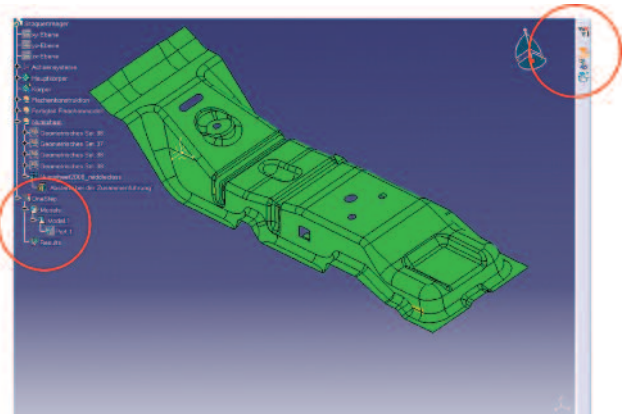
The crisis has hit AutoForm itself in phases, since our customers include automotive OEMs as well as suppliers, but also engineering service providers and steel suppliers. They are not all affected at the same time. However, of course, we also feel the crisis. As a consequence, we are holding off on investments and hiring fewer new staff members than usual. What has remained unchanged, however, is that approximately one third of our budget continues to be spent on research and development. There is a great deal of innovation in new technologies and much is happening in our field.

ISMR: How can companies successfully position themselves for the future?

MT: Looking worldwide, some companies out there still have structural and technology problems. Some companies simply did not do

Top Right: AutoForm-OneStep is integrated in CATIA V5 as a so-called workbench and can be accessed at the push of a button.

Bottom Right: The results of the AutoForm feasibility assessment are available to the user in the CATIA-tree structure.



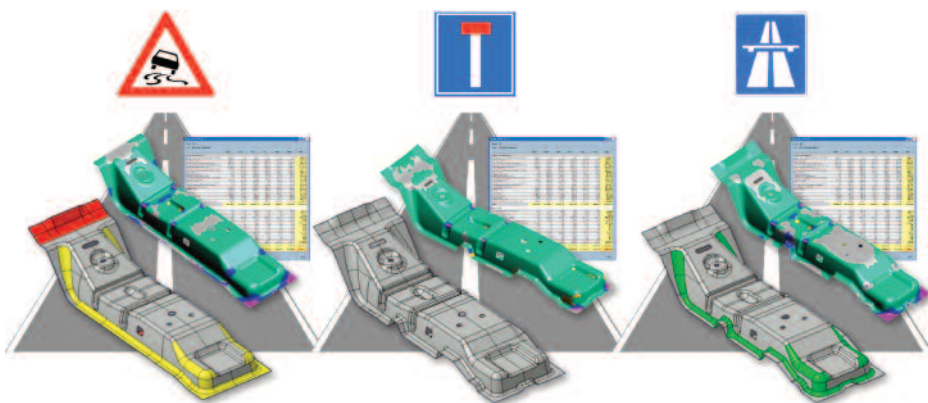
their homework for many years and have portfolios that include the wrong products and old or out-of-date technologies, or they have inefficient corporate/internal structures, and these companies will struggle to be successful in this very harsh environment. The question is: will they be able to update their processes and adapt their products themselves more competitively for the future?

ISMR: What challenges, in your view, facing metal formers and metal fabricators today?

MT: When it comes to designing a product and defining its manufacturing concept, one of the things missing in the sheet metal industry is comprehensive digital process planning. The comprehensive aspect and approach just isn't there. For a specific part, assembly or group, you want to know the exact design to choose, the kind of production method to apply to achieve your economic and quality goals and timelines in the best way possible. Whatever you do, focusing on

just one aspect is not the right approach. A more integrated approach, that takes into account all the parameters and goals (ie quality, cost, lead times, function - what we call 'the four dimensions') and how they affect each other is, in my view, the right approach. You need to look at this in terms of the entire lifetime of the product - a long term design philosophy, in other words. We are supporting our customers in such a multi-dimensional approach with AutoForm^{plus}.

In terms of challenges, our customers also face



Above: Comprehensive Digital Process Planning assesses various dimensions such as stamping feasibility and costs at a very early point in time. In this way, impasses and difficulties which are typically identified much later can be avoided early on.

Right: Tryout is supported by AutoForm-Sigma by slightly changing the parameters such as, for example, the position of the blank or draw beads and the user receives a description of the change to the part in seconds.

environmental problems and are under pressure to lower costs. Reducing the weight of the car and optimising the material consumption of the BIW (body in white) is one way, at least, of achieving this. This won't fully solve the problem for them in the long term but we can certainly help them to achieve their weight reduction and material consumption goals. Twenty-five years ago, BIW was produced in mild steel. Today, cars are being made from ultra-high strength material, high strength steel, aluminium, etc. As soon as you try to benefit from these materials or apply new technologies, such as hot forming, you have to use simulation technologies.

Quality requirements have also greatly increased - another customer challenge. Today's cars demand greater levels of quality and issues such as springback need to be dealt with in

OVs	Perf vars	Robustness	Sensitivity	Detail	F.L.D	Tryout
Virtual tryout						
Name		Tryout value		Min	Max	
pos_X	0.00	-0.899	-0.90	3.22	-4.78	4.57
pos_Y	0.00	-0.140	-0.14	2.52	-4.69	4.28
[ZL_1]	0.37	0.3704	0.37	0.03	0.32	0.41
[ZL_2]	0.37	0.3575	0.36	0.04	0.32	0.42
ZL_3	0.53	0.5317	0.53	0.04	0.47	0.59
ZL_4	0.53	0.5332	0.53	0.05	0.45	0.60
P_bh	2.50	2.5048	2.50	0.20	2.26	2.75
Reibung	0.15	0.1473	0.15	0.01	0.14	0.16

has great potential for sheet metal forming. Through state-of-the-art technology, we cover the entire "sheet metal" process chain and ensure continuity. Our focus clearly remains on our core competence, sheet metal forming. We strive to rank among the top leaders in this sector.

ISMR: What is this multidimensional approach like in detail?

MT: When designing stamping processes, the quality of the part has been the primary focus up until now i.e. simulation should identify possible cracks, wrinkles or surface defects. However, we see further stamping part requirements which need



process engineering. Springback is very dependent upon fluctuations in production - small variations in material properties or production processes (positioning of the blank etc.) can cause springback problems. Manufacturers need to ensure that processes are robust so that these variances are just a minor influence on the overall product quality.

ISMR: You recently introduced a new product line called AutoForm^{plus}. What target groups is this new software aimed at and what is your philosophy behind it?

MT: With the introduction of AutoForm^{plus}, we aim to give companies in the sheet metal forming industry a better understanding of Comprehensive Digital Process Planning. This multidimensional approach

to be balanced. These concern not only the quality but also the function of the stamped part. This is often almost unalterable, as for example with crash characteristics which the part must fulfil or simply the geometry, or rather the available space. Sometimes compromises are necessary to make it possible to produce the part at all. Function is, so to speak, a second aspect in addition to quality. A further aspect is cost since, in practice, the target costs of a part are often determined very early on - even before the geometry. And we see a fourth aspect as the time expenditure for the tryout and ramp-up. A part must now be available faster than ever before. In a nutshell: a customer is successful when a part is brought onto the market rapidly, at low cost and with the best possible quality.

ISMR: Bringing quality parts at low total cost onto the market rapidly, that actually sounds simple and logical ...

MT: ... but quite difficult. Part development, cost planning, process engineering and production represent completely different disciplines with their own interfaces, but are all involved in achieving the objective.

Left: The qualitative assessment is mostly based on feasibility, dimensional accuracy and surface quality (from left to right).

FACE TO FACE

ISMR: And how do you help your customers to overcome these challenges?

MT: The goal of AutoForm Engineering is to provide a tool which links together the four aspects/dimensions of process design, is fully integrated and which continuously evaluates these dimensions.

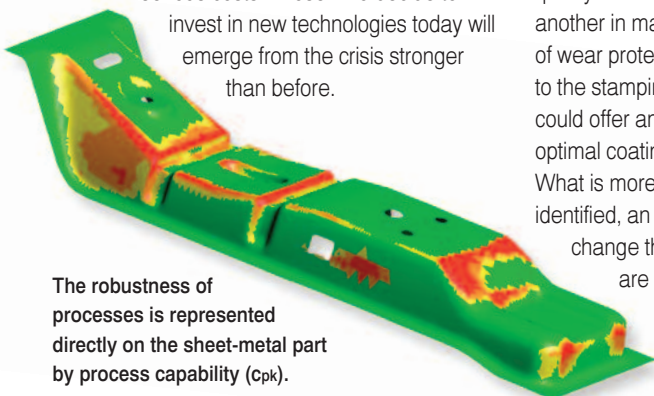
ISMR: You are regarded as an innovation leader. What strategies do you follow alongside innovative leadership?

MT: There is a great deal of expertise behind AutoForm^{plus}. It involves analyzing and modelling the interrelated processes of sheet metal forming to obtain a relatively easy-to-apply software system at the end. Our experts must understand the sheet metal forming process inside and out - bringing people to this point is a long-term investment. We are convinced that this will pay off, particularly in times of crisis.

One of our explicit strategic goals is sustainable customer relations. "Sell and Forget" is not the way we conduct business. AutoForm software is therefore not sold, but rather leased. In this way, customers can make fresh decisions for themselves each year.

ISMR: What benefit do your customers have from AutoForm software in the current difficult business environment?

MT: Despite the crisis our opinion is: now more than ever since, in any case, there is no way around simulation. When, for example, a tool maker applies AutoForm software today, he starts saving on costs tomorrow, since promising leverage in product development can be adjusted earlier, long before money is spent on correction loops. Compared to the software investment, these costs are in fact consistently higher. In addition, expertise regarding processes increases. Trial and error does not result in any serious costs. Those who decide to invest in new technologies today will emerge from the crisis stronger than before.



The robustness of processes is represented directly on the sheet-metal part by process capability (Cpk).

Right: The new product line AutoForm^{plus} is aimed at Comprehensive Digital Process Planning, a multidimensional approach which considers function and quality as well as lead time and costs.

ISMR: The "cost" issue is high priority: how can you support your customers in connection with this?

MT: AutoForm has a solution for the calculation of tool and material costs: AutoForm-CostCalculator can reliably identify cost drivers. It allows customers to recognize the possible savings potential in tools. We work on the basis of part CAD data and, in this way, prevent cost estimates based solely on experience with reference parts.

ISMR: This is a new approach. What is next?

MT: Development in the area of calculations is headed towards production costs. The design of robust processes is absolutely necessary for this. AutoForm-Sigma enables the airtight collection of information. Robust processes enormously increase the ability to plan as well. When assessing costs, time expenditure plays an important role. Less expenditure, for example, in tryout and ramp-up offer not only financial benefits but also allow for an early market entry.

ISMR: This all sounds realistically plausible. Do companies practice this comprehensive approach?

MT: No, there is room for improvement. This is not due to lack of insight on the part of the customer; in fact, it is organizational interfaces which cause the disruption of continuity. For example, departments responsible for costs and quality are to a great extent out of touch with one another in many companies. Or, take the question of wear protection which is actually only of interest to the stamping plant. But, AutoForm-DieAdviser could offer answers for suitable tool design or optimal coating already in the design phase. What is more - even if the potential has been identified, an integrated tool is missing. We aim to change this with AutoForm^{plus}. Customers are now able to first make substantiated calculations on what a particular quality demand will cost, for example, in an extreme case,



when reducing the clearance of an automobile by half a millimetre.

ISMR: How do you plan to lead your customers to adapt to an integrated approach?

MT: For us, extensive user support is also a part of our offer. Therefore, we have a powerful consulting team whose members know our customers' processes and their business. In this way we ensure that software solutions are effectively utilised to their full extent and are profitable.

ISMR: In closing, let's take a look at the future: What potential do you see for your software?

MT: The trend lies in fuel-efficient automobile models which must be put onto the market quickly. Weight plays a decisive role in fuel efficiency. This requires the use of lighter, high-strength materials, which place great demands on forming tools. These demands can only be met with sophisticated simulations, such as the ones we provide.

Dr.Thomma, thank you very much.

CONTACT

Dr. Markus Thomma
Corporate Marketing Director
AutoForm Engineering GmbH
Switzerland

Phone: +41 43 444 61 61

Email:
markus.thomma@autoform.ch

Website: www.autoform.com