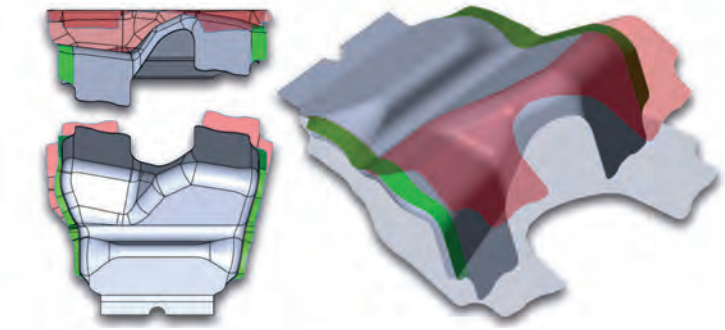
A STREAMLINED FLOW

Löhmann Automotive Systems GmbH uses the SOLIDWORKS CAD system with the Logopress® dedicated progressive die add-in for quotations, process engineering and die designs of stamped parts.



With Logopress, the flattening prediction of complex parts can be carried out relatively quickly. The forming stages for the strip layout are already defined. (Image source: Logopress).

ISMR SAYS: *"Using one system for all die designs saves a German automotive manufacturer time and money."*

"Many of our customers are manufacturers of parts and are faced with challenging geometries," explained Marc Löhmann, managing director of LAS Löhmann Automotive Systems in Iserlohn, Germany.

"These customers appreciate our manufacturing expertise and competence in die design. The combination of SOLIDWORKS® and Logopress® DieDesign allows us, with reasonable effort, to provide a draft of the strip layout and to offer competent consulting from the first meeting with the customer. We save time with SOLIDWORKS® and Logopress®, especially with orders for stamped parts but also for the die design," he added.

Logopress SAS, based in Pouilley les Vignes (near Besançon, France), has been developing and distributing die design software for the tool & die industry, as well as flattening and blank prediction software, for 30 years. The company has been part of the AutoForm Group since the end of 2018.

Logopress software is now used in more than 30 countries worldwide and has been integrated into SOLIDWORKS as a Gold certified add-in since 2004. The main product is Logopress DieDesign, software tailored to progressive dies, which includes the modules Logopress® DieDesign, Logopress® StripLayout and Logopress® Flatten. Recently, Logopress® ProgSim was introduced to simulate part thinning, thickening, wrinkling, splitting and springback during strip layout creation.

Marc Löhmann, Managing Director, LAS Löhmann Automotive Systems (source: LAS).

Logopress add-in

The key to a reliable quotation for stamped parts is the flattening prediction and strip layout.

"It would take hours to produce a strip layout without software like Logopress. No one would do that for an initial quotation," explained Marc Löhmann.

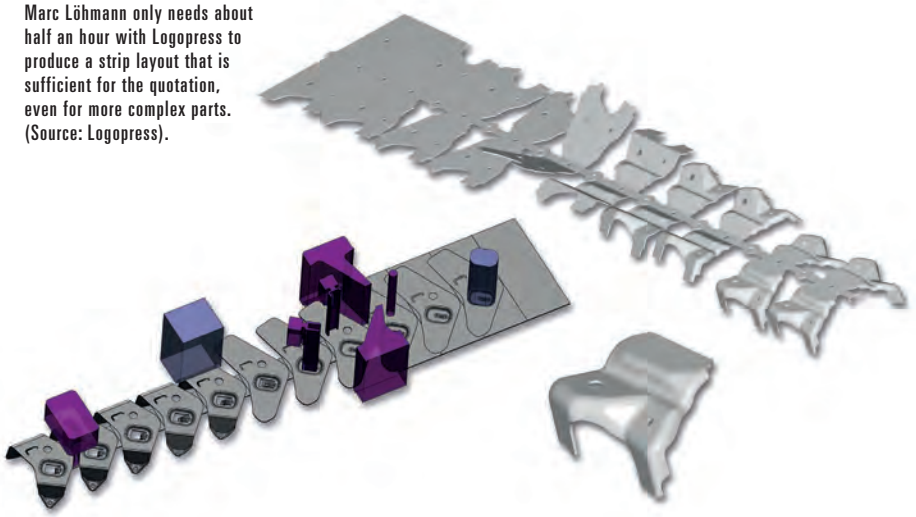
It is much faster using Logopress. From the 3D STEP file of the part, Logopress® Flatten quickly determines the flat shape of the complex part geometries. The first forming stages are defined with Logopress® Flatten and then expanded in Logopress® StripLayout to develop strip layout, which determines where and how parts will be cut, stamped and bent.

"When designing the strip layout, Logopress enables you to quickly put together the necessary cutting, stamping and bending punches. We can then immediately inform the customer where notches or overcuts are required or where other problems could arise," Marc Löhmann pointed out. "This can be communicated to the customer and any changes that are necessary for production can be taken into account in advance."

This means that the most important information for the quotation is available.

"You know how much material is needed,

Some challenging stamped parts that LAS Löhmann Automotive Systems GmbH manufactures for the automotive and electronics industries (source: LAS).



Marc Löhmann only needs about half an hour with Logopress to produce a strip layout that is sufficient for the quotation, even for more complex parts. (Source: Logopress).

the number of stations, the die length and the required stamping forces," summarised Marc Löhmann. However, for the final pricing, assumptions still need to be made, for example, regarding the maximum number of strokes "but, overall, with Logopress you get a reliable quotation faster," explained Löhmann. He usually produces a strip layout that can be used for costing quotations in less than half an hour.

Die design and die templates

After validating the final strip layout, including all cutting and forming punches, the German manufacturer outlined the advantages of the die templates during the final die design stage with Logopress® DieDesign. These enable the creation of die frames and all their components according to given specifications, which can then be saved and used as a basis for new die designs.

"We have developed specific standards in our company regarding how we want to build dies. We define these standards with the die templates," commented Marc Löhmann. "For example, if we have always used four M8 x 50 screws in the die template for plate fastening, then that will be the case in every one of our dies and no-one would ever think of doing it differently on their own without a reason. That ensures consistency in design and prevents any errors."

Löhmann uses the die template as the basis after designing the strip and the corresponding punches of the die.

"It is very important that the standard parts and the die templates work hand-in-hand to guarantee a standardised die design. We always use the same plates, the same standard parts and the same set-up. In this way, you have a standard that works but from which you can deviate if necessary. The result is a huge reduction in workload and time saved in the design process," he added.

Once the strip layout is in place, the complete die can be assembled within a few days using Logopress.

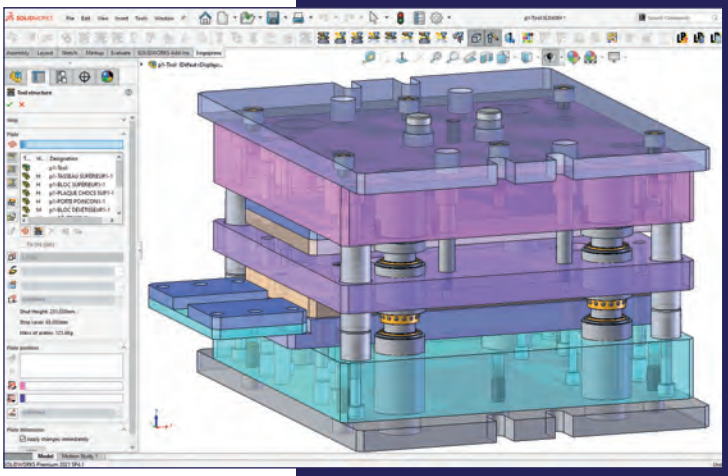
Die testing

Marc Löhmann checks the functioning of the die design with Logopress® DIE DEBUGGER.

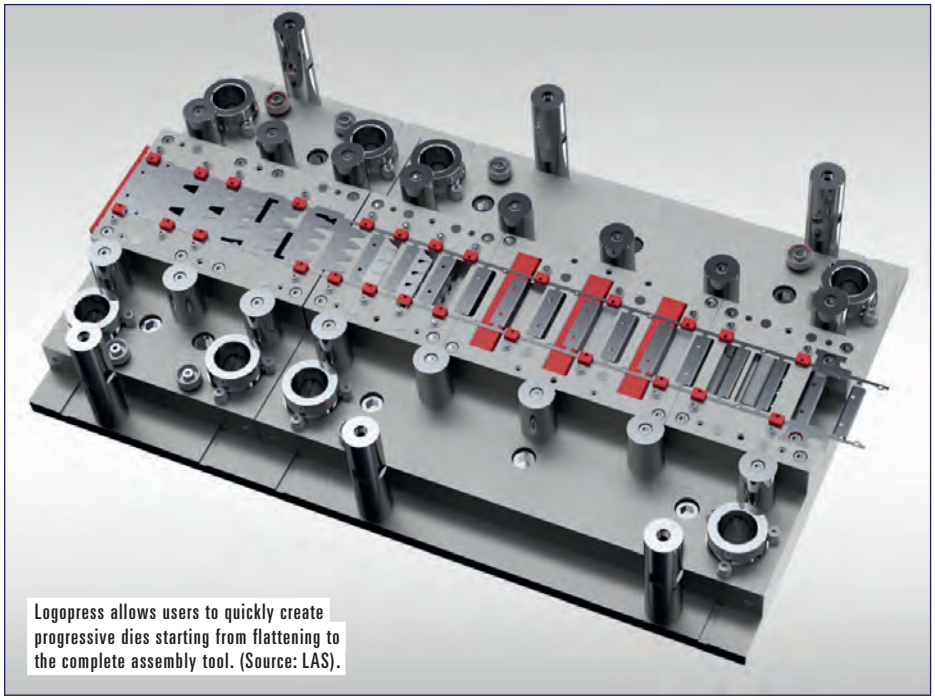
"Even for an experienced designer, it is difficult to keep track of all elements and possible collisions," he explained. The module automatically checks whether all screw holes are included in the CAD file, whether the hole punches are correctly positioned or whether the scrap falls correctly. Even more important is the dynamic simulation of possible interference between die elements or with the strip.

Die templates

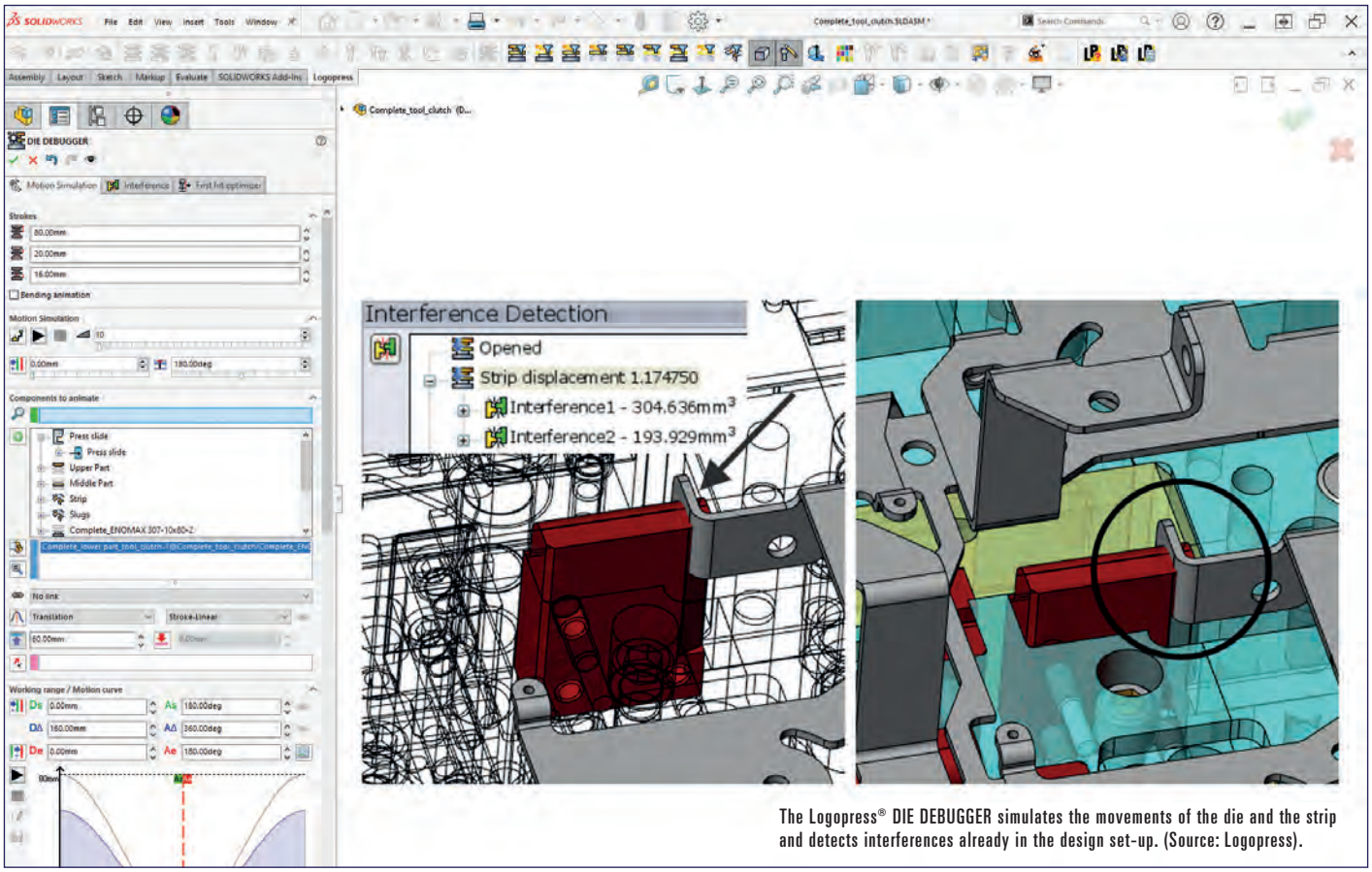
In the die templates, all elements (from the plates to the columns and bushings to the dowel pins) are stored and parametrically linked so that their positions are automatically adjusted during design changes.
Marc Löhmann estimates that it takes between 100 and 150 hours to set up a die template.
"However, once a die template has been defined, then any sizes and positions are determined, the standard parts are already inserted and the BOM, as well as the drawings, are already prepared," he explained.



Below: User-specific die template. (Source: Logopress).



Logopress allows users to quickly create progressive dies starting from flattening to the complete assembly tool. (Source: LAS).



The Logopress® DIE DEBUGGER simulates the movements of the die and the strip and detects interferences already in the design set-up. (Source: Logopress).

For this test, Löhmann specifies the strokes (press, strip, stripper) in the module and runs an automatic simulation, which he can also fast-forward and rewind for a more detailed view. The system issues collision warnings, marks the collision points and shows, among other things, how much of the volume is colliding.

"Sometimes it's just an auxiliary tool that you forgot to hide but sometimes real design changes are required," Löhmann pointed out. That is why he goes through all the collision warnings with a high level of concentration, corrects them and then runs the simulations again. The time required for a single animation is a few minutes.

"Logopress has greatly expanded die animation in recent years," Löhmann summed up. "With the current version, very complex motions can be simulated. The system detects most and, more importantly, major collisions in advance."

All drawings and BOM can be generated automatically in Logopress from the 3D data of the die design. Bidirectional modifications in the BOM are directly tracked in the drawing and vice versa. In addition, part specifications and even drilling charts can be generated automatically.

All in all, it is a straightforward process, as Löhmann knows since he has his dies built externally.

"We only give our suppliers the CAD data, the drawings and the technical data in a neutral format," he told *ISMR*.

Expansion to Bihler dies

"We also run Logopress for dies used on Bihler's automatic punching and bending machines. You have to fiddle with it a bit, but it works," Löhmann highlighted, as another special feature. With the kinematics module for die simulation, it is possible to animate any machine or die even if it was not designed with Logopress.

"We use Bihler's neutral data in SOLIDWORKS and Logopress to assemble our components. We even built our die template for the progressive die in the Bihler machine," reported Marc Löhmann. "When designing the Bihler dies themselves, we then use the Logopress functions. Although we are not able to put together the Bihler die set as we can in 'Bihler-CAD', we can do it directly in SOLIDWORKS. We get on well with that and it means that we don't have to work with two systems. That's a major advantage."

LAS Löhmann Automotive Systems GmbH switched to SOLIDWORKS and the Logopress add-in years ago with the support of the service provider, Coffee.

"We use the system intensively," emphasised Löhmann. "Parts lists, die templates, die animation–the whole package."

The Logopress® ProgSim forming simulation, which is based on AutoForm's solver, is already in his investment plan. ■

www.las-gmbh.de

About LAS

LAS Löhmann Automotive Systems GmbH in Iserlohn, Germany, was founded in 1996. It has been supplying companies in the automotive and electrical industries with challenging stamped and bent parts (up to 150mm x 150mm in size) for more than 30 years. Since the end of 2020, Marc Löhmann has been the company's second-generation managing director.

The company operates with a range of modern machinery including automatic stamping machines with press forces of up to 1300kN, Bihler punching and bending machines, and welding systems. It also offers a complete range of services from consulting to prototype construction and series production.

With a workforce of 18 staff members, LAS Löhmann Automotive Systems GmbH generates annual sales of around three million euros. Through the acquisition of Menke GmbH, which specialises in wire bending parts, LAS has positioned itself more broadly since the end of 2020.

It offers its customers CAD support in the design and optimisation of parts; prototype manufacture for design validation; the design and manufacture of progressive tools and Bihler tools as well as small batch delivery.