

# A PASSION FOR SHEET METAL FORMING

Portuguese toolmaker, EPALFER, uses AutoForm software to help it deliver optimised tool designs for robust stamping processes.



Eduardo Oliveira, CEO of EPALFER, and his partner at EPALFER, João Henriques

Car production and the current automotive market pose challenges to toolmakers as every single part of a new car requires a unique tool. Once the design of a new part is finalised by the product design department, it is released to the feasibility and tooling departments, where an appropriate tool to produce the part is designed. With so many new auto plants and new vehicle designs being launched faster than ever before, companies which make these tools must find effective ways to meet demands.

EPALFER, a modern Portuguese toolmaker, attributes its success to AutoForm software. Eduardo Oliveira, CEO at EPALFER, stated: "With AutoForm software, we are able to successfully deal with complex part geometries, modern materials, tight deadline requirements and high quality demands."

## The tooling equation

EPALFER was founded as a small independent toolmaker company in 2002 in Águeda, Portugal. With the successful completion of several initial projects and a growing customer list, the company currently employs over 70 staff members.

EPALFER develops, produces and tests tools for stamping. These tools are used for progressive die and transfer die stamping. Advanced technology and equipment, combined with experienced staff, have driven the company's continuous growth and consolidated its presence in the global marketplace for automotive tooling. It has been

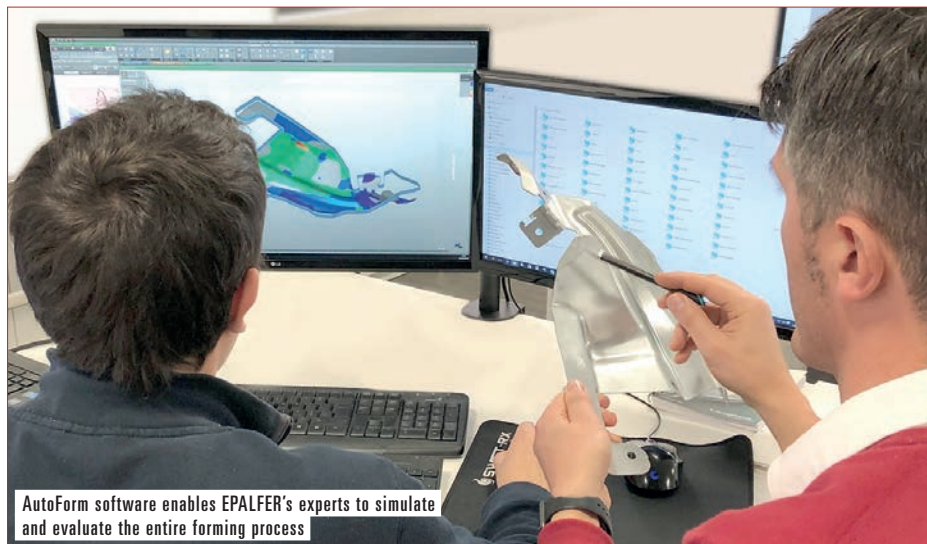
## ISMR SAYS:

*"In a competitive toolmaking market, toolmakers must find efficient ways to reduce overall lead time and costs, whilst ensuring high tool and part quality"*

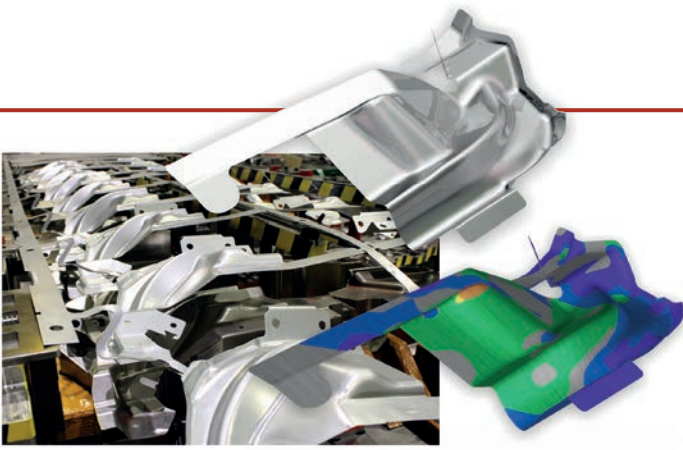
honoured with several prestigious awards, such as PME excelência in 2015, Parceiro de Excelência in 2016, Parabéns líder in 2017 and Associado in 2018, for its achievements in Portugal.

Eduardo Oliveira, CEO of EPALFER, added: "AutoForm software is an integral part of our daily business processes and supports us throughout almost all of our departments and in every new project. When our company was being formed, we looked for software which could address and solve the problems which we faced daily, such as simulation-based process engineering, springback compensation, trim line optimisation as well as robust manufacturing.

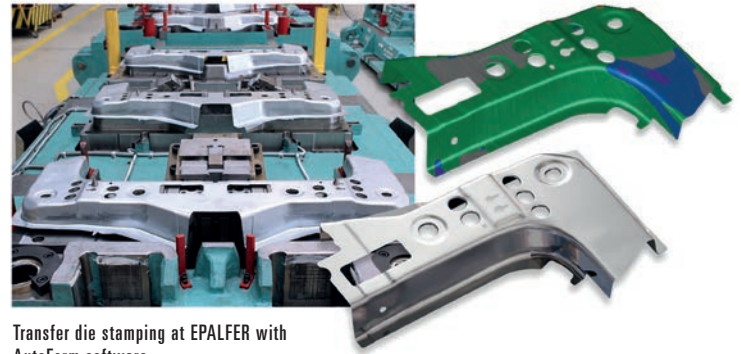
Five years ago, after consulting for possible suppliers, we came across the announcement of AutoForm's event in Aveiro and decided to attend. At the event, we received our first insights into AutoForm software and functionalities. We also met AutoForm's experts and software users and heard about their experiences. After this event, we decided to incorporate AutoForm software in our engineering department. Continuous



AutoForm software enables EPALFER's experts to simulate and evaluate the entire forming process



AutoForm's software allows EPALFER to successfully simulate the progressive die stamping process



Transfer die stamping at EPALFER with AutoForm software

investment in technology, software, the latest equipment and continuous staff development are of the highest priority to us. AutoForm has proved to be the right partner for us to achieve these goals," he added.

## Efficient tool production

In a competitive toolmaking market, toolmakers must find efficient ways to reduce overall lead time and costs whilst ensuring high tool and part quality. To do this, the number of press tryouts and optimisation loops, as well as the total lead time in the tooling process, must be reduced. Therefore, tooling engineers look for the best solutions to quickly and efficiently set up the entire tooling process, make process modifications and evaluate different process layouts to select the best one. The rapid verification of multiple new concepts for quality and cost improvements, as well as the identification of complex forming problems during the early phase of tool development, are very important. The main goal is to increase the reliability of stamping tools to achieve efficient and reliable production or, in other words, to find the best optimised tool designs for a robust stamping process.

When EPALFER receives a customer's stamped part with the request to build a tool which can ensure smooth, reliable production, several departments are called to action. Each of these departments deals with the customer's needs at different stages of tool production. The engineering department, supported with AutoForm's software, ensures the engineering of manufacturable parts. In the production department, milling and eroding

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processes are carried out by experienced EPALFER staff with modern equipment. In the assembly department, experienced and qualified toolmakers assemble single components to create high-quality tools. Although these tools are very often complex, the toolmakers are able to assemble several tools at the same time.

In the tryout department, all tools are tested in mechanical presses under the working conditions to which they would be exposed during serial production. EPALFER experts examine critical areas on the part as well as the measures to resolve these effectively and the consequences on other areas of a part, as a result. In general, during tryout, the tool undergoes extensive fine tuning which is a cost- and time-intensive step on the path to the successful production of a quality tool.

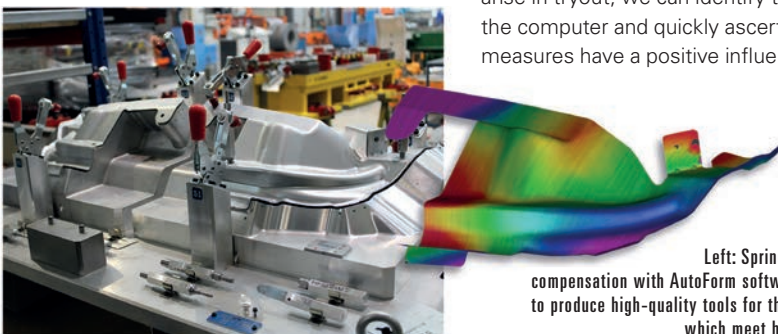
## Simulation-based tryout

“AutoForm's software allows us to carry out simulation-based tryout. Should a problem arise in tryout, we can identify the cause on the computer and quickly ascertain which measures have a positive influence on the

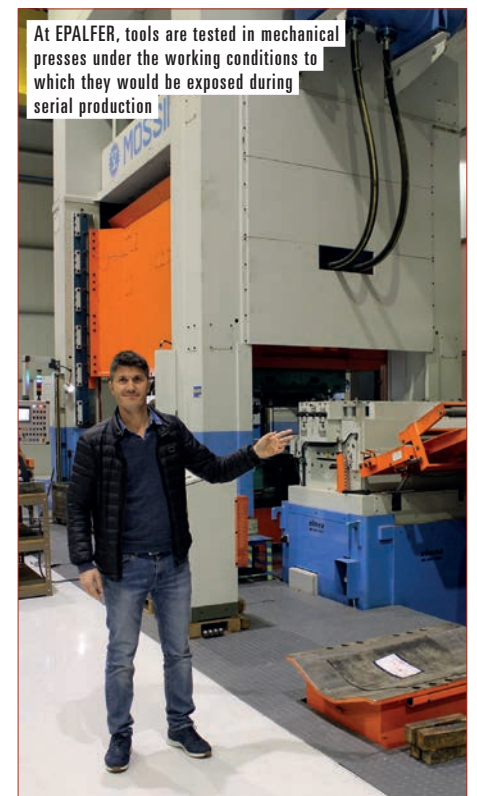
forming result. In addition, AutoForm software allows us to address stamping robustness issues. With AutoForm-Sigma, we can develop the best part and tool designs for a robust stamping process,” explained Eduardo Oliveira.

“During tryout, correctional work and modifications are inevitable and every correction loop that can be avoided offers an immediate advantage in terms of time and cost savings. This is where AutoForm plays a decisive role. In practice, one correction loop, depending upon the tooling die and its dimension, generally costs between 10,000 and 15,000 euros. So, imagine how much we can save every time we eliminate a correction loop. With AutoForm software, we are able to reach a new level of competitiveness and better serve our customers.”

After the tool is finished and stamping begins, the first parts must be checked before further stamping continues. EPALFER's metrology department is equipped with a modern contact CMM and laser scan systems.



Left: Springback and springback compensation with AutoForm software enables EPALFER to produce high-quality tools for the production of parts which meet high quality standards



At EPALFER, tools are tested in mechanical presses under the working conditions to which they would be exposed during serial production

# FOCUS ON CAD/CAM

One of our recent projects has been the creation of a virtual show room through which our existing customers will have access to our 3D designs



Eduardo Oliveira added: "We check the part and test the capability and stability of the process with AutoForm software. After the part has been checked and the tool is ready, we send it to the customer. One of our recent projects has been the creation of a virtual show room through which our existing customers will have access to our 3D designs.

"In general, our customers are OEMs as well as tooling and stamping companies primarily in Europe, the USA and South America. We are proud to be a reliable partner to Gestamp; Kirchhoff Automotive; Kemmerich Metal Engineering; Flex-N-Gate; Grupo Segura; Muhr Metalltechnik; Silencor and Bosch, among

others, and we look forward to extending our customer base further in the future."

He concluded: "By using AutoForm software, we are faster and more accurate than ever before. At the same time, we are able to save time and cost, which is of great value for us as well as for our customers. Ultimately, we provide our customers with the tools they need for immediate use in their serial production. With AutoForm software, we can solve potential stamping problems earlier in the tool development cycle, saving more time and resources, which results in faster time-to-market for new car models, with obvious advantages." ■



Above: AutoForm software enables EPALFER to select the process parameters and tool geometry for robust stamping processes

## CONTACT

For further details,  
see [www.autoform.com](http://www.autoform.com)