



AETHRA
SISTEMAS AUTOMOTIVOS

AETHRA Automotive Systems anticipates critical aspect issues on large automotive body components with PAM-STAMP 2G

THE CHALLENGE

AETHRA needed to secure the parts quality according to customer requests, whilst saving development time and money.

Simulated results close enough to the real parts concerning splits, wrinkles, superficial defects and tool marks allowed the tools tuning with significant reduction in work hours.

THE BENEFITS

- Reduced testing time and waste of raw materials,
- Secured quality according to customer specifications,
- Tested new process strategies thanks to the reliability of the software results.

“AETHRA Automotive Systems, with the help of ESI South America in Brazil, significantly improved the results in prediction and resolution of surface defects in external panels using PAM-STAMP 2G. Nowadays, to satisfy customer needs, we can test different strategies in the process development because we have confidence that we'll see the same behavior in try-out.”

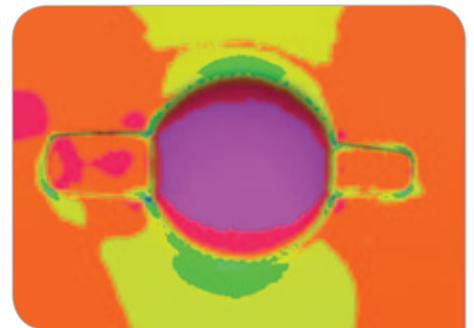
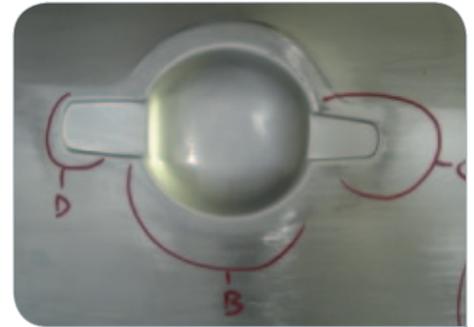
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In the automotive industry there is a ceaseless search for more resistant and lighter materials, modern design, fuel savings, safety, comfort, quality and repeatability in production and especially lower environmental impacts.

AETHRA, like other automotive press shops, facing daily the challenges presented by this quest. New materials are developed, thicknesses are reduced, product designs are made more complex.

For such a company to grow given the current world economy, wasting time and raw materials is economically unacceptable. In the stamping process, most of the waste is concentrated in tool tuning, which also turns out to be the most costly work for the company, hence the necessity to reduce the required work time in testing and tuning. A reliable stamping simulation software can effectively reduce trial times as well as the number of material blanks needed for testing, in addition to contributing to securing part quality. AETHRA has repeatedly obtained great results here with the help of ESI's PAM-STAMP 2G.

For external panels, the quality of the product's surface is critical to customers. To validate an external panel it is necessary for it to be free of

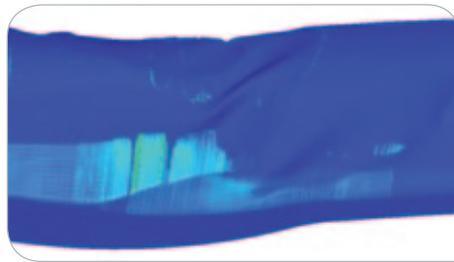


Typical problems in external panels can be predicted with simulation

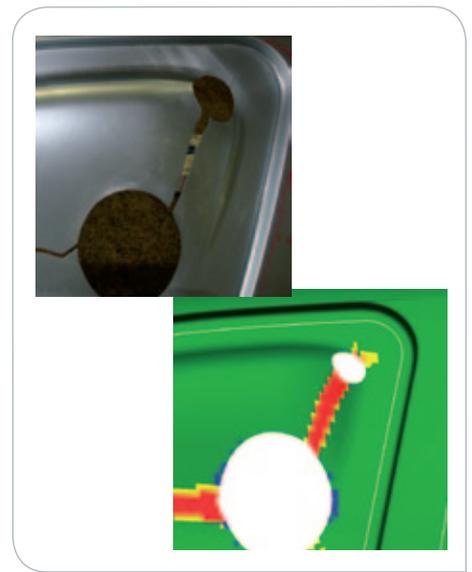
tool marks and any kind of superficial defect. Furthermore, though the product must have structural hardness, it cannot show any sign of necking caused by excessive strain. When this kind of flaw is found during testing, the tuning process typically becomes very expensive and time-consuming. Although the die is already machined and assembled, the press isn't in fact producing: personnel is spending time on analysis and careful modification, and for each test one metal blank is rejected.

After acquiring PAM-STAMP 2G, the engineering and the tool testing teams

from AETHRA, with the constant support of ESI South America in Brazil, started a reverse engineering work aiming to set the contour scale from PAM-STAMP 2G's analysis in order to find the defect that actually occurred during physical testing. The goal was to benefit from the lessons learned by applying them to future simulations. The results obtained in the first comparisons between simulation and testing proved to be incredibly accurate. Consequently, a software feedback was implemented for every product, resulting in a significant increase in result accuracy and reduced testing time for die release to AETHRA's press shops.



Exclusive PAM-STAMP 2G contour set to show the tool marks



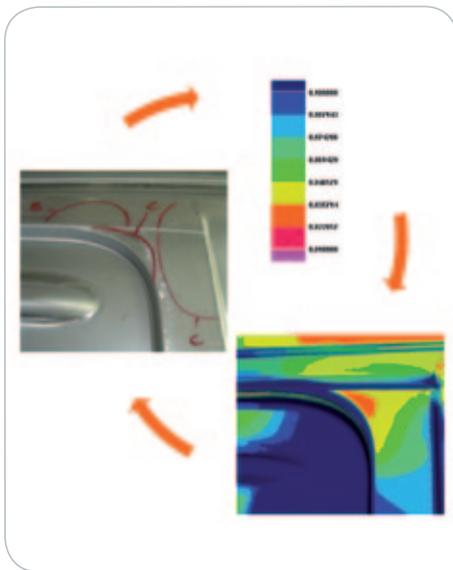
Feedback cycle to set the contour scales

Reverse engineering

In 2008, AETHRA's engineering department received an investment to expand its formability cell. At that moment a benchmark operation was launched to gather information about the software solutions available on the market for stamping process simulation. The strong and weak points of each solution were compared and reviewed in order to meet the company standards. After several months visiting users, exchanging with carmakers and conducting extreme tests with challenging parts, AETHRA concluded that PAM-STAMP 2G would be the best fit for the press shop's needs, especially when related to issues of surface quality.

AETHRA's team began the reverse engineering work according to the following process:

- Identify and monitor the test variables,
- Audit the first manufactured parts,
- Compare audited and simulated parts then setup the contour scales in order to recreate the problems found,
- Solve the problems using the simulation adjusted with the modified contour scales,
- Adjust of the dies according to the new setup.



Feedback cycle to set the contour scales

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To find out more about ESI's Sheet Metal Forming Simulation Suite, visit : www.esi-group.com/metal-forming

ABOUT AETHRA AUTOMOTIVE SYSTEMS

Founded in 1947 with the first plant called Hammer, only in 1981 began operating in the automotive field as its exclusive vocation. During the last decades the RHEA Group participated in the major developments of vehicles in the Brazilian market, offering everything from engineering services with its modern stations of CAD/CAM/CAE, as well as construction of soft tooling, prototypes, 5D laser cut, development of definitive dies, welding and assembling lines. And finally, the series parts manufacturing with JIT logistics to several automotive clusters in Brazil.

ABOUT ESI GROUP

ESI is a pioneer and world-leading provider in virtual prototyping that takes into account the physics of materials. ESI has developed an extensive suite of coherent, industry-oriented applications to realistically simulate a product's behavior during testing, to fine-tune manufacturing processes in accordance with desired product performance, and to evaluate the environment's impact on performance. ESI's solutions fit into a single collaborative and open environment for End-to-End Virtual Prototyping, thus eliminating the need for physical prototypes during product development. The company employs over 750 high-level specialists worldwide covering more than 30 countries. ESI Group is listed in compartment C of NYSE Euronext Paris. For further information, visit www.esi-group.com.



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