

99-02 Chevy Silverado
Front Air Dam simulated
by PAM-STAMP 2G
Courtesy of Advanced Cam

Advanced Cam designs 50% faster 'right first time tooling' of automotive parts with PAM-STAMP 2G

The Company

Advanced Cam, Inc. is a full-service CAD/CAM/CAE facility with years of experience developing and engineering manufacturing solutions for the automotive and aircraft industries nationwide. They have concentrated on assembling a uniquely qualified staff experienced in pre-construction engineering, die build and try-out, mold machining, tooling and fixtures. This broad array of talent allows them to understand the personality of customers' projects and develop a regulated plan, foreseeing and eliminating problems and meeting the expectations of each projects individual needs.

It is their mission to provide maximum service utilizing only the most qualified personnel, latest technology and current training to help customers be competitive in a demanding industry.

The Story

The company Advanced Cam designs production dies for automotive components. Their customers are involved in line-die, progressive die stamping and tool making for parts such as inner reinforcements, rails, inner doors and deck lids.

Meeting the requirements for part quality, piece cost and delivery lead time, demands an in-depth understanding of the stamping process. Advanced Cam relies on PAM-STAMP 2G simulations to optimize the process in order to meet their customers' requirements.

ESI Group has developed PAM-STAMP 2G, a cost-efficient sheet metal stamping simulation tool, taking into account physics of materials. Covering the entire tooling process from quotation and die design through formability and try-out validation, PAM-STAMP 2G includes the modules PAM-DIEMAKER for rapid die creation, PAM-QUIKSTAMP for rapid stamping evaluation and PAM-AUTOSTAMP for forming process validation, quality and tolerance control. Sharing of model data and material database between PAM-AUTOSTAMP and PAM-QUIKSTAMP allows Advanced Cam to focus on the stamping process.

PAM-QUIKSTAMP allows the designer to evaluate die geometry and process parameters such as die addendum shape, drawbeads, and blankholder forces, and run quick formability evaluations. Ready-to-use templates are available for most pressing processes while other models can be created using the Stamp Toolkit. The blank shape design provides accurate estimation of the blank size which reduces material waste.

The Challenge

- Provide customers with "right first time" tool designs for automotive components in order to run production with a minimum of manufacturing risks.
- Meet customer's specifications in terms of delivery time, cost, and component quality.

The Story

"The accuracy of the simulations from PAM-STAMP 2G, and the precision of the graphical results make it the foundation of my business. We have upgraded to PAM-STAMP 2G since January 2004 after 5 years of using the previous version, and found that, among other benefits, it runs much faster than the previous version. For example, a simulation that once took 10 hours to process now only takes half the time. Springback calculations run in minutes instead of hours. This enables us to modify tool design and achieve high quality die tooling of automotive components."

*Eric Wilhelm,
Owner, Advanced Cam Inc., Utica, MI*

The Benefits

- Reduced die design cycle
- Component quality increase
- Production process validation for accurate formability
- Wrinkles and splits prediction
- Accurate springback prediction
- Minimized manufacturing risks
- Reduced engineering changes and downstream problems
- Decision-making early in the tool design phase
- Reduced processing time with MPP version

SUCCESS STORY

PAM-AUTOSTAMP allows Advanced Cam to easily and quickly prepare a stamping simulation for automotive components. The usual tuning techniques can all be easily included in the virtual try-out, just as the try-out engineer would on the shop floor to optimize the process. PAM-AUTOSTAMP takes into consideration all process parameters involved in stamping such as die geometry, material behavior, blankholder force, drawbead shape and position, delivering the detailed results required for validating formability and part quality issues such as splits, wrinkles, surface defects, and springback.

Taking advantage of accurate springback prediction

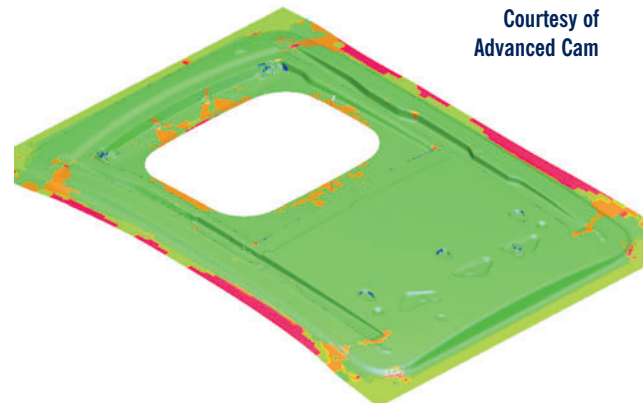
PAM-STAMP 2G also helps Advanced Cam to accurately predict springback, allowing effective die compensation to correct this defect. Springback is a major problem in production, particularly with High Strength Steel as the part shape after springback may not be within tolerance and could be unsuitable for the intended application. The amount of springback depends upon the distribution of stresses at the end of the forming, which in turn results from the properties of the material and the geometry of the part. Using PAM-STAMP 2G, Advanced Cam modifies the tooling geometry to compensate for the effect of springback.



The company's design department

PAM-STAMP 2G enables Advanced Cam to predict wrinkles, cracks and splits on a side panel

Courtesy of Advanced Cam



“PAM-STAMP 2G provides accurate stamping simulation results and enables us to check the feasibility of automotive components early in the design phase. Companies like ESI Group are changing the way to design die tooling by speeding up time to market and cutting development costs” reported Mr. Wilhelm.

About ESI Group

ESI Group is a pioneer and world leading provider of digital simulation software for prototyping and manufacturing processes that take into account the physics of materials. ESI Group has developed an entire suite of coherent, industry-oriented applications to realistically simulate a product's behavior during testing, to fine tune the manufacturing processes in synergy with the desired product performance, and to evaluate the environment's impact on product usage. ESI Group's product portfolio, which has been industrially validated and combined in multi-trade value chains, represents a unique collaborative, virtual engineering solution, known as the Virtual Try-Out Space (VTOS), enabling a continuous improvement on the virtual prototype. By drastically reducing costs and development lead times, VTOS solutions offer major competitive advantages by progressively eliminating the need for physical prototypes.

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