



STAMPING

PAM-STAMP 2G

The Professional Solution
for Stamping Simulation



Courtesy of Audi



PAM-AUTOSTAMP
Simulation for
production validation

PAM-QUIKSTAMP
Fast feasibility assessment

PAM-DIEMAKER
Rapid die design

Courtesy of Jaguar cars

Selected References

ARCELOR

"Incorporating the forming simulation results from PAM-STAMP into PAM-CRASH enabled us to achieve accurate results, much closer to reality, especially when using new types of steel such as Trip 800 and DP 600, compared to common steel. PAM-STAMP DMP version helped us to reduce simulation time and optimize our hardware utilization at low cost."

Dr. Gilles Tremouilles, Design Department Manager, Arcelor Group, Arcelor Innovations, Isoform.

GENERAL MOTORS

"PAM-STAMP's capability provides an avenue to attack the high cost and long lead times existing with the traditional methods of try-out tool and process development. Using the parallel version of PAM-STAMP, General Motors optimizes its computing network. From both an economic and technical point of view, the results validated the use of the parallel version of PAM-STAMP."

HYUNDAI

"PAM-STAMP has helped us to optimize the die manufacturing process of a side panel's outer dies. Our lead time has been reduced by 50%. This generates huge cost savings and a greater tool and part quality, upfront in the manufacturing process."

Mr. Kim Eok-Jo, Senior Vice President Hyundai Motor Company

KARMANN

The addition of PAM-STAMP simulation data to our crash simulations is necessary to have accurate results when using new types of steel, such as the new high strength steel DP600, with increased hardening effects compared to common steel. The ability to include this information in the PAM-CRASH simulation can make a crucial difference in the correlation between simulation and prototype testing."

Mr. Norbert Schulte-Frankenfeld, Manager of CAE, Wilhelm Karmann GmbH

NOTHELFER PLANUNG GmbH

"The easy integration of VIKING die design into a CAD environment is essential for its application in tool designing. Being able to export die designs directly into the CAD environment is one of VIKING's major advantages in comparison with other software."

PAM-STAMP 2G, Creating Unmatched Added Value

Meeting Current Industrial Requirements

Through industrial consortia, ESI Group has developed PAM-STAMP 2G in direct response to market requirements of OEMs, material providers, tier suppliers and toolmakers.

Through partnerships with computer hardware leaders, ESI Group has developed state-of-the-art technology to put synergies in hardware and software into industrial stamping simulation solutions.

Product Integration

With the new licensing system based on flexible tokens, the customers will have immediate access to the full PAM-STAMP 2G value chain including PAM-DIEMAKER, PAM-QUIKSTAMP, PAM-AUTOSTAMP and the Stamping Professional Pack. The new version brings unmatched added value by enabling direct product integration and communication.

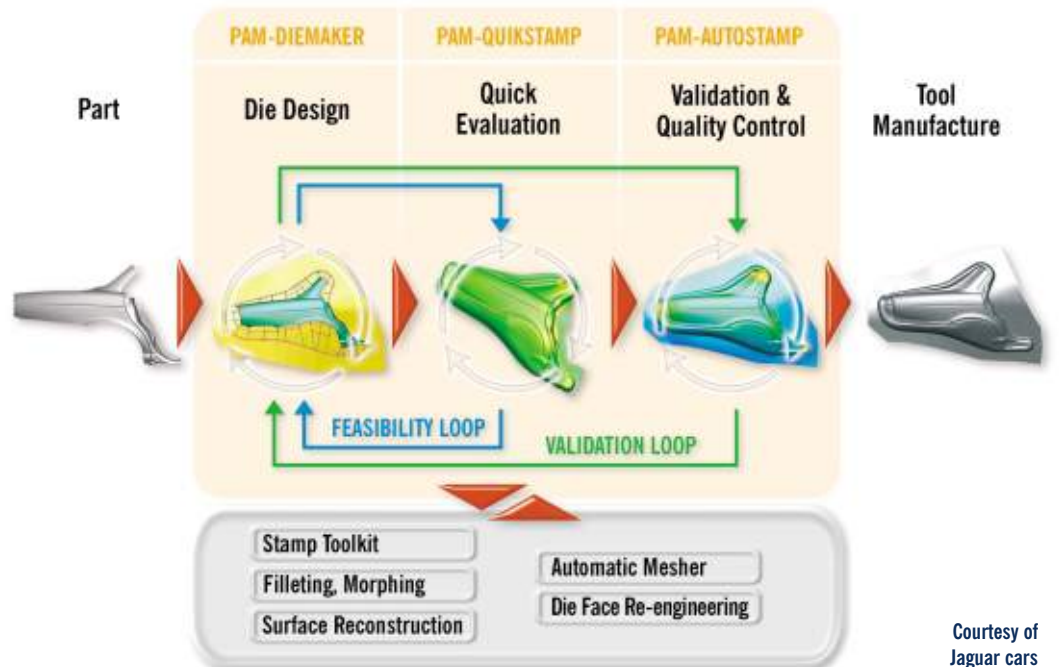
The Best Tool for PLM and Collaborative Work

PAM-STAMP 2G offers a unique stamping simulation value chain, from quick die design, through early feasibility, to final validation and quality control, without modeling discontinuity.

Leveraging Product Lifecycle Management, it brings together designers and try-out experts to make online decisions in a collaborative environment.

Professional solution

Sharing of material database and models between modules allows the user to focus on the stamping process rather than software issues.



Courtesy of Jaguar cars

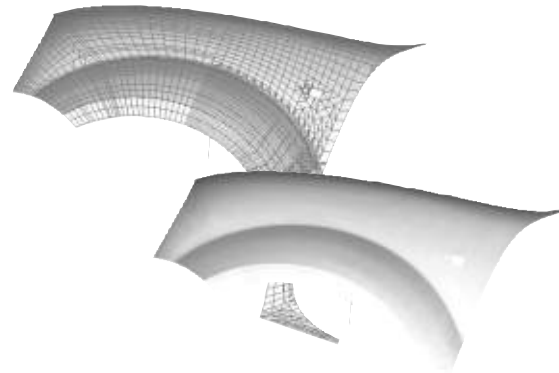
PAM-STAMP 2G in Action

Import

PAM-STAMP 2G accepts industry standard CAD formats, such as IGES, VDA and recently CATIA V5 interface.

Meshing

PAM-STAMP 2G has the capability to automatically generate a mesh from the CAD geometry. Strong integration of DeltaMesh into PAM-STAMP 2G improves meshing capabilities by including import of all useful CAD information such as group, layers and patches.



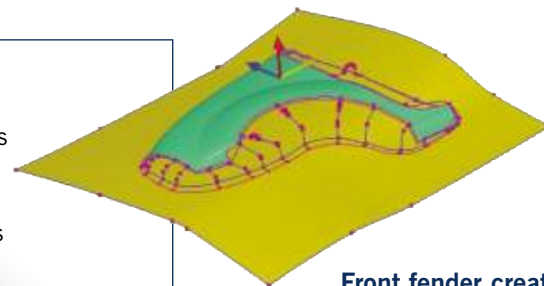
PAM-STAMP 2G for CAD import and accurate Meshing

Courtesy of Renault

Die Design

The PAM-DIEMAKER module helps the user to quickly build a parametric tool geometry using the component as a reference. Blankholder and die addendum surfaces are intuitively generated.

The parametric die design allows an interactive process between die design and simulation.

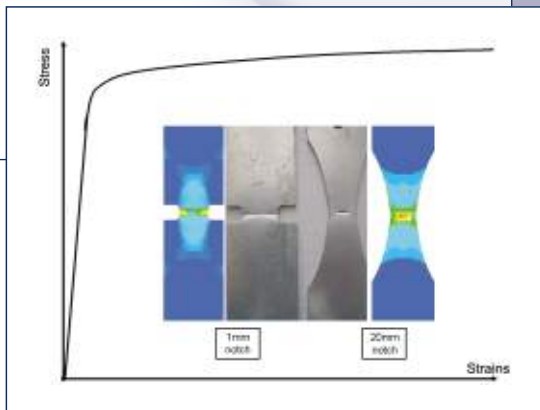


Front fender created by PAM-DIEMAKER

Courtesy of Renault

Material Database

Different elasto-plastic material models are available to suit various grades of standard steel, very/high strength steel, or aluminum. Depending on the data available, the strain hardening and kinematic hardening can be represented as either curves or empirical laws.



Quick Feasibility Assessment

The PAM-QUIKSTAMP module offers the optimum compromise between accuracy and speed for quick formability assessment. This approach easily eliminates bad design choices and provides a good basis for iteration and optimization.

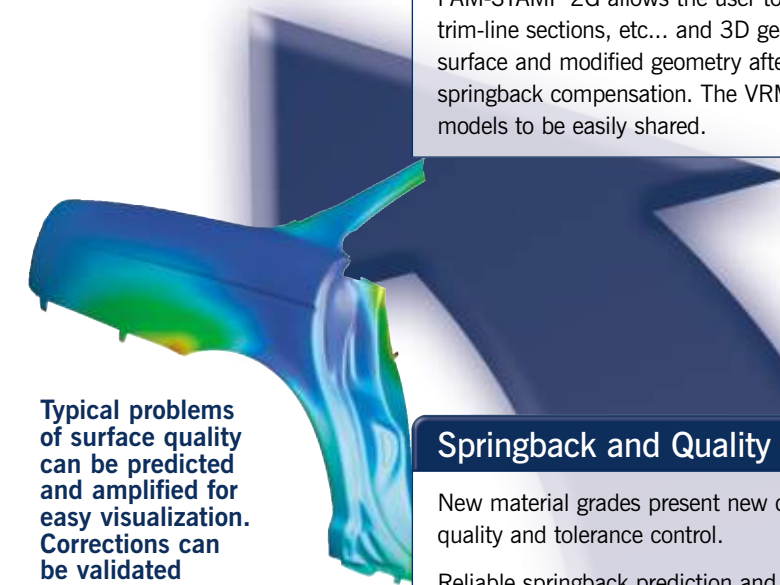
PAM-STAMP 2G is a complete, integrated, scalable and streamlined stamping solution. It covers the entire tooling process from quotation and die design through formability and try-out validation.

PAM-STAMP 2G allows users to make decisions on-line in a continuous improvement process within a collaborative environment bringing together the design engineer, the material provider, the die designer and the try-out press shop from an early stage of the design right through to production.

Projects results are easily shared within the project team by making use of integrated reporting tools. This web-enabled technology allows images, annotations, text and 3D models to be shared, thus supporting a truly collaborative engineering environment.

Data Export

PAM-STAMP 2G allows the user to export 2D geometry such as trim-line sections, etc... and 3D geometry as die addendum, binder surface and modified geometry after forming simulation and springback compensation. The VRML export technology allows 3D models to be easily shared.



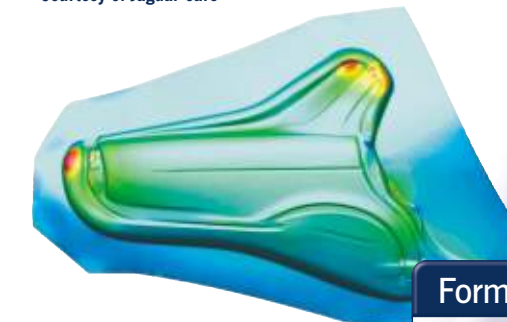
Typical problems of surface quality can be predicted and amplified for easy visualization. Corrections can be validated after springback

Courtesy of Jaguar cars

Springback and Quality Control

New material grades present new challenges in terms of final part quality and tolerance control.

Reliable springback prediction and validation of subsequent correction is one of the key successes of PAM-STAMP 2G.



PAM-STAMP 2G forming simulation

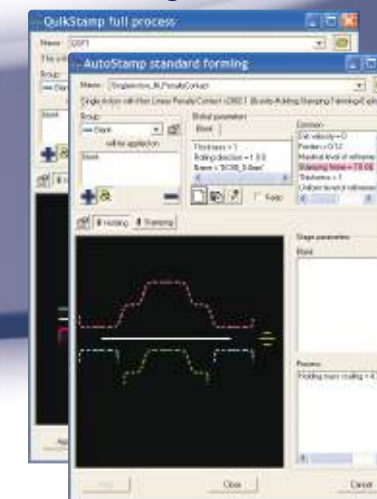
Courtesy of Jaguar cars

Formability Validation

'Right first time' tooling can only be achieved by replacing physical try-out with virtual try-out, and by replacing it with the most accurate virtual try-out possible! This means being able to spot all the usual formability issues of course, like splits, wrinkles and slip-lines, but also going that bit further... PAM-AUTOSTAMP gives the user the possibility to include the finer details in the virtual try-out, which give more reliable, and more detailed results.

All of the usual try-out techniques: drawbeads, spacers, lubrication, gas-springs, and variable cushion forces, can all be easily included in the virtual try-out, just as the try-out engineer would in reality, to tune and optimize the process.

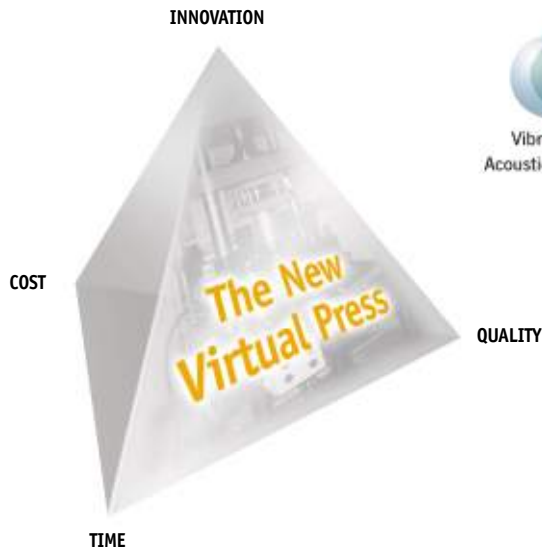
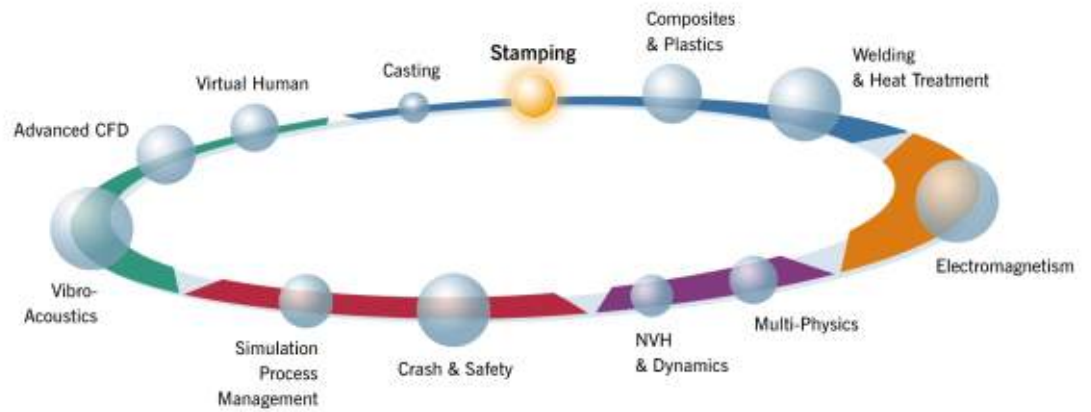
The PAM-STAMP 2G macro dialog



Stamp Toolkit

An innovative technology allows a super-user to develop a full range of sheet metal stamping templates for various forming process simulations. These macro-commands are editable within the Stamp Toolkit environment. The menu, as seen by an end-user is a pre-defined template which describes the forming process. The template ensures a consistent modeling approach.

PAM-STAMP 2G in the Virtual Try-Out Space



SUPPORTED PLATFORMS:

Windows NT, Windows 2000, Windows XP Professional, Linux : Intel / AMD

Unix: DEC*, Fujitsu*, HP, HP Itanium 2, IBM, NEC*, SGI, SUN
(* solver only)

Detailed specifications upon request



PAM-STAMP 2G Selected References

OEMs: AUDI, BMW, DAEWOO, DAIHATSU, DAIMLERCHRYSLER, FIAT, FORD, FORD OTOSAN, GENERAL MOTORS, HONDA, HYUNDAI, ISUZU, KIA, LANDROVER, MAZDA, MITSUBISHI, NISSAN, OPEL, PSA, RENAULT, SAAB, SEAT, SKODA, SSANGYONG MOTORS, SUZUKI, TOYOTA, VOLKSWAGEN, VOLVO TRUCK, YAMAHA

AUTOMOTIVE SUPPLIERS: ARVIN MERITOR, BATZ, BENTELER, BUDD, DANA, FAGRO, GEDAS, KARMANN, KIRSCHHOFF, MAGNA STEYR, MICHELIN, NOTHELPER, OGIHARA, PCI, POLYNORM GRAU, TDM, TENNECO, UNIPRES JAPAN, UNIPRES UK, VALEO, WAGON

MATERIAL SUPPLIERS: ACERALIA, ALCAN INTL CANADA, ARCELOR, CORUS, JFE STEEL, KOBE STEEL, NIPPON STEEL, PECHINEY, POSCO LP, SALZGITTER MANNESMANN FORSCHUNG, SIWE, SUMITOMO METAL, THYSSEN KRUPP GMBH, VOEST ALPINE

AEROSPACE: DASSAULT AVIATION, EMBRAER, MORA AEROSPACE, SNECMA MOTEURS

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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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