Patrice Auger, R&D Manager for Assembly Processes, PSA-Peugeot Citroën

For more success stories, please visit: www.esi-group.com/sheet-metal-forming
Sheet Metal Forming Simulation Suite

PAM-STAMP 2G

A single software suite for all your metal forming needs: PAM-STAMP 2G is a dedicated solution for sheet metal forming, with the appropriate tools adapted to the context of your project.

Solutions-oriented tools for automotive, aerospace, and general stamping processes.

Including: Tuoration and die design with formability and try-out validation, springback prediction and correction. It provides solutions-oriented tools for automotive, aerospace, and general stamping processes.

Benefits

- Speeds up part and die design and improves stamping process quality
- Reduces costs, by using development methods validated by industrial users to deliver dies right the first time
- Masters springback in the manufacturing process and delivers fast and accurate die compensation
- Supports a wide variety of materials: Aluminium, Titanium, Dual Phase, Trip, Boron etc.
- Ensures trouble free manufacturing through virtual tests

Formability Assessment

Formability assessment by simulation is a standard part of all die engineering processes today. PAM-STAMP 2G includes a fast solver to make this assessment, offering a choice in the balance between speed and accuracy. Thanks to short simulation times, benefit can be found immediately in the die design, reducing the risk of splits, cracks, and wrinkles in the forming process.

Process Validation

Once we arrive at the process validation stage, blank deformation, induced strains resulting in springback, and quality criteria can be done with PAM-STAMP 2G to show the expected deformation field after the forming operations. Combined with die compensation, this widely used and accepted tool provides an easy and accurate tool to assist with program changes.

One Simulation Suite for all your Sheet Metal Forming needs

PAM-STAMP 2G simulates not only the full stamping chain, but also processes such as:

- Roll-hemming
- Stretch forming
- Rubber pad forming
- Tube forming
- Progressive die
- etc

Part Geometry

Process Validation / Virtual Testing

Stamping, flanging, hemming, and Superplastic forming

Part Design

Formability Check

Process Validation

No simulate at this stage, validation step, without being produced a single physical prototype, where the die is finally assembled and finished, it will be right the first time.

In addition to the inverse solver available in PAM-DIEMA for CATIA V5, the Advanced Die Compensation module of PAM-STAMP 2G allows for fast iterations with product designers to produce representative die geometries fast to evaluate the feasibility of the part shape itself. Such an inverse solver allows for quick die design cycles, reducing the risk of splits, cracks, and wrinkles in the forming process.

Die Compensation

Die Compensation & CAD Update

PAM-STAMP 2G includes an integrated Automatic Die Compensation module, which modifies the shape of the die in order to correct for the effects of springback. Once the final die shape is determined, the CAD model needs to be updated using third-party software such as PAM-Flex or PAM-Form.

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Part Feasibility / Cost Estimation

Part Geometry

 Die Design

Part Geometry

 Die Design

From quick die design......

...to final process validation

Part CAD

Die Design

Evaluation & Validation

Final CAD

Save design time with link to PAM-DIEMA for CATIA V5

With the link to PAM-DIEMA for CATIA V5, the whole chain can be covered inside CATIA and remesh CAD throughout the design process, from the input part CAD geometry to the final tool CAD design. This allows significant time saving, whilst ensuring the high quality of the results.

Optimization

Optimization

PAM-STAMP 2G includes optimization modules for trim line and blank line optimization. More generic optimization of stamping process parameters, such as forces and die forces, becomes more accessible today as computer hardware technology develops. Optimization and robustness assessments are becoming a logical extension of forming simulation.