HEXAGON

Brochure

Simufact Forming

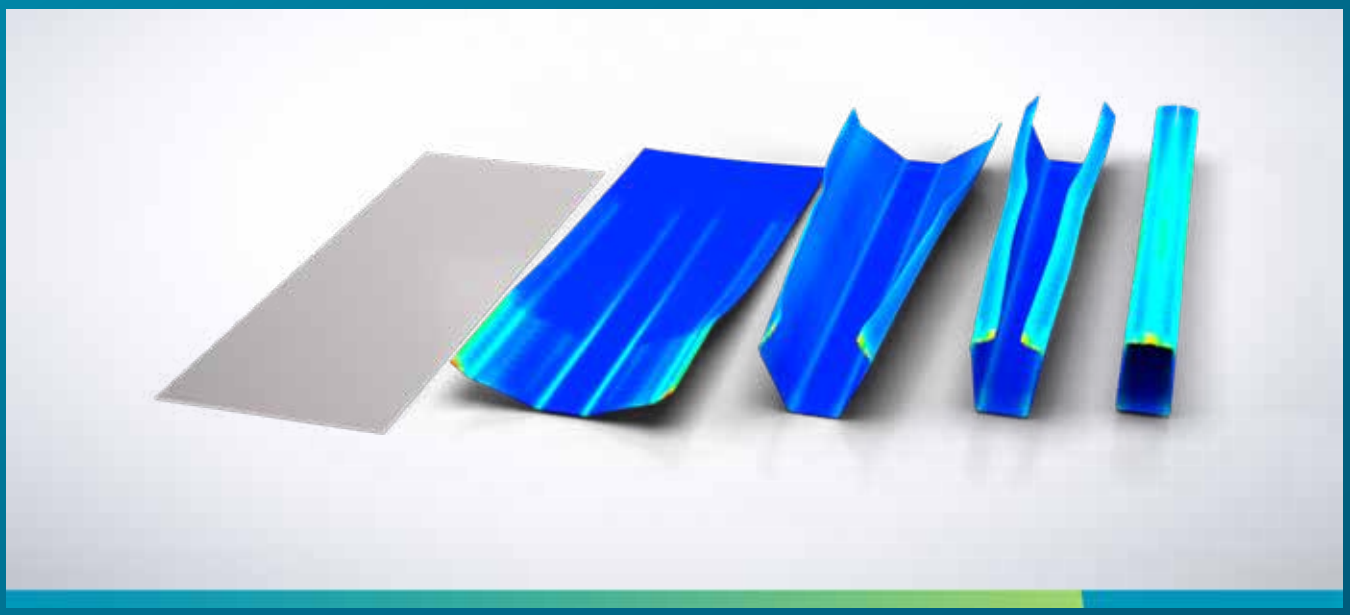
Software Solution for Metal Forming Processes

Simufact Forming

Is an established software solution for the simulation of metal forming manufacturing processes. It addresses companies from the manufacturing industries which are specialised in metal forming and mechanical joining processes.

The software covers all essential areas of metal forming technology: hot forging, cold forming, sheet metal forming, all important incremental processes such as roll forming and open-die forging, as well as mechanical joining.

It provides support in microstructure simulation, calculation of die load, material flow and prediction of material properties during conventional and inductive heat treatment. Furthermore, thermo-mechanical joining methods of pressure welding are also supported.



Challenges in manufacturing

- High costs and high material consumption due to too many physical trials to find the optimal process settings
- Lack of knowledge about the feasibility of the process at an early design stage, leading to high costs in production due to changes at a later stage
- In-efficient manufacturing processes lead to lower turnover
- Failure to meet customer requirements for quality and performance of parts
- Simulation software requires high FEA expert knowledge

Our solution to overcome your challenges

Design and optimise your metal forming processes:

- Determine the optimal amount & sequence of stages, and the process window with minimised material usage while ensuring a robust manufacturing process
- Identify & eliminate potential manufacturing errors
- Optimise tool life

Save material, time and money by replacing expensive and time-consuming physical tryouts with virtual tests

No expert knowledge required, as the software solution is designed to be user-friendly, intuitive and process-oriented

A strong team with a lot of manufacturing knowledge behind it to support you

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"Simufact Forming has been one of the important software systems used in the Schaeffler Group for developing innovative forming technologies and continuously optimizing existing processes."

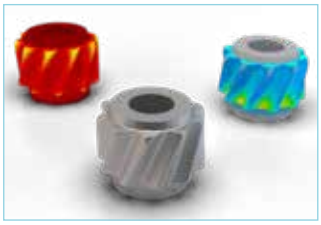
Norbert Nickl
Vice President Advanced Production,
Schaeffler Technologies AG Co KG

SCHAEFFLER

5 Easy Steps: From importing your CAD files to simulation results

Simufact Forming is practical, fast and easy to learn. You can just concentrate on the details of your forming processes instead of on the software.

This software solution is an engineering tool for designers of dies or processes which supports and simplifies your daily work. With a few clicks, you can simulate and evaluate your forming processes:



01 Import and position your geometries or CAD files

The imported geometries can be moved and rotated easily and interactively in the software. All known standard formats and native CAD data are supported through special interfaces.

02 Select your materials and press properties

Select a pre-defined material from Simufact's material database and assign it to the geometries via drag-and-drop. Furthermore, define the press properties simply through easy-to-understand dialogues.

03 Generate the Finite Element Mesh

The Fine Element (FE) Mesh is mandatory to calculate the simulation model in every FEA tool. In general, creating the FE Mesh requires a lot of time and expert knowledge. In Simufact products, the creation of the mesh is done automatically through just one click.

04 Start simulation

When all previous steps have been successfully completed and the automatic model check has been carried out – to avoid unnecessary simulation abortion – the model can be started by simply pressing the start button.

05 Open your simulation results

The simulation results can be evaluated either after the calculation or even during the calculation. Pre-defined result variables for specific applications are displayed so that the user can make a quick statement about the results.

From here, you can change and vary your simulation model to test or optimise your metal forming process. Simply copy the model you previously created and calculate with the new assumptions, e.g. number of strokes, replace your tools, or replace the material used. At the end of the simulation, the two or more results can be placed side by side and compared so that you can virtually experience how your manufactured part behaves depending on certain factors of your manufacturing process.

"We use Simufact Forming in the process development of production processes to determine stable process and control parameters implemented in one of our customer's plants."

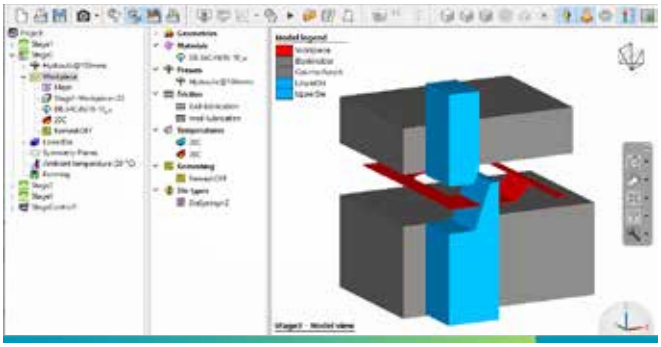
Dr. Koos van Putten
Senior R&D Manager,
SMS group GmbH

SMS group

Simulation tool for metal forming designed for productivity and simplicity

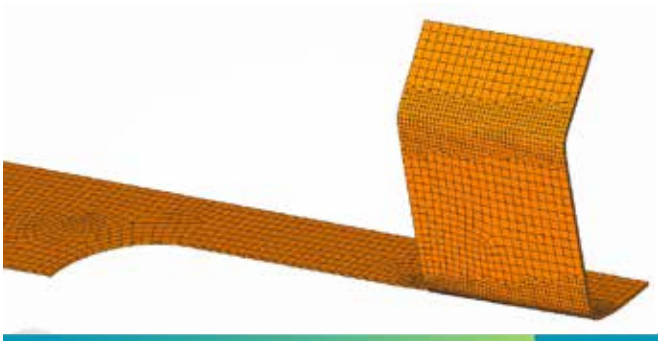
Dedicated application modules

Normally, specific applications require specific settings to be made by FEA experts. Our experts have taken on this task for you to ensure that each individual module has the optimal settings so that the simulation is fast and robust and at the same time accurate.



Easy process setup via drag and drop

Geometries, materials, kinematics and attributes can be easily and intuitively assigned to one or more processes via drag and drop.

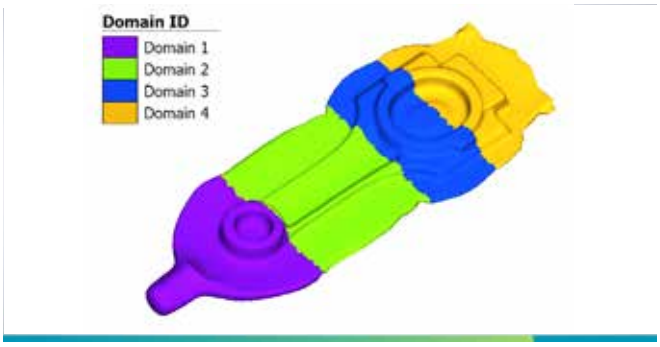


Automatic meshing & remeshing

Simply set the element size and create refinement boxes for particularly important areas if needed, click “Create Mesh” and the meshing will be performed automatically.

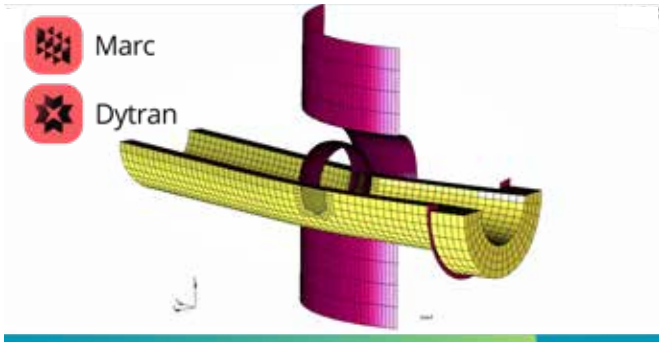
Automated sub-stage simulation

You no longer need to calculate the processes individually and then export the results to import them into the subsequent process. With automated sub-stage simulation, all processes can be looped and the process chain, including the positioning of the components, is automatically simulated.



Parallelisation technologies

The parallelisation methods in the Simufact products dramatically speed up your simulations and lead to higher productivity.



Powered by MARC / Dytran

The world’s leading non-linear solvers.

The modular concept of Simufact Forming helps to choose the right module for every forming application

The modular concept helps you to choose exactly the relevant functions for your manufacturing processes. This approach saves you costs and gives you the flexibility to adapt to changing requirements.

The dedicated application modules are not only more cost-effective, but also offer you process-specific functionalities for all areas of forming technology. They allow you to simulate individual manufacturing steps and can be combined to simulate entire process chains. Add-on modules offer you a wide range of further valuable functions for the daily use of the software.

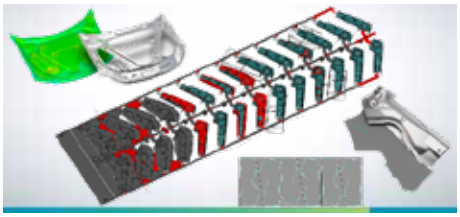
*Depending on your needs, further add-on modules can be available for all Simufact software solutions, for microstructure calculations, faster performance, additional CAD import interfaces, customisations and access to material databases.

Contact us and be a part of our community:

| Visit **hexagon.com/products/simufact-forming**

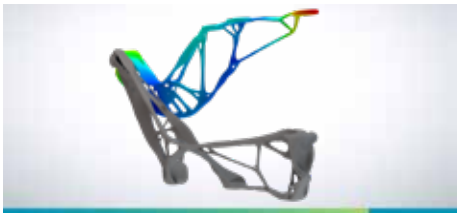
More virtual manufacturing solutions from Hexagon

FTI FormingSuite
Cost engineering, process planning, and stamping simulation for progressive and line dies.



Simufact Welding
Special weld structure simulation software for virtual tests and process design for the optimisation of assemblies.

Simufact Additive
A software for virtual testing and process optimisation for metal-based additive manufacturing, like powder bed fusion and metal binder jetting.



MSC Apex Generative Design
Software that produces optimized, lightweight designs tailored for Additive Manufacturing.

"Using Simufact software helps our production functions to virtually 'see' product behavior in response to the manufacturing process parameters as well as the critical design parameters. The in-depth technical support from Simufact has provided LuK with a tremendous simulation resource for discovering new methods for solving difficult problems."

Dr. Kunding Wang
FEA Engineer, LuK USA LLC

Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's Manufacturing Intelligence division provides solutions that use data from design and engineering, production and metrology to make manufacturing smarter. For more information, visit hexagon.com.

Learn more about Hexagon (Nasdaq Stockholm: HEXA B) at hexagon.com and follow us @HexagonAB.