

PRESS RELEASE

Simufact Welding 7 Speeds Up Simulations of Sheet Metal Structures

- *Reduced calculation time of thin-walled sheet metal parts by solid-shell elements*
- *Faster simulation of resistance spot welding processes supported by simplified calculation method*
- *Achieve higher results quality by taking into account coatings and clamping concepts*
- *New functions improve the intuitive handling of the software*

Hamburg, Germany, July 20, 2017 – Simufact, an MSC Software company, brings to market Simufact Welding 7, the next version of its solution for the simulation of welding processes. Functional novelties such as solid-shell elements, simplified calculation methods for resistance spot welding processes and the more flexible consideration of clamping concepts: Simufact Welding 7 promises shorter processing times, more accurate results, and a more intuitive operational use of the software.

Faster calculation of thin-walled sheet metal parts by solid-shell elements

Through the use of solid shell elements, assemblies made of thin sheets can be calculated more quickly because the required number of elements in the model drops significantly.

The software can also convert many models with hexahedron elements into solid-shell meshes. For this, Simufact Welding 7 checks whether clear upper and lower surfaces are present. If these specifications are identified by the conversion function, the previous hexahedron mesh can be converted to solid-shell mesh.

New solver and revised contact definition accelerate the simulation

The parallel segment-to-segment calculation implemented in the new solver allows faster and more efficient calculation of large models with many contact surfaces. This contact description is paralyzed by DDM (Domain Decomposition Method) parallel computation framework which utilized parallel computation efficiently.

Fast calculation method for resistance spot welding processes

In Simufact Welding 7, Simufact introduces the simplified calculation method “Thermal Cycle” for resistance spot welding processes. Using this method, which is already used for other welding processes, complex and large assemblies can be calculated in a shorter calculation time.

If the shape of the nugget is already known from process models or measurements, the user can simplify the calculation by directly predefining temperatures inside the nugget without previous calculation.

Simplify the model set-up with robot assistant

With a few mouse clicks, users can add new welding robots with multiple welding paths, heat sources and fillets to their models. The user is typically confronted with many welds when simulating large structures or multi-part assemblies. The robot assistant simplifies the model set up for the user, since he can process all steps in one dialogue.

Higher accuracy of the clamping conditions

While welding large assemblies, usually several hundreds of clamping tools are required which, like the welding itself, have an influence on distortions and residual stresses on the workpiece. Until now, the stiffness of the clamp could be described exclusively perpendicular to the contact surface. With the implementation of the definition of clamping tools with translatory and rotational stiffness, version 7 additionally takes into account possible rotations and the movements of the tools along the surface.

Practical oriented 3D measurement for a better validation of simulation results

Users compare their simulated model with their target design or with 3D measurement data as a reference model. They import the reference model from the measurement software into the user interface of Simufact Welding 7 and can then compare the simulated workpiece with the target design. If the user overlaps both workpieces, they can determine the deformation. This shows the deviation between the simulated and the target design.

Increased quality of simulation by adding additional coating data

Material properties influence the result quality of resistance spot welding processes especially if it comes to resistances of the material. Simufact Welding 7 now provides data of 16 common coatings, which enable the user to take into account the electrical properties of coated sheets and to further increase the quality of the simulation. No effort is required to determine the resistance data.

Simulating the process chain

Simufact Welding 7 can import UNV files - improving the compatibility of the welding software with third-party software and interoperability in the process chain. The user can import result data from third parties such as from forming or casting simulation into Simufact Welding in order to edit these files or use them for subsequent calculations.

Individual positioning with the contact positioner and with the transformation matrix

Using the transformation matrix, engineers can position and move the workpieces quickly and individually in the software. The user can position the same workpiece independently in several models. Contact positioner helps during positioning of components relative to each other. Using this functions, they save time since manual corrections are no longer required.

Please find accompanying press pictures for [download](#) on the Simufact website.

About Simufact

Simufact Engineering – an MSC Software company – is a global operating software company providing process simulation products and services to manufacturing industries. Today, after more than 20 years of developing and supporting simulation solutions for the design and optimization of manufacturing techniques in metal processing, the Hamburg (Germany) headquartered company has established as one of the leaders in this business area. Simufact succeeds in extending its global market share backed up by a dynamically growing customer base exceeding a number of 700 customers. A strong and continuously growing network composed of local offices and channel partners ensures global support. The software primarily aims at the automotive industry, mechanical engineering, aerospace industry and their respective suppliers. Typical fields of application for Simufact software are hot forging, cold forming, sheet metal forming, rolling, ring rolling, open die forging, mechanical joining, heat treatment, different welding processes, and most recently additive manufacturing.

For more information about Simufact Engineering please visit www.simufact.com.

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