Simufact Welding 8

Top 8 New Features

1. Meshing technology from a single source
   Simufact Welding 8 offers Simufact’s own embedded meshing technology which usage is user-friendly and intuitive. Users can create basic geometries directly in Simufact Welding and mesh them with internal meshers that support hexahedral and tetrahedral elements as well as solid shells. The meshing technology also supports local refinement boxes, allowing to create denser meshes in weld seams or weld spots. It makes the daily work of a welding specialist more comfortable. Simufact users become advantage of the wide product range of MSC Software: Creation of large and complex models is supported by the companies owned mesher of MSC Software. Customers do not need to use third-party products for meshing large, complex welding models.

2. Increased meshing quality and calculation stability through improved fillet generator
   Simufact Welding 8 comes along with a widely reworked fillet generator which is now able to create meshed geometries based on quadrangular shapes. These geometries are common in laser cladding and multilayer welding models. Triangle-based fillets can now be created with respect to given (uneven) leg lengths, so that the number of nodes per leg corresponds with the relation of leg length. Additionally, created mesh cross-section are visible in the generator preview window, so the mesh quality can be controlled directly here without the need to create and control meshes afterwards. This leads to better mesh quality and improves the calculation stability and also quality of results.

3. Reduce time while creating complex assemblies with a large number of tools
   The recently released version of Simufact Welding 8 offers more realistic clamping tools. During the simulation clamps can be activated, deactivated or fixed in space for a certain time period. The transfer of clamp properties, such as activation or fixation time, forces, stiffness, as well as the extended creation wizard reduce the effort needed to create and configure large numbers of tools with similar properties. Especially for complex assemblies with high number of tools those new features reduce the time needed for proper model setup.

4. Intuitive and easy model setup by automatic gravity positioning and bounding box alignment
   These both new features make the model setup more intuitive and make positioning of components in the model easier. Using gravity positioner Simufact Welding 8 is able to automatically calculate the behavior of a geometry falling onto other geometries under the influence of gravity. The calculation includes friction and damping and furthermore the user also controls the precision of the calculation. The bounding box positioner allows easy positioning of geometries relative to each other. From the user’s perspective, it is a usability improvement which largely reduces the time needed for preprocessing.
Extended and improved functionality for the import and export of UNV-files

Simufact Welding 8 offers in its graphical interface an extended and improved functionality for the import and the export of UNV-files. Users are now more flexible while importing files from third-party products. Even if imported files are not following the UNV standard definition or include some user defined result types, import settings can now be edited and configured before importing the UNV-files into a Simufact Welding project. The new version also offers new functions for exporting UNV-files: Users can now decide if they only want to view the files in a third-party product or if they want to use them for subsequent steps such as structural analysis or NVH-analysis, in this case, results needed for further calculation are exported in integration points and can be used for following analysis steps.

New interactive model and result views increase the usability of the user interface

The latest version of Simufact Welding provides an interactive view control widget in model and result views. The widget combines the functionality for view control (view angles, zoom, mirroring, rotations, reset to defaults) as well as view synchronization (synchronizing several views open in one project). Also, the synchronization now supports live synchronization, automatically changing view settings, result type and selected increment in all open views if those settings are changed by the user in one of the open views. Using the widget enables the user to work faster and more efficiently while evaluating the results of the simulation, comparing different models and their results. In addition, the representation of geometries in the view (mesh, solid, contours and so on) is now controllable for the complete model as well as for single geometry.

Best-Fit Method: By touch of a button compare simulation and reference model

In Simufact Welding 8, users can easily compare the simulated model with a reference model (e.g. a CAD model or measured surfaces) using the “best-fit method”. In the best-fit-method the software automatically determines the position at which the deviation between both geometries is the lowest and shows this deviation in the result view. The visual presentation of the results, based on measurements, allows the user quickly assess whether the deviations are within the permissible tolerances. For this function, Simufact has integrated Hexagon’s 3DReshaper technology.

Proper import of result files from clouds or other remote high-performance machines

Cloud computing and HPC (high performance computing) is often used for the simulation of various numbers of models. In such cases the data needed by the solver is sent to a remote machine, where the calculation takes place. Simufact Welding 8 is now able to import result files in the GUI, sort them properly and make them available for the result evaluation.