New Forming Software Offers Improved Operation & Covers Additional Processes

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New operational concept streamlines model setup and model evaluation. Also offers new application field of pressure welding as well as links process simulation with process monitoring.

Simufact Engineering, an **MSC Software** company, launches its forming simulation software, called Simufact Forming 14. The new software package provides a newly developed GUI (Graphical User Interface) that simplifies the modeling and the evaluation of the simulation results (preprocessing and postprocessing).

Another highlight of the new version is the new pressure welding module, which enables the simulation of joining processes in which workpieces are connected by pressure and heat.

Simufact Forming provides new process types for the simulation of mechanical joining processes. These include process-specific presets that shorten the model set up for the joining processes of self-piercing riveting, punch riveting and blind riveting as well as for tensile tests.

New Operating Concept Simplifies Model Set Up & Evaluation of Results

Simufact Engineering GmbH has introduced a new operating concept in the new version and provides its users with modern, graphically appealing software dialogs, which provide for more flexibility both in model set up and in the evaluation of results. Interactive and context-related user dialogs support the user in evaluating the simulation results. With a single mouse click, the user alternates between temperature, deformation or tool load.

The new operating concept also provides a number of graphical improvements for the model set up and allows for simplified depiction via mouse or touchpad. Positioning as well as creating "clippings", hence to insert cutting planes into the model, can be combined here. This allows the user to verify the model during the set up and if necessary adjust certain process parameters.

Simulate Pressure Welding Processes

The new application module, Pressure Welding, assists in the simulation of mechanical-thermal processes, in which workpieces are joined by the introduction of pressure and heat. Typical methods are resistance spot welding, friction welding and friction spot welding.

Also interesting for cold formers, the projection welding process, a typical production step downstream of the cold forming process, can now be simulated and provide valuable indications for the optimum development of the weld projections on the workpieces. Heat formers are also benefiting from the implementation of the Pressure Welding module.
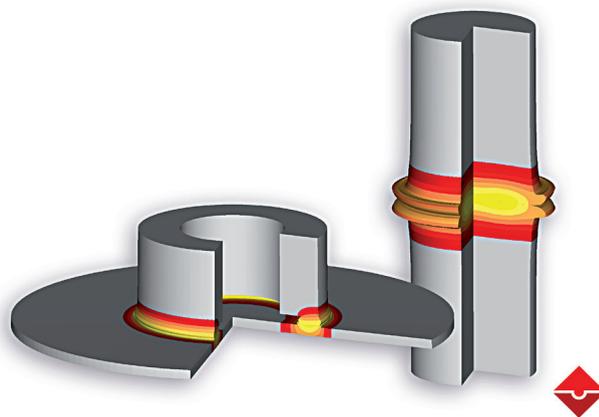
Simufact Forming 14 incorporates a new Pressure Welding application module that assists in the simulation of mechanical-thermal processes.

The module can now be used to illustrate electrical upsetting processes, which are frequently used in hot forming as upstream process steps.

The Pressure Welding module's functionality puts its focus on the process simulation. The user is given precise information on the behavior of the individual welding points, at the same time taking into account the time profile. Thus, manufacturing steps of the forming process are combined with thermal joining processes.

## Improved Tool Life by Linking Process Simulation with Process Monitoring

At *wire 2016*, Simufact, along with **Prokos**, a company of the **Marposs** group, a specialist for process monitoring, and **Möhling**, an expert in the field of cold forming and cold formed parts, presented in a pilot project the linkage between process simulation and process monitoring. This allows the use of a set-point and actual comparison of measured and simulated forces to be set up in the same way as the process was previously simulated or optimized—"Manufactured as simulated". In this way, cold formers can increase their tool life. With the new version, users are offered this exclusive **Brankamp** interface.

Joining Optimizer Saves Time & Money

The Joining Optimizer is a new add-on tool available for Simufact Forming—serving as an efficient solution in car body manufacturing. It shortens development times by automatic validation of self-piercing riveting and clinching processes.
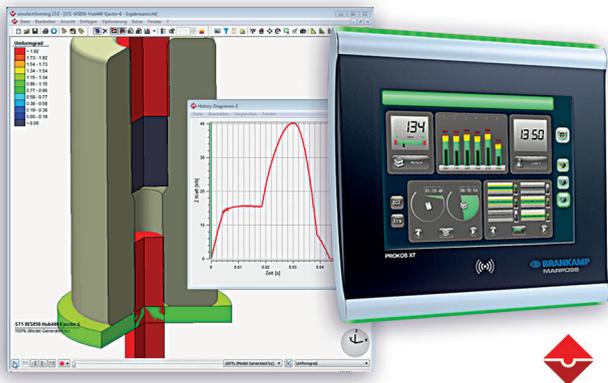
Simufact Forming 14 can incorporate the exclusive Brankamp interface to link process simuation with process monitoring.
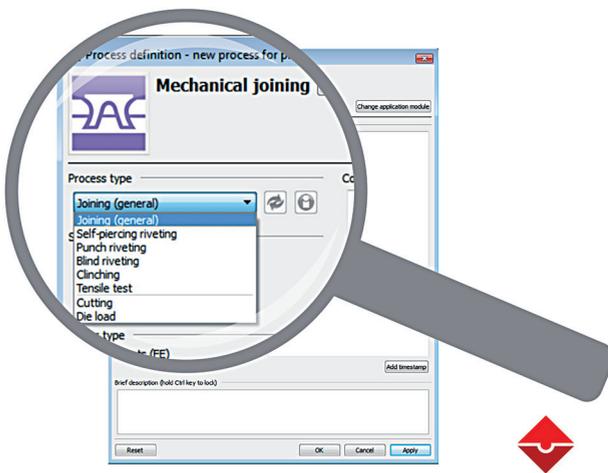
Simufact Forming 14 includes the new add-on Joining Optimizer tool that shortens development times by automatic validation of self-piercing riveting and clinching processes.

The user can virtually test a wide range of material thickness combinations with various rivet models and tool combinations. This evaluation delivers a ranking list of technically feasible tool-rivet combinations for a single material thickness combination.

An easy-to-understand traffic light indicator based on undercut, minimum bottom sheet thickness, maximum punch force, final rivet head position, etc., visualizes the feasibility. All evaluations are stored in a database for knowledge management, reducing the efforts for re-evaluation of similar material thickness combinations.

In a second subsequent step, the Joining Optimizer Assembly helps in optimizing the number of needed tool-rivet combinations (best possible compromise) for a given set of material thickness combinations of an assembly. The Joining Optimizer aims at providing the highest efficiency in serial production through the minimization of the number of tool and rivet changes.

Simufact has developed the Joining Optimizer in cooperation with **Audi**, which is employing this solution in its production environment.

New Process Types & Other Interfaces Implemented

In terms of user friendliness, Simufact has introduced numerous innovations and simplifications in the field of mechanical joining. From now on, the new process types are available via the Application Function Set technology—Self-pierce-riveting, punch riveting and blind riveting. Process-specific predefined parameters are loaded for the modeling and thus shorten the model set up. On top, users can now also automate the positioning as well as visualize the simulation of adhesive processes in the module mechanical joining and thus also take into account the functionalities of the adhesive in the joining process.

With an interface to the casting simulation ProCast (ESI), Simufact takes up the idea of process chain simulation and combines casting and forming simulation. Data that is imported from the casting simulation via the ProCast interface can be utilized in the Simufact Forming 14 software for forming subsequent operations.

The material database, Simufact Material, offers the users already a comprehensive package of materials. From steels, stainless steels, cobalt alloys, nickel base alloys, Ni-Fe super alloys up to the titanium alloys, all are available to users for the simulation. Through the cooperation with **MatCalc Engineering** in Vienna, users can import high-quality aluminum materials via a new interface. The JMatPro interface has been extended by Simufact to include electrical material properties.

The new Simufact Forming 14 forming simulation software package is now available for downloading at the Simufact Engineering website listed below.
www.simufact.com

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