

PRESS RELEASE

Process simulation for cold forming: Simufact shows the new capabilities of its current product versions

Simufact has expanded its simulation spectrum of cold forming to include pressure welding processes and has added the capability to simulate resistance heating.

Industry 4.0: Linking process simulation and process monitoring to optimize tool life - a pilot project with Prokos and Möhling

Hamburg, Germany, March 8, 2016 – Simufact Engineering, an MSC Software company, will unveil latest novelties of their simulation solutions Simufact.forming and Simufact.welding at the Wire show in Duesseldorf. With the current product versions Simufact has expanded the range of application fields by including additional manufacturing processes.

Simufact introduces new options for the simulation of pressure welding processes, in which workpieces are joined by applying heat (through the introduction of electrical current or due to friction) and are then subsequently joined by applying pressure. Pressure welding processes - include resistance spot welding, friction welding and friction spot welding among others. Another new feature is the possibility to simulate the intermediate steps in resistance heating which allows for a reduction of strain hardening effects.

A special topic at the Simufact stand is the Industry 4.0-related linking of process simulation with press force monitoring in order to improve tool life: Simufact presents the results of a pilot project with its partners Prokos and Möhling.

Simufact.forming and Simufact.welding are widely used software solutions within the metal forming market for the design and optimization of manufacturing processes in metal-processing. Based on Simufact software solutions users can simulate a wide range of forming and joining techniques, including the processes involved in cold forming. Simufact's software solutions are aiming at automotive manufacturers and their suppliers, rail vehicle manufactures, companies from the aerospace industry and mechanical engineering companies.

The new application module pressure welding adds value to cold forming manufacturing process chain

Many cold-formed workpieces are further processed in subsequent stages of manufacturing. Therefore, for the suppliers of parts, it is important to meet certain quality requirements for further processing right from the start.

A typical subsequent production step following the cold forming process is pressure welding which connects two components. In resistance pressure welding one or more elevations (weld projections) are introduced to the work piece. The geometry

of the weld projection defines the exact area the electrical current is to be transmitted to, so that only the elevation on the component can be welded. Following this process the parts are joined together by exerting mechanical pressure.

The simulation of pressure welding processes can provide valuable information for the optimal shape of weld projections on the workpieces and finally help meeting the requirements of pressure welding processes.

Improving tool life by linking process simulation and process monitoring

The increasing accuracy of simulation models as well as the simulation-based predictions of the press force progression provide users useful practical assistance for adjusting tool settings on the machine. More and more cold forming companies employ production process monitoring systems in order to identify component quality issues and to secure the production process. By coupling process simulation and process monitoring, they may prevent a systematic overloading of the tools and machines which results in an increase of tool life, fewer tool failures and overall a more robust production process.

In a joint project Simufact, Prokos (a production control systems specialist for process monitoring in metal forming), and Möhling (an expert in cold forming and cold formed parts) have connected the two worlds of process simulation and process monitoring. The project partners have exclusively brought together the simulation software Simufact.forming with Prokos' systems. They gathered first practical experience when employing the systems at Möhling – especially with regards to the press force progression. Linking process simulation with process monitoring allows for a practical adjustment of cold forming processes based on an optimized simulated process design: "Manufacture as simulated". This approach simplifies the production machine's set-up with the objective of optimizing tool life. Besides Simufact also Prokos will present first results from this joint project at the Marposs Group stand (Hall 15, J60).

Resistance spot welding simulation – the most important innovation in Simufact.welding 5

Simufact.welding is a welding simulation software that allows for the calculation of distortions, residual stresses and the material conditions within welding processes from a single user interface.

In addition to simulating arc welding and laser beam welding the current version Simufact.welding 5 now also covers resistance spot welding (RSW). RSW is a leading joining process in the automotive industry, where it is commonly used to connect metal sheets in car body assembly. RSW is an energy efficient process; due to the reduced amount of heat that develops during this welding process, component distortion – the No. 1 issue with welding in serial production – is lower compared to fusion welding processes.

With Simufact's new software module, users can model the electro-thermal-metallurgically-mechanical RSW process including a user-friendly definition of movable X- and C-welding guns. This enables minimizing the distortion of even complex resistance spot welded structures. Besides the calculation of welding distortions, software users can now also examine the influences of coatings and welding sequences on the process.

Simufact welcomes visitors to Wire in Hall 15, Stand D13.

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 600 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, and welding. For more information about Simufact Engineering please visit www.simufact.com.

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