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## Technical Brief

# Fast and stable process simulation at highest accuracy by new tetrahedral elements – much more enhancements within Simufact Forming 2021

**Hamburg, March 31, 2020** – [Simufact](#), a global operating software company providing process simulation solutions and services to metalworking industries, today announced the release of Simufact Forming 2021. The latest release covers five top highlights such as the new tetrahedral elements for meshing, which speed up the process simulation at highest accuracy. Further enhancements are the assistance for damage modelling, which allows the user for an easy, automated and efficient way to generate a damage model increasing the accuracy of the results in terms of predicting the component at failure. Simufact Forming 2021 also comes up with a new finite volume solver, taking calculation speeds to a next level, the extended boundary conditions to predict properties under loads, and even the ability to simulate new process types such as hydroforming. An additional highlight of the new version is the MpCCI Mapper, an interface for exchanging simulation results with 3<sup>rd</sup> party products, coming from our technology partner SCAI Fraunhofer institute.

### **Significantly faster calculation with the same accuracy thanks to new tetrahedral elements, new finite volume solver and a new time step control option**

Simufact Forming 2021 provides our user with several new improvements, that significantly increase the calculation speed of his process simulation. A new tetrahedral element for meshing has been developed, which makes the simulation up to 2.8x faster speed compared with the previous tetrahedral elements. A new finite volume method (FVM) solver has been developed. It specifically targets hot forming processes and is up to 1.5x times faster than the existing FVM solver. Also a new time step control option has been implemented, giving the user a speed gain of 40%-70%.

### **New damage model assistance serves for increased accuracy**

For the first time, Simufact introduces an assistant for damage modelling in Simufact Forming 2021. It convinces by its ease of use and the user benefits from increasing accuracy. The damage model for itself can have an enormous impact on the accuracy predicting the damage occurrence as well as the force progression. The creation of a damage model in the simulation has been very difficult and therefore has been neglected in the simulation. In Simufact Forming 2021, the user enters the damage characteristics from experiments, including equivalent strain and the averaged Lode angle at failure. The new damage modelling assistant automatically calculates, generates and calibrates the damage model's parameters. Finally, the user benefits from the newly generated damage model, which enables accurate calculations in the future.

### **First approach to predict properties under loads**

With Simufact Forming 2021, after process simulation, the user looks forward to structure simulation with basic functionalities. The structural simulation helps him, among other things, to determine the maximum load before the component fails and the force progression of a dynamic load. In addition, with this new feature, the user has the possibility to simulate new process types, such as hydroforming.

### **Result transfer to and from 3rd party product by the MpCCI Mapper**

Thanks to this new feature, the user can transfer his process simulation results from the software into any format by the help of the MpCCI Mapper interface. It provides advanced and robust methods to map, compare and transfer simulation results and experimental data in integrated simulation workflows. Thus, the user benefits from the capability to transfer his results from 3<sup>rd</sup> party products prior to Simufact Forming and afterwards.

*“Simufact Forming is an established software solution for the simulation of metal forming manufacturing processes. Our top priority is to help our customers increase their efficiency and productivity as well as reduce costs and time-to-market by shifting physical tryouts to virtual*

testing”, says Dr. Gabriel Mc Bain, Senior Director Product Management at Simufact Engineering GmbH & Forming Technologies. *“With the release of Simufact Forming 2021, we take speed, stability as well as user experience of our solution to the next level. We are pleased to announce the new version of Simufact Forming 2021 – faster and more exciting to use than ever before!”*

Visit the What’s new website in order to discover the top highlights in the recent version: <https://www.simufact.com/what-s-new-in-v2021.html>

### About Hexagon | Simufact

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

Simufact, part of Hexagon’s Manufacturing Intelligence division, applies simulation and process knowledge to help manufacturers optimise metal forming, mechanical and thermal joining and additive process quality and cost. Learn more at [simufact.com](http://simufact.com). Hexagon’s Manufacturing Intelligence division provides solutions that utilise data from design and engineering, production and metrology to make manufacturing smarter.

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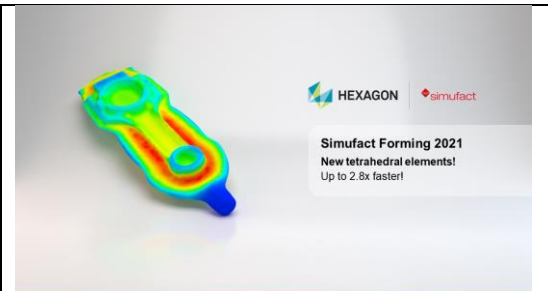
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### Notes to editor

The following images are available upon request.

 <p>01_Speed-Cover_EN.png          (Dimensions: 1280 x 720)</p>	<p>New tetrahedral elements unlock up to 2.8x more speed for your simulations!</p>
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 <p>02_Damage-Cover_EN.png (Dimensions: 1280 x 720)</p>	<p>New damage model assistance – Generate and consider damage model easier than ever!</p>
 <p>03_FVM-Cover_EN.png (Dimensions: 1280 x 720)</p>	<p>New Finite-Volume-Solver enables speed-up your simulations by up to 1.5x</p>
 <p>04_Hydroforming-Cover_EN.png (Dimensions: 1280 x 720)</p>	<p>Extended boundary condition definition enables first approach to predict properties under loads and even new process type such as hydroforming</p>
 <p>05_MpCCI-Cover_EN.png (Dimensions: 1280 x 720)</p>	<p>The new MpCCI Mapper interface enables result transfer between Simufact and 3rd party products to simulate downstream analysis such as crash simulation</p>