Technical Brief

# Extended Python API in Simufact Welding 2021 enables complete automation from model creation to evaluation

**Hamburg, April 26, 2020** – Simufact, part of Hexagon's Manufacturing Intelligence division, has announced the release of Simufact Welding 2021. The latest version includes an extended Python API that enables the user to fully automate his welding process simulation workflows from model creation to the evaluation of many variants or different processes. It offers productivity improvements and reduces human error. Further enhancements include a new weld bead creation tool, the enhancement of the heat source definition, and the further improvements regarding the direct energy deposition (DED) module making Simufact Welding 2021 an easy to use Software tool. Users also benefit from a new cost calculation module, which provides an overview of total process costs and the ability to compare the cost of different process variants.

**Extension of Python API enables for smart simulation and maximized automation**
The extended Python API scripting allows the user to easily create and calculate models from scratch. It also enables for data input and output to be fully automated.

For example, Simufact Welding 2021 allows the user to automate model creation, such as the import and the positioning of his parts, the creation and the assignment of objects necessary to the process and their process definition. In addition, Simufact Welding 2021 now automatically initiates post-processing such as the creation of measuring points wherever needed, and exporting or copying results into subsequent processes. Once the results have been exported from Simufact Welding 2021, our user can analyse results without any limits using Python programming language.

Simufact Welding 2021 moves an important step forward towards automation. Our development team is about to improve and expand this even further in the future to simplify your daily work.

**New weld bead creation tool provides complete control over any shape of weld beads**
Until now, modelling certain welds such as butt welds would require for an additional software. Simufact Welding 2021 has integrated a new weld bead creation tool, that serves for a complete control over any shape of your weld beads. Whether you need to simulate square butt welds, V-butt welds or T-joints with a gap: the new weld bead creation helps you to easily, quickly and intuitively create them within one welding simulation software.

**Enhancement of DED module**
We have improved our direct energy deposition (DED) module so that users can easily create a geometry based on the trajectories after the G-Code import. Afterwards he generates the mesh for his simulation. Further enhancements improve the stability, robustness, and ease of use in both: model generation and simulation of DED processes.

**New cost estimation module provides at-a-glance breakdown of entire manufacturing cost**
Simufact has enhanced its range of applications by including a basic cost estimation module as technical preview. Users can now estimate the costs of each process variant in advance and optimize them prior to production.
The new cost estimation module makes it possible to estimate itemized and total costs of each variant. This allows the user to compare different welding processes in terms of cost. The holistic calculaton engine considers fixed costs such as maintenance and labour costs and variable costs such as material and tooling consumables and the cost of energy used.

**Enhancement of heat source definition – based on measurements**
Defining the heat source is essential for a welding simulation. Simufact Welding 2021 simplifies the heat source definition so users can focus on their process setup.

Look forward to two major updates to the heat source definition:

1. The Goldak's heat source geometry and power can be estimated by using the geometric parameters of a weld bead dimensions from a weld plan or a cross-section from experiment.
2. In addition to the conventional heat source definition by specifying the speed, power and efficiency, users can now easily specify the target temperature, the temperature tolerance as well as the maximum current and the maximum voltage.

Use our new, quick and easy heat source definition tool to estimate the heat source dimensions and properties without spending much time and efforts for calibrating it in order to run a first-shot welding simulation.

"We are proud to offer the market *Simufact Welding 2021, our solution for modeling and optimizing a wide range of thermal joining processes, taking into account weld sequence and clamping. Our goal with each release is to increase the stability, efficiency and usability of the software. Our customers shall benefit from the new possibilities to simplify their daily production",* says Dr. Gabriel Mc Bain, Senior Director Product Management at Simufact. "*With the release of Simufact Welding 2021, we have taken a huge step towards automation and extended the scope of Simufact Welding by the new cost estimation tool to support our users to design cost-effective processes. Users can look forward to many new features that will make their everyday work easier!*"

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-SW-v2021.html

**About Hexagon | Simufact**

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

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

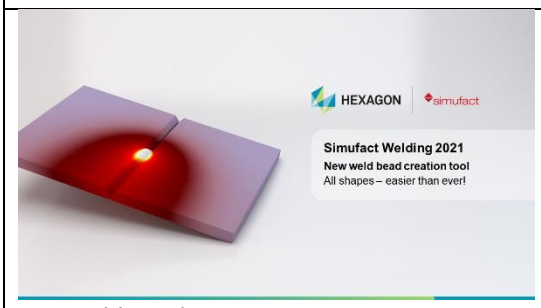
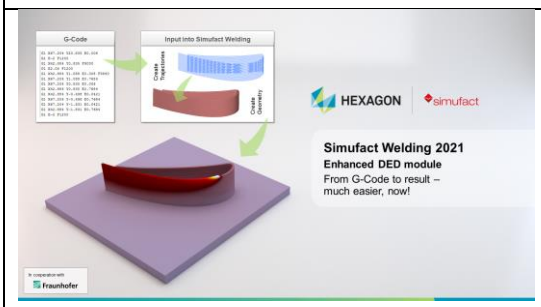
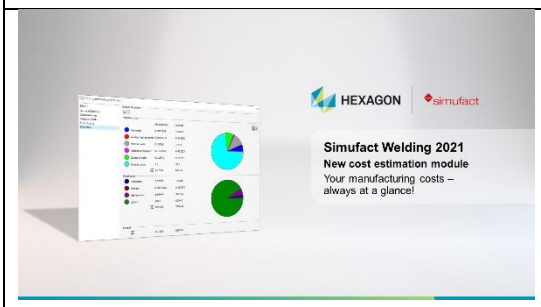
Simufact, part of Hexagon's Manufacturing Intelligence division, applies simulation and process knowledge to help manufacturers optimise metal forming, mechanical and thermal joining and additive process quality and cost. Learn more at simufact.com. Hexagon's Manufacturing Intelligence division provides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

Learn more about Hexagon (Nasdaq Stockholm: HEXA B) at hexagon.com and follow us @HexagonAB.



**Contact:**
Michael Tran
Product Marketing Manager,
Simufact Engineering GmbH & Forming Technologies
+49 (0)40 790128-000
michael.m.tran@hexagon.com

**Notes to editor**
The following images are available in the press pack, or upon request.

| | |
|---|---|
|  <br>01_PythonAPI-Cover_EN.png<br>(Dimensions: 1280 x 720) | The extended Python API capability allows the user to create and calculate models from scratch which also enables fully automated data input and output |
|  <br>02_WeldBeadGenerator-Cover_EN.png<br>(Dimensions: 1280 x 720) | New tool to create all shapes of weld beads within one software |
|  <br>03_DEDmodule-Cover_EN.png<br>(Dimensions: 1960 x 1080) | Create your DED process, from G-code import to result, within one software. |
|  <br>04_costestimation-Cover_EN.png<br>(Dimensions: 1960 x 1080) | New module for cost estimation to always have an overview of the entire costs of a welding process |

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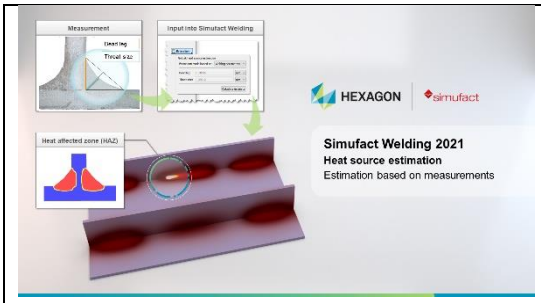
|  <br>05_heatsource-Cover_EN.png<br>(Dimensions: 1960 x 1080) | Estimate heat source dimensions and properties without spending long time and much effort for calibrating in order to run a first-shot welding simulation |