

# Data\* from: Combined experimental-numerical analysis of the temperature evolution and distribution during friction surfacing

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Zina Kallien<sup>1,a</sup> and Benjamin Klusemann<sup>1,2</sup>

<sup>1</sup>Solid State Materials Processing, Institute of Materials Mechanics, Helmholtz-Zentrum Hereon, Germany

<sup>2</sup>Institute of Product and Process Innovation, Leuphana University of Lüneburg, Germany

<sup>a</sup>Corresponding author: [zina.kallien@hereon.de](mailto:zina.kallien@hereon.de)

## General information

The data set consists of two main folders:

- Experiments
- Simulations

The data sets contain the main data of the experimentally and numerically performed friction surfacing (FS) processes. The experimental data corresponds to the results from Kallien et al. [1]. Two '.xlsx' files are in the main folder, entitled 'Overview\_Experiments' and 'Overview\_Simulations', which provide an overview of all experiments and simulations used in this study and provide e.g. process parameters or used material properties. The files also contain a link to the supplementary files, i.e. the corresponding folder with simulation input and output files as well as experimentally recorded data during the FS process.

## Experimental Data

The experimental data is provided in the folder 'Experiments' containing the subfolders:

- cross-sections
- logs\_RAS
- thermocouples

The 'cross-sections' contain the pictures taken at a light optical microscope, which were used to determine the deposit thickness and width. The folder 'logs\_RAS' contains the recordings of the welding equipment for each process, including e.g. process time, forces, displacements, rotational speed and torque. The folder 'thermocouples' contains the temperature recordings for the processes where temperature measurements were performed.

## Numerical Data

The 'Simulations' folder contains 25 subfolders, where each folder contains an input file (.k) and a .g file containing the nodes, for which the output was written in a .txt file, i.e. the temperature data.

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## References

- [1] Z. Kallien, L. Rath, A. Roos, B. Klusemann, Experimentally established correlation of friction surfacing process temperature and deposit geometry, *Surf. Coat. Technol.* 397 (2020) 126040.