

**SCCH**  
**Software Competence Center**  
**Hagenberg**

Programme: COMET – Competence Centers for Excellent Technologies

Programme line: COMET-Centre K1

COMET subproject: moFOCS  
01/2015 - 12/2018, multi-firm

COMET subproject: Next  
01/2015 - 12/2018, multi-firm



## SMART COMBINATION

ARTIFICIAL INTELLIGENCE MEETS SOFTWARE ENGINEERING. HOW TO MAKE EXCELLENT PRODUCTION SMART AND FIT FOR INDUSTRY 4.0.

Transformers consist in part of many layers of stacked sheet metal that is cut from coils. The properties of the initial material influence the attributes of the transformers, e.g., power loss and noise generation. Thus the selection of the sheet material is decisive. In addition, waste from cutting must be minimized and the coils must be purchased as economically as possible. For this complex task, the experts at Software Competence Center Hagenberg (SCCH) linked the topics of production optimization and automated software documentation at Siemens Transformers Austria; on the basis of the latest research results, SCCH developed tools for this purpose.

### Making hidden knowledge visible

The calculation of transformers is complex and is often based on programming languages such as C++ or Fortran. This software contains the core domain-specific expertise of the engineers. The tool developed by SCCH transforms the knowledge contained in the software into technical documentation. This documentation contains the mathematical formulas for calculating the transformers and is therefore used to verify the correct calculation. However, the formulas are also used for the next step, the optimization of production.

## SUCCESS STORY



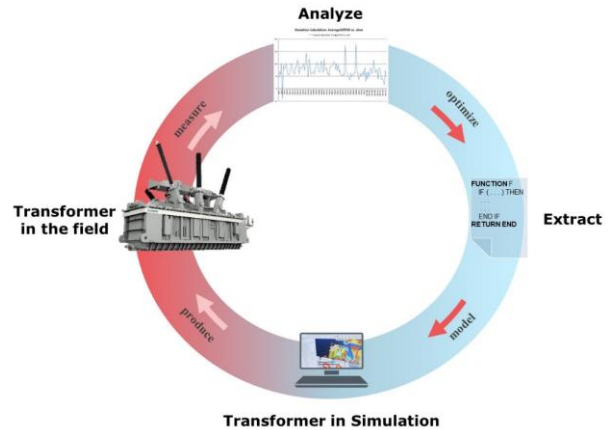
### Impact and effects

#### AI learns from production and optimizes

Artificial Intelligence analyses the measurement data of the produced transformers and compares them with the calculated data. The prediction of the transformer properties is improved and the parameterization of the calculation model is optimized with increasing empirical knowledge from production. The improved parameterization enables continuous optimization of the calculation model on the basis of the measurements.

The production of transformers is thus optimized with regard to material usage (cutting plan optimization and optimal selection of sheet metal qualities). The key figures of power loss, noise generation and machine set-up times can also be improved. In addition,

automatically generated acceptance documentation of the transformer calculation is available.



Design and production of transformers at Siemens.  
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#### Project coordination (Story)

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#### Project partner

- Siemens Aktiengesellschaft Österreich - Transformers, Österreich

Diese Success Story wurde von der Zentrumsleitung/ der Konsortialführung und den genannten Projektpartnern zur Veröffentlichung auf der FFG Website freigegeben. Weitere Informationen zu COMET: [www.ffg.at/comet](http://www.ffg.at/comet)