

TOPIC FOR A STUDENT RESEARCH PROJECT OR BACHELOR THESIS

ANALYSING 3D CAD MODELS FOR THE DIGITAL PROCESS CHAIN

The use of 3D CAD models and the entry of geometric specifications as Product Manufacturing Information (PMI) is becoming increasingly important for the digitalization of the process chain. The aim of the work is to analyse and evaluate the structure of the 3D CAD model and the associated geometric specification for the data transfer without loss to other software systems in the field of production technology, e.g. CAx, simulation and measuring device software.

The effect of the model structure is to be investigated on one or more test components with typical geometric functional specifications, e.g. size dimensions, shape and position tolerances and roughness. To this end, the requirements are to be derived from the software systems and data formats. The aim is to develop a recommendation for action that can support design engineers.



Fig.: <https://www.zeiss.de/messtechnik/erfolgsgeschichten/modellbasierende-produktdefinition-verbindet-konstruktion-und-messtechnik.html>

TASKS:

- Researching the possibilities of tolerancing according to ISO GPS in Siemens NX
- Creation of a test component in NX software as a 3D model with PMIs and transfer to selected software, such as the Calypso measuring instrument software from Carl Zeiss
- Compilation of the requirements for the 3D CAD model and entry of the geometric specification
- Derivation of a recommendation for action for developers/design engineers
- Summary of the results and development of an outlook