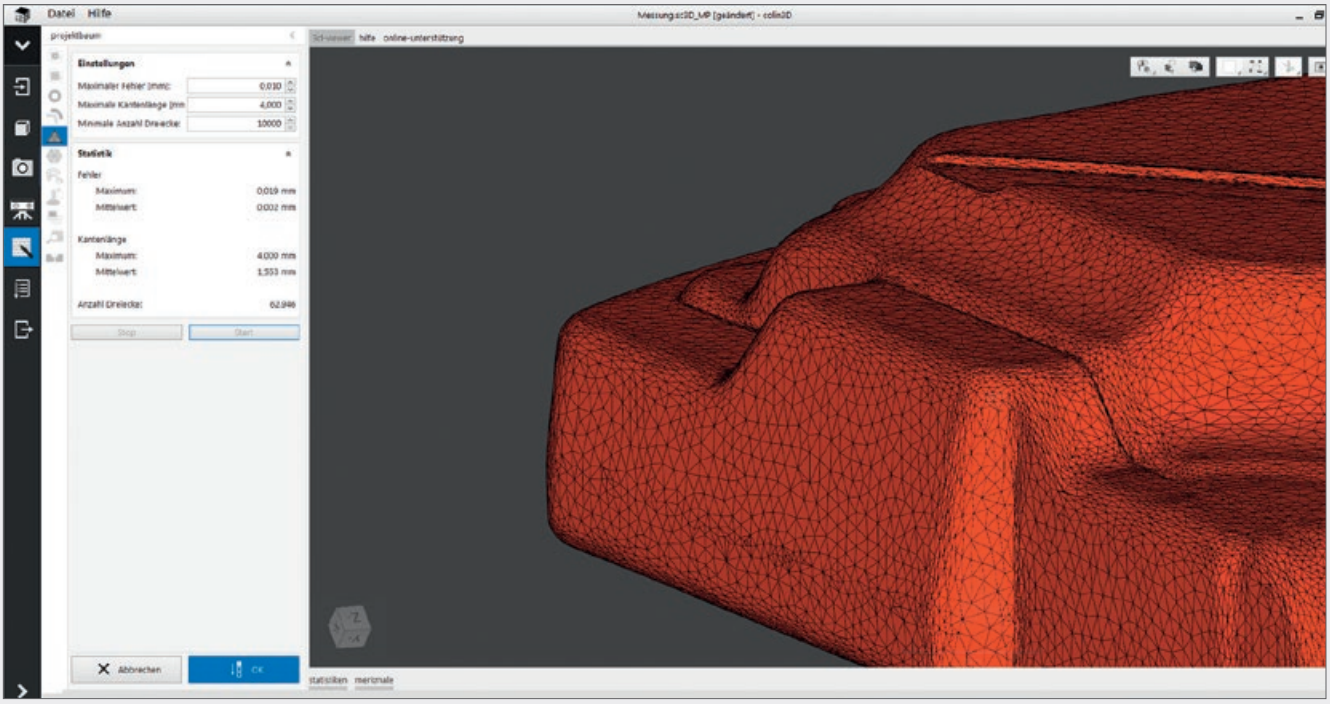
Software for optical 3D sensor systems

ZEISS colin3D



Quick triangular network computation using high-quality data reduction

CO

ZEISS colin3D

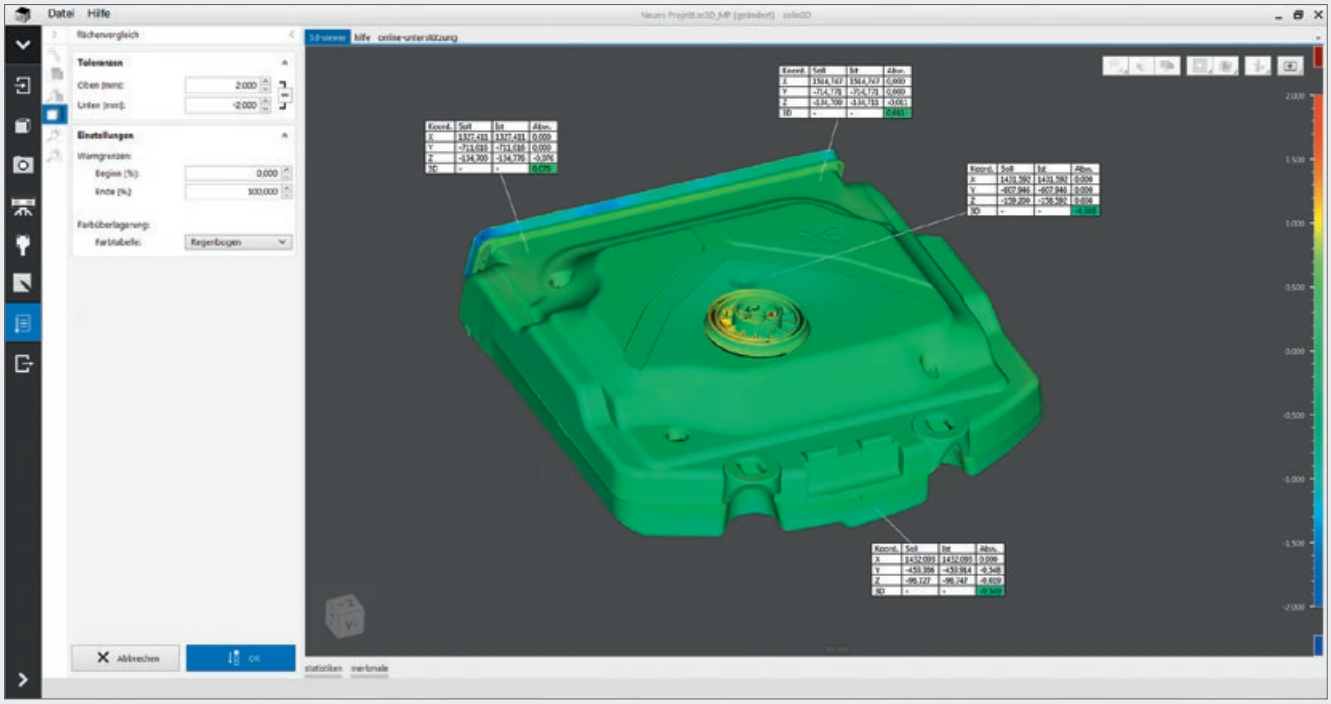
Optical 3D capture
and 3D analysis

Highlights

- Perfectly matched to optical 3D sensor systems from ZEISS Optotechnik
- Fast triangular network generation
- Surface comparison with report function
- Intuitive network processing
- Documentation of calibration
- Monitoring of system accuracy
- Automatically high-quality measured data through intelligent quality criteria

Innovative functionality

The ZEISS colin3D software platform is designed to ideally complement the COMET, COMET Photogrammetry and T-SCAN sensor systems. The program independently identifies the ideal strategies for merging individual images (matching) and guides you to the ideal result using a completely redesigned, project-oriented user interface. Thanks to the CAD integration, you receive continual feedback about the component surface areas that still need to be captured.



Simple off-color comparison

Maximum performance

Based on years of programming experience with 64-bit operating systems and the corresponding hardware such as graphics cards and multi-processor systems, the new algorithms of ZEISS colin3D achieve maximum performance and data quality.

Optimal user support

To quickly and efficiently position the T-SCAN system from ZEISS, the measurement field and scanner can be optionally displayed in ZEISS colin3D, making it easier to determine the ideal tracker position. Measuring programs for applications using the rotary tables COMETrotary and COMETdual rotary can be easily generated and executed. All individual measurements in a measurement sequence are subjected to quality checks and automatically repeated if necessary.

Data analysis functions

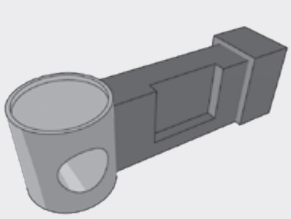
For quality assurance applications, the scan data can be compared on the surface of a CAD model using a simple best fit alignment. ZEISS colin3D contains a simple false color display with a color gradient and fixed values. To more precisely analyze deviations, users can place the flyers on the surface individually as required. Reports for documenting the measurement results can be easily and quickly generated and managed.

Maximum ease of use

Thanks to the extremely user-friendly, reduced user interface, little training is required and the software is easy to work with. Adapted to the workflow, the standardized menu structure is logically and incrementally built and only contains the setting options that are of relevance to the application.

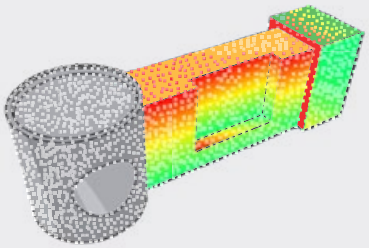
Back to the CAD model

ZEISS REVERSE ENGINEERING



1. Product data set

2. Actual data: product



3. Analysis: plan-actual comparison

RE

ZEISS REVERSE ENGINEERING

Reverse engineering and tool correction

Highlights

- Highly precise reverse engineering
- User-friendly operation, modern optics
- Simple processing of point clouds
- Automated standard geometry recognition
- CAD quality analysis
- Basic CAD functions
- Special functions for tool correction

CAD data from point clouds

Reverse engineering is an important step to extract the design data from a finished component. The part must first be scanned, e.g. with an optical sensor or with a computer tomograph.

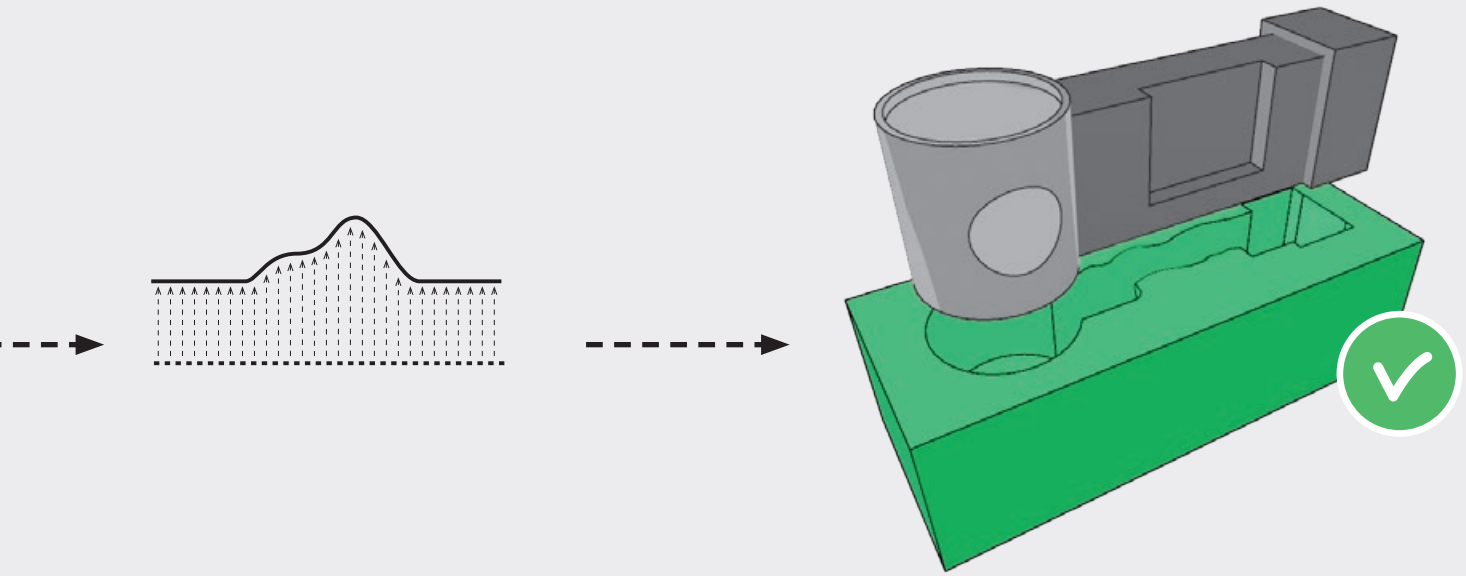
High result quality

From the resulting point clouds, ZEISS Reverse Engineering generates surface descriptions which can then be processed in the CAD system. As a result, complex surfaces can be described in their entirety with small data quantities. Standard geometries are not only described as an approximation, but also through exact geometric elements. In addition to the precise description of the model, the algorithms smooth the surfaces to an extent that the transitions are as tangentially constant and curvature-constant as possible – a must for optimal milling paths.

Processing point clouds

Prior to reverse engineering, the input data must usually be structured and edited. ZEISS Reverse Engineering offers exactly the right tools for this task.

- Rectangle, polygon and Lasso selection (modes: add, delete, either-or)
- Efficient management of selected point quantities
- Deletion of outliers and digitizing errors



4. Errors are transferred to your tool

5. Corrected tool

Automated work steps

Intelligent algorithms simplify working with the software and improve the quality of the resulting CAD model.

- Curvature estimator for point cloud segmentation
- Feature extraction for automated standard geometry recognition
- Routines for point cloud thinning
- Automated tools for multi-step trimming of the computed surfaces

Quality analysis and CAD functions

In addition to reverse engineering, the software offers important functions to analyze the quality of the computed models. Basic CAD functionalities such as blending, extending and binding area also provided. These are needed, for example, to build complex components from the ground up.

Special functions for tool correction

The tool correction is an excellent feature of ZEISS Reverse Engineering. You generate ready-for-use CAD data for correcting injection molding tools. ZEISS Reverse Engineering determines not only the deviations of a scanned component from the nominal data, but also subsequently calculates the appropriately corrected tool form. A single correction loop is often sufficient to finish machining a tool, allowing the correction process to be cut by weeks. A particular benefit of the ZEISS Reverse Engineering software is the ability to stipulate continuity conditions. These can be easily modified to fit the particular component shape and the shrinkage behavior of the material used.