Software

Overview

Dev = −0.0097

Dev = 0.0199

Dev = 0.0033

Dev = 0.0037

Dev = 0.0027

ZEISS

We make it visible.

Optoelectronics   Precision engineering
Mechanical engineering   Aerospace   Automotive

# Convenient and powerful – measuring software from Carl Zeiss IMT

Measuring, evaluation and management software from Carl Zeiss IMT enables you to increase the performance of all your measuring operations. Together with measuring machines and sensors from Carl Zeiss IMT, you control a superior, high-performance system – and obtain informative results as quickly as possible.

As a full provider of industrial measuring technology, Carl Zeiss IMT has always focused on the needs of the market. You benefit from this experience even when you use our software on non-ZEISS measuring machines: all standard interfaces and data formats are supported.

Work with the best-in-class system for operating convenience, efficiency and flexibility. This brochure provides an overview of the main software components from Carl Zeiss IMT.

Optoelectronics   **Precision engineering**
Mechanical engineering
Aerospace
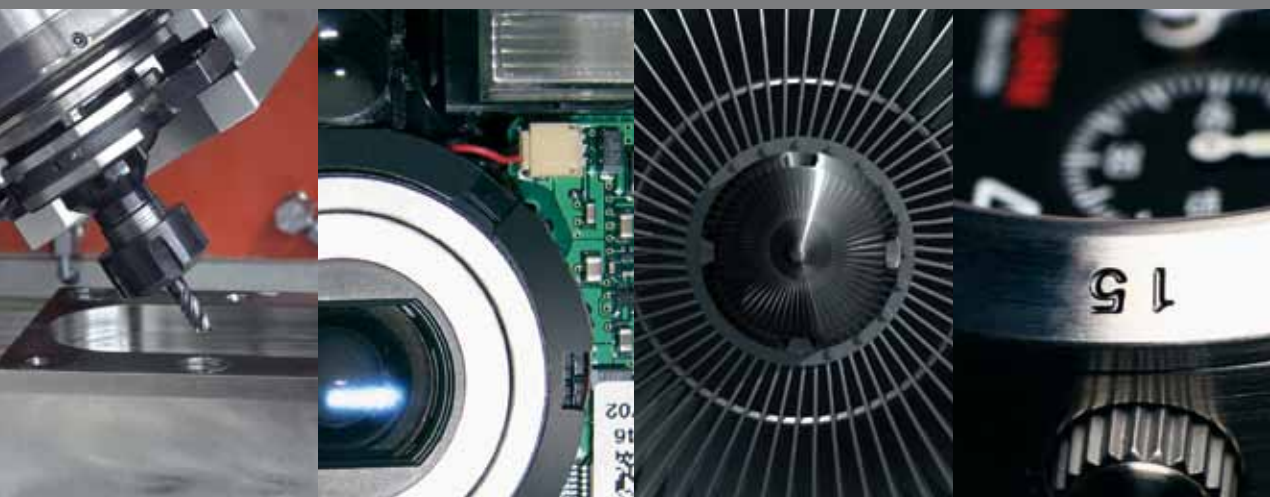
Functions and areas of application

	Offline programming	Measurement	Evaluation	Digitization, reverse engineering	Automation	Measuring lab management	Process data management
CALYPSO	◯	◯	◯				
myCALYPSO		◯					
FACS					◯		
CALYPSO preset					◯		
GEAR PRO		◯	◯				
BLADE PRO			◯				
CALIGO	◯	◯	◯				
DIMENSION				◯			
iDA	◯						
PiWeb							◯
Master Control Center						◯	

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Plastics

Transportation

Energy production

Electronics/household appliances

Medical systems

Measurement Plans
with a Click of the Mouse.

The total program for standard geometries and more.

CALYPSO has revolutionized programming in measuring technology. Its feature-oriented interface provides unparalleled ease of use. Intuitively create measuring programs by selecting the feature used in the CAD design drawing. Enter size, form and position tolerances directly from the CAD model.
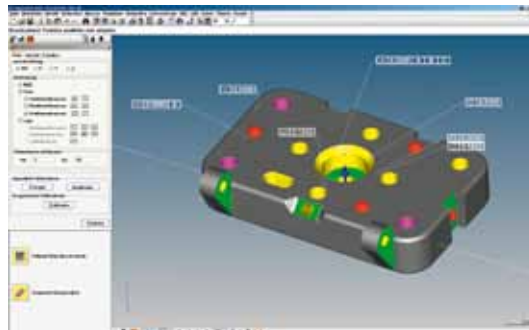
Software strategy

Many tasks – one tool
CALYPSO is designed for manual and CNC measurements, online and offline programming. CALYPSO is multisensor capable and supports all current sensors and measuring capabilities from Carl Zeiss. Via the I++ DME interface, CALYPSO allows you to control non-ZEISS measuring systems such as 3D measuring machines, articulated arm measuring machines, laser trackers and computer tomographs.

Collision-free – automatically
As soon as you define a part feature and the associated tolerances with a few clicks of the mouse, CALYPSO automatically generates an appropriate measuring strategy that can be modified and applied to other features at any time. CALYPSO quickly moves the stylus around the workpiece without collisions and approaches the part features correctly – you are free to deal with other tasks.

Dynamic mini-plan
CALYPSO's hierarchical design and feature-oriented programming give you the flexibility to focus your measurement planning on the production process. For example, you can interrupt measuring runs to quickly measure another part. The interrupted measurement can be easily continued afterwards.

More intelligent scanning with VAST Navigator
CALYPSO supports VAST Navigator – the fifth generation of scanning from Carl Zeiss. Without unnecessary interruptions and with optimal approach and travel paths, VAST Navigator allows you to measure smoothly in one run. A tangential approach is standard. Fully integrated intelligence enables CALYPSO to determine the maximum scanning speed depending on the required accuracy.

Optional interfaces:
IGES 2D/3D, VDA 2D/3D, STEP 3D, DXF 2D, PMI, and FTA can be directly processed.

Optional direct interfaces:
ParaSolid, CATIA V4, CATIA V5, ProEngineer, UniGraphics, Inventor, Solid Works

CALYPSO basic features

- Direct CAD interfaces
- Programming without complicated code
- Feature-oriented programming
- Multisensor capable: optical and contact methods
- I++ DME interface

- In-between measurements with mini-plan
- Dynamic measurement
- Automatic travel path generation – automatic avoidance of collisions
- Changes are passed on

Tools for Special Jobs.

CALYPSO extensions.

CALYPSO planner

The offline version of CALYPSO. Use CALYPSO planner to write measuring programs offline. Your measuring machine is not blocked by CALYPSO planner and can continue being used for additional measurements. CALYPSO planner saves the finished measuring program. Furthermore, it can be loaded and run at any time with CALYPSO. In conjunction with CALYPSO simulation, measuring runs can be generated and simulated remotely.

CALYPSO simulation

Virtual collision observation. The part, clamping equipment, stylus, probe, base plate, rotary table, measuring range, or the entire measuring machine, are simulated in the CAD window.

CALYPSO curve

Measure and calculate 2D and 3D curves.
Inspection features: curve slope, cam throw, curve length, curve form, surface area, etc.
Fields of application: crankshafts, cam shafts, turbine blades, powertrains.

CALYPSO preset

Preset erosion electrodes and processing tools. Users are graphically guided through the manual measuring run. The most commonly used measurement plans are saved. CNC extensions are available for square and round basic geometries.

▊ Planning
▊ Execution
▊ Infrastructure

myCALYPSO

myCALYPSO turns your measuring machine into a flexible gage. Standard measuring tasks, such as the measurement of the interior diameter or height, are saved as macros and can be loaded with a few clicks of the mouse.

CALYPSO freeform surfaces

Measurement of freeform surfaces. Deviations from plan are marked in color. Typical fields of application include medical technology, mold making and engine construction in which freeform surfaces have to be inspected along with standard geometries.

CALYPSO PCM

Menu-guided control of parameter-supported measuring runs. Workpiece variations can be efficiently measured using a measurement plan parameterized with CALYPSO PCM.

FACS automation

FACS (Flexible Automation and Control System) is used to integrate the measurement cells into CIM automation environments. FACS establishes the connection between the measuring cell and the process control computer. This allows you to initiate measuring runs from a customer-specific user interface

CALYPSO/ qs-STAT export

Export measuring results in the Q-DAS format for analysis in the qs-STAT statistics program. CALYPSO qs-STAT export converts the CALYPSO result files from a CNC measuring run into Q-DAS description and value files. With qs-STAT, you can then statistically evaluate production processes, for example.

GEAR PRO

Spur Gears, Bevel Gears, Worms.
GEAR PRO – CAD-based gear wheel software.

Used together with CALYPSO, the GEAR PRO line enables you to inspect spur gears, bevel gears and worms. GEAR PRO generates a CAD model of the gearing from the geometry definition. The graphic display allows operators to quickly and visually check their input values. A standard measurement can be performed immediately based on the definition of the geometry.

All GEAR PRO programs feature the same easy-to-use interface. Gear measurements can be started either automatically from a CALYPSO measurement plan or manually in the corresponding GEAR PRO program.

The analytical 3D gear tooth model and the graphic-supported input windows make measuring with GEAR PRO highly effective. The software enables measurements with or without a rotary table. Several measuring runs can be defined per measurement plan and features can be turned on and off. An optional qs-STAT interface is available for statistical evaluation.
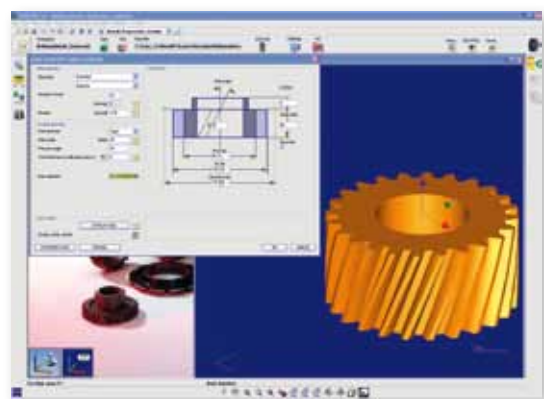
GEAR PRO involute was specially developed to measure spur gears.
• Straight or slanted-tooth spur gears
• Conically corrected gears
• Bevel gears
• Splines

GEAR PRO bevel measures and evaluates bevel gears. Nominal values can either be imported via the CAD interface (Gleason, Klingelnberg, Daimler-ZAFE, CCDS) or generated by digitizing a master gear.

GEAR PRO worm is used to measure worms. GEAR PRO worm takes into account the different geometries from ZA, ZI, ZK and ZN worms.

Evaluation of Turbine Blades.

Determine blade parameters with BLADE PRO.

With BLADE PRO, a wide variety of turbine blade parameters can be determined from existing measuring results. An algorithm patented for Carl Zeiss accounts for disproportional length errors, thus enabling evaluation of tolerance-critical areas of leading and trailing edges. BLADE PRO communicates bi-directionally with your existing measuring software via a neutral interface.

BLADE PRO determines the following blade parameters from existing measuring results:
- Form error of the blade profile
- Maximum blade length
- Maximum blade thickness
- Corner radius of the leading and trailing edge
- Thickness of the leading and trailing edge
- Blade thickness at any point of the nominal profile
- Torsion angle of the blade
- Blade length parallel to the chord line
- Profile waviness
- Batch point, center of gravity, mean line, etc.
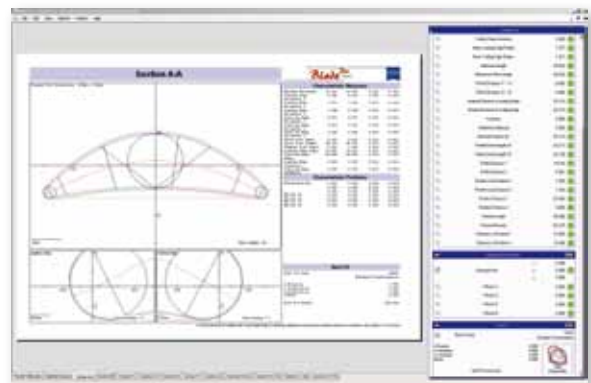
Automated to the Measuring Program.

## Offline programming system for car body construction.

iDA software supports measuring operators in measurement planning and offline programming for car body construction. Measurement plans can be converted to measurement programs on a Windows-based computer with a high degree of automation. The measuring programs created offline are transferred in the standardized DMIS format to the corresponding coordinate measuring machines of various manufacturers.

iDA (integrated DMISGen application) is an offline programming system for car body construction. It works regardless of the manufacturer thanks to the utilization of DMIS. It is the only offline programming system with an interface to HOLOS. iDA accommodates the measuring plan formats of all leading carmakers. iDA automates the programming process.

Overview of the key features
- Planning and programming on the 3D CAD model (part and device)
- Interfaces to import measurement plans (control lists)
- Parameterization delivers standardized, yet flexible measuring principles for very fast and easy programming
- Machine simulation
- Collision test
- Automated change management
- Mirrored measuring programs with automatic stylus allocation and intelligent mirroring of feature names
- Undo and restore functions
- Machine-independent
- I++ DMS capable
- Factory standards
- Combines different measuring software in one program

iDA
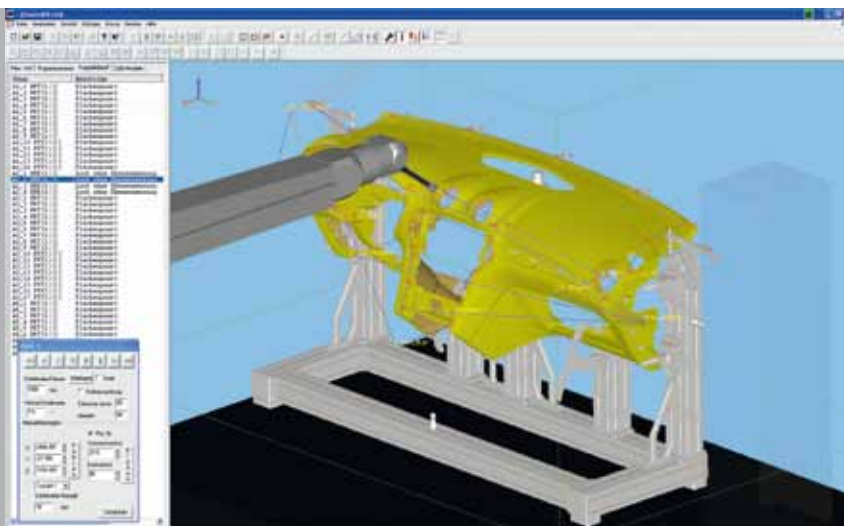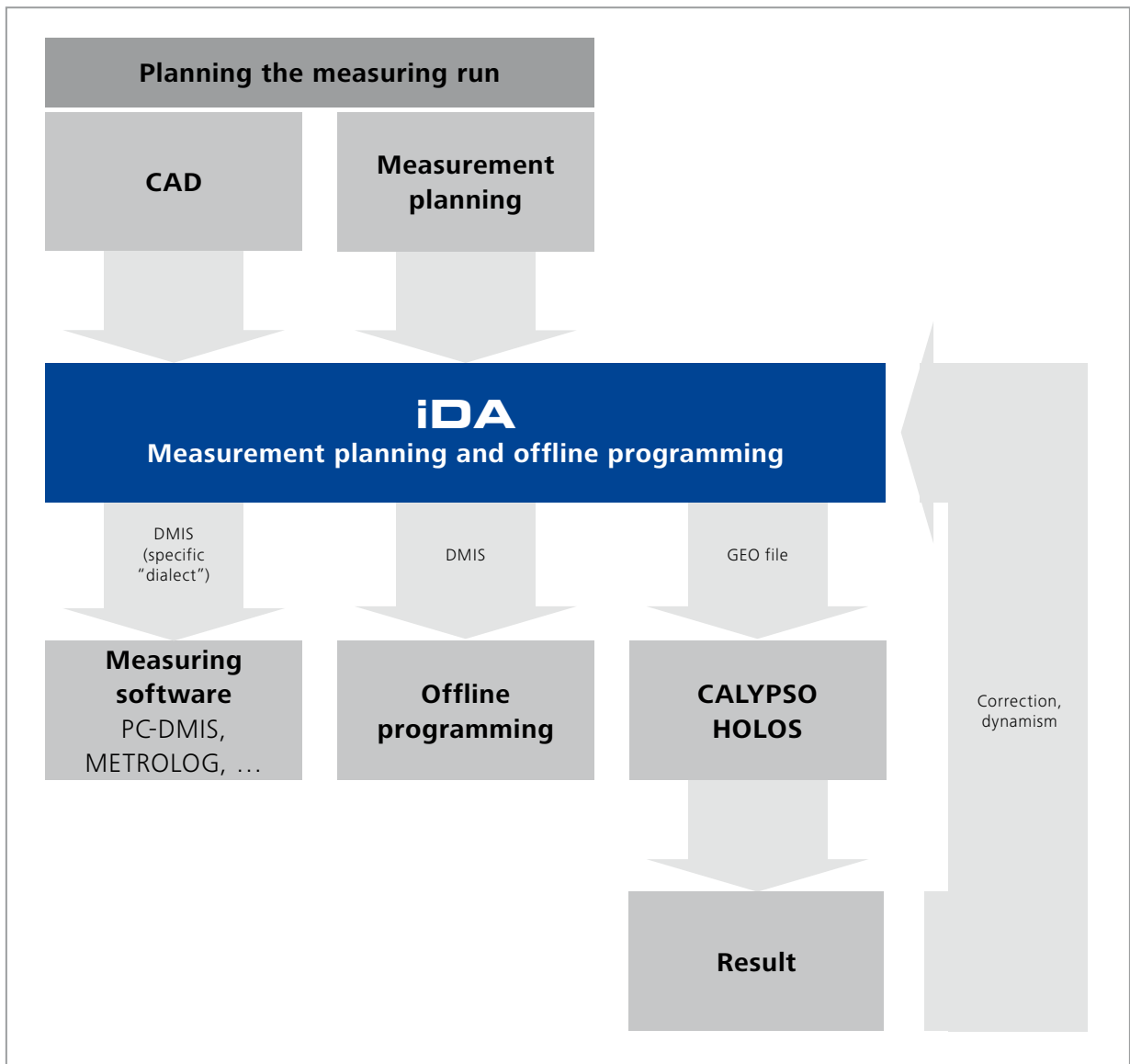
Precisely Capture Freeform Surfaces.

The complete program for freeform surfaces and more.

CALIGO, the new software for freeform surfaces, makes the measurement of car body parts easier and faster than ever. The completely new software architecture provides highly efficient tools for analysis measurements, serial measurements, simulations and reporting.

Successor to HOLOS
CALIGO replaces HOLOS software. Switching from HOLOS to CALIGO is amazingly simple: measurement plans programmed in HOLOS can be easily imported into CALIGO. Furthermore, CALIGO integrates seamlessly into Carl Zeiss' current software portfolio.

By focusing on the measurement of freeform surfaces, CALIGO is primarily intended for users in car body construction. With CALIGO, they receive a total solution that enables them to intuitively measure standard geometries in the same way as freeform surfaces. CALIGO is easy to use, has a short familiarization period, and offers powerful data processing tools and many new functions that simplify quality assurance.

**The CALIGO interface offers central
access to relevant functions and software.**
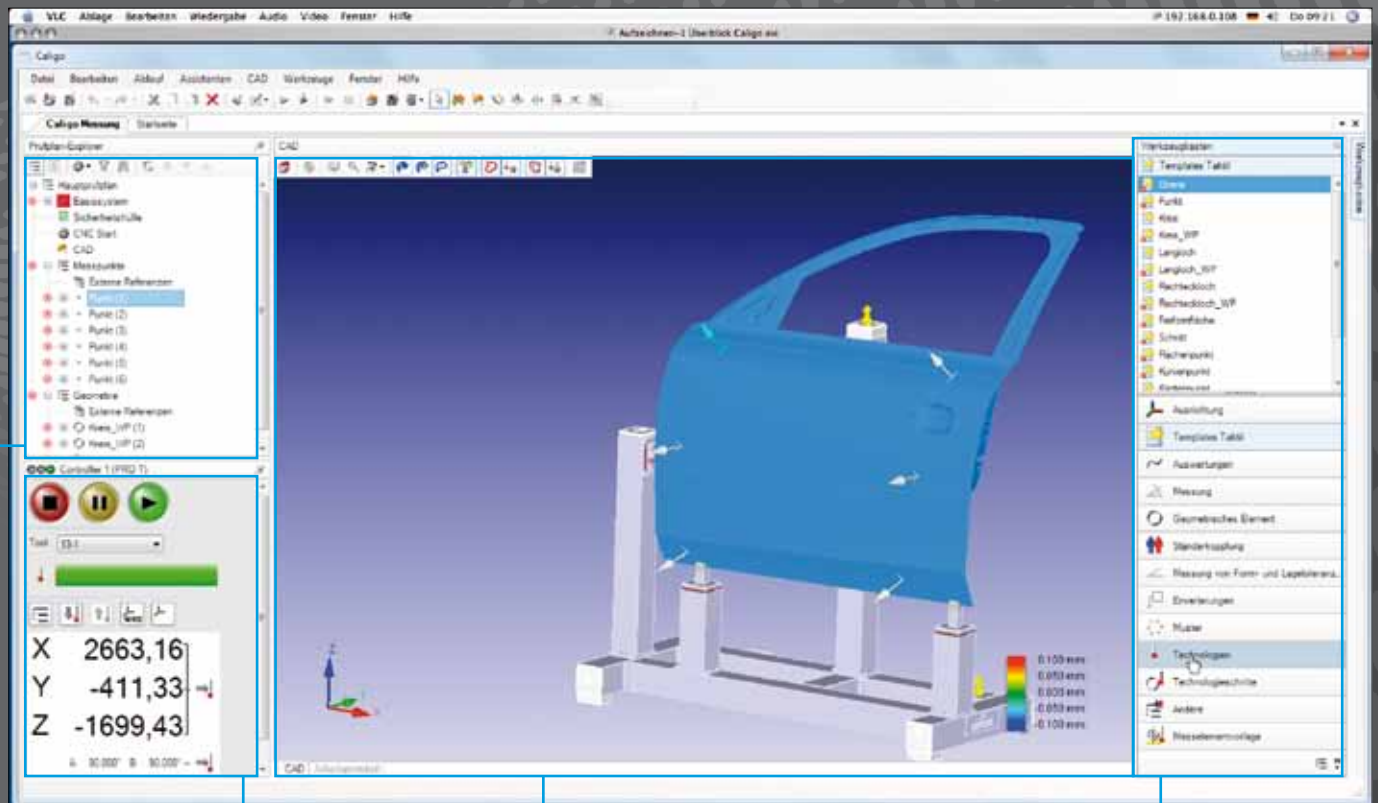
The Measurement
Plan Explorer lists the
measurement plan and
its sub-plans in a tree
structure.

Your measuring machine
is controlled via the
control window – the
current coordinates of
the measuring sensor
are always in view.
The drop-down menu
enables you to select
your contact or optical
sensor. The machine can
be precisely positioned
via numerical input.

The CAD window takes
up the most space. You
can turn the part in any
direction and enlarge
sections.

The toolbox contains
templates of alignments
and features, as well as
other frequently used tools.
You can also create such
templates and configure the
toolbox as needed.

New software technologies

Carl Zeiss turned to the latest software develop-
ment technologies for CALIGO. For example, a
modular system architecture offers the flexibility
needed for the requirements of tomorrow.
Optimum use of the available system resources
means that extensive measurement data is
available more quickly with CALIGO. The CALIGO
user interface enables the operator to intuitively
use the measuring software. This reduces the
familiarization period and promotes acceptance
of the new software.

CALIGO
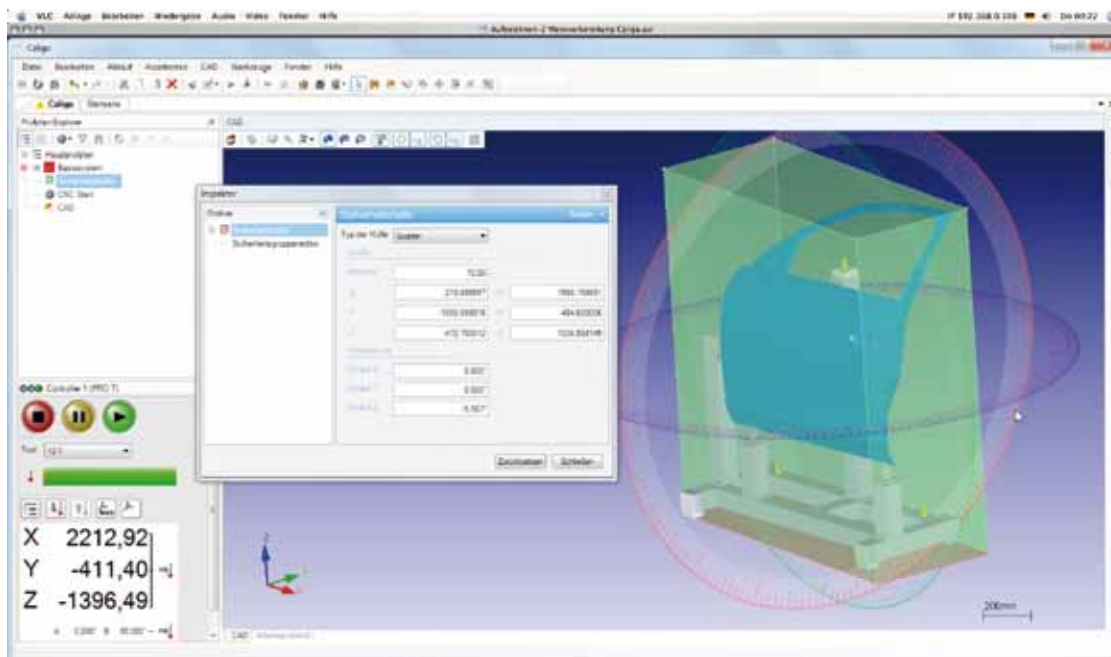
CALIGO automatically generates a safety sheath that can be modified as needed.

Change management

The change management function in CALIGO increases efficiency enormously: feature lists common in quality inspection can be imported in CALIGO and saved directly as measurement plans. If a feature list changes, the synchronization function enables the user to compare it with the current measurement plan. Every modification is shown to the user, who can then decide if he wants to accept the change or make additional modifications. The change management function in CALIGO enables users to respond to changes quickly and flexibly, and to integrate modified items into their measuring process without further delay.

Simulation

The simulation function now available in CALIGO provides users with an extensive array of tools to analyze the measuring program before the real sequence starts: the measuring run is shown as a virtual animation in the CAD window. Functions such as collision control, travel path track and collision ball help them optimize programming or detect and eliminate errors. Various horizontal arm measuring machines and duplex systems can be completely simulated in CALIGO. The EagleEye optical sensor has also been taken into consideration. It is now possible to set up a run with EagleEye offline.

CALIGO highlights
- User-friendly interface
- Extensive simulations
- Simple change management
- Measuring program templates
- Measurement data management with evaluation via timeline
- Offline programming
- Parallel management of several coordinate systems
- Fast and easy RPS alignment
- Automatically generated travel path around a safety sheath
- Colored display of freeform surface errors
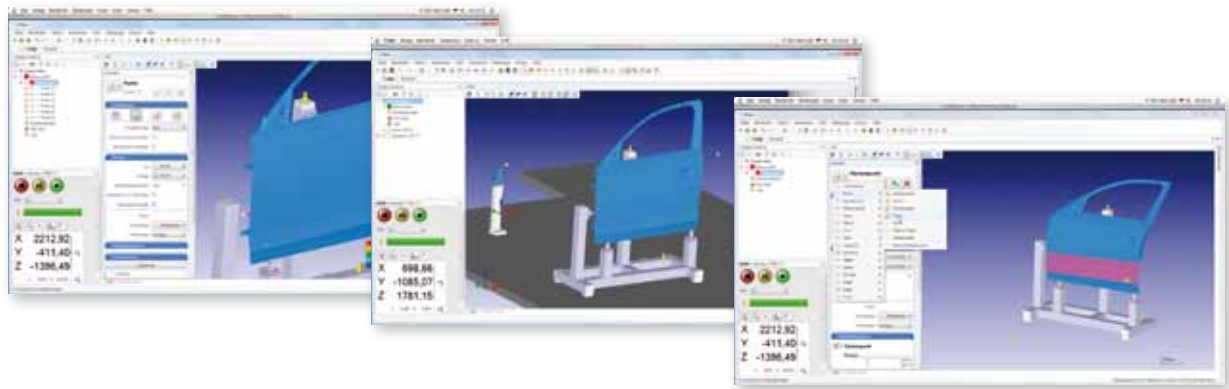
Safety sheath

CALIGO can generate travel paths automatically
to prevent collisions with the workpiece.
CALIGO independently finds the path from
feature to feature. Furthermore, the new "Path
in / Path out" navigation function is integrated
into CALIGO. This enables users to program a
safe path into and back out of an interior space.
Certain features from an extensive measurement
plan or new features can be programmed quickly
and measured reliably.

Evaluation and reporting

CALYPSO makes it possible to generate CAD
result displays as false-color illustrations or with
result flags in the measurement plan. These
views can then be incorporated into a measure-
ment log. CALIGO has a library of standard
templates for fast log output. The integrated
editing module in CALIGO enables users to
design logs and templates in accordance with
corporate guidelines.
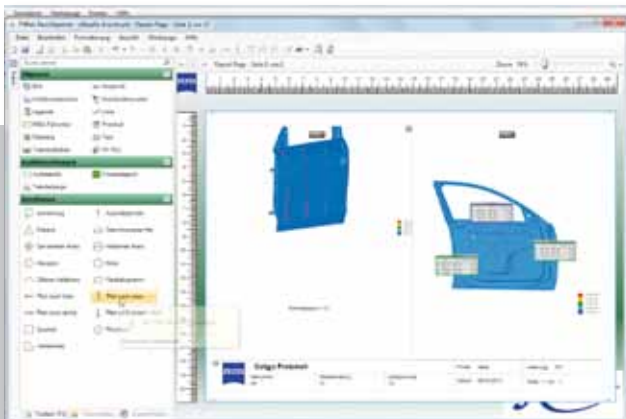
A graphic program enables
users to add to the log
and edit features using the
PiWeb BasicReporter.

Analyze, Evaluate, Process.

Web-based quality data management.

The amount of measuring and process data generated as a result of the high level of automation in production is constantly increasing. As varied as the completed products are, so too are the measuring methods and the associated data. A flexible system solution is required to make the most of this flood of data.

The PiWeb quality data management system enables the uniform evaluation and analysis of measuring and process data. You receive product-specific reports and the associated statistics quickly and easily. PiWeb enables you to analyze, evaluate and graphically display all types of quality and process data in real time around the globe.

Why PiWeb?
PiWeb helps you detect deviations in real time and react quickly. You can directly deliver corrective values to your production depart-ments. The combination of measuring and process data in one report makes correlations visible. Data on several workpieces can be summarized in one report, making weaknesses in the production process visible. Measures can be implemented where they are needed.

PiWeb consists of three modules
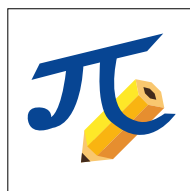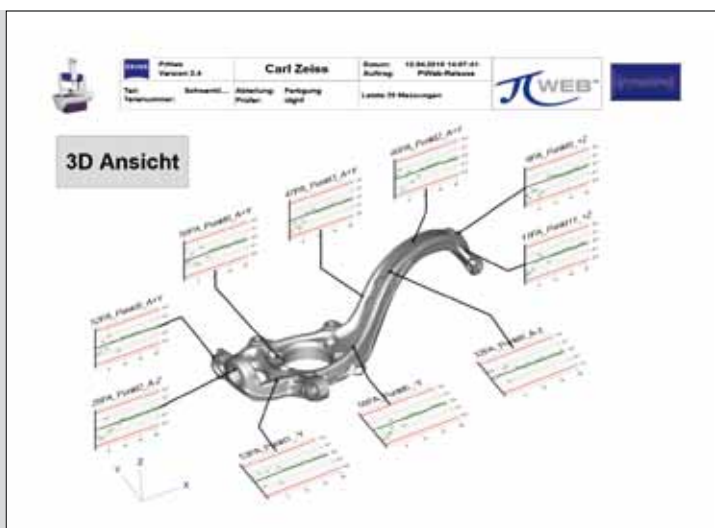
PiWeb Reporter
Customization of reports
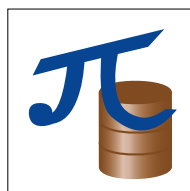
PiWeb Planner
Version history measure-ment plan management

PiWeb Monitor
Display of process-relevant data in real time

PiWeb benefits at a glance

- "Real-time Process Control" from PiWeb minimizes the time between measurement data acquisition and process evaluation.
- PiWeb processes all types of quality and process data
- Thanks to central data management with PiWeb, it is possible for the first time to perform comprehensive real-time evaluations of all data from around the globe.
- Aided by state-of-the-art web service interfaces, PiWeb permits global access to all quality and process data.
- Quality data can be uniformly evaluated regardless of the production site.
- Your reports are not equipment-specific, but production-specific.
- Potential sources of errors or existing irregularities are recognized in current production within seconds. Production tolerances can be efficiently utilized.
- PiWeb can be easily integrated into existing portals and evaluation programs. It is also possible to integrate other applications and components into PiWeb.
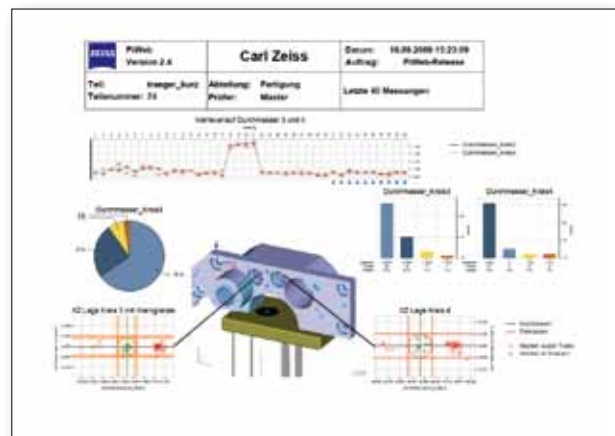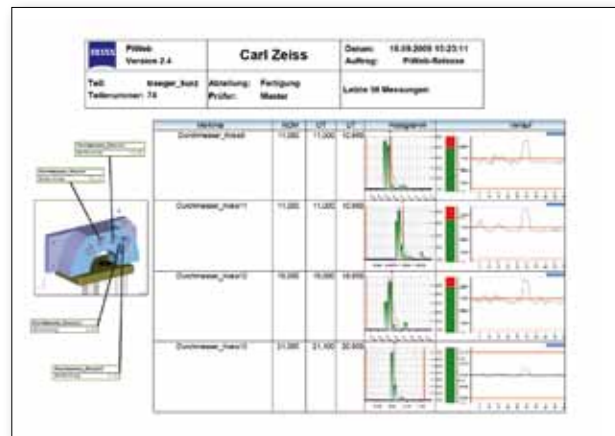
Faster from the Model to the Tool.

Reverse engineering on a coordinate measuring machine.

DIMENSION allows you to utilize Carl Zeiss measuring machines to digitize design models. DIMENSION provides CAD designers with a finished design as a data set, which they can use directly in their existing environment.

High result quality

DIMENSION generates surface descriptions or triangulations from scattered point clouds, which can then be edited in the CAD or CAD/CAM system. As a result, complex surfaces can be described with low data quantities. Unlike with traditional methods, 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 tangential and curvature-constant as possible – the requirement for optimal milling paths.

Exact determination of edge curves

The quality of the digitization process depends largely on the calculation of the edge curves. For trimmed surfaces, DIMENSION automatically calculates a surface with larger edge borders than the digitized area.

Fast insertion of part digitization

Changes can be captured with DIMENSION by means of part digitization. To calculate new surface data, the original data set, which serves as the reference surface, is merged with the measured data.

See what you measure

All flat features can be displayed in 3D, rotated, shifted and zoomed as rendered models. Light sources give the visualization an additional dimension. This enables easy evaluation of the achieved results.
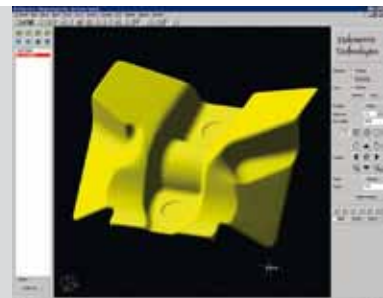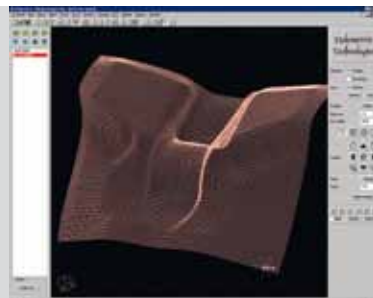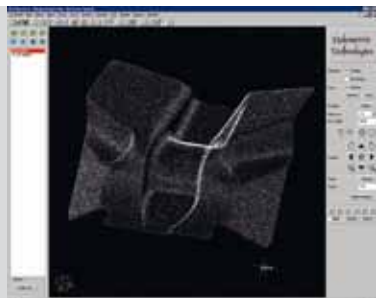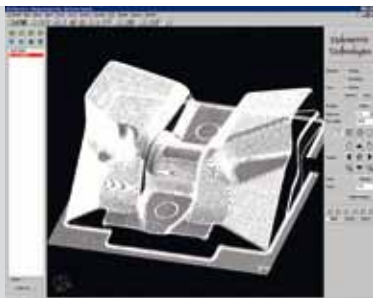
Manage Measuring Technology.

Machines, data, programs, results.

MCC

Organized information and communication management is becoming increasingly important – even in coordinate metrology. This requires technologies that enable the central organization of machines, programs, logs and expertise. Most knowledge portals and document management systems, however, are too global without optimized functions for coordinate measuring technology. This is where the Master Control Center takes over. It was specially developed for the requirements of coordinate measuring technology.

The Master Control Center is an access-protected, server-based solution for corporate intranets. Due to its intuitive operation and easy management, users do not require any training or special courses. Centrally organized metrology information is available where it is needed.

Needless to say, the Master Control Center provides the basic functions of a flexible knowledge and communication management system, including transparent, web-based user and

access management. The content can be customized and graphically displayed with a clearly arranged structure. New forums, albums and files can be added. The index-based full text search enables users to access stored data quickly and easily. Key words, authors, categories or other criteria – the full text search scans all types of documents (including PDF, Word, Excel, PowerPoint, Shockwave Flash, Text and PostScript).

The Master Control Center is modularly designed, with each module functioning as a standalone solution. As a result, investment costs can be easily calculated and the implementation can be performed step by step to meet your specific requirements.

Measuring lab 1 Location A

MCC Server

Measuring lab 2 Location B

Production

Location C

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