# THOME PRÄZISION

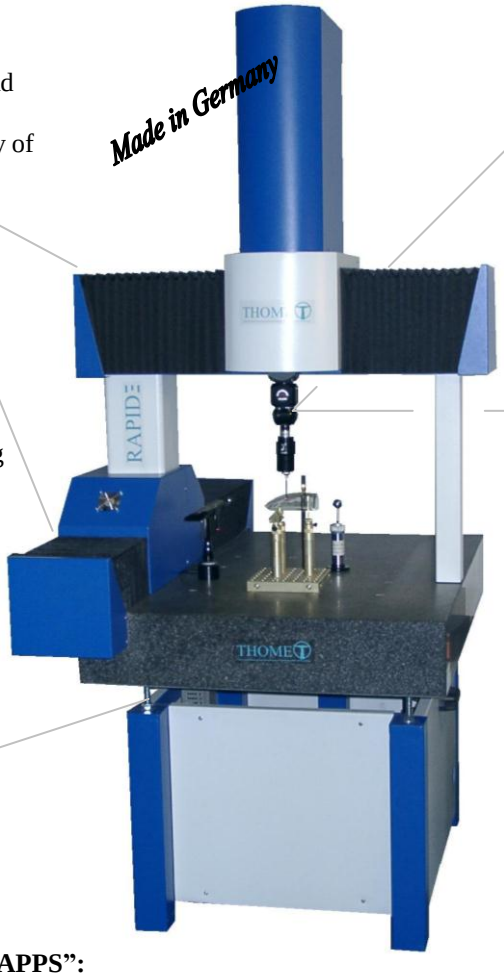
## Special offer
## 3D-Measuring Machine RAPID CNC

**Granite guide ways** of highest quality secures high thermal stability, precision and mechanical rigidity. Through the high precision of the guides and the high quality of

the surfaces the air consumption of the air bearings is minimised.
Completely encompassed guide ways optimize the repeatability of the measuring results.

**Joystick MCU Lite** from Renishaw with function keys and speed regulation.

**Double passive vibration damping** is integrated in the support frame as a standard.

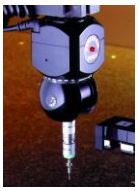



**Probe Heads from RENISHAW**

**a.) TP8**
Manual rotateable probe head for basic measurings

**b.) RTP20 Probehead**
automatical, rotate- and swingable probe head. Turns and rotate by using a ball rod

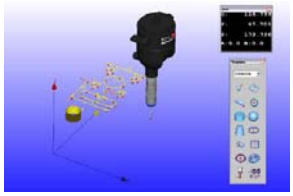
**c.) PH10T**
Motorized turn- and rotateable probe head in 7,5°.



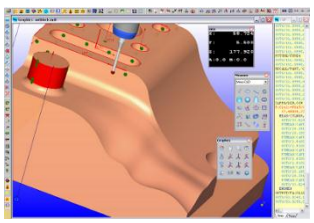
**Probe changer MCR 20**
Useable with the RTP20 for full automatic system operation. Stores up to 6 probemodules.

**10 piece stylus box.**

**User friendly inspection software "CAPPS":**



a.) **CAPPS PS**
Measuring of geometrical elements with graphical analyses. All the elements are displayed on the screen. Generate inspection reports automatically with text and graphics No CAD import available.



b.) **CAPPS BASIC Plus**
CAD import available. Measuring of geometrical elements against CAD model. Digitize and scan curves from parts. 3D graphical display of all measured and nominal features. GD&T Tolerance and Report Generation.

**Machine delivery contains:**

1. 3D-Coordinate Measuring Machine RAPID CNC - MPEe=2,2+L/350, MPEp=2,5µm
2. CNC-control unit and Joystick from RENISHAW
3. DELL PC, newest configuration, WINDOWS 7 professional, 22" TFT monitor, "ALL IN ONE" colour printer.
4. a.).Manual rotate- and swingable probe head TP8 / b.) Probe head RTP20/PH10T inclusive TP20 probe and 1 module
5. 10 piece set of M2 stylus in a box, 1 calibration ball Ø25 with M8 thread

**Further you will receive the following equipment according to your requirements:**

| | | | **Mostly Sold !** | |
|---|---|---|---|---|
| | **Rapid packet 1** | **Rapid packet 1+** | **Rapid packet 2** | **Rapid packet 3** |
| **Changer** | No | Nein | MCR20 changer | MCR20 changer |
| **Probe** | TP8 | TP8 | RTP20 | PH10T |
| **Software** | CAPPS PS | CAPPS BASIC Plus | CAPPS BASIC+ | CAPPS BASIC+ |
| **Measuring area 700x500x400mm** | **29.990 €** | **32.490 €** | **36.990 €** | **45.990 €** |
| **Order-No.:** | P754CN-PS-TP8-uk | P754CN-BP-TP8 | P754CN-BP-RTP-uk | P754CN-BP-PH10-uk |

***Prices are Ex work / Training, installation, travel expenses are not included / Warranty period: 12 months.**
**The Offer is valid until 30.06.2013.**

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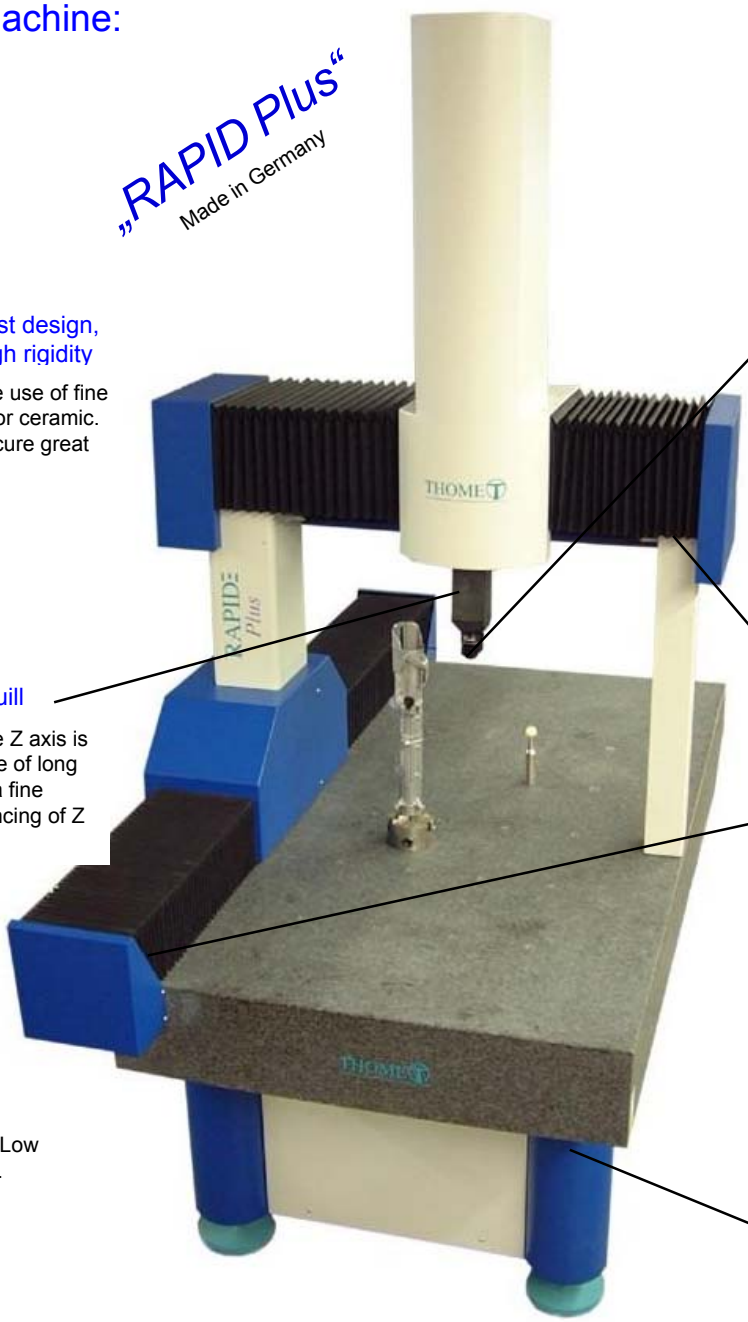
# THOME PRÄZISION

## 3D-measuring machine “RAPID/RAPID Plus” CNC

### Merits of our machine:




**Highest precision, robust design, thermal stability and high rigidity**

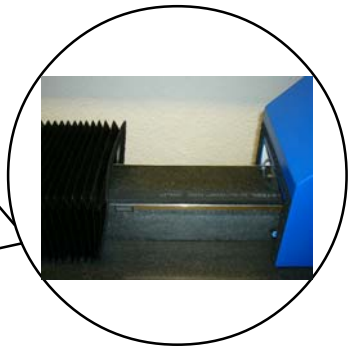
It is achieved thanks to the use of fine materials such as granite or ceramic. Optimised air bearings secure great mechanic precision.

**Modern, flexible contact systems**

All reading systems may be used (contact, optic and scanning) by Renishaw as well as the respective change units of modules. Plane or point laser may be used.

**Great diameter of the quill**

Thus the rotation round the Z axis is prevented. Ideal for the use of long contact tips. Besides that a fine controlled pneumatic balancing of Z axis weight.



**Enclosed guiding route**

Protection against damage and direct temperature impacts.

**Belt drive at all axes**

High rigidity and low wear. Low maintenance requirements.

**Double passive dampening of vibrations**

Integrated directly in the machine frame. Thus the machine may be suitably positioned close to production. Active vibration dampening by pneumatic spring insulators also possible.

- Calculated sections guarantee highest rigidity, dynamism and constant precision
- Guiding parts of natural granite of the highest quality secure protection against temperature impacts on guidance precision and long-term stability
- Besides high precision the optimised air bearings also guarantee fluent operation with low wear and vibration damping
- Compensation of quill weight by precision controlled pneumatic cylinder
- Systems of distance measuring: photoelectric light system by RENISHAW
- Resolution 0.0005 mm
- Feed speed max. 530 mm/s
- Acceleration max. 1400 mm/s

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# THOME PRÄZISION

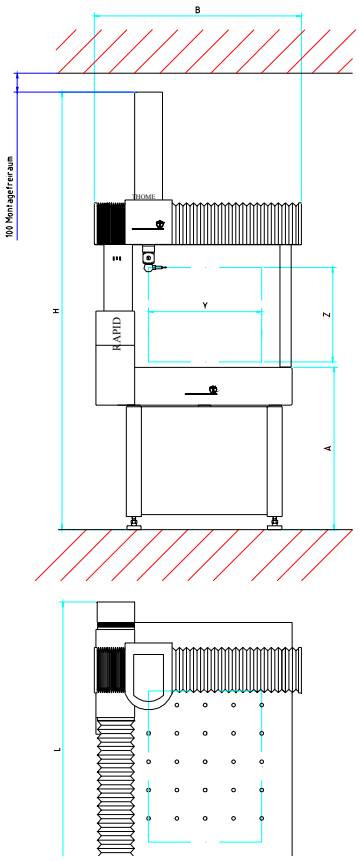
## 3D-measuring machine “RAPID/RAPID Plus” CNC

### Flexibility of measuring range in all axes

Our coordinate measuring machines RAPID / RAPID Plus are characterised by the highest precision, compactness and low maintenance demands. The machines come equipped with precise optimized granite guides. Ceramic guides of the highest quality may be supplied on request. In this way the measuring machine acquires dynamics and rigidity. Thermal stability and high guiding precision provide for the most precise measuring results even without substitution of software compensation. Double passive vibration absorbers are standardly integrated in machines. Machines can be delivered with pneumatic spring insulators upon customer’s request. This allows dampening of especially low frequency oscillations.

### Reliability and precision for top price

Air bearings are enclosed as standard. Thus the guides are protected against damage, dirt and direct temperature impact. High-dynamic servo-motors and highly rigid belt drives guarantee optimal positioning behaviour. These factors make our machines ideal for scanning. Our machine design system enables various combinations of axes lengths. We shall be pleased to make a machine according to your individual requirements.



## Technical data:

| Measuring Area | RAPID | | | | RAPID Plus | | | |
|---|---|---|---|---|---|---|---|---|
| X-Axis [mm] | 600 | 700 | 800 | 900 | 800 | 1000 | 1200 | 1500 |
| Y-Axis [mm] | 500 | | | | 600 / 700 | | | |
| Z-Axis [mm] | 400 | | | | 500 / 600 | | | |
| Weight [kg] | 550 | 600 | 800 | 950 | 1100 for Y=600 1250 for Y=700 | 1300 for Y=600 1500 for Y=700 | 1500 for Y=600 1750 for Y=700 | 1700 for Y=600 2000 for Y=700 |
| Max.workpiece weight [kg] | 450 | 480 | 500 | 550 | 550 | 600 | 650 | 700 |
| Length [mm] | 1360 | 1460 | 1560 | 1660 | 1681 | 1881 | 2081 | 2381 |
| Width [mm] | 1035 | | | | (for y 600) 1171, (for y 700) 1271 | | | |
| Height (H) [mm] | 2235 | | | | 2460 / 2660 | | | |
| Table height (A) [mm] | 800 | | | | | | | |
| Measuring accuracy[µm] | according to ISO 10360-2: MPEE=2,2 + (L/350) ; MPEP=2,2 with TP200 | | | | | | | |
| Resolution | 0,0005mm | | | | | | | |
| Calibration speed<br>Max. speed<br>Max. acceleration | 0 to 80mm/s<br>max. v = 530mm/s<br>a = 1400mm/s² | | | | | | | |
| Temperature necessary to secure accuracy | 20°C +/-2°C, max. 1°C / hour, 1,5°C / day | | | | | | | |
| Air consumption | 25l/min, pre-cleaned air - quality according to ISO 8573 class 2 | | | | | | | |

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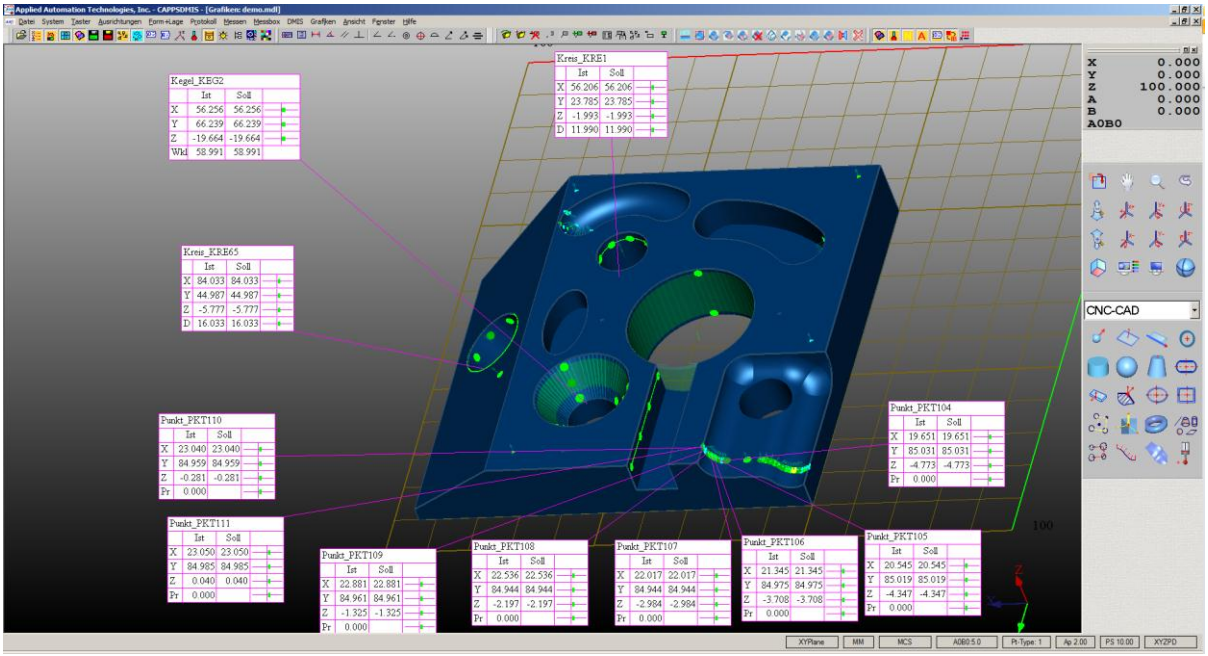
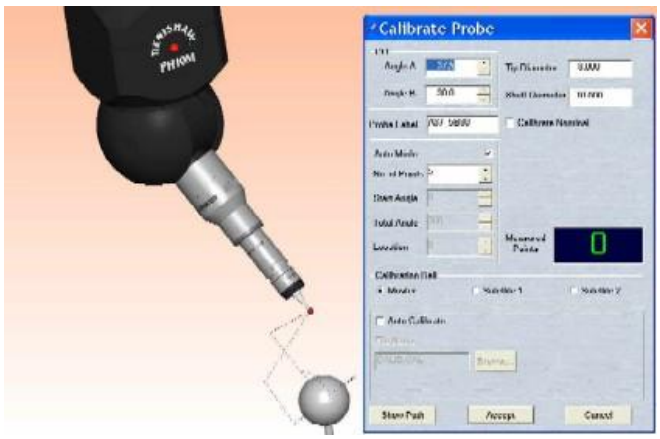
# THOME PRÄZISION

## Powerful inspection Software CAPPS

CAPPS was developed to be an upwardly mobile metrology software with a strong graphics engine, complete CAD capability, a powerful programming language with DMIS and tree view structure as well as a flexible reporting environment. With over 20 years of evolution, CAPPS has been one of the leader in CAD based measurement software. CAPPS offers several software levels serving specific needs of customers.
CAPPS is available in 3 separate versions. Each designed to meet the particular needs of its users.






## CAPPS PS (Powerfully Simple)

Measurement of all standard geometric entities: **POINT, PLANE, LINE, CIRCLE, SPHERE, CYLINDER, CONE, ELLIPSE, TORUS, EDGE, SLOT, ANGLEPT, CORNER POINT without any need for CAD/CAM data**.
Automatic feature detection during manual measurement.
Constructions of geometric and user defined entities: **BESTFIT, INTERSECT, MIDFEAT, TANGENT, PERPENDICULAR, PARELLEL, PROJECT, MOVE**.
GD&T Tolerance and Report Generation: All geometric **FORMS, DISTANCE, ANGLE, PARALLELISM, PERPENDICULARITY, ANGULARITY, TRUE POSITION, PROFILE, RUNOUT**.
Alignment options: **SETUP, TRANSLATE, ROTATE, MIRROR, SAVE, RECALL**.
Probe Calibrations: Automatic probe calibrations, for fixed or indexable probe heads.

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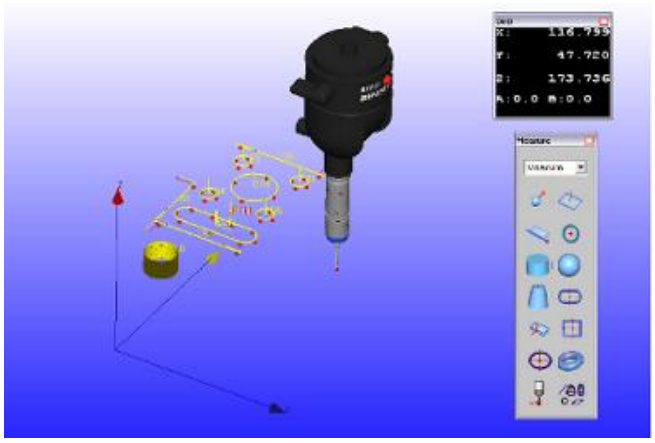
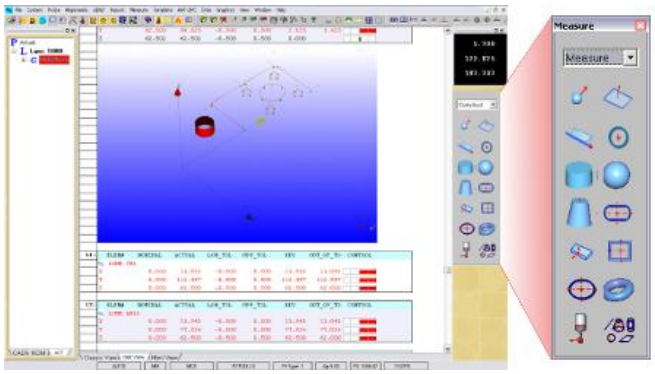
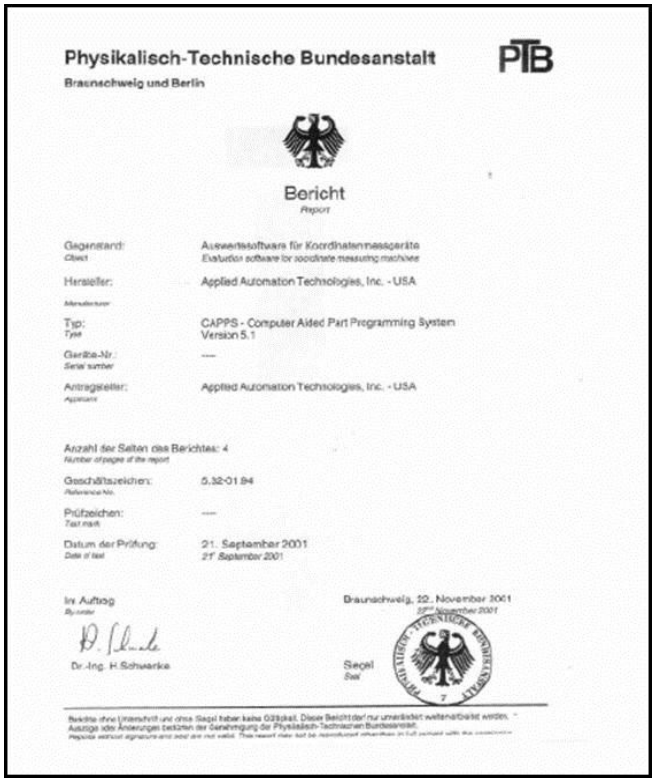




Advanced alignment options: MGP, Simple 3-2-1 alignment macro for fixtureless parts.
Teach part programs in DMIS language
Programming window in DMIS or TREE view.
Execute programs: LOOP, Automatic, Manual, User prompts
Generate inspection reports automatically with text and graphics
Update inspection reports for different ALIGNMENT, TOLERANCE
Insert Bitmaps,Re-Synchronize Labels in the Report Window.
Save inspection programs, inspection projects and measured data.
3D graphical display of all measured and nominal features.
Real time display of PROBE, Coordinate Systems, Calibration sphere in 3D
Configurable and programmable view commands
Graphical User Interface includes menus and toolbars.
3D graphics interface with easy to use short keys and toolbars.
This software can be updated to advanced Level which includes CAD Interface



Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

PTB

Bericht

Report

Gegenstand: Auswertesoftware für Koordinatenmessgeräte

Hersteller: Applied Automation Technologies, Inc. - USA

Typ: CAPPS - Computer Aided Part Programming System
Version 5.1

Anzahl der Seiten des Berichtes: 4

Geschäftszeichen: 5.32-01.84

Prüfzeichen: ---

Datum der Prüfung: 21. September 2001

Im Auftrag

Dr.-Ing. H.Schwarke

Braunschweig, 22. November 2001

Siegel

| THOME PRÄZISION | Datum:28.9.2012<br>Zeit:14:40:49<br>KMG:Demopart | Anwender:M. Thome<br><br>Teilename:123 | Teil Nr.:567<br><br>Kommentar:Demo |
|---|---|---|---|

| ELEM# | SOLLWERT | ISTWERT | U_TOL | O_TOL | ABW | AUSSERH. | TENDENZ |
|---|---|---|---|---|---|---|---|
| EBENE EBE1 [MCS] | | | | | | | |
| Ebenheit | | 0.011 | | 0.020 | | | |
| DEMO ** DEMO ** DEMO** Demo Software | | | | | | | |

| ELEM# | SOLLWERT | ISTWERT | U_TOL | O_TOL | ABW | AUSSERH. | TENDENZ |
|---|---|---|---|---|---|---|---|
| Innen KREIS KRE1 [WKS1-MT] Hallo Klaus | | | | | | | |
| X | 56.210 | 56.209 | -0.200 | 0.200 | -0.001 | | |
| Y | 23.790 | 23.781 | -0.200 | 0.200 | -0.009 | | |
| Dur | 12.000 | 12.009 | -0.050 | 0.050 | 0.009 | | |
| Rundheit | | 0.018 | | 0.050 | | | |
| DEMO ** DEMO ** DEMO** Demo Software | | | | | | | |

| ELEM# | SOLLWERT | ISTWERT | U_TOL | O_TOL | ABW | AUSSERH. | TENDENZ |
|---|---|---|---|---|---|---|---|
| Innen KEGELKEG1 | | | | | | | |
| X | 56.213 | 56.196 | -0.200 | 0.200 | -0.017 | | |
| Y | 66.213 | 66.195 | -0.200 | 0.200 | -0.018 | | |
| Angle | 60.000 | 60.175 | -0.200 | 0.200 | 0.175 | | |
| Form | | 0.004 | | 0.050 | | | |
| DEMO ** DEMO ** DEMO** Demo Software | | | | | | | |

| ELEM# | SOLLWERT | ISTWERT | U_TOL | O_TOL | ABW | AUSSERH. | TENDENZ |
|---|---|---|---|---|---|---|---|
| PUNKT PKT1 [WKS1-MT] | | | | | | | |
| X | 3.058 | 3.145 | -0.200 | 0.200 | 0.087 | | |
| Y | 52.134 | 52.110 | -0.200 | 0.200 | -0.024 | | |
| Prof | | -0.000 | -0.025 | 0.025 | | | |
| DEMO ** DEMO ** DEMO** Demo Software | | | | | | | |

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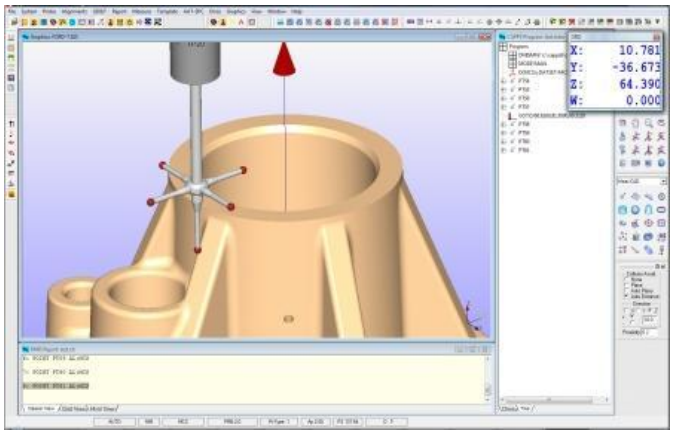

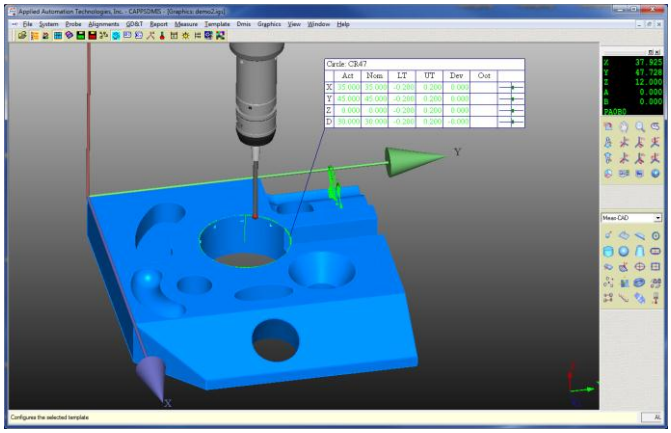

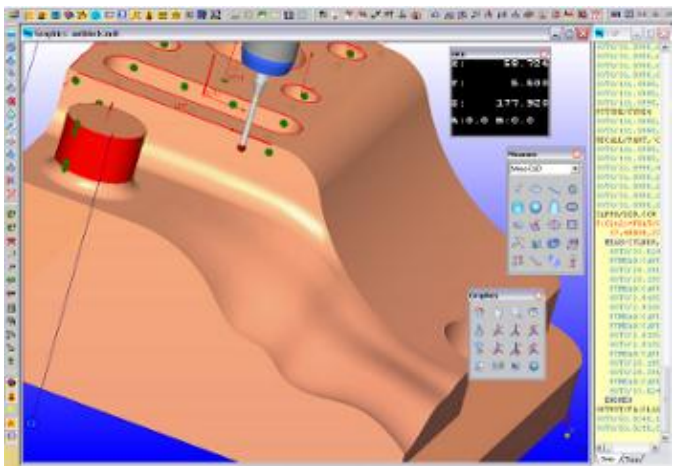

## CAPPS-BASIC+

Measurement of all standard geometric entities: **POINT, PLANE, LINE, CIRCLE, SPHERE, CYLINDER, CONE, ELLIPSE, TORUS, EDGE, SLOT, ANGLEPT, CORNER POINT, CURVES, SURFACES.**

Automatic feature detection during manual measurement.

Constructions of geometric and user defined entities: **BESTFIT, INTERSECT, MIDFEAT, TANGENT, PERPENDICULAR, PARELLEL, PROJECT, MOVE.**

GD&T Tolerance and Report Generation: All geometric **FORMS, DISTANCE, ANGLE, PARALLELISM, PERPENDICULARITY, ANGULARITY, TRUE POSITION, PROFILE, RUNOUT.**

Alignment options: **SETUP, TRANSLATE, ROTATE, MIRROR, SAVE, RECALL.**

Probe Calibrations: Automatic probe calibrations, for fixed or indexable probe heads.

Advanced alignment options: MGP, Simple 3-2-1 alignment macro for fixtureless parts.

Advanced alignment macros: CAD-MGP, 3D SMART 321

- Import **Wire-Frame** CAD models from IGES and STEP: Wire frame, surface or Solid models.
- Teach part programs in DMIS language
- Programming window in DMIS or TREE view.

Standard DMIS Engine: Create Part Programs in Native DMIS Language with advanced Capps-DMIS Commands, variable and macro support.

- Execute programs: LOOP, Automatic, Manual, User prompts
- Generate inspection reports automatically with text and graphics
- Update inspection reports for different ALIGNMENT, TOLERANCE
- Insert Bitmaps,Re-Synchronize Labels in the Report Window.
- Save inspection programs, inspection projects and measured data.
- 3D graphical display of all measured and nominal features.
- Real time display of PROBE, Coordinate Systems, Calibration sphere in 3D
- Configurable and programmable view commands
- Graphical User Interface includes menus and toolbars.
- 3D graphics interface with easy to use short keys and toolbars.

Advanced Nominal Data extraction for geometrical

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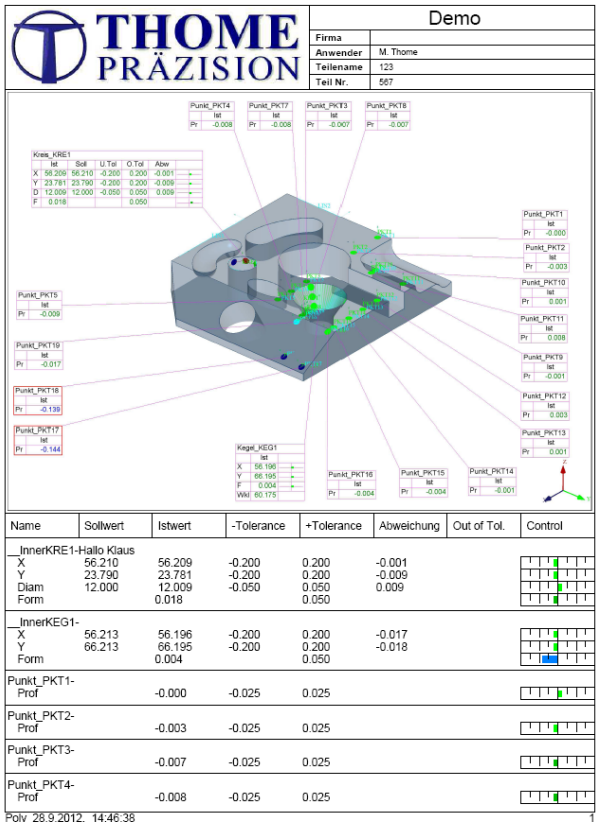


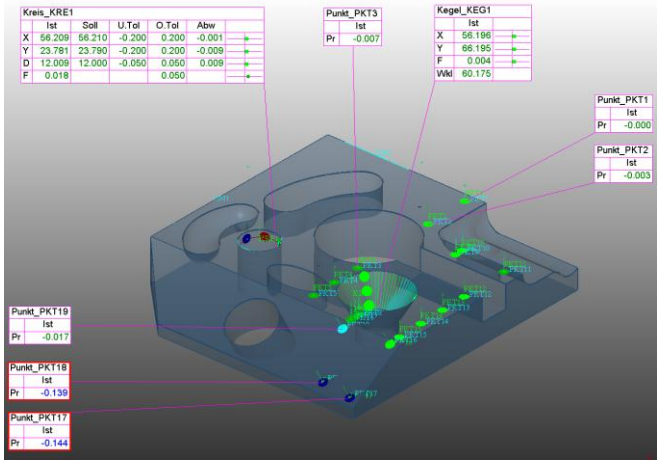

features from wire-frame only.
Added AAT-AUTOCAL Creator Module: Create Probe List Files, Mirror Probe Angles, Configure Probe Labels and Probe Lengths and simulate and calibrate Probes in DCC Mode.
AAT MDL Creator Module: Automatic translation of CAD files into
CAPPS with a choice of different levels of shading quality.
CURVES:

- Digitize and scan curves from parts
- Create NURB spline data from scanned data
- Export all measured data into IGES model

Measure-CAD: Automatic measurement in Learn Mode.

- Create automatic probing paths and measured any geometrical features
- Teach measurement paths from CAD data and measure automatically

Sheet Metal Feature measurement commands.
RELATIVE measurement commands for SLOT, HOLE, BOSS, EDGE and TRIM Points
Hole Search and Locate options to measure small holes with large deviations
Layer and color tree view for all data, CAD, Actual, Nominals and DMIS.
Offline Programming and Program Simulation Tools
Create nominal probe calibration commands and Create DMIS programs to automate Master Ball Measurement and Probe Calibration Routine.
Accelerated part programming with Large/Multiple CAD files
EXCEL and WEB HTML export with report files
Advanced Scanning and Digitizing methods




## CAPPS-ADVANCED

**MEASUREMENT OPTIONS:**

- Measurement of all standard geometric entities: **POINT, PLANE, LINE, CIRCLE, SPHERE, CYLINDER, CONE, ELLIPSE, TORUS, EDGE, SLOT, ANGLEPT, CORNER POINT, CURVES, SURFACES.**
- Automatic feature detection during manual measurement.
- Constructions of geometric and user defined entities: **BESTFIT, INTERSECT, MIDFEAT, TANGENT, PERPENDICULAR, PARELLEL, PROJECT, MOVE.**
- GD&T Tolerance and Report Generation: All geometric **FORMS, DISTANCE, ANGLE, PARALLELISM, PERPENDICULARITY,**

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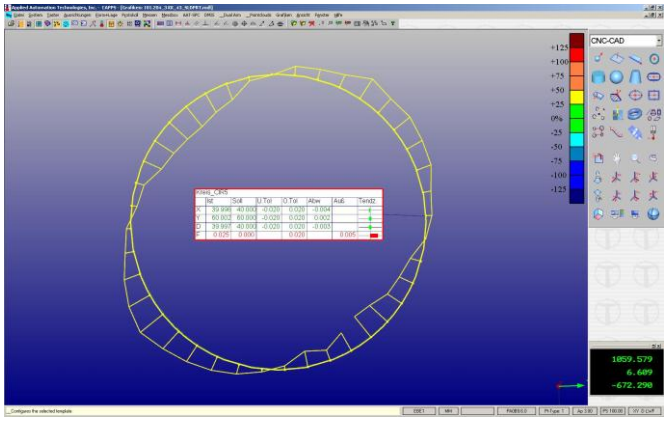

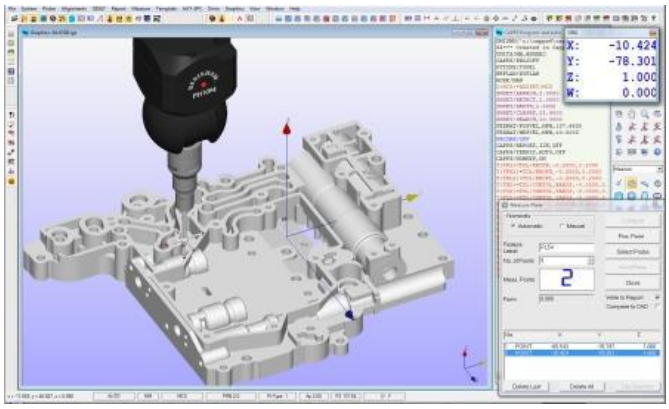

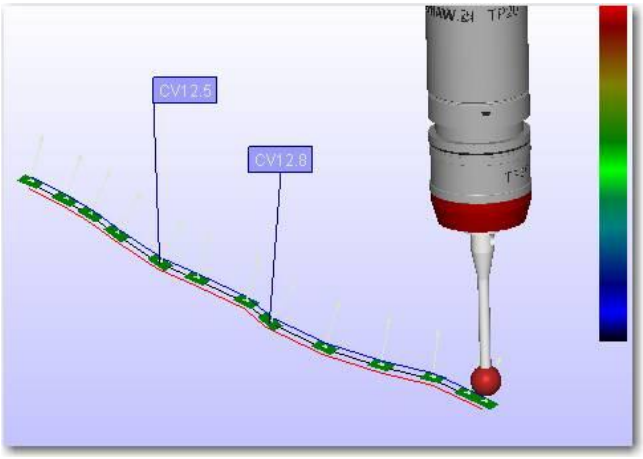


**ANGULARITY, TRUE POSITION, PROFILE, RUNOUT, SYMMETRY.**

- Automatic feature detection of any feature.
- Sheet metal relative measurement commands, hole search and locate options.
- Vector build and automatic path correction.
- Material thickness, part shrinkage options.

**CURVE & SURFACE OPTIONS:**

- Create surface sections by cutting surface at body lines.
- Grid Points Generation of U-V lines on surfaces.
- Measure points on all or selected surfaces
- Generate nominal data for points or geometrical on surface models
- Create wire-frame from surface data
- Automatically create all nominal data from surfaces
- Extract nominal data for points and geometry during manual measurement
- Options to extend and offset surfaces
- Generate data on surfaces at trim lines

**ALIGNMENTS:**

- Alignment options: SETUP, **TRANSLATE, ROTATE, MIRROR, SAVE, RECALL**.
- Advanced alignment options: **MGP, 3-2-1, 3D Bestfit**.
- Iterative alignments with iteration on CAD or by re-measuring part
- Apply alignment on CAD models

**PROBE CALIBRATIONS:**

- Automatic probe calibrations, for fixed or index able probe heads.
- Works with PH10, Manual indexable heads, MH20i, RTP20
- Analog probe calibrations for SP25, SP600, SP80
- Automatic probe definitions using probe model files.
- Support for star stylus configurations
- Extract probe calibration data from DMIS to auto calibrate.
- Calibrate probes in the middle of programs or executions.
- Auto calibrate using DMIS program
- Support for MCR, SCR, FCR, ACR tool changers using tool/tip changer option.

**CAD IMPORT OPTIONS:**

- Import CAD models from IGES and STEP: Wire frame, surface or Solid models.
- Direct CAD import options available for CATIA, UG, ProE, Parasolid, VDA at extra charge

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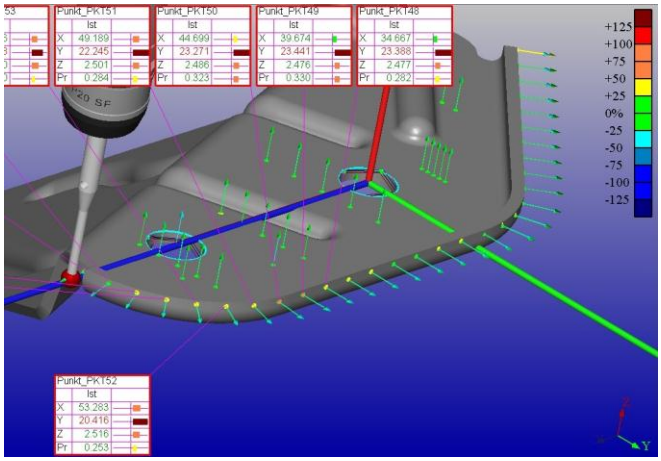
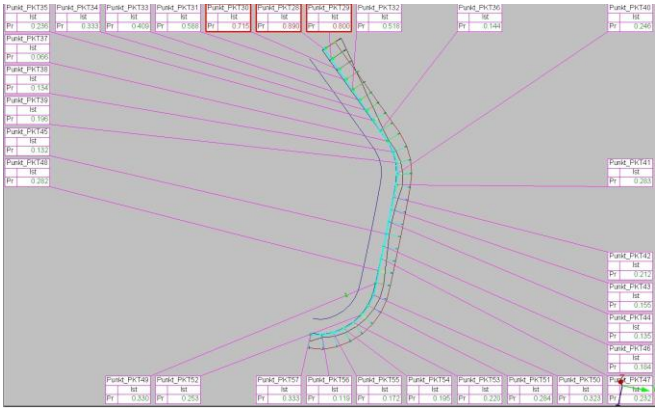
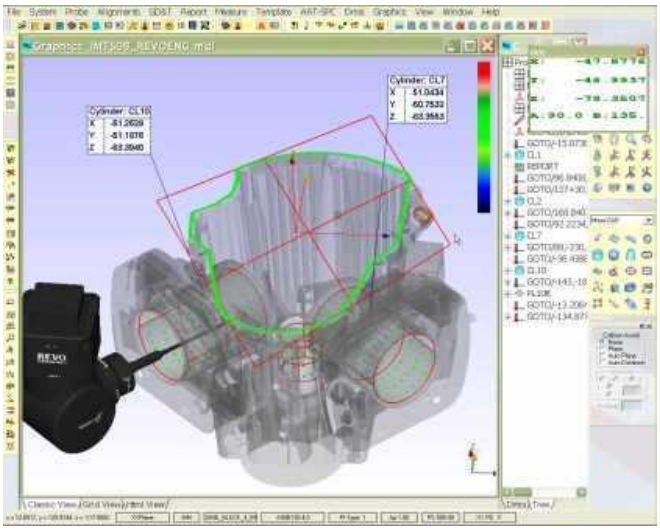
# THOME PRÄZISION







- Teach part programs in DMIS language from CAD or accept CMM programs in DMIS language
- Layer and color tree view for all data, CAD, Actual, Nominals and DMIS.
- Ability crate layers, colors, hide or delete.
- Change CAD model alignments, mirror and copy.
- Save imported models into AAT MDL format or export to IGES, or STEP.

**PROGRAMMING OPTIONS:**

- Automatic point and click on surfaces to measure any point
- Group many features to generate automatic measurement routines
- Measure 2D features automatically by graphically adjusting measurement parameters.
- Real time display of programming window in DMIS or TREE view.
- **Advanced Collision Detection:** Detect and Avoid possible part
- collision. Automatically insert clearance points to avoid collision
- Offline Programming and Program Simulation Tools
- Teach part programs in DMIS language
- Programming window in DMIS or TREE view.
- Real time display of programming window in DMIS or TREE view.

Standard DMIS Engine: Create Part Programs in Native DMIS Language with advanced Capps-DMIS Commands, variable and macro support.

- Execute programs: LOOP, Automatic, Manual, User prompts
- Generate inspection reports automatically with text and graphics
- Update inspection reports for different ALIGNMENT, TOLERANCE
- Insert Bitmaps,Re-Synchronize Labels in the Report Window.
- Save inspection programs, inspection projects and measured data.
- 3D graphical display of all measured and nominal features.
- Real time display of PROBE, Coordinate Systems, Calibration sphere in 3D
- Configurable and programmable view commands
- Graphical User Interface includes menus and toolbars.
- 3D graphics interface with easy to use short keys and toolbars.

Advanced Nominal Data extraction for geometrical

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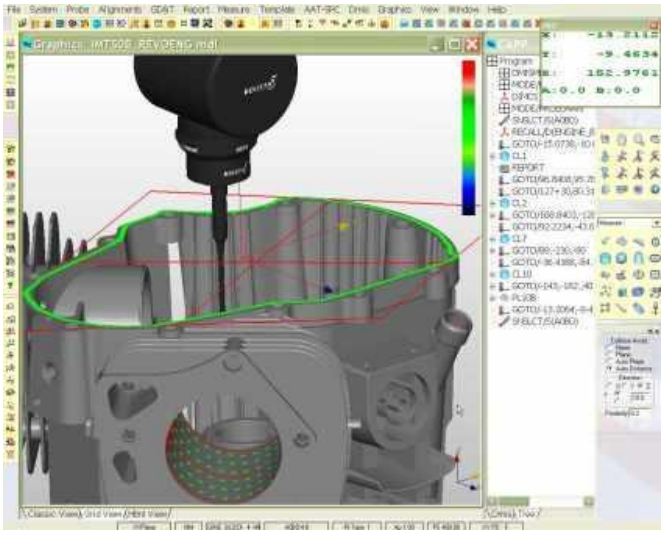

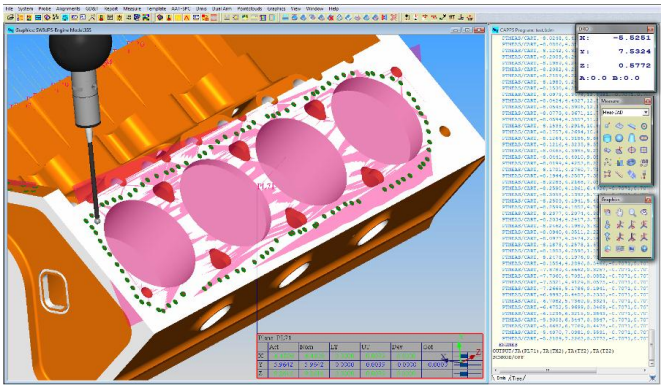

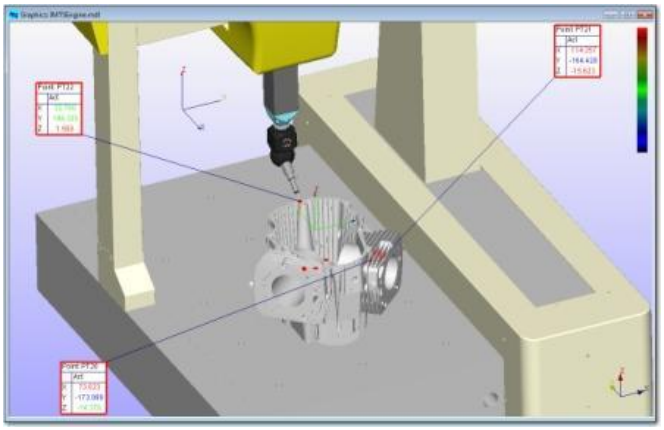

features.

Added AAT-AUTOCAL Creator Module: Create Probe List Files, Mirror Probe Angles, Configure Probe Labels and Probe Lengths and simulate and calibrate Probes in DCC Mode.

AAT MDL Creator Module: Automatic translation of CAD files into CAPPS with a choice of different levels of shading quality.

SURFACE OPTIONS:

- Create surface sections by cutting surface at body lines.
- Grid Points Generation of U-V lines on surfaces.
- Measure points on all or selected surfaces
- Generate nominal data for points or geometrical on surface models
- Create wire-frame from surface data
- Automatically create all nominal data from surfaces
- Extract nominal data for points and geometry during manual measurement
- Automatically recognize geometry from surfaces during measurements

CURVES:

- Digitize and scan curves from parts
- Create NURB spline data from scanned data
- Export all measured data into IGES model

Measure-CAD: Automatic measurement in Learn Mode.

- Create automatic probing paths and measured any geometrical features
- Teach measurement paths from CAD data and measure automatically

Sheet Metal Feature measurement commands. RELATIVE measurement commands for SLOT, HOLE, BOSS, EDGE and TRIM Points

Hole Search and Locate options to measure small holes with large deviations
Collision Detection: Detect and Avoid possible part collision. Automatically insert clearance points to avoid collision
Confetti Style Reporting for molds and dies with multi color reports.
Layer and color tree view for all data, CAD, Actual, Nominals and DMIS.
Offline Programming and Program Simulation Tools

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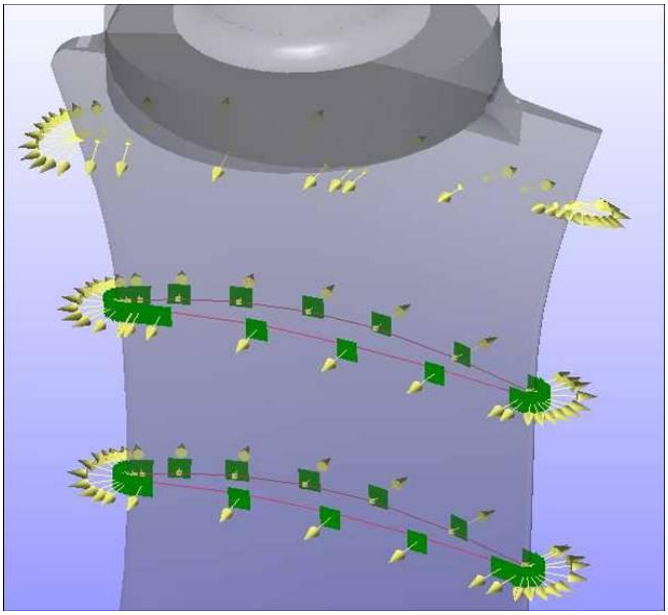
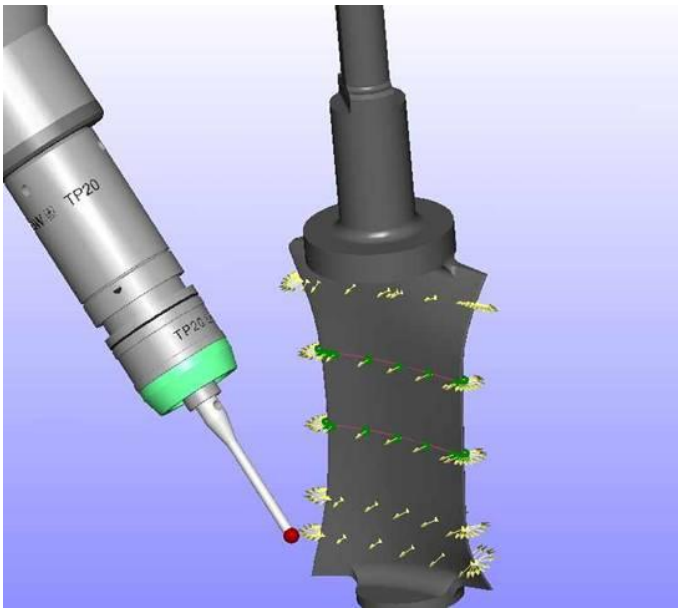
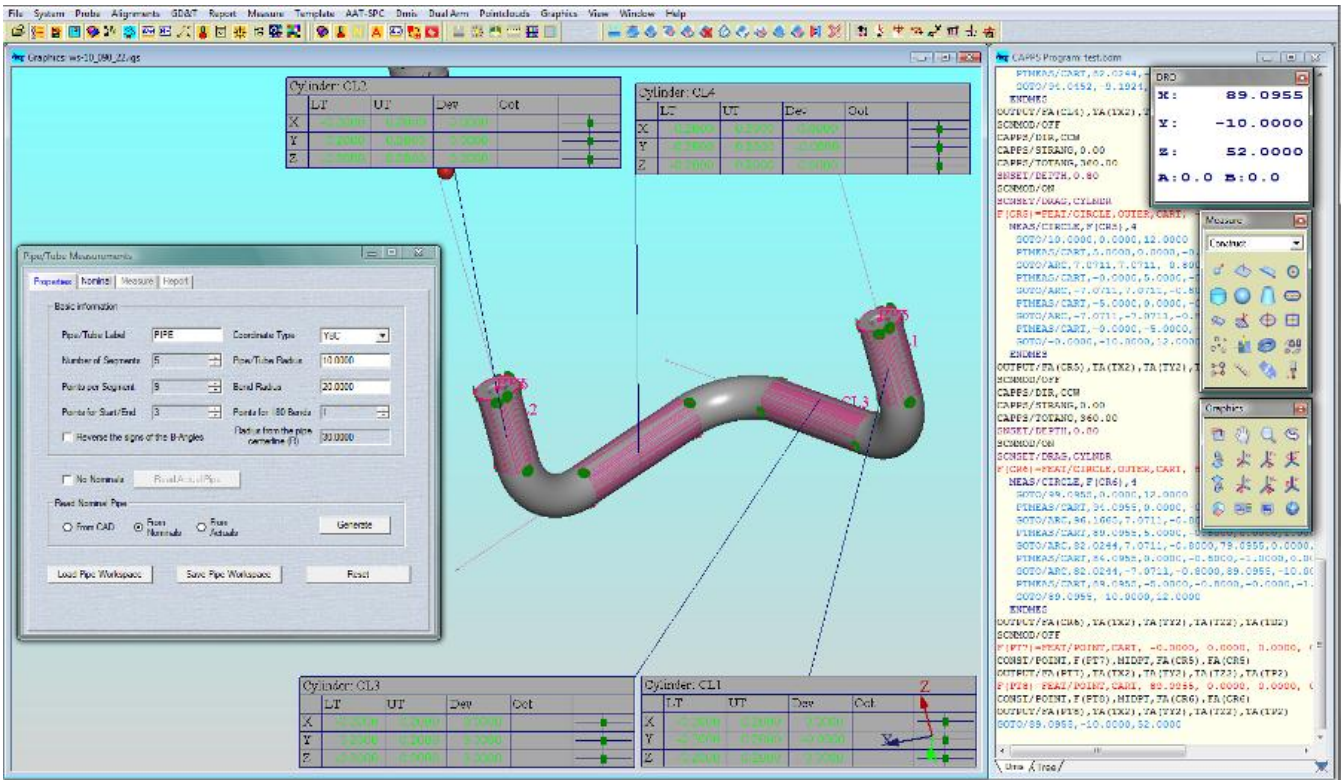
# THOME PRÄZISION

Graphical report generation with templates.
Create nominal probe calibration commands and Create DMIS programs to automate Master Ball Measurement and Probe Calibration Routine.
Accelerated part programming with Large/Multiple CAD files
Advanced CAD options of interface with rendering
Support of multiple CAD Interfaces (IGES, STEP are standard)
EXCEL and WEB HTML export with report files
Advanced Scanning and Digitizing methods





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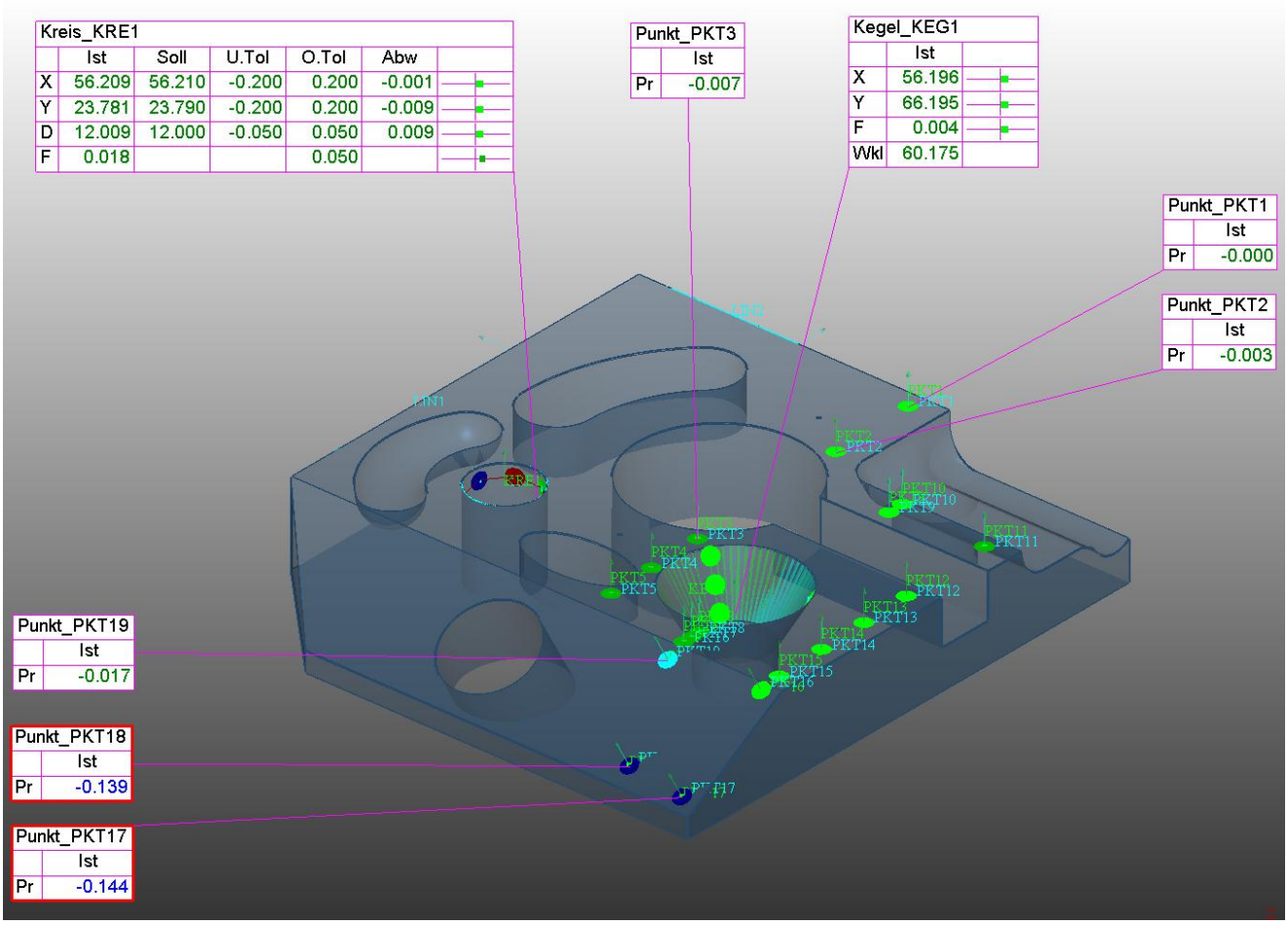


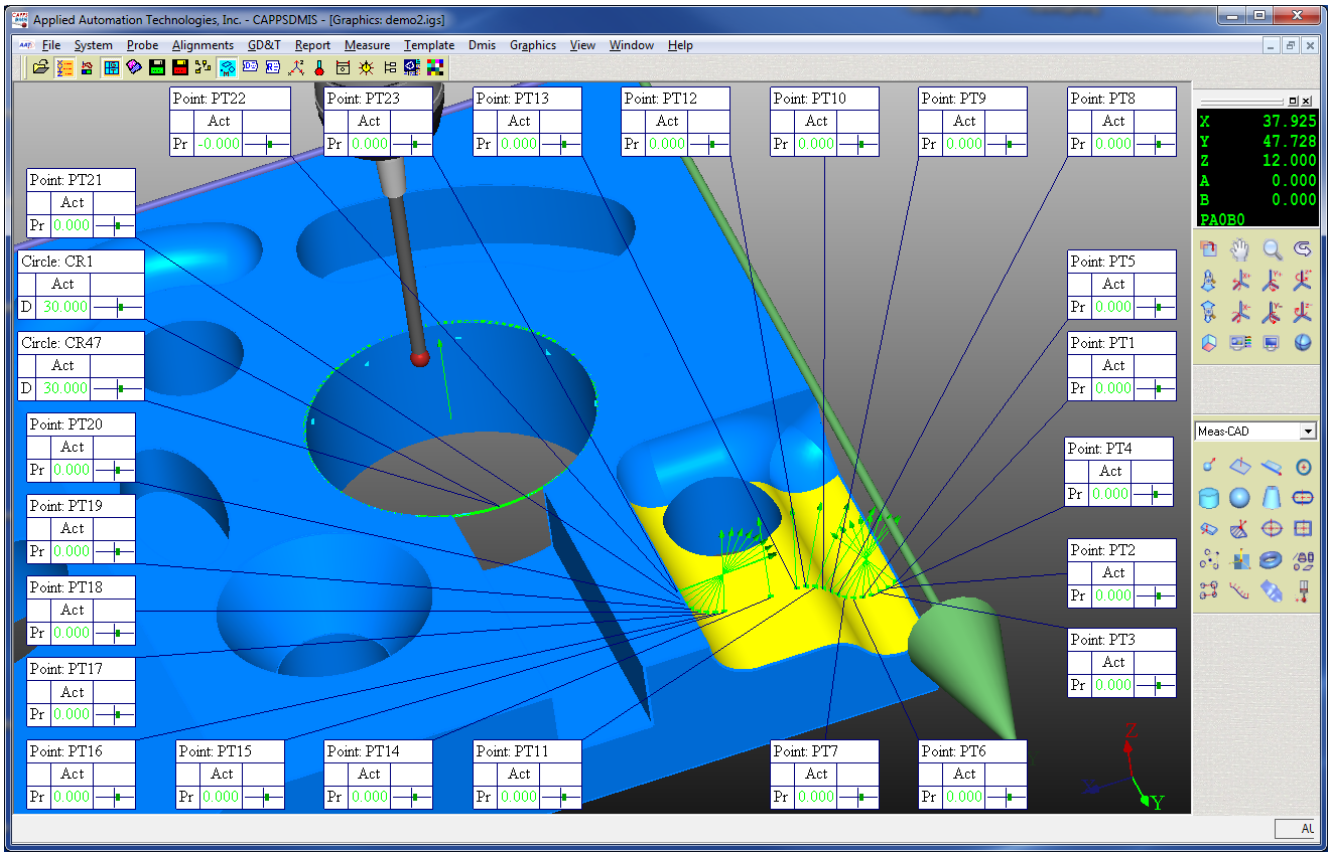


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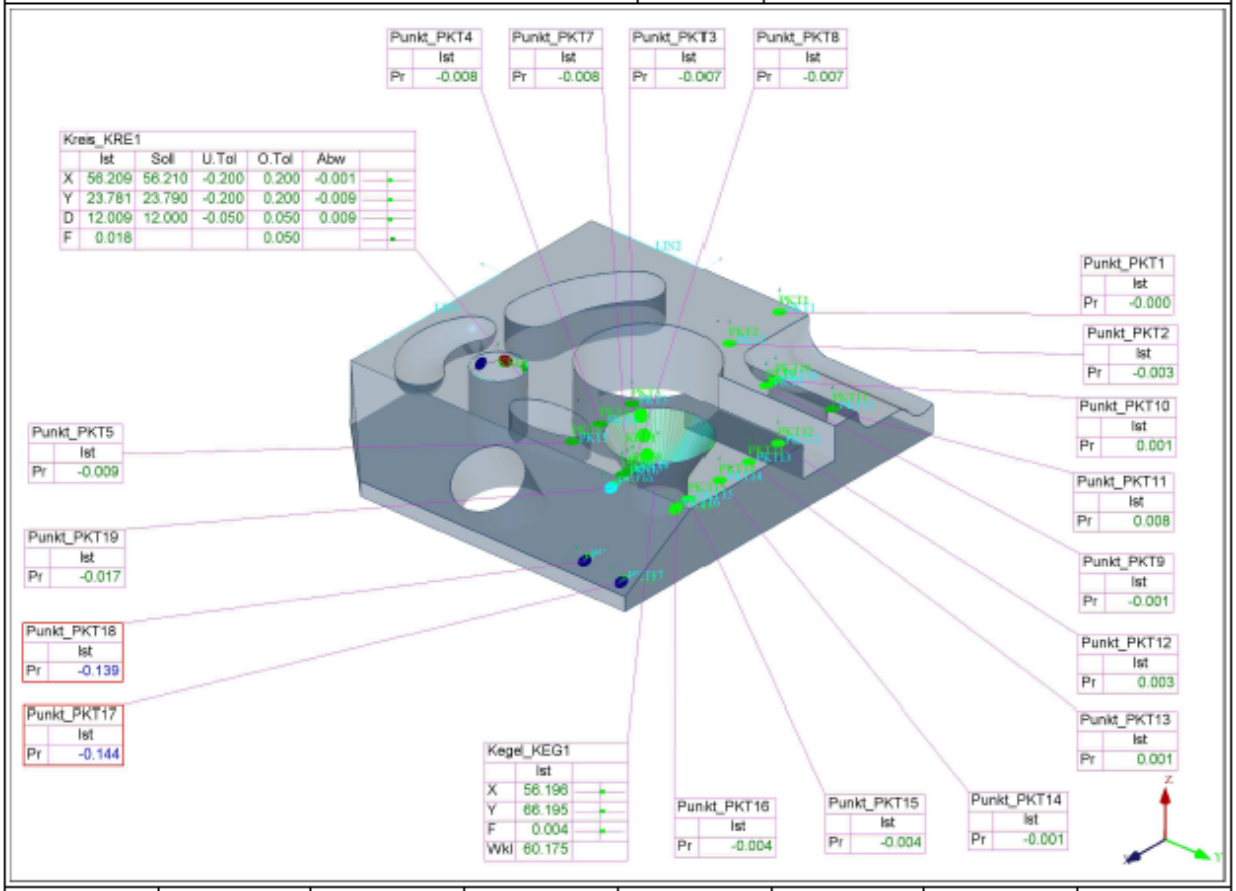
# THOME PRÄZISION

THOME PRÄZISION

| Demo | |
|---|---|
| Firma | |
| Anwender | M. Thome |
| Teilename | 123 |
| Teil Nr. | 567 |




| Name | Sollwert | Istwert | -Tolerance | +Tolerance | Abweichung | Out of Tol. | Control |
|---|---|---|---|---|---|---|---|
| __InnerKRE1-Hallo Klaus | | | | | | | |
| X | 56.210 | 56.209 | -0.200 | 0.200 | -0.001 | | |
| Y | 23.790 | 23.781 | -0.200 | 0.200 | -0.009 | | |
| Diam | 12.000 | 12.009 | -0.050 | 0.050 | 0.009 | | |
| Form | | 0.018 | | 0.050 | | | |
| __InnerKEG1- | | | | | | | |
| X | 56.213 | 56.196 | -0.200 | 0.200 | -0.017 | | |
| Y | 66.213 | 66.195 | -0.200 | 0.200 | -0.018 | | |
| Form | | 0.004 | | 0.050 | | | |
| Punkt_PKT1- | | | | | | | |
| Prof | | -0.000 | -0.025 | 0.025 | | | |
| Punkt_PKT2- | | | | | | | |
| Prof | | -0.003 | -0.025 | 0.025 | | | |
| Punkt_PKT3- | | | | | | | |
| Prof | | -0.007 | -0.025 | 0.025 | | | |
| Punkt_PKT4- | | | | | | | |
| Prof | | -0.008 | -0.025 | 0.025 | | | |



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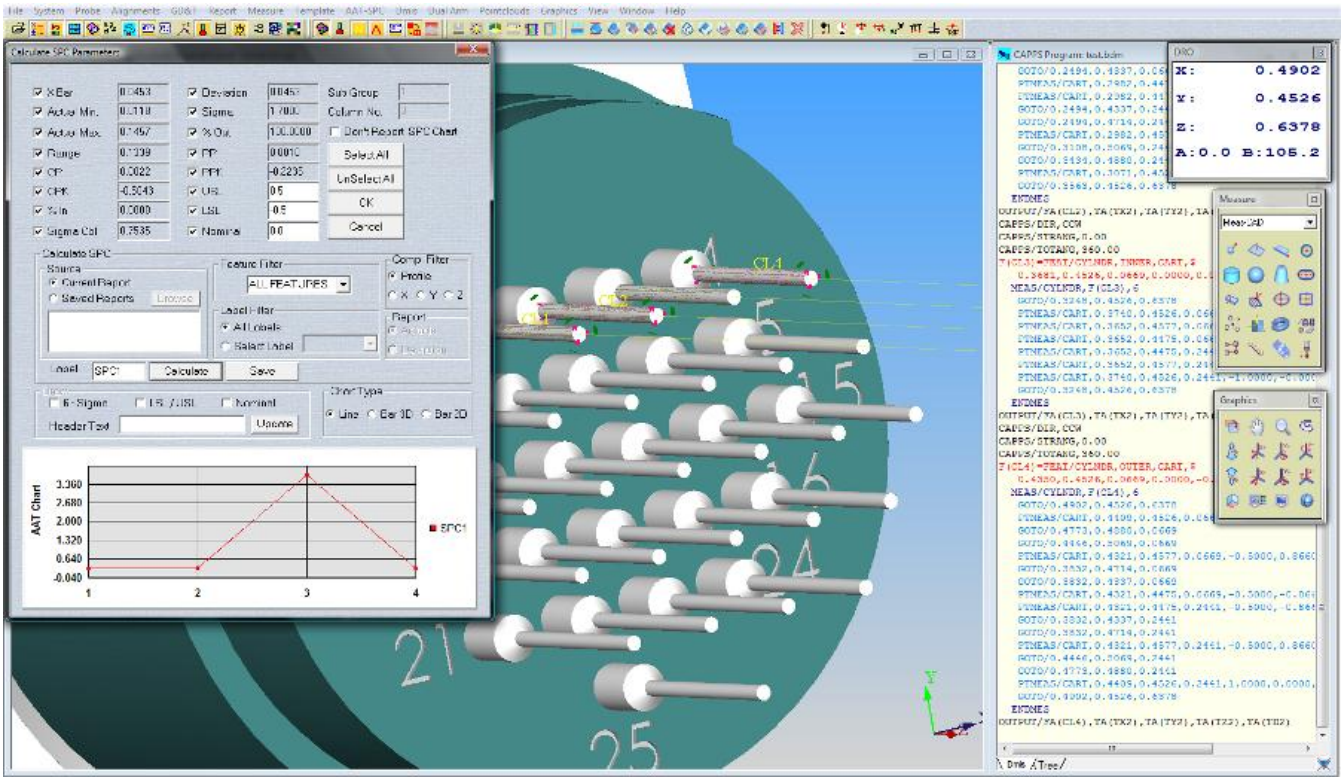

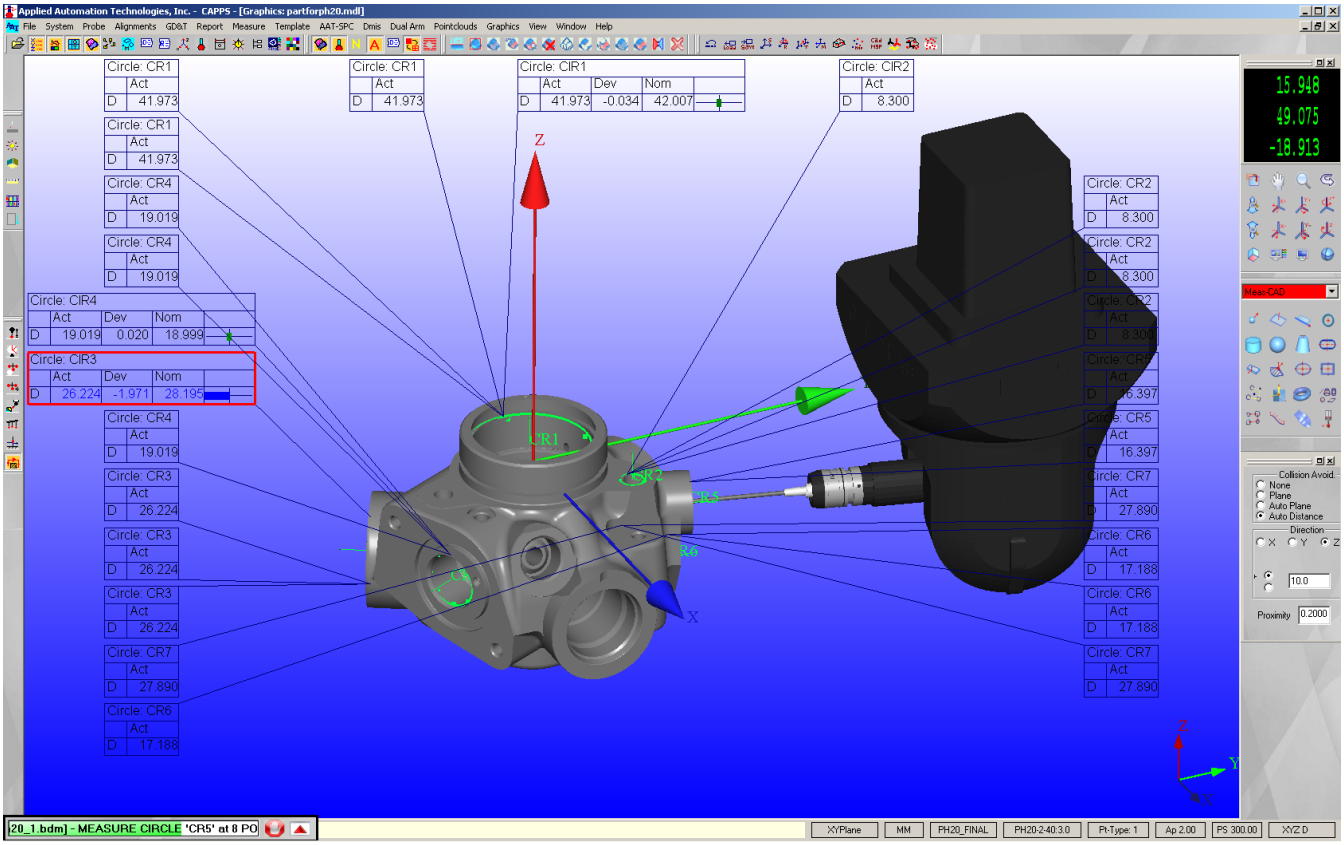

CAPPS is also ideal suited for retrofitting. Different older CMM's from various manufacturers.

Old Machines can be transformed into modern measuring machines. This is especially interesting for bigger machines with a high value of the mechanic components.

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# THOME PRÄZISION

## Controller by Renishaw

**UCC Fusion "Modern touchtrigger controller"**

**CNC-Controller by Renishaw**
Optimized the CMM and the probes combinations. Highest exactness and bigger flexibility is given. Future hard and software updates can be simply carried out.

- **Precise vector control** for 3 axes with running optimisation to decrease measuring time.
- **Automatic probe reverse movement** after contact in CNC- and Joystick move.
- **Crash protection** by limitation of feed force.
- **Optimised checkingroutines**
- **Integrated Interface** for Touchprobes like TP6, TP2, TP20, TP8, MH20i etc.
- **UCC server Interface (I++DME) communication**
- **CNC software option**

*UCC-Fusion controller by Renishaw*

*Application example for Renishaw controller*

**UCC 2 „High performance Scanning controller"**

- **Renishaw's universal CMM controller is suitable for touch-trigger and scanning probing.**
- **UCC2™ is also the controller platform for the revolutionary new Renscan5® technology.**
- **The new UCC2™ offers full 4-axis control and scanning capability.**
- **Known part adaptive scanning techniques:**
- **cylinder scan**
- **gasket scan**
- **grid scan**
- **automatic find centre**
- **advanced data filtering**
- **advanced analogue probe calibration**
- **Crash protection** by limitation of feed force.
- **Integrated Interface** for probes **SP25M, SP80, SP600**
- **UCC server Interface (I++DME) open communication Interface for every Inspectionsoftware**
- **Internal error compensation**
- **Free comfiguration for highest flexibility by measuring and scanning.**

*UCC2 controller by Renishaw*

*SPA power supply for big Measuring machines*

*SPA-Lite power supply for small Measuring machines*

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# THOME PRÄZISION

## Joystick for Renishaw Controllers

---

**Joystick MCU-Lite for all UCC-controller**

- Multi function Joystick
- Control lever for manual operation
- Ergonomically designed and massive enclosured
- speed regulation for safety test of new measuringprogramms
- emergency stop button
- 13 function keys. Two function keys can be set by the user

Preis MCU-Lite 790,-€

---

**Joystick MCU1 for all UCC-Controller**

- Multi function Joystick
- Control lever for manual operation
- Ergonomically designed and massive enclosured
- speed regulation for safety test of new measuringprogramms
- emergency stop button
- 17 function keys. Four function keys can be set by the user
- LCD-Display for graphical user instructions
- Operate as a computer mouse
- Has a system menu that can allow navigation through operating software

Preis MCU1 / 1.990,-€

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All prices are without obligation.

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# THOME PRÄZISION

## Probe Heads

**PH6 / PH6M**

- compact fixed heads with integrated cable
- Possibility of side probing by using a starprobe
- maximum extension 150 mm

**PH6:** All M8 thread probes (like TP20 and TP200) can be fitted directly onto the mount. Scanningprobes can´t be used.
**PH6M:** All Autojoint system probeheads (like SP25 and SP600) can be fitted directly. Touchtrigger Probes can be fitted by using an adapter. Scanningprobes are fully supported.

**RTP20**

The automated indexing of the RTP20 allows the integral TP20 probe to be moved to 168 repeatable positions in 15-degree increments using both the A and B axes, requiring a one-time only qualification for each stylus position thus ensuring fast throughput for part inspection.
Improved productivity is achieved via probe module changing and automated indexing without the need for constant re-qualification.
A built-in extension together with existing extension bars allow reach up to 168 mm (including maximum stylus length).
Utilising the CMM motion to lock and orientate the head, together with the MCR20, provides a fully automated system.
Crash protection: TP20 modules have overtravel in all directions. The magnetic mounting provides additional crash protection in X and Y.
Seven different TP20 modules are available.

**PH10T / PH10M motorized indexing head by RENISHAW**

***PH10T*** *for use with touchtrigger probes*

The PH10 was designed to increase the throughput. It offers the possibility to the CMM to position the probe in space. This allows measurements from different angular positions, without the need for frequent, time-consuming modification of the stylus.
This system enables fast, complete and repeatable measuring of more complex workpieces. The machine will be upgraded to a 5-way measuring machine and enables significant measuring time saving especially with complex inspection parts.

- repeatability of position ±0.5µm
- rotating axis ± 180°, swing axis 0°-105°
- total number of positions 720
- max. torque 0.45Nm
- max. extension 300mm using PAA3 extension
- weight 645g
- operational environment temperature 10-40°C

**PH10T:** All M8 thread probes (like TP20 and TP200) can be fitted directly onto the mount. Scanningprobes can´t be used.
**PH10M:** All Autojoint system probeheads (like SP25 and SP600) can be fitted directly. Touchtrigger Probes can be fitted by using an adapter. Scanningprobes are fully supported.

***PH10M*** *for use with scanning probes*

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# THOME PRÄZISION

## 5-axis ProbeheadPH20 with Headtouch performance

**PH20 5-axis simultaneous motion Probehead with Headtouch performance**

PH20's unique 'head touches' allow measurement points to be taken by moving only the head rather than the CMM structure. Using only the rapid rotary motion of the head, points can be taken faster, and with improved accuracy and repeatability. Furthermore, 5-axis motion eliminates time spent indexing the head. Together these speed increases typically result in a 3-fold improvement in throughput over conventional systems.
Easy access to features at any angle
PH20's infinite positioning capability guarantees optimal feature access, minimising stylus changes.
5-axis simultaneous motion allows larger parts to be measured on the CMM by minimising the space required around the part for head rotation. PH20 automatically aligns itself with the part coordinate system, avoiding stylus collisions and the requirement for accurate fixtures.
The unique 'inferred calibration' technique developed for PH20 determines the head orientation and probe position in a single operation, allowing subsequent measurement at any head angle. Further modules only require a few touches on the calibration sphere before use.
Users of the PH20 probe head will immediately have access to the range of proven TP20 probe modules, providing a wide selection of trigger forces, directional sensing options and extensions to meet application requirements. The detachable modules provide crash protection and can be automatically changed using the MCR20 change rack



**MCR20 automatic changing rack for probehead TP20, RTP20 and PH20**

The MCR20 probe module changing rack is designed to securely hold stored modules for rapid automatic changing, and to protect them from airborne contaminants which may be present within the working environment.
6 Slots are available.
With this changer you can change automatically and with a repeatability of 1µm between different probemodules.

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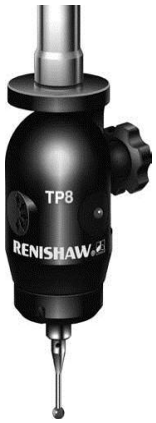
# THOME PRÄZISION

## Probes

**TP8**
**Manual rotateabel probe head from Renishaw with integrated probe**




The TP8 is extremely robust and a low cost solution. It is useable on manual measuring machines as well as on CNC machines.

- The TP8 has a fixed integrated probe
- 2D repeatability +/-1µm. The stylus force is up to 0,13 N in X-Y-plane
- The fixing of the stylus is by M3 screw
- The TP8 must be recalibrated after each rotation.
- It does not work with an automaticly changing rack.

**TP20**
**Electromechanical touch-trigger probe TP20** by RENISHAW
- set with 2 replaceable standard trigger modules, cleaning kit and tool kit.

- Probe TP20 consists of two parts – probe body and detachable trigger module
- Highly accurate 5-way touch-trigger probe
- Decreased measuring time due to fast stylus configuration changing without the need for requalification
- Ca. 3 million of touches of each module
- 2D- uncertainty of measurement A0.8µm
- Repeatability (max. 2σ) 0.35µm
- Thread M8

Testing conditions: extension length 10mm, touch speed 480mm/min, trigger force 0.08 N

**TP200**
**Electronic touch-trigger probe TP200 with interface PI200 and head cable PLM6.T** by RENISHAW

- Probe TP200 consists of two parts – probe body and detachable trigger module
- Great repeatability and highly accurate 3D- shape deviation
- Fast, repeatable stylus changing, without the need for requalification
- Ca. 10 million of touches of each module
- 2D- uncertainty of measurement A0.8µm
- Repeatability (max. 2σ) 0.4µm
- Thread M8

Testing conditions: extension length 50mm, touch speed 480mm/min, trigger force 0.02-0.04 N

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# THOME PRÄZISION

## Changing racks

**MCR20 changing rack** by RENISHAW.

Change unit with six changer ports. Module combinations may be quickly renewed and automatically changed without the necessity of recalibration. At the same time it protects modules from contaminants. The changer unit works passively and does not need any electrical connection for the control of the measuring machine. Module changing is performed following simple commands. The MCR20 system also has crash protection.

**SCR200 changing rack** by RENISHAW.

Changing rack with six ports.
Module combinations may be quickly renewed and automatically changed without the necessity of recalibration. Installation and system adjustment is ideal for the user as no special cable, software or link to the measuring machine are needed. Module changing is performed following simple commands. SCR200 system also has crash protection.

**MRS 400/600 and 1000 fixing kit for fast and automatic changing of switching modules and probes.**

MRS has modular design and is ideal for various changing systems by Renishaw. SCP600 (SP600 memory modules), SCP80 (SP80 memory modules), FCR25 (SP25M memory modules) and units ACR3 may be attached to the MRS strip which may be of various lengths (400mm, 600mm and 1000mm). Further future changing systems by Renishaw will also be compatible with MRS.

**FCR25 module changing rack unit** by RENISHAW
with three or six ports for direct mounting to the measuring machine or mounting to the console MRS (see figure). Storing of scanning modules SM25-1, SM25-2, SM25-3, TM25-20. Thanks to the enclosed adapters PA25-SH, PA25-20 module holders SH25-1, SH25-2, SH25-3 or modules TP20 may be docked.

*FCR25-module change unit with 3 ports*

*MRS 600*

*FCR25 Stand alone*

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# THOME PRÄZISION

## Steuerung PC-System

---

**Dell TFT Monitor 22“**
**Garantie 3 Jahre Vorortservice**

In the inclination adjustable 22-inch screen, high picture contrast and quick response times. In the wide picture format you can explain several uses side by side on a screen and increase thus your productiveness
Resolution: 1680×1050

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**Intel Core i3-2130 (3.40GHz, 3MB)**
Mini-Tower Gehäuse
**3 years of maintenance guarantee**

- 500GB Hard Disl
- Working memory 4GB
- 48x DVD-ROM/CD-RW Combo Drive
- AMD Radeon HD 6350 Grafic card 512MB
- Windows 7 Professionell
- Wireless Maus und Wireless Tastatur
- Wireless mouse and Wireless keyboard

installation, configuration, connecting of all cabels, installation of additional cards, test and set machine parameters, connecting to the CMM.

---

**Drucker HP Officejet 4500**

4-in-1 multifunctional device for wireless printing, scanning, copying and faxing with exceptionally low cost per page.

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# General terms of business of the company
# THOME Präzision GmbH

**1. Offers**
Our offers, also on the part of our representatives, are without obligation. The written order confirmation is obliging. Supplements, changes or verbal additional agreements need to her effectiveness of the written confirmation. The documents belonging to the offer, pictures Drawings, Declarations of weight and Measurements are authoritative only roughly, as far as they are not called expressly obliging. In quotations, drawings and other documents the THOME Präzision GmbH reserves itself property rights and copyrights; they may be made to third not accessible.

**2. Price and payment**
a. Basically the agreed prices get on not free ex works; cargo, postage, duty, assembly and packaging pays the customer just as a desired transport, theft and pilferage or other inssurance. The packaging is calculated to the respective cost of sales. From this divergent arrangements need the written form. For the prices the value added tax comes by the respective legal height.
b. In the absence of special arrangements the payment is to be made cash freely cashier's office of the THOME Präzision GmbH namely:
30% payment in advance after receiving the order confirmation within 14 days, 70 % payment in advance 20 days before the estimated shipping date.

**3. Delivery time**
a. Delivery dates, achievement terms and appointments are valid only roughly, unless they are agreed in particular cases expressly and in writing as obliging.
B. If terms of delivery are agreed obligingly, they begin with sending the order confirmation, however, not before adduction of the documents to be procured by the customer, approvals, releases as well as before entrance of the agreed deposit.
c. An agreed delivery time is kept if up to her expiry the object of delivery has left the work or the dispatch readiness is informed.
d. An agreed term of delivery is extended appropriately with measures within the scope of labour disputes, in particular strike and lockout as well as by the entry of unforeseen obstacles which lie beyond the will of the THOME Präzision GmbH, as far as such obstacles are as can be proved on the completion or delivery of the object of delivery of considerable influence. This is also valid if the circumstances enter with untersuppliers.
The precalled circumstances are also not to be represented by the THOME Präzision GmbH if they originate during an already being delay. Beginning and end of such obstacles will inform in important cases of the THOME Präzision GmbH the customer as soon as possible.
e. In case of the delay the customer is entitled to the exclusion of other claims to demand a delay damage. He amounts for every full week of the delay to 0.2%, on the whole, however, at most 3% of the value of that part of the whole delivery which cannot be used as a result of the delay on time or vertragsgemäß.
following Becoming the dispatch by request of the customer delays, become to him, beginning one month after announcement of the dispatch readiness which calculates, at least nevertheless, 0.5% of the invoice amount for every month by the storage to originating costs. Nevertheless, the THOME Präzision GmbH is entitled to dispose after settlement and futile course of an adequate term otherwise of the object of delivery and to supply the customer with appropriately extended term.
g. The observance of the term of delivery puts the fulfilment of the contract ¬ to duties of the customer ahead.

**4. Retention of title**
a. The THOME Präzision GmbH reserves itself the property in the object of delivery up to the entrance of all payments from the supply agreement. The retention of title remains also exist for all demands which are entitled to the THOME Präzision GmbH from running business connections to the customer.
b. Only customers with suitable industrial concerns are entitled to the wide disposal or subsequent treatment of the product within the scope of her proper business concern. By now the customers resign to us everybody to them from the wide disposal and the business relations to her buyers in connection with the wide disposal to being entitled demands with subsidiary rights for the protection of our claims. The retention of title remains also effective if the object of delivery processes, is mixed or is connected; the THOME Präzision GmbH becomes the fraction owner in the products anew resulted by mixture.
Other orders about the object of delivery are prohibited the customer. Anyhow the customers are entitled to the move of the demands resigned to us and are obliged, as long as we do not revoke this authorisation. However, by request the customers must immediately inform us to whom they have disposed of the product and which demands are entitled to them from the disposal.

c. If the customer comes to default or injures he his obligations from the retention of title, can use the THOME Präzision GmbH the purchase object herausverlangen and after written announcement with adequate term under charge of the utilisation proceed for the purchase price freehand.

**5. Danger crossing and acceptance**
a. The danger goes over at the latest in sending the parts of delivery on the customer, namely also if part deliveries occur or the THOME Präzision GmbH still other achievements, e.g., the sending costs or transportation and installation has taken over.
b. If the dispatch is delayed as a result of circumstances which the customer has to represent, the danger of the day of the dispatch readiness on the customer goes over; however, the THOME Präzision GmbH is obliged to cause the assurances if requested and costs of the customer this required.
C. Part deliveries are allowed.

**6. Liability for defects of the delivery**
The THOME Präzision GmbH sticks for the defects of the delivery to which also the absence of expressly assured qualities belongs to the exclusion of other claims regardless of segment 9.d. as follows:
a. All those parts are to be mended free of charge at reasonable discretion of being defeated choice of the THOME Präzision GmbH or to deliver anew, which to itself within 6 months (with Mehrschichtbetrieb within 3 months) since introduction as a result of a fact lying before the danger crossing - in particular because of faulty design, bad building materials or defective implementation - when do not put outside uselessly or in her usefulness as unimportant affected. The statement of such defects is to be announced to the THOME Präzision GmbH immediately in writing. Substituted parts become a property of the THOME Präzision GmbH. If the dispatch, the installation or the introduction are delayed without fault of the THOME Präzision GmbH, the liability goes out at the latest 12 months after danger crossing.
For essential foreign products the liability of the THOME Präzision GmbH limits itself to the cession of the liability claims which you are entitled against the supplier of the foreign product.
b. The right of the customer to assert claims from defects comes under the statute of limitations in all cases from the time of the timely rebuke in 6 months, at the earliest, nevertheless, with expiry of the guarantee term.
c. No guarantee is taken over for the damages which have originated from postfol. ¬ to genden reasons:
Inexpedient or improper use, faulty assembly or initial start-up by the customer or third, natural From ¬ use, faulty or negligent treatment, inexpedient company means, exchange materials, defective edge and interfaces terms, chemical, electro-chemical or electric influence, provided that they are not due to a fault of the THOME Präzision GmbH.

d. To the given name of all of the THOME Präzision GmbH after any judgement inevitably to appearing repairs and spare deliveries the customer has to give the necessary time and opportunity after notification with the THOME Präzision GmbH, otherwise the THOME Präzision GmbH is released from the liability for defects. Only in urgent cases of the danger of the operational safety and to the defence of unreasonably big damages and the THOME Präzision GmbH is to be informed immediately, or if the THOME Präzision GmbH is with the removal of the lack in delay the customer has to let remove the right the lack or by third and to require substitute of the necessary costs from the supplier.
e. From by the repair or spare delivery originate ¬ to the immediate costs carries the THOME Präzision GmbH - in so far as as itself the objection puts outside as entitled - which costs of the spare part including the dispatch as well as the adequate costs of the removal and installation, further, if this can be required for situation of the isolated case rightly, the costs of the possibly necessary Gestellung of his assemblers and assistants., For the rest, the customer bears the costs.
following for the spare part and the repair amounts to the Gewährlei ¬ stungsfrist 3 months. She runs at least up to the expiry of the original guarantee term for the object of delivery.
The term for the liability for defects in the object of delivery is extended by the duration of the business interruption caused by the repair works.
g. By possibly on the part of the customer or third improperly without previous approval of the THOME Präzision GmbH made changes or repair works the liability for the results originating from it is lifted.
h. Other claims of the customer, in particular a claim to substitute of the damages which have not originated in the object of delivery themselves are excluded.
This disclaimer of liability is not valid with intention or coarse carelessness of the owner or leading employees. He is not valid also with the absence of qualities them are expressly assured if the assurance has just aimed to secure the customer against the damages which have not originated in the object of delivery themselves.

**7. Liability for accessory obligations**
If the delivered object of the customer as a result of omitted or faulty implementation from before or after completion of the contract to recumbent proposals and consultations as well as other contractual Nebenverpflichtungen - in particular instructions for service and servicing of the object of delivery - vertragsgemäß cannot be used by fault of the THOME Präzision GmbH, the regulations of the segment 6. and 9. are valid to the exclusion of other claims of the customer accordingly.

**8. Surely of the customer on resignation and other liability of the THOME Präzision GmbH**
a. The customer can withdraw from the contract if the whole achievement becomes finally impossible for the supplier before danger crossing. The same is valid with incapacity of the supplier. The customer can also withdraw from the contract if with an order of objects of the same kind the implementation of a part of the delivery becomes impossible after the number and he has a legitimate interest in the refusal of a part delivery; if this is not the case, the customer can diminish the consideration accordingly.
b. If achievement delay is given for the purposes of the segment 3., and the customer grants an adequate extension with the explicit explanation to the supplier located in delay that he rejects the acceptance of the achievement at the end of this term, and the extension is not kept, the customer is entitled to the resignation.
C. If the impossibility enters during the acceptance delay or by fault of the customer, this remains to the consideration obliged.
d. The customer has further a right to rescind if the supplier allows to spread an adequate extension put to him for the repair or spare delivery with regard to a lack to be represented by him for the purposes of the terms of delivery by his fault futilely. The right to rescind of the customer exists from in other cases of the Fehlschlagens of the repair or Ersatzlie ¬ ferung by the supplier.
e. All the other further claims of the customer, in particular on change, notice or decrease as well as on substitute are excluded from damages of some kind namely also from such damages which have not originated in the object of delivery themselves.
This disclaimer of liability is not valid with intention or coarse carelessness of the owner or leading employees. He is also not valid with the absence of qualities which are expressly assured if the assurance has just aimed at the customer against damages which have not originated in the object of delivery themselves to secure.
following step of the customers of the bill of sale back, so the following expense allowances are to be paid to the THOME Präzision GmbH:
30% of the order sum with all standard products of the THOME Präzision GmbH.
80% of the order sum with all Sonderanfertigungen of the THOME Präzision GmbH.

**9. Surely of the THOME Präzision GmbH on resignation**
For the case of unforeseen events for the purposes of the segment 3.d. of these general terms of business, provided that they change the commercial relevance or the contents of the achievement considerably or have an effect on the company of the THOME Präzision GmbH considerably, and for the case afterwards of turning out impossibility of the implementation the contract is adapted appropriately. As far as this is not defensible economically, stands to the THOME Präzision GmbH the right to withdraw too all or part from the contract.
Compensation claims of the customer because of such a resignation do not exist. If wants to make the THOME Präzision GmbH of the right to rescind use, she has to inform of this after knowledge of the range of the event immediately the customer, namely also if first with the customer a lengthening of the term of delivery was agreed.

**10. E-mail**
E-mails serve with the THOME Präzision GmbH of the quick communication. They carry no signatures and can be changed by third. Obliging arrangements are dispatched with the THOME Präzision GmbH as a letter, scanned letter or fax and carry signatures according to the signature regulation applying with the THOME Präzision GmbH.

**11. Place of fulfilment, legal venue**
a. Place of fulfilment for all deliveries and payments is of the companies ¬ sit.
b. With all disputes arising from the contractual relationship Darmstadt/Germany is agreed if the customer is an independent commercial agent, a legal entity of the public right or a public law special property as a legal venue.

**12. Other**
a. Divergent terms of business of the customer are non-binding for the THOME Präzision GmbH even if these is not expressly contradicted.
b. The language of communication is German. It is worth the right of the Federal Republic of Germany.
c. Should one of the preceding conditions be ineffective, the remaining regulations are not touched from this. The contracting partners have to substitute for an ineffective regulation with an allowed regulation which comes to the sense and the meaning most near the ineffective regulation.