

The software for all applications.

QUINDOS by Hexagon Metrology GmbH is probably the most powerful software in the field of dimensional metrology.

Due to its open architecture QUINDOS can not only be connected to Coordinate Measuring Machines of the Hexagon Metrology group, but can also run on many measuring machines of other makers.

The Basic licence provides all commands required for the inspection of standard parts, for example engine blocks, gear boxes etc.



It also includes features like Form and True Position evaluation acc. to ISO, free programmable plots, generation of probing points and much more.

QUINDOS runs on the latest PCs with Windows XP operating system.

Besides the basic package there are about 35 optional packages available. They cover almost all measuring tasks and special geometries manufactured in today's industrial world.

Below you find all available options at a glance. For more detailed information please refer to the QUINDOS options catalogue or to the Hexagon web site.

QUINDOS Basis

Metrology software for use with 2D and 3D Coordinate Measuring machines.

Measuring and connecting of all standard elements.

Online/Offline generation of probing points for elements.

Free programmable subroutines and loops. Graphic package for user defined plots.

Form and Position evaluation according to ISO R1101, incl. MMC and much more.

Optional packages

QUINDOS Curves

Operations on 2D and 3D curves. Radius correction, Actual-Nominal comparison, 2D and 3D best fit operations. Generation of nominal curves for given mathematical formulas. Incl. VDAFS interface for data exchange with CAD systems.

QUINDOS 2D Gauging and Constant Velocity Joints CVJ

2D Gauge simulation of hole patterns with up to 2 datums, incl. MMC.

Centering of nominal circles into contours (for inspection of constant velocity joints - CVJ).

QUINDOS Statistics

Interactive graphics-guided statistics, computes all basic statistical values, like X-bar, R, S, min, max, cpk, etc. Display of histograms, probability net and production spread.

Tests on distributions and outliers. Included are Quality Control Charts, Machine Capability Test, Trend Analysis and Export of data via QSSTAT and CIMMY / QSWE formats.

QUINDOS Measurement of Part Pallets

Inspection of a large number of same or different parts, put on a fixture.

Increases drastically the throughput and utilization of a Coordinate Measuring Machine.

QUINDOS Feature Based Inspection

Free selection of measurements (features) within a part program, in any order. QUINDOS automatically generates the moving path for the CMM to reach the feature(s) selected. Increased throughput due to reduced measuring and programming time, in particular for complex parts such as cylinder heads etc.

Gears

QUINDOS Gear

Measurement of **Cylindrical gears**, straight or helical, internal and external, on high precision Coordinate Measuring Machines. Evaluation according to DIN, ISO, JIS, AGMA and CNOMO standards, with and w/o eccentricity. Individual modification of profile and flank line. The gear package includes **Serration Gears**, with straight or involute profile according to DIN 5481 and DIN 5482.

QUINDOS Unknown Gear

Inspection of straight and helical, external and internal gears or gear segments without known parameter.

All standard parameters are evaluated, i.e. module m_n , alpha and beta angle, addendum modification factor x etc.

QUINDOS Gear Gages

For involute masters and lead masters. Left and right handed with straight or helical flanks. FELLOWS - type or single gear flank type. (This option requires ultimate precision Coordinate Measuring Machine, i.e. Leitz PMM-C 700 P)

QUINDOS Straight Bevel Gear

Evaluation of flank and profile form, pitch, tooth thickness etc. of straight bevel gears according to DIN 3965, part 1 and 2.

In case of non tooling manufacturing, the mold and die can be measured.

QUINDOS Spiral Bevel Gear

Measurement of Involute Spiral Bevel Gears according to DIN 3965, AGMA 390.03a, Rev 1988 or ANSI/AGMA 2009-A98.

Evaluation of flank form, pitch, tooth thickness, spiral and profile angle etc.

With interfaces to GAGE 4/WIN package of GLEASON WORKS and VDAFS-KEGMES of University of Aachen.

This option includes the inspection of **Crown Gears**.

GLEASON GAGE 4/WIN

GAGE 4/WIN by GLEASON WORKS, USA, for optimizing the production process of spiral bevel gears on GLEASON gear cutters

GAGE 4/WIN runs independent on a separate PC, and only in combination with the option "**Spiral Bevel Gear**".

Gear Cutting Tools

QUINDOS Hob Cutter

For inspection of single and multi thread hobs with parallel or helical flutes on precision CMMs. All evaluations as required by DIN 3968. In addition to DIN, also axial pitch and tooth height can be measured.

QUINDOS Shaper Cutter

All evaluations at shaper cutters with cone or step type cutting face as required by DIN 1829. Evaluates angles at the cutting edge, profile, helix, pitch, runout, thickness.

QUINDOS Shaving Gear

Helix, profile, pitch, runout and corrections are evaluated. The evaluations of shaving gears are similar to the ones of cylindrical gears.

QUINDOS Broach

Inspection of spur and helical broaches, with ring type spaces as well as helical chip spaces, on high accuracy 3D Measuring Machines. Also with negative face angle. Evaluation of runout, transverse pitch, stepping of profile, face angle, back off angle, tooth profile, dimension over balls etc.

Worms

QUINDOS Cylindrical Worm

Measurement of single start and multi start worms, left or right hand lead. Type ZA, ZI, ZN, ZK and ZC according to DIN 3975. On a CMM without rotary table. Evaluation of flank, topography, profile in axial section, lead, pitch etc.

QUINDOS Worm Wheel for Cylindrical Worm

Evaluates flank, profile, topography, pitch, runout and tooth thickness of worm wheels as conjugate of cylindrical worms of type ZA, ZI, ZN, ZK and ZC.

QUINDOS Globoid Worm

Single start and multi start double enveloping worms, left or right hand lead. Generation type "plane" and "straight". Evaluation of profile, lead, pitch, runout and topography.

Special Geometries

QUINDOS Blade

Inspection of airfoils and any kind of turbine blades. Blade specific evaluations such as leading and trailing edge, radius, centerline, max. inscribed diameter. Requires the option "**Curves**".

QUINDOS Thread / API Thread

External and internal threads, with single or multiple starts. The threads can be of cylindrical or conical (tapered) shape. Evaluation of lead, mean diameter, pitch, profile angle etc. Includes the inspection of **API threads**.

QUINDOS Camshaft

Evaluation of Cams and Camshafts, based on nominal data "Angle over Stroke" . For any kind of follower. Output of Stroke error charts. Computing of stroke, velocity and acceleration over angle. Requires the option "**Curves**".

QUINDOS Complementary Cams

Calculation of the complementarity errors of a pair of cams. Optimising of a given parameter to minimize complementarity error. Requires the option "**Curves**".

QUINDOS Valve Guides and Seats

Automatic generation and measuring of all probing points and scan lines for valve seats with minimum 2 cone angles. With valve specific evaluations and plots.
Requires the option "**Curves**".

QUINDOS Ovality of Pistons

For pistons of internal combustion engines with single, double or triple ovality.

QUINDOS Screw Compressor

Inspection of transverse or axial sections of Screw Rotors on precision coordinate measuring machines with scanning capability. Actual-nominal comparison of the contour, with best fit. Evaluation of lead, pitch, root and tip circle etc.
Requires the option "**Curves**".

QUINDOS Step Gear

Inspection of the profiles of step gears (roller gears) with cylindrical or globoid shaped carriers. The relationship between the rotation angle of the carrier and the movement of the roller axis is evaluated. Requires the option "**Curves**".

Miscellaneous Options

QUINDOS Digital Input/Output Interface

Use of up to 16 digital I/O channels to control external devices such as fixtures, light signals as well as programmable controls. Required for integration of a CMM into an automated part transport system or into a Flexible Manufacturing System (FMS). Not included is special hardware and its programming.

QUINDOS Automatic Gauge Inspection

Inspection of gauges in accordance with VDI/VDE/DGQ 2618. Valid for Plug gauges, Snap gauges, Go and No Go ring gauges and master gauges. This option requires an ultra high accuracy 3D Coordinate Measuring Machine and a gauge fixturing system by Hexagon Metrology, which is not included.

QUINDOS CMM Test with Ball Plate

Verification of a Coordinate Measuring Machine (CMM) by measuring a calibrated ball plate, according to VDI/VDE 2617, part 5. Requires a standard ball plate, certified by PTB (Physikalisch Technische Bundesanstalt).

QUINDOS CMM Error Simulation

Calculation of the error range of a 3D Coordinate Measuring Machine for every feature of a part measuring program. A QUINDOS part program is executed off-line. Based on the CMMs probing error "P" the error budget for every feature measured is calculated.

QUINDOS Offline Programming

Offline programming of parts, statistical evaluations, writing of Plots etc. on a separate PC for increased throughput on the Coordinate Measuring Machine. Note: The user needs to have minimum 1 Online license of QUINDOS. The PC is not included in this license.