ACCTee
Integrated analysis software

ACCRETECH | EUROPE

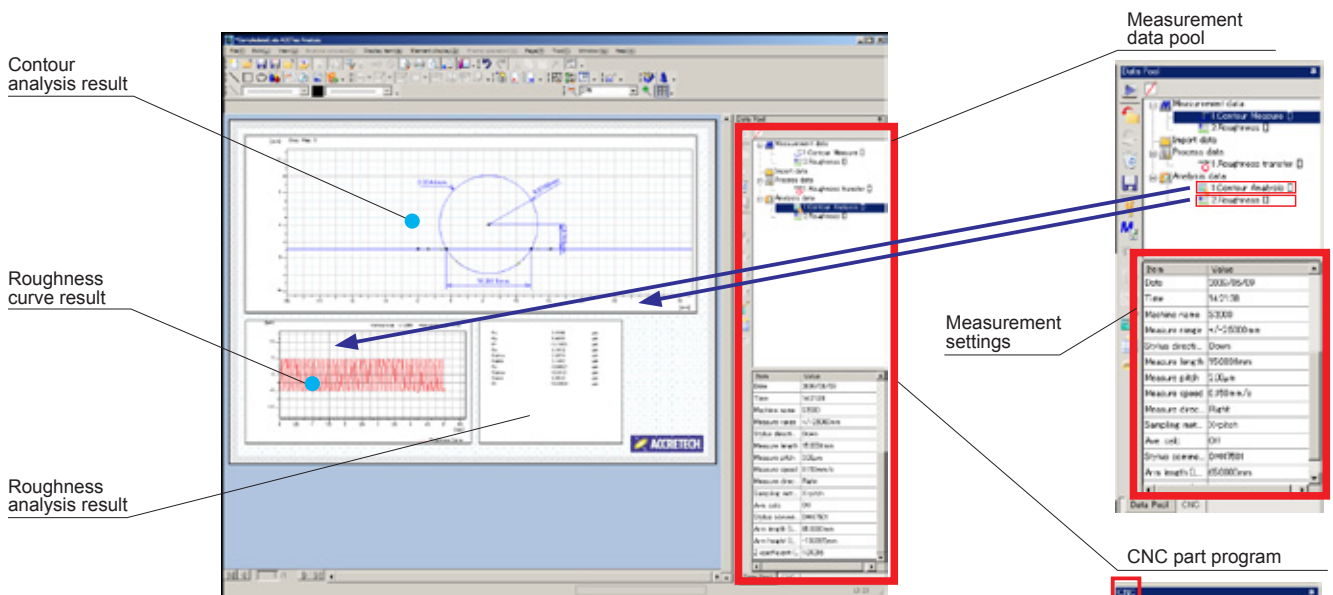# ALL in one Document!

ACCTee

New measurement style with new concept

Integrated analysis software ACCTee

The NEXt-generation ACCTee measurement system has been developed to incorporate the new concept of TiMS integrated software. By enabling the measurement and analysis all on one document, the software provides leading-edge operability and an intuitive work environment for measurement and analysis tasks. With the document-based new measurement style, all of the operations are available on one document (measurement result sheet), and all of the data and information can also be saved with the related data. This is the ACCTee "All in one Document" NEXt-generation integrated software

## Leading-edge operability in the document screen

ACCTee is equipped with a Windows-style user interface that anyone can easily access. High operability is achieved with the user-friendly and intuitive icons that assist a series operations from the measurement to the printing of analysis results.

Contour analysis result

Roughness curve result

Roughness analysis result

Measurement data pool

Measurement settings

CNC part program

CNC command edit screen

CNC function

This provides a highly efficient measurement work environment, as the series of tasks, from the measurement to the output of the test result, can be executed automatically. For the case and calculation error in the measurement result, operations such as "Jump", "Pause", "Stop" and "Continue" can be selected. Using the system call command, you can display any type of image files during CNC operation, and can check the part setup and stylus configuration with photos so that you can avoid accidental errors in advance.
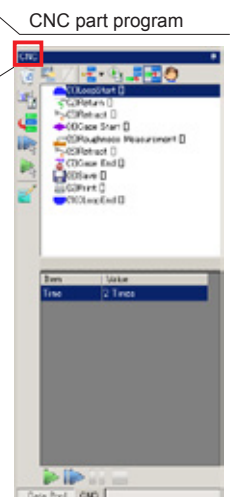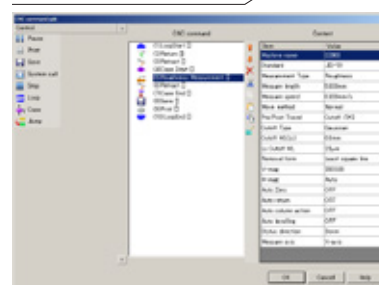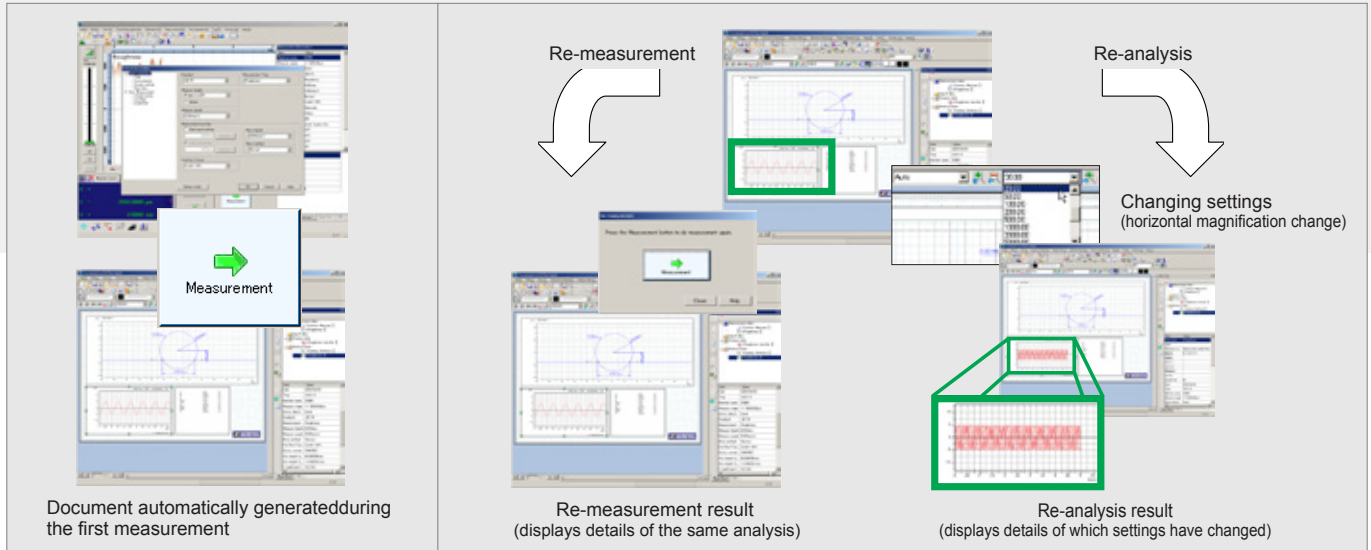
Efficiency improvement of re-analysis and re-measurement with easy operation

ACCTee contains all of the information including the layout, measurement settings, analysis settings, measurement data, and part program in one document, so that the data edit, addition, re-analysis, and re-measurement of the analysis details can be executed freely. Since the switchover between windows is not necessary, it improves the operational efficiency by 40% or more compared with conventional software. Besides executing re-analysis, when executing the same measurement and analysis as previously, the measurement result similar to the previous time can be acquired by selecting the measurement data in the data pool and clicking the re-measurement data.


Re-measurement

Re-analysis

Changing settings
(horizontal magnification change)

Measurement

Document automatically generatedduring the first measurement

Re-measurement result
(displays details of the same analysis)

Re-analysis result
(displays details of which settings have changed)

Comprehensive evaluation display document

ACCTee can evaulate an individual parameter using the 16% rule and the design value. In addition, the software can display OK/NG in the graphic image to show an overall evaulation of the whole document. As the master page preparation is registered, the inspection sheet unifying the logo mark and the background will output.
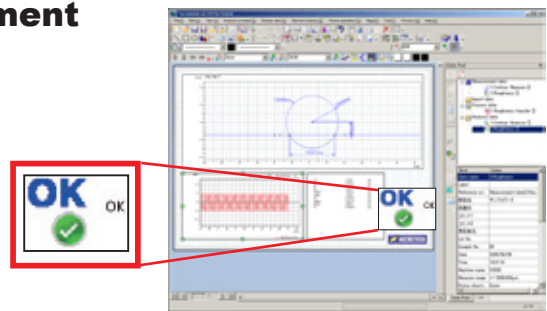
Self-diagnosis function

In case of emergency, the self-diagnosis function is always active. As the support function for handling errors, it displays messages to indicate problems such as measurement screen errors and failures, so that the operator can take appropriate action to resolve the problem as soon as possible.
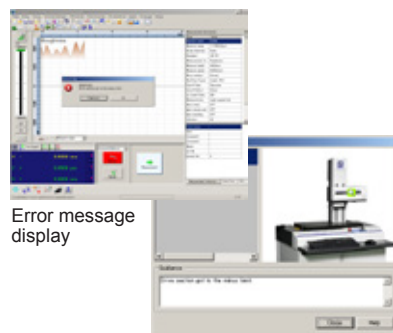
Error message display

The location of the problem is indicated with a picture

International support

ACCTee can be used overseas and supports several languages including Japanese, Chinese, Korean, English, German, French, Italian, Spanish, Portuguese, Czech and Polish (consult us before taking out to overseas countries).

Supports multiple languages

Data protection software

The data measured by ACCTee can be protected by locking the data, deleting unintended data or backing up data, so that accidental data loss can be prevented.
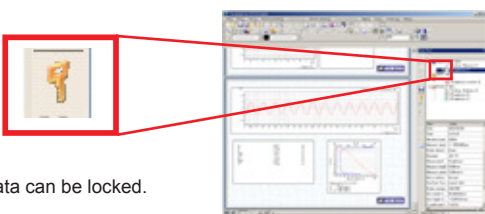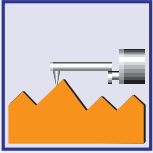

The data can be locked.

Help system

ACCTee can always call up the Help wizard whenever the ACCTee is on. ACCTee has an on-line manual system so that an appropriate help message can be displayed by clicking the help soft key. The help message can also be retrieved by using the index or keywords.

Roughness

ALL in one Document!

## Surface roughness measurement and analysis system

Applicable machines - SURFCOM NEX Series

SURFCOM NEX 001	SURFCOM NEX 031
SURFCOM NEX 100	SURFCOM NEX 041
SURFCOM CREST	

ACCTee roughness measurement and analysis system

This is the standard software associated with the SURFCOM NEX/CREST series roughness system. ACCTee has changed the roughness measurement system with its new concept - the measurement can be executed on a document basis, providing leading-edge workability and an intuitive work environment. As settings can be changed under the guidance of various wizards, anyone can perform the measurement tasks easily and efficiently.

AI measurement wizard

For the ACCTee AI measurement function, the parameters and analysis settings appropriate for the roughness standard and evaluation purpose can be specified. In addition, the optimum measurement settings can be specified by executing a trial measurement. The analysis item for the measurement data selected on the document can be displayed by selecting the display items at the end.
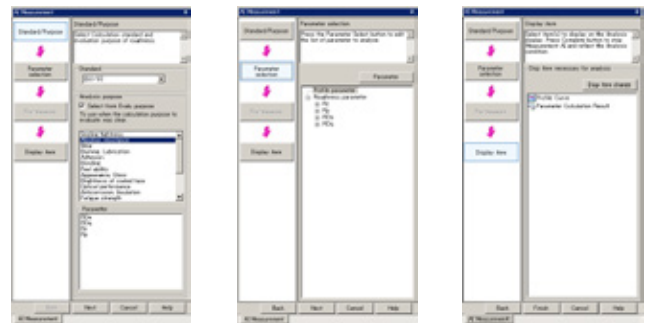
Pickup calibration wizard

For the detector calibration of the ACCTee, the sensitivity calibration is executed by selecting any of the following three options: depth specimen; magnification calibration unit; and reference specimen. NEXt, the calibration condition (inputting reference value) is specified, installation method for the calibration unit and the measurement start position are confirmed, then the calibration is executed. This series of procedures are performed with help from the relevant wizard.

Calibration alarm

ACCTee can accept any time as the time of calibration. In addition to the probe replacement time, a message is displayed to encourage calibration based on the frequency of measurements or lapsed days, which guarantees an accurate and stable measurement by ensuring periodic calibration.

Stylus tip check wizard

ACCTee can use a depth specimen or reference specimen for the stylus tip check. The tip of the stylus gets wear and chips more and more as it is used continuously for measurements. Regular checks are necessary to maintain accurate measurements. Anyone can check the stylus tip easily by following the guidance wizard.
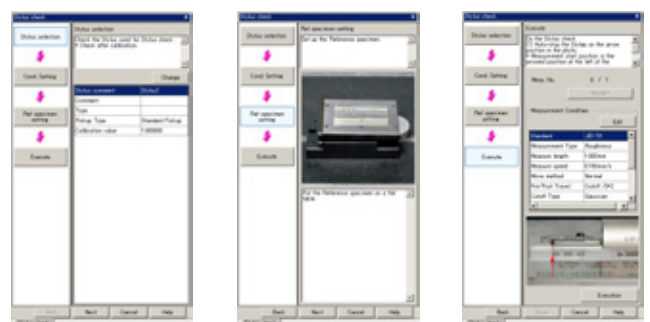
Input of parameter figure and symbols wizard

The ACCTee analysis function can select the same type of symbols described on the design diagram and can input the design value of the analysis settings and the parameters for the pass/fail judgment.
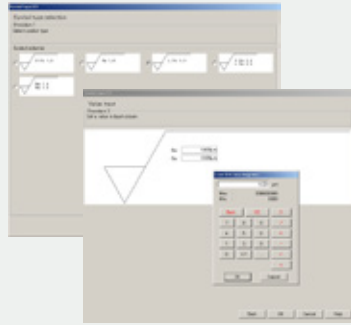
Roughness peak and valley detection function

ACCTee detects the maximum point (minimum point) and automatically shifts the stylus to the maximum point (minimum point) as the ACCTee peak and valley function traces the cylindrical profile, convex, concave, and spherical profile using the stylus. For manual operation, the position is reported by an alarm.

Preview function when changing analysis settings

By changing the ACCTee analysis settings, you can set and change the roughness parameter calculation standard, cut-off filter, notch level, deletion length and more. The range of the waveform data used for the roughness parameter calculation can be set to any value. To select the form remove (tilt correction), an optimum form remove setting can be selected as a result of the addition of the preview function. The area and condition specified can easily be cleared.

Automatic judgement under 16% rule (JIS2001 standard)

In the ACCTee analysis process, the 16% rule and the max rule are standardized for the tolerance criteria of the roughness evaluation parameters. It is possible to set with the roughness analysis process. With the 16% rule, when the number of measurement values for multiple standard lengths that exceed the tolerance is below 16%, it is assumed to pass. With the Max rule, all of the measurement values of the multiple standard lengths must not exceed the tolerance.
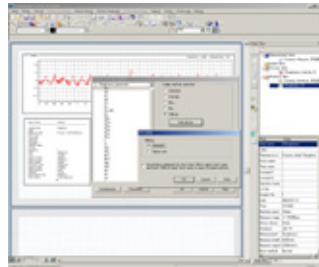
Roughness curve trace display

As the profile traced by the roughness stylus is displayed, the measurement area can be set on the screen.

Step difference parameter

On the concave and convex profile, the step difference can be measured. The measurement, average height, maximum height, minimum height, and area can be calculated from the data.

Wear-out analysis for roughness curve data

The difference between data can be calculated as a wear amount by overlapping and displaying two roughness curves.

Specification	ACCTee roughness measurement and analysis program
Support roughness standard	Conforms to JIS2001, and JIS1994, JIS1982, ISO1997, ISO1984, DIN1990, ASME2002/1995 – CNOMO
Parameter	Ra, Rq, Ry, Rp, Rv, Rc, Rz, Rmax, Rt, Rz.J, R3z, Sm, S, RΔa, RΔq, Rλa, Rλq TILT A, Ir, Pc, Rsk, Rku, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, VO, K, tp, Rmr, Rmr2, Rσc, AVH, Hmax, Hmin, AREA, NCRX, R, Rx, AR, NR, CPM, SR, SAR, etc
Parameter evaluation	The evaluation result can be displayed by standard, average value, the maximum value, minimum value, and 16% rule
Evaluation curve	Profile Curve, Roughness Curve, Filtered Waiveness Curve, Roll. Circ. Waiveness, Rolling Circle Waiveness Curve ISO13565-1 (DIN4776) Roughness Curve, Roughness Motif Curve, Waviness Motif Curve, and Upper Envelope Curve, dominant Waviness (optional)
Surface characteristic display	Bearing area curve, power graph, ADC graph, ISO13565-2 Bearing area curve, peak height distribution graph/list, auto correlation graph wear-out amount analysis (two arbitrary curves), and overlapping analyses (ten curves or less)
Form remove (tilt correction)	Least square straight line correction, n-dimension polynomial (n=2-9) correction, both ends correction, least square circle correction, least square oval correction, spline correction, robust (spline) correction (arbitrary or beginning or latter half of the setting range can be specified for all the options)
Filter type	Gaussian phase compensating filter, phase uncompensation type 2RC filters, phase compensation type 2RC filters, spline filter, and robustness (spline)
Filter	Cut-off wavelength (λc): 0.008, 0.025, 0.08, 0.25, 0.8, 2.5, 8, 25, 50mm (9 levels), arbitrary (from 0.001mm) Cut-off ratio (λs): 1/30, 1/100, 1/300, 1/1000, arbitrary (from 1/10) Cut-off wavelength (λs): 0.08, 0.25, 0.8, 2.5, 8, 25, 80μm (7 levels), arbitrary (from 0.05)
Stylus calibration	Can be selected from depth specimen (JIS standard), magnification calibration unit, and reference specimen. Maximum 20 units of stylus calibration information can be registered (deadline for the calibration time can be specified)
Number of data points	Maximum 300,000 points
Magnification display: Lengthwise	Arbitrary value (unit: 0.01), automatic and 50 - 10,000k times
Magnification display: Sidewise	Arbitrary value (unit: 0.01), automatic and 1 - 1,000k times
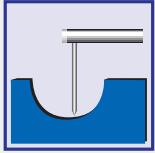
Contour

ALL in one Document!

## Contour profile measurement and analysis system

Applicable machines - SURFCOM NEX Series
SURFCOM NEX 030	SURFCOM NEX 031
SURFCOM NEX 040	SURFCOM NEX 041
SURFCOM NEX 100	SURFCOM CREST

### ACCTee contour profile measurement and analysis system

This is the standard software associated with the Contourecord NEX/CREST series contour system. ACCTee completely changes the measurement style of contour profiles with a new concept. Document-based measurements and analysis with leading-edge operability and an intuitive work environment. Each function from measurement to analysis are easy to select and perform, to optimize throughput and performance.

Work trace function

As this function displays a manually traced profile, it is effective for measurements such as understanding the measurement limit point for measuring as far as the edges of a wall or valley when standing at the trace start or end points, or for places where it is difficult to check visually such as inside a hole etc. As the start point and the end point can be specified in the profile traced on the screen, the measurement will never fail. The screen changes to show the real-time status upon starting a measurement, which displays the profile being measured.
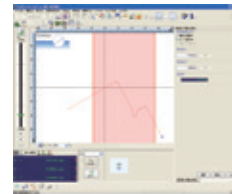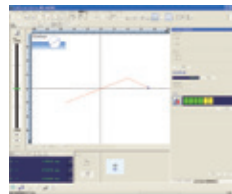

Work trace measurement area setting
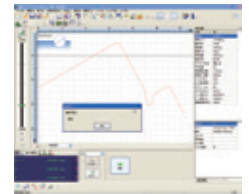
Real-time display

Peak and valley function

There are two modes in this function: Auto mode - The minimum point is automatically detected; and Manual mode - when the level mark on the screen is approaching, it is notified by means of color and sound change by turning the knob on the adjustment platform or the driving unit.

Manual mode detection start
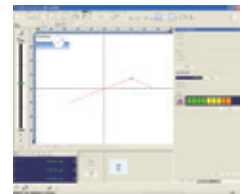
Manual mode maximum point detection

Stylus calibration wizard

The calibration for the stylus is executed by the masterball calibration unit. Through the masterball measurement and step difference measurement, the tip R correction and the arc error correction can be executed automatically or manually. The calibration is performed following the wizard guidance instructions in the following order: calibration condition (inputting reference value) setting, placement of the calibration unit, confirmation of measurement start point, and execution of calibration.

Calibration alarm

Any time can be accepted for the calibration time. In addition to the stylus replacement time, a message for encouraging calibration based on the measurement frequencies or lapsed days is periodically displayed, which guarantees an accurate and stable measurement.
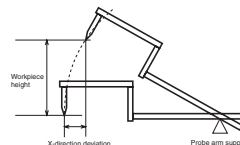
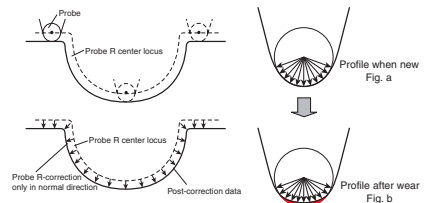### Masterball calibration function (patented)

Arc correction calculation

As the stylus makes an arc movement around the fulcrum of the stylus arm, an error emerges with the data in X direction at the stylus tip. This arc step difference is corrected by the masterball calibration unit, which guarantees high accuracy measurement.

Confirmation screen of calibration result

Tip R correction

The tip R correction is also an indispensable element for high accuracy measurement. The measurement surface is captured at the center of the tip R, and an offset correction is made in the normal line direction for the amount of the tip R (radius). (Fig. a) If the profile of the stylus tip R is always completely round, only the R value needs to be corrected, however, other errors may be generated by the correction amount itself due to process errors or biased wear on the tip R (Fig. b). The contour system of Tokyo Seimitsu monitors the status of the stylus tip based on the proprietary algorithm by creating the correction value for each 10 degrees of the tip R.

Pitch calculation function

For the same multiple profiles composed of circles and straight lines, the pitch between line cross or pitch between circle centers can be automatically calculated just by specifying the arc with the mouse. The evaluation of radii by a circle pitch and the evaluation of angles by a line pitch is also possible. The efficiency of the analysis task can be improved by using the dimension line auto output function concurrently.

Pitch calculation   Input range   Pitch calculation   Calculation result
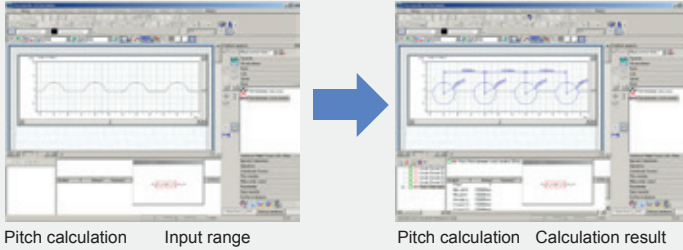
Profile synthesis function

Even for items that require multiple measurements because of the limitation of the stylus angle, the analysis can be performed by combining the data into one using the profile synthesis function.

Profile

Measurement

Analysis
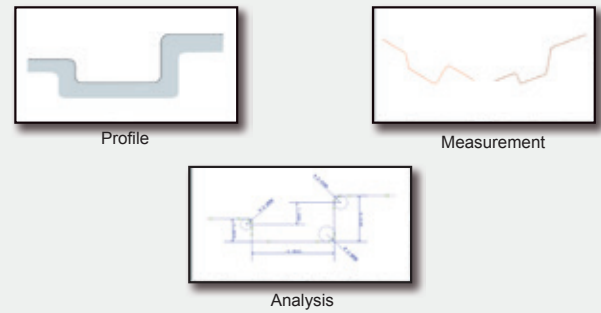
AI function (automatic element evaluation)

The points, straight lines, and circles of the basic elements are automatically extracted by turning on the AI function and by selecting the specified area of the measurement data. This eliminates the specification of the menu and icon in each case, which significantly reduces operating time.
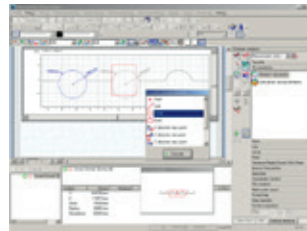
## Elements calculation with icon guidance

When performing a new calculation from any of the multiple elements already created, all possible choices are displayed. Multiple inter-element calculations can also be selected intuitively in accordance with the purpose.
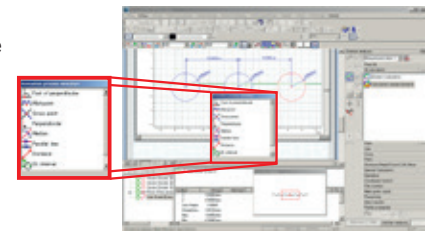
Element calculation
(options for circle-circle calculation are displayed)

Favorite

Frequently used commands can be stored in "Favorite". The commands can be re-organized for easy use.
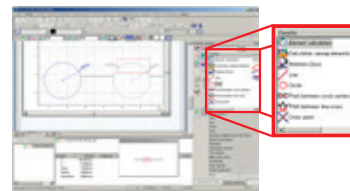
Calculation result preview function

When the multiple area input function is turned off, upon the input of the area that can set calculation area freely, the preview for the calculation result and the dimension line is displayed so that the calculation result can be checked beforehand. When the multiple area input function is turned on, the calculation result is displayed at the time of finalizing the element.
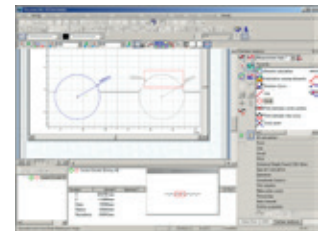
Example of preview

Edge detection measurement

It is possible to set so that the edge part can be detected during measurement and the measurement can be finished automatically.
It is effective when you want to measure the far end of the edge part.

Importing external data

It is possible to import CAD IGES/DXF data, and the measurement data* from the coordinate-measuring machine, Calypso Curve, and make an evaluation based on the contour analysis.
*The nominal data to be output by the Calypso option form data, ASCII I/O program.

Calculation point manual input

When analyzing the same profile repeatedly, it is possible to intervene the manual operation of the operator for the targeted analysis during CNC execution by changing the settings of the re-calculation to enable detailed analysis.

Specification	ACCTee contour profile measurement machine and analysis program
AI function	Automatic distinction of elements including points, straight lines, and circles automatically distinguish the combination executable of calculation between two elements (point - point, point - straight line, point - circle, point - oval, straight line - straight line, circle - straight line, circle - circle, straight line - oval, circle - oval, oval - oval)
Arithmetic processing	Point (cross point, mid-point, contact point, peak, valley), Line (perpendicular, median, contact line, parallel line, bisector, virtual line), Circle (partial circle, oval, contact circle, virtual circle), Pitch (pitch between line cross, pitch between circle centers), Distance, Curve length, Angle, Inter angle (cmplm. angle, suppl. angle), Coord. Diff (X coord. difference, Z coord. difference, dliff. angle, radius difference), Polar coord difference, Step difference (average step, max. step, min. step), Area calculation (addition, subtraction, multiplication, division, power operation, surplus, absolute value, square root), Statistics (average, max., min., std. dev., total sum), Over-pin calculation, Dimension line display function, Calculation result design value collation, mirror inverse, smoothing, form combining (whole composition, partial composition), Calculation point repeat function, Work trace function, Peak/valley function, CNC function, Nominal collation, Best fit (parallel move, rotary move), Nominal value preparation function
Data file I/O	Batch automatic calibration and manual calibration by the masterball calibration unit Maximum 20 units of stylus calibration information can be registered (the deadline of the calibration time can be specified)
Coordinate control	Origin, setting each axis, parallel move, and rotary move
Calculation support function	Infinite cursor, cursor form vertical/horizontal switch, one point micro motion, setting or error band
Stylus calibration	Batch automatic calibration and manual calibration by the masterball calibration unit Maximum 20 units of stylus calibration information can be registered (the deadline of the calibration time can be specified)
Measure pitch	0.01~1000 µm
Number of data points	Maximum 300,000 points
Magnification display: Lengthwise	Arbitrary value (unit: 0.01), automatic and 0.01 - 10,000,000 times
Magnification display: Sidewise	Arbitrary value (unit: 0.01), automatic and 0.01 - 10,000,000 times

Together with our partners, we are able to offer you a Europe-wide sales and service network. Through the regional proximity, a service technician can reach your premises without any prolonged wait and travel times. If you have any questions, please contact us directly from all European countries through our centralized metrology phone number or email address:

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