

## Company Profile

DewensionZ (China) Co., Ltd., invested and established by External-Array Software, Inc., is specialized in providing coordinate measuring machine (CMM) manufacturers in China with international high-level RationalDMIS measurement testing software, aiming to improve the overall level and the technical grade of coordinate measuring machine made in China.

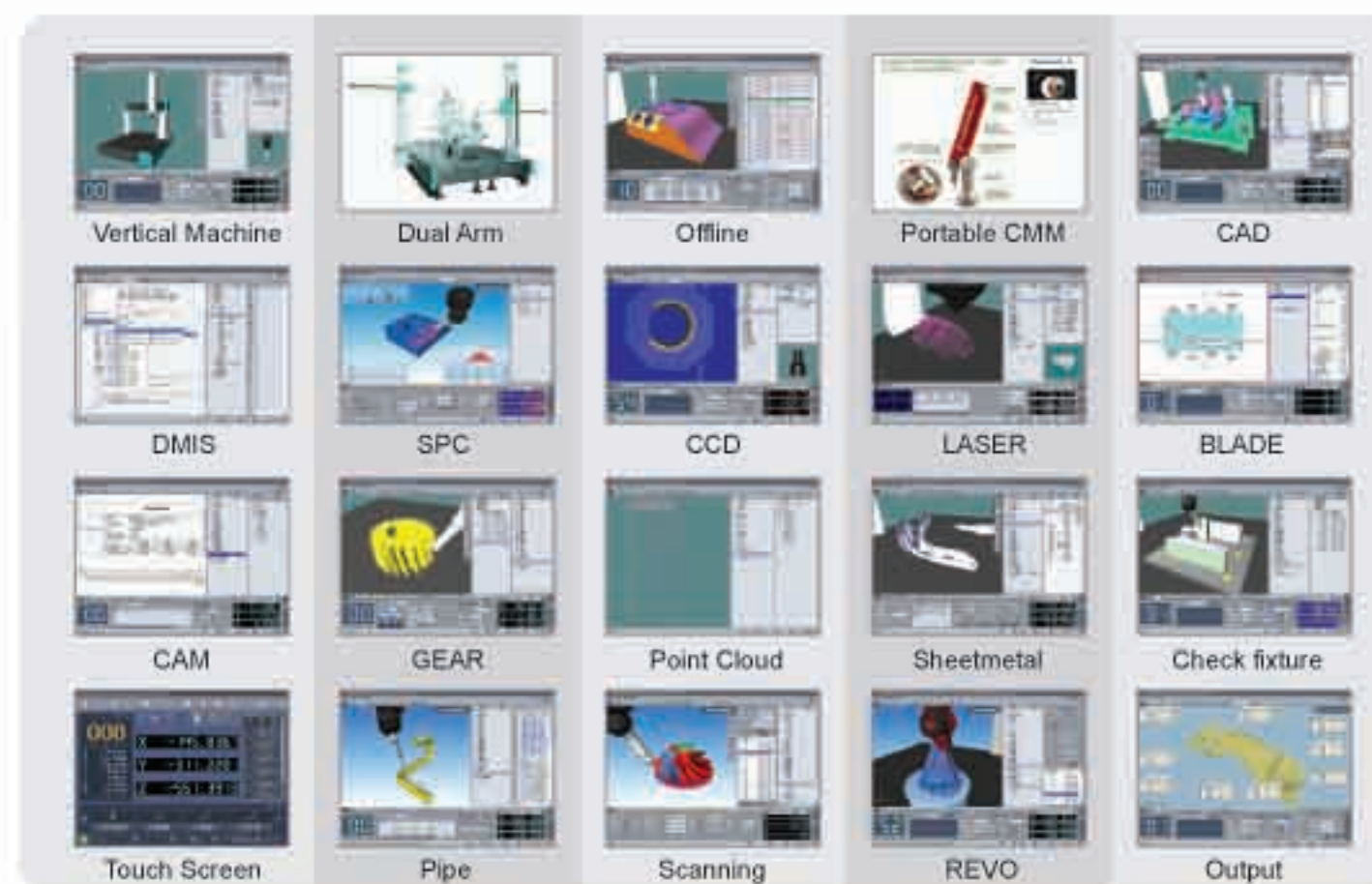
RationalDMIS is a new-generation coordinate measuring software, which is completely self-developed. Featured with various advantages, such as visualization, powerful function and high efficiency, it not only has being praised highly by experts in CMM industry since released into the market, but also wins the trust of customers.

RationalDMIS has passed the authentication of Physikalisch-Technische Bundesanstalt (PTB), a world well-known Deutsch metrology institute, and its reliability, effectiveness, etc are recognized by authorities. RationalDMIS falls in compliance with DMIS standards and ISO22093:2003 international standards.

A set of RationalDMIS, a complete set of solutions! The software supports I++ Protocol System or various other control devices. With its powerful functions, including brief user-friendly software interface, unique drag & drop operation, seamless connection with CAD data, 100% graphical display from measuring to output report, and object-based quick programming tests, the customers do not need to master much professional knowledge but a standardized three-day training class.

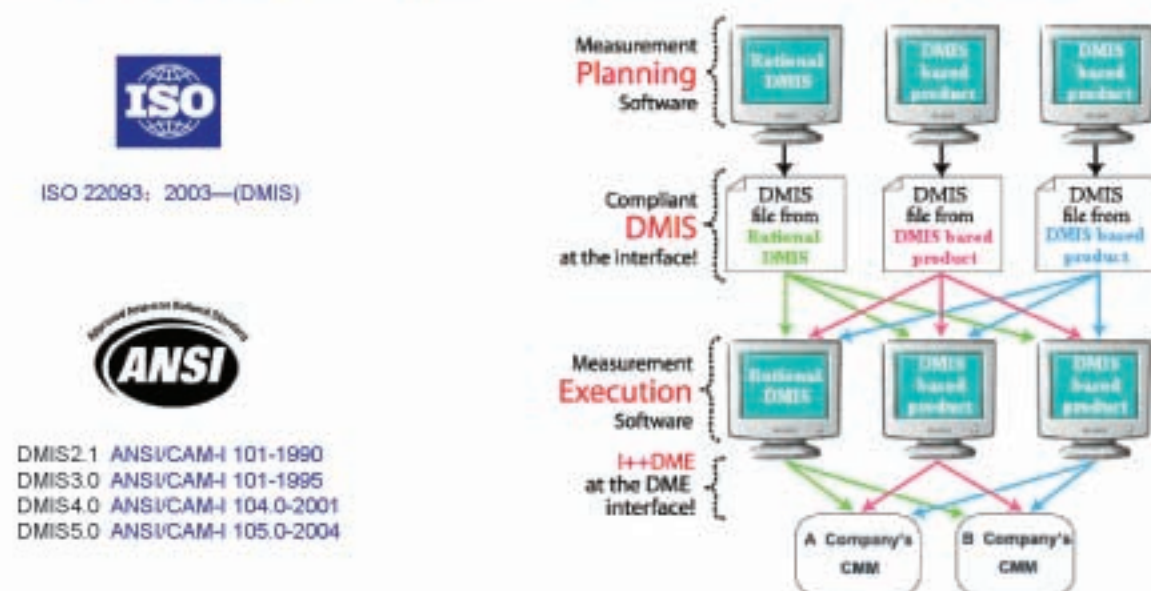
RationalDMIS is a new breakthrough with the respect to the practicability, intelligence, convenience and so on of coordinate measuring software, and therefore it is the most ideal option for manufacture industry and metrology industry.

Our goal is to constantly develop and improve RationalDMIS measuring software applicable to Chinese market, to make them meeting the requirements of CMM manufacturers and terminal users with quick speed and best quality, and meanwhile we also provide corresponding technical service and supports.





RationalDMIS is always in step with world advanced standards, design concepts!



DMIS (Dimensional Measuring Interface Specification) provides a set of uniform standards for the two-way testing data transfer between computers and measuring machines. DMIS standards have been widely recognized among international industries and have become the standards for CMM industry globally! DMIS is recognized and adopted by more and more large manufacturers, such as BMW, TemPress, NASA, GE, etc. It has become a common view in coordinate measuring industry to know and use DMIS, to integrate with international metrology standards. DMIS will show its advantages further in the fierce competitions in future!

The outstanding advantages of DMIS are: Time-saving! Money-saving!

DMIS ensures that it completely complies with the interchangeability between DMIS Standard testing programs, there is no need to make any conversion or revision, and there will be no time wasted on reprogramming, which can guarantee the value of all testing component programs!

At the very beginning of design, RationalDMIS is completely developed based on DMIS and it is one of the software in the world which highly supports DMIS Standard!



I++ Protocol is made by the joint effort of seven largest auto manufacturers in Europe. It establishes and defines the public interfaces between different testing devices, and thus quickens the connection between different hardware control devices and measuring software. At the same time of saving time, it also reduces the cost spending on developing new interfaces.

DMIS and I++ represent the advanced design concepts and future development trends of coordinate measuring industry! It is lucky that RationalDMIS is a pioneer supporting DMIS, I++! Only the software developed strictly based on industrial standards can make sure the universal property of programs and the interchangeability of hardware control systems, and can truly save cost, improve efficiency for the users!

#### PTB Authentication

Physikalisch-Technische Bundesanstalt (PTB) is a world well-known Deutsch metrology institute of CMM software authentication. RationalDMIS has successfully passed the authentication of PTB, which proves that its accuracy, compatibility and reliability are recognized by the authority.



RationalDMIS supports Windows XP and Windows 7!

RationalDMIS supports various hardware control system

UCC1, UCC2, UCClite, WPC, DEVA, TUTOR-P,  
MicroScribe hinged arm; Baces3D hinged arm; HEADER line laser



RationalDMIS supports various sensors/changers, etc.

High-speed five-axis: latest Renishaw high-speed five-axis triggered PH20!

High-speed five-axis scanning REVO!

Non-contact: CCD, OTP6M, LD50-Laser, LD60-Laser...

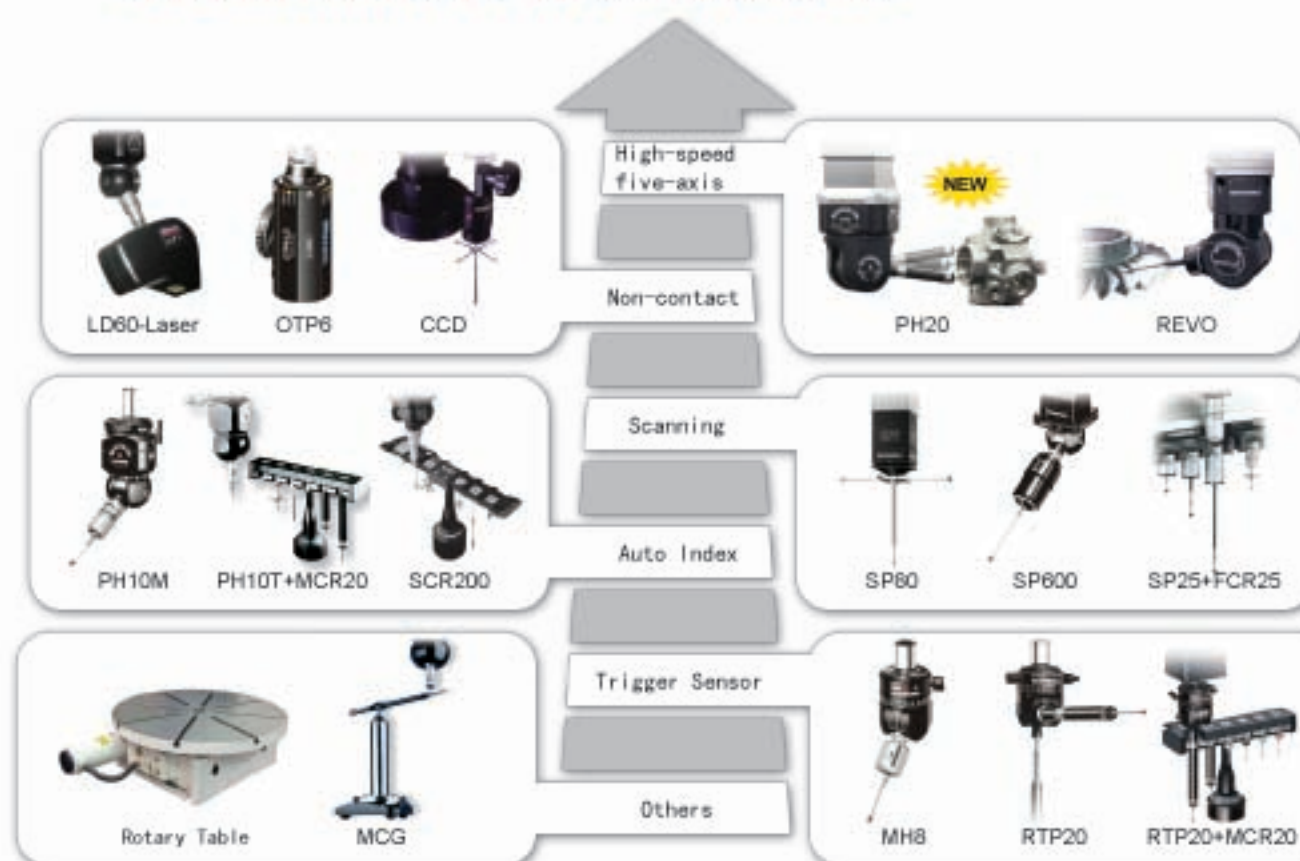
Continuous scanning: SP80, SP600M, SP25...

Auto-rotation sensor: PH9, PH10T, PH10M...

Triggered sensor: MCP, MH8, MH20I, RTP20, TP20, TP200...

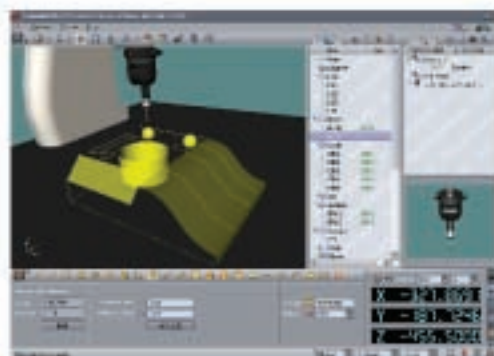
Sensor changer: MCR20, SCR200, FCR25-L3, FCR25-L6...

Others: MCG calibration gauge, rotary table, temperature sensor...

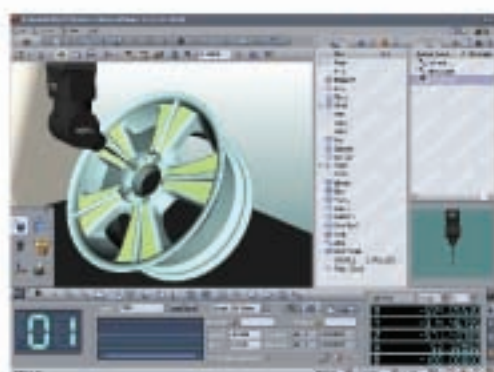




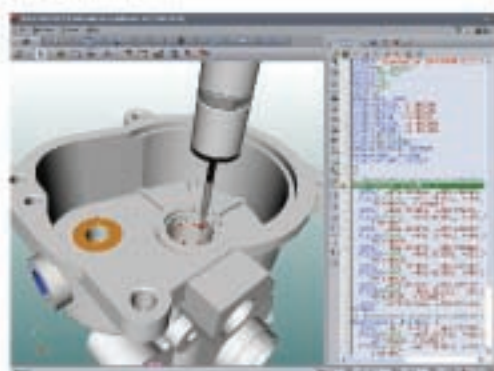
## Versions & Functions of RationalDMIS CMM



Lite Version



Standard Version



Offline Version



Simulation Version for Teaching

- ☑ Applicable to the measurement of parts without CAD
- ☑ DMIS 5.0 programming
- ☑ Display the features, machine model, and sensor model under graphics viewer
- ☑ Display the measurement process, measuring path preview/real time simulation in graphics
- ☑ Graphical output report
- ☑ Create and construct complete coordinate systems, evaluate various tolerances
- ☑ Support the shape of curves, surfaces
- ☑ Support point cloud, e.g. point cloud import/export
- ☑ Support 21 error compensation/temperature compensation/real time temperature compensation

- ☑ Including all the functions in the Lite Version of RationalDMIS
- ☑ Support CAD import/export, seamless connection with CAD
- ☑ Auto identifying CAD features, quick CAD-based programming, real-time comparison
- ☑ Anti-collision measuring, intelligent planning measuring
- ☑ Support auto-rotating sensor: PH9, PH10, five-axis triggered PH20...
- ☑ Support continuous scanning sensor: SP25, SP80, five-axis scanning REVO...
- ☑ Support various Renishaw sensor changers
- ☑ Support 4th rotating table, MCG calibration gauge
- ☑ Equip with Proe, UG, CATIA, ParaSolid direct interface
- ☑ Optional modules: SPC/CCD/Laser/blade/cam/gear/pipeline

- ☑ Its interface is the same with the Standard Version of RationalDMIS
- ☑ Its data can also be used in other versions
- ☑ DMIS 5.0 programming
- ☑ Quick graphical measuring program editing
- ☑ Preview measuring path of work piece
- ☑ Anti-collision measuring, intelligent planning measuring

- ☑ Realize low-cost, high-efficient measuring teaching
- ☑ Based on RationalDMIS 2.65, its operation is the same as Version V2.65
- ☑ Support all kinds of simple handle linking
- ☑ Accomplish single or more persons teaching
- ☑ Fail to connect CMM hardware
- ☑ The evaluated data have errors after processing, and it can test the data with simulated online

## Main Features of RationalDMIS:

### Intuitive, brief interface

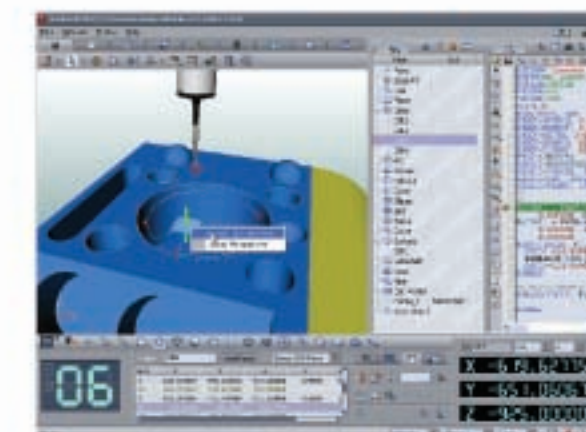
- ⊕ Unique, intuitive, brief user interface
- ⊕ No pop-up window
- ⊕ No complicated input, verification process
- ⊕ Avoid interface redundancy caused by more than one pop-up window



### Simple, high-efficient operations

Click with mouse + drag & drop with mouse = powerful functions

- ⊕ Real-time connection between graphic area, data area and operating area, simply "click with mouse" can identify all the features on CAD model, complete the quick editing of program, etc.
- ⊕ Drag & drop maximally simplifies the operating process. Whether it is calibrating sensor, measuring feature, creating coordinate system, constructing feature, evaluating tolerance, or outputting reports, it can be completed by the drag & drop of mouse, which makes the operation much easier.





## 100% graphical display

All the operating processes can be 100% displayed in graphics.

From create machine models → create sensor → calibrate sensor → create coordinate system → measure parts → change sensor → construct feature → evaluate tolerances → output reports.... It is intuitive and clear!



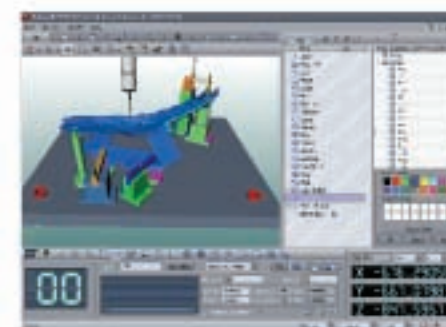
It is intuitive, convenient, intelligent CMM software, and only by a few days' training, even users with little industrial experiences can grasp it easily!

## Powerful Functions



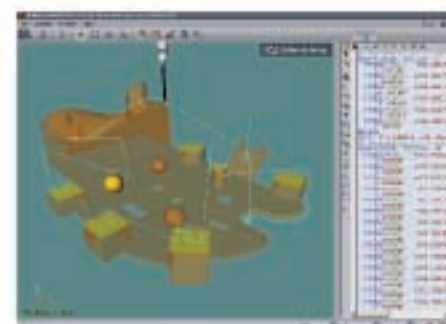
### 100% DMIS

- ✦ DMIS 5.0 programming
- ✦ DMIS self-learning program
- ✦ DMIS format import/export
- ✦ Graphical object-based quick programming
- ✦ Support both online and offline programming
- ✦ DMIS Chinese display, built-in DMIS program Chinese-English quick translation



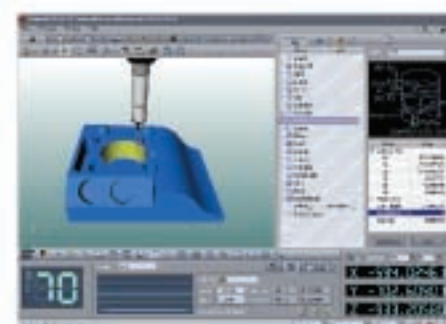
### Seamless Connection with CAD Data

- ✦ Support IGES, STEP, DXF
- ✦ Support Proe, UG, CATIA, ParaSolid direct interface
- ✦ Read, edit CAD colors and layers
- ✦ Automatically identify nominal CAD features: point/line/plane feature
- ✦ Automatically find out nominal features and perform real-time comparison with nominal features
- ✦ Quick CAD grid point measuring, CAD mirror image and CAD cutaway view



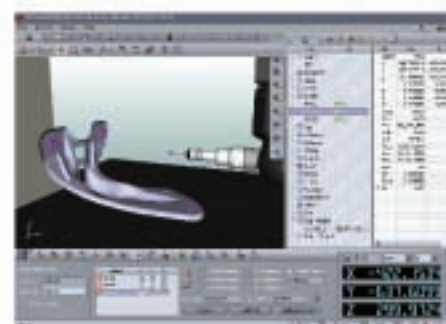
### Intelligent Measuring

- ✦ Anti-collision measuring, path preview and real-time simulation
- ✦ Intelligent measuring: automatically identify the feature type based on the measuring point and location
- ✦ Intelligent path planning: automatically create optimal measuring path
- ✦ Dependence testing: identify whether the coordinate system and sensor are correct under current status
- ✦ Rational shortcut panel: provide one shortcut window to quickly create coordinate system/construction/tolerance, etc.



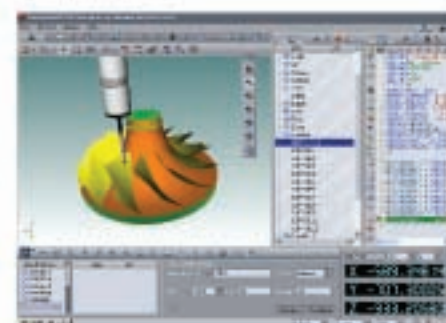
### Continuous Scanning

- ✦ Support SP25, SP600, SP80...
- ✦ Support WPC triggered continuous scanning
- ✦ Support REVO high-speed five-axis linkage scanning
- ✦ Filtering function: filter the burr and disturbance during scanning
- ✦ Support the non-contact quick scanning of line laser
- ✦ Support Renishaw sensor changer



### Various methods to create coordinate system

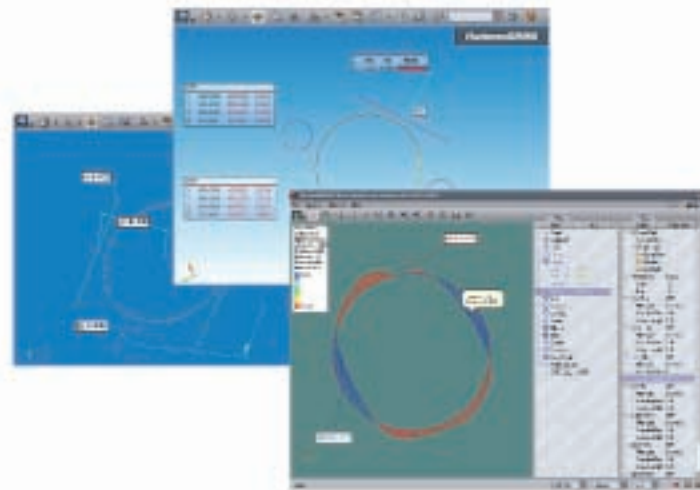
- ✦ Coordinate system alignment of various complicated work piece
- ✦ Quick 3-2-1 alignment
- ✦ Quick CAD aligning work piece
- ✦ RPS alignment
- ✦ Multi-point fitting, BestFit fitting
- ✦ Iteration alignment (align work piece of free-form surfaces)



### Powerful Feature Construction Functions

- ✦ Satisfy various construction demands
- ✦ CAD mirror, various geometrical features mirror
- ✦ Intelligently and quickly fitting new features
- ✦ Quickly construct limits
- ✦ Feature array copy, rotation copy
- ✦ Work piece deviation, material compensation





#### Complete, Quick Tolerance Evaluation

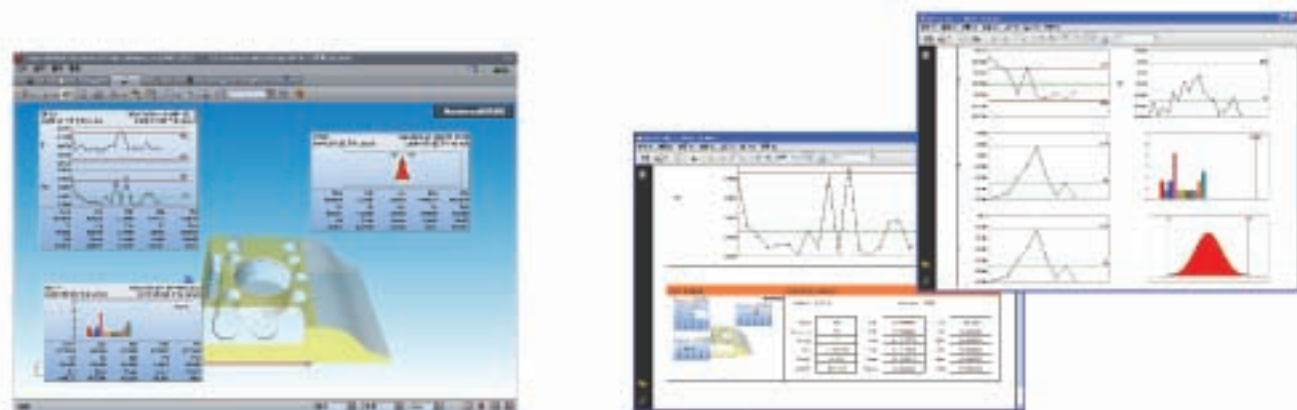
- ◆ In accordance with various standards: GB / ISO / ANSI / DIN / AGMA
- ◆ Evaluate various tolerances: Distance/Angle/Angularity/Perpendicularity/Parallelism/Position/Cylindricity/Concentricity/CircularRunout/TotalRunout/Circularity/ConeAngle/Diameter/Radius/Flatness/Straightness/PointProfile/CurveProfile/SurfaceProfile/Symmetry/Width
- ◆ Label the error of feature dimensions graphically
- ◆ Support max entity MMC, min entity LMC, RFS
- ◆ Quickly evaluate the tolerances of single feature, quickly copy and evaluate features of the same type



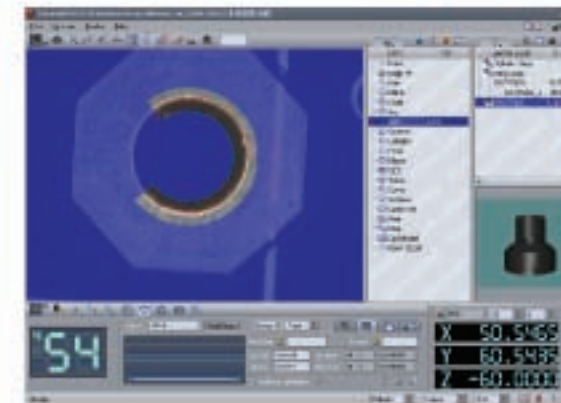
#### Diversified Output Reports

- ◆ Traditional text report output
- ◆ Graphic output
- ◆ SPC data statistics and analytical report
- ◆ All kinds of form error report
- ◆ Output of various forms, including HTML, EXCEL, PDF, etc
- ◆ Import, edit user-defined output templates

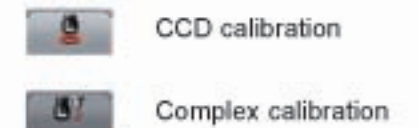
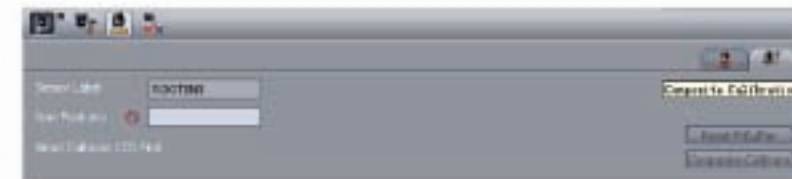
#### SPC Module: used for the statistics and analysis of product quality



#### CCD Module: used for the analytical testing, complex measuring of graphics

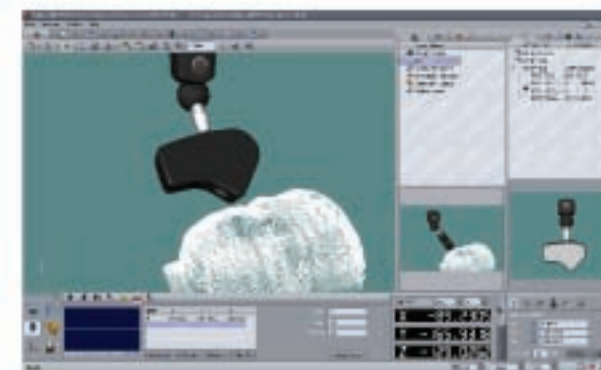


#### CCD calibration and complex calibration



Complex calibration: make sure that the data of CCD and triggered sensor area combined into the same coordinate system

#### Laser Scanning Module: usually used in high-speed, high-precision reverse



Multi measuring angles and stitching, trimming of scanning data automatically

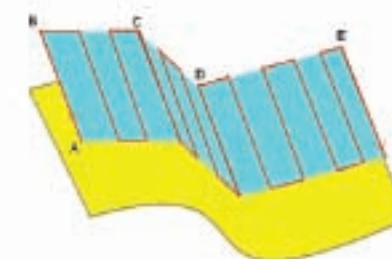


Diagram of contour path

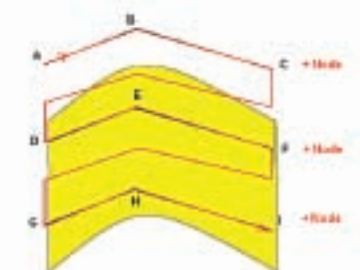
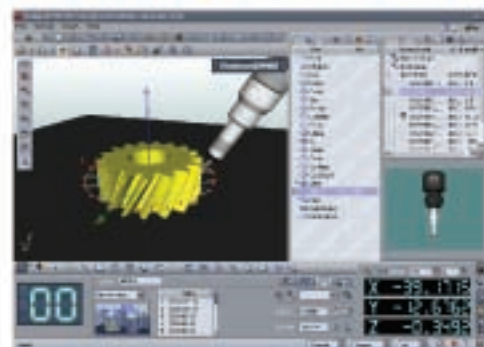


Diagram of non-contour path



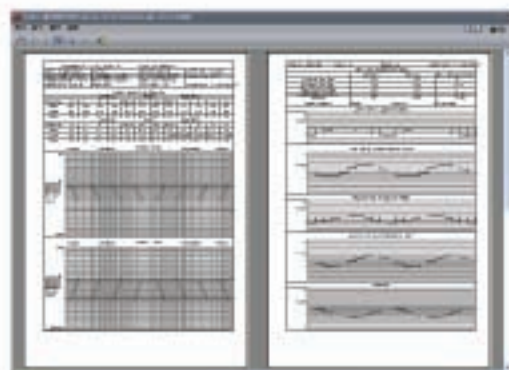
**Gear Module:** used to measure the involute gear of cylinder, including internal straight gear, external straight gear and helical gear..



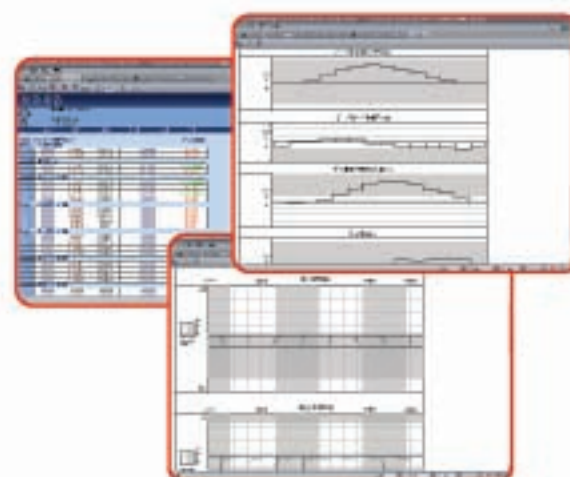
Automatically construct gear CAD based on the design parameters



Gear Path/Lead/Profile Measure

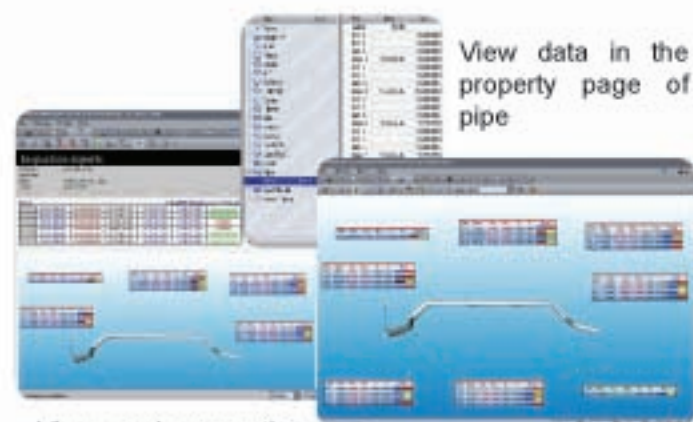


Report of gear



Text/graphics report

**Pipe Module:** used to test and analyze the automobile pipe, oil pipe..

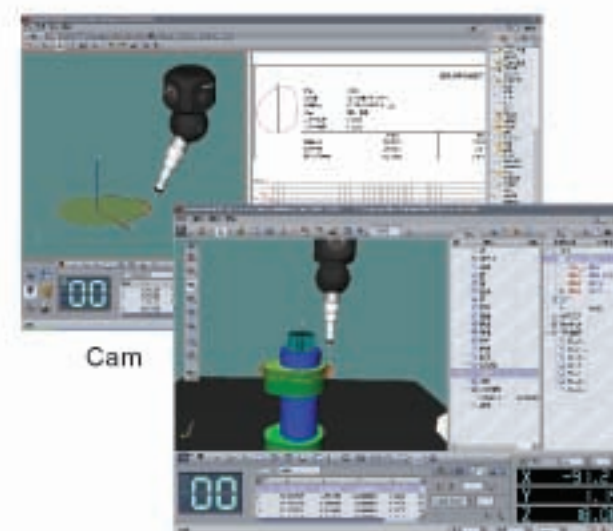


View data in the property page of pipe

View and save the graphic pipe data in output report

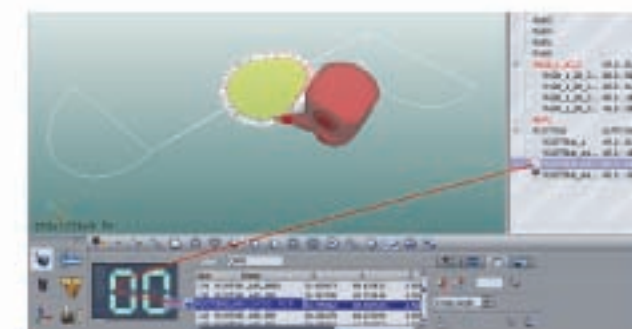
Intuitively, visually view and save the graphic pipe data in output report

**Cam Module:** used to analyze cam/camshaft

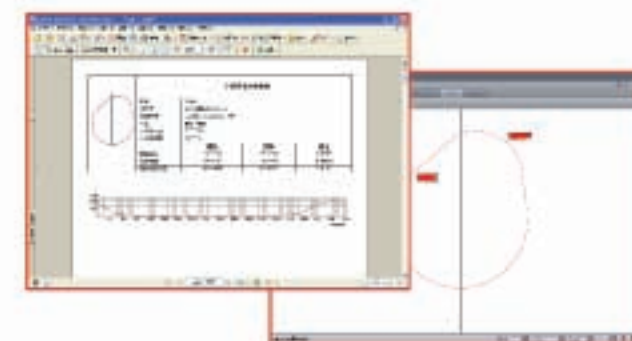


Cam

Camshaft

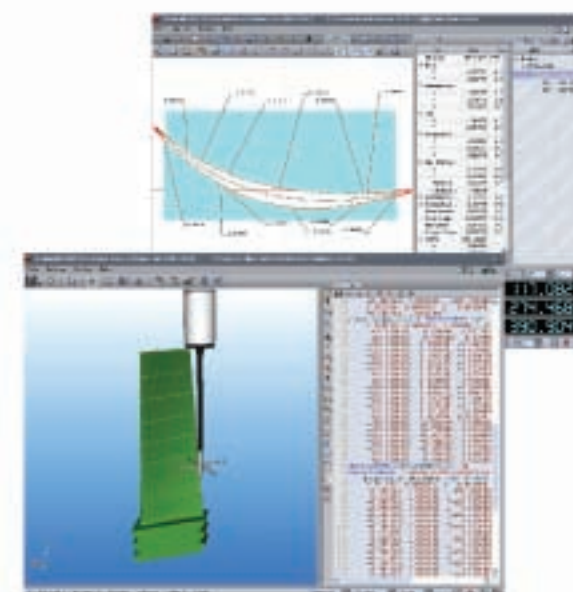


Change Probe angles

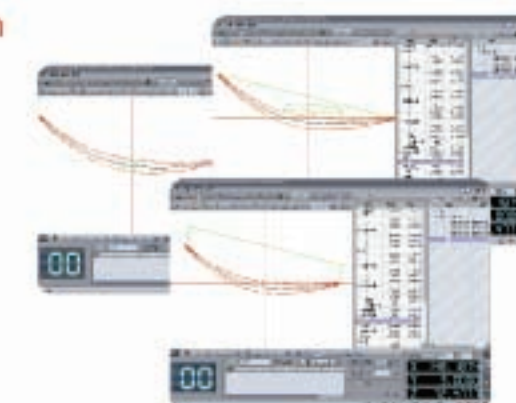


Cam report

**Blade Module:** used to measure and analyze aviation blade, nuclear power blade



Measure Blade



Evaluating Blade's parameter



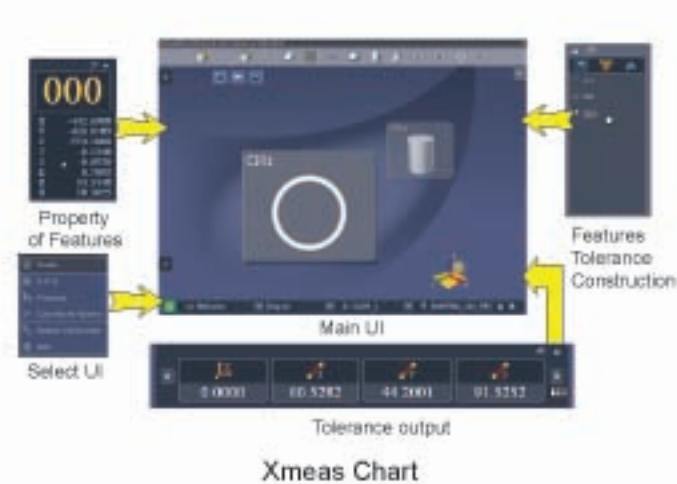
Blade Report



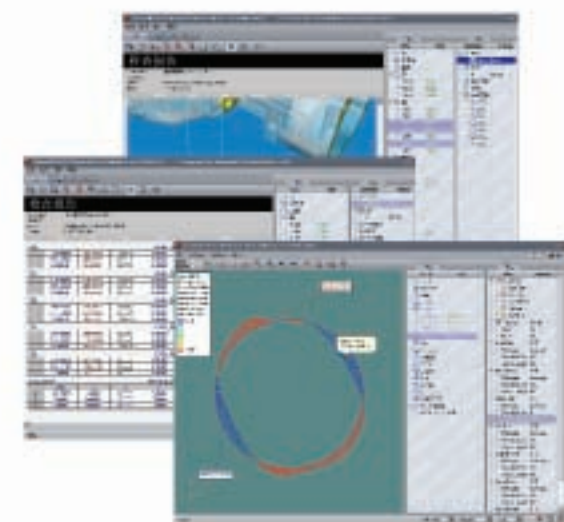
**Touch Screen:** the operations can accomplish most of the testing at measuring machine terminal with touch screen.



- ✓ **Dual-screen, data sharing, to improve the work efficiency!**  
The main screen RationalDMIS and Xmeas show different interfaces, which realizes dual screen and data sharing, improving over 30% work efficiency.
- ✓ **Complete and practical functions!**  
Xmeas can complete regular functions easily, including auto zero return of machine, sensor calibration, construct/switch coordinate system, tolerance evaluation, unit conversion, report output and printing, etc, which can greatly reduce the round trip time of operators and improve testing efficiency.
- ✓ **Simple operation, easy to learn!**  
Complete touch operation, supporting virtual soft keyboard input, brief interface, intelligently identify the type of feature under measuring, auto list the tolerance/construction available for calculation.

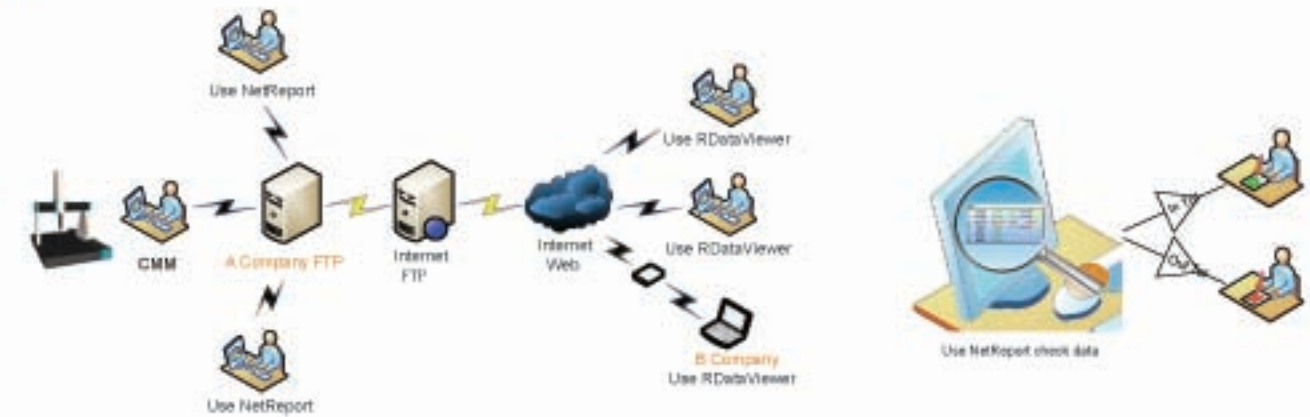


**Net report:** it allows the user to view the real-time measuring data, edit the output report from other computer with the help of LAN



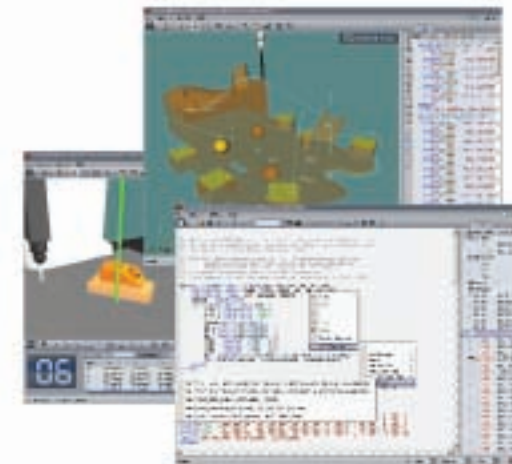
- 💡 **Free the coordinate measuring machine! Improve the utilization of measuring machine! Enhance the testing efficiency!**  
The coordinate measuring machine can carry out measuring without interruption, and the report maker can compile data report at real time!
- 🧩 **Quality monitoring! Coordinating the performances of multi departments! Coordinating the testing of multi products!**  
The quality inspection department can call the data, check the data and status of products under inspecting at any time. The design department, the production department and the quality inspection department can check the percent of pass at real time, and thus adjust/coordinate the work.
- 🕒 **Data sharing! Paperless/Network! High-efficiency and Time-saving!**  
It allows the users realizing real-time sharing of report or data between the client (Company A) and its supplier (Company B). Complete network operation, and it avoids a series of complicated acceptance procedures, including report printing, data transfer, testing submitting/waiting, application/acceptance, etc.

**RationalDMIS Net Report Solution:**



**RDataViewer** is a free software allowing the user to quickly view RationalDMIS testing report, and it is available at <http://www.external-array.com.cn>

**NetOffline:** it allows the programmer performing DMIS offline programming for the components from other computer by LAN(TCP/IP).



- 📋 **Standardized process! Clear labor division!**  
The design department is in charge of designing the CAD of components, the programmers write measure program, CMM operators are in charge of running DMIS program online and complete the report!
- 🕒 **Improve efficiency! Improve the utilization of CMM!**  
CMM operators directly open the program by programmers for testing, which not only avoids a lots of preparation for the operators, such as analyze the drawings of each component one by one, find out the testing method, and study the path planning, but also save lots of time!
- 💰 **Improve safety! Reduce the cost!**  
The CAD object-based programming, visualization of measuring machine/sensor/CAD, path simulation, anti-collision testing, powerful offline programming function can ensure the programmers to compile reasonable, safe testing program. It also avoids the machine collisions caused by mistake of operators, reduces the false parts caused by the misunderstanding of design/testing requirements of the operators, or by improper testing methods, which greatly reduces the loss!

**RationalDMIS NetOffline Chart:**

