



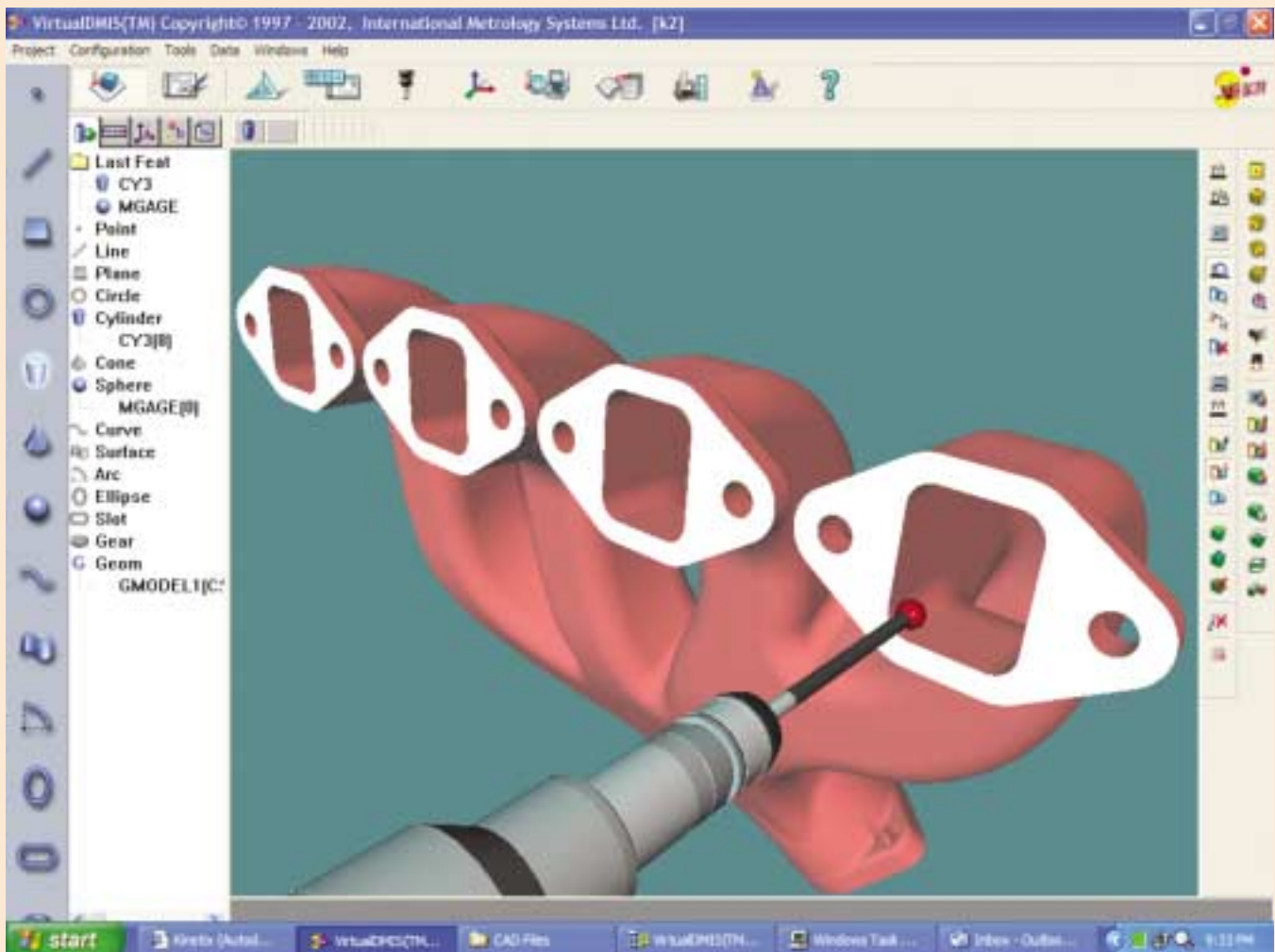
Virtual DMIS

Elevating Metrology
to a Higher Level



ActiveMatrix™

Repurpose CAD data independent of CMM software
Runs as a standalone application
Direct Import of CATIA V4 and V5, ProE, Unigraphics, Parasolids, IGES, STEP, ACIS, VDAFS
Export in CATIA V4 and V5, Parasolids, IGES, STEP, ACIS, VDAFS, CASCADE BREP, VRML
Single click feature recognition and motion generation from CAD
Mirror imaging
Multiple CAD model import
Auto translation of world coordinates
Graphics manipulation – solid or wire



Virtual DMIS' new Active Matrix™ CAD interface creates a bi-directional link between product design and measurement. Read and write industry standard and native CAD data formats. Active Matrix can be run as a stand-alone application anywhere in the enterprise, providing product data repurposing power wherever it is needed. Models can be "cleaned up" prior to the start of programming anywhere in the enterprise.

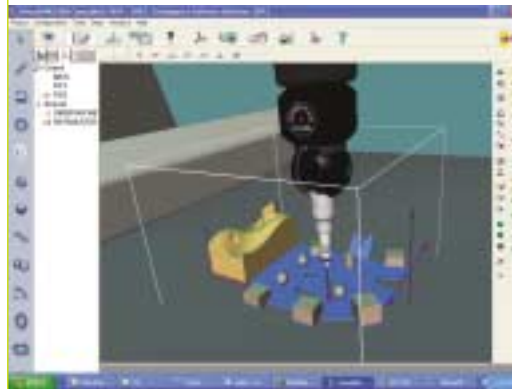
Virtual DMIS is built upon the next generation CASCADE™ solid modeling engine and displays the CAD model in a true solids format, providing the ultimate in accuracy and enabling surface nominal data and vectors to be selected directly from the part model. Multiple models can be imported and positioned on the Virtual CMM.

Full prismatic part geometry is available with automatic feature recognition and measurement simply by selecting the feature to be inspected with a single mouse click.

Virtual DMIS has been developed with the Dimensional Measurement Interface Standard (DMIS) as its foundation and is engineered to fully exploit the power and capabilities of this measuring technology standard (ANSI/CAM-I 101-1995). Virtual DMIS lives up to its name and utilizes DMIS in a pure native format eliminating the need for translators and provides a seamless two way exchange of DMIS between CAD/CAM and CMM measuring systems.



Import all major CAD formats



Position the model on the Virtual machine



Single-click creation of nominal features



Use Active Matrix to clean up model before import

Graphical Programming

On-Line and Off-Line

Program creation directly from CAD model

Optimization, simulation and verification

Auto collision resolution and avoidance

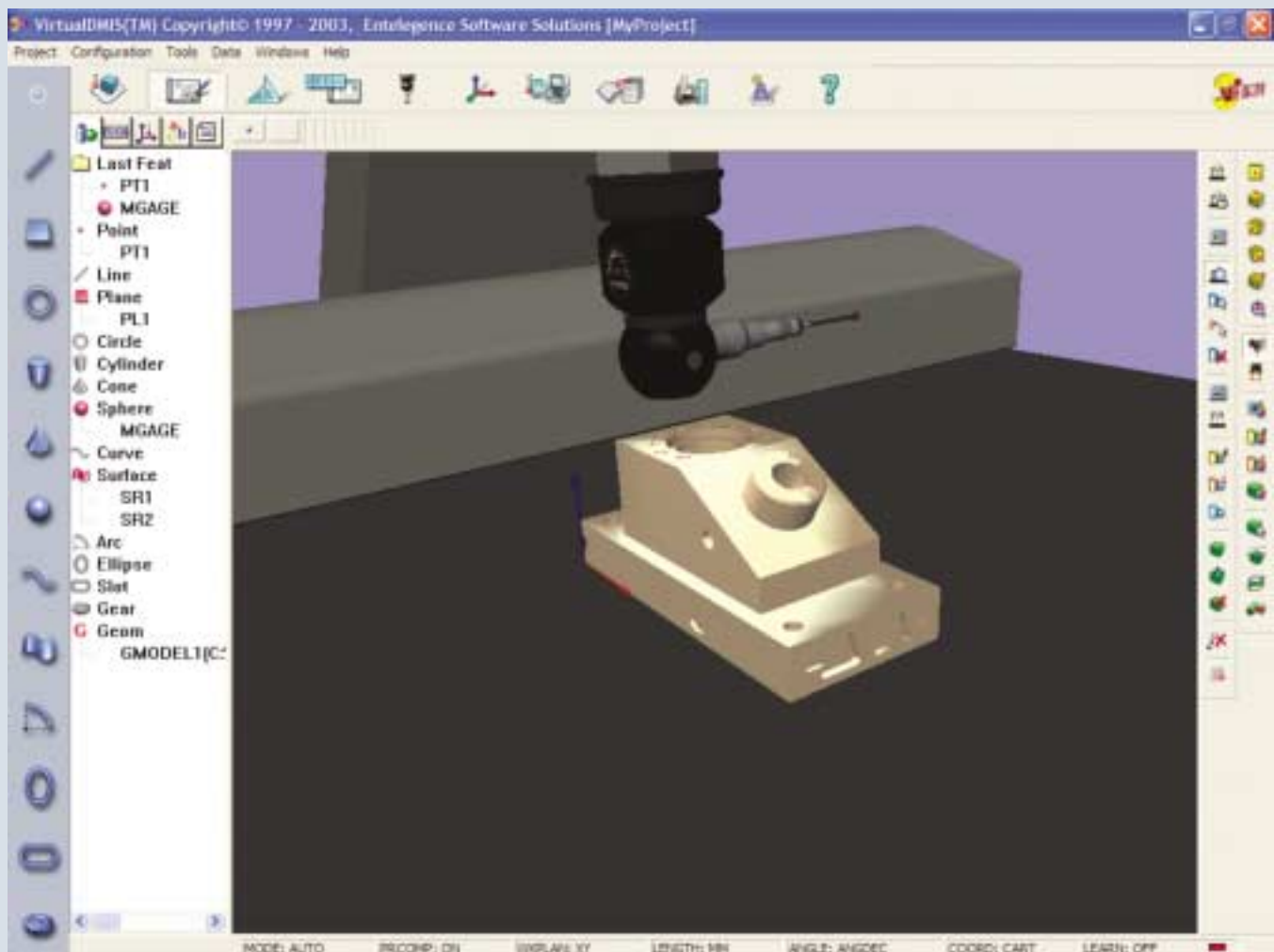
Graphic sensor configuration

Full library of Renishaw probe components

Automatic sensor calibration

Motion path graphics

Comprehensive library of CMM models



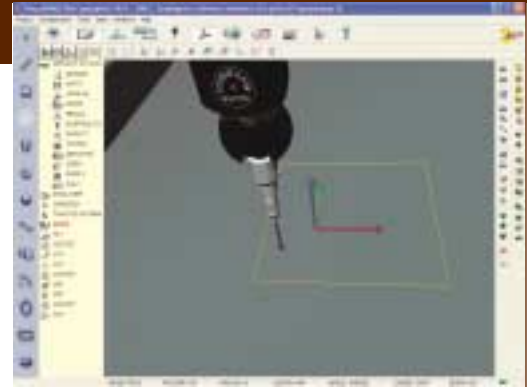
Virtual DMIS runs as both an Off-Line or On-Line application enabling CMM inspection programs to be generated and verified at a location that best serves the measurement task. On-Line users can switch to Off-Line at the CMM, enabling program editing and verification to occur without risk of CMM structure crashes.

Graphical Programming allows inspection programs to be generated in a virtual digital manufacturing environment including full CMM and Probe kinematic simulation and program verification and optimization in advance of part inspection demand; reducing lead-times and improving productive CMM utilization. Probe Path Simulation enables effective program prove out. CAD model manipulation tools allow the model to be located in the optimum position within the CMM volume regardless of design alignment.

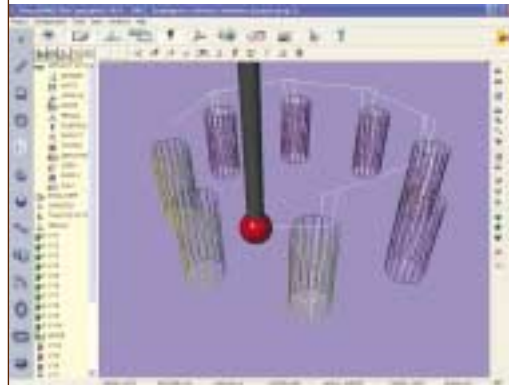
Feature Based Measurement is achieved by selecting the object to be measured. Auto feature recognition, nominal feature definition and single click, automatic entry to the nominal feature database is seamlessly achieved.

A full 3D scaled dynamic representation of the CMM and Renishaw Probing System from the extensive on-line library provides real world simulation and programming tools.

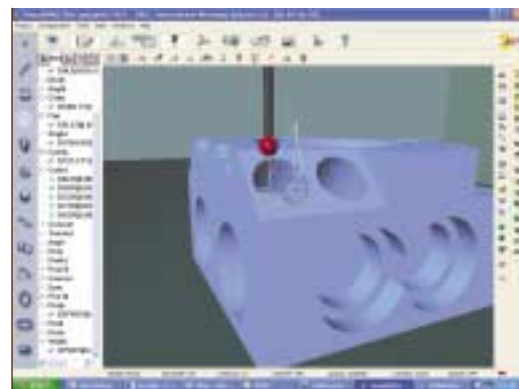
Solid Model based Collision Avoidance provide for foolproof anti-crash assurance, protecting your valuable equipment and maximizing uptime.



Program with or without a CAD model



Off-line probe path simulation verifies motion



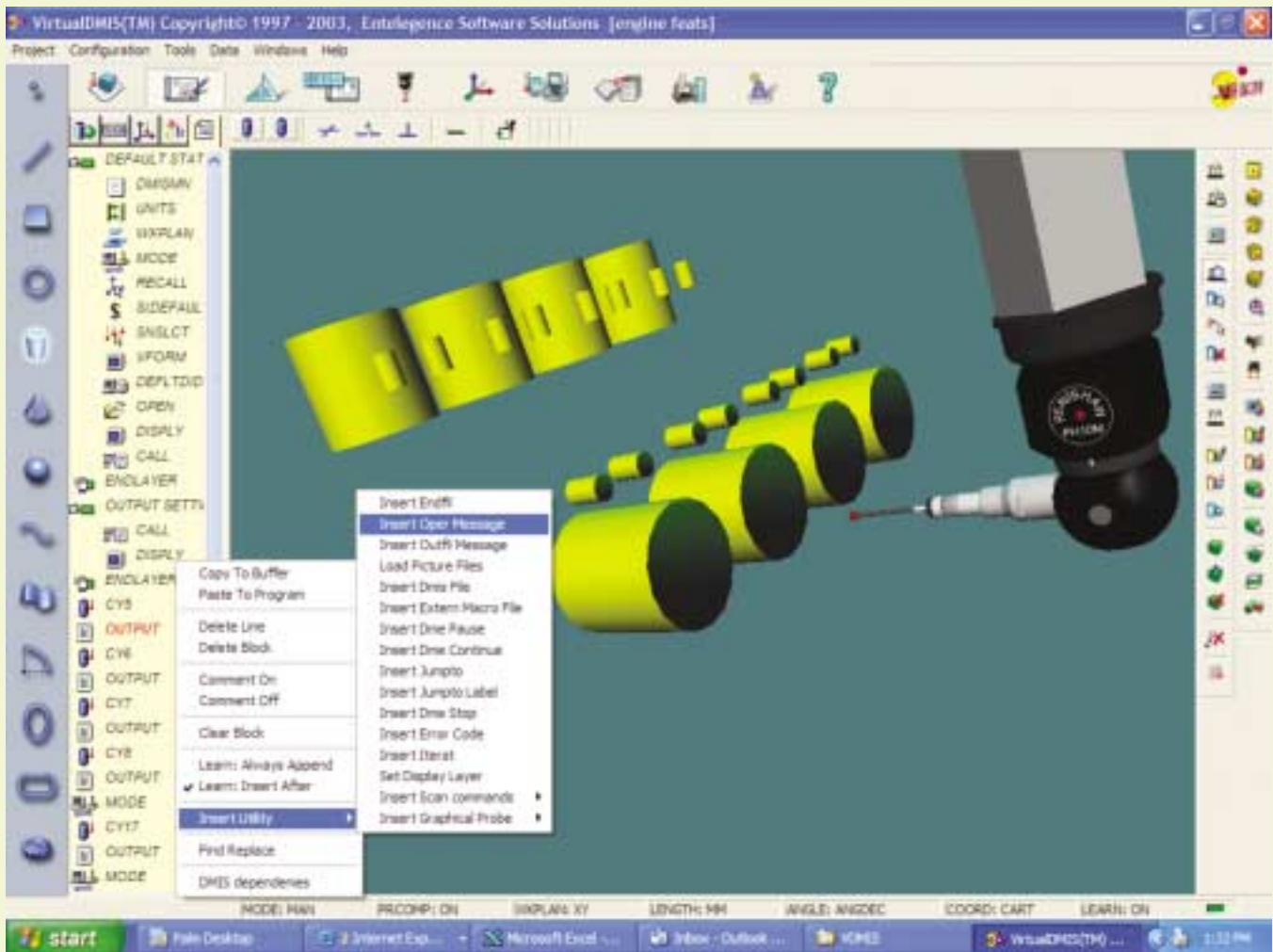
Solid model collision avoidance eliminates shaft probings



Full support for DMIS clearance surfaces

Intelligent Measurement

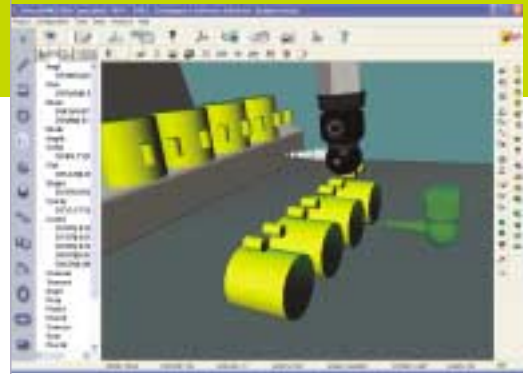
Iconized DMIS™ — pictorial DMIS program
DMIS in, DMIS out, native DMIS 4.0
Virtual kinematic CMM model and probe
Pick and measure capability
Smart Measure™ algorithms
Automatic indexing head alignment to nominal feature
Probe collision protection
Last 2 features intuitive toolbar
Ghost “go-to” simulation



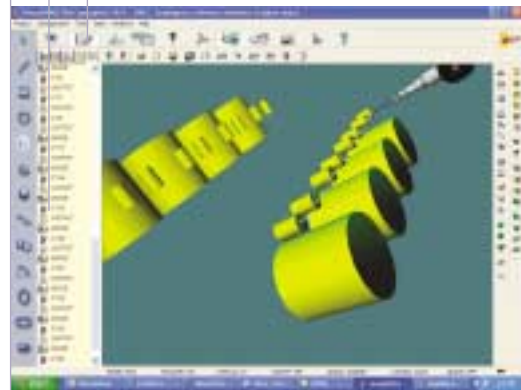
Creating a CMM programming revolution with the patented Iconization of the DMIS Standard (US Patent 5,960,431) Virtual DMIS negates the requirement for the programmer to write high level code. Picture Programming in vertical format provides a smart and friendly program interface and allows simplified program editing through cutting, pasting, copying, insertion functions, etc., all everyday events for a Windows-literate individual. High level commands – jump to, if-then-else and DMIS macro calls – are also accommodated with unique ease. Who said CMM programming was not easy?

Automatic Renishaw Indexing Head alignment to the optimum probing angle eliminates the guesswork from sensor definition; auto calibration routines complete the task. Point and Click Measurement enables the probe to automatically inspect part features by following the mouse clicks performed at the PC screen, rendering the traditional joystick style of CMM measurement routines obsolete. Reversing the probe vector and allowing for material thickness accommodates the situations where you have reverse part CAD data.

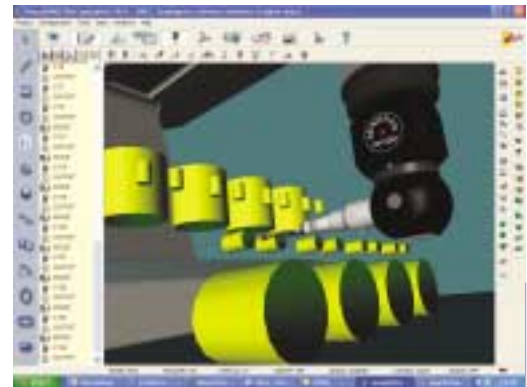
Smart Measure™ algorithms enable the CMM to intuitively determine the features being measured without operator input. Active on both manual and CNC CMMs, the user simply touches the part with the probe and Virtual DMIS does the rest. Valid for point, line, plane, circle, cylinder, cone and sphere, Smart Measure enables prismatic features to be fully inspected without the traditional PC interaction.



Ghost go-to simplifies motion programming



Copy and paste repetitive measurement



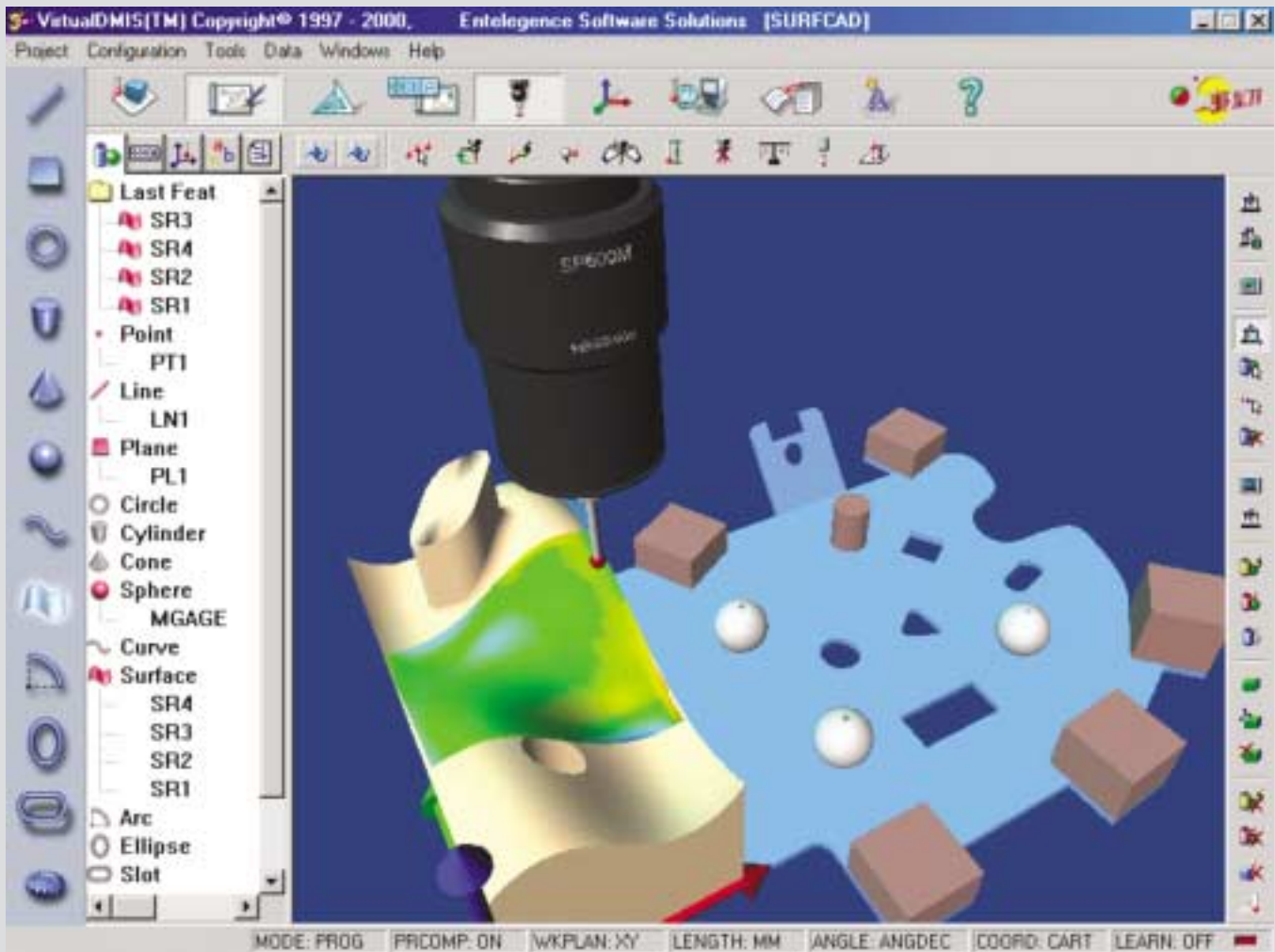
Automatic indexing head alignment



Automatic feature measurement

Scanning and Enhanced Surfacing

Scan curves and surfaces from CAD models
Support for Touch Probe Rapid Scan and Scanning Probe continuous scan
Full IAI sheet metal inspection including relative measure
Iterative alignment to surfaces
Reverse engineering with integrated fitting of splines and surface patches
Renishaw head index within curve scan
Profile analysis with uni- or bi-directional tolerancing



Combined with the 32 bit On-Motion controller Virtual DMIS scans with touch probes at the rate of 8 pts./sec. Rapid Scan™ provides a 10-fold increase over traditional point to point probing. Continuous scanning with analog probes on CMMs equipped with the Renishaw UCC1 provides data rates up to hundreds of pts./sec. The Renishaw SP25, SP600 and SP80 are supported. Rapid Scan can be utilized for reverse engineering or the comparison of actual scans to their corresponding nominals.

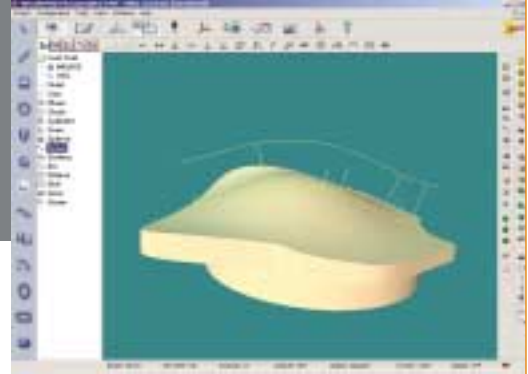
Virtual DMIS revolutionizes CMM feature measurement with Feature Scan.™ Developed as an enhancement of Rapid Scan to scan features and provide a stream of points rather than a few discrete points, allowing for more accurate measurement. Feature scan is seamless and can be applied automatically to features during CNC inspection.

The optional feature rich Enhanced Surfacing Module of Virtual DMIS extends its capabilities as a supreme graphical analysis tool for complex 3D surfaces at the CMM.

Iterative alignment routines allow the physical part to be aligned accurately off the CAD model for the most complex of parts. Click on the aligned CAD model and the nominal definition and surface normal vectors are automatically created. A single mouse click provides CNC point measurement with deviations displayed graphically. Automatic scanning and tolerancing of the nominal surface provides a full visual report.

As a reverse engineering tool, Surfacing allows automatic scanning of curves with data export in ASCII or IGES B-spline Curve format. When scanning patches, the actual surface is reconstructed at the CMM for export as an IGES surface file.

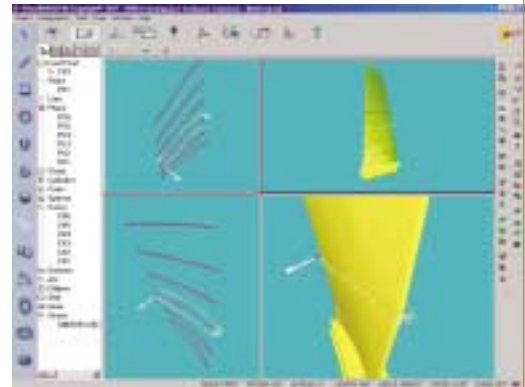
A nominal grid of points can be automatically created and overlaid on the CAD model to extract nominal data points which can be measured under CNC execution at the click of a mouse.



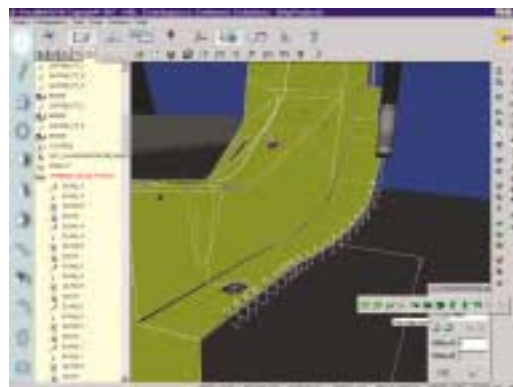
Profile results directly on CAD models



Profile results to printer



Cross sections from CAD model in multi view



Relative measure command set for thin-wall parts

Graphical Reporting

Graphical display of measured results

Balloon display of nominal, actual and deviation

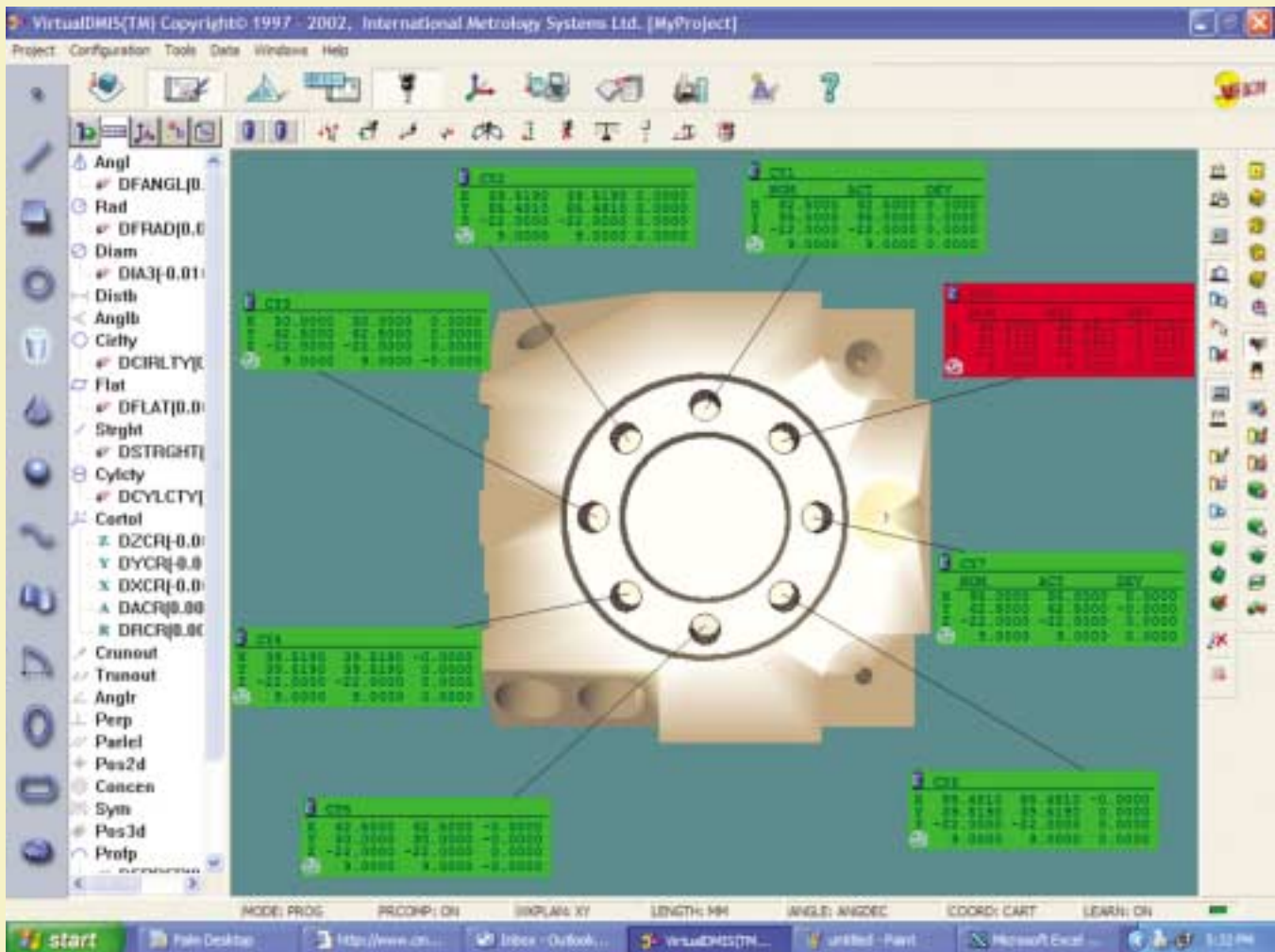
View manipulation during reporting

Pictorial reports appended with numerical data

Optional CAD model display

Whisker diagrams for rapid visual form analysis

SPC

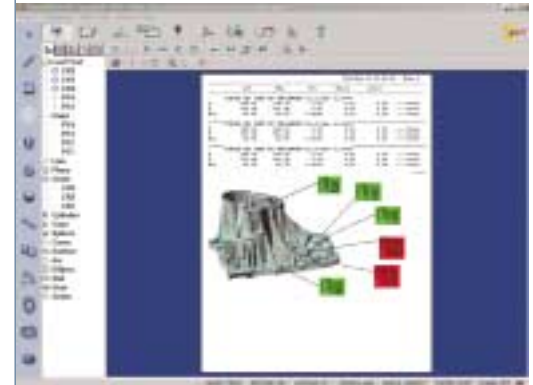


The fundamental reason for measurement is to provide information. Virtual DMIS has turned the transformation of data into information into an art form. No longer do you have to accept standard difficult to interpret CMM reports or transfer data into separate software packages.

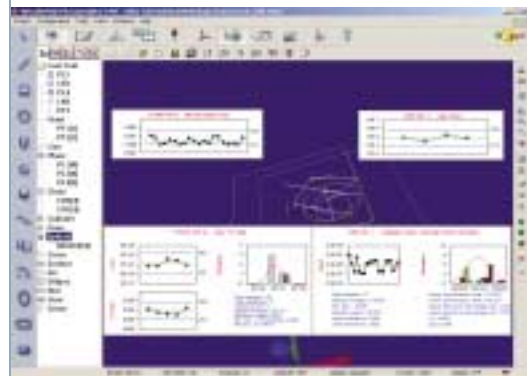
Balloon referencing of measured features, color coded to signify status, is seamlessly achieved either through auto creation as features are measured, or by dragging and dropping features from the feature database. Reporting sessions on measured data can also take place Off-Line for post analysis.

Full control over the graphics view area allows reports to be created with or without the CAD model displayed. Individual feature type entities can be switched off for clarity. Unlimited views and full flexibility over displayed data provides you with the ultimate presentation tools. Seamless data transfer to Microsoft Office products complete the capabilities.

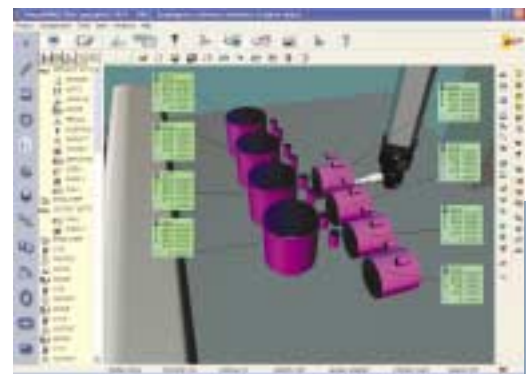
eSolve.net oversees metrology data throughout the supply chain. Results are transferred through the Metrology Data Markup Language (MDML) to the eSolve.net server for review and further analysis by authorized users anytime, anywhere.



Easy to understand graphics on printed reports



SPC reporting in CAD viewer



Balloons stay attached in any view



eSolve.net – web-based supply chain data manager

Additional Modules

Virtual DMIS has been designed to support an open-ended array of add-on modules.

Customize Virtual DMIS to deliver the complete application solution for your enterprise by adding one or more of these optional modules:

Virtual Vision⁺™ Multi-Sensor Software

Virtual Gear

Virtual Excel

Virtual SPC

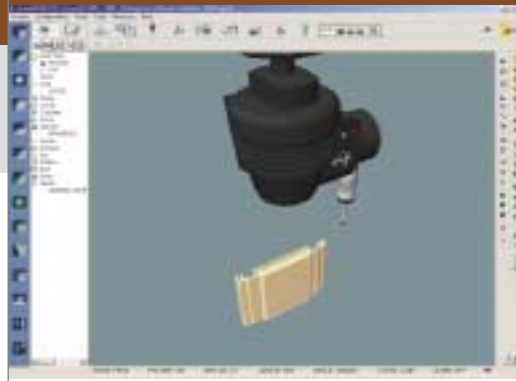


Virtual Vision⁺ brings CAD and multi-sensor functionality together in one environment. Virtual Vision⁺ allows optical measurement on a standard CMM or on a dedicated video CMM system. Intuitive lighting control and support for single or dual monitor PC configurations maximizes programming efficiency.

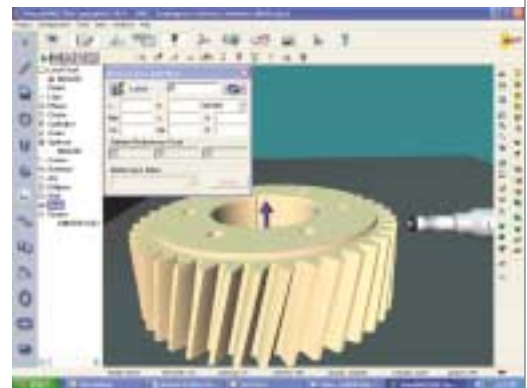
With Virtual Gear, Helical and Spur gear measurement can be performed with or without a Rotary table. Gear Inspection routines and reports are automatically created after defining gear data according to the appropriate standard. AGMA, DIN and ISO standards are supported.

The Virtual Excel module links the output window directly to an Excel spreadsheet. Values can be automatically inserted into spreadsheet cells for post measurement processing with formulas and Visual Basic macros. Virtual DMIS commands for importing values from spreadsheets into the Virtual DMIS environment are also included.

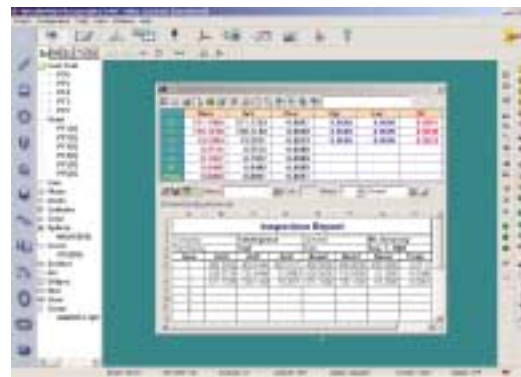
Virtual SPC adds SPC functionality to the Virtual DMIS environment. X-bar and R charts, Histograms, Run charts and Capability studies including derivation of Cp and Cpk are supported. Export of data into Excel is supported for SPC data. Balloons with SPC reports can be overlaid on CAD model images for easy understanding of the process.



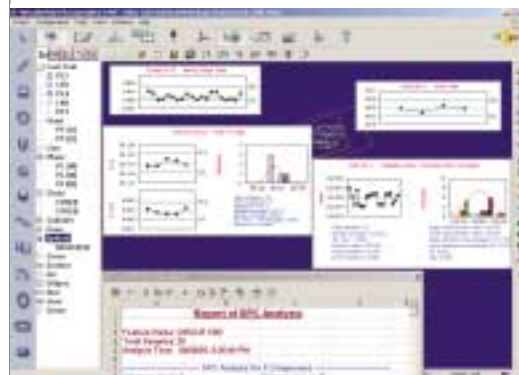
Virtual Vision⁺ CAD -based multi-sensor environment



Virtual Gear for helical and spur gears



Virtual Excel merges the Virtual DMIS and Excel environments



Virtual SPC places SPC reports on CAD model

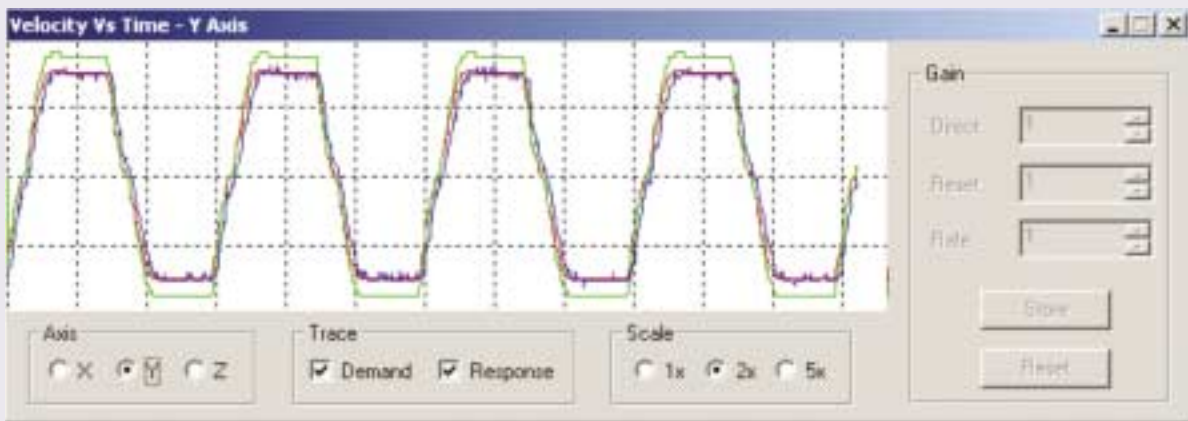
Retrofits

IMS On-Motion for Point-to-Point and Rapid Scan™

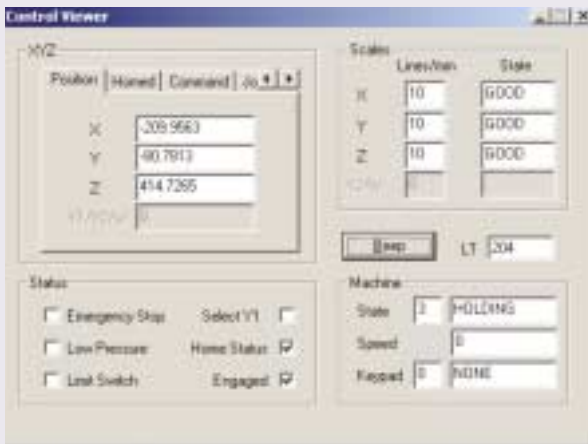
Renishaw UCC for analog probing and scanning

Full 21 DOF error correction with open map

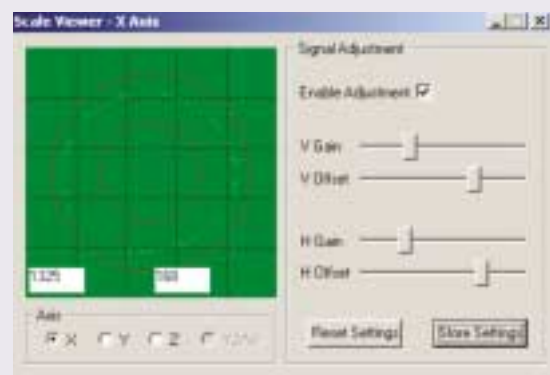
Integrated tuning and diagnostic tools



Motion viewer for fast, reliable servo tune-up



Control viewer shows all signals and status indicators



Virtual oscilloscope shows scale signals for easy maintenance

A CMM with Virtual DMIS represents the ultimate inspection tool. Icon based CAD programming, Online or Offline, in the DMIS language represents the most efficient system architecture possible.

Virtual DMIS can be retrofitted to upgrade your existing CNC or Manual CMM into a "state of the art" measuring system. Our service providers have a breadth of experience in a variety of brands of CMMs ensuring engineering integrity and providing total customer confidence. Virtual DMIS has been retrofitted to a wide variety of brands, models and types of CMMs, providing a database of cost effective and fully engineered solutions.

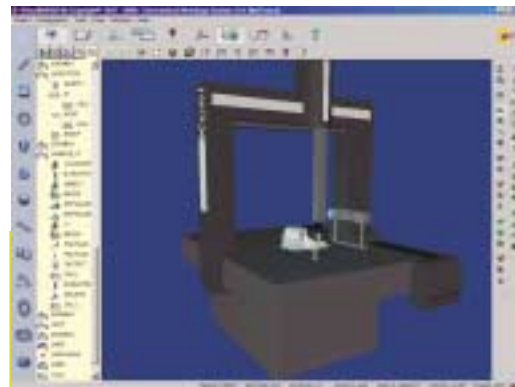
CNC Retrofit options include both the IMS On-Motion and Renishaw UCC controller solutions. Manual Retrofits require only scale interfaces and a PC card.

The economical Virtual DMIS Lite, including Smart Measure, is available for users who do not need CAD capability at the CMM. Virtual DMIS Lite can be upgraded to the full enhanced version at any time.

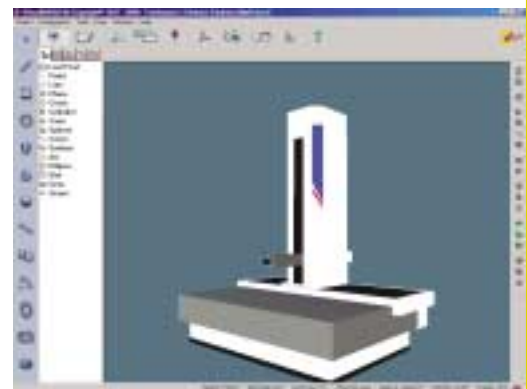
With full error correction integrated in the On-Motion controller API, machine accuracy can be assured. Servo tuning and diagnostic tools assure proper controller setup. The built-in accuracy checking routines including Ball Bar, Step Gage and Length Bar, assure that your CMM performance need never be in doubt.



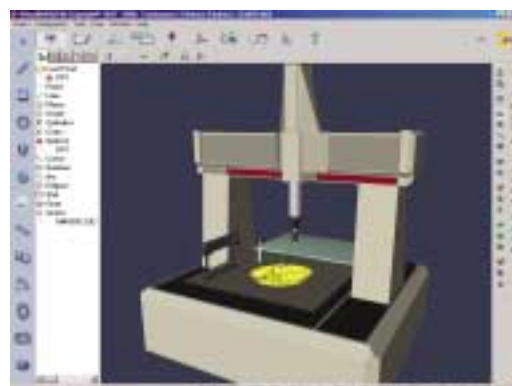
Gantry



Moving bridge



Horizontal arm (dual arm optional)



Ring bridge



CMM Mexico
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Fax: (81) 8676 3893
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