

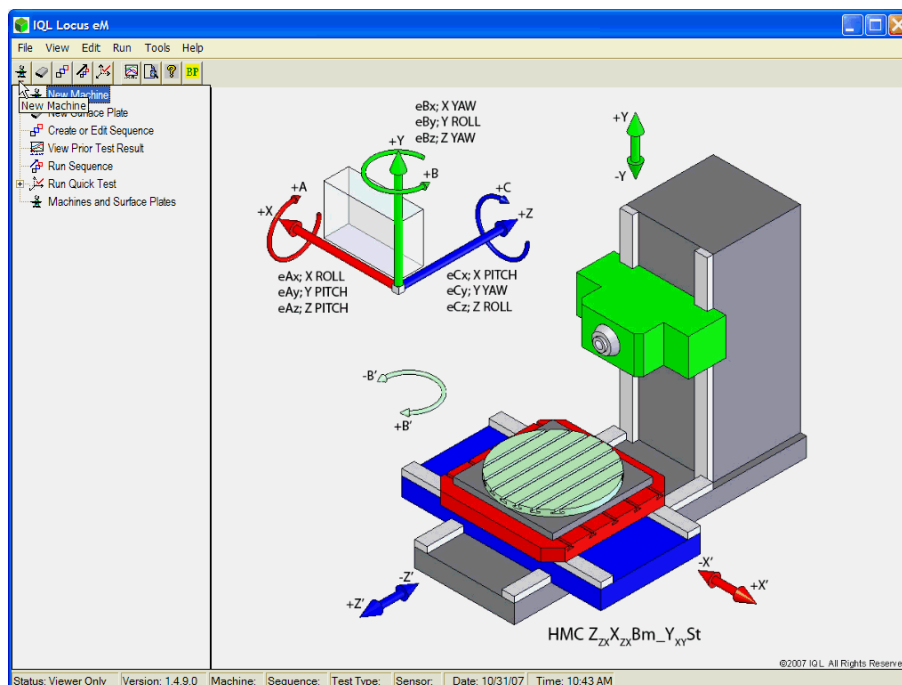
Locus[®] eM Measurement Software

For Machine Tools & Surface Plates

Comprehensive Measurement Capability for Manufacturing

Locus eM is a comprehensive software tool for measurement, analysis and diagnostics, supporting a wide range of manufacturing equipment including machine tools as well as surface plates. When used in combination with supported instruments, users with little or no experience can successfully and quickly measure a wide range of equipment attributes.

All measurement tasks are presented in easy to use task “Sequences” that guide the user via step-by-step instructions. Results are provided with color graphics in multiple formats, making them easy to understand and communicate. The flexible display window allows the user to rotate the image to any orientation, easily focusing on areas of interest. Custom reports and presentations can be easily created by exporting output screens into Microsoft[®] Word for editing and formatting.



Locus eM includes a wide range of measurement tests: Axis Alignment (Squareness & Parallelism), Axis Angular (Pitch, Yaw, & Roll), Axis Positioning, Dynamic Step Test, System Compliance, Thermal Drift, Flatness X Pattern (Moody), Flatness Grid, Profile Straightness and Profile Parallelism, Earth Leveling as well as Volumetric Positioning Performance. Each test has been provided within an individual task Sequence which guides the user through all of the steps needed to make successful measurements: Preparation, Configuration and Measurement.

Locus eM also allows the user to customize these Sequences or create new Sequences to suit their specific needs. Each machine tool or surface plate can be individually defined. All measurement data is stored in an easy to navigate directory system, making the measurement data simple to access and archive. All related files include a unique identifier to insure data traceability.

Comprehensive measurement tests, 3D color graphics, easy to navigate data storage, and step-by-step task Sequences make Locus eM the best solution for measurement and evaluation of common manufacturing equipment.

Locus eM is part of the Locus Manufacturing Metrology Suite, IQL's comprehensive offering of measurement and analysis software and manufacturing process diagnostic tools. Contact IQL today for a quote, reference P/N 1000-114.

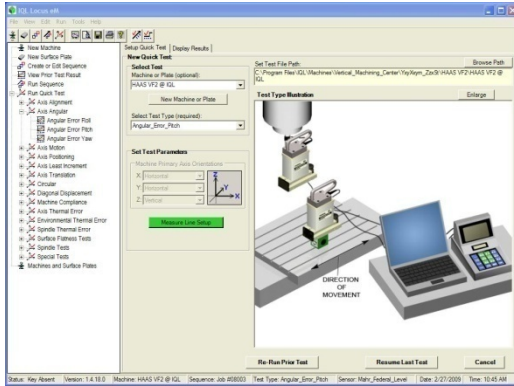
A BETTER WAY TO ACHIEVE TOLERANCES



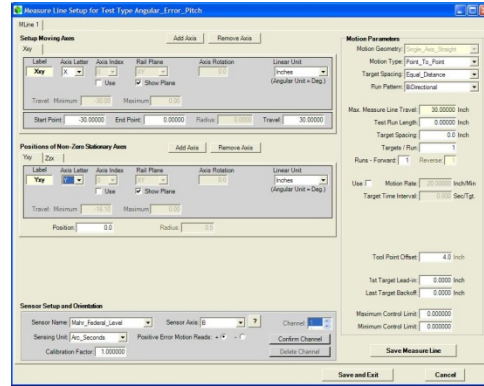
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Set-up

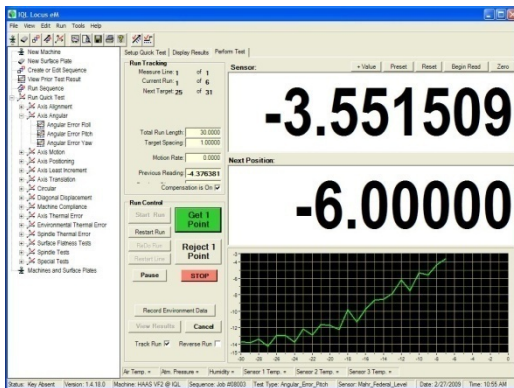


Test Setup Screen with Instructions

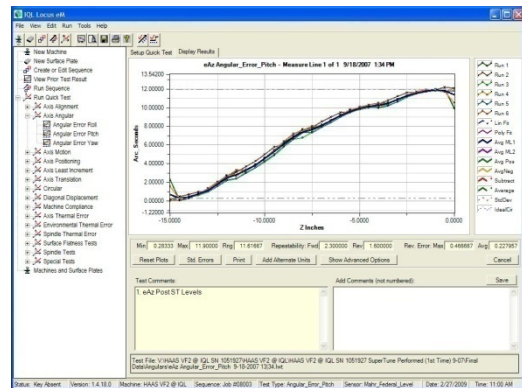


Detailed Measurement Line Setup

Measurement

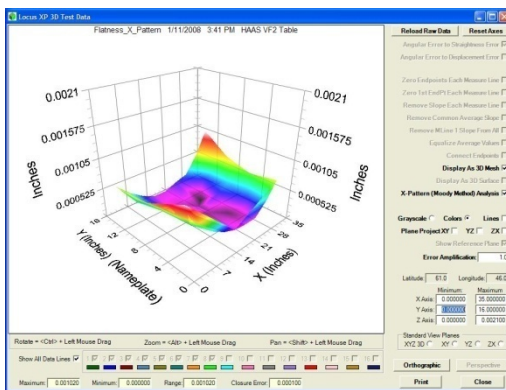


Capture Screen with Instruction and Test Controls

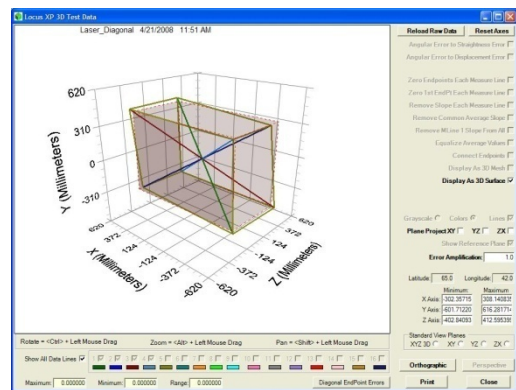


Data Output Screen with User controllable analysis

Graphic Outputs



3D Surface Flatness Output



Diagonal Displacement Diagnostic Output

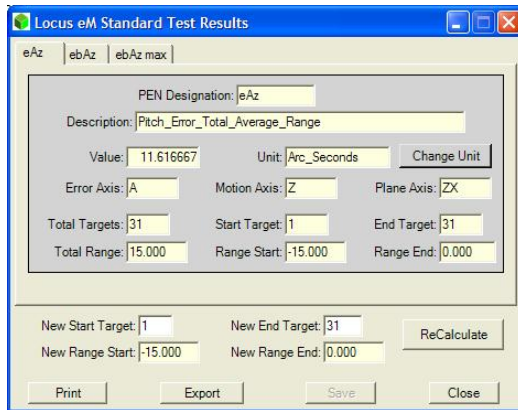
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Locus® eM Measurement Software

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Parametric Error Names (PENs)



Sample Parametric Error Output Screen (Z Axis Pitch)

Instruments Supported:

- Mahr Federal Electronic Level Systems
 - 832 Amplifier
 - 432 Amplifier
- Mahr Federal LVDT
 - 832 Amplifier
- Renishaw Ball Bar (QC10 & QC20-W)
- Renishaw Laser System (ML10 & XL-80 Series)
- HP/Agilent Laser Systems (GPIB/IEEE)
- Heidenhain Angular Encoder

System Requirements:

- Operating System: Windows® XP or 7
- Processor: 1 GHz, 2 GB RAM
- Hard Drive: 2 GB free disk space
- Drives: CD-ROM for software installation
- Ports: Two (2) USB ports
- Screen: 1020 x 768 pixels minimum

Measurement Tests:

- Axis Alignment
 - Linear Squareness
 - Linear Parallelism
 - Rotary Squareness
 - Rotary Parallelism
- Axis Angular
 - Angular Error Roll
 - Angular Error Pitch
 - Angular Error Yaw
- Axis Positioning
 - Angular Displacement
 - Linear Displacement
- Axis Least Increment
 - Step Test
- Axis Translation
 - Straightness
- Diagonal Displacement
 - Laser Diagonal
- Machine Compliance
 - Compliance
- Axis Thermal Error
 - Angular Displacement
 - Linear Displacement
- Environmental Thermal Error
 - Angular Drift
 - Linear Drift
- Surface Flatness Tests
 - Flatness X Pattern
 - Flatness Grid
- Special Tests
 - Profile Straightness
 - Profile Parallelism
 - Relative Parallelism
 - Profile with Relative Parallelism
 - Surface Parallelism

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IQL helps leading manufacturers to improve the most challenging manufacturing processes. Incorporated in 1985, IQL is a CAE development and engineering services resource that improves manufacturing productivity by focusing on manufacturing equipment performance and its impact on achieving desired part tolerances. Over time we have developed a comprehensive knowledge base of actual machine performance and specific design behavior which is the foundation upon which we build all of our research, development and support activities.

We work with advanced global manufacturers, including ABM Gulfstream, BAE, BMW, Boeing, Caterpillar, EDAC/SNI, Franklin Fueling Systems, GE, GM, Kohler, Lockheed Martin, Mitsubishi, Northrop Grumman, Okay Industries, Pratt & Whitney, Primus International, Siemens, Sikorsky, Tecomet, Timken, Volvo, W.L. Gore, Westinghouse and many others. We actively contribute to the development of national and international standards for the characterization of machine tools and inspection equipment: ASME B5.54 (Machining Centers), ASME B5.57 (Lathes & Turning Centers), ISO 230 (Metal Cutting Machine Tools) and ASME B89.1.12 (Coordinate Measuring Machines). IQL has also been the machine tool metrology resource for several DoD programs including: Smart Machine Platform Initiative (SMPI), National Center for Defense Manufacturing and Machining (NCDMM) and US Army Network Centric Manufacturing Program (NCM).

Services: Machine tool calibration (including laser, level, and spindle alignment), manufacturing process modeling, machine optimization, evaluation and adjustment, procurement specification support, machine capability evaluation, manufacturing process diagnostics as well as machine design reviews and recommendations.

Training: Courses and customer-tailored training in the latest methods for basic and advanced manufacturing process and machine tool evaluation.

Measurement Products: Instruments and artifacts (including lasers, electronic levels, ball bars, rotary calibrators, spindle analyzers, master squares) and custom kits used for machine characterization as well as standalone software for measurement and evaluation.

IQL is the preferred resource for those striving toward First Part Correct manufacturing processes.

Locus Software

Electronic Level Accessory Kit

(provides integration between hardware & software)

Includes:

- 1) 1' RS232 (Serial) to USB Adapter Cable
- 1) 4-port Micro USB Hub
- 1) Wireless Presenter Remote
- 1) 10' Null Modem Cable (RS232 9-Pin)
- 1) Zippered Storage Pouch

Call us today for a quote, reference P/N IQL-1000-024.

Manufacturing Process Diagnostics

IQL uses Locus Methods, a deterministic approach that considers all potential root causes to identify the key focus areas for manufacturing process correction and improvement. IQL can quickly diagnose a wide range of manufacturing issues. Effort can then be focused on those areas which provide the greatest return. Manufacturing Process Diagnostics can be tailored to meet your specific needs. Typical engagements are relatively short and many can be executed in a single day.

IQL SuperTune™ for Machining Centers

IQL SuperTune enhances Volumetric Positioning Performance for basic Haas Vertical Machining Center and Horizontal Machining Center models. IQL SuperTune is a multi-point process that more than doubles the volumetric accuracy of general purpose machine tools, approaching positioning performance of high precision European and Japanese machine tools at a fraction of the cost. When high accuracy is required to meet tight tolerance applications, IQL SuperTune is the answer.

IQL CalibrationPlus™

Today's complex machine tools have unique behaviors, with different effects on machine precision. The value of laser calibration is very limited, without first diagnosing the root cause of the problems. IQL CalibrationPlus is a comprehensive diagnostic service developed upon field experience with hundreds of machine tools. Our unique approach takes into consideration your manufacturing needs and then applies an extensive IQL knowledge base of machine designs and behavior to identify those machine elements having the greatest impact.