

# Manufacturing Process Diagnostics

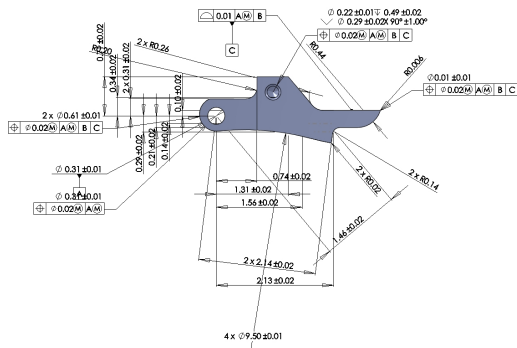
Fast and efficient identification of manufacturing process elements with the greatest potential for improvement

## Objective Focused Evaluation

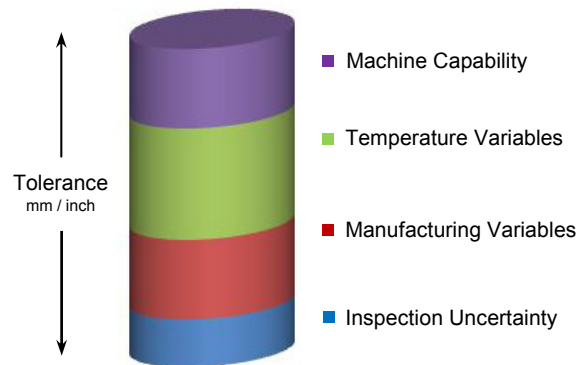
The ability to confidently achieve feature tolerances depends on multiple factors. IQL uses Locus Methods, a deterministic approach which considers all the potential root causes to identify the key focus areas for manufacturing process correction and improvement.

## 3 Key Process Diagnostic Steps

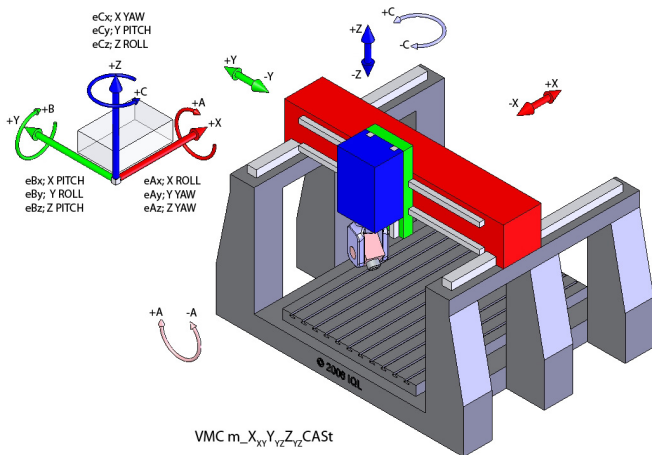
### 1. Identify Critical To Manufacture Features



### 2. Establish a Process Error Budget



### 3. Model Machine Feature Capability



## Many Proven Results

1. Science-based Machine Selection
2. Lower Start-up Costs
3. Focused Long Term Accuracy Control
4. Improved Maintenance Diagnostics
5. Optimized Part Orientations
6. Reduced Environmental Errors
7. Improved Machine Up Time

Manufacturing Process Diagnostics can be tailored to specific needs. Typical engagements are relatively short and many can be executed in a single day.

Contact IQL today for a quote customized to meet your manufacturing goals.

A BETTER WAY TO ACHIEVE TOLERANCES





(401) 539-8510 tel  
(401) 539-0572 fax  
info@iqlinc.com

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<sup>®</sup> eM Software

A comprehensive machine tool measurement and alignment software package, Locus eM includes a wide range of measurement tests, 3D color graphic outputs, easy to navigate data storage, and step-by-step task Sequences. Locus eM is compatible with Electronic Amplifiers, Levels, and Gages, ML10 Laser System, and HP Laser System. Call us today for a quote, reference P/N IQL-1000-114.

## Manufacturing Process Diagnostics

The ability to confidently achieve feature tolerances depends on multiple factors. 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<sup>™</sup> 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<sup>™</sup>

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.