

Machine Qualification



Understanding Machine Tool Calibration Systems



As a machine tool user or builder you need control and peace of mind, knowing that your machine is continuously **performing within required tolerances.**

Understanding Machine Qualification



Innovative machine tools need state-of-the-art ultraprecise measuring equipment. **IBS's machine tool qualification systems** qualify and improve the geometrical and dynamic accuracy performance of linear axis, rotary axis and spindles.



Methods of machine qualification

Our measuring system **based on sensor technology** is the only tool that can **perform a 3D dynamic measurement** in conformity with the ISO standard in just a minute. In contrast, alternative measuring methods such as touch probes are static and therefore unable to measure dynamic errors.

Additionally, these alternatives are limited to 1-dimensional measurements, making them blind to squareness errors. Moreover, these alternative methods require significantly more time to complete a machine qualification.

State-of-the-art method



IBS's machine tool qualification systems offer several advantages over laser interferometers:

- **Easy set-up and operation**, both by the machine operator. The system can be installed directly on the machine tool without the need for complex alignment or calibration
- **Rapid measurements**, measurements are done in real-time in minutes, which speed up the machine qualification process immensely
- **Wide measurement range**, including linear and rotary motion, with quality report, status and trend data.

More benefits of IBS's machine qualification systems

- Quick periodic accuracy checks **give confidence** that the machine (and the product) is within tolerances
- Less downtime after maintenance, shift or crash. You can **quickly resume production**
- Less need to check your products on a CMM. You have **more control** over your production process on-site.
- The measuring report indicates the parameters for improving pivot line offsets and squareness errors, giving you the option to **optimize the accuracy of the machine.**

Understanding Machine Qualification



Our machine-integrated, workshop robust **Inspector systems** provide rapid and automatic qualification of cutting position, rotary table characteristics or spindle behavior.

Our **Analyzer systems** offer in-depth measurement and diagnostics.




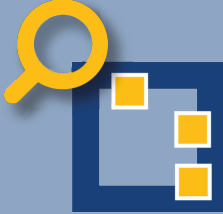


Inspector Series



Analyzer Series





Inspector Series

- **Speed:** Machine inspection in minutes to micron accuracy and below
- **Simplicity:** Automated measurement to ISO standards
- **Assurance:** Digital quality reporting and interactive history
- **Control:** Tolerance setting and optional compensation

	LINEAR AXIS	LINEAR & ROTARY AXIS	SPINDLE
 Inspector Series			

Analyzer Series

- **Power:** In-depth measurement and diagnostics
- **Flexibility:** User defined machine analysis
- **Accuracy:** From microns to nm
- **Speed:** Complex measurements executed in minutes

	LINEAR AXIS	LINEAR & ROTARY AXIS	SPINDLE
 Analyzer Series			

Understanding Machine Qualification



The **Position Inspector** is designed to provide a rapid, automatic method for calibration of machine **linear axes**. Measurements are made according to international standards (ISO 230). Results are presented instantaneously in a digital quality report as well as an interactive history function.



Understanding Machine Qualification



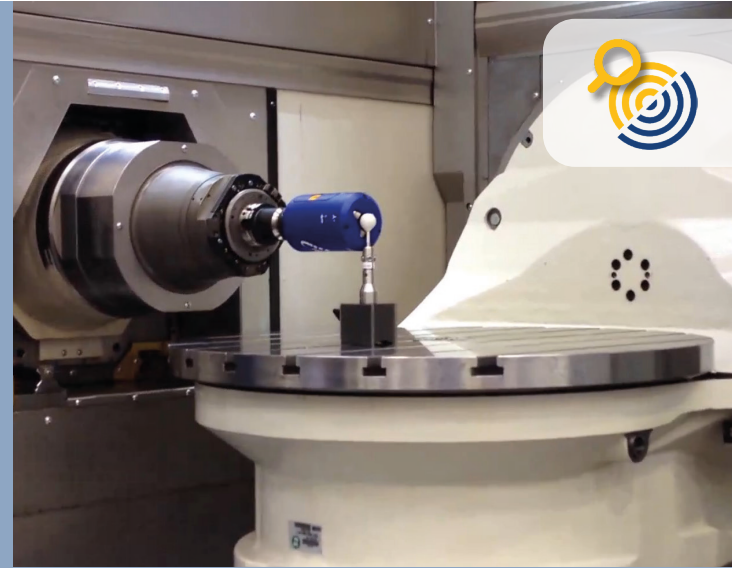
The **Position Analyzer** is designed for applications where machine size or layout requires a specially defined measurement artefact. The system provides measurements of the machine's 3D positioning and straightness errors according to ISO 230, with comprehensive diagnostic capability.



Understanding Machine Qualification



The **Rotary Inspector** provides a revolutionary method to measure and correct the **full 5-axis kinematic performance**. Rapid measurement (<1 min), based on standard ISO measurements, allows for tracking of error development over time (thermal distortion). A digital quality report shows the KPIs.



Understanding Machine Qualification



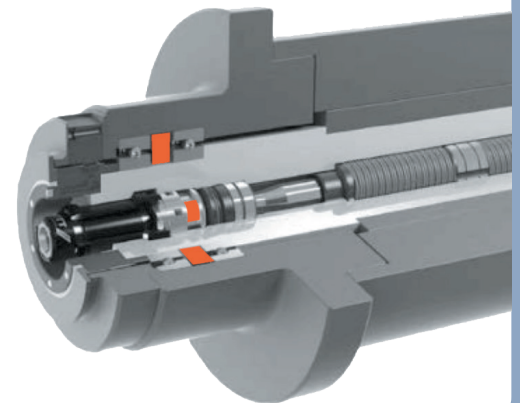
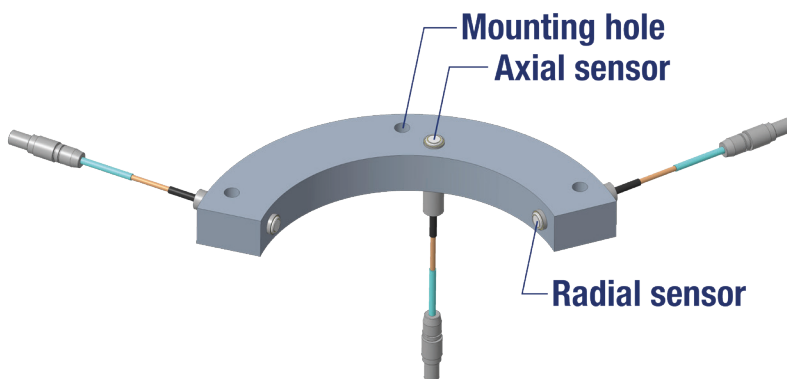
The **Rotary Analyzer** is designed for machine specific tests and in-depth analysis. It can be easily programmed to perform a range of static or dynamic user defined tests including ISO standard measurements. Customised **multi-axis** machine acceptance tests can be developed and measurements completed in minutes.



Understanding Machine Qualification



The **Integrated Spindle Inspector** offers accuracy, speed and an intelligent measurement solution easily integrated into your spindle and your control systems. Sensors are built-in and simultaneously measure machine spindle runout in the X, Y, and Z directions. Axial and radial error motions are measured at 15 kHz with up to 5 sensors and 65 nm resolution.



Understanding Machine Qualification



Our **Spindle Analyzer** systems offer in-depth spindle accuracy and performance assessment at the nano level.

- **Spindle Check Analyzer (SCA)** for shop floor use offers regular and rapid inspection.
- **Spindle Error Analyzer (SEA)** for machine tool builders offers additional measurement and analysis options for further detailed assessment.



Spindle Check Analyzer



Spindle Error Analyzer

Understanding Machine Qualification



Do you want to know more about our **Machine Qualification Systems**, the different series and the advantages?



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<https://www.ibspe.com/machine-qualification>,

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