



C. D. Measurements Ltd

SPECIALISTS IN ENGINEERING METROLOGY



On-Site Calibration Services

Laser Metrology Services - Utilising advanced equipment and computer aided technology, we provide professional calibration services for users of machine tools, Co-ordinate Measuring Machines (CMMs), horizontal, vertical and rotary measuring machines. Our UKAS accredited linear and rotary measurements are traceable to national standards. This coupled with our highly specialised engineers experienced in all aspects of machine tool and CMM metrology, can accommodate requirements for basic axis positioning (linear and rotary), full volumetric evaluation, error mapping, software compensation and diagnostic analysis.



Linear Axes – assessed using our Keysight Technologies twin frequency laser interferometers, capable of measuring up to 80m of linear motion. Our best case, UKAS accredited, measurement uncertainty of $0.15 \mu\text{m} + 0.50 \mu\text{m/m}$ for lengths up to 4m and $1.9 \mu\text{m/m}$ for axes up to 30m, is the best available in the UK.

Rotary Axes – are assessed using our extensive range of metrology equipment including laser interferometers, laser autocollimators, precision polygons, automated index tables, electronic levels etc. Our best case, UKAS accredited, measurement uncertainty is 0.6 arc seconds (0.00017°).

5-Axis Tool Point – can be assessed using our proprietary “Pointsure” system enables quick measurement of the tool tip position as 5-Axis contouring takes place. This can provide a bench mark for machine “health” or used while optimising machine parameters to remove the need for the repeated test cut, measurement cycle.



Minimum Downtime – by application of our Automated Calibration Software and techniques, a typically a 3-axis CNC machining centre can be error compensated and calibrated in approximately 7 hours.

Improve Machine Performance – Where software error correction is available, this can usually improve the accuracy of Machine Tools. Our in house software generates data for compensation schemes used in the most popular controllers. Ranging from a simple straight line correction to a full volumetric error map. In most cases this error correction can be updated automatically without the need for human input, speeding the process up and reducing the chance of human error. At other times our experienced engineers can manually update the Machine Control System.

Ball Bar – UKAS Accredited Contouring Assessment – Our in house developed, “Contisure” ball bar system, is UKAS accredited for circular profiling assessment at radii from 50mm to 250mm to ISO230-4.



Reports and Certification – results can be analysed to various international standards such as ISO 230, JIS, VDI3441, NMTBA and to customer specified requirements. Reports and calibration certificates are provided in PDF format for easy distribution to relevant parties by the customer. The independent verification required in achieving UKAS accreditation gives our customers confidence in our capabilities, as well as internationally recognised certificates of calibration.

Volumetric Error Mapping, Analysis and Compensation – Complete parametric error assessment of machine tools and CMMs can be

undertaken. Using our in house software, positional, straightness, squareness, roll, pitch and yaw errors can be combined to give a volumetric error map. This information can then be entered in to the volumetric error correction systems of the latest CNC controllers.

A Service to Industry – Serving customers in aerospace, composite, calibration, heavy engineering, marine, medical, military, motor sport, oil and gas, pattern making, power sectors; our customers appreciate our commitment to quality and our continued endeavour to offer the best service at competitive cost. Lost production can be alleviated with willingness and flexibility to accommodate our customers' needs, even outside of normal working hours. We cover the whole of the UK, EU and other countries by special request, where we work alongside our customers' maintenance staff, as well as a wide range of machine tool manufacturers and suppliers. Our considerable experience in the calibration and compensation fields enables us to offer, not only the basic requirements for reliable production, but also in-depth assessment of all aspects of machine tool and CMM performance.



The combination of experience, extensive range of equipment and unique software, enable us to carry on where others leave off.

Our Measurement Capability	
Linear Length	Up to 80m (UKAS accredited up to 30m)
Angular / Straightness	Up to 30m
Squareness	Up to 30m total axes travel
Rotary	360° without restriction (UKAS accredited 360°)
Ball Bar Contouring	0.1mm up to 1000mm radius (UKAS accredited 50mm to 250mm)

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