Machine Tool Machining Performance
Energy and temperature analysis in grinding p. 3
Milling machine tool stability and performance p. 25
Ultra-high speed turning on a vertical machining centre of aerospace aluminium alloys p. 35

Investigation of the cutting force coefficients in ball-end milling p. 45
Difficulties in characterising roll surfaces p. 55
High-precision automated polishing of engineering components p. 65

Metrology Applications
Metrology for parallel kinematic machine tools (PKM) p. 77
Unisquare, a new device to measure the geometric errors of parallel kinematics p. 89
Behaviour and accuracy specification-study on an LED-CMOS camera 3D measuring system p. 97

Surface analysis techniques to optimise the performance of CNC machine tools p. 107

CMM Inspection and Volumetric Performance
Inspection of large CMMs by sequential multi-lateration using a single laser tracker p. 121
Investigating the volumetric performance of multi-axis measurement arms p. 131
Volumetric positioning accuracy of a vertical machining center equipped with linear motor drives (evaluated by the laser vector method) p. 141

Tool Path Generation, Algorithms and Drives
Curve fitting with arc splines for NC toolpath generation p. 153
Identification of modal parameters affecting the dynamic performance of CNC machine tools p. 161
Modelling and simulation of the turning process p. 171
A servo parameter tuning method for high-speed NC machine tools based on contouring error measurement p. 181
Modelling and simulation of a feed drive using the transmission line modelling technique p. 193

CMM Application
The development of sensors for CMMs p. 205
Inspection of curvic couplings using a CMM p. 221
Fixture evaluation based on CMM p. 231
CMM Analysis and Algorithm Development
Analysis of linear and angular errors of a small coordinate measuring machine (SCMM) p. 245

Mating algorithms based on co-ordinate measurements and conclusions to geometrical dimensioning and tolerancing p. 257
Correctness of free form surface fitting algorithms p. 263
Form evaluation algorithms in coordinate metrology p. 273

Machine Tool, Elements and Sensors
Machine tools for future-oriented production p. 287
Investigating power quality solutions for computer numerical control machine tools p. 315

Design optimisation of the head of a high-precision optical polishing machine p. 325
Gears, Transmissions and Sensors

Modelling the dynamic behaviour of a ball-screw system taking into account the changing position of the ball-screw nut p. 337
Measuring and modelling heat transfer and thermal errors on a ballscrew feed drive system p. 349
Design of flat pad aerostatic bearings with the aid of finite element analysis p. 361
Worm gear meshing stiffness calculations based on experiments p. 371
Flaw detection and quantification for ferromagnetic steels using pulsed eddy current techniques and magnetization p. 381
A review of the fundamentals of the finite element simulation of metal cutting p. 391

Machine Tool Performance

Machine tool performance: past and present research contributions from the Centre for Precision Technologies p. 403
Evaluating the structural dynamics of a vertical milling machine p. 421
Finite element analysis of the structural dynamics of a vertical milling machine p. 431
Active vibration control of machine tool structures - Part 1: DSP algorithms p. 441
Active vibration control of machine tool structures - Part 2: An experimental active-vibration control system p. 451

Machine Tool Measurement and Calibration

A theoretical analysis of 4 body diagonal displacement measurement and sequential step diagonal measurement p. 463
Practical experience of thermal testing with reference to ISO 230 Part 3 p. 473
Evaluation of numerically controlled machine tool positioning accuracy p. 485
Identification method for scale, pitch and yaw deviations with linear measurements p. 495

Method for establishing machine tool performance specifications from part tolerance requirements p. 507
Six-degree-of-freedom measurement of machine tool thermal deviations caused by linear axis motion p. 517
Methodology and simulation of the calibration of a five-axis machine tool link geometry and motion errors using polynomial modelling and a telescoping magnetic ball-bar p. 527

Condition Monitoring and Instrumentation

Development of VI-based predictive maintenance system p. 547
Opportunities, problems and solutions when instrumenting a machine tool for monitoring of cutting forces and vibrations p. 557
A general data logger for the measurement of the dynamics and the parameter estimation of machine tools p. 569
From manual grinding to CNC automation--a major step forward for the rod mill p. 579
Index of Authors p. 589

Table of Contents provided by Blackwell's Book Services and R.R. Bowker. Used with permission.