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| Autore | Grous Ammar |
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| Nota di contenuto | Cover; Title Page; Copyright Page; Table of Contents; 2.2.5. Dimensioning according to ANSI and CSA; Chapter 1. Fundamentals of Error Analysis and their Uncertainties in Dimensional Metrology Applied to Science and Technology; 1.1. Introduction to uncertainties in dimensional metrology; 1.2. Definition of standards; 1.3. Definition of errors and uncertainties in dimensional metrology; 1.3.1. What is the difference between error and uncertainty?; 1.3.2. Why make a calculation of errors' uncertainty?; 1.3.3. Reminder of basic errors and uncertainties 1.3.4. Properties of uncertainty propagation 1.3.5. Reminder of random basic variables and their functions; 1.3.6. Properties of random variables of common functions; 1.4. Errors and their impact on the calculation of uncertainties; 1.4.1. Accidental or fortuitous errors; 1.4.2. Systematic errors; 1.4.3. Errors due to apparatus; 1.4.4. Errors due to the operator; 1.4.5. Errors due to temperature differences; 1.4.6. Random errors; 3.10.5. Measurement of screw threads by three-wire method; 1.5. Applications based on errors in dimensional |

metrology; 1.5.1. Absolute error = E_a
1.5.2. Relative error = E_r 1.5.3. Systematic error; 1.5.4. Accidental error (fortuitous error); 1.5.5. Expansion effect on a bore/shaft assembly; 1.6. Correction of possible measurement errors; 1.6.1. Overall error and uncertainty; 1.6.2. Uncertainty due to calibration methods; 1.6.3. Capability of measuring instruments; 1.7. Estimation of uncertainties of measurement errors in metrology; 1.7.1. Definitions of simplified equations of uncertainty measurements; 1.7.2. Issue of mathematical statistics evaluation of uncertainties in dimensional metrology
1.7.3. Uncertainty range, coverage factor k and range of relative uncertainty1.8. Approaches for determining type A and B uncertainties according to the GUM; 1.8.1. Introduction; 1.8.2. Properties; 1.8.3. Brief description of type-A uncertainty evaluation method; 1.8.4. Type-B uncertainty methods; 1.9. Principle of uncertainty calculation: types A and B; 1.9.1. Error on the repeated measure: calculation of compound standard uncertainty; 1.9.2. Applications on the laboratory calculations of uncertainties; 1.9.3. Simplified models for the calculations of measurement uncertainties
1.9.4. Laboratory model of dimensional metrology1.9.5. Measurement uncertainty evaluation discussion; 1.9.6. Contribution of the GUM in dimensional metrology; 1.10. Summary; 1.11. Bibliography; Chapter 2. Fundamentals of Dimensional and Geometrical Tolerances According to ISO, CSA (Canada), and ANSI (USA; 2.1. Introduction to geometrical products specification; 2.2. Dimensional tolerances and adjustments; 2.2.1. Adjustments with clearance: $\text{Ø}80 \text{ H}8/\text{f}7$; 2.2.2. Adjustments with uncertain clearance: $\text{Ø}80 \text{ H}7/\text{k}6$; 2.2.3. Adjustments with clamping or interference
2.2.4. Approach for the calculation of an adjustment with clearance

Sommario/riassunto

Applied Metrology for Manufacturing Engineering, stands out from traditional works due to its educational aspect. Illustrated by tutorials and laboratory models, it is accessible to users of non-specialists in the fields of design and manufacturing. Chapters can be viewed independently of each other. This book focuses on technical geometric and dimensional tolerances as well as mechanical testing and quality control. It also provides references and solved examples to help professionals and teachers to adapt their models to specific cases. It reflects recent developments in ISO and GPS standard
