1. Record Nr. UNINA9910825515903321

Titolo	Practical residual stress measurement methods / / edited by Gary S. Schajer
Pubbl/distr/stampa	Chichester, West Sussex, United Kingdom : , : John Wiley & Sons Inc., , 2013
ISBN	1-118-40283-9 1-118-40282-0 1-118-40281-2
Descrizione fisica	1 online resource (330 p.)
Classificazione	TEC032000
Altri autori (Persone)	SchajerGary S
Disciplina	620.1/123
Soggetti	Residual stresses
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Title Page; Copyright; Contents; List of Contributors; Preface; Chapter 1 Overview of Residual Stresses and Their Measurement; 1.1 Introduction; 1.1.1 Character and Origin of Residual Stresses; 1.1.2 Effects of Residual Stresses; 1.1.3 Residual Stress Gradients; 1.1.4 Deformation Effects of Residual Stresses; 1.1.5 Challenges of Measuring Residual Stresses; 1.1.6 Contribution of Modern Measurement Technologies; 1.2 Relaxation Measurement Methods; 1.2.1 Operating Principle; 1.3 Diffraction Methods; 1.3.1 Measurement Concept; 1.3.2 X-ray Diffraction; 1.3.3 Synchrotron X-ray 1.3.4 Neutron Diffraction1.4 Other Methods; 1.4.1 Magnetic; 1.4.2 Ultrasonic; 1.4.3 Thermoelastic; 1.4.4 Photoelastic; 1.4.5 Indentation; 1.5 Performance and Limitations of Methods; 1.5.1 General Considerations; 1.5.2 Performance and Limitations of Methods; 1.6 Strategies for Measurement Method Choice; 1.6.1 Factors to be Considered; 1.6.2 Characteristics of Methods; References; Chapter 2 Hole Drilling and Ring Coring; 2.1 Introduction; 2.1.1 Introduction and Context; 2.1.2 History; 2.1.3 Deep Hole Drilling; 2.2 Data Acquisition Methods; 2.2.1 Strain Gages 2.2.2 Optical Measurement Techniques2.3 Specimen Preparation; 2.3.1 Specimen Geometry and Strain Gage Selection; 2.3.2 Surface Preparation; 2.3.3 Strain Gage Installation; 2.3.4 Strain Gage Wiring;

2.3.5 Instrumentation and Data Acquisition; 2.4 Hole Drilling Procedure; 2.4.1 Drilling Cutter Selection; 2.4.2 Drilling Machines; 2.4.3 Orbital Drilling; 2.4.4 Incremental Measurements; 2.4.5 Post-drilling Examination of Hole and Cutter; 2.5 Computation of Uniform Stresses; 2.5.1 Mathematical Background; 2.5.2 Data Averaging; 2.5.3 Plasticity Effects; 2.5.4 Ring Core Measurements
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4.3 Stress Intensity Factor Determination

Sommario/riassunto

"This comprehensive collection of practical residual stress measurement techniques is written by world-renowned experts in their respective fields. It provides the reader with the information needed to understand key concepts and to make informed technical decisions. Fully illustrated throughout, each chapter is written by invited specialists and presents chapters on hole-drilling and ring-coring, deep hole drilling, slitting, contour method measurements, X-ray/synchrotron/neutron diffraction, ultrasonics, Barkhausen noise and optical measurement techniques"--