

Contents

Inspection Equipment and Techniques	1	Speckle Metrology	432
Visual Inspection	3	Acoustical Holography	438
Laser Inspection	12	Strain Measurement for Stress Analysis	448
Coordinate Measuring Machines	18	Digital Image Enhancement	454
Machine Vision and Robotic Evaluation	29	Acoustic Microscopy	465
		Use of Color for NDE	483
Methods of Nondestructive Evaluation	47	Nondestructive Inspection of Specific Products	489
Guide to Nondestructive Evaluation Techniques	49	Forgings	491
Replication Microscopy Techniques for NDE	52	Castings	512
Leak Testing	57	Powder Metallurgy Parts	536
Liquid Penetrant Inspection	71	Steel Bar, Wire, and Billets	549
Magnetic Particle Inspection	89	Tubular Products	561
Appendix: Proprietary Methods of Magnetic Particle		Weldments, Brazed Assemblies, and Soldered Joints	582
Inspection	122	Adhesive-Bonded Joints	610
Magnetic Field Testing	129	Boilers and Pressure Vessels	641
Electric Current Perturbation NDE	136	Quantitative Nondestructive Evaluation	661
Magabsorption NDE	143	Introduction	663
Electromagnetic Techniques for Residual Stress		Fracture Control Philosophy	666
Measurements	159	Applications of NDE Reliability to Systems	674
Eddy Current Inspection	164	NDE Reliability Data Analysis	689
Remote-Field Eddy Current Inspection	195	Models for Predicting NDE Reliability	702
Microwave Inspection	202	Statistical Methods	717
Ultrasonic Inspection	231	Statistical Quality Design and Control	719
Acoustic Emission Inspection	278	Metric Conversion Guide	755
Radiographic Inspection	295	Abbreviations and Symbols	758
Industrial Computed Tomography	358	Index	761
Appendix 1: CT Reconstruction Techniques	379		
Appendix 2: Computed Tomography Glossary	383		
Neutron Radiography	387		
Thermal Inspection	396		
Optical Holography	405		
Appendix: Selection of Holographic Systems	429		