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Descrizione fisica	1 online resource (345 p.)
Disciplina	004.6 530.8 534 620
Soggetti	Electrical engineering Computer networks Sound Physical measurements Measurement Quality control Reliability Industrial safety Communications Engineering, Networks Computer Communication Networks Acoustics Measurement Science and Instrumentation Quality Control, Reliability, Safety and Risk
Lingua di pubblicazione	Inglese
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction: Generalities on Ultrasonic Non-Destructive Testing Systems and organization of the book -- Describing the Ultrasonic System at a physical level: Modelling and Simulation -- Improving the Ultrasonic Systems Performance: Signal Processing Tools -- Dealing with the collected data: Information Processing -- Real world

applications of Ultrasonic Nondestructive Evaluation Systems: industrial application issues.

Sommario/riassunto

This book covers the practical implementation of ultrasonic NDT techniques in an industrial environment, discussing several issues that may emerge and proposing strategies for addressing them successfully. It aims to bridge advanced academic research results and their application to industrial procedures. The topics covered in the text range from the basic operation of an ultrasonic NDT system to the simulation of the measurement operations; from the choice and generation of the signals energizing the system to the different ways of exploiting the probes and their output signals; and from quality assessment evaluation to the use of soft computing techniques for classification. Throughout the text, an effort is made to embrace a system view where the physical and technological aspects of sensing are addressed together with higher abstraction levels, such as signal and information processing. Consequently, the book aims at guiding the reader through the various tasks requested for developing a complete ultrasonic imaging system for nondestructive testing, up to the perspective goal of automatic classification of the outputs of a production line. The presentation is reinforced by many applicable examples, proposed in the last chapters. The content of this book is the result of the common effort of four University Research Groups that focused their research activities for two years on this specific objective, working in direct conjunction with primary industrial firms, in a research project funded by the Italian government as a Strategic Research Project. · Discusses the cycle from signal generation, propagation, collection by sensors, and data analysis · Covers the implementation of ultrasonic NDT techniques in the perspective of a complete system setup including classification of product line output · Presents recent theoretical advances and fundamental issues for their practical implementation.