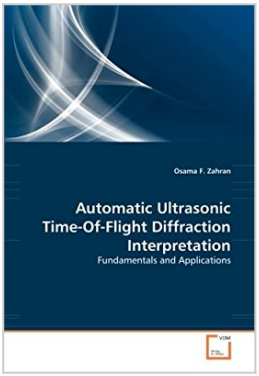

Automatic Ultrasonic Time-Of-Flight Diffraction Interpretation: Fundamentals and Applications

By Osama F. Zahran

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Time-Of-Flight Diffraction (TOFD) is a new ultrasonic technique that gained popularity in ultrasonic NDT community as a precise sizing tool because of its ability to provide very accurate amplitude-independent positioning and sizing with a high probability of detection for a large variety of defects, with a relatively low false alarm rate and lower cost. This book addresses the problems associated with TOFD inspection, automatic data processing and interpretation of TOFD data as a comprehensive automatic interpretation aid for the detection, positioning, sizing and characterisation of defects in TOFD data and several innovative signal and image processing have been proposed and implemented to great success. Image processing, pattern recognition and artificial neural networks are combined to provide a near real-time pre-assessment of a given scan by applying the procedures and criteria recommended by the adopted standards and codes for detection, sizing, positioning and classification. In this book, TOFD is used for the inspection of welds in steel structures. Furthermore, the proposed inspection procedures for railway track is presented.

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B.Sc, M.Sc, Ph.D (Liverpool, UK) in Non-Destructive Testing (NDT) Signal & Image Processing. Held an international post- experience certificate in ultrasonic NDT & member of British Institute of NDT since 2003. Current research involves development of signal & image processing techniques, pattern recognition & artificial intelligence.

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