



Handbook of Technical Diagnostics: Fundamentals and Application to Structures and Systems

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This book presents concepts, methods and techniques to examine symptoms of faults and failures of structures, systems and components and to monitor functional performance and structural integrity. The book is organized in five parts. Part A introduces the scope and application of technical diagnostics and gives a comprehensive overview of the physics of failure. Part B presents all relevant methods and techniques for diagnostics and monitoring: from stress, strain, vibration analysis, nondestructive evaluation, thermography and industrial radiology to computed tomography and subsurface microstructural analysis. Part C covers the principles and concepts of technical failure analysis, illustrates case studies, and outlines machinery diagnostics with an emphasis on tribological systems. Part D describes the application of structural health monitoring and performance control to plants and the technical infrastructure, including buildings, bridges, pipelines, electric power stations, offshore wind structures, and railway systems. And finally, Part E is an excursion on diagnostics in arts and culture. The book integrates knowledge of basic sciences and engineering disciplines with contributions from research institutions, academe, and industry, written by internationally known experts from various parts of the world, including Europe, Canada, India, Japan, and USA.

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Editorial Review

From the Back Cover

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About the Author

Prof. Dr.-Ing. Dr. h.c. Horst Czichos has been President of BAM, the German Federal Institute for Materials Research and Testing (1992-2002) and President of EUROLAB, the European Federation of National Associations of Measurement, Testing and Analytical Laboratories (1999-2003). He holds degrees in precision engineering, physics and materials science from the Free University and the Technical University of Berlin, and obtained a Dr. h.c. from KU Leuven University for his research work in tribology. He is currently Professor of Mechatronics at the University of Applied Sciences, BHT Berlin, and received 2007 the Beuth Award for achievement in engineering education.

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