Holnicki-Szulc

Smart Technologies for Safety Engineering

Smart technologies comprise a dynamic new interdisciplinary research field that encompasses a wide spectrum of engineering applications including, but not limited to, intelligent structures and materials, actuators, sensors and structural observability, control systems and software tools for the design of adaptive structures. Smart technologies focus on the issues surrounding the safety and integrity of engineering systems. Smart Technologies for Safety Engineering presents the achievements of ten years of research from the Smart-Tech Centre applied to some of the key issues of safety engineering. Results presented include: - Original methods and software tools for modelling, design, simulation and control of adaptive structures and applicability of the adaptive concept to the design of structures for extreme loads; - Application of the smart-tech concept to hot research topics and emerging engineering issues including health monitoring of structures and engineering systems, monitoring of loading conditions, automatic structural adaptation to unpredictable, randomly changing dynamic conditions and the optimal design of adaptive structures and engineering systems; - Numerically efficient and original software packages that can be used for the design of adaptive, as well as passive (without control devices) structures. - The Virtual Distortion Method, which has been developed especially for fast reanalysis of structures and systems and exact sensitivity analysis, allowing for effective modelling, design, health monitoring and control of smart engineering systems. The original research and practical applications in Smart Technologies for Safety Engineering will appeal to a broad spectrum of engineers, researchers, professors and graduate students involved in the research, design and development of widely understood adaptronics and mechatronics, including smart structures and materials, adaptive impact absorption, health and load monitoring, vibration control, vibroacoustics and related issues.

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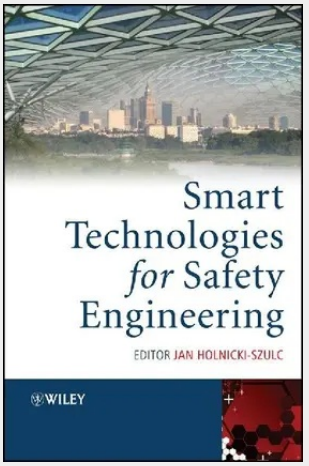

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