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Sommario/riassunto

This handbook comprehensively covers the cutting-edge trends and techniques essential for the integration of nondestructive evaluation (NDE) into the changing face of the modern industrial landscape. In particular, it delves into the marriage of NDE with new techniques in e. g. data mining, cloud computing and autonomous operation, highlighting the potential for cyber-physical controlled production and discussing the myriad possible applications across many different industries. The Handbook of NDE 4.0 centers around the Internet of Things and Industry 4.0 – the next generation of industrial production encompassing all aspects of networking across all industrial areas. It discusses the adaptation of existing NDE techniques to emerging new technological areas, such as 3D printing, via the introduction of cyber systems into the inspection and maintenance processes. In addition, the handbook covers topics such as the management and processing of big data with respect to real-time monitoring of structural integrity and reliable inspection of individual components. Remote NDE to include competence not available on-site will be a potential technique to increase reliability of NDE inspections by integrating additional specialist inputs into the decision process by methods such as telepresence, thereby better leveraging the scarce resources of senior inspectors into industrial inspections at multiple sites. The handbook houses a wealth of essential information to help academics, industry professionals and entrepreneurs navigate through this burgeoning new field. The material in this handbook is presented with the intention of ultimately improving human safety through reliable inspections and dependable maintenance of critical infrastructure, while also enhancing business value through reduced downtime, affordable maintenance, and talent optimization.