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3rd International Symposium on Fatigue Design and Material Defects, FDMD 2017, 19-22 September 2017, Lecco, Italy

Editorial

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The actual fatigue strength and service life of structural components is typically controlled by the defect population due to the manufacturing process. These defects accelerate the initial phase of fatigue damage accumulation into a physical micro crack whose dimensions involve a few microstructural units.

The concepts of defect-tolerant design, developed more than 20 years ago, aim to cover the gaps among stress-based design approaches with generous safety factors, fracture-mechanics-based residual life assessments and NDE requirements. Metal Additive Manufacturing (AM) exemplifies an emerging field where the capability to predict fatigue properties and service life of components using the defect-tolerant design approach has great potential.

After the previous successful events of Trondheim in 2011 and of Paris in 2014, the third edition of the Fatigue Design and Material Defects symposium held in Lecco, Italy, in September 2017 attracted researchers and experts from all over the world (European Union, Japan, China, India, Russia, Algeria, Canada, United States, Argentina).

During the symposium, the more than 100 presentations provided an update of the ongoing research on the key connections between manufacturing processes, fatigue properties and component design in industry. The complete program of the FDMD3 Symposium and the Book of Abstracts can be found at: http://www.fdmd3.polimi.it/programme/.

Thematic sessions on specific topics (i.e. experimental techniques, fatigue thresholds, VHCF, additive manufacturing, multiaxial fatigue, advanced materials) and on industrial applications (defect assessment methods,

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welds, power generation) promoted lively discussions among participants.

This special issue of the Procedia-Structural Integrity includes all the contributions submitted in final form after the Symposium for review to the Scientific Committee. The effort of the authors and of the colleagues that volunteered for the revision process is therefore acknowledged.

The organization of such an important event was made possible by the generous support of invited lectures and dedicated events by important companies and technical partners and by the tireless assistance to organizers and participants provided by the *FDMD3 Team* and staff of Polo di Lecco (Politecnico di Milano).

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