ADM 2024 International Conference
September 11th - 13th, 2024 | Palermo (Italy)

Special Session

Engineering design for AM in a product life cycle perspective

Background and Motivation

Additive manufacturing (AM) technology has grown rapidly in recent decades due to its many advantages over conventional manufacturing techniques. Given the "non-subtractive" nature inherent in AM processes, they all appear environmentally sustainable at a basic level, resulting in either no waste or at least a reduced amount of scraps. The advantages of environmental sustainability become even more pronounced, especially in products with highly intricate geometries that require customisation. However, sustainability depends on product and process parameters from a life cycle perspective.

The special session on "Engineering design for AM in a product life cycle perspective" can serve as a platform for knowledge exchange, networking, and collaboration among researchers, practitioners, and industry professionals interested in leveraging additive manufacturing technologies to drive innovation and sustainability in product development.

It encompasses (i) the rise of additive manufacturing technologies across various industries and how AM has revolutionised traditional manufacturing processes by enabling the production of complex geometries, (ii) the engineering design challenges and opportunities in fulfilling environmental concerns and the integration across the product life cycle, and (iii) industry relevance providing examples and case studies showcasing successful applications of engineering design for AM across various industries, such as aerospace and automotive.

The special session will be the appropriate place to share the first insights from the eDAM project (Lifecycle-based methodology for engineering (eco)design of AM components in transport vehicles – funded by the Italian Ministry of Research - MUR through the PRIN program).

Topics

- Eco-design for Design for Additive Manufacturing (DfAM)
- Life Cycle Engineering for Additive Manufacturing (AM) technologies
- Advanced frameworks, methods and tools for DfAM based on artificial intelligence
- Economic and Environmental Sustainability modelling and assessment of AM
- Eco-design guidelines for supporting multi-criteria decision-making in AM
- Applications of Eco-DfAM in the transport vehicles sector (aerospace and automotive)

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Lifecycle-based methodology for engineering (eco)design of AM components in transport vehicles

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