



Machines

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Special Issue Reprint

Recent Advances in Smart Design and Manufacturing Technology

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This Special Issue collects eight peer-reviewed papers showcasing recent developments in design and manufacturing technologies, with a particular focus on the integration of advanced materials, process innovation, human-centered design, and digitalization. The contributions reflect how modern manufacturing is increasingly multidisciplinary, merging design, production, and system intelligence. The main topics covered include the following:

- Four-dimensional printing and smart structures, introducing self-folding mechanisms enabled by pre-stressed materials;
- Optimization of additive and hybrid processes, including parameter tuning for FFF with PVA supports and design strategies for directed energy deposition;
- Precision machining studies applied to aerospace alloys, analyzing hole quality and tool wear;
- Human-centric manufacturing, with on-field ergonomics assessment and human-error analysis in collaborative robotics;
- IoT-based monitoring and scheduling optimization for flexible manufacturing systems, improving responsiveness and reliability.

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