Announcement

Industry 4.0 SCIENCE

Quantum Manufacturing

Quantum technologies are opening up new possibilities for industrial production, from highly precise measurement and advanced sensing to quantum computing for complex optimization problems. As manufacturing systems become increasingly data-driven and interconnected, the question is how quantum technologies can contribute to solving challenges that conventional approaches struggle to address. Their integration into Industry 4.0 requires not only technological advances but also a clear understanding of their practical potential and limitations.

Quantum Manufacturing encompasses different approaches, including the application of quantum technologies in production processes, the use of quantum computing to support manufacturing decisions, and the development of manufacturing methods for quantum devices themselves. These approaches raise new questions about process control, quality assurance, materials, and the interaction between quantum systems and established industrial infrastructures. Bridging the gap between research and industrial application remains a key challenge.

This issue of Industry 4.0 Science (www.industry-science.com) explores emerging concepts, technologies, and applications at the intersection of quantum technology and manufacturing. The focus is on how quantum approaches could transform production, enable new capabilities in sensing and optimization, and contribute to the next generation of intelligent, precise, and interconnected industrial systems.

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