



DIGITAL MANUFACTURING

The digitization of the manufacturing world is forging ahead. Small and medium-sized enterprises intent on keeping up with this development are particularly in need of solutions for custom digital technologies and, thus, interfaces to their customers' digital factories.

Integrated digital engineering throughout the entire life cycle of products, machinery, plants and factories harbors great potential: Simultaneous development of products and manufacturing systems shortens development times. Functions can be validated on virtual models at an early stage, plants and processes can be improved, and staff can be qualified reliably.

Technologies for Efficient Manufacturing

As a technology partner, we develop, configure and integrate digital methods, tools and interfaces for flexible manufacturing. We facilitate reliable and sustainable use of digital methods and tools throughout the entire life cycle of plants and manufacturing and logistic systems as well as their infrastructures.

Thus, we tap the potential of worlds of digital experience for small and medium-sized enterprises: We interface digital and real worlds to boost your manufacturing performance. Our goal is to engineer work systems smarter and manufacturing and logistics systems more resource efficiently and to create infrastructures for networked manufacturing.

FRAUNHOFER INSTITUTE FOR FACTORY OPERATION AND AUTOMATION IFF

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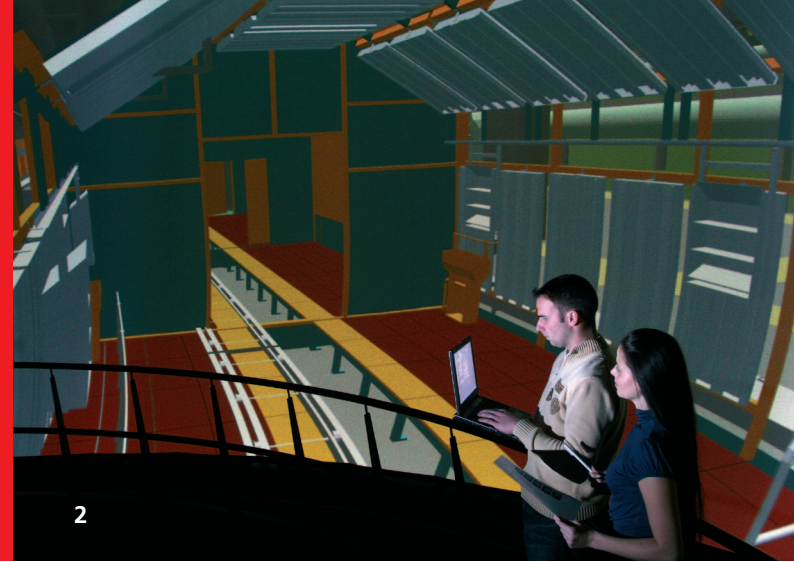
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DIGITAL TECHNOLOGIES FOR NETWORKED MANUFACTURING





INTEGRATED SOLUTIONS FROM THE IDEA THROUGH IMPLEMENTATION

Digital Technologies for the Life Cycle

The Fraunhofer IFF provides custom solutions for individual phases of the life cycle or its entirety, from virtual prototypes through commissioning and even servicing, maintenance and qualification during operation. As a technology partner, we develop and implement systems solutions or advise you on the integration of digital tools and models in existing or new processes, plants and machinery.

More Efficient Planning

Digital methods and tools enable you to coordinate parallel engineering from an idea through the start of production in very short time, which is validated and transparent. We provide custom solutions for the planning and development of products and manufacturing systems:

- Design reviews and virtual interactive planning support
- Development of custom machines from the idea through commissioning
- Design and simulation of process plants for efficient and effective energy and resource use
- Planning of manufacturing operations and material flow simulations
- Auto-ID solutions for more transparency in digital supply chains

Reliable Equipping and Operation

Once a digital maintenance history has been implemented, digital technologies and models support reliable and efficient operation of technical systems:

- Technologies for future work systems
- Assistance systems for assembly and order picking
- Model-based planning and development of inspection systems
- Technology-based qualification and assistance: early training of operators and service staff on a virtual model
- Marketing support for plant manufacturers with virtual reality
- Maintenance, service and refinement throughout the entire life cycle

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Chemicals

Simultaneous product and manufacturing development

- ↓ Development time by 15 – 20%
- ↓ Development risk
- ↓ Defective products



Petroleum/Natural Gas

Digital product development, qualification and assistance

- ↑ Transparency in the process
- ↑ Acceptance in development
- ↑ Currency of data



Machinery Manufacturing

Visual assistance and inspection system

- ↓ Failure rate by 100%
- ↓ Assembly time by 20%
- ↑ Reliability in the process chain



Plant Manufacturing

Simulation and optimization of flows in emission control systems

- ↓ Energyconsumption up to 15%
- ↓ Additive consumption by 50% and more
- ↓ Maintenance costs by approx. 50%
- ↓ Replacement expenditures by 25% and more



Automotive and Supplier

Planning of a dynamic factory

- ↑ Simplified collaboration among contractors
- ↑ Higher data integrity
- ↓ Shorter planning cycles
- ↑ Integration of diverse processes
- ↑ Interface to Industry 4.0