

Mittelstand 4.0 Competence Centre of Excellence in Ilmenau

The competence center in a nutshell

To smartly connect the strengths of small and medium-sized enterprises (SMEs) in the region for mutual benefit, the focus of the Mittelstand 4.0 Competence Centre is on the interactive networking of employees, machines and processes. Especially cooperation between smaller companies to digitize business processes is supported. The aim is to set up these companies future-proof for the digital economy. In five model factories of the competence center, businessmen from medium-sized companies can familiarize with digital production solutions and try them out. In addition, the competence center supports companies through a variety of information events, workshops, projects and expert contacts. The entire offer of the competence center is free and supplier neutral.

Focus of the project

The Mittelstand 4.0 Competence Centre of Excellence in Ilmenau supports small and medium-sized companies especially in the following questions:

- How can a medium-sized company profit from the networking of machines and processes? What are the benefits of cooperative value creation processes with other companies?
- How can modern digital technologies be integrated into existing systems and plants? What is the benefit for the company and what does it cost?
- Which methods are there for the additive production of 3D printing models? What are the requirements for integrating additive manufacturing processes into an existing production environment?
- How is it possible to improve inter- and intra-company cooperation through a digital communication and data exchange platform?
- How does real-time tracking and processing of data work? How is this data transferred and shared inter-



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nally and across companies? Which automatic process and quality controls result from this?

- How do the situation and the relationship between people and machines change at workplaces and what are the consequences for work and business processes?

Demonstrators of the competence center

Using the following demonstrators in the model factories the Mittelstand 4.0 Competence Centre of Excellence in Ilmenau illustrates digitization solutions for small and medium-sized companies:

- Demonstrator „Cooperative value creation, cross-company manufacturing planning and production“ in Ilmenau
- Demonstrator „Condition monitoring of machines by retrofittable sensors“ in Ilmenau for data acquisition and networking of machines
- Demonstrator „Networked production and manufacturing processes in a private cloud“ in Jena on cloud-based platforms for data management and networking of 3D printing applications
- Demonstrator „3D-in-process grinding wheel measurement“ in Schmalkalden to determine the wear of machine parts during the production process (real-time) as well as for networking, communication and distribution of the information

- Demonstrator „Sensor-integrated cutting tool“ also in Schmalkalden for process monitoring of machines in real time, transmission of information, and networking of machine elements

In addition, the five model factories of the competence center provide vivid offers for the individualization of products, the 3D scan, the use of mobile end devices as well as for quality monitoring in production cells. In addition, they show self-configuring machines.

Support offers for companies

The free information offer of the Mittelstand 4.0 Competence Centre of Excellence in Ilmenau includes:

- Information sessions and days, lectures, trade fair tours, best practice examples and publications in order to sensitize and inform small and medium-sized companies about digitization
- Workshop discussions to enable an active exchange between the companies and the competence center
- Test and proving possibilities in the model factories to experience solutions live on-site and to provide space for direct questions and suggestions
- Joint implementation projects to apply the expertise of the model factories to the current, practical challenges of the companies
- Checklists, guidelines and practical examples to record the state of digitalization in the company and to point out concrete application examples for digitization

Project partners

The Mittelstand 4.0 Competence Centre of Excellence in Ilmenau consists of the following project partners:

- Ilmenau University of Technology, Department of Production Engineering (consortium leader)
- Institute for Microelectronics and Mechatronics Systems GmbH in Ilmenau
- Ernst-Abbe University of Applied Sciences in Jena
- GFE-Gesellschaft für Fertigungstechnik und Entwicklung Schmalkalden e.V.
- Association for application and education in the field of Industry 4.0 e.V. in Sondershausen (subcontractor)

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Mittelstand 4.0 – Digital Production and Work Processes funding initiative

The Mittelstand 4.0 Competence Centre of Excellence in Ilmenau belongs to Mittelstand-Digital. With Mittelstand-Digital, the Federal Ministry for Economic Affairs and Energy is supporting digitization in small and medium-sized enterprises (SMEs) and in skilled trades. Further information can be found at www.mittelstand-digital.de.

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