PRESS RELEASE

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Werkzeugmaschinenlabor WZL der RWTH Aachen University

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Project closure of the research project imPROvE

Increase of efficiency potential in factory planning

In Germany, industry accounts for about 40 % of primary energy consumption. An important starting point for reducing emissions is the optimization of the overall system of a factory, consisting of energy supply, buildings and production. In the imPROvE research project, the departments of Factory Design and Digital Factory Planning of the Chair of Production Engineering at the Laboratory for Machine Tools and Production Engineering (WZL) at RWTH Aachen University among others developed methods to increase the efficiency potential already at the factory planning stage. For this purpose, the integration and networking of factory and energy system was considered and a methodology for phase-overlapping conception, execution planning and operation of the factory was developed.

Particularly noteworthy is the implementation of an interface model between production, building and energy system planning as well as the development of an integrated concept for the entire factory system consisting of the various subsystems. Various methods for the integrated scheduling of production and energy systems in the planning phase as well as during operation could also be developed. With these methods, significant energy savings can be expected.

Furthermore, THEDA is a prototype, dynamic building simulation that allows to realistically predicting the energy demand of buildings in an early planning phase. Following the research project imPROvE, THEDA will be further developed into a professional software tool and the results obtained will be useful for other users in practice.

In this context, the WZL of RWTH Aachen University in particular was able to extend the Aachen factory planning procedure to include energy system planning. For this purpose, four further planning modules were developed, defined and connected with existing planning modules. Furthermore, a decision methodology would be planned with the help of decision trees in order to efficiently evaluate combinations of energy supply, buildings and production against each other.

In the research project imPROvE there was a very good and close cooperation between the company and the university. This can be seen in the successful practical tests of all methods and tools at the participating companies e.GO and Teekanne as well as at the associated partner RILA. The results were presented at several conferences and published in international journals.

Overall, the imPROvE research project has been a success and has helped to strengthen NRW as a research location and the local companies. The multi-layered findings on the conception, planning and operation of factories enable a direct increase in the competitiveness of the partners and form the basis for the development of future software and service products "Made in NRW".

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Das Werkzeugmaschinenlabor WZL der RWTH Aachen steht weltweit seit mehr als 100 Jahren für zukunftsweisende Forschung und erfolgreiche Innovationen auf dem Gebiet der Produktionstechnik. Unter der Leitung der vier Professoren Christian Brecher, Thomas Bergs, Robert Schmitt und Günther Schuh forscht das WZL in sechs Bereichen – Fertigungstechnik, Werkzeugmaschinen, Produktionssystematik, Getriebetechnik, Fertigungsmesstechnik und Qualitätsmanagement – an der zukunftsgerechten Gestaltung der Produktion in Hochlohnländern. Zusammen mit Industriepartnern verschiedener Branchen erarbeitet das WZL in öffentlich geförderten wie auch bilateralen Projekten Lösungen für vielfältige Themenstellungen aus der Produktion. Diese Aktivitäten werden auf dem RWTH Aachen Campus im Cluster Produktionstechnik verstetigt.

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