Prof. Dr.-Ing. Eberhard Abele

The Institute Director Professor Dr.-Ing. Eberhard Abele studied mechanical engineering at the Stuttgart University of Technology. He was a researcher and department leader at the Fraunhofer Institute for manufacturing engineering and automation (IPA) in Stuttgart, Germany. In the past he was holding several management functions in a German automotive supply company as head of production planning and head of special purpose machine tool. In the same company he was head of production technology and a technical director.

Since 2000 he is director of the Institute for Production Management, Technology and Machine Tools (PTW) at the Technische Universität Darmstadt. Professor Abele is chairman of the team “production research 2020” (Produktionsforschung 2020) of the German Ministry of Education and Research, fellow of the International Academy for Production Engineering (CIRP) and a member of the German Academy of Science and Engineering (acatech). He published about 200 international research publications in the fields of cutting, automation, robotics, machine tools, and production management.

PTW
TU DARMSTADT

The Institute of Production Management, Technology and Machine Tools (PTW) is one of the leading German research institutes for production technology. Currently about 40 associate researchers focus their work on innovation along the manufacturing value chain. This includes the development of machine components and cutting tools, technologies for high speed machining, energy efficient machine tools and manufacturing processes and production management.

As a pioneer the PTW opened in 2007 its own learning factory CiP on the campus of the Technische Universität Darmstadt. Producing real products the CiP represents a complete industrial production facility including machining and indirect processes. Meanwhile, a second learning factory on energy efficient manufacturing “ETA-Factory” is in the planning stage.

THE η-FACTORY – AN INTERDISCIPLINARY LEARNING APPROACH

In the project “ETA-Factory” an interdisciplinary team of different researchers from TU Darmstadt have joined together with the aim to develop a highly efficient model factory. In this research project different topics, such as energy efficient production machines, thermal and electric interaction and energy recovery between machines, process chain and the factory building, are addressed. Further work focusses on the factory energy system as a whole. As different energy sinks can have a different energy demand at a different point in time a system is needed, which is able to allocate the energy intelligently.

The research done in the ETA-factory will break new grounds in the scientific research of energy efficiency of production sites. Beyond that the ETA-Factory is planned to be used as a research and demonstration object, for education of future engineers and the training of industrial partners in the field of energy efficient production. The presentation gives an overview about the ideas behind the project and will present an approach to demonstrate energy efficiency topics in a learning factory approach.