

PRESS RELEASE

Aachen, April 5, 2022

New Working Group on Predictive Quality

Reducing Testing Efforts and thus Increasing Productivity and Sustainability

Laboratory for Machine Tools and
Production Engineering (WZL) of
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The Laboratory for Machine Tools and Production Engineering WZL of RWTH Aachen University together with the Fraunhofer Institute for Production Technology IPT in Aachen has set up a new industry working group for "Predictive Quality". The goal is to significantly reduce joint testing efforts on a pre-competitive basis and to realize higher productivity through the elimination of physical testing processes, as well as higher quality through a reduction in rejects, continuous quality monitoring and the generation of knowledge from the models, and increased sustainability through a more resource-efficient use of resources.

Modern quality management has more and more data at its disposal at an ever faster pace. At the same time, advanced algorithms are enabling ever more detailed mappings and models of production. These data and models form the basis for the subject area of predictive quality. Predictive Quality describes the data-based prediction of quality characteristics. Using a learned relationship between process parameters and quality characteristics, time-consuming physical inspection processes, which are often only carried out in random samples, can be replaced by low-effort model-based 100% inspection. Predictive quality has already been successfully implemented in industry-related research projects in which testing efforts were significantly reduced and productivity increased. At the same time, more and more data-based quality management tools are being developed and used by manufacturing companies in digitization and Industry 4.0 projects, software companies are providing advanced infrastructures for data acquisition and storage, and start-ups are forming business models via the provision of corresponding algorithms for data evaluation.

The two Aachen institutes support companies from the manufacturing industry (e.g. automotive, metal processing, chemical, pharmaceutical, medical technology) as well as software companies specialized in data acquisition, storage and processing (e.g. CAQ, MES, sensor manufacturers, cloud providers) in the working group with their many years of experience.

The industry working group is financed by an annual membership fee and serves the new members for the rapid dissemination and utilization of research results and networking and is based on three pillars. Two community meetings per year are intended to facilitate exchange between the members of the working group. The meetings will also be used to present the latest findings and results from industry and research will be presented. One topic-specific study per year is carried out within the Working Group to gain insights into the current state of the art in the companies, challenges and new approaches. The topics are chosen by a majority vote of the of the working group members. In one demonstrator project per year, new ideas and approaches are specifically new ideas and approaches are tested by the Laboratory for Machine Tools and Production Engineering WZL and Fraunhofer IPT. For example, different algorithms for quality prediction or preprocessing can be implemented and compared. The demonstrators can either

PRESS RELEASE

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come from the halls of the Laboratory for Machine Tools and Production Engineering WZL and Fraunhofer IPT or be provided by a company. Joint project results are available to the partners without restriction.

Photo



Predictive Quality Demonstrator at the Chair of Production Metrology and Quality Management at the WZL
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PRESS RELEASE

Aachen, April 5, 2022

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Laboratory for Machine Tools and Production Engineering (WZL)

The Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University enhances the innovative strength and competitiveness of the industry with trend-setting basic research, applied research and the associated consulting and implementation projects in the field of production technology. In the research fields of manufacturing technology, machine tools, production engineering, gear technology as well as production metrology and quality management, practical solutions for rationalizing production are developed with industrial partners from a broad range of branches.

Fraunhofer Institute for Production Technology (IPT)

The Fraunhofer Institute for Production Technology IPT develops system solutions for the networked, adaptive production. Clients and cooperation partners come from the entire manufacturing industry - from aerospace technology, automotive engineering and its suppliers, especially from tool and mold making, the precision engineering and optical industries, but also from the life sciences and many other sectors. The IPT combines knowledge and experience in all fields of production technology. In the fields of process technology, production machines, production quality and metrology, as well as technology management, it offers project partners and clients individual special solutions and immediately realizable results for the manufacture of sophisticated components and high-tech products.