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# USING DIGITISATION

## TO QUANTIFY THE TRUE COSTS OF PRODUCTION

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**O**ver the past 100 years, industrialisation has taken hold of almost all sectors of the economy and has been characterised by continuous cost optimisation, time savings and quality improvements. However, the resulting overproduction, besides being economically reasonable, has led to a rapid increase in resource consumption and CO<sub>2</sub> emissions. Although this is the reason why large parts of the population can now afford to own purchased goods such as clothing, electrical appliances, vehicles, machines or infrastructure, the production of these goods consumes energy and raw materials, the recuperation of which is often impossible.

Today, such capital- and resource-intensive productivity thinking is being overtaken by the future image of a more ecologically minded society. As a result, the capital market is changing its target as well: away from the capital-intensive business models of industry. The focus of investors is changing – toward environmental, social and corporate governance issues that are forcing manufacturing companies to make sustainable changes.

“In many areas of production, we are reaching the limits of our knowledge with conventional methods, technologies and processes. However, digitisation is now enabling us to

exceed these limits. The more we know about our complex processes and their boundary conditions, the better we can identify the true costs of our products and save valuable resources”, explains Professor Thomas Bergs, Chair of Manufacturing Technology at the Laboratory for Machine Tools and Production Engineering (WZL) of the RWTH Aachen University and member of the Board of Directors at the Fraunhofer Institute for Production Technology IPT.

## **Limit Overproduction and Reduce Resource Consumption**

Above all, data on requirements, the development process, (serial) production and the use of goods must already be incorporated into product design and production planning so that production itself can be continuously optimised. In the upcoming years, the assessment of the performance of companies will shift significantly in all manufacturing sectors, according to the forecast of the Aachen scientists. As a result, companies are now being called upon to evaluate and optimise their range of services and their value creation on the basis of the three sustainability-related areas of corporate responsibility: Environment, Corporate Social Responsibility and Corporate Governance.

*“The threat of climate change and the necessary energy turnaround make it absolutely essential to look at production and all associated processes in terms of their sustainability.”*



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The Aachen researchers identify the so-called Internet of Production (IoP) as the most important enabler of such a production turnaround: the end-to-end digitisation and networking of machines and plants within the production and value chain. The IoP is designed to help manufacturing companies achieve greater sustainability, efficiency, productivity, quality and competitiveness. The secure availability of data, information and knowledge, at any time and any place, is considered one of the most important promises of Industry 4.0 and at the same time forms the basis for transparency along all product life cycles and stages of the value chain. This can help to ensure that production is ultimately geared to customers' actual requirements and demand quantities.

## Turning Data into Sustainability

With the effects of the Corona pandemic hitting many manufacturing companies and changing the global economy in the long term, further trend-setting questions are arising around the future of production technology.

Under the guiding theme "Turning Data into Sustainability", WZL and Fraunhofer IPT will discuss these questions during the 30th Aachen Machine Tool Colloquium (AWK) on September 22 and 23, 2021: The Aachen researchers want to sharpen the entrepreneurial view of the future so that the production turnaround towards a sustainable productivity can be achieved. Aim of the conference is to enable companies to deal successfully with drastic crises and to be able to operate profitably again within a short period of time.

## Hybrid Information Hub for Production Technology Trends

The AWK'21 is both a network meeting and an information hub. Accompanied by an international top-class lecture program and with thematic tours through the hosting research facilities, the conference will offer a comprehensive and interdisciplinary insight into the trends of applied research and development for specialists and executives from industry and science.

September 22 - 23, 2021

## 30th Aachen Machine Tool Colloquium



### Turning Data into Sustainability Securing Future Competitiveness by Sustainable and Resilient Production

With the effects of the Corona pandemic hitting many manufacturing companies and changing the global economy in the long term, once again trend-setting questions are arising around the future of production technology:

- What is the value of the variety of recorded data for manufacturing companies today?
- How can algorithms and analyses be utilized to make reliable forecasts in order to produce more efficiently and sustainably in the future?
- How can data acquisition and machine learning lead to rapid, error-free improvements in (series) production in order to become more resilient in the face of crises?
- How do successful companies manage to emerge stronger from the crisis and quickly return to profitability?

What else does the AWK'21 have to offer?

#### **A hybrid lecture program**

Four lecture sessions - online and on-site at the Aachen Eurogress - by and for experts in the field of production technology.

#### **On-site guided tours and 3D tours**

Guided tours on selected topics such as digitalization, individualization, electrification of drive technology, Industry 4.0, blockchain, artificial intelligence or 5G on the shop floor as well as an individual digital exploration of the production technology institutes in Aachen and selected partners.

#### **Industrial exhibition: Production 4.0 in practice**

The industrial exhibition at the Aachen Eurogress and online as an insight into the sustainable production of the future.

Information and registration [www.awk-aachen.com](http://www.awk-aachen.com)