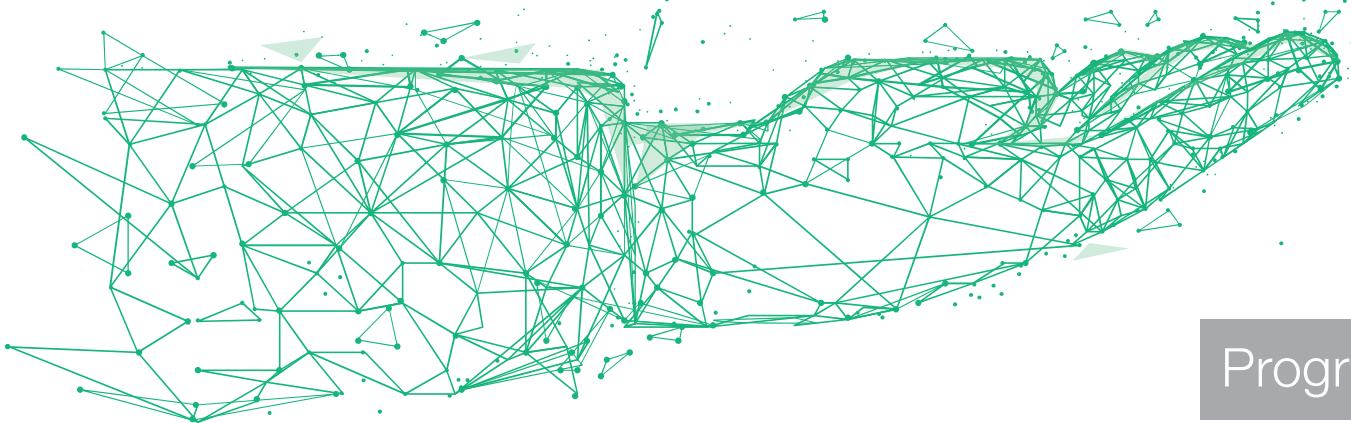


AWK'23



May 11-12, 2023

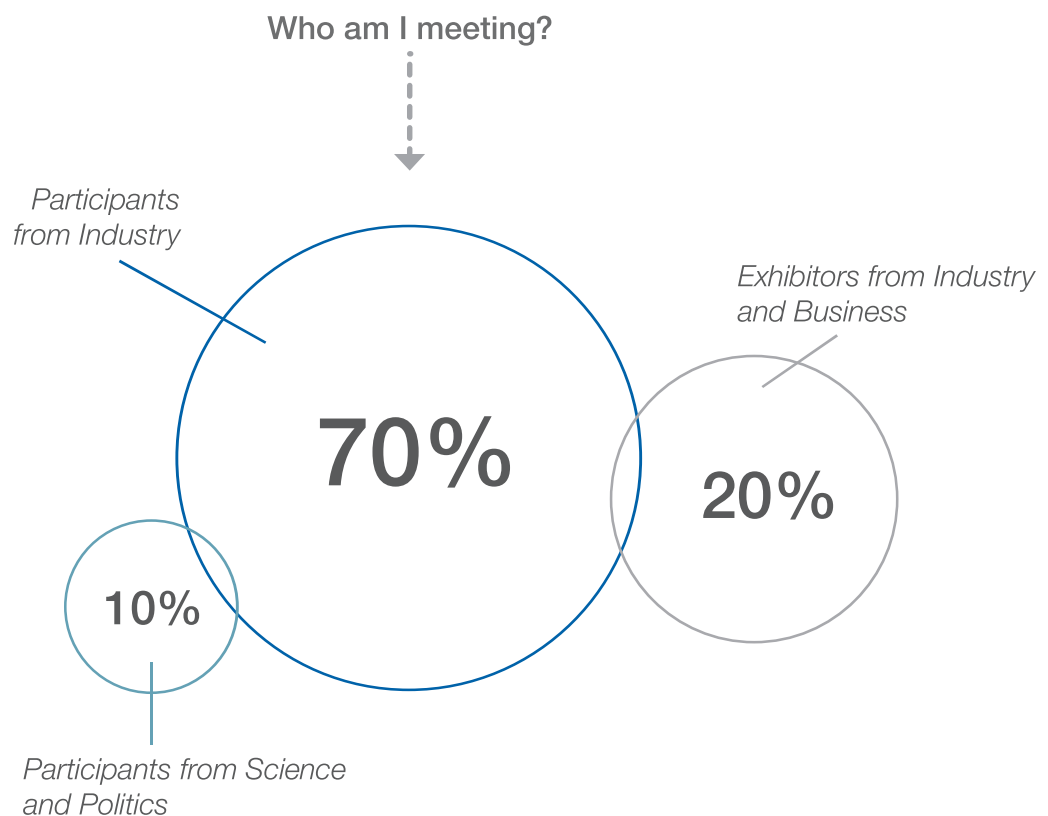
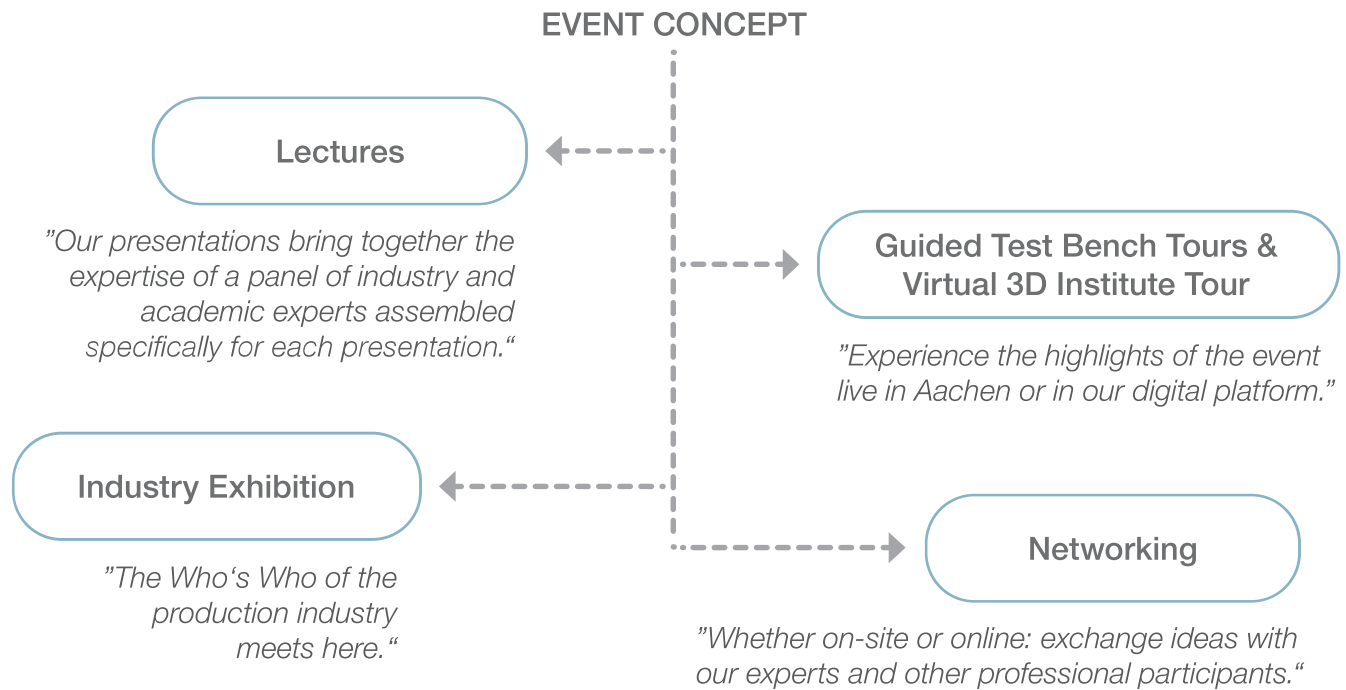
Empower Green Production



Program



The Event at a Glance



Greeting

AWK'23: On the way to a value-enhancing circular economy using digital production technologies

"Empower Green Production" is the guiding theme of the 31st Aachen Machine Tool Colloquium, which will take place in a hybrid event format from May 11-12, 2023.

Join us at AWK'23 and learn, on-site at the Aachen Eurogress or online, how companies can use a targeted evaluation of manufacturing and usage data, powerful algorithms, and optimized decision-making processes to create a sustainable and also value-enhancing circular economy.

Such an economy is characterized by the fact that not mainly raw materials and energy from used products, but instead, used products and machines are refurbished, industrially upgraded and used for much longer. Not only higher energy efficiency, CO2 savings and reduced scrap characterize sustainable production, but also life-extending measures such as the well-timed replacement of existing components with refurbished ones or those that offer end customers upgrades with entirely new functions. In the future, data technologies from the "Internet of Sustainable Production" and the digital shadow in the form of digital product files or material certificates will help industrial companies to save up to 50 percent of their resources and emissions and, at the same time, they will be able to manufacture and offer products up to 30 percent more cost-effectively than before.

The specific approaches and developments that will shape the transformation to a value-enhancing circular economy in the coming years will be the topic of AWK'23 in two parallel series of lectures with technical and keynote presentations, as well as in additional plenary lectures from science and practice live in and out of the Aachen Eurogress.

Benefit from our hybrid lecture program, which we have developed for the AWK according to a proven and unique concept: in intensive cooperation between experts from the industry, together with scientists from the Laboratory for Machine Tools and Production Engineering WZL of the RWTH

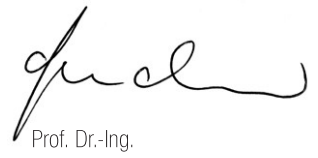
Aachen University and the Fraunhofer Institute for Production Technology IPT. As a special highlight, at AWK'23 we will offer you content-based tours through the machine halls and laboratories of WZL and Fraunhofer IPT, which combine the presented visions of the lecture program with current research work and future concepts already implemented in the industry.

Become part of one of the world's most renowned network meetings for experts and leaders from the manufacturing industry, business, science and politics on-site in Aachen. Or, if you have to travel further distances, simply opt for the digital program to save resources: with additional agenda items and networking options designed especially for online participants.

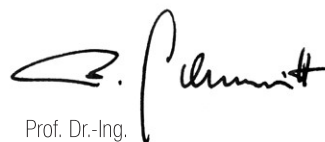
We look forward to meeting you at AWK'23!



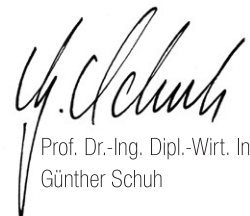
Prof. Dr.-Ing.
Thomas Bergs MBA



Prof. Dr.-Ing.
Christian Brecher



Prof. Dr.-Ing.
Robert Schmitt



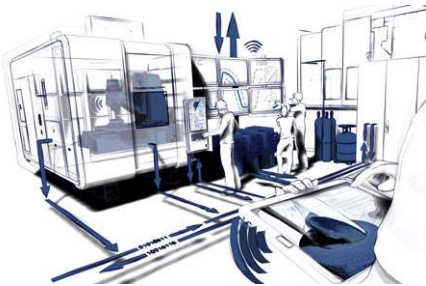
Prof. Dr.-Ing. Dipl.-Wirt. Ing.
Günther Schuh

Top-level research close-up

Production data and process chains for eco-friendly manufacturing, data structures and analysis methods for closed product life cycles, sensor and automation technology for more sustainable production systems - in guided tours through the laboratories and machine halls of WZL, Fraunhofer IPT and partners, our experts will provide you with information on the following topics, which challenges you may encounter on your way to a fully operational circular economy and which solutions we are already developing today together with our industrial partners.



Guided Tours

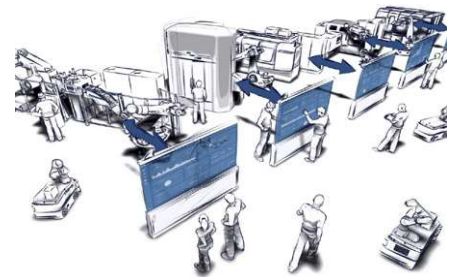


Data-driven sustainable manufacturing

The shift towards sustainable manufacturing of highly individualized products requires far-reaching changes in production. At the same time, digital planning tools and the utilization of process data allow to predict and increase economic and ecological performance. This theme tour highlights various data-based approaches to sustainable production of highly stressed components from the engine to the connector.

Sustainable manufacturing through data-based process chain optimization

Efficient and sustainable optimization of process chains requires systematic coordination of individual processes with a holistic view of economic efficiency, environmental sustainability and quality. Using a process chain for the production of transmission shafts as an example, this theme tour demonstrates a holistic evaluation approach for operational excellence and predictive quality on a profound data basis. In addition, adaptive process chains for one-off and series production will be presented.



Sense - Think - Act: Closed loop data for closed loop lifecycles

How can metrology, AI and robotics enable circular economy and closed loop lifecycles? Automation with end-to-end data infrastructure that connects sensors, actuators and AI algorithms in the edge cloud in real time can help close the data loop of the "Sense - Think - Act" paradigm. This theme tour shows examples of zero-waste production, agile line-less assembly, virtual climate control and AI for machine vision.

Production analytics for machine tools

Resource efficiency and sustainability of production chains can be increased with cross-domain production data in the machine tool environment. The focus of this theme tour is on the use of intelligent models to increase productivity and quality in manufacturing. These directly reduce the consumption of operating resources, energy and raw materials and not only improve the overall ecological balance of production, but also create monetary added value for users.



Innovative gear analysis for the green economy

More efficient e-mobility, wind power or aviation demand more innovative test methods for gear technology - especially against the background of rising energy costs and the demand for more sustainability. In this theme tour, test rigs for determining gear load capacity, efficiency and NVH show which current test methods can offer significant added value for the design of future gear systems.

Guided Tours



Smart Automation Lab

The Smart Automation Lab shows how data can be used in the Internet of Production in conjunction with modern automation and information technology. The aim is not only to collect data, but also to make it usable and thus increase the sustainability of industrial production processes. Smart robotics, data modelling, artificial intelligence, the industrial Internet of Things as well as new manufacturing control systems and human-machine interaction offer new approaches to solutions.

The next generation of propulsion systems

Hardly anywhere is a transformation as urgent as in mobile propulsion systems for the aviation, transport and automotive sectors. The high demand for energy-efficient propulsion, battery storage or fuel cells requires not only completely new manufacturing processes, but also a rapid market ramp-up of high production volumes. This theme tour shows how companies can meet the demand for a new technology mix in the future.



Digitization for more sustainable production

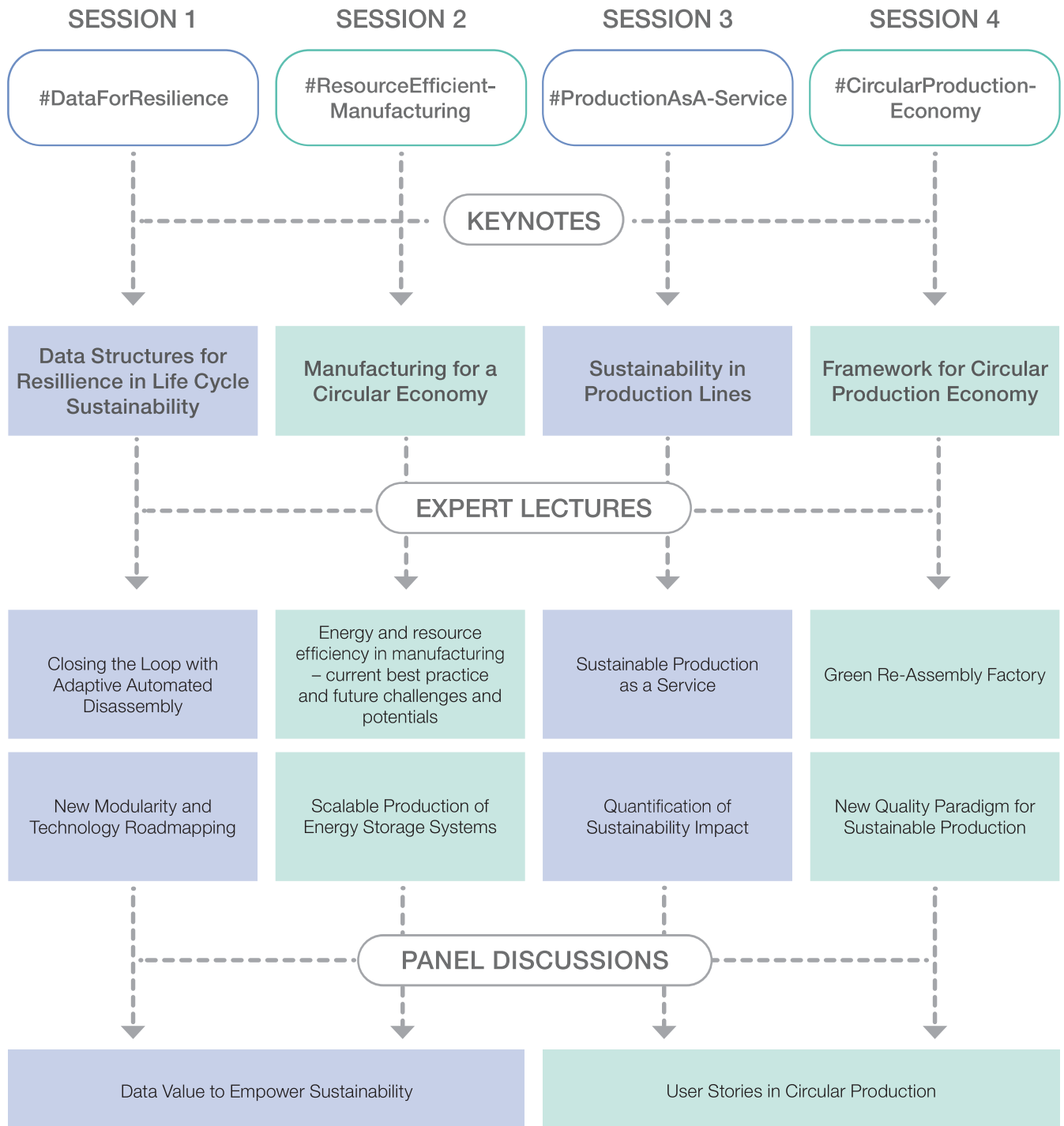
Digitization, from digital twins, 5G connectivity and AI to life cycle assessment (LCA), contributes to quality assurance and can help minimize waste in production. It creates transparency in sustainable value chains to make CO₂ footprints visible across company boundaries. This theme tour shows how companies can use digitization to meet the requirements of the Supply Chain Act. The theme tour shows important components of modern digitization, starting with the digital twin, 5G connectivity, AI and life cycle assessment (LCA).

Enablers for sustainable production systems

The Ramp-up Factory is a central hub for sustainable production systems along the product life cycle: on the four levels of strategy, organization, data structures and technology, it demonstrates solutions that empower green production, integrating the different cycle phases from development across supply chains to the company's own factory and corporate strategy.



The Colloquium



Agenda Day 1

- 09.00 Welcome**
Sibylle Keupen, Lord Mayoress, City of Aachen
- 09.15 Introduction**
Prof. Dr.-Ing. Robert Schmitt, WZL of RWTH Aachen / Fraunhofer IPT
- 09.30 Plenary 1: Manufacture #LikeABosch – Producing Technology Invented for Life**
Dr.-Ing. Stefan Hartung, CEO, Robert Bosch GmbH
- 10.00 Coffee break, visit of the industrial exhibition and networking**
- 10.30 Plenary 2: Circular Economy as an industry strategy for sustainable value creation made in Europe**
Prof. Dr.-Ing. Siegfried Russwurm, President, Federation of German Industries (BDI)
- 11.05 Keynote Co-Host 1: Autonomous Manufacturing for a Sustainable Future**
Paolo Guglielmini, President and CEO, Hexagon AB
- 11.35 Lunch Break, visit of the industrial exhibition and networking**
- | | | |
|--------------|--|---|
| 13.00 | SESSION 1
Data Structures for Resilience in Life Cycle Sustainability
Prof. Dr.-Ing. Robert Schmitt,
WZL of RWTH Aachen / Fraunhofer IPT | SESSION 2
Manufacturing for a Circular Economy
Prof. Dr.-Ing. Thomas Bergs,
WZL of RWTH Aachen / Fraunhofer IPT |
| 13.30 | SESSION 1
Closing the Loop with Adaptive Automated Disassembly <ul style="list-style-type: none">• Guido Nilgen, Director Quality Management, Miele & Cie. KG• Dr. Thilo Greshake, Partner, Head of Sustainability & Mobility Transformation, MHP Management- und IT-Beratung GmbH | SESSION 2
Energy and Resource Efficiency in Manufacturing – Current Best Practice and Future Challenges and Potentials
Dr. Christoph Zeppenfeld, Vice President & Head of QHSE Corporate Responsibility, MAN Energy Solutions |
| 14.00 | New Modularity and Technology Roadmapping
Dr.-Ing. Ulrich Viethen, CEO, Murrelektronik GmbH | Scalable Production of Energy Storage Systems
Dr.-Ing. Stephan Witt, COO, Jagenberg AG |
- 14.35 Panel Discussion: Data Value to Empower Sustainable Production**
- 15.30 Plenary 3: Beyond Sustainability – Manufacturing a new mindset**
Stefan Liske, Founder & Managing Director, PCH Innovations
- 16.00 Guided tour at the institutes at RWTH Aachen Campus**
- 19.00 Evening event**

Agenda Day 2

- 09.00 Welcome**
Prof. Dr.-Ing. Reimund Neugebauer, President, Fraunhofer-Gesellschaft
- 09.15 Plenary 4: Transformation of the steel industry – how to save 2.5% of German CO₂ emissions**
Dr. Marie Jaroni, Head of Decarbonization, thyssenkrupp Steel Europe AG
- 09.50 Keynote Co-Host 2: 5G – Manufacturing a Sustainable Future by Breaking the Energy Curve**
Joe Wilke, VP and Head of Center of Excellence 5G Industry 4.0, Ericsson
- 10.25 Keynote Co-Host 3: Transforming Industry Through the Industrial Metaverse: A Catalyst for Sustainability**
Dr. Annika Hauptvogel, Head of Technology & Innovation Management, Siemens
- 10.55 Coffee break, visit of the industrial exhibition and networking**
- | | |
|---|--|
| 11.25 SESSION 3
Sustainability in Production Lines
Prof. Dr.-Ing. Christian Brecher,
WZL of RWTH Aachen / Fraunhofer IPT | SESSION 4
Framework for Circular Production Economy
Prof. Dr.-Ing. Günther Schuh,
WZL of RWTH Aachen / Fraunhofer IPT |
| 11.55 SESSION 3
Sustainable Production as a Service
Dr. Tilman Buchner, Global Leader Innovation Center
for Operations, Partner & Director, Boston Consulting
Group (BCG) | SESSION 4
Re-Manufacturing Green Factory
• Wilhelm Mauß, Managing Director,
Lorenz GmbH & Co. KG
• Dr. Till Potente, VP Operations and Sustainability,
Phoenix Contact Electronics GmbH |
| 12.25 Quantification of Sustainability Impact
Dr. Andreas Peters, Head of Development,
Mendritzki Holding GmbH & Co. KG | New Quality Paradigms for Sustainable Production
Dr. Philipp Jatzkowski, Head of Production Excellence,
TÜV Rheinland Consulting GmbH |
- 12.35 Lunch Break, visit of the industrial exhibition and networking**
- 14.00 Panel Discussion: User Stories in Circular Production**
- 14.55 Coffee break, visit of the industrial exhibition and networking**
- 15.15 Plenary 5: Title to be announced**
Dr. Elisabeth Schrey, Managing director, DeepTech & Climate Fonds
- 15.50 Outlook**
Prof. Dr.-Ing. Robert Schmitt, WZL of RWTH Aachen / Fraunhofer IPT
- 16.00 Guided tour at the institutes at RWTH Aachen Campus**

In Plenum

Hosts



Prof. Dr.-Ing. Thomas Bergs MBA

Holder of the Chair of Manufacturing Technology at the WZL and Head of the Process Technology Division at the Fraunhofer IPT



Prof. Dr.-Ing. Christian Brecher

Holder of the Chair of Machine Tools at the WZL and Head of the Production Machines Division at the Fraunhofer IPT



Prof. Dr.-Ing. Robert Schmitt

Holder of the Chair of Production Metrology and Quality Management & Institute for Information Management in Mechanical Engineering and Head of the Production Quality and Metrology department at the Fraunhofer IPT



Prof. Dr.-Ing. Dipl.-Wirt. Ing. Günther Schuh

Holder of the Chair of Production Engineering at the WZL and Head of Technology Management at the Fraunhofer IPT

In Plenum

Plenary Speakers



Dr.-Ing. Stefan Hartung
CEO, Robert Bosch GmbH



Prof. Dr.-Ing. Dr.-Ing. E. h. Siegfried Russwurm
President and Chairman, BDI –
Federation of German Industries.



Dr. Marie Sophie Jaroni
Head of Decarbonization,
Thyssenkrupp Steel Europe AG



Dr. Elisabeth Schrey
Managing director,
DeepTech & Climate Fonds



Stefan Liske
Founder & Managing Director,
PCH Innovations

The co-host speakers



Paolo Guglielmini
President and CEO,
Hexagon AB



Dr. Annika Hauptvogel
Head of Technology & Innovation
Management Siemens



Joe Wilke
VP and Head of Center of
Excellence 5G Industry 4.0,
Ericsson

In the Sessions

Speakers



Dr. Tilman Buchner

Global Leader Innovation Center for Operations, Partner & Director, Boston Consulting Group (BCG)



Dr. Andreas Peters

Head of Development, Mendritzki Holding GmbH & Co. KG



Dr. Thilo Greshake

Partner, Head of Sustainability & Mobility Transformation, MHP Management- und IT-Beratung GmbH



Dr. Till Potente

VP Operations and Sustainability, Phoenix Contact Electronics GmbH



Dr. Philipp Jatzkowski

Head of Production Excellence, TÜV Rheinland Consulting GmbH



Dr.-Ing. Ulrich Viethen

CEO, Murrelektronik GmbH



Wilhelm Mauß,

Managing Director, Lorenz GmbH & Co. KG



Dr.-Ing. Stephan Witt

COO, Jagenberg AG



Guido Nilgen

Director Quality Management, Miele & Cie. KG



Dr. Christoph Zeppenfeld

Vice President & Head of QHSE Corporate Responsibility, MAN Energy Solutions

Industry Exhibition



In addition to the plenary and expert lectures, leading German and European companies from industry and business will present their innovations on the topic of “Empower Green Production”. The AWK’23 industrial exhibition offers you an exclusive insight into the production of the future and lets you experience the unique networking character of the event: Exchange ideas with top-class exhibitors who are already working on concrete solutions for the circular economy and discover exciting new products.

Become an exhibitor or cooperation partner to benefit from the reputation of the AWK’23!

Further information at www.awk-aachen.de

Become a premium partner of the virtual AWK’23

In addition to the analog format at the Eurogress Aachen, we offer you the chance to feature your company digitally and be present on location during the event through a wide range of marketing options. As a premium partner, you can customize your company’s presentation according to your wishes and receive attractive placement of your brand message on our website, in the digital event platform, and on printed materials. Feel free to contact us.

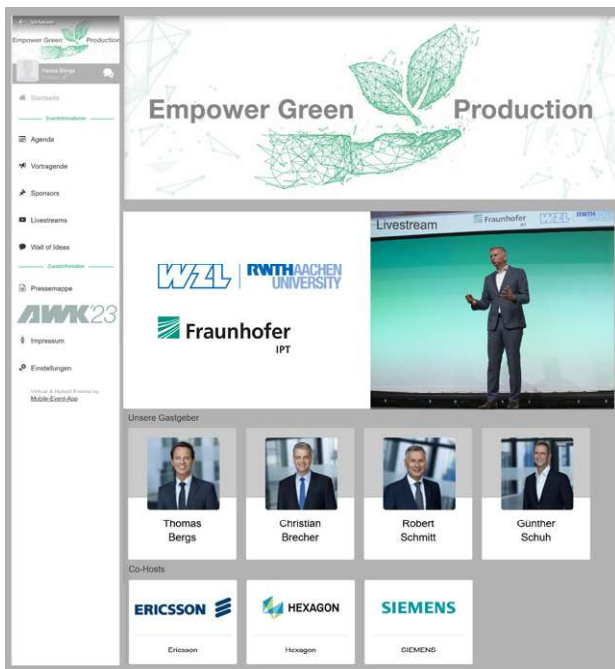
Exhibitor Industry Overview

- General mechanical and plant engineering
- Automobile
- Aerospace
- Electronics and telecommunications
- Plastics production and processing
- Metal production and processing
- Software services
- Science

Hybrid Event Format

In addition to the usual face-to-face event at the Eurogress in Aachen, there will again be a digital transmission of large parts of the event program. The digital event platform brings the experience of the live event to your desktop and offers access independent of time and location. This way you can get in touch with other participants and exhibitors.

Congress feeling - online as well as on site



Take the chance and participate live in AWK'23 - no matter where you are! Look forward to our industrial exhibition, presentations in the large plenum as well as exciting interviews, and ask your questions in our expert sessions.

In addition to the on-site institute tour, you can also explore the machine halls and test benches virtually. Through immersive digital 3D content, you will gain unique glimpses behind the scenes of WZL and Fraunhofer IPT. We will present the digital twins of our machine halls and test benches to you in detail in accompanied theme tours: In addition to the usual detailed information on our research projects and networks, we will show you additional content in the form of video material, which will give you in-depth impressions of our research work and plant technology, as well as live and interactive commentary and guidance from our scientists.

Be it on site or online: The AWK'23 will become a unique meeting point for internationally leading experts and leaders from industry, business, science and politics.

In the digital program, you will also be able to access additional exclusive presentations by our scientists.

Hosts



The **Fraunhofer Institute for Production Technology IPT** combines knowledge and experience from all areas of production technology. Located in Aachen, we offer customers and partners applied research and development of methods, technologies and processes for the networked, adaptive production of sustainable and environmentally friendly products and the associated services. We understand production not only in terms of its individual steps, but also consider the entirety of processes and connections between all links in the process chain. Our range of services is aligned to the current challenges of specific industries, technologies and product areas such as aviation and aerospace technology, the energy sector, automotive engineering and its suppliers in lightweight construction and toolmaking, machine tool manufacturing, the precision engineering and optical industries, as well as medical technology, biotechnology and pharmaceuticals.



The **Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University** promotes the innovation drive and competitiveness of industry with trend-setting basic research, applied research and with resulting consulting and implementation projects in the field of production engineering. In the research fields of manufacturing technology, machine tools, gear technology, production engineering as well as production metrology and quality management, practical solutions for resource-efficient production are developed with industrial partners from a wide range of sectors.

Industry 4.0 topics such as digitalization, individualization, automation, robotics, data monetization, sustainability, artificial intelligence and 5G are addressed alongside the classic problems of manufacturing companies.

Production Engineering at the Aachen Site

The WZL and the Fraunhofer IPT are located in the immediate vicinity of the RWTH Aachen Campus, one of the most important centers for production technology. Another strength of the two institutes, which cooperate closely with each other in all areas of work, is their thematically broad, international network of a wide variety of partners from science and industry, which allows them to comprehensively solve interdisciplinary tasks.

This close cooperation is also reflected in the personal union of their management:

The Fraunhofer IPT is also managed by the four directors of the WZL of RWTH Aachen University Thomas Bergs, Christian Brecher, Robert Schmitt and Günther Schuh.

We look forward to a lively exchange with you!

Organization

Registration information

Date

May 11-12, 2023

Venue

Eurogress Aachen
Monheimsallee 48
52062 Aachen
Germany

Conference fee

On site: 1400 € *

Includes: Lecture program, industrial exhibition, visit of the institutes, conference documents, bus transfer, catering on both days and the evening event.

Please note that the participation in the conference on site can only be booked including the evening event.

Digital: 500 € *

Included are: Lecture program, industrial exhibition, visit of the institutes, conference documents as well as further offers on the digital event platform.

Registration

Please register on our website www.awk-aachen.com.
www.awk-aachen.com

Cancellation

Registrations will be considered in the order of their receipt. The cancellation policy can be accessed on our website at www.awk-aachen.com/impressum. Please do not pay until you received the invoice.

Your contact

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Germany

info@awk-aachen.de
www.awk-aachen.com

*plus VAT at the statutory rate.