

FEBRUARY 6-7, 2019 IN AACHEN

# ICTM CONFERENCE



# PROGRAM

WELCOME TO THE 5<sup>TH</sup> CONFERENCE OF THE  
INTERNATIONAL CENTER FOR TURBOMACHINERY  
MANUFACTURING AACHEN – ICTM

DEVELOPMENTS AND TRENDS  
TO MEET THE FUTURE CHALLENGES  
IN PRODUCTION TECHNOLOGY

Digital production is a strong enabler to increase efficiency in manufacturing turbomachinery components. By fostering a high level of data consistency, continuity and availability, more robust processes as well as higher transparency can be obtained leading to increased economic process chains and proof of certification in the future. Additionally, combining approaches of Industrie 4.0 and process-specific developments will open up new opportunities for manufacturing complex turbomachinery components.

This year's ICTM Conference will deal with interdisciplinary approaches as well as the development of manufacturing processes to enhance efficiency in production and repair as well as increase lifetime of modern turbomachinery components.

Aachen is a leading competence center of excellence for application-oriented turbomachinery manufacturing. In recent years, multiple industrial cooperations were initiated and enhanced. At the conference, you will be able to see latest developments presented by experts from industry and research.

We are looking forward to meeting you at the  
ICTM Conference 2019 in Aachen.



Prof. Johannes Henrich Schleifenbaum  
Fraunhofer ILT



Prof. Thomas Bergs  
Fraunhofer IPT

## Topics

- Industrie 4.0 with regard to component manufacturing
- Innovative process monitoring systems
- Advanced machining
- Innovative and newly developed materials
- Additive manufacturing
- Laser based repairs
- Live Presentations at the Fraunhofer facilities

## Speakers

- Design and Manufacturing Experts of Turbomachinery OEM
- Specialists of Machine Tool and Equipment Suppliers
- Experts for Digitalization and Industrie 4.0 Developments
- Representatives of Universities and Fraunhofer Institutes

## Addressee

- Specialists and Managers of Turbomachine Manufacturers, Aeronautics and Power Generation, Machine Tool and Equipment Suppliers
- Design and Manufacturing Engineers
- Stakeholders for Laser and Machining Technologies

## Language

Lectures are presented in English and German with simultaneous interpreting.

# ICTM CONFERENCE – PROGRAM

1<sup>ST</sup> DAY



WEDNESDAY, FEBRUARY 6, 2019

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Session 1	Introduction and Keynotes	Session 3	Monitoring / Safety
<b>9:00</b>	<b>Introduction</b> <ul style="list-style-type: none"><li>• Prof. Thomas Bergs, Fraunhofer IPT, Aachen (DE)</li><li>• Prof. Johannes Henrich Schleifenbaum, Fraunhofer ILT, Aachen (DE)</li></ul>	<b>14:00</b>	<b>Regulatory Considerations for Process Monitoring and NDE of Advanced Manufacturing Processes</b> Michael Gorelik, PhD, Federal Aviation Administration, Phoenix (US)
<b>9:05</b>	<b>Smart Factory @ MTU</b> Lars Wagner, MTU Aero Engines AG, München (DE)	<b>14:30</b>	<b>Systems and Strategies for Process and Machine Condition Monitoring</b> Dr. Dirk Lange, MARPOSS Monitoring Solutions GmbH, Egestorf (DE)
<b>9:35</b>	<b>Trends and New Technologies in the Production of Stationary Gas Turbines and Turbo Machines</b> Michael Kleinhenz, MAN Energy Solutions, Oberhausen (DE)	<b>15:00</b>	<b>The Importance of Special Processes for Aeroengine Component Manufacturing</b> Dr. Thomas Haubold, Rolls-Royce Deutschland, Oberursel (DE)
<b>10:05</b>	<b>Networked, Adapted Production of Turbomachinery Components</b> Prof. Thomas Bergs, Fraunhofer IPT, Aachen (DE)	<b>15:30</b>	<b>Live Presentations at Fraunhofer Institutes – Highlights</b> <ul style="list-style-type: none"><li>• Talu Ünal-Saewe, Fraunhofer ILT, Aachen (DE)</li><li>• Philipp Ganser, Fraunhofer IPT, Aachen (DE)</li></ul>
<b>10:30</b>	<b>Coffee Break – Visit of the Industrial Exhibition</b>	<b>15:45</b>	<b>Transfer to Fraunhofer Facilities by Shuttle Bus</b>
Session 2	Digitalization	Session 4	Live Presentations
<b>11:00</b>	<b>Advanced Multiblade Machining through enhanced Tool Path Calculation Approches</b> Dr. Marc Stautner, Module Works GmbH, Aachen (DE)	<b>16:00</b>	<b>Live Presentations at Fraunhofer Institutes</b>
<b>11:30</b>	<b>Being Sure in the Digital Production with Advanced Metrology Technology</b> Dr. Dietrich Imkamp, Carl Zeiss Industrielle Messtechnik GmbH, Oberkochen (DE)	<b>18:30</b>	<b>End of Live Presentations</b> Transfer back to Eurogress Conference Center
<b>12:00</b>	<b>Manufacturing Turbomachinery Components in a Digital Environment</b> Dr. Sascha Gierlings, Fraunhofer IPT, Aachen (DE)	<b>Evening Event</b>	<b>Networking Event</b>
<b>12:30</b>	<b>Lunch Break – Visit of the Industrial Exhibition</b>	<b>20:00</b>	<b>Networking Event with Dinner</b> “Coronation Hall” of Aachen, doors open at 19:30
		<b>23:30</b>	<b>End of Evening Event</b>

*Simultaneous Interpreting German/English*



THURSDAY, FEBRUARY 7, 2019

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**Session 5** *Additive Manufacturing*

- 9:00**    **Evolution instead of Revolution:  
Additive Manufacturing from the Perspective  
of a Full-Service Provider**  
Christoph Hauck, MBFZ toolcraft GmbH, Georgensgmünd (DE)
- 9:30**    **Status of Additive Manufacturing  
at MAN Energy Solutions**  
Anders Such, MAN Energy Solutions, Oberhausen (DE)
- 10:00**   **Maintenance, Repair and Overhaul of Gas Turbine  
Components with LMD for Lifetime Extension**  
Dr. Bernd Burbaum, Siemens AG, Berlin (DE)
- 10:30**   **Coffee Break – Visit of the Industrial Exhibition**

**Session 6** *Advanced Machining*

- 11:00**   **Advancements in EDM – Solutions  
for the Production of Turbomachinery Components**  
Dr. David Welling, Makino Europe GmbH,  
Aachen (DE)
- 11:30**   **The Leading Edge – A Toolmakers View on the  
Challenges in Turbomachinery Manufacturing**  
Dr. Manuel Wacinski, Kennametal Shared Services GmbH,  
Fürth (DE)
- 12:00**   **Adaptive and Intelligent Clamping  
Technology – Applications in Turbomachinery  
and Aerospace Industry**  
Roman Kalocsay, Innoclamp GmbH, Aachen (DE)
- 12:30**   **Lunch Break – Visit of the Industrial Exhibition**

**Session 7** *Material / Design*

- 14:00**   **Model-based Definition of Processes and Materials**  
Jean Philippe Thomas, Pratt & Whitney, East Hartford (US)
- 14:30**   **Ceramic Matrix Composites for Next Generation  
Gas Turbines**  
Florian Reichert, Schunk Kohlenstofftechnik GmbH,  
Heuchelheim (DE)
- 15:00**   **Importance of New Nickel and Cobalt Alloys  
for Future Turbomachinery Applications**  
Dr. Tatiana Hentrich, VDM Metals International GmbH,  
Werdohl (DE)

**Session 8** *Closing*

- 15:30**   **Future of Aviation – Innovations and Perspectives**  
Dr. Jochen Kaiser, Bauhaus Luftfahrt e.V., Taufkirchen (DE)
- 16:00**   **End of Sessions**

*Program subject to minor changes.*

# INDUSTRIAL EXHIBITION LIVE PRESENTATIONS NETWORKING EVENT

BECOME AN EXHIBITOR AT  
THE ICTM CONFERENCE 2019!  
[www.ictm-aachen.com](http://www.ictm-aachen.com)



## YOUR EXTRA BENEFITS!

### Industrial Exhibition

At the accompanying industrial exhibition in the foyer of the conference center, various suppliers will present new products and latest trends. Benefit from the exchange of information and know-how at the industrial exhibition is a perfect match with the ICTM Conference. Discuss innovative solutions for your specific problems face-to-face with the worldwide recognized companies.

### Live Presentations

Fraunhofer ILT and Fraunhofer IPT have gained a huge expertise in manufacturing and repair processes in turbomachinery. In Live Presentations both institutes will demonstrate their latest laser and machining technology developments as well as digitalization and Industrie 4.0 approaches. Use the opportunity to exchange information with our team of experts on-site.

### Networking Event

The "Coronation Hall" of the Town Hall Aachen will be the location of the Networking Event on Wednesday, February 6, 2019. Take the opportunity for networking after the conference in a relaxed atmosphere. Get an impression at: [www.aachen.de/rathaus](http://www.aachen.de/rathaus)

### Become an Exhibitor at the ICTM Conference!

The industrial exhibition offers an ideal platform to get in personal contact with the ICTM Conference participants. Take the chance and show your innovative products and services at the ICTM Conference 2019!

If you would like to present your products and your company at the industrial exhibition at the ICTM Conference 2019, please contact us for further information about exhibiting and sponsoring opportunities.

### Contact

Dipl.-Betw. Silke Boehr  
Phone +49 241 8906-288  
[contact@ictm-aachen.com](mailto:contact@ictm-aachen.com)

### Exhibitors and Sponsors ICTM Conference 2019

(Status Dec. 2018)



**ICTM – International Center for Turbomachinery  
Manufacturing in Aachen**

The ICTM Aachen is a joint initiative of the Fraunhofer Institute for Production Technology IPT, the Fraunhofer Institute for Laser Technology ILT, the Laboratory for Machine Tools and Production Engineering WZL of the RWTH Aachen University as well as the Chair for Digital Additive Production DAP of the RWTH Aachen University.

It offers an integrated and interdisciplinary platform which focuses on production and repair technologies primarily, providing R&D solutions in the full range of competencies of the participating research institutes. As turbomachinery manufacturing is a highly interdisciplinary market the ICTM Aachen also pursues R&D approaches geared to design trends and the use of advanced materials.

Aim of the ICTM Aachen is to speed up technological innovations and to transfer them into industrial applications. It employs the full technology portfolio of all of its members to provide excellent R&D for turbomachinery manufacturing.

**The Time of Rapid Prototyping has gone**

*“Now additive manufacturing must prove that it is an integral part of modern production technologies. Not only special requirements in production, such as environmental protection, health and safety at work, must be taken into account. Above all, more productive and reliable systems as well as an extensive range of materials are required. The difference between a component and a high-end component lies in the entire process chain, from design and manufacturing to finishing including quality measurement.”*

**Christoph Hauck, CEO MBFZ toolcraft GmbH**

**International Cooperation in Aachen**

*“Thanks to the ICTM Aachen we have received support to initiate the technological change that opens up the possibilities for the upcoming creative revolution: Here we find exactly the innovations with which we can bring about paradigm changes in the production of highly sophisticated components for international markets.”*

**Mikio Sakurai, Senior Chief Engineer  
of Manufacturing, IHI Corporation**

**World Class Manufacturing Made in Germany**

*“Turning big data into smart and relevant data given the possibilities and capabilities of digitalization will further enable the required world class manufacturing.”*

**Dr. Stefan Weber, Senior Vice President Technology  
and Engineering Advanced Programs, MTU Aero Engines AG**



The ICTM Conference is organized by the Fraunhofer Institutes for Laser Technology ILT and for Production Technology IPT. The ICTM Conference will focus on the latest trends in laser and machining technology as well as on digitalization in production and major trends such as Industrie 4.0. Use the opportunity during the tour through the institutes to get an overview about the latest R&D activities.

### **Fraunhofer Institute for Laser Technology ILT**

With about 500 employees and more than 19,500 m<sup>2</sup> net floor space, the Fraunhofer Institute for Laser Technology ILT, founded in 1985, is one of the most important contracting research and development institutes of its sector worldwide. Its experts develop and optimize laser beam sources and laser processes.

### **Fraunhofer Institute for Production Technology IPT**

With more than 450 employees on 6,000 m<sup>2</sup> of useable space, it provides customer-oriented manufacturing solutions. The highly qualified specialists have gained wide range of know-how in multiple industrial sectors such as aerospace, automotive, energy, optics, precision mechanics, machine tools and, in particular, turbomachinery.

### **Location Aachen**

The imperial city of Aachen, located in the heart of Europe, offers a variety of sights, elegant stores as well as numerous bars in the picturesque, historic city center. Aachen's immense scientific potential, its future-looking economic structures and conveniently situated location, where three countries – Germany, Belgium and the Netherlands – meet, offer the ideal context for a successful conference.

We are looking forward to welcoming you at the ICTM Conference 2019!

### **Hotels**

A certain contingent of hotel rooms with special negotiated rates has been reserved for the participants of the ICTM Conference 2019. We recommend early reservations. For further information please visit: [www.ictm-aachen.com](http://www.ictm-aachen.com).

# ICTM CONFERENCE 2019 TERMS AND CONDITIONS

## REGISTRATION

online: [www.ictm-aachen.com](http://www.ictm-aachen.com)

FEBRUARY 6–7, 2019  
EUROGRESS AACHEN, CONFERENCE CENTER  
MONHEIMSALLEE 48, 52062 AACHEN, GERMANY

Early Bird Registration  
by Dec. 17, 2018!



### Registration Fee

The registration fee for the ICTM Conference 2019 is 990,- € per person. This includes the conference participation (895,- € free of tax under § 4 UStG) and the Networking Event (95,- € incl. VAT), the conference proceedings, lunch, light refreshments and coffee breaks on both conference days. It also covers the shuttle service to the Live Presentations at the Fraunhofer facilities on February 6, 2019. Please note that the conference participation cannot be booked without the Networking Event.

### Early Bird Registration

If you register by December 17, 2018 you will receive an Early Bird discount of 100,- €.

### Registration

Please register online at [www.ictm-aachen.com](http://www.ictm-aachen.com) or use the registration form attached. You can pay the participation by bank transfer after having received your invoice.

### Registration Deadline

Please register by January 25, 2019 at the latest.

### Cancellation

In case of cancellation before January 7, 2019 the fee will be refunded less 100,- € handling charges. Otherwise the full fee will be charged and we will send the proceedings to you or welcome a substitute participant instead.

### ICTM Conference 2019

February 6–7, 2019 in Aachen, Germany

Name \_\_\_\_\_  
First Name \_\_\_\_\_  
Company \_\_\_\_\_  
Division \_\_\_\_\_  
VAT-Number \_\_\_\_\_  
Street \_\_\_\_\_  
ZIP / City \_\_\_\_\_  
Phone \_\_\_\_\_  
Fax \_\_\_\_\_  
E-mail \_\_\_\_\_

Registration fee Conference 895,- € (795,- € Early Bird)  
Networking Event fee 95,- € incl. VAT

### Invoice Address (if different from Participant Address)

Company \_\_\_\_\_  
Department \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_

### Method of Payment

Bank Transfer / Money Order

*I agree that information provided by me may be published and distributed in an attendance list and will be processed in the seminar database. I have read the participation conditions as well as the data protection policy and accept them.*

Date \_\_\_\_\_ Signature \_\_\_\_\_

Please fill in the form and fax it to Daniel Heinen: **+49 241 8904-6443**

## ORGANIZATION

### **Fraunhofer Institute for Laser Technology ILT**

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52074 Aachen, Germany  
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