



New Production Technologies in the Aerospace Industry

December 02<sup>nd</sup> 2020 Virtual Conference





CIRP sponsored conference



#### Greetings



Dear Ladies and Gentlemen!

the aerospace industry has always been driven by challenges, which often result in innovation. Both, the products and the manufacturing processes are constantly evolving, leading to new standards and technologies, not only in aerospace industry. In the centuries of development, research and industry have always been faced with new challenges, and one of the main challenges in 2020 is the Covid-19 pandemic. The Covid-19 pandemic has hit not many industries as hard as the aerospace industry. Companies are faced with major challenges and have to rethink their business strategy. Especially in these uncertain times it is important to stay competitive.

Digitalization and new manufacturing technologies can help to satisfy the demands of cost efficiency, resource efficiency and sustainability. The best way to exploit the innovative power of the industry and expand boundaries of manufacturing the technologies, production machines and products is through exchange. This is offered by the Institute of Production Engineering and Machine Tools of the Leibniz University Hannover (IFW) and the Manufacturing Innovations Network e.V. (MIN) with the "Machining Innovations Conference for Aerospace Industry" for many years. The conference provides a platform for discussions and exchanges between experts and scientists at an international level in the field of manufacturing technology.

On behalf of the Organizing Committee, we welcome you to the 20th Machining Innovations Conference for Aerospace Industry - MIC 2020 on December 2<sup>nd</sup>. Renowned experts from industry and research will present the latest trends, newest know-how and research results in aerospace industry. Furthermore, the topics digital transformation, new strategy and intelligent processes are discussed in moderated workshops to enable a more intensive exchange and to support the development of specific ideas for the own company. The conference program is completed by an online tour through the IFW-laboratory.

The scientific session is sponsored by the International Academy for Production Engineering (CIRP). All Contributions to the scientific session are published in MIC Proceedings accessible via SSRN (https://www.ssrn.com/).

We proudly present the agenda of this year's conference. For further information, please visit our website:

www.mic-conference.com

We are looking forward to welcome you to the MIC 2020.

Yours sincerely,

Olaf Lawrenz

Chairman of the Manufacturing Innovations Network e.V. Head of Varel/Bremen site at Premium AEROTEC GmbH

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Prof. Dr.-Ing. Berend Denkena

Member of the Board of the Manufacturing Innovations Network e.V., Head of the Institute of Production Engineering and Machine Tools, Leibniz Universität Hannover

### Welcoming Speech

08:45 a.m.	Introduction speech for the Machining Innovations Conference 2020
	<i>Prof. DrIng. Berend Denkena, Leibniz Universität Hannover and Member of the Board of the Manufacturing Innovations Network e.V.</i>

#### Keynote Speeches

09:00 a.m.	New Strategy
	Manfred Hader, Senior Partner, Roland Berger
09:20 a.m.	Digital connectivity in aircraft manufacturing – easier said than done
	Jürgen Nolde, Vice President Siemens Vertical Aerospace
09:40 a.m.	Optimization and digitalization of the metallic additive manufacturing process chain at Airbus Helicopters
	Luis Diaz, Vice President Head of Industrial Service Centers Germany, Airbus Helicopters
10:00 a.m.	SFB 871 – Regeneration of Complex Capital Goods
	Nicolas Nübel, Research Assistant, Leibniz Universität Hannover
10:30 a.m.	Coffee Break
Session 1:	10:50 a.m. – 12:10 p.m.: New Technologies in Machining
10:50 a.m.	Influence of the crystallographic orientation of a directionally solidified nickel-based superalloy on macroscopic grinding forces
	Adina Grimmert, Research Assistant, MTU Aero Engines AG
11:10 a.m.	A new flank face design leading to an improved process performance when drilling high- temperature nickel-base alloys
	Milan Bücker, Research Assistant, Technische Universität Dortmund
11:30 a.m.	Machining technology and PVD coatings for milling thin structural parts of Inconel 718
	DrIng. Heiko Frank, Business Area Manager, GFE – Gesellschaft für Fertigungstechnik und
11.50	Entwicklung Schmalkalden e.v.
11:50 a.m.	synchronous motor drive
	, Ph. D. Kazumasa Miura, Post Doc, RWTH Aachen University
12:10 p.m.	Lunch Break and online Technology Demonstration of the IFW Laboratory
Session 1:	01:00 p.m. – 02:50 p.m.: New Technologies in Machining
01:00 p.m.	Machining-based thermal error analysis of CFRP-structured machine tool
	Makoto Kato, Visiting Lecturer, Keio University, Yokohama
01:20 p.m.	Present status and future directions of high performance cutting in aerospace manufacturing
	Ahmad Sadek, Research Officer, National Research Council Canada, Montreal
01:40 p.m.	performance of face turning of Ti-6AI-4V titanium alloy
	Stephan Basten, Research Assistant, Technische Universität Kaiserslautern
02:00 p.m.	Coffee Break

## Agenda December 02<sup>nd</sup> 2020

<ul> <li>02:30 p.m. Development of a process-oriented tribological test rig for the performance assessment of tool coatings in turning of titanium Ti6Al4V Petter Ploag, Research Assistant, Technische Universität Hamburg</li> <li>02:50 p.m. Break and preparation for Online Workshop</li> <li>Session 2: 10:50 a.m 12:10 p.m.: Additive Manufacturing &amp; Machining Innovations</li> <li>10:50 a.m. Challenges and innovative solutions in additive multi-material processing in the fields of powder, sensor integration and powder application systems Julia Förster, Research Assistant, Faunhofer 18CV</li> <li>11:10 a.m. Cryogenically additive applied support structures and damping elements for chatter suppression in the machining of thin-walled components Eva Jaeger, Research Assistant, Technische Universität Dortmund</li> <li>11:30 a.m. Optimized support structures for postprocessing of additively manufactured parts Clemens Maucher, Research Assistant, Universität Suttgart</li> <li>11:50 a.m. Near-net-shape trimming process by abrasive water jet cutting of high-performance workpieces for the aerospace industry</li> <li>Robert Jaczkowski, Research Assistant, Technische Universität Berlin</li> <li>12:10 p.m. Lunch Break and online Technology Demonstration of the IPW Laboratory</li> <li>Session 2: 01:00 p.m 02:50 p.m.: Machine Tools &amp; Additive Manufacturing</li> <li>01:30 p.m. Fundamental study on cutting temperature in high speed cutting of difficult-to-cut materials</li> <li>Takashi Ueda, Professor, Nagoya University, Japan</li> <li>01:30 p.m. Design and manufacturing strategy of a back-to-back test rig for investigation of ultra high cycle fatigue strength regarding tooth root strength in aerospace applications Johannes Lövenich, Research Assistant, Rethine Universität Darmstati</li> <li>01:30 p.m. Coffee Break</li> <li>02:30 p.m. In-process quality monitoring during turning based on high frequency machine data Alexander Ferig, Research Assistant, RWH Aacheen Uni</li></ul>	02:10 p.m.	Investigation of the influence of different hard coatings on chip formation and process forces when machining duplex steel 1.4462 Ante Glavas, Research Assistant, Rheinische Fachhochschule Köln
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Manfred Hader, Senior Partner, Roland Berger	Workshop:	03:00 p.m. – 04:00 p.m. New Strategy
		Manfred Hader, Senior Partner, Roland Berger

## Agenda December 02nd 2020

## Farewell Speech

04:00 p.m.	Farewell speech of the MIC 2020
	Prof. DrIng. Berend Denkena, Leibniz Universität Hannover and Member of the Board of
	the Manufacturing Innovations Network e.V.

December 03rd	Two more online workshops will be offered
	Organisation by the Manufacturing Innovations Network e.V. (MIN)
	More information on mic-conference.com



# Tour through the IFW-laboratory



# Regeneration complex investment goods

SFB 871 - System demonstrator



# 2

### Innovative processes





**2**b

Hybrid tool for manufacturing friction-reduced cylinder barrel sockets



Oxygen-free machining of Ti-6AI-4V



#### Please note:



The videos can be watched during lunch break

DE All the presentations will be held in German.



The presentations will be available online during the conference





# MIC App 2020



QR-Code to Google Play and Apple Store





