November 6–7, 2018, Fraunhofer IWU, Chemnitz

25th SFU / 6th ICAF / 6th AutoMetForm

ENSURING ADDED VALUE – INNOVATIONS IN FORMING TECHNOLOGY

FINAL PROGRAM
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**Hall 1**

**Hall 2**

**Hall 3**
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<th>Time</th>
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<tr>
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<tr>
<td>09.00</td>
<td>Ensuring Added Value – Innovations in Forming</td>
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<td>09.00</td>
<td>Technology III</td>
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<td>10.40</td>
<td>Coffee and Tea Break</td>
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<td>11.10</td>
<td>Session F1</td>
<td>Session F2</td>
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<td>11.10</td>
<td>Consideration of the Entire Process Chain I</td>
<td>Tools for Forming</td>
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<td>12.25</td>
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<td>Consideration of the Entire Process Chain II</td>
<td>Joining by Forming</td>
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<td>Primary Shaping and Forming</td>
<td>Interaction of Process and Machine</td>
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<td>16.50</td>
<td>Conclusion</td>
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**Wednesday, November 7, 2018**

**Location:**
- Hall 1: VR lecture hall
- Hall 2: H130/131
- Hall 3: M001
- Catering/Networking Dinner: Event area
- Conference Office: Foyer
- Forming Live: Testing facilities
Coming soon
18th ASIM Dedicated Conference
The CIRP-Sponsored Triple Conference consisting of the 25th Saxon Conference on Forming Technology SFU, the 6th International Conference on Accuracy in Forming Technology ICAFt and the 6th International Lower Silesia – Saxony Conference on Advanced Metal Forming Processes in the Automotive Industry AutoMetForm deals with the latest developments and approaches of current challenges and trends in forming technology. This constellation of the event offers an ideal platform for exchanging ideas with top-level speakers from science and industry.

We are delighted that the Minister-President of the Free State of Saxony Mr. Michael Kretschmer and the Marshal of Lower Silesian Voivodeship Mr. Cezary Przybylski have taken over the patronage for this conference.

A traditional highlight of the conference will be the demonstrations and presentations at the Fraunhofer IWU testing facilities within “Forming Live”.

We look forward to a jointly exchange of experiences with you and welcome you to our Triple Conference in Chemnitz.

Prof. W.-G. Drossel
Fraunhofer IWU

Prof. Z. Gronostajski
Wroclaw University of Technology, Poland

Prof. U. Prahl
TU Bergakademie Freiberg
This congress triple sends an overall message from Chemnitz: forming technology is a key technology to advanced industrial production. And this major scientific event also clearly states that Saxony is ranking among the best in forming technology as well as our partners in Lower Silesia. Therefore I have gladly accepted the patronage of the 6th AutoMetForm, the 25th Saxon Conference on Forming Technology and the 6th International Conference on Accuracy in Forming Technology.

The congress topic “Ensuring Added Value – Innovations in Forming Technology” emphasizes the importance of this branch of engineering. Forming technology gives a boost to productivity growth and product innovation. Both are essential to the automotive industry with its dominant role in the Saxon and Lower Silesian economies, keeping OEMs and suppliers abreast of international technological developments.

In this way, the congress triple’s host, the Fraunhofer Institute of Machine Tools and Forming Technology IWU at Chemnitz, greatly contributes to safeguarding the 95,000 jobs in the Saxon automotive industry. Most of them still are in the production of ICE cars, but the Saxon automotive industry is already on its way towards hybrid, electric, and even fuel cell cars. Moreover, Chemnitz is a leading site of sensor, software and systems development for autonomous driving. But even this mobility revolution greatly depends on lightweight engineering and, therefore, advanced forming technology.
For more than a quarter century, the Fraunhofer IWU has contributed greatly to the lead in production technology of Saxony’s automotive industry. Its active networking with partner institutions from Lower Silesia corroborates the claim that our region in the heart of Europe is going to decisively shape 21st century mobility.

For this achievement in scientific and industrial success, I say a heartfelt Thank you to the Fraunhofer IWU, and wish all participants of the three congresses interesting speeches and fruitful discussions in Chemnitz.

Michael Kretschmer
Prime Minister of the Free State of Saxony
PLENARY SESSION A – HALL 1
ENSURING ADDED VALUE – INNOVATIONS IN FORMING TECHNOLOGY I

09.00 Welcome
Prof. Welf-Guntram Drossel, Executive Director, Fraunhofer IWU, Germany

Welcome Address
Secretary of State, Uwe Gaul, Saxon State Ministry for Higher Education, Research and the Arts SMWK, Germany

Welcome Address
Celestyna Górczyńska-Owsianko, Deputy Director of the International Cooperation Department, Marshal Office of Lower Silesian Voivodeship, Poland

Welcome Address
Prof. Uwe Götze, Vice President for Transfer and Academic Qualification, Chemnitz University of Technology, Germany

09.40 Electrification’s Impact on the Value Chain of a Tier 1 Supplier
Bernd Kiel, Vice President Technology, Tower Automotive Holding GmbH, Germany

10.05 Coffee and Tea Break
PLENARY SESSION B – HALL 1
ENSURING ADDED VALUE – INNOVATIONS IN FORMING TECHNOLOGY II

10.35  **GESMultistep: Start of Production for New High Speed Hotstamping Process in Gestamp**
Dr. Oliver Straube, R&D BIW – Steel, Ph Tech Center Germany, Manager, Gestamp Umformtechnik GmbH, Germany

11.00  **Accuracy in Incremental Forming: Challenges and Strategies**
Prof. Joost R. Duflou, Katholieke Universiteit Leuven, Fellow CIRP, Belgium

11.25  **Next Generation Maritime Technologies in Production Engineering**
Dr. Thomas Rüggeberg, Federal Ministry for Economic Affairs and Energy BMWi, Germany

11.50  **Forming Technologies – Potentials for Added Value**
Prof. Reinhard Mauermann, Director, Fraunhofer IWU, Germany

12.15  Lunch
SESSION C1 – HALL 1
INCREMENTAL PROCESSES I

13.15  Simulation Methods for Skew Rolling
       Prof. Alexander Brosius, Technische Universität Dresden, Germany

13.40  Forming of Non-Axisymmetric Products
       Michał Pieszak, INOP – Institute of Metal Forming, Poland

14.05  Methodology for the Design of Recursively Axially Formed Rotor Shafts Made of Two or More Combined Segments
       Robin Kurth, Fraunhofer IWU, Germany

14.30  High-Speed Incremental Forming – New Technologies for Flexible Production of Sheet Metal Parts
       Maik Linnemann, Fraunhofer IWU, Germany

14.55  Coffee and Tea Break
SESSION C2– HALL 2
NETWORKED PRODUCTION SYSTEMS, DIGITIZATION I

13.15 Factory of the Future as Driver
Torsten Kübert, Bosch Rexroth AG, Germany

13.40 Process Optimization with 3D Metrology for Sheet Metal Forming
Michael Müller, GOM GmbH, Germany

14.05 Gray Box Approach for Prediction of Air Bending
Vitalii Vorkov, Katholieke Universiteit Leuven, Belgium

14.30 Investigation of the Tribological Behavior of Car Body Parts in Series Production
Barbara Hansen, BMW Group Plant Regensburg, Germany

14.55 Coffee and Tea Break
SESSION C3 – HALL 3
INNOVATIVE MATERIALS AND SEMI-FINISHED PRODUCTS I

13.15 Application of Physical Simulation and Advanced Analytical Techniques of Microstructure Characterization for the Development of Multiscale Models of AHSS Sheets Production in Continuous Annealing Process
Jarosław Opara, Institute for Ferrous Metallurgy, Poland

13.40 Evaluation of Using Distribution Functions for Mean Field Modelling of Multiphase Steels
Prof. Maciej Pietrzyk, AGH University of Science and Technology, Poland

14.05 Determination of Forming Limit Curve by Finite Element Method Simulations
Dmytro Lumelskyj, Polish Academy of Sciences, Poland

14.30 Process Integrated Inspection of Joints During Assembling Processes Using NDT Methods
Christian Conrad, Fraunhofer IZFP, Germany

14.55 Coffee and Tea Break
SESSION D1 – HALL1  
INCREMENTAL PROCESSES II

15.25 Putting Processes on the Chain – CAM Components as Important Links for Virtualization of New Processes  
Dr. Marc Stautner, ModuleWorks GmbH, Germany

15.50 A Helical Wedge Rolling Process for Producing a Ball Pin  
Prof. Zbigniew Pater, Lublin University of Technology, Poland

16.15 Plastic Deformation Components in Mandrel Free Infeed Rotary Swaging of Tubes  
Yang Liu, University of Bremen – Bremen Institute for Mechanical Engineering, Germany

16.40 Profile Cross Rolling for the Local Hardness Increase in Helical Components such as Extruder Screws  
Erik Forke, Fraunhofer IWU, Germany

17.15 Forming Live  
Presentations in the Testing Facilities of Fraunhofer IWU

19.00 Networking Dinner and Award Ceremony
SESSION D2 – HALL 2
NETWORKED PRODUCTION SYSTEMS, DIGITIZATION II

15.25 Improved Process Monitoring of Hot Stamping Production Lines by Smart Data Acquisition  
Jens Aspacher, Schuler Pressen GmbH, Germany

15.50 Process Surveillance in Hydroforming Based on Machine Learning Algorithms  
Dr. Gregor Steinhagen, Graebener Maschinentechnik GmbH & Co. KG, Germany

16.15 Digitization – Forging 4.0  
Dr. Benjamin Heß, Hirschvogel Holding GmbH, Germany

16.40 Forming 4.0: Smart Machine Components  
Robin Kurth, Fraunhofer IWU, Germany

17.15 Forming Live  
Presentations in the Testing Facilities of Fraunhofer IWU

19.00 Networking Dinner and Award Ceremony
SESSION D3 – HALL 3
INNOVATIVE MATERIALS AND SEMI-FINISHED PRODUCTS II

15.25 It’s all about Adiabatic Shear Bands: Material-Related Reasons for Different Cutting Results in High-Speed Impact Cutting of Ultra Highstrength Steels
Dr. Sven Winter, Fraunhofer IWU, Germany

15.50 The Influence of Forming Conditions on the Plastic Deformation Distribution During Hot Stamping Process of 7075 Aluminum Alloys
Dr. Sławomir Polak, Wrocław University of Science and Technology, Poland

16.15 Planetary Riveting of Electric Bimetallic Micro-Contacts
Dr. Wojciech Presz, Warsaw University of Technology, Poland

16.40 Microstructural Aspects of Energy Absorption of High Manganese Steels
Dr. Magdalena Jabłońska, Silesian University of Technology, Poland

17.15 Forming Live
Presentations in the Testing Facilities of Fraunhofer IWU

19.00 Networking Dinner and Award Ceremony
Experience live presentations at our machines and equipment in the testing facilities of Fraunhofer IWU. Main topics will be:

- Production technologies for vehicles with alternative drive technologies
- Forming 4.0 – Added value through networked production
- Process chain based on forming for lightweight powertrain components
- Methods for incremental sheet metal forming
- Xeidana®: data analysis for intelligent quality assurance
- Tool making for forming technologies
- ML4production: Machine learning for production
- Intelligent machine components – Basic module of Industrie 4.0

Within the framework of “Forming Live” our speakers from industry and science will give you practical insights into their topics.
Properties of B-Pillar Made of Aluminium 7075
Prof. Zbigniew Gronostajski, Head of Metal Forming and Metrology Department, Wrocław University of Science and Technology, Poland

We are on Fire for Magnesium!
Prof. Ulrich Prahl, Deputy Director, Institute of Metal Forming, Technische Universität Bergakademie Freiberg, Germany

Sensor Placement Design Strategy and Quality Estimation in Modern Car Body Production Using Stochastic Finite Element Methods
Dr. Robert Struck, Manager Production Technology, AUDI AG, Germany

Developing the Complexity of Forming Technologies for Enhancing Added Value
Prof. Matthias Putz, Director, Fraunhofer IWU, Germany

Coffee and Tea Break
SESSION F1 – HALL 1
CONSIDERATION OF THE ENTIRE PROCESS CHAIN I

11.10 Thinking Outside the Box – Flexible Structures for Production Challenges of Tomorrow
Sebastian Frank, Lasco Umformtechnik GmbH, Germany

11.35 Press Hardening with TELOS Global: Sustainable Solutions, from Prototyping to Production
Axel Weiand, TELOS Global, Germany

12.00 Lightweight Construction – Magnesium Forging
Christian Kuhn, GSA – Geschenkschmiede Schneider Aalen GmbH, Germany

12.25 Lunch
SESSION F2 – HALL 2
TOOLS FOR FORMING

11.10 Selected Effective Methods of Increasing the Durability of Forging Tools in Hot Forging Processes
Paweł Widomski, Wrocław University of Science and Technology, Poland

11.35 Flexible Tooling for Impulse Forming
Lasse Langstädtler, University of Bremen – Bremen Institute for Mechanical Engineering, Germany

12.00 Added Value in Tooling Applications by Laser Beam Melting
Mathias Gebauer, Fraunhofer IWU, Germany

12.25 Lunch
SESSION G1 – HALL 1

CONSIDERATION OF THE ENTIRE PROCESS CHAIN II

13.25 New Concepts in Roll Forming for Batch Size One-Production
Dr. Thomas Dietl, data M Sheet Metal Solutions GmbH, Germany

13.50 Flexible and Economic Manufacturing of Lightweight Car Body Structures for the eMobility
Andreas Müllegger, TRUMPF Laser- und Systemtechnik GmbH, Germany

14.15 Numerical and Experimental Investigations for Hot Metal Gas Forming of Stainless Steel X2CrTiNb18
Peter Freytag, Salzgitter Hydroforming GmbH & Co. KG, Germany

14.40 Physical and Numerical Simulation of the Multipass AHSS Strip Rolling, Cooling and Coiling
Dr. Łukasz Rauch, AGH University of Science and Technology, Poland

15.05 Coffee and Tea Break
SESSION G2 – HALL 2
JOINING BY FORMING

13.25  **Automatic Bead Position Calculation for Hem Flange Bonding**  
Dr. Benjamin Hecht, Volkswagen AG, Germany  
Medardus Eckert, Fraunhofer IWU, Germany

13.50  **Research on Susceptibility of 7075 Aluminium Alloy to Extrusion Welding**  
Prof. Dariusz Leśniak, AGH University of Science and Technology, Poland

14.15  **Manufacturing of Hybrid Gears by Incremental Sheet-Bulk Metal Forming**  
Sebastian Wernicke, Technische Universität Dortmund, Germany

14.40  **Possibilities of Joining Different Metallic Parts of Structure Using Friction Stir Welding Methods**  
Prof. Romana Ewa Śliwa, Rzeszow University of Technology, Poland

15.05  Coffee and Tea Break
SESSION H1 – HALL 1
PRIMARY SHAPING AND FORMING

15.35 Media Based Forming and Injection Molding Based on Fiber Reinforced Plastic Tubes
André Albert, Fraunhofer IWU, Germany

16.00 Near Solidus Forming
Jokin Lozares Abasolo, Mondragon University, Spain

16.25 Development of an Innovative Lightweight Piston Through Process Combination “Casting – Forging”
Prof. Lutz Krüger, Technische Universität Bergakademie Freiberg, Germany

16.50 Conclusion
Prof. Welf-Guntram Drossel, Executive Director, Fraunhofer IWU, Germany
SESSION H2 – HALL 2
INTERACTION OF PROCESS AND MACHINE

15.35  Internet of Things – the Brave New World of Thermo-Processing
       Dr. Andreas Seitzer, Himmelwerk High and Medium frequencies converters, Germany

16.00  Modeling Elastic Behavior of Forming Machine Components to Reduce Tool Manufacturing Time
       Robert Tehel, Fraunhofer IWU, Germany

16.25  Screening-Based Evidence of the Impact of Geometrical Deviations on Inner Stresses on Mechanical Presses
       Nico Wagner, Fraunhofer IWU, Germany

16.50  Conclusion
       Prof. Welf-Guntram Drossel, Executive Director, Fraunhofer IWU, Germany
Conference Location
Fraunhofer Institute for Machine Tools and Forming Technology IWU
Reichenhainer Strasse 88
09126 Chemnitz, Germany

Access / Transfer
The Institute is easily reached by trams no. 3/C13/C14/C15 from all conference hotels. A detailed description on how to get to the venue can be found under www.iwu.fraunhofer.de/en/ICAFT-SFU.

We offer a free shuttle service to the conference hotels exclusively after the Networking dinner on November 6.

Chairman
Prof. Dr.-Ing. Welf-Guntram Drossel
Executive Director, Fraunhofer IWU

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Conference Languages
German, English (simultaneous translation)

Conference Documentation

Presentation Slides
The conference folder you received contains a ballpoint pen that includes an USB flash drive comprising the presentation slides released by the speakers.

Procedia Manufacturing
The publication of the scientific papers will take place via Procedia Manufacturing after the conference. We will inform you as soon as the proceedings are online.
In Media Cooperation with