

Thinking the Future
Zukunft denken



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46th Aachen Foundry Colloquium

The Virtual Foundry – Status and Future Developments

March 19-20, 2020 | Foundry Institute, Aachen

Over the last 40 years, the virtualization of casting processes has become a success factor for the foundry industry. Software today predicts numerous aspects of the process sequence for the production of cast parts in a virtual environment. The use of simulation results prior to production enables foundrymen, toolmakers and designers to model, verify and validate processes and to optimize design and process parameters. However, the diversity and complexity of the physics, materials, metallurgy and foundry processes still present significant challenges 40 years after the first application of simulation programs. For this reason the theme of this event is:

The Virtual Foundry – Status and Future Developments

International conference and 46th Aachen Foundry Colloquium

The event will be bilingual German/English with simultaneous translation and gives an overview of the current state and the future of the variety of simulation applications for the foundry industry. Leading experts from industry and science from all over the world have agreed to give overview lectures on this topic.

Companies from industry and the software sector will be represented like Nematik, Ford, Martinrea Honsel, Liebherr, Frech, Flow Science, ESI, MAGMA, RWP, and research institutions such as the TU Braunschweig, University of Iowa, Jönköping University, ACCESS e.V. and the Foundry Institute of the RWTH Aachen University as well as guest lecturer Prof. emer. Wilfried Kurz.

The focus of the conference will be on today's and tomorrow's requirements of simulation tools from the point of view of the foundry industry and their customers. The colloquium is therefore aimed at foundry engineers, cast part buyers, designers and all responsible persons, who want to get a concentrated overview of the the state of the art and the possibilities of simulation and optimization in foundry industry. This applies to all relevant casting processes and casting materials, the product development of complex casting parts as well as the linking of different process steps along the entire process chain.

We look forward to welcoming you on March 19 and 20, 2020 to exciting presentations and personal exchange at the Foundry Institute as well as at the evening event in the Aachener football stadium, the Tivoli.

From 09:00 am **Registration**
 10:00 am **Welcome**
 Prof. Andreas Bührig-Polaczek, Foundry Institute
 RWTH Aachen University, Germany

Basics of Virtual Casting

10:15-10:45 am **Fluid Mechanics of Metal Casting:
 Accessible High-Fidelity Solutions**
 Dr. Michael Barkhudarov, Dr. Amir Isfahani –
 Flow Science Inc., USA

10:45-11:15 am **Solidification and Defects, Casting Quality**
 Mark Samonds, Ph.D. – ESI US R&D, USA

11:15-11:45 am **Integrated Modeling of Stresses, Distortion and
 Cracks in the Casting and Heat Treatment
 Processes – State-of-the Art and Future Challenges**
 Dr. Jesper Thorborg – MAGMA Gießerei-
 technologie GmbH, Germany

11:45-12:15 am Coffee Break

Process – Microstructure – Properties

12:15-13:15 pm **Progress in Modelling and Simulation of
 Solidification Microstructures**
 Prof. emer. Wilfried Kurz – Ecole Polytechnique
 Fédérale de Lausanne, Switzerland

1:15-2:00 pm Lunch Break

Virtual Product Development and Quality Assurance

2:00-2:30 pm **Advances in Steel Casting Simulation**
 Prof. Christoph Beckermann – Department of
 Mechanical Engineering, University of Iowa, USA

2:30-3:00 pm **Cast Iron: From Dinosaurs to Virtual Optimization
 of Castings**
 Jakob Olofsson, Ph.D. -School of Engineering,
 Jönköping University, Sweden

3:00-3:30 pm **Application of Simulation in Aluminum Casting
 Process and Cast Component Development –
 Limits, Challenges and Future Expectations**
 Prof. Franz Feikus – Nemak Europe GmbH,
 Germany

3:30-4:00 pm Coffee Break

Virtual Product Development and Quality Assurance

4:00-4:30 pm **Virtual Casting Component Development:
 „How we put the D966H for Rail Application under
 a Weight Reduction Program“**
 Manfred Pister – Liebherr Machines Bulle SA,
 Switzerland

4:30-5:00 pm **A Virtual Approach for Developing Complex
 Castings in the Automotive Industry**
 Eben Prabhu – Ford Motor Company,
 Dearborn, USA

5:00-5:30 pm **Application of CAE Methods and Process
 Simulation for Part and Tool Development
 in HPDC and LPDC**
 Dr. Achim Egner-Walter – Martinrea Honsel
 Germany GmbH, Germany

From 7:00 pm **Foundrymen's Night in the Aachen football
 stadium „Tivoli“**

Data for all Applications

9:00-9:30 am **Simulation platforms for material simulations**
 Dr. Georg Schmitz – Access e.V., Germany

The Virtual Process Chain in the Foundry

09:30-10:00 am **Metallurgy – composition, physical data and
 mechanical properties of the cast component**
 Dr. Konrad Weiß, RWP GmbH, Germany

10:00-10:30 am **„The virtual Core“ – Simulation and optimization
 of a complex material from the production to the
 application in the casting**
 Dr. Jörg C. Sturm – MAGMA Gießerei-
 technologie GmbH, Germany

10:30-10:45 am Coffee Break

Panel Discussion

10:45-11:30 am **Vision, Economical Aspects, Requirements &
 Demands of Casting Experts**
 Session Chair: Dr. Götz Hartmann, MAGMA
 Gießereitechnologie GmbH, Germany

11:30-12:00 am Coffee Break

The Virtual Foundry as a Whole Plant

12:00-12:30 am **Cyber-physical System High Pressure
 Die Casting Machine – Current Status and Vision**
 Dr. Kai Kerber, Peter Maurer –
 Oskar Frech GmbH + Co. KG, Germany

12:30-1:00 pm **Enhancing the Eco-Efficiency of Casting Processes
 through Digital Methods and Tools**

Dr. Sebastian Thiede, Sebastian Gellrich,
 Prof. Christoph Herrmann – Institut für
 Werkzeugmaschinen und Fertigungstechnik |
 Nachhaltige Produktion und Life Cycle
 Engineering, TU Braunschweig, Germany

1:00-1:30 pm **The Process Chain of Casting Processes – Challenge
 and Opportunity for Foundrymen and Simulation**
 Prof. Andreas Bührig-Polaczek, Gießerei-Institut
 der RWTH Aachen University, Germany

From 1:30 pm **Standing Buffet**



Conference Fees

The participation fees are staggered as follows:
Standard: 450 €,
Pensioners / Students / Doctoral Students: 150 €

Venues

Conference: Foundry Institute
Intzestraße 5 | 52072 Aachen

Evening event: Aachener Tivoli
Krefelder Str. 205 | 52072 Aachen

Hotel contingent

We set up hotel contingents for you in various hotels in Aachen.
Further information and a list of hotels can be found at:
www.foundry-conference-aachen.de

Registration

You can register online using the registration form on
www.foundry-conference-aachen.de, via email or by
writing to the address below. The general terms and conditions
can be viewed at www.academy.rwth-aachen.de/de/agn

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Foundry Institute, RWTH Aachen University

The Foundry Institute of RWTH Aachen University is one of the leading research and educational institutions for foundry technology worldwide. This exposed position is primarily supported by three pillars: the unity of research and teaching, the diversity of research topics and the constructive and close cooperation with partners from industry and science. The Institute's quality and competence are guaranteed in the long term by its international orientation, strategic research fields and cooperation. www.gi.rwth-aachen.de

AGIFA e.V.

The Aachener Gießerei-Familie e.V. is an association of graduates and students of foundry science and employees of the foundry institute. It was founded by Prof. Dr.-Ing. habil. Eugen Piwowarsky, first professor of the Foundry Institute. The purpose of AGIFA is to promote students and scientific work in the field of foundry science.

RWTH International Academy

The advanced training formats of the RWTH International Academy offer practitioners from a wide variety of industries the opportunity to benefit from the broad spectrum of knowledge of the RWTH institutes while working.
www.academy.rwth-aachen.de

vdg-Academy

The vdg Academy is the leading provider of seminars and training courses for the foundry industry. The continuously expanded and updated further training program covers the qualification requirements at all levels within the companies. The vdg Academy is strongly networked in the industry and firmly embedded in the technical structures of the vdg and bdg.
www.vdg-akademie.de

Impressum

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Photo: Martin Braun (casting process on cover page)