

**ALD Vacuum Technologies**

High Tech is our Business



# Metallurgy & More Conference

SEPTEMBER 18 - 22, 2023 | HANAU, GERMANY



**YOUR LEADING  
SUPPLIER FOR ADVANCED  
VACUUM FURNACES**

**150 YEARS**  
EXPERIENCE

## Program Overview

### Monday, September 18, 2023: ARRIVAL & WELCOME RECEPTION

16:00 - 18:00 Registration at Best Western Hotel 'Villa Stokkum' in Hanau-Steinheim

18:00 - 21:00 Registration and Welcome Reception at Best Western Hotel 'Villa Stokkum'

### Tuesday, September 19, 2023: TECHNICAL CONFERENCE DAY 1

08:00 - 08:20 Pick-up at Best Western Hotel, 'Villa Stokkum' and bus transfer to ALD Vacuum Technologies GmbH

08:00 - 09:00 Registration at ALD Vacuum Technologies GmbH

09:00 - 18:30 Conference Day 1 at ALD Vacuum Technologies GmbH

18:30 - 22:00 Conference dinner (Bavarian style)

### Wednesday, September 20, 2023: TECHNICAL CONFERENCE DAY 2

08:00 - 08:20 Pick-up at Best Western Hotel, 'Villa Stokkum' and bus transfer to ALD Vacuum Technologies GmbH

09:00 - 18:00 Conference Day 2 at ALD Vacuum Technologies GmbH with Technology Tour

18:30 - 22:00 Gala dinner

### Thursday, September 21, 2023: EVENT

07:45 / 08:00 Pick-up at Best Western Hotel, 'Villa Stokkum' – approx. end 21:30

Excursion A) to German Aerospace Center (DLR), Institute of Materials Research, Cologne

Excursion B) to AMG TITANIUM | GfE, Gesellschaft für Elektrometallurgie mbH, Nuremberg



# WELCOME

YOUR LEADING  
SUPPLIER FOR ADVANCED  
VACUUM FURNACES

2023

SEPTEMBER 18 - 22



## Metallurgy & More Conference Program 2023

### MONDAY, SEPTEMBER 18, 2023

- 16:00 - 18:00 **Registration**  
Best Western Hotel 'Villa Stokkum'
- 18:00 - 21:00 **Registration and Welcome Reception**  
Best Western Hotel 'Villa Stokkum'

### TUESDAY, SEPTEMBER 19, 2023

- 08:00 - 08:20 Pick-up at hotel and bus transfer to ALD
- 08:00 - 09:00 Registration at ALD

#### KEYNOTE SESSION #1

- 09:00 - 09:20 **Welcome & Conference Opening**  
ALD Management
- 09:20 - 09:50 **Unconventional Precursors via Metallothermic Reduction for Smelting of High Reactive Metals**  
Prof. Dr. Bernd Friedrich  
RWTH Aachen - IME - Process Metallurgy and Metal Recycling, Germany
- 09:50 - 10:20 **Decarbonisation Technologies of the Steel Industry**  
Christoph Genter  
AMCG, Germany
- 10:20 - 10:35 coffee break at exhibition

#### SESSION 1: TRENDS IN VAR & ESR TECHNOLOGIES

- 10:35 - 11:00 **Innovation in Vacuum Arc Remelting Technology**  
Ashish D. Patel  
TIMET, USA
- 11:00 - 11:25 **VAR Safety for Reactive Metals**  
Ulf Edling  
Alleima Tube AB, Sweden
- 11:25 - 11:50 **Potential Measures to Reduce Energy Consumption during ESR**  
Dr. Reinhold Schneider  
University of Applied Sciences Upper Austria
- 11:50 - 12:15 **Premelted ESR WACKER ELECTROFLUX; Chemical, Physical and Thermodynamical Characteristics**  
Dr. Javad Mohsseni  
Wacker Chemie AG, Germany
- 12:15 - 13:15 lunch

#### SESSION 2: METAL POWDER PRODUCTION & PROCESSING

- 13:15 - 13:40 **Challenges in Metal Powder Production**  
Toste Jonsäter M. Sc.  
Höganäs AB, Sweden
- 13:40 - 14:05 **Manufacturing of High-performance Conformal Cooling Channels with Customized High-hard M2 Powder by Binder-Jet Technology**  
Sasikumar Thangam  
Indo MIM, India
- 14:05 - 14:30 **Atomization with EIGA Premium – Opportunities and Challenges**  
Dr. Karin Ratschbacher  
GfE Materials and Metals GmbH, Germany
- 14:30 - 14:55 **Gas-enabled Innovation in Powder Atomization and Low Pressure Carburizing**  
Pierre Forêt  
Linde GmbH, Germany
- 14:55 - 15:10 coffee break at exhibition

#### SESSION 3: VIM SYSTEMS & TECHNOLOGIES

- 15:10 - 15:35 **VIDP Avoidance of Deflagration during Evacuation and Cleaning**  
Robert Tanzer  
voestalpine Böhler Edelstahl GmbH & CoKG, Austria
- 15:35 - 16:00 **VIM Furnace Designs for Copper-Titanium Alloys Manufacturing**  
Stefan Lemke  
ALD Vacuum Technologies GmbH, Germany
- 16:00 - 16:25 **Implementing Best Practices and Reducing Process Costs for Refractory Use in Investment Casting & Alloy Production**  
Phil Geers  
BLASCH Precision Ceramics, USA
- 16:25 - 16:40 coffee break at exhibition

## SESSION 4: INVESTMENT CASTING

16:40 - 17:05 **Numerical Continuity as a Tool for Process Development and Improvement for Manufacturing SX Turbine Components**  
Dr.-Ing. Julio Aguilar  
Safran Advanced Turbine Airfoils, France

17:05 - 17:30 **Ti64 Investment Casting of Knee-Implants: An Upscaling Project based on the Leicomelt TP5**  
Dipl.-Ing. Heiner Michels  
ACCESS e.V., Germany

17:30 - 17:55 **Latest Contributions in Vacuum Technology to Support Process Automation and Sustainability**  
Dr. Andreas Merz  
Leybold GmbH, Germany

17:55 - 18:20 **exhibition**

18:30 - 18:45 Bus transfer to Wirtshaus am See

18:45 - 21:45 **Conference Dinner**

21:45 - 22:00 Bus transfer back to hotel

## WEDNESDAY, SEPTEMBER 20, 2023

08:00 - 08:20 Pick-up at hotel and bus transfer to ALD

09:00 - 09:00 Conference start

### KEYNOTE SESSION #2

09:00 - 09:30 **Hybrid Energy Storage Systems - Sector Coupling Strategies for the Industry**  
Dr. Volker Kölln  
LiVa Power Management Systems, Germany

09:30 - 10:00 **EBuild® 850: Industrial Scale Electron Beam Powder Bed Fusion**  
Dr. Fuad Osmanlic  
ALD Vacuum Technologies GmbH, Germany

10:00 - 10:30 **Aerospace Innovations and the Development of the Fully Electric Aircraft eMagic One**  
Michael Kügelgen  
MK Technology GmbH, Germany

10:30 - 10:45 **coffee break at exhibition**

## SESSION 5: TURBINE BLADE COATING

10:45 - 11:10 **Operation and Material Limitations of Modern Jet Engines**  
Dr. Jan Oke Peters  
Lufthansa Technik AG, Germany

11:10 - 11:35 **EBPVD TBC Process Technology – Evolution, Present State and Opportunities**  
Dr. Albert Feuerstein  
Retired from Praxair Surface Technologies, Inc., USA

11:35 - 12:00 **Plasma Activation by Hollow Cathode with the SMART Coater and Other Recent R&D Activities**  
Dr. Ole Hinrichs  
ALD Vacuum Technologies GmbH, Germany

12:00 - 13:00 **lunch**

## TECHNOLOGY TOUR

13:00 - 14:45 **Visits to ALD and Fraunhofer IWKS Facilities - Presentation of Systems and Process Technologies**

## SESSION 6 OPPORTUNITIES TO INCREASE SYSTEM AVAILABILITY & PRODUCTIVITY

14:45 - 15:10 **Implementation and Experience with ALD Expert on Firth-Rixson Metals ESR Furnaces**  
Adrian Mills  
Firth Rixson Metals, UK

15:10 - 15:35 **Dry Vacuum Pumps for High Productivity in Metallurgy and Heat Treatment**  
Dr. Karsten Fenske  
Busch Vacuum Solutions, Germany

15:35 - 16:00 **Increased Machine Availability through Predictive Maintenance**  
Dr. Jens-Uwe Heitsch  
DANGO & DIENENTHAL Maschinenbau GmbH, Germany

16:00 - 16:15 **coffee break at exhibition**

## SESSION 7: EB & PLASMA MELTING TECHNOLOGIES

16:15 - 16:40 **Hydrogen Plasma Smelting Reduction: The Way to Carbon Free Steelmaking**  
Dr. mont. Michael Zarl  
K1-MET GmbH, Austria

16:40 - 17:05 **Development of New Ni-based Active Brazing Alloys**  
Dr. Ulrich Klotz  
fem Research Institute, Germany

17:05 - 17:30 **Melting Technologies for Refining of Reactive and Refractory Metals**  
Ulrich Biebricher  
ALD Vacuum Technologies GmbH, Germany

17:30 - 18:00 **exhibition**

18:00 - 18:30 Bus transfer to Behl's Genussshotel

18:30 - 21:30 **Conference Dinner**

21:30 - 22:30 Bus transfer to hotel

## THURSDAY, SEPTEMBER 21, 2023 TOUR TO DLR AND GfE

**THURSDAY, SEPTEMBER 21, 2023**  
**EXCURSION A – DLR, COLOGNE**



**Deutsches Zentrum  
für Luft- und Raumfahrt**  
 German Aerospace Center

## Lab tour at German Aerospace Center

- 8:00 - 10:30** Transfer to DLR, Cologne
- 10:30** Refreshment break at DLR
- 11:00** Introduction of Institute of Materials Research
- 11:30 - 13:00** Lab tour at Institute of Materials Research
- | High temperature and Functional Coatings
  - | 3D-printing and metallic materials
  - | Ceramic Matrix Composites
  - | Experimental and numerical methods for high temperature alloys
  - | Battery/Energy storage technologies
- 13:00 - 14:00** Lunch
- 14:00** Departure to Cologne Downtown
- 14:30 - 16:00** Visit Cologne's historical center, Cathedral
- 16:00** Transfer to restaurant
- 18:30** Dinner
- 21:00 - 22:00** Transfer to Best Western Villa Stokkum, Steinheim

Further information



**Institute of  
Materials Research**

[www.dlr.de/wf/en](http://www.dlr.de/wf/en)

Today technical systems have achieved such a high degree of complexity that further improvements can only be made by means of a multidisciplinary systems approach. Here the materials play a key role, as very often alone their availability is the decisive factor in the realization of the complete system. The investigation and development of new materials alone would only take us halfway. Nowadays manufacturability, availability and last but not least costs, are equally important when considering the technical usability and therefore also the commercial application and success of a material.



Pictures: DLR WF

**THURSDAY, SEPTEMBER 21, 2023**  
**EXCURSION B – GfE, NUREMBERG**



## GfE Metalle und Materialien GmbH in Nuremberg

- 7:45 - 10:30** Transfer to GfE, Nurmberg
- 10:30** Refreshment break at GfE, distribution of the PSA
- 11:00 - 11:30** Welcome at GfE
- 11:30 - 13:30** **Workshop Tour**
- | Spherical powder production
  - | VAR technology for TiAl electrodes
  - | TiAl recycling with cold wall induction crucibles
- 13:30 - 14:30** Lunch
- 14:30 - 15:00** Drive to castle „Kaiserburg“
- 15:00 - 16:00** Sightseeing at castle „Kaiserburg“
- 16:00** Transfer to restaurant
- 19:00** Dinner
- 21:00 – 22:00** Transfer to Best Western Villa Stokkum, Steinheim

Further information



## TITANIUM ALUMINIDES

### AN INTERMETALLIC SUCCESS STORY

#### Main products

Standard alloys: TiAl48-2-2, g-MET, RNT 650, TNM und TNB (alloy composition according to customers specification)

#### Manufactured as:

- VAR Ingots
- Cast feed stocks for investment casting
- Cast rods for EIGA based gas atomization
- Cast and HIPedfeed stocks for subsequent wrought processing
- Cast and HIPedfeed stocks for subsequent mechanical machining
- Extruded profiles

**AMG TITANIUM**  
**GfE Metalle und Materialien GmbH, Nürnberg**  
**[www.gfe.com](http://www.gfe.com)**

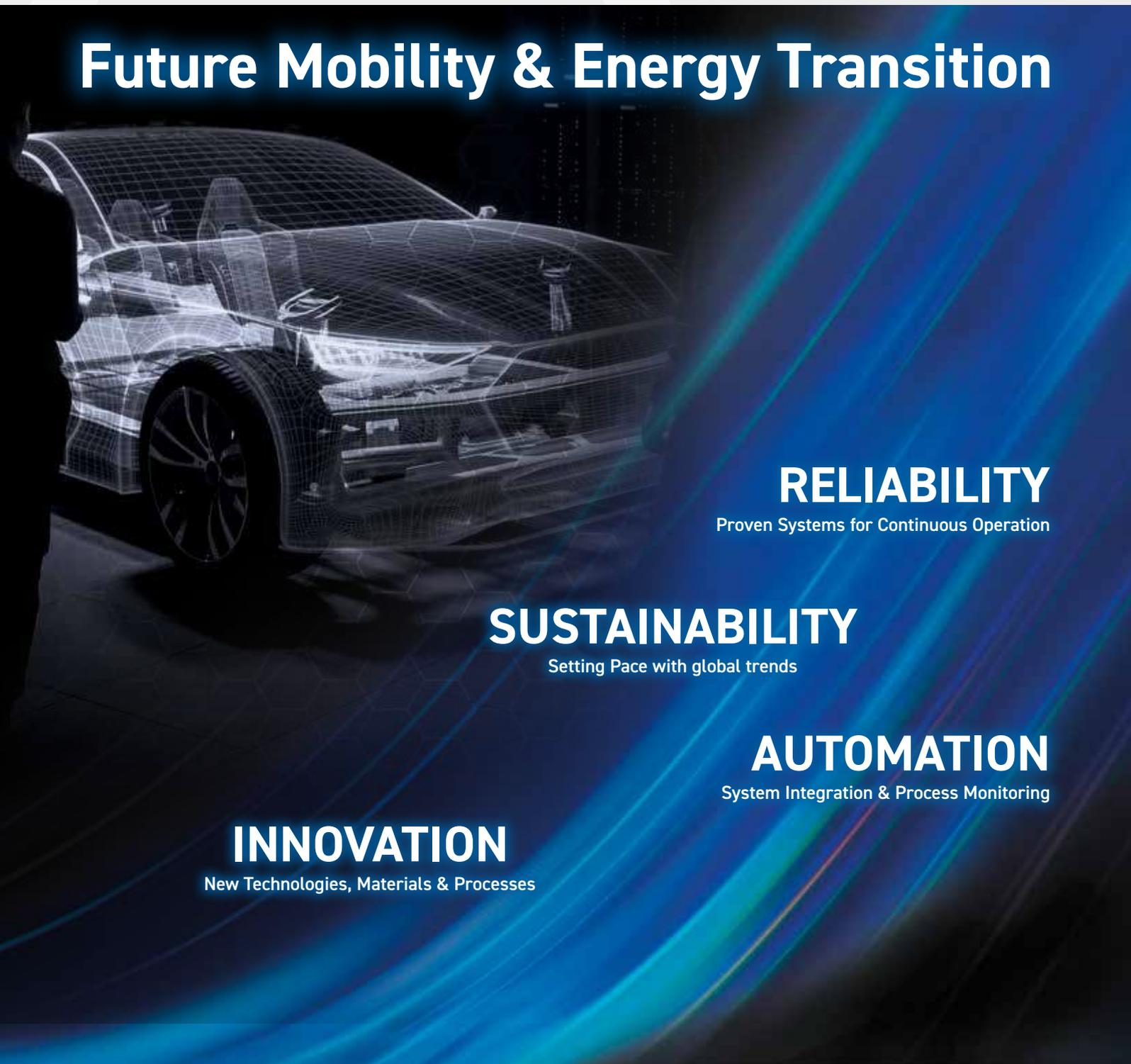
## ALD Vacuum Technologies

High Tech is our Business

The Metallurgy & More Conference takes place in ALD's headquarters in Hanau.

This conference is focused on operational aspects, new developments and improvements of premium melting, re-melting, casting, atomization techniques, additive manufacturing and industrial digital solutions. New technologies and solutions will also be discussed in response to global trends.

# Future Mobility & Energy Transition

A wireframe car model is shown on the left side of the page, set against a dark background with blue light streaks. The car is a sedan, and its structure is composed of a grid of white lines. The background features several diagonal blue light streaks that create a sense of motion and technology.

## RELIABILITY

Proven Systems for Continuous Operation

## SUSTAINABILITY

Setting Pace with global trends

## AUTOMATION

System Integration & Process Monitoring

## INNOVATION

New Technologies, Materials & Processes