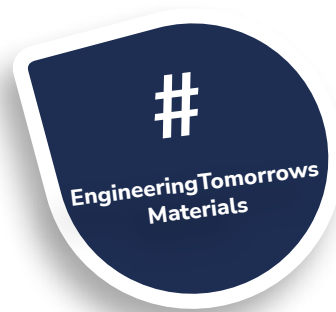


VDI



International Congress
June 19 - 20, 2024, Mannheim, Germany

VDI Initiative
Meet OEMs in Mannheim!



Top topics

- Exterior: Solutions made from Honeycomb sandwich material, Natural fibers and recycled Polypropylene
- Interior: Use of additive Manufacturing with sustainable Materials, New PP foam Technologies and Recyclates
- Circular economy: Impact of the ELV Directive, mechanical and chemical Recycling, securing raw Materials
- Manufacturing processes: Functionally integrated particle foam Applications, overmolded electronics, finishing Technologies
- Materials: Upcycling for ABS, Plastics for Electromobility, use of Wood and Cellulose fibers

Your benefits

- Industry meeting-point with 80 exhibitors
- 47 hand-picked Keynotes & Lectures
- 15 OEM Lectures
- Auto show
- Big EM Public Viewing: Germany vs. Hungary

with friendly support of:



VDI Initiative – Meet OEMs in Mannheim!

PIAE – THE platform for Plastics in Automotive Engineering

For over 40 years, the international VDI Congress PIAE has been the most important industry meeting place worldwide for all those involved in the field of Plastics in Automotive. Representatives from the entire value chain, from raw materials to tools and machines to the finished product part, meet in Mannheim every year to discuss the latest developments.

The high proportion of OEM participants in particular makes this Congress so important for the industry. With the help of our program committee as well as the supporting panel of experts, we have launched the initiative „Meet OEMs in Mannheim“ and thus once again identified the right participants from the automotive manufacturers and invited them personally. In 2024, over 20% of the congress participants will once again be experts from AUDI, BMW, Mercedes-Benz, Ford, Opel, Porsche, Renault, MAN, Scania and Volkswagen.

The participants – Who will you meet?

Participants by industry

Raw material

31 %

Tier 1

26 %

OEM (Vehicle manufacturer)

20 %

Tools/Machines

15 %

Consulting/Research/Others

8 %

Function

Project management/Engineer R&D

39 %

Project management/Group management

27 %

Management/Division management

22 %

Technical Sales/Product Management

9 %

Research

3 %



Testimonials:

„Participation of many OEMs shows the development momentum towards sustainability.“
Jürgen Gugg, BMW A

„I like the high level of technical things presented during the 2 days. Very interesting and relevant application shown for automotive mass production application.“
Guillaume Gardère, Valeo Thermal Systems

„Everything was very well organized. Very interesting topics!“
Avshalom Ben Ami, Polyram plastic industries LTD

„Great programme, great organization. Plenty of time for discussion.“
Daniel Kugele, Robert Bosch GmbH

„It was a very successful event that exceeded my expectations by far – I would very much like to do it again repeat.“
Ingo Fliege, Volkswagen AG

„Good distribution of lectures and opportunities for discussion.“
Denis Eschwey, Volkswagen AG

„Networking is always good at the PIAE.“
Uwe Kolshorn, Kunststoff-Institut für die mittelständische Wirtschaft NRW GmbH

„Good organization, good event technology, interesting lectures and exhibition, very good opportunity for networking.“
Lothar Egersdörfer, Webasto Roof & Components SE

PIAE 2024 | Program overview

Wednesday, June 19, 2024 – 1st day of Congress

Mozartsaal (Level 0)




08:50  **Keynotes**

10:30 Coffee break with visit to the exhibition & Auto show




Mozartsaal (Level 0)

Musensaal (Level 1)




Stamitzsaal (Level 1)


11:15  **Exterior**  **Circular Economy**  **Interior**

13:15 Lunch break with visit to the exhibition & Auto show

15:00  **Use of sustainable materials**  **Manufacturing Processes 1**  **Simulation**

16:00 Coffee break with visit to the exhibition & Auto show

16:45  **Materials 1**  **Use of Recyclates 1**  **Sustainability 1**




ab 17:45  **PIAE Networking Party mit EM-Public Viewing (Deutschland vs. Ungarn) in der Fachausstellung und der Rosengarten-Lounge**

Thursday, June 20, 2024 – 2nd day of Congress




Mozartsaal (Level 0)

Musensaal (Level 1)

Stamitzsaal (Level 1)

09:00  **Lightweight Design**  **Use of Recyclates 2**  **Manufacturing Processes 2**

11:00 Coffee break with visit to the exhibition & Auto show

11:45  **Manufacturing Processes 3**  **Odor in Vehicle Interior**  **Materials 2**

12:45 Lunch break with visit to the exhibition & Auto show

Mozartsaal (Level 0)

14:00  **Sustainability 2**

15:00 Closing words

15:15 End of the congress



Keynotes

Moderation: Dipl.-Ing. Thomas Drescher, Volkswagen AG

08:50 Begrüßung und Eröffnung durch den Kongressleiter

Dipl.-Ing. Thomas Drescher, Leitung Vorentwicklung und Fahrzeugbeurteilung, Aufbauentwicklung, Volkswagen AG, Wolfsburg

09:00 AI-driven Engineering – How Artificial Intelligence is changing the Automotive Engineering of the Future

- How AI technology is increasing the productivity of developers in the automotive industry
- Greater innovation performance through generative AI in prototyping, vehicle design and testing
- Opportunities and limitations of current AI solutions
- A look into the future of engineering



Prof. Dr.-Ing. Roman Dumitrescu, Director, Fraunhofer Institute for Mechatronic Systems Design IEM, Paderborn

09:30 Story „Circular Vision“ BMW



Anna Diermeier, Senior Designer Material and Color design, BMW Group, Munich

10:00 Smart Cars Need Smart Materials

- Smart car era demands advanced Design for Trim panels
- Integration of smart features requires collaboration with Phone and Electronics industry
- Higher dimensional stability, lightweight, and sustainability are crucial
- Strong OEM and Tier One supplier partnership, exemplified by HiPhi and Covestro, is essential



Mark Stanton, Co-Founder, CTO & European Program President, Human Horizons, Shanghai, China

10:30 Coffee break with visit to the exhibition & Auto show



Mozartsaal (Level 0)



Exterior

Moderation: Jürgen Gugg, BMW Group

11:15 Porsche 911 – New honeycomb sandwich material for underbody panels

- Economical light weight underbody panels
- Innovative thermoplastic honeycomb sandwich produced continuously with inline welded surface layers
- Direct integration of local stiffeners and complex GMT geometries within the forming process like known in the LWRT process
- Saving CO₂ due to decreased material input

Dr.-Ing. Steffen Hölzel, Head of Development Rear and Attachment Systems Exterior, Dr. Ing. h.c.F. Porsche AG, Weissach,
Dipl.-Wirtsch.-Ing. Jens Klug, Business Development Manager, Tech Center, Gubesch Thermoforming GmbH, Wilhelmsdorf and
Dr.-Ing. Jochen Pflug, CEO, ThermHex Waben GmbH, Halle (Saale),
 Co-author: Dipl.-Ing. (FH) Fuat Kayadere, Dr. Ing. h.c.F. Porsche AG, Weissach

Musensaal (Level 1)



Circular Economy

Moderation: Dipl.-Ing. Thomas Drescher, Volkswagen AG

A systematic approach to circular economy in the automotive industry

- Circular Economy
- Public Private Partnership
- Evaluation of circular economy pathways

Anneke Schleusener, M. Eng., Projekt Management, Open Hybrid LabFactory, Volkswagen AG, Group Components and **Matthias Heck, M. Sc.**, Project coordinator, Open Hybrid LabFactory e. V., Co-authors: Dr. Marko Gernuks, Volkswagen AG, Group Technology, Wolfsburg, Prof. Dr.-Ing. Christoph Herrmann, Technische Universität Braunschweig, Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig

Stamitzsaal (Level 1)



Interior

Moderation: Dipl.-Ing. Wolfgang Möller, Volkswagen Osnabrück GmbH

Additive – economical – sustainable ... and this is going into series production! Additive Manufacturing of Structural Interior Parts using Sustainable Materials

- Additive Manufacturing
- Sustainability
- Requirements for materials/process
- Structural interior parts

Dipl.-Ing. (FH) Franz Maidl, Development Engineer, Lightweight Construction and Technology Development, BMW Group, Landshut and **Dr.-Ing. Michael Rieck**, Head of Innovation Management, Sales and Innovation, Co-authors: Friederike Schwartz, M. Sc., both of Akro Plastic GmbH, Niederzissen, Andreas Geltinger, BMW Group, Landshut

11:45 Vehicle Underbody Components Made of Natural Fibers and Recycled Polypropylene for Future Integration in Electric Vehicle Platforms

- Batterie Electric Vehicles, Underfloor Components, Underbody
- Biobased Materials, Natural Fibres, Polypropylene, Post Consumer Recycling, LWRT
- Sustainability
- Material Development

Dipl.-Ing. Fabian Groh, Project Manager Pre-development, Development Cultivation system, AUDI AG, Neckarsulm and **Dipl.-Ing. Moritz Micke-Camuz**, Research associate, Application Center HOFZET, Fraunhofer Institute for Wood Research, Wilhelm-Klauditz-Institut WKI, Hannover, Co-authors: Robert Apfelbeck, AUDI AG, Neckarsulm, Dr. Thomas Reußmann, TITK, Rudolstadt

Addressing the circularity challenge of the new EU end-of-life vehicles regulation: post-consumer recycled PP for high end automotive interior applications

- The new EU End-of-Life Vehicle Regulation
- Mechanical recycling of post-consumer plastic waste streams
- Qualification of mechanical recycled Polypropylene for automotive interior applications
- Recyclability of recycled content materials

Gisela Lehner, M.A., Marketing Manager, Mobility and **Dipl.-Ing. Georg Grestenberger**, Application Marketing Manager – Automotive Interior, Mobility, Co-authors: Dr. Daniela Mileva, Dr. Markus Gall, all of Borealis Polyolefine GmbH, Linz, Austria

Lightweight Design Innovation: A Case Study of 20 % Weight and CO₂ Emission Reduction in Door Panels

- Lightweighting in injection molding
- Chemical Foaming
- Interior trim (door panels)
- Carbon footprint reduction

Patrizia Scholz, Business Development Manager, Colors, Additives and Inks, Avient Corporation, Ahrensburg and **Ivan Guinea, M. Sc.**, Materials Development Engineer, Doors & Hard Trim BU, Antolin Group, Burgos, Spain, Co-author: Laura Carrillo, Avient Corporation, Barcelona, Spain

12:15 Polycarbonate based Roof Sensor Module for automated driving

- Functional requirements and resin selection
- Part design, Injection Compression and process optimization
- Function integration
- Module realisation

Dipl.-Ing. (FH) Christoph Klinkenberg, Global Technical Marketing Mobility Exterior, Covestro Deutschland AG, Leverkusen and **Ing. Magnus Sviberg**, Director Research and Development, Webasto Roof & Components SE, Stockdorf, Co-author: Dr. Rainer Hagen, Covestro Deutschland AG, Leverkusen

The Post-Consumer-Dilemma – The ELV-Regulation from the perspective of a medium-sized recycling company of Engineering and High Performance Plastics!

- Mechanical Recycling
- ELV-Regulation – PIR and PCR
- Engineering plastics /High Performance plastics
- Recyclates

Kai Zies, M. Sc., CEO, MKV GmbH Kunststoffgranulate, Beselich-Obertiefenbach

Sustainable and light-weight interior ducts: new possibilities with ultra-low density PP foams

- Incumbent interior ducting solutions
- Ultra-low density PP foaming technology
- Concept study PP foam duct
- Sustainability outlook

Dipl.-Ing. Georg Grestenberger, Application Marketing Manager – Automotive Interior, Mobility, Borealis Polyolefine GmbH, Linz, Austria and **Andrew Simpson, B. Eng.**, NVH Technical Manager, AER Stafford Ltd., Norton Canes, United Kingdom, Co-author: Steven Thielemans, Jiffy-Abriso Group, Wellen, Belgium

12:45 Highlights of the plastic carrier in the grey area of the active rear spoiler system

- Highlights of the new rear spoiler concept
- Requirements for a visible component in the grey area of the rear spoiler
- Weight reduction and optimisation of surface quality through MuCell technology
- Enhancement of the surface with a 3D laser texture

Thomas Hübener, M. Sc., System Engineer, Dr. Ing. h.c. F. Porsche AG, Weissach

Transforming Resources for a more connected, sustainable World


- Securing raw materials
- Saving polymer
- Reduction of CO₂
- Reaching the goal together

Marc Kochhan, Head of Research and Development & Sales, Ecobat Resources Germany GmbH, Braubach

Industry-first use of a 25 % mechanically-recycled post-industrial polypropylene in a safety-critical dashboard carrier application

- Dashboard carrier in LGF PP
- Use of mechanically recycled post-industrial PP
- Material development and specifications
- Evidence of application performance

Geert-Jan Doggen, Senior Business Manager, SBU Polymers, SABIC, Bergen op Zoom, The Netherlands and **Amber Chow**, Materials Engineer Sustainability & Polymers, Studio and Design, Fisker Inc., Manhattan Beach, CA, USA

13:15  **Lunch break with visit to the exhibition & Auto show**

Mozartsaal (Level 0)



Use of sustainable materials

Moderation: Robert Someschan, Ford-Werke GmbH



Musensaal (Level 1)

Manufacturing Processes 1



Stamitzsaal (Level 1)

Simulation

15:00 Skoda show car sustainable materials

- Show car based on Skoda Enyaq
- Sustainable materials
- Use of recycle
- Reduction of CO₂ footprint

Ing. Dalibor Kopáč, Ph.D., Development Engineer and **Ing. Radek Havlík**, Development Engineer, both of Škoda Auto a.s., Mladá Boleslav, Czech Republic

Innovative production solutions for function-integrated thermoplastic particle foam applications for interior and exterior applications

- Recycling-compatible cover layers (Class A components)
- Functional integration in particle foam components
- Tool technology
- Machine technology

Heinz Hohensinner, Sales & Project planning application technology, Competence Center Plastics, Fill Gesellschaft m.b.H., Gurten, Austria

THERMOFIP: A new era for the automotive cooling market thanks to optimized simulation of the effects of water and glycol-based coolants on parts for their entire lifespan

- Fiber reinforced polyamides
- Coolant
- Aging
- Materials modeling
- Simulation

Dr. Robert Gilles, Senior Materials Expert, Application Center, DOMO Engineering Plastics Europe Spa, Arco, Italy

15:30 Implementation of Sustainable Materials in Body Interior

- Motivation for Implementing Sustainable Materials
- Classes of Sustainable Polymers
- Analysis of latest EU-Regulations
- Timeline for Future Implementation

Dipl.-Ing. (TH) Werner Jakobs, Manager Interior Systems & Interior Components, Body development Vehicle interior and

Dipl.-Ing. Norbert Klar, Technical specialist, Body development Vehicle interior, both of Ford-Werke GmbH, Cologne

Mantara: Stay competitive with a 70 % reduction in clamping force due to thermoplastic foaming

- Reduction in clamping force
- Material savings
- CO₂ balance comparison
- Examples


Roger Kaufmann, CEO, GK Concept GmbH, Dresden and

Dipl.-Ing. Manuel Wöhrle, Manager of Industries, Applications & Industries, ARBURG GmbH + Co KG, Lossburg, Co-authors: Dipl.-Ing Sebastian Pirl, Dipl.-Ing Philipp Hammer, both of GK Concept GmbH, Dresden

Simulation and characterisation of moisture-dependent properties of polyamide 6 in technical components

- Concentration-dependent diffusion behaviour of polyamide 6
- Coupling of sorption behaviour with water-induced swelling
- Numerical modelling of the thermomechanical behaviour in a non-equilibrium state
- Use of real climate data to calculate moisture distributions

Dr.-Ing. Anna Katharina Sambale, Research group leader, Co-authors: Dr.-Ing. Kai Uhlig, Prof. Dr.-Ing. Markus Stommel, all of Leibniz-Institut für Polymerforschung Dresden e. V., Dresden

16:00  **Coffee break with visit to the exhibition & Auto show**

Mozartsaal (Level 0)



Materials 1

16:45 Metal replacement – who wins the race? PA 6 or PP? The pedal carrier of the MAN TG3 for model year 2024

- Installation situation
- Load requirements (emergency braking)
- Load cycles up to the millions
- Costs and weight

Dipl.-Ing. (FH) Hartmut Häberle, Technical consulting on Plastic applications, Engineering Drivetrain/Cabin & Chassis, Co-author: Dipl.-Ing. (FH) Robert Wagner, M. Sc. (TUM), both of MAN Truck & Bus SE, Munich

Musensaal (Level 1)



Use of Recyclates 1

Plastic recyclates and CO₂ balancing: A processor's view

- Plastics recycling
- Manufacturing-related challenges
- Component-related challenges
- LCA accounting

Karolin Kreuels, M. Sc., Development Engineer, Plastics Technology and **Dr.-Ing. Peter Helmke**, Sub-department Head of Testing and Pre-development, Plastics Technology plant Wolfsburg, both of Volkswagen AG, Wolfsburg, Co-author: Prof. Dr.-Ing. Reinhard Schiffers, Universität Duisburg-Essen

Stamitzsaal (Level 1)



Sustainability 1

THERMOFIL CIRCLE F*12R series– Recent development in glass fibre reinforced Polypropylene compounds with a reduced carbon footprint for automotive applications

- Sustainable grade
- Material specifications
- Reinforced thermoplastics
- Low carbon footprint

Nicolas Schlutig, M. Eng., Technical support and CAE Manager, Technical Department, Sumika Polymer Compounds Europe, Saint Martin de Crau, France

17:15 Shaping the future – BASF plastics innovations in electromobility

- Polymers for emobility
- New class of material Ultramid® Expand for use in crash and structurally relevant components, as well as in the battery
- Polybutylene terephthalate-based plastics solutions without PTFE and antimony trioxide

Dr.-Ing. René Holschuh, Segment Manager Transportation and **Dipl.-Kfm. Simon Weiss**, Segment Manager Transportation, both of BASF SE, Ludwigshafen

Replacement of body sheet metal parts with plastic recyclates in vehicle series projects using the example of the water box

- Recycled plastics
- Structural components made of plastic
- Sustainability
- Closed Loop Share

Dipl.-Ing. (FH) Philipp Malzkorn, Development Engineer, Development of Cultivation systems, Co-authors: Dipl.-Ing. Robert Apfelbeck, both of Audi AG, Neckarsulm, Anca Hocke, RSH Polymere GmbH, Hamburg

Wood-based bioeconomy and plastics technology – renewable raw materials for technical components

- Wood-based bioeconomy
- Thermoplastic composites
- Cellulose fibers
- Wood fibers
- Material and process studies
- Mechanical properties

Sebastian Wiedl, MBA, Research Associate, Research and Development Plastics Technology and **Dr.-Ing. Frederik Obermeier**, Research Associate, Research and Development Plastics Technology, Co-authors: Prof. Peter Karlinger, Prof. Dr.-Ing. Norbert Müller, all of Technische Hochschule Rosenheim

from 17:45  **PIAE Networking Party with big public viewing (European Championship match Germany vs. Hungary) in the trade exhibition and the Rosengarten Lounge**

After an exciting 1st Congress day full of interesting insights and innovations, it is time to round off the evening with a communicative drink and buffet with your colleagues and make new contacts. We cordially invite you to come together and watch the European Championship soccer match between Germany and Hungary (Kick-off: 18:00). Join in the excitement in a convivial atmosphere with a refreshing beer. Look forward to an entertaining evening, full of soccer enthusiasm and interesting conversations! We cordially invite you to join us and look forward to welcoming you there!

Mozartsaal (Level 0)



Lightweight Design

09:00 TABASKO – Tape based carbon fiber lightweight design

- Local endlessfiber reinforcement of highly stressed part areas of a frunk
- Cold, separate and linear PP-CF-UD-tapes overmolded with PP-GF by foam injection molding
- Circular economy by fully recyclable material mix and by higher pcr-application quantity
- Improvement of stiffness, impact strength and heat resistance of the part

Dipl.-Ing. Frank Häusler, Development Engineer Plastics Technology, Dr. Ing. h.c. F. Porsche AG, Weissach and **Dipl.-Ing. Michael Johann**, Specialist Project Manager Body Development, Porsche Engineering Services GmbH, Bietigheim-Bissingen, Co-author: Dr.-Ing. Hubert Stadtfeld, Dr. Ing. h.c. F. Porsche AG, Zuffenhausen

09:30 Lightweight construction with thermoplastic sandwich structures, ready for serial production – 3D sandwich components functionalized in the injection molding process

- Thermoplastic honeycomb core sandwich structures
- Thermoforming and functionalization in the injection molding process
- Process and structural design
- Interior, exterior, structural components

Dipl.-Ing. Matthias Biegerl, Development Engineer, ElringKlinger AG, Lenningen and **Dr.-Ing. Ralf Schlimper**, Group Leader Evaluation of Fiber Composite Systems, Co-authors: Dr.-Ing. Thomas Gläßer, borh of Fraunhofer IMWS, Halle (Saale), Friedrich Zerling, M. Sc., ThermHex Waben GmbH, Halle (Saale)

10:00 Innovative laser ablation process enables new light designs

- Processing of large 3D-molded plastic components with given production fluctuations and current market requirements
- Innovative and flexible process to produce backlit design elements for indoor and outdoor use
- Laser material removal with JENscan® Style

Dipl.-Ing. Torsten Reichl, Product Manager Laser Processing, Product Management, JENOPTIK Automatisierungstechnik GmbH, Jena

Musensaal (Level 1)



Use of Recyclates 2
Moderation: Dipl.-Ing. Fabian Groh, AUDI AG

Characterization of the Paintability of Plastic Recyclates

- Material Characterization
- Paintability
- Exterieur
- Recycling

Katharina Tonn, M. Sc., PhD student, Pre-development body system, Volkswagen AG, Wolfsburg, Co-author: Prof. Dr.-Ing. Christoph Herrmann, Technische Universität Braunschweig, Fraunhofer Institute for Surface Engineering and Thin Films IST, Braunschweig

Providing solutions to Challenges in Recycled Polymer Processing via Innovative Analytical Techniques

- Analysis of organic and inorganic impurity
- Novel analytical method to determine PE/PP mass fraction in blends
- Solution for low strength of recycled materials
- Problem-solving and root cause analysis

Yoshitomo Furushima, Ph.D., Research Associate, Materials Characterization Laboratories, Toray Research Center, Inc., Otsu, Shiga, Japan and **Yuki Yoshida**, R&D Analysis Manager, Toray Automotive Center Europe, Toray Industries Europe GmbH, Neufahrn bei Freising

Cost-effective and recyclable: Functionalized aPA6 profiles in injection molding

- Development of robust aPA6 pultrusion process
- Co-molding of the aPA6 profiles as local reinforcement
- Recyclability of the hybrid structures

Dr.-Ing. Felix Behnisch, Product Manager Structural Lightweight Global, Röchling Automotive SE, Worms and **Michael Wilhelm, M. Sc.**, Group Leader Lightweight Structures, Polymer Engineering, Fraunhofer Institute for Chemical Technology ICT, Pfingsttal, Co-author: Dr. Michael Janssen, Röchling Industrial SE & Co. KG, Haren

Stamitzsaal (Level 1)



Manufacturing Processes 2

Technology Innovation made by KraussMaffei & INEVO – ColorForm

- Innovative finishing technology for plastic components
- Combination of the technologies Reaction Process Machinery and Injection Molding
- Innovative tooling technology for processing of Polyurethane and Thermoplastic

Michael Fuchs, B. Eng., Global Business Development RPM, KraussMaffei Technologie GmbH, Parsdorf and **Andreas Popp**, CEO, INEVO s.r.l., San Polo di Piave, Italy

Components for battery housings using fiber reinforced polymers: new requirements – new solutions

- High demands on battery housings and their materials
- Innovative use of phenol
- Production process suitable for large-scale production

Dipl.-Ing. (FH) Christian Schludi, Director Business Development, Composite Solutions | Large Scale Solutions and **Dr.-Ing. Peter Kuhn**, Team Lead Product Design, Composite Solutions | Large Scale Solutions, Co-authors: Dr.-Ing. Christoph Ebel, Dr.-Ing. Maximilian Schäfer, all of SGL Carbon, Meitingen/Innkreis, Austria

DraKo – Wireless contacting of overmolded electronics

- Contacting of printed conductors
- Wireless power and signal transmission
- Processing by film injection molding
- Demonstrator with touch operation
- Possibilities for decoration with functional inks and lacquers
- Versatility of screen printing and process requirements

Dr.-Ing. Angelo Librizzi, Authorized Signatory and Division Manager, Research and Development, KIMW Forschungs-gGmbH, Lüdenscheid and **Dr. rer. nat. Dipl.-Chem. Hans-Peter Erfurt**, Head of IMD/FIM Technology, Research and Development, Pröll GmbH, Weißenburg i. Bay.

Mozartsaal (Level 0)

10:30 Virtual Validation and Optimization as Enabler for the 3D Skeleton Winding (3DSW) Technology for Innovative Lightweight Structures

- Digital product development
- Cost-efficient lightweight structures
- Thermoplastic fiber skeleton winding
- Injection overmolding

Dr.-Ing. Dominik Dörr, CEO, Co-authors: Stefan Haas, M. Sc., both of Simutence GmbH, Karlsruhe, Jonathan Haas, M. Sc., Dr.-Ing. Björn Beck, both of Fraunhofer ICT, Pfinztal

Musensaal (Level 1)

Organo Sheet offcuts – Is closed-loop recycling an alternative?

- Recycling organic sheet
- Thermoplastic composites
- Material and process studies, Mechanical properties
- Life cycle assessment and economic efficiency

Sabine Hummel, B. Eng., Projekt Associate, Research and Development Plastics Technology and **Theresa Pscherer, M. Sc.**, Research Associate, FG Sustainable Engineering & Management, Co-authors: Prof. Martin Würtele, Prof. Sandra Krommes, all of Technische Hochschule Rosenheim

Stamitzsaal (Level 1)

„Battery Box – The Next Generation“ – Potential for Plastics

- BEV – Given battery compartments are based on metal designs
- Industry value chain is developing thermoplastic concepts to demonstrate feasibility and advantages, focusing on large shot volumes and large tonnage equipment
- Derived cell concepts cover clamp forces up to 11.000 to, enabling large shot volumes as well as composite reinforcements in one single moulding cell
- One tray or lid in one single moulding cycle

Dipl.-Ing. Michael Fischer, Business Development Manager, ENGEL Austria GmbH, Schwertberg, Austria

11:00  Coffee break with visit to the exhibition & Auto show



Manufacturing Processes 3

11:45 Joined with success! Thermomanagement new materials and welding processes in EV thermomanagement

- Different component requirements in thermal management of electric vehicles and vehicles with combustion engines
- New manufacturing technologies and innovative materials due to need for more complex components (direct laser welding process and hybrid plastic-metal welding processes)
- Sustainability aspects of these new manufacturing technologies (energy and material savings)

Dipl.-Ing. Thilo Stier, Director Sales & Innovation, AKRO-PLASTIC GmbH, Niederzissen and **Ing. Stephen Thompson**, Director, Manufacturing Engineering, Sogefi Air & Cooling Canada Corp., Montreal, Québec, Canada



Odor in Vehicle Interior

Use of recycled materials in car interiors and reduction of the carbon footprint using functional fillers

- Odor reduction in PC recycles through the use of functional fillers
- Mineral additives to reduce the carbon footprint
- Change in mechanical properties when using these fillers

Dipl.-Ing. Thorsten Hilgers, Project Manager Plastics, Product Development, Quarzwerke GmbH, Frechen



Materials 2

Innovative Halogen-Free Flame Retardant Solutions for High-Performance Polymer Applications in E-Mobility: A Focus on Material Sustainability and Technological Advancements

- Flame Retardants: mode of action, fire tests
- Applications in Thermoplastics, e.g. connectors
- Applications in Thermosets, e.g. battery housings
- Trends and outlook

Dr. Sebastian Hoerold, Head of Application Development Polymer Solutions, Additives and Adsorbents, Co-author: Dr. Christian Battenberg, both of Clariant Plastics & Coatings (Deutschland) GmbH, Gersthofen

12:15 New technology for direct processing of chopped fibers in the injection molding process

- Cost-efficient direct processing method
- Chopped glass fiber processing in the injection molding process
- Investigation of fibre length and fibre distribution
- Mechanical properties and applications

Dipl.-Ing. Stefan Schierl, Head of Process Engineering & Business Development Technology, KraussMaffei Technologies GmbH, Parsdorf and **Dipl.-Ing. Jan Wiedemann**, Head of Group Innovation and Materials Development, Innovation and Materials Development, Co-author: Dominik Schmitt, B. Eng., both of Wirthwein SE, Creglingen

Management of vehicle indoor air quality with sustainable polymer additive solutions

- Vehicle indoor air quality
- Emission targets
- Increase usage of recycled material
- Odor reducing technologies

Dr. Antonello Decortes, Global Product Manager, Marketing and **Dr. Christopher Starkie**, Technology Manager, Research and Development, both of Avient Corporation, Pogliano Milanese, Italy/ Knowsley, United Kingdom

Upcycling filaments for the functionalization of technical ABS thermoformed components in small series applications

- Additive manufacturing
- Thermoforming
- Upcycling of ABS
- Surface activation

Timo Reindl, M. Sc., Research Associate, Co-author: Prof. Dr.-Ing. Christian Bonten, both of Institut für Kunststofftechnik, Universität Stuttgart

12:45  Lunch break with visit to the exhibition & Auto show



Sustainability 2

Moderation: Robert Someschan, Ford-Werke GmbH

14:00 Sustainable solutions for engineering plastics

- Sourcing as key to virgin like quality for mechanical recyclates
- Quantity and Quality deviations
- Recycled solutions for visible parts
- Bio based PA56 as an alternative for conventional PA types

Samuel Moon, B. A., Sales Manager, Technical Sales Team and **Dr.-Ing. Julian Heinisch**, Application Engineer, Engineering Plastics/Application Engineering, both of LG Chem Europe GmbH, Frankfurt am Main

14:30 Trends and Challenges of Polymer materials in the Automotive sector

- Frugal requirements
- Sustainable, high-quality materials
- Strategic orientation of VW Materials technology
- PIAE 2023 Recap

Timo Ahtelik, M. Sc., Sustainability Manager Materials Engineering and **Dr. Thomas Taddigs**, Sub-department Head of Materials Engineering, both of Volkswagen AG, Wolfsburg

15:00 Closing words

15:15 End of the congress

Autoshow

Within the scope of the Autoshow, where current models and concept studies of the car manufacturers are shown, you will have the opportunity to study the plastic components directly on the following vehicles onsite: MAN Sattelzug, Skoda IVET Showcar, BMW i Vision Circular, Audi RS 6 Avant GT, Audi Q6 e-tron Prototyp, HiPhi Z, Porsche 911 Turbo S, Porsche Macan Turbo Electric, Porsche Taycan Turbo

The Borealis Sustainability Concept Car is showcasing latest advances in polypropylene (PP) developments: from post-consumer recycled plastics for high-end automotive applications to lightweight flame retardant PP for e-mobility.



© BMW AG



© Borealis AG



© MAN Truck & Bus SE



© HiPhi



© Porsche AG



© AUDI AG



© SKODA AUTO a.s.



© Porsche AG



© Porsche AG



© AUDI AG

Exhibition & Sponsoring

Marketplace Plastics in Automotive Engineering

The trade show accompanying our PIAE congress has become one of its highlights. More than 80 national and international exhibitors display their innovative plastics solutions. The exhibition is one of the largest in the field of automotive plastics!

Information

If you would like to exhibit or sponsor at this VDI congress please contact:

Sandra Schreiner

Project consultant Exhibitions & Sponsoring
Phone: +49 211 6214-188 | E-Mail: schreiner@vdi.de

You would like to present your car model or concept study at the Autoshow during the show? Please contact:

Elena Langenfels

Project consultant Exhibitions & Sponsoring
Phone: +49 211 6214-8662 | E-Mail: langenfels@vdi.de

Sponsoren



SIRMAX
GROUP



GRAFE

Exhibitors PIAE 2024 (as at February 2024)

3A Composites Airex AG
4a engineering GmbH
AKRO-PLASTIC GmbH
almaak international GmbH
ARBURG GmbH + Co KG
Asahi Kasei Europe GmbH
Avient
Bada AG
BASF Polyurethanes GmbH
BASF SE
Bio Plastics Recycling GmbH & Co. KG
Borealis AG
BYK-Chemie GmbH
Cannon Deutschland GmbH
Celanese Services Germany GmbH
Colloids Limited
CONSTAB Polyolefin Additives GmbH
Covestro Deutschland AG
DIEFFENBACHER GmbH Maschinen- und Anlagenbau
Dow Deutschland Anlagengesellschaft mbH
ELIX Polymers S.L.
ElringKlinger AG
ENGEL AUSTRIA GmbH
Ensinger GmbH
Envalior Deutschland GmbH
EPSAN Deutschland GmbH
Evonik Industries AG
Fill Gesellschaft m.b.H.
Geba Kunststoffcompounds GmbH
GKG Goldmann Kunststoffe GmbH & Co. KG
GRAFE GmbH & Co. KG
hapego plastics GmbH
HPF The Mineral Engineers/Quarzwerke GmbH
KINGFA Sci. & Tech. (Europe) GmbH
KRAIBURG TPE GmbH & Co. KG
LG Chem Europe GmbH
LOTTE CHEMICAL DEUTSCHLAND GmbH
LyondellBasell
MF SOFTWARE GmbH
Oechsler AG
PCW GmbH
Polyram plastic industries LTD
Pöppelmann Kunststoff-Technik GmbH & Co. KG
PRET Europe GmbH
QIN-Form GmbH & Co. KG
Radicigroup High Performance Polymers
Resonac Europe GmbH
ROMIRA GmbH
RSH Polymere GmbH
RÜHL PUROMER GmbH
SABIC Specialties
Sax Polymers Industrie GmbH
Sirmax SPA
Sumika Polymer Compounds Europe
Sumitomo Chemical Europe S.A./N.V.
Summerer Technologies GmbH & Co. KG
Techniplas Schwäbisch Gmünd GmbH
TechnoCompound GmbH
ThermHex Waben GmbH
Toray Research Center, Inc.
TotalEnergies Refining & Chemicals SA
Trinseo Deutschland

General information

Congress Chairman



Dipl.-Ing. Thomas Drescher, Head of Pre-development and Vehicle assessment, Structure development Volkswagen AG, Wolfsburg

Supporting panel of experts



1. L to R

Jochen Hardt, Covestro Deutschland AG, Leverkusen

Roger Kaufmann, GK Concept GmbH, Dresden

Klaus Munker, Magna Exteriors GmbH, Altbach

2. L to R

Stefan Schierl, KraussMaffei Technologies GmbH, Parsdorf

Prof. Martin Würtele, Technische Hochschule Rosenheim

Technical Sponsor

VDI Society for Materials Engineering

The VDI Society for Materials Engineering makes a point of networking experts both from business and from scientific fields close to actual applications in order to allow discussion of current questions about components and products from the point of view of materials and the corresponding technologies and also to enable engineers in this field to access via the network the approaches to solutions which have been worked out.

www.vdi.de/gme

Program committee



1. L to R

Pascal Bertens, DAF Trucks N.V., Eindhoven, The Netherlands

Dr. Christian Bornhorst, Volkswagen AG, Wolfsburg

Orhan Dönmez, Mercedes-Benz Türk A.S., Istanbul, Turkey

Dipl.-Ing. Fabian Groh, AUDI AG, Neckarsulm

Jürgen Gugg, BMW Group, Munich

2. L to R

Dr. Steffen Hölzel, Dr. Ing. h.c.F. Porsche AG, Weissach

Dr. Gérard Liraut, Renault s.a.s., Guyancourt Cedex, France

Dr. Jenni Meiners, Opel Automobile GmbH, Rüsselsheim

Dipl.-Ing. Wolfgang Möller, Volkswagen Osnabrück GmbH

Stefan Röhl, MAN Truck & Bus AG, Munich

3.

Robert Someschan, Ford-Werke GmbH, Cologne

Media Partners

bioplastics
MAGAZINE.COM

IS
NOW

Renewable
Carbon
Plastics
MAGAZINE

K-PROFI
Impulse für Kunststoffverarbeiter | www.k-profi.de

Das Branchenblatt
der Kunststoffindustrie
K
ZEITUNG

PLASTVERARBEITER

PEU magazine



EVENT-APP
Available in your App
store by June 2024!

VDI Wissenforum GmbH | VDI-Platz 1 | D-40468 Düsseldorf | Germany

Need help?
Please contact us!

VDI Wissenforum GmbH
Customer Center
P.O. Box 10 11 39
40002 Düsseldorf | Germany
Phone: +49 211 6214-201
Fax: +49 211 6214-154
Email: wissenforum@vdi.de
www.piae-europe.com

✓ I will participate as follows for the price per person plus VAT:

	Congress „PIAE 2024“ June 19 - 20, 2024 Mannheim (01TA701024)
Participation fee	<input type="checkbox"/> EUR 1.690,-

1111

I'm interested in sponsoring and/or exhibition.

First Name _____	Last Name (Family Name) _____
Title _____	VAT-ID _____
Company/Institute _____	Job Title _____
Street _____	Department _____
ZIP Code, City, Country _____	
Phone _____	Email _____
Deviating bill address _____	Fax _____
Datum _____	Unterschrift _____

Participants with an invoice address outside of Austria, Germany and Switzerland are kindly requested to pay by credit card. Please don't send your credit card details via email, fax or post. Please book your ticket at www.piae-europe.com. Transferring your credit card details via our website ensures your details are encrypted and security of your data is guaranteed.

The general terms and conditions of VDI Wissenforum GmbH can be found on the Internet:

Congress Venue: www.vdi-wissenforum.de/terms-and-conditions/
Congress Venue: Rosengarten, Rosengartenplatz 2, 68161 Mannheim, Germany, Phone +49 (0) 621 41 06-0, www.vdi-wissenforum.de/terms-and-conditions/
Accommodation: A limited number of rooms are available in the Dorint Kongresshotel Mannheim (Phone +49 (0) 621 1251-0, Email: inform@dmh.dorint.com) at a special rate with mention of the keyword "VDI 2024". Please book your accommodation early. Other hotel bookings can be made through our free booking service www.vdi-wissenforum.de/hrs. Andere Hotelbuchungen können Sie über unseren kostenlosen Buchungsservice www.vdi-wissenforum.de/hrs vornehmen.

Services: The scope of services includes the digital event documentation, beverages during breaks, lunch and the evening reception. The event documentation are available online. Access data will be sent electronically to the participants prior to the event. For more information, see our terms and conditions.

Congress office: Congress Center Rosengarten, Foyer

Opening hours PIAE: Wednesday, June 19, 2024, 08:00 to end of program
 Thursday, June 20, 2024, 08:00 to 15:15

Congress languages: German and English (with simultaneous interpreting of the lectures German ↔ English)

Data protection: VDI Wissenforum GmbH uses the email address you have provided to regularly inform you about similar VDI Wissenforum GmbH events. If you would no longer like to receive any information or offers, you can object to your data being used for this purpose at any time. To do so, use the following email address wissenforum@vdi.de or one of the other contact possibilities mentioned above.
 We would like to make you aware of general information about the usage of your data here: <https://www.vdi-wissenforum.de/privacy-policy/>
 I hereby agree to VDI's terms and conditions and confirm that the data I have provided to register above is correct. Your contact data was obtained based on article 6, paragraph, sentence 1 lit. f) DSGVO (legitimate interest). Our legitimate interest is to select a precise selection of possible interested parties for our events. You can get more information about the source and usage of your data here: www.vdi-wissenforum.de/len-source-of-address/

