

# JOINING IN CAR BODY ENGINEERING 2017

4 – 6 APRIL 2017

CAR BODY ENGINEERING

**16 OEM**  
PRESENTATIONS BY

Audi, BMW, Daimler AG,  
Jaguar Land Rover,  
Porsche, Toyota,  
VW, Volvo



## REDUCING COMPLEXITY – ENABLING LIGHTWEIGHT DESIGN

In modern lightweight car body engineering, the trend towards an ever more intensive material mix continues unabated, even though the multitude of car body materials used in a given vehicle is strongly dependent on the vehicle segment. The complete mantra in car body lightweight design reads „the right material in the right place using the right joining processes“. And a “right” joining technology needs not only to perform the specific joining task in an optimal way, including difficult-to-join or thermally sensitive material combinations as well as geometrically challenging part arrangements, it also has to be economic, robust and ready for series production, globally available, simulatable and, ideally, flexible enough to adapt to a variety of joining situations. The goal is to minimize complexity in the body shop and yet to welcome new joining technologies, where they are enabling new and efficient lightweight design solutions. Helping to provide viable solutions for this goal is the aim of the annual Automotive Circle conference „Joining in Car Body Engineering“. From 4 to 6 April 2017, the conference again assembles its leading network of expert engineers in Bad Nauheim, Germany, to discuss latest practical achievements and trends in relevant car body joining technologies, paving the way towards more efficiently produced lightweight design car bodies.



Be part of these discussions;  
we are looking forward to  
meeting you in Bad Nauheim!

**Dr. Dirk Meine**  
Presidium  
Automotive Circle, DE

### MODULE 1

#### ADHESIVE BONDING AND HYBRID BONDING

TUESDAY, 4 APRIL 2017, 9.00 H –  
WEDNESDAY, 5 APRIL 2017, 15.00 H

*Moderators: Professor Dr. Klaus Dilger, Institute of Joining and Welding Technology (ifs), Technical University Braunschweig, DE  
Professor Dr. Christian Lammel, IFF GmbH – Induktion, Füge-technik, Fertigungstechnik, DE*



**Professor Dr.  
Klaus Dilger**



**Professor Dr.  
Christian Lammel**

### MODULE 2

#### THERMAL AND MECHANICAL JOINING

WEDNESDAY, 5 APRIL 2017, 9.00 H –  
THURSDAY, 6 APRIL 2017, 16.15 H

*Moderators: Professor Dr. Stefan Böhm, University of Kassel,  
Institute for Production Technology and Logistics, DE  
Dr. Dirk Meine, Automotive Circle International, DE*



**Professor Dr.  
Stefan Böhm**



**Dr. Dirk Meine**

## TUTORIALS

In addition and prior to the conference, the tutorials “Adhesive bonding technologies” and “Thermal and mechanical joining technologies” provide newcomers with application-oriented fundamentals of joining methods used in today’s automotive production.



## ADHESIVE BONDING TECHNOLOGIES

**3 APRIL 2017, 9.00 – 13.00 H**

*Prof. Lucas F.M. da Silva, Faculty of Engineering, University of Porto, PT*

- \* Theory of adhesion
- \* Adhesive selection
- \* Joint design
- \* Surface preparation
- \* Joint fabrication methods

## THERMAL & MECHANICAL JOINING TECHNOLOGIES

**3 APRIL 2017, 14.00 – 18.00 H**

*Sullivan Smith, TWI Ltd, GB*

- \* Thermal and mechanical joining methods and their mechanisms
- \* Overview on these methods: capabilities and limitations
- \* Application of thermal and mechanical joining technologies in the automotive production

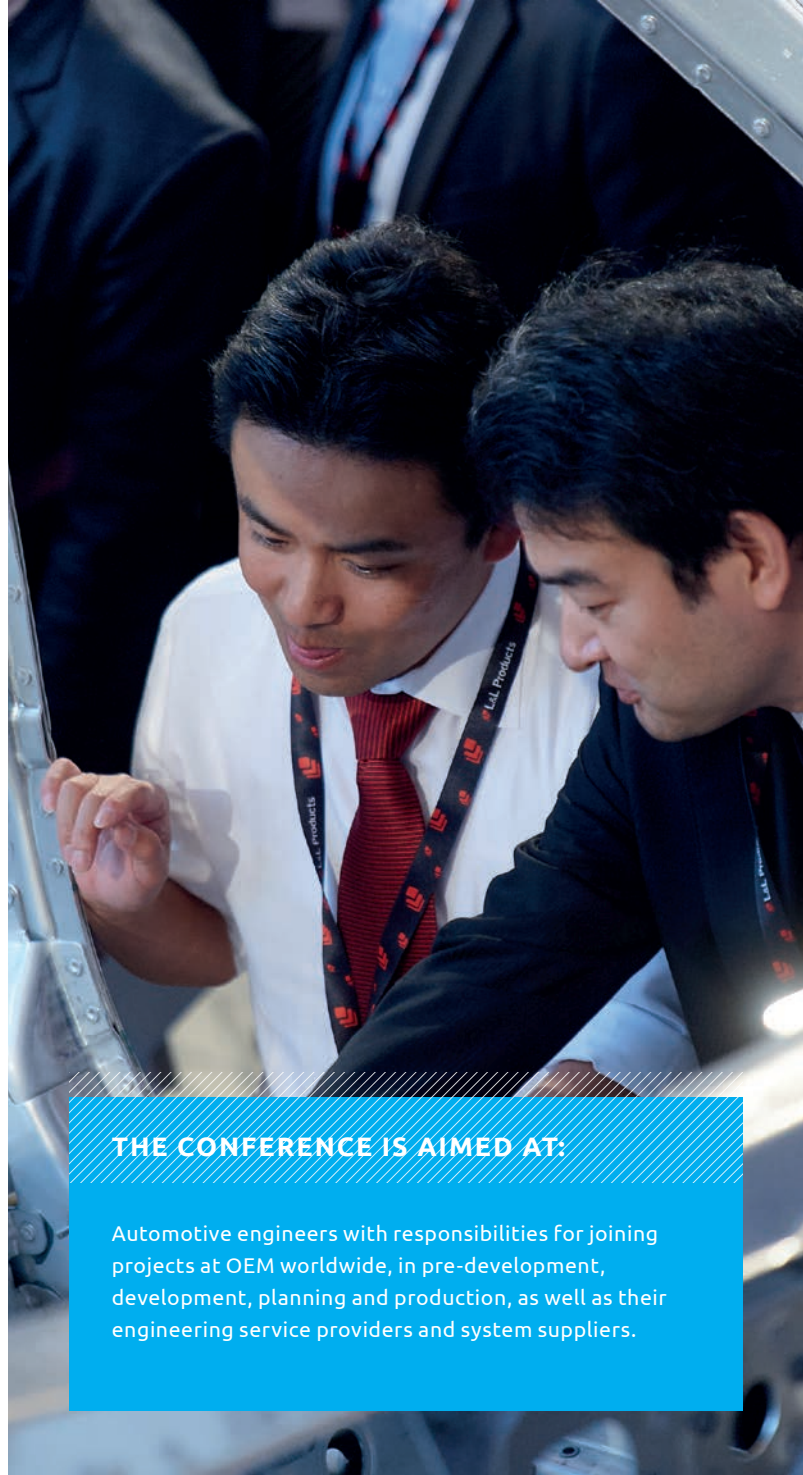
## TUTORS



**Prof. Lucas F.M. da Silva,**  
Faculty of Engineering,  
University of Porto, PT



**Sullivan Smith,**  
TWI Ltd, GB



### THE CONFERENCE IS AIMED AT:

Automotive engineers with responsibilities for joining projects at OEM worldwide, in pre-development, development, planning and production, as well as their engineering service providers and system suppliers.

## INTERNATIONAL OEM ADVISORY BOARD



Steffen Müller,  
**Audi AG, DE**



Thomas Richter,  
**BMW Group, DE**



Holger Schubert,  
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Tommaso Giunti  
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**Ford-Werke GmbH, DE**



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Taishi Tarui,  
**Nissan Motors Co.  
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Corporation, JP**



Christian Borowitz,  
**Volkswagen AG, DE**



Per Lindahl,  
**Volvo Car Corp., SE**



## EXHIBITION AND SPONSORING

### NETWORKING FOR YOUR SUCCESS

As an exhibitor/sponsor, you can benefit on-site from the technical and personal exchange of ideas and experiences with specialists in the automotive industry.

Thus, you can

- \* increase clearly the visibility of your company
- \* expand your contacts with decision makers
- \* boost your brand awareness with the OEMs

The accompanying exhibition as well as the attractive sponsorship opportunities provide the ideal platform for your presence.

Decide for an exhibition package, including a full conference ticket, or place your advertisement on lanyards, conference booklets, USB cards or pen + pads.

You have a specific idea yourself?  
Contact me, and we will develop jointly  
your individual performance as an  
exhibitor/sponsor at the conference.

**Imke Rotermund**  
Sales Manager  
Automotive Circle  
T +49 511 9910-343  
imke.rotermund@vincentz.net





# PROGRAMME

TUESDAY, 4 APRIL 2017

MODULE 1

## MODULE 1: ADHESIVE BONDING AND HYBRID BONDING

9.00 h Welcome and conference introduction

### FOCUS: ADHESIVES

9.15 h Adhesives in the body shop – current and future requirements

Reiner Jost, Daimler AG, DE

IMPULSE

Responses to the questions raised by the Impulse presentation:

9.25 h Dr. Andreas Lutz, Dow Europe GmbH, CH

9.45 h Dr. Thomas Engels, Henkel AG & Co. KGaA, DE

10.05 h Andreas Gabor, Hexcel Composites GmbH & Co KG, AT

10.25 h Federico Ciardelli, Lord Corporation, CH

10.45 h ☕ Coffee and contacts

### USE CASES

11.15 h Hybrid bonding approach for aluminum-steel constructions for structural components in the automotive industry

Rodrigo Romero Llerenas, Metalsa S.A. de C.V., MX

11.45 h Development and application of a new structural adhesive for JLR light weight vehicles

Ken Jacobs, Jaguar Land Rover Ltd., UK; Urs Rheinegger, Sika Technology AG, CH

12.15 h Adhesive bonding @ power drives for automotive applications – current status and challenges

Stefan Imhof, Brose Fahrzeugteile GmbH & Co. KG, DE

12.45 h 🍴 Lunch break

### QUALITY CONTROL AND PROCESS DEVELOPMENT

14.00 h Quality assurance in the production process through a non-destructive testing method

Andre Kraft, BMW Group, DE

14.30 h A robust approach to developing wet applied body and paintshop adhesives for automotive applications

Michael Lough, Jaguar Land Rover Ltd., UK

15.00 h Analytical design of elastic adhesive bonds under climatic stress

Sebastian Mailänder, Paderborn University, Laboratorium für Werkstoff- und Fügetechnik (LWF), DE

15.30 h Numerical modelling of hybrid-bonding processes

Dr. Holger Fricke, Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, DE

16.00 h ☕ Coffee and contacts

### FOCUS: ADHESIVES APPLICATION TECHNOLOGY

16.30 h Adhesives application in the bodyshop – current status and necessary future developments

Dr. Michael Frauenhofer, Kay Hermannsdoerfer, Audi AG, DE

IMPULSE

Responses to the questions raised by the Impulse presentation:

16.40 h Dr. Niels Hammer, Nimak GmbH, DE

17.00 h Andreas Kiefer, SCA Schucker GmbH & Co. KG, DE

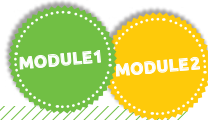
17.20 h Torsten Hölzel, ATN Hölzel GmbH, DE

17.50 h 🗣️ Get-Together / Meet the Speakers

The speakers of the day will be available for individual discussions.

19.30 h Networking Night Module 1

WEDNESDAY, 5 APRIL 2017



**MODULE 1: ADHESIVE BONDING AND HYBRID BONDING**

**MODULE 2: THERMAL AND MECHANICAL JOINING**

– Joint session of both modules –

**9.00 h** Welcome and introduction to Module 2

**KEYNOTE**

**9.10 h** The smart bodyshop – meaningful big data management in car body production  
*Dr. Michael Zürn, Daimler AG, DE*

**OEM PROGRESS REPORTS**

**9.40 h** Joining technology in the new Volvo V90 car body  
*Per Lindahl, Volvo Car Corporation, SE*

**10.10 h** ☕ Coffee and contacts

**10.40 h** New joining concept to link aluminium side panels to steel lightweight underbody constructions  
*N. N., Volkswagen AG, DE; N. N., Dr.-Ing. h.c. F. Porsche AG, DE*

**11.10 h** Realisation of a high-performance aluminium-steel mixed joint in a fully automated car body main line  
*Oguzhan Eroglu, BMW Group, DE*

**11.40 h** Use of panel forming elements in car body engineering  
*Peter Wurster, Carsten Bär, Audi AG, DE*

**12.10 h** 🗣️ [Live Polls in the auditorium](#)

**12.25 h** 🍴 Lunch break

**SMART JOINING**

**13.40 h** PLUG – self-piercing riveting of non-compatible materials  
*Fredrik Wandebäck, Swerea IVF AB, SE; Per Lindahl, Volvo Car Corporation, SE*

**14.10 h** Potentials of industry 4.0 and machine learning for mechanical joining

*Mathias Jäckel, Fraunhofer Institute for Machine Tools and Forming Technology (IWU), DE*

**14.40 h** ☕ Coffee and contacts – End of Module 1 –

**MODULE 2: THERMAL AND MECHANICAL JOINING**

**WELDING IMPROVEMENTS**

**15.00 h** Automated rework of weld seams  
*Dr. Peter Daniel, Vitronic Dr.-Ing. Stein Bildverarbeitungssysteme GmbH, DE*

**15.30 h** The Twin Spot Welding Gun of Volkswagen – from the Idea to Readiness for Start of Production  
*Dr. Eike-Christian Klages, Volkswagen AG, DE*

**16.00 h** Short-term resistance spot welding in connection with high-dynamic actuators – plant concept and potential uses when joining lightweight applications  
*Kay Nagel, Nimak GmbH; Niels Holtschke, Universität Magdeburg, Institut für Werkstoff- und Fügetechnik; DE*

**16.30 h** ☕ Coffee and contacts

**17.00 h** Influence of fusion rates on the integrity of spot welded austenite-ferrite joints  
*Chris Frohwein, Volkswagen AG, DE*

**17.30 h** A practical approach to evaluate the susceptibility of zinc coated steels to liquid metal embrittlement during spot welding  
*Robert Sierlinger, Voestalpine Stahl GmbH, AT*

**18.00 h** 🗣️ [Get-Together / Meet the Speakers](#)

*The speakers of the day will be available for individual discussions.*

**19.30 h** Networking Night Module 2

MODULE 2

THURSDAY, 6 APRIL 2017



**MODULE 2: THERMAL AND MECHANICAL JOINING**

**NEW PROCESSES**

- 8.30 h**    **Widening the application spectrum of flow drill screw joints**  
*Steffen Sinzel, Norbert Hornbostel, Audi AG, DE*
- 9.00 h**    **Potential of innovative welding technologies for the application of 7xxx series aluminum alloys in car body construction**  
*Markus Puschmann, Fraunhofer Institute for Machine Tools and Forming Technology (IWU), DE*
- 9.30 h**    **Potential of the capacitor discharge welding technology for joining of difficult to weld materials and dissimilar material combinations**  
*Dr. habil. Frank Riedel, Fraunhofer Institute for Machine Tools and Forming Technology (IWU), DE*
- 10.00 h**   **Magnetic Pulse Welding – revival of an innovative technology**  
*Anatoli Rebensdorf, University of Kassel, Institute for Production Technologies and Logistics, Department of Cutting and Joining Manufacturing Processes, DE*
- 10.30 h**    **Coffee and contacts**
- 11.00 h**   **Investigation on the formation of the joint between aluminum and zinc-coated steel**  
*Christoph Lüdecke, Volkswagen AG, DE*
- 11.30 h**   **New dissimilar and similar metal spot joining process for aluminum and high-tensile-strength & CEQ steel based on the advantage of arc welding**  
*Suzuki Reiichi, Kobe Steel Ltd., JP*

**SIMULATION**

- 12.00 h**   **High-speed joining: A battleground to numerical simulation and experimental characterization**  
*Michael Gehrken, Paderborn University, Laboratorium für Werkstoff- und Fügetechnik (LWF), DE*

- 12.30 h**   **Automated simulation of self-pierce riveting**  
*Heiko Hellmeier, Patrick Siegmann, Audi AG, DE*

**13.00 h**    **Meet the Speakers**  
*The speakers of the day will be available for individual discussions.*

 **Lunch break**

**LASER TECHNOLOGY**

- 14.15 h**   **Vehicle development by application of Laser Screw Welding**  
*Norimasa Koreishi, Toyota Motor Corporation, JP*
- 14.45 h**   **Intelligent sensor based laser remote processing for lightweight design**  
*Andreas Müllegger, Trumpf Laser- und Systemtechnik GmbH, DE*
- 15.15 h**   **High Speed Laser Spot welding – Innovated joining solution for automotive**  
*Dr. Klaus Krastel, IPG-Laser GmbH, DE*

**15.45 h**   **OEM conclusions**  
*OEM Advisory Board experts on trends and current challenges in car body joining technology.*

- 16.00 h**   **Farewell address and end of the conference**

*Subject to change (status as of 18 January 2017)*

**Programme updates at:  
[www.automotive-circle.com](http://www.automotive-circle.com)**

## TERMS & CONDITIONS

### REGISTRATION PROCEDURES

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Automotive Circle  
Plathnerstr. 4c, DE-30175 Hannover  
T +49 511 9910-384, F +49 511 9910-379  
jannike.von.kampen@vincentz.net

### ONLINE REGISTRATION

www.automotive-circle.com

### DATE AND VENUE

Conference: 4 – 6 April 2017  
Tutorial: 3 April 2017

### CONPARK

Hotel & Conference Centre Bad Nauheim  
Elvis-Presley-Platz 1, DE-61231 Bad Nauheim  
T +49 6032 303-0, F +49 6032 303-529  
info@conpark.com  
www.conpark.com

We kindly ask you to make your own hotel reservation at the conference hotel, please refer to Automotive Circle. The hotel offers special room rates from 135,- € to 155,- € depending on different cancellation conditions. The mentioned room rates include 5,- € breakfast per person and per day.

### CONFERENCE FEES

#### Conference:

Early-Bird Module1+Module2: 2.345,- €  
Standard Module1+Module2: 2.545,- €  
Early-Bird per Module: 1.595,- €  
Standard per Module: 1.795,- €

#### Tutorial:

Per Tutorial: 550,- €  
Tutorials: 850,- €

Early-bird price available until 6 March 2017. Students will get 50 % discount on standard prices on presentation of a valid student ID.

\* All prices plus 19 % German VAT.  
All conferences in Europe are subject to VAT. To reclaim, please contact your local tax office.

### CONFERENCE FEES INCLUDE

**Conference:** Fees including full conference participation, incl. conference materials and list of delegates, the authority for downloading the presentation on the internet, luncheons, catering and the participation in the evening networking event.

**Tutorial:** The participation fee include the attendance in the tutorial, list of delegates, the proceedings and the coffee break.

### CONFERENCE LANGUAGE

The conference will be translated simultaneously into English and German. Please note that the contents of lectures and presentations at simultaneously interpreted conferences are predominately composed in the English language.

### CANCELLATIONS

Fees will be refunded in full if notice of cancellation is received by 6 March 2017. 50 % of the conference fees will be refunded in case notification of cancellation is received later, but not later than 20 March 2017. Delegates who fail to attend without notifying the organiser will be liable for the whole conference fees. Substitutions of

delegates may be made at any time. Cancellations and changes should be notified in writing. In all cases date of postmark shall apply. Any fees to be refunded will be paid after the end of the conference. The organiser reserves the right to change the programme content or to cancel the event due to important reasons. Cancellation fees of third parties that may appear in this context will not be reimbursed.

### DATA PROTECTION

Vincentz Network produces a list of delegates for each event which may include the following information: company name, address (zip code, city, country), name and job function of the delegate. This list of delegates will be made available for all conference delegates, speakers, exhibitors and sponsors of the event, who may use the data for promotional purposes. Objection against publication and circulation of this data may be made at any time until 3 weeks prior to the event and has to be made in writing to the organiser. Company's name, city and country might be published on the internet as reference for upcoming Automotive Circle conferences.

### PLEASE NOTE

By registering you understand that your participation and attendance at the conference may be videotaped, filmed and/or audio recorded. You agree that the recording may be used for any lawful purposes that Vincentz Network, or its designees, in their sole discretion, may determine. The address data are processed for customer service and information purposes in compliance with the German Federal Data Protection Law. Company's name, city and country might be published on the Internet as reference for the upcoming conferences of Automotive Circle.

### PICTURES

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## YOUR CONTACT

### Jannike von Kampen

Event Manager  
Automotive Circle  
T +49 511 9910-384  
jannike.von.kampen@vincentz.net



## REGISTRATION

# JOINING IN CAR BODY ENGINEERING 2017

## I hereby register for

### ■ CONFERENCE

Early-Bird Module1+Module2:  
Standard Module1+Module2:  
Early-Bird per Module:  
Standard per Module:

4 – 6 April 2017

2.345,- €\* (until 6 March 2017)

2.545,- €\*

1.595,- €\* (until 6 March 2017)

1.795,- €\*

### ■ TUTORIALS

per Tutorial:  
Tutorial 1+2:

3 April 2017

550,- €\*

850,- €\*

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**Register now and save 200 € with the early bird fee  
valid until 6 March 2017!**

**SAVE  
200 €**

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