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Carbon Products of the Leading Supplier from Germany

See you at Booth 63

www.richard-anton.de
Welcome to Dresden, Germany for the eighth annual EuroBrake conference and exhibition - the world’s largest event in braking technology.

We are delighted to have returned to the International Congress Center in Dresden, Germany - a state of the art conference centre located in the city’s old town on the bank of the River Elbe. Dresden is home to many high-tech companies in sectors including semiconductors and aerospace and is one of Germany’s foremost research locations - the ideal location for EuroBrake 2019.

EuroBrake was established in 2012 and has since grown significantly, attended by more than 1,100 delegates in 2018, offering an important Technical Programme of 140 technical presentations and featuring 100 international organisations within the exhibition. EuroBrake attracts a global audience of engineers, scientists, academics and executives from the industries of passenger car, commercial vehicle, rail and the wider industrial sectors.

EuroBrake 2019 offers a wonderful agenda, featuring sessions on brake control systems, the environment and advanced disc coatings, while we dedicate a Panel Discussion on the topic of lifelong brakes. Following a successful introduction last year, a selection of sessions have been specifically dedicated to rail braking technology. Our international exhibition features 100 organisations, who represent the entire value chain from leading industry players to new entrants – it’s a great opportunity to meet new suppliers.

We are delighted that the EuroBrake Student Opportunities Programme returns to EuroBrake 2019; we welcome 50 international students to our fantastic community – why not visit the Student Lounge and show your support. We are extremely grateful to our sponsors who are supporting this innovative programme.

We are delighted that you have joined us here in Dresden for what is sure to be a fabulous EuroBrake 2019!

Harald Abendroth  Chris Mason
Chairman, EuroBrake 2019  CEO, FISITA
PRODUCTS

MECHANOMADE®
Mechanomade® FA25 is a metal powder manufactured by a mechano-chemical process called High Energy Ball Milling (HEBM). Thanks to this process, specifically functionalized products having singular properties in which the fine elements distribution and the phases integration, favor the achievement of superior performances specially designed for friction materials application.
  » Good thermal conductivity due to metallic nature and particular flake morphology
  » Constant friction even at high load, low fade and good recovery
  » Low disc wear contributing to the formation of a constant and uniform third layer
  » Good corrosion resistance

SICACELL
Improves the physical and tribological characteristics of brake pads

STILOX
The right key to improves the friction level reducing wear and noise

ULTIMATE SERIES
New approaches to lubrication in friction material free of antimony trisulphide: from alternative compounds to adaptive lubricants

PROCHIM GP
A noise process solution in friction material

PROCHIM D SERIES
The most cheaper alternative of abrasive modifier

AL-X SERIES
Calcined aluminium oxides with different particle size and α-Al₂O₃ content

POTASSIUM TITANATE
Functional filler available in several morphologies

WWW.ITAPROCHIM.IT
EuroBrake is an essential learning and networking event for all engineers, scientists and executives concerned with braking systems throughout the value-chain from OEMs through to materials suppliers including:

<table>
<thead>
<tr>
<th>Passenger car</th>
<th>Academia and research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial vehicle</td>
<td>Application</td>
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<tr>
<td>Motorcycle</td>
<td>Research and development</td>
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<tr>
<td>Aerospace</td>
<td>Materials</td>
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<tr>
<td>Rail</td>
<td>Quality and process</td>
</tr>
<tr>
<td>Industry brakes</td>
<td>Testing and measurement</td>
</tr>
<tr>
<td>Wind turbines</td>
<td>Sales and purchasing</td>
</tr>
</tbody>
</table>

Official Media Partners

EuroBrake 2019 is organised by FISITA, the international membership organisation for the automotive and mobility systems engineering profession.

Established in 1948, FISITA links the national automotive engineering societies in 37 countries representing over 210,000 engineering professionals and organises the biennial FISITA World Automotive Congress, the annual World Mobility Summit and the FISITA PLUS Conference.

FISITA (UK) Limited
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FISITA President
Prof. Frank Zhao
FISITA Chief Executive
Chris Mason
EuroBrake Manager
Gemma Wilkins
Tel: +44 (0) 1279 883 476

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# EuroBrake 2019 Overview

## Tuesday 21 May 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00</td>
<td>Registration Opens</td>
</tr>
<tr>
<td>09:30 - 12:00</td>
<td>Student Introductory Lecture – Konferenz 2</td>
</tr>
<tr>
<td>13:00 - 13:15</td>
<td>Welcome and Introduction to EuroBrake 2019 – Hall 4-5</td>
</tr>
<tr>
<td>13:15 - 13:25</td>
<td>Student Opportunities Programme at EuroBrake – Hall 4-5</td>
</tr>
<tr>
<td></td>
<td>Towards High-Resolution Simulation of Spatio-Temporal Fine Dust Dispersion In Urban Areas</td>
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<td></td>
<td>Braking Systems, Safety Performance: Trends in Future, Legal Requirements and Consumer</td>
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<td></td>
<td>Protection Programs</td>
</tr>
<tr>
<td>14:00</td>
<td>Exhibition Opens</td>
</tr>
<tr>
<td>14:25 - 14:40</td>
<td>Break – Exhibition Hall</td>
</tr>
<tr>
<td>14:40 - 16:00</td>
<td>RTP – Brake Rotors: Design and Performance – Hall 4</td>
</tr>
<tr>
<td></td>
<td>ITB – Innovative Tools for Brake Testing – Hall 5</td>
</tr>
<tr>
<td></td>
<td>FMM – Fundamentals: Models and Methods – Konferenz 5-6</td>
</tr>
<tr>
<td>16:00 - 16:20</td>
<td>Break – Exhibition Hall</td>
</tr>
<tr>
<td>16:20 - 18:00</td>
<td>DBC – Design of Brake Components – Hall 4</td>
</tr>
<tr>
<td></td>
<td>BE1 – Brake Emissions: Sampling, Measurement and Characterisation – Hall 5</td>
</tr>
<tr>
<td>18:00 - 19:30</td>
<td>Official EuroBrake 2019 Welcome Reception – Sponsored by NUCAP – Exhibition Hall</td>
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## Wednesday 22 May 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>08:30 - 10:10</td>
<td>SBDC – Progressive Brake Disc Coatings – Hall 4</td>
</tr>
<tr>
<td></td>
<td>SIBD – Innovative Brake System Design Approaches – Hall 5</td>
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<tr>
<td></td>
<td>FMV – Fundamentals: Vibrations – Konferenz 5-6</td>
</tr>
<tr>
<td></td>
<td>Panel Discussion – Lifelong Brakes: Opportunities and Challenges – Konferenz 1</td>
</tr>
<tr>
<td>10:10 - 10:40</td>
<td>Break – Exhibition Hall</td>
</tr>
<tr>
<td>10:40 - 12:20</td>
<td>RWA – Rail Wheel Contact and Adhesion – Hall 4</td>
</tr>
<tr>
<td></td>
<td>STIF – Special Session - Innovative Technologies and Functions in Electronic Brake Systems – Hall 5</td>
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<tr>
<td></td>
<td>BSS – Brake Squeal: Simulation and Test Methods – Konferenz 5-6</td>
</tr>
<tr>
<td></td>
<td>ISO – International Regulations and Standards-ISO Project Review – Konferenz 1</td>
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<tr>
<td>12:20 - 14:00</td>
<td>Lunch – Exhibition Hall</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Poster Short Talk Session – Konferenz 1</td>
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<tr>
<td>13:30 - 14:00</td>
<td>Poster Viewing Session – Konferenz 1 Foyer</td>
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<tr>
<td>12:30 - 13:30</td>
<td>IDIADA Open Seminar – Konferenz 3-4</td>
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<tr>
<td>14:00 - 15:40</td>
<td>Rail Panel – High Speed Trains Worldwide: Opportunities and Limitations – Hall 4</td>
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<td>PMD - Pad Material and Design – Hall 5</td>
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<td></td>
<td>SVDE – Virtual Development of Electronic Brake Systems – Konferenz 5-6</td>
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<td></td>
<td>WSP – Workshop on Brake Emissions: Part 1 – Konferenz 1</td>
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<td>15:40 - 16:10</td>
<td>Break – Exhibition Hall</td>
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<tr>
<td>16:10 - 17:50</td>
<td>RBS – Rail Brake System and Components – Hall 4</td>
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<tr>
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<td>CGN – Creep-Groan Noise – Hall 5</td>
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<tr>
<td></td>
<td>RMA – Raw Materials – Konferenz 5-6</td>
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<tr>
<td></td>
<td>WSP – Workshop on Brake Emissions: Part 2 – Konferenz 1</td>
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<tr>
<td>18:00 - 19:00</td>
<td>EuroBrake Drinks Reception – Sponsored by Head Acoustics – Terrace level</td>
</tr>
<tr>
<td>19:00 - 22:30</td>
<td>EuroBrake Dinner – Sponsored by Brembo – Terrace level</td>
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## Thursday 23 May 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>08:30 - 10:10</td>
<td>RBT – Brake Testing and Simulation – Hall 4</td>
</tr>
<tr>
<td></td>
<td>RTE – Brake Rotors: Thermal Effects – Hall 5</td>
</tr>
<tr>
<td></td>
<td>BE2 – Brake Emissions: Fundamentals and Innovation – Konferenz 5-6</td>
</tr>
<tr>
<td>10:10 - 10:40</td>
<td>Break – Exhibition Hall</td>
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<tr>
<td></td>
<td>ADT - Advanced Dynamometer and Vehicle Testing – Konferenz 5-6</td>
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<tr>
<td>12:20 - 13:20</td>
<td>Lunch – Exhibition Hall</td>
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<tr>
<td>13:20 - 15:00</td>
<td>EMB – Electromechanical Brakes – Hall 4</td>
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<tr>
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<td>LBR – Lightweight Brake Rotors – Hall 5</td>
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<tr>
<td></td>
<td>FMC – Friction Material Characterisation – Konferenz 5-6</td>
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<tr>
<td>15:00 - 15:20</td>
<td>Break – Exhibition Hall</td>
</tr>
<tr>
<td>15:20 - 16:40</td>
<td>FMG – Fundamentals: General – Hall 4</td>
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<tr>
<td></td>
<td>NVH - Brake Noise Test and Reduction Methods – Hall 5</td>
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<tr>
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<td>FMM – Friction Material Formulation – Konferenz 5-6</td>
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<tr>
<td>16:40</td>
<td>Exhibition Closes</td>
</tr>
<tr>
<td>16:40 – 18:00</td>
<td>EuroBrake Farewell Reception – Exhibition Foyer</td>
</tr>
</tbody>
</table>
Organisation

Steering Committee

- Harald Abendroth
  Chairman EuroBrake 2019
  Consultant

- Klaus Jäckel
  Mercedes-Benz Trucks
  Daimler AG

- Prof. Dr. Georg Ostermeyer
  TU Braunschweig

- Prof. David Barton
  University of Leeds

- Loïc Lelièvre
  Flertex Sinter

- Dr. Ludwig Vollrath
  Consultant

- Prof. Yannick Desplanques
  University of Lille

- Jan Münchhoff
  AUDI AG

- Gemma Wilkins
  FISITA
  EuroBrake 2019 Project Manager

- Dipl. -Ing Bastian Recke
  Technische Universität Braunschweig

- Aaron Völpel
  Volkswagen

- Dr. -Ing Kai Bode
  AUDI AG

- Hannes Sachse
  IDIADA Fahrzeugtechnik GmbH

- Dr. Nils Perzborn
  ZF Group

- Fabian Limmer
  University of Leeds

- Hayley Millar
  FISITA

- Prof. Dr. Georg Ostermeyer
  TU Braunschweig

- Dr. Jens Bauer
  Continental

- Dipl. -Ing Yannick Desplanques
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  Flertex Sinter

- Dr. Ludwig Vollrath
  Consultant
The EuroBrake Advisory Board consists of representatives from major companies and research institutions that lead the field in braking technology today. The Advisory Board provides strategic advice and helps to ensure that EuroBrake continues to meet the needs of the international braking community.
What does an automotive engineer really do?
What are your study options?
Will you be the next innovator?

Find answers to these questions and more at Your Future in Automotive
www.fisita.com/yfia

Where will you take us next?
EuroBrake Student Opportunities Programme 2019

EuroBrake 2018 saw the second successful Student Opportunities Programme, where 50 engineering students from around the world were given the unique opportunity to attend EuroBrake as part of a sponsored programme.

At EuroBrake 2019 the Student Opportunities Programme will again offer international students the chance to attend and take part in the world’s largest conference and exhibition dedicated to braking technology.

Students will:

- Meet with top experts from industry and academia
- Access the exclusive Student Lounge to network with peers and professionals
- Attend a dedicated Introductory Lecture on the basics of braking, including a valuable overview of key EuroBrake sessions
- Discuss your career options and get CV advice from management and HR professionals in the brake industry
- Participate in specialised round table discussions and surgery sessions
- Attend the EuroBrake Dinner
- Gain financial assistance with hotel and travel expenses

The sponsored student delegate passes will include full access to the Technical Programme and entry to the EuroBrake Exhibition, giving participants the chance to connect with organisations at the heart of the industry.

Within the conference students will learn about the latest industry innovations and have the chance to participate in expert discussions on new technology.

University of Hertfordshire student Kim Everitt attended EuroBrake 2018 via ESOP. She said: “This event has multiple amazing opportunities for all - as a result of attending EuroBrake, I am more confident in my abilities and excited to continue pursuing my career in automotive engineering. I encourage other students to apply for ESOP 2019 and I hope to return as a delegate.”

Visit the Student Lounge on the exhibition hall level - a chance to network and meet new friends
Join FIEC today
The exclusive international community for mobility systems engineers

Collaborate, engage, share, learn
- Showcase your unique professional profile and network within the global community
- Search and apply for the latest industry jobs, internships and work experience placements
- Engage in peer-to-peer creative collaboration in the International Discussion Forum
- Hold direct conversations with others via the Private Messaging function
- Utilise the FISITA Travel Bursary for exclusive funding opportunities
- Gain unlimited access to FISITA content and resources
- Receive weekly email updates, featuring the latest jobs and discussion forum posts

SIGN UP NOW
FREE OF CHARGE
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Promoting excellence in mobility engineering

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Support the Student Opportunities Programme at EuroBrake 2020

Do you want to engage with and advise engineering students who could become the mobility talent of tomorrow?

Will you help to guide and support students who have a passion for engineering to join our international community?

As your company looks to the future and embraces the challenge of technology changes and trends, your support will help to inspire the next generation of mobility engineers and technologists at EuroBrake 2020.

By supporting the Student Opportunities Programme, you will be invited to meet with participants in the Student Lounge, a designated area for students, industry and academics to network.

This is a unique platform for your organisation to meet with and advise those looking to enter the braking industry and support students to learn first-hand about their career options as they enter the mobility industry.

To express your interest in supporting ESOP 2020, please visit Hayley Millar in the Student Lounge.

Thank you to our 2019 sponsors

"In establishing the EuroBrake Student Opportunities Program (ESOP), FISITA has made an immeasurable contribution to our entire brake industry. Attracting engineering students to our corner of the automotive industry is important. Many students we met with had no idea that there even was an entire industry dedicated to brakes. ESOP provides enormous opportunities for both students and the attending companies."  
NUCAP, ESOP Headline Sponsor 2018
FISITA has been supporting the world’s automotive engineering community for more than 70 years, encouraging and welcoming new talent into our industry. To help strengthen the support for our future generation of engineers, we have established the FISITA Foundation.

How can you get involved?

Donations of any amount to the Foundation will create more opportunities for young engineers to take advantages of the unique FISITA Travel Bursary, in order for them to fulfil work experience opportunities within our industry.

Start making a difference today by making a pledge.

www.fisita.com/foundation

Testimonials

“Without the FISITA Travel Bursary I wouldn’t have been able to cope with the costs. It helped me enormously to focus on studying and working at my placement. I am very thankful and greatly appreciate the support of FISITA to help young engineers go abroad and gathering valuable experiences”

Quirin Anker
Msc Automotive Engineering, Munich University of Applied Science

“I’ve learned a lot about how an automotive company operates, made great connections, improved my Italian, and had a lot of fun. I can’t wait to see what the future holds, and I know it wouldn’t be possible without the FISITA Travel Bursary”

Hannah Waters
BSc Mechanical Engineering and Italian, University of Rhode Island

Founding Donors
You could be forever recognised as one of the ten Founding Donors by pledging £5,000 or more.

Initial Donors
Our initial donors who pledge £100 or more will be forever credited on the Donor Wall.
## Opening Plenary

**Tuesday 21 May 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>13:00 - 13:15</td>
<td><strong>Welcome and Introduction to EuroBrake 2019</strong> – Hall 4-5</td>
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<tr>
<td></td>
<td>Mr. Harald Abendroth</td>
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<td></td>
<td>EuroBrake 2019 Chairman</td>
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<tr>
<td>13:15 - 13:25</td>
<td><strong>Student Opportunities Programme at EuroBrake</strong> – Hall 4-5</td>
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<td>Dr.-Ing. Kai Bode</td>
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<td>AUDI AG</td>
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### Opening Plenary Session – Hall 4-5

**Chairs:**
- Mr. Klaus Jäckel, Daimler AG
- Prof. Dr. Georg Ostermeyer, TU Braunschweig

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**Towards High-Resolution Simulation of Spatio-Temporal Fine Dust Dispersion In Urban Areas**

**Prof. Dr.-Ing. Manfred Krafczyk**

Head of Institute, Institute for Computational Modelling in Civil Engineering, Technical University Braunschweig, Germany

Fine / break dust pollution is assumed to be detrimental to public health in urban areas. The main anthropogenic sources of such pollutants are traffic, manufacturing industry and power stations as well as heating systems of private households. In order to investigate the coupled dynamics of individualised traffic and fine dust dispersion due to local airflow on a building scale, we propose a coupled simulation approach.

We propose a coupled modelling and simulation approach resulting in a high-resolution (down to the meter scale) coupled simulation approach coupling a Computational Fluid Dynamics (CFD) research code to a traffic model for individual cars in an urban area. Large scale meteorological conditions enter as boundary conditions for the Large Eddy CFD simulation (LES). As the simulation takes into account the individual buildings in an urban area, reliable local wind profiles can be predicted which are the main driver of fine dust dispersion. A cellular traffic model describing traffic dynamics provides the fine dust distribution which is being advected by the CFD model. The coupled model is implemented on General Purpose Graphics Processing Units (GPGPUs).

We provide preliminary feasibility studies of a comparison between individualised traffic modelling and a homogenized model on a street scale coupled to a mature CFD simulation based on a Cumulant Lattice Boltzmann approach (CLBM). To this end, the presented coupled simulation approach can serve as a starting point for more realistic scenarios.

---

**Braking Systems, Safety Performance: Trends in Future, Legal Requirements and Consumer Protection Programs**

**Ignacio Lafuente**

Head of Commercial Vehicles Homologations department, IDIADA Automotive Technology S.A, Spain

In the fast changing automotive industry, special attention is being paid to technologies such as automated driving and fuel efficiency. However, other systems in the vehicle, such as braking systems, are already experiencing a fast evolution.

Rulemaking fora are working to address these new features and requirements that need to be covered in order to protect the users. At European or International level, these groups allow interested parties - manufacturers, suppliers, governments and NGOs- to share opinions, experiences, knowledge and expectations in order to produce the most cost-effective regulations, in particular these related to active safety and accident avoidance. This presentation deals with some of these issues taking into account the approach used by the authorities.

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<thead>
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<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>13:25 - 14:25</td>
<td><strong>Opening Plenary Session</strong></td>
<td></td>
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<tr>
<td>14:25 - 14:40</td>
<td><strong>Break – Exhibition Hall</strong></td>
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</table>
Technical Programme
Tuesday 21 May 2019

<table>
<thead>
<tr>
<th>14:40 - 16:00</th>
<th>Technical Sessions</th>
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<tbody>
<tr>
<td><strong>FMM - Fundamentals Models and Methods – Konferenz 5-6</strong></td>
<td><strong>EB2019-MFM-002</strong></td>
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<tr>
<td>Chair: Prof. Yannick Desplanques University of Lille</td>
<td>3D Printing of Friction Material (Part 2) - Waterbased Liquid Friction Compounds</td>
</tr>
<tr>
<td>Co-Chair: Dr. Axel Stenkamp TMD Friction</td>
<td>Dr. Roman Milczarek LF GmbH &amp; Co. KG Germany</td>
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<tr>
<td>Dipl.-Ing Christian Schmied Tribotec GmbH Austria</td>
<td>Dipl.-Ing. Christian Schmied Tribotec GmbH Austria</td>
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<tr>
<td><strong>EB2019-SVM-041</strong></td>
<td><strong>Overview and Future Potentials of Virtual Methods in the Development of Modern Brake Systems</strong></td>
</tr>
<tr>
<td>Dr.-Ing. Philippe Stegmann Audi AG</td>
<td>Dr. Fabian Fontana IVK University of Stuttgart Germany</td>
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<tr>
<td>Mr. Zhongquan Shuai CRRC QiShuYan Institute CO., LTD. China</td>
<td>Mr. Fabian Fontana IVK University of Stuttgart Germany</td>
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<tr>
<td>Prof. Fei Gao, Prof. Dr. Rong Fu, Dr. Wei Qi Dalian Jiaotong University China</td>
<td>Prof. Fei Gao, Prof. Dr. Rong Fu, Dr. Wei Qi Dalian Jiaotong University China</td>
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<tr>
<td><strong>EB2019-IBC-004</strong></td>
<td><strong>Development of Inertia Simulation Range Calculation Software for Brake Dynamometer</strong></td>
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<tr>
<td>Dr.-Ing. Sebastian Gramstat Audi AG Germany</td>
<td>Mr. Reiner Becker, Mr. Wilfried Strauss Fritz Winter Esengießerei GmbH &amp; Co. KG Germany</td>
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<tr>
<td>Dr. Panayotis Dimopoulos Eggenschwiler Swiss Federal Laboratories for Materials Science and Technology Switzerland</td>
<td>Mr. Wolfgang Huschenhöfer, Sebastian Hellfeier Buderus Guss GmbH Germany</td>
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<tr>
<td>Prof. Dr.-Ing. Louis JezequeL, Dr. Sébastien Besset Laboratoire LTDS/ Ecole Centrale de Lyon France</td>
<td>Prof. Dr.-Ing. Louis JezequeL, Dr. Sébastien Besset Laboratoire LTDS/ Ecole Centrale de Lyon France</td>
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<td><strong>EB2019-MDS-004</strong></td>
<td><strong>The Influence of the Thermal Module of a Brake Disc on Its Natural Frequencies</strong></td>
</tr>
<tr>
<td>Dr. Ing. Hans-Willi Raedt Hirschvogel Automotive Group</td>
<td>Mr. Marcelino de la Cruz, Dr. Ing. Hans-Willi Raedt Hirschvogel Automotive Group</td>
</tr>
<tr>
<td>Dr. Wilfried Strauss Fritz Winter Esengießerei GmbH &amp; Co. KG Germany</td>
<td>Mr. Wilfried Strauss Fritz Winter Esengießerei GmbH &amp; Co. KG Germany</td>
</tr>
<tr>
<td>Mr. Raphael Leibl Hirschvogel Umformtechnik GmbH Germany</td>
<td>Mr. Raphael Leibl Hirschvogel Umformtechnik GmbH Germany</td>
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<tr>
<td><strong>EB2019-MDS-023</strong></td>
<td><strong>Development of a Wheel Hub Integrated Brake Disc</strong></td>
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<tr>
<td><strong>EB2019-SVM-029</strong></td>
<td><strong>Modelisation of the Vibratory Dynamics of an Aircraft Braking System</strong></td>
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<tr>
<td>Prof. Dr.-Ing. Louis JezequeL, Dr. Sébastien Besset Laboratoire LTDS/ Ecole Centrale de Lyon France</td>
<td>Ing. Alexy Mercier Safran Landing Systems/ Laboratoire de Tribologie et Dynamique des Systèmes</td>
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<tr>
<td><strong>EB2019-SVM-033</strong></td>
<td><strong>Runway Tests of Anti-locking (ABS) System for Mid-sized Airplane</strong></td>
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<tr>
<td>Dr. Eng. Zbigniew Skorupka Instytut Lotnictwa, Poland</td>
<td>Dr. Eng. Zbigniew Skorupka Instytut Lotnictwa, Poland</td>
</tr>
<tr>
<td><strong>EB2019-SVM-026</strong></td>
<td><strong>A New Approach for Testing of Brake Tubes: Consideration of Assembling Based Mistakes</strong></td>
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<td>Mr. Onur Tokul, Mr. Ozan Koyuncu Bambor Sanayi ve Ticaret A.Ş. Turkey</td>
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<td><strong>EB2019-MFM-010</strong></td>
<td><strong>Objective Method for Crack Detection in Brake Friction Material</strong></td>
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<td>Saikiran Divakaruni ZF Group</td>
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<td>Donald Yuhas IMS United States</td>
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<td><strong>EB2019-MDS-020</strong></td>
<td><strong>Hard-Metal Coated Brake Discs – Investigations of Tribology, Mechanical Robustness and Wear Products</strong></td>
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<td>Dr.-Ing. Sebastian Gramstat, Dipl.-Ing. Robert Waninger, Dr.-Ing. Bertram Reinhold, Dr. Heino Sieber Audi AG Germany</td>
<td>Prof. Dr.-Ing. Louis JezequeL, Dr. Sébastien Besset Laboratoire LTDS/ Ecole Centrale de Lyon France</td>
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<td>Dr. Panayotis Dimopoulos Eggenschwiler Swiss Federal Laboratories for Materials Science and Technology Switzerland</td>
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<td><strong>EB2019-MDS-042</strong></td>
<td><strong>Natural Frequency – Chances and Restrictions Based on Materials Design</strong></td>
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<tr>
<td>Mr. Wolfgang Huschenhöfer, Sebastian Hellfeier Buderus Guss GmbH Germany</td>
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<td><strong>EB2019-MDS-004</strong></td>
<td><strong>The Influence of the Thermal Module of a Brake Disc on Its Natural Frequencies</strong></td>
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<td>Mr. Reiner Becker, Mr. Wilfried Strauss Fritz Winter Esengießerei GmbH &amp; Co. KG Germany</td>
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<td><strong>EB2019-MDS-023</strong></td>
<td><strong>Development of a Wheel Hub Integrated Brake Disc</strong></td>
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<td>Mr. Marcelino de la Cruz, Dr. Ing. Hans-Willi Raedt Hirschvogel Automotive Group</td>
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<td>Mr. Raphael Leibl Hirschvogel Umformtechnik GmbH Germany</td>
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### Key to Technical Sessions

- Full written papers will be included in the Proceedings of EuroBrake 2019.
- Oral papers are authors’ presentations supported by PowerPoint presentations only.
- Main author: First listed name. Presenting author: bold.
- Where permission has been given by the author, full technical papers and presentations of oral-only authors will be available in PDF format in the Conference Proceedings.
- The EuroBrake app will include abstracts for all papers: full written papers, oral-only presentations and posters.

| 16:00 - 16:20 | Break – Exhibition Hall |
Technical Programme

Tuesday 21 May 2019

16:20 - 18:00 Technical Sessions

BE1 - Brake Emissions - Sampling, Measurement and Characterisation – Hall 5
Chair: Prof. Dr. Klaus Augsburg
TU Ilmenau
Co-Chair: Mr. Guido Perricone
BREMBO S.p.A.

EB2019-EBS-007
 Particle Size Distribution Measurements as a New Approach for Characterization of Brake Lining Materials
Dr. Dmytro Lugovy, Mr. Matthias Schroeder
Horiba Europa GmbH
Dr. Sebastian Gramstat
Audi AG
Germany

EB2019-FBR-011
A Study of Brake Contact Pairs under Different Brake Conditions with Respect to Airborne Wear Particle Emissions
Mr. Long Wei, Dr. Yatsze Choy, Prof. Chunshun Cheung
The Hong Kong Polytechnic University
China - Hong Kong

EB2019-EBS-027
Thermal and Braking Regimes During Proving Ground Measurements Using the WLTP-Brake Cycle for Brake Emissions Measurements
Mr. Carlos Agudelo, Mr. Ravi Teja Vedula, Mr. Josh Bautell
Link Engineering Co.
Mr. Alan Stanard, Mr. Tim DeFries
ERG
United States

EB2019-FBR-016
Chemical and Physical Characterization Brake Wear Particle under Novel Brake Wear Emission Cycle
Dr. Hiroyuki Hagino
Japan Automobile Research Institute
Japan

EB2019-SVM-037
High-Fidelity Modelling and Characterization of Dynamometer Enclosure Interactions Using a DOE Approach for Brake Emissions Measurements
Mr. Carlos Agudelo, Mr. Ravi Vedula, Mr. Joshua Bautell
Link Engineering Co.
Mr. Jesse Capaczetro, Ms. Qingquan Wang
University of Michigan
United States

EB2019-FBR-022
Brakes 2025 – Design of an Electromechanical Drum Brake
Mr. Christian Vey, Dr.-Ing. Jens Hoffmann, Dr.-Ing. Martin Semsch, Mr. Sébastien Pla
Continental Teves AG & Co. oHG
Germany

EB2019-MDS-030
Design Optimisation of Formula 1 Brake Caliper
Dr. Marko Tirovic, Dr. Nicolas Sergent, Mr. Clive Temple
Cranfield University
United Kingdom

EB2019-EBS-019
Development and Advantages of a New Lightweight Floating Caliper Design
Mr. Falko Wagner, Prof. Dr.-Ing. Ralph Mayer, Dipl.-Ing. Lutz Pander
TU Chemnitz
Mr. Gernot Sprandel, Mr. Claus-Peter Weidner
Daimler AG
Germany

18:00 - 19:30 Official EuroBrake Welcome Reception – Exhibition Hall
Sponsored By
Panel Discussion
Lifelong Brakes: Opportunities and Challenges

08:30 – 10:10 – Konferenz 1

Chair:
Univ.-Prof. Dr.-Ing. Ralph Mayer
Professor of Vehicle Systems Design, Chemnitz University of Technology

Chair:
Dr.-Ing. Michael Kleczka
Senior Manager Advanced Chassis Engineering, Daimler AG

As a consequence of advanced friction couples and alternative powertrains, and the possibility for recuperation, lifelong brakes now seem to be feasible.

The aftermarket for friction material and brake rotors is an important industry with significant commercial impact for all levels of the supply chain. Companies and groups involved in the aftermarket business, who are also financing research and development, are highly concerned.

How far is this trend also justified in technical terms?

How long will it take until we see relevant market shares of alternative powertrains with remaining large suppliers of conventional systems? Broad uptake of coated brake rotors is debatable. Major hurdles are corrosion and rust, which can appear in different ways. Long-term behaviour of shims or backing plates / bonding is relatively unknown.

We may expect new brake concepts, which can be optimised for dust emissions, corrosion and reliability. But we also must look for conclusive answers regarding:

- Technical challenges
- New requirements for testing
- Commercial consequences
- Technical inspection
- Legal impact
- Sustainability
- Total cost of ownership

The Panel Discussion will highlight various aspects of life-long brakes together with professionals from different sectors.

Panellists:
Mr. Michael Schog, Director, Foundation Brake Engineering, ZF Group Active Safety Systems
Dr.-Ing. Jens Hoffmann, Manager, Advanced Development, Continental Chassis & Safety
Dr. Agusti Sin, Materials & Process Innovation Director, ITT Friction Technologies
Mr. Yukihiro Shiomi, Project General Manager, Chassis Development Div., Toyota Motor Corporation
Dr. Gregory M. Vyletel, Executive Director, Engineering – AM Braking, DRiV Incorporated
Dr.-Ing. Jaroslaw Grochowicz, Technical Specialist, Ford Werke GmbH
Technical Programme

Wednesday 22 May 2019

08:30 - 10:10  Technical Sessions

FMV – Fundamentals: Vibrations – Konferenz 5-6

Chair:  Prof. Dr. Georg Ostermeyer
TU Braunschweig

Co-Chair:  Mr. Parimal Mody
Braking and Friction Expert

EB2019-FBR-014
High-Frequency Vibrations in the Friction Boundary Layer of Brake Systems
Mr. Johannes Otto, Mr. Jan Malte Sandgaard, Prof. Dr.-Ing. Georg-Peter Ostermeyer
TU Braunschweig, Germany

EB2019-EBS-020
Early Stages of Friction-induced Vibration: First Results on Links with Friction Mechanisms at the Interface
Dr. Anne-Lise Cristol, Ing. Edouard Davin, Dr. Jean-François Brunel, Prof. Yannick Desplanques
University of Lille

EB2019-SVM-027
The Influence of Differential Pad Wear on Low-Frequency and High-Frequency Brake Squeal
Mr. Johannes Otto, Prof. Dr. Georg Ostermeyer
TU Braunschweig, Germany
Dr. Seong Rhee
SKR Consulting LLC, United States

EB2019-SVM-035
Brake Noise Detection Using Deep Learning
Dipl.-Ing. Merten Stender, Prof. Dr. Norbert Hoffmann
Hamburg University of Technology
Dr. Ing. Merten Tiedemann
Audi AG, Germany

EB2019-FBR-007
Stick-slip Phenomenon of a Lubricated Contact in Spring Brake Systems
Ing. Ilaria Ghezzi
SOMFY S.A.
Prof. Dr.-Ing. Yves Berthier
LaMCoS, Institut National des Sciences Appliquées de Lyon (INSA), France
Dr.-Ing. Davide Tonazzi, Prof. Dr.-Ing. Francesco Massi
DIMA, University of Rome “La Sapienza” Italy

SBDC - Progressive Brake Disc Coatings – Hall 4

Chair:  Dr. Sebastian Gramstat
Audi AG

Co-Chair:  Prof. David Barton
Leeds University

EB2019-MDS-003
Investigations on the Run-In Behaviour of a PEO-coated Aluminium Brake Disc and Its Influence on the Corrosion Behaviour in Application-relevant Environment
Mr. Florian Gulden, Dr.-Ing. Heinz Werner Hoeppel
FAU Erlangen-Nürnberg
Dr.-Ing. Sebastian Gramstat, Dr.-Ing. Anton Stich
Audi AG
Prof. Dr.-Ing. Ulrich Tetzlaff
TH Ingolstadt, Germany

EB2019-EBS-005
Coated Rotors for the Use in Electrical Vehicles with regard of CO² and Fine Dust Emission Reduction
Mr. Reiner Becker, Mr. Wilfried Strauss
Fritz Winter Eisengiesserei GmbH & Co. KG
Germany

EB2019-EBS-024
Hard-coated Brake Discs – First Field Review and Requirements Concerning Bev Applications
Mr. Manuel Wirth, Mr. Manuel Rodrigues, Mr. Karl Hauk, Dr. Matthias Leber, Mr. Donatus Neudeck
Porsche AG, Germany

EB2019-MDS-038
Coating of Brake Discs through Extreme High-speed Laser Material Deposition
Dipl.-Ing. Thomas Schopphoven, Dr.-Ing. Andres Gasser
Fraunhofer Institute for Laser Technology ILT
Dr.-Ing. Tobias Phillip Utsch
HPL Technologies GmbH
Prof. Dr.-Ing. Johannes Henrich Schleifenbaum
Fraunhofer Institute for Laser Technology ILT/ RWTH Aachen University, Germany

EB2019-EBS-028
The RELIABLE Project: Wear Resistant Lightweight Aluminium Brakes for Vehicles
Dr. Robin Francis, Dr. Suman Shrestha
Keronite Ltd
Dr. Andy Smith
Alcon Components Ltd
United Kingdom

SBDC - Progressive Brake Disc Coatings – Hall 4

Chair:  Dr. Sebastian Gramstat
Audi AG

Co-Chair:  Prof. David Barton
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United Kingdom

SBID - Innovative Brake System Design Approaches – Hall 5

Chair:  Mr. Michael Lingg
Volkswagen

Co-Chair:  Mr. Paul Linhoff
Continental AG

EB2019-EBS-031
Developing Brake Systems – Ideas for Tomorrow
Dr. Martin Treimer, Mr. Ulrich Kuhn, Mr. Philipp Buck
BMW Group

EB2019-IBC-016
Current and Future Topics in the Development of Brake Systems
Dr.-Ing. Aaron Völpel, Dipl.-Ing. Frank Stebner, Dipl.-Ing. Michael Lingg
Volkswagen AG

EB2019-IBC-011
Impact of Increased Non-frictional Braking to the Future Design of Disc Brakes in Commercial Vehicles
Dipl.-Ing. Paul Henning
WABCO

EB2019-IBC-030
AUDI E-tron: Integration of a Brake-by-Wire System into a Battery Electric Vehicle
Mr. Sebastian Kirch
Audi AG

EB2019-IBC-029
Future Chassis Systems Approach
Mr. Paul Linhoff, Mr. Sebastian Müller
Continental Teves AG & Co. OHG

10:10 - 10:40  Break – Exhibition Hall
Technical Programme

Wednesday 22 May 2019

International Regulations and Standards
ISO Project Review

WG 10 Brake Linings and Friction Couples - N0001
10:40 – 12:20 – Konferenz 1

Welcome

EB2019-MDS-040
ISO - Corrosion
Dr. Agusti Sin
ITT Friction Technologies
Italy

EB2019-MDS-026
ISO Test Procedure: Metal Pick-Up
Generation in Disc Brakes
Dr.-Ing. Jaroslaw Grochowicz
Ford Werke GmbH
Germany

EB2019-FBR-005
JSAE Global Standardization Activities
Update
Mr. Toshiro Miyazaki
Akebono Brake Industry Co., Ltd.
Mr. Shigeru Sakamoto
Toyota Motor Corporation
Japan

EB2019-MDS-009
Analysis of Metal Pickup Growth
Mechanism within Automotive Brake Pads
Dr. Hirokazu Noda
Ask Technica Corporation
Prof. Dr. Takahiro Takei
University of Yamanashi
Japan

EB2019-MFM-013
Standardization of Drag Mode Friction
Test for Hydraulic and Pneumatic Vehicle
Brakes
Mr. Nicolae Penta
TMD Friction
Romania

EB2019-FBR-030
ISO 6310 Revision - Brake Linings —
Compressive Strain Test Methods
Dr. Andreas Giese
DRiV Incorporated
Germany
Mr. Carlos Agudelo
Link Engineering Co.
United States

EB2019-MFM-011
Friction Relevant Brake Disc Specification
Dr.-Ing. Sebastian Gramstat
Audi AG
Germany
Mr. Carlos Agudelo,
Link Engineering Co.
United States

EB2019-MFM-012
SAE Standards Update
Mr. Carlos Agudelo
Link Engineering Co.
United States

EB2019-MFM-006
Regulatory Framework State of the Art
regarding Braking Systems for Highly
Automated Vehicles in Europe and USA
Mr. Ignacio Lafuente, Mr. Carles Lujan,
Mr. Jaume Llop, Mrs. Marta Tobar,
Mrs. Estrella Martinez
IDIADA Automotive Technology
Spain

EB2019-MFM-001
Standard Load Spectra for Commercial
Vehicle Brakes
Dipl.-Ing. Kevin Lucan,
Prof. Dr.-Ing. Bernd Bertsche
IMA - University of Stuttgart
Germany

Session Wrap Up
### Technical Programme

**Wednesday 22 May 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair</th>
<th>Co-Chair</th>
<th>Main Topic</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:40 - 11:30</td>
<td><strong>Technical Sessions</strong></td>
<td>Mr. Thierry Chancelier</td>
<td>Dr. Torsten Treyde</td>
<td>BSS - Brake Squeal - Simulation and Test Methods</td>
<td>Mr. Dong Joon Min, Mr. Sang Chan Park, Mr. Kyung Hwan Park, Mr. Heejin Cho, Mr. Fengsun Qiao</td>
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<td>Chassis Brakes International</td>
<td>ZF TRW</td>
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<td>10:40 - 11:30</td>
<td><strong>Technical Sessions</strong></td>
<td>Mr. Johannes Gräber</td>
<td>Dr. Peter Brooks</td>
<td>RWA - Rail wheel Contact and Adhesion – Hall 4</td>
<td>Mr. Benedikt Koll, Dr. Eng. Guillaume Martin, Prof. Dr. Etienne Balmes, Dr. Eng. Guillaume Vermot des Roches</td>
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<td><strong>Technical Sessions</strong></td>
<td>Dr. Matteo Frea</td>
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<td>SITF - Innovative Technologies and Functions in Electronic Brake Systems</td>
<td>Dr. Matteo Frea, Ing. Salvatore Perna, Ing. Roberto Tione, Mr. Josko Kurbasa, Mr. Christof Maron, Mr. Karsten Klein, Stefan Schubert</td>
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Poster Short Talk Session and Poster Viewing Session

Poster Short Talk Session 12:30 – 13:30 – Konferenz 1
Poster Viewing Session 13:30 – 14:00 – Konferenz 1 Foyer

EuroBrake 2019 posters will be on display throughout the conference and the final abstract from each poster will be available to download on the EuroBrake 2019 website and App. Full technical papers submitted alongside the posters, are available on the EuroBrake Proceedings USB and will also be made available online to registered delegates after the conference.

The technical and research content of selected submissions will be briefly highlighted in the Poster Short Talk Session. All delegates are invited to this important session. Authors will then be available to further discuss their poster presentations in the Poster Viewing Session which will immediately follow and which will be accompanied by lunch. Authors will also be available to discuss their posters during the Welcome Drinks Reception on the evening of Tuesday 21 May, or during coffee breaks throughout the conference.

Best Poster Prizes
The top three posters will be awarded a prize at the EuroBrake Dinner on the evening of Wednesday 22 May.

Posters will be judged by a panel of experts from the EuroBrake Steering Committee, FISITA and others invited from both industry and academia.

1st Place  -  EUR 700
2nd Place  -  EUR 500
3rd Place  -  EUR 300

Sponsored by ITT Friction Technologies

EB2019-IBC-027
Development of Electric Drum-in Hat Parking Brake for Heavy Duty Pick-up Truck
Mr. Chihoon Jo, Mr. Inuk Park, Mr. Byungsoo Kim, Mr. Jaehyun Kwon, Mr. Minkyu Jung, Mr. Moojin Choi, Mr. Daewoong Jun, Mr. Sangchul, Jung
Hyundai Mobis
Republic of Korea

EB2019-EBS-010
Experimental Study on Steering Brake Squeal Based on Bench Test
Mrs. Surong Wu, Mr. Kang Fei, Mr. Le Xi
Continental Brake Systems (Shanghai) Co., Ltd
Mr. Xuegui yu
Shanghai Automotive Brake Systems Co, Ltd
Dr. Dejian Meng
Tongji University
China

EB2019-MDS-039
Investigation of Stiction Phenomena and Related Inhibitors in Brake Systems by Electrochemical Methods
Dr. Agusti Sin
ITT Friction Technologies
Italy

EB2019-FBR-012
Percentage Braking System
Mr. Seyyedhassan Seyyedlatemi
Omega net
Iran (Islamic Republic of)
EB2019-MDS-022
Comparison of Measurement Methods for Fiber Particle Content in Titanate
Mr. Daisuke Taki, Dr. Eng. Hideki Sakai, Dr. Eng. Hideki Fujii
Toho Titanium Co., Ltd
Japan

EB2019-MDS-024
Phase and Morphological Transformations of Friction Layer of a Model Low-metallic Brake Pads Exposed to Different Conditions During ISO26867
Dr. Katerina Dedkova, Dr. Miroslav Vaculik, Dr. Kristina Cabanova, Dr. Katerina Mamlulova Kutlakova, Dr. Jana Kukutschova
VSB-Technical University of Ostrava Czech Republic
Prof. Peter Filip
Southern Illinois University United States

EB2019-MDS-005
Design and Assessment of a Test Rig for Airborne Brake Wear Debris Measurements
Mr. Asmawi Sanuddin, Prof. Dr. David Barton, Dr. Peter Brooks, Dr. Carl Gilkeson, Dr. Shahrizan Kosarieh
University of Leeds United Kingdom

EB2019-SVM-003
Automated Braking Tests Using Individually Adjustable Driving Robots
Dipl.-Ing. Tobias Rinnert, Prof. Dr.-Ing. Günther Prokop
Auto Mobil Forschung Dresden GmbH Germany

EB2019-MDS-011
Mineral Processing Technologies and their Impact on Properties of Functional Fillers
Dipl.-Ing. Veronika Mayer
Kerntner Montandindustrie GmbH Austria

EB2019-MDS-025
High Performance Brake Pads Studied on a Dyno, with and without Fly Wheels
Dr. Nico Langhof, Dipl.-Ing. Thorsten Balzer, Dr.-Ing. Stefan Flander, Prof. Dr.-Ing. Walter Krenkel
University of Bayreuth Germany

EB2019-EBS-012
Lightweight Metal-Ceramic Hybrid Brake Disc for Electric-Powered Vehicles: Concept and Prototype
Dipl.-Ing. Thorsten Balzer, Dr. Nico Langhof, Dipl.-Ing. Reinhard Hackenschmidt, Prof. Dr.-Ing. Frank Rieg, Prof. Dr.-Ing. Walter Krenkel
University of Bayreuth Germany

EB2019-MFM-002
3D Printing of Friction Material (Part 2) - Waterbased Liquid Friction Compounds
Dr. Roman Milczarek, Dr. Ute Wittig
LF GmbH & Co. KG Germany
Open Seminar
12:30 – 13:30 – Konferenz 3-4

Buckle up! Changes ahead
IDIADA OPEN SEMINAR

Speaker:
Ignasi Ferrer
Director, Corporate Integration & Innovation

Our industry is already experiencing the change from conventional powertrains to electrified mobility. The way brakes are used is changing deeply and the functional priorities of braking systems are being transformed. But the scale of change towards autonomous driving is even bigger.

We have to understand this change as part of the digital transformation which is affecting not only the automotive industry but all businesses. It is no longer about technology but about business models.

How are we getting ready for such a massive change? We will share some thoughts about it.
Rail Panel
High Speed Trains Worldwide: Opportunities and Limitations
14:00 – 15:40 – Hall 4

This panel brings together leading rail transport experts from both Europe and Asia to discuss future research directions and challenges facing the rail sector. Each panellist will make a short presentation on the status of high-speed rail traffic in their domain. Special focus will be given to braking and safety concepts of high-speed rail vehicles.

Travelling time is one of the most important influences on the decision regarding which means of transport a customer will use. If the train travelling time between major cities exceeds 3-4 hours, a means of transport other than the railway may be chosen.

To allow travel within these time frames, high-speed rail travel will need to become more commonplace and speeds of 250 km/h to 380 km/h can be expected, depending on the country. Not only the trains themselves, but the whole railway system including the signalling and track system must be compatible with these velocities. On the other hand, costs of maintenance and energy consumption are strongly and exponentially dependent on the train velocity. Finding the cost optimal working point in this target space is strongly dependent on the particular situation in each country.

This panel discussion involving leading rail experts will include consideration of the following:

- Which solutions have each country chosen to match their situation?
- What future challenges are there in the high-speed sector (to both industry and operators) and how are these challenges being addressed?
- Did we settle for 380 km/h maximum for regular commercial operations, even in countries where topography and/or travel distances would allow or require higher speeds, due to technical and commercial influences?

Panellists:
Mr. François Cabillon Consultant
Prof. Dr.-Ing. Christian Schindler RWTH Aachen University
Johannes Gräber Knorr-Bremse - Systeme für Schienenfahrzeuge GmbH
Cornelius Buchkremer Siemens AG
Dr. Weijun Yang Locomotive and Car Research Institute, China Academy of Railway Sciences Co.Ltd.
Panel Workshop
Workshop on Brake Emissions
14:00 - 17:50 – Konferenz 1

Chair:
Dr. Theo Grigoratos
European Commission, Joint Research Centre, Italy

Chair:
Dr.-Ing Sebastian Gramstat
Audi AG, Germany

Brake emissions are a multidisciplinary field and therefore experts from different specialised fields are required to tackle the problem. The current workshop deals with the topic, considering five different dimensions:

**Non-exhaust contribution to the environment**
Many studies with contrasting results have been published and yet fundamental questions remain open. What is the contribution of non-exhaust traffic related sources to the ambient PM concentrations? Are existing PM and PN EFs realistic?

Dr. Hugo Denier van der Gon,
Netherlands Organisation for Applied Scientific Research, TNO

**Health relevance of non-exhaust particles**
One cannot fully assess the importance of non-exhaust emissions without providing information on health effects. The topic has been treated as taboo for many years. What do we know about possible adverse health effects of non-exhaust particles?

Dr. Miriam Gerlofs,
National Institute for Public Health and the Environment (RIVM) Netherlands

**Measurement approach**
On-going activities worldwide employ different methodologies. Harmonization comes with many difficulties and newly risen problems/issues. What are the challenges for applying real-world measurements and how can real world measurements be used for lab tests?

Dr. David Hesse,
TU Ilmenau – EB2019-FBR-017

Dr. Jaroslaw Grochowicz
Ford Werke GmbH

Carlos Agudelo
Link Engineering Co.

Tomasz A. Gonet,
Lancaster University – EB2019-EBS-029

Mr. Felix Wenzel,
TU Ilmenau – EB2019-FBR-019

**Future perspective – technologies changing the picture**
One should take a look to the future and the upcoming technological changes which appear to be rapid. Regenerative braking, AEB, other features but also improvement of the existing materials (i.e. coated discs and life-long pads) are discussed in this session.

Dr. - Ing. Sebastian Gramstat,
AUDI AG on behalf of the German Association of the Automotive Industry, VDA

**On-going activities worldwide – are we moving towards regulation**
Information regarding on-going activities worldwide is provided during this session. Do these activities lead to non-exhaust emissions regulation? What gaps need to be filled in order to move towards regulation?

Dr. Mattia Alemani,
Brembo S.p.A. – EB2019-EBS-023

Dr. Theodoros Grigoratos,
European Commission Joint Research Centre
Technical Programme

Wednesday 22 May 2019

14:00 - 15:40 Technical Sessions

PMD - Pad Material and Design
- Hall 5
Chair: Mr. Eros Sales
ITT Motion Technologies
Co-Chair: Mr. Bernd Rohrberg
TMD Friction

EB2019-EBS-008
Disc Brake Pads Regeneration: Preliminary Investigation of the Re-use of Worn Friction Materials
Ms. Mara Leonardi, Dr. Andrea Dorigato, Dr. Cinzia Menapace, Prof. Stefano Gialanella, Prof. Giovanni Straffelini
University of Trento
Ing. Luca Menapace
Brembo S.p.A.
Italy

EB2019-MDS-013
Best of Both Worlds: Optimized Fibre Reinforcement for Friction Materials
Dr. Jürgen Rothe
Schwarzwälder Textil-Werke Heinrich Kautzmann GmbH
Germany

EB2019-EBS-017
Eco Design of Brake Pads with Recycled Friction Materials
Mr. Jijie Ma
Zhejiang Normal University
China
Prof. Anna Hedlund Åström, Dr. Yezhe Lyu, Dr. Jens Wahlström, Prof. Ulf Olofsson
KTH Royal Institute of Technology
Sweden
Dr. Mara Leonardi
University of Trento
Italy

EB2019-EBS-018
Impact of Geometry, Type of Material and Quality of Punching of the Metallic Support of Brake Pad on Essential Properties of Hydraulic Friction Brake
Mr. Maciej Młodzikowski, Mr. Damian Banach, Dr.-Ing. Tomasz Orłowski
Lumag sp z o. o.
Poland

SVDE - Virtual Development of Electronic Brake Systems – Konferenz 5-6

Chair: Prof. Manfred Meyer
ZF Group
Co-Chair: Dr.-Ing Sebastian Kruse
Audi AG

EB2019-IBC-020
Model Based Development - Proposals and Requirements for an Integrated Virtual Engineering Process
Dr. Thomas Puetz, Dr.-Ing. Stefan Weiland
ZF Active Safety GmbH
Germany

EB2019-IBC-025
BOSCH Connected Development - Chassis Systems - Brakes
Mr. Andreas Hoffmann
Robert Bosch GmbH, Chassis Systems, CC-AS/EYB
Germany

EB2019-SVM-032
Designing Fault-tolerant Brake Control Algorithms Using Simulation
Mr. Steve Miller, Mr. Gaurav Tomar
MathWorks
Germany

EB2019-IBC-014
Safe Brake Control Development of an Aircraft Brake System with a Model Based Software Development Approach
Mr. Günther Siegel, Mr. Xavier Formari
ANSYS

EB2019-SVM-038
Scenario-based Testing for EBS in Context of Autonomous Driving
Dr. Andre Hildebrandt, Mr. Michael Peperhowe, Dr.-Ing. Peter Reinold
dSPACE GmbH
Germany

15:40 - 16:10 Break – Exhibition Hall

14:00 - 17:50 Technical Sessions

WSP - Workshop on Brake Emissions: – Konferenz 1

Co-Chair: Dr. Theo Grigoratos
European Commission, Joint Research Centre, Italy
Chair: Dr.-Ing Sebastian Gramstat
Audi AG, Germany

EB2019-FBR-017
Real Driving Emissions Measurement of Brake Dust Particles
Dipl.-Ing. David Hesse, Prof. Dr. Klaus Augsburg, Dipl.-Ing. Toni Feißel
TU Ilmenau, Germany

EB2019-EBS-029
Magnetic Differentiation of Brake Wear from other Roadside Pollution Particles - Preliminary Results
Mr. Tomasz A. Gonet, Prof. Barbara A. Maher
Lancaster University, United Kingdom

EB2019-FBR-019
Measurement of Tire Wear Particles
Prof. Dr.-Ing. Klaus Augsburg, Mr. Felix Wenzel
TU Ilmenau
Dr.-Ing. Sebastian Gramstat
Audi AG, Germany

EB2019-EBS-023
The Lowbrasys Project: A Journey towards a Low Environmental Impact Brake System
Dr.-Ing. Mattia Alemani, Ing. Guido Perricone, Mr. Giorgio Valota, Dr. Gianmarco Giordano
Brembo S.p.A.
Mr. Walter Cerri
Flame Spray
Prof. Giovanni Straffelini, Prof. Stefano Gialanella, Dr. Cinzia Menapace, Dr. Matteo Federici
University of Trento
Prof. Andrea Remuzzi
Istituto Mario Negri
Dr. Theodoros Grigoratos
Joint Research Centre, Italy
Mr. Sebastian Mueller
Continental
Mr. Marcus Morbach
Federal Mogul Motorparts
Dr.-Ing. Jaroslav Grochowicz, Dr. Rainer Vogt, Dr. Marcel Mathissen
Ford, Germany
Dr. Katerina Dedkova
Technical University of Ostrava, Czech Republic
Prof. Jens Wahlström, Prof. Ulf Olofsson
Royal Institute of Technology Stockholm
Sweden
Technical Programme

Wednesday 22 May 2019

18:00 – 19:00 EuroBrake Drinks Reception – Terrace Level

19:00 – 22:30 EuroBrake Dinner – Terrace Level

CGN - Creep-Groan Noise – Hall 5
Chair: Dr.-Ing. Angelo Sardá
Continental Corporation
Co-Chair: Mr. Joachim Noack
ZF Group

EB2019-SVM-001
Investigations on Creep Groan Concerning Static and Dynamic Axle Bushing Properties
Dipl.-Ing. Manuel Pürscher,
Dipl.-Ing. Severin Huemer-Kals,
Prof. Dr.-Ing. Peter Fischer
Graz University of Technology
Austria

EB2019-SVM-042
Investigation of Creep Groan Mechanism Using Different Scale Characterization Techniques
Dr. Agusti Sin
ITT Friction Technologies
Italy

EB2019-FBR-021
ODS of Fixed Calliper Brake and Double Wishbone Axle During Creep Groan at Corner Test Rig
Dipl.-Ing. Manuel Pürscher,
Prof. Dr.-Ing. Peter Fischer
Graz University of Technology
Austria

EB2019-SVM-013
Dynamics of Air Brake Actuation System under Creep Groan Excitation
Ing. Angel Sanchez,
Dr. Eng. Juan J. García-Bonito,
Ing. Jose Lapresta, Ing. Narcis Molina,
Ing. Fabio Squadrani
Applus IDIADA
Spain

EB2019-FBR-026
Experimental Characterization of Brake Lining Material for Groan Noise Propensity
Dr.-Ing. Davide Tonazzi,
Ing. Alessandro Lazzari,
Prof. Dr.-Ing. Francesco Massi
University of Rome “La Sapienza”
Ing. Giovanni Conidi, Ing. Cristiano Malmassari,
Ing. Andrea Cerutti
Brembo S.p.A.
Italy

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Brembo S.p.A.
Italy

RBS - Rail Brake System and Components – Hall 4
Chair: Dr.-Ing Tim Hodges
DRiV Incorporated
Co-Chair: Mr. Franck Poisson
SNCF

EB2019-IBC-017
Electronic Emulation of Pneumatic Braking Functions for Railways Applications
Faiveley Transport
Italy

EB2019-IBC-023
Research Project: Investigation of the Conditions for a Widespread Use of Eddy Current Brakes
Ms. Silvia Eickstaedt
DB Systemtechnik GmbH
Germany

EB2019-MDS-031
State of the Art of and New Challenges for Composite Brake Blocks.
Mr. Gerrit Streit
DB Systemtechnik GmbH
Germany

EB2019-MDS-027
The Effect of Binder Variations on the Friction Materials Properties and Pressing Process
Mr. Pablo Monreal, Dr.-Ing. Uwe Wienstroth,
Dr. Jorge González, Mrs. Teresa Rouzaut
ICER Rail - Knorr Bremse
Spain

RMA - Raw Materials – Konferenz 5-6
Chair: Prof. Dr. Jayashree Bijwe
ITT Delhi
Co-Chair: Mr. Fernao Persoon
Lapinus

EB2019-MDS-041
Exploration of Thermoplastic Polymers as a Possible Replacement of Phenolic Resin in Friction Materials
Prof. Dr. Jayashree Bijwe, Mr. Umesh Marathe,
Dr. Vishal Mahale
ITT, Delhi, India

EB2019-MDS-015
Exploring the Possibility of Replacing Copper in Nao Brake-pads with Different Grades of Stainless-Steel Powders
Mr. Navnath Kalel, Prof. Dr. Jayashree Bijwe,
Prof. Dr. Ashish Darpe
IIT, Delhi, India

EB2019-MDS-006
Metal Sulfide Coated Fibers - Bringing Solid Lubricants to the Contact Plateau
Christian Schmied, Dr. Carmen Moser,
Herbert Kienleitner
Tribotec GmbH, Austria

EB2019-MDS-014
Tin Sulfide Substitution through Modification of Oxidation Properties of Synthetic Sulfides
Dr. Carlos Lorenzana,
Mrs. Gabriela Macías Benalcázar,
Mr. Miguel Ángel Sanz Montero
RIMSA Metal Technology, Spain

EB2019-MDS-029
Tribo Performance of Single and Multiwall Carbon Nanotube in the Disc Brake Pad Formulation
Mr. Surya Rajan B,
Mr. Sathickbasha K,
Dr. Saibalaji M A S,
Dr. Selvakumar A S,
Dr. Prince Arockia Doss,
Mr. Mohamed Aslam Noorani A B,
Mr. Md Usaid Hammad K
B S Abdur Rahman Crescent Institute of Science and Technology, India

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## Technical Programme

**Thursday 23 May 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
<th>Chair</th>
<th>Co-Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 – 10:10</td>
<td>Technical Sessions</td>
<td>Hall 4</td>
<td>Prof. Raphael Pfaff</td>
<td>Prof. Dr. Jiliang Mo</td>
</tr>
<tr>
<td></td>
<td>BE2 - Brake Emissions: Fundamentals and Innovation – Konferenz 5-6</td>
<td></td>
<td>Link Engineering Co.</td>
<td>Southwest Jiaotong University</td>
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<td>Co-Chair: Dr. Carlos Agudelo</td>
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<td>Co-Chair: Dr. Hiroyuki Hagino</td>
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<tr>
<td>10:10 – 10:40</td>
<td>Break</td>
<td>Hall 4</td>
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<td></td>
<td>Exhibition Hall</td>
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**Technical Sessions**

**BE2 - Brake Emissions: Fundamentals and Innovation – Konferenz 5-6**

- **EB2019-EBS-011**
  - Title: Establishment of Brake Wear Emission Analysis Techniques
  - Authors: Mr. Shigetomo Suzuki
  - Affiliation: Akebono Brake Industry Japan

- **EB2019-EBS-022**
  - Title: Brake Particle Formation and Behavior in Frictional Contact
  - Authors: Ms. Katharina Kolbeck, Prof. Dr.-Ing. Klaus Augsburg, Mr. Rasmus Leicht
  - Affiliation: BMW / TU Ilmenau

**RBT - Rail Brake Testing and Simulation – Hall 4**

- **EB2019-FBR-010**
  - Title: Development of a Regenerative Friction Model to Enhance Braking Simulation with the Multibody Software VOCO
  - Authors: Dr. Eng. Moncef Toumi, Mr. Mohammed Bouallaga, Mr. Michel Sebès, Dr. Hugues Chollet
  - Affiliation: Daimler AG, IFSTTAR, Bombardier Transportation, Ford Otosan

**RTE - Brake Rotors: Thermal Effects – Hall 5**

- **EB2019-SVM-008**
  - Title: A Further Understanding of Brake Disc Thermal Simulations under an Emergency Stop
  - Authors: Dr. Qianjin Yang, Mr. Baozhi Zhang, Mr. Liqiang Song, Ms. Hui Yu, Mr. Fulin Gai
  - Affiliation: Yantai Winhere Auto Parts Manufacturing Co., Ltd.

**RBT - Rail Brake Testing and Simulation – Hall 4**

- **EB2019-FBR-009**
  - Title: Braking Curve Prediction from Observed Deceleration Performance
  - Authors: Prof. Dr. Raphael Pfaff, Prof. Dr.-Ing. Ingo Eilen, Prof. Dr.-Ing. Bernd D. Schmidt
  - Affiliation: FH Aachen University of Applied Sciences

**RTE - Brake Rotors: Thermal Effects – Hall 5**

- **EB2019-SVM-010**
  - Title: Numerical Efficient Thermal Network for Calculating the Brake Disc Temperature
  - Authors: Mr. Manuel Arnold, Mr. Moritz Bolay, Dr. Ing. Oliver Stump
  - Affiliation: Daimler AG

**RTE - Brake Rotors: Thermal Effects – Hall 5**

- **EB2019-SVM-019**
  - Title: Simulation Study on the Thermomechanical Behaviour of AL-MC Automotive Brake Discs
  - Authors: Dr. Samuel A. Awe, Mr. Adam Thomas, Mr. Anders Eklund, Mr. Nicholas Zervos
  - Affiliation: Automotive Components Floby AB

**RTE - Brake Rotors: Thermal Effects – Hall 5**

- **EB2019-SVM-031**
  - Title: Brake Cooling Modelling & Correlation
  - Authors: Dipl.-Ing. Dilek Bayrak Akça, Dipl.-Ing. Yiyğit Dalga, Dipl.-Ing. Yasin Hacisalihoglu, Dr. Cenk Dinç
  - Affiliation: Ford Otosan

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**Break – Exhibition Hall**

**EB2019-EBS-011**

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- Affiliation: Ford Otosan

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**Break – Exhibition Hall**
EuroBrake 2019 Strategy Panel

How will the brake industry solve the challenge of brake emissions - by changing the brake design, the brake operation, or both?

10:40 – 12:20 – Hall 4-5

Brake emissions have been the subject of intensive discussion in various circles for years; more and more specialists are taking part in the discussion and looking for ways to optimize the vehicle braking system in order to minimize emissions. But the world around us is changing fast in evolutionary and even revolutionary ways.

On the one hand, new materials and highly automated subsystems for the friction brake are being developed in an evolutionary manner. Scientists understand the chains of interactions and their influences better and better.

On the other hand, highly automated vehicles are no longer science fiction; fully electrified vehicle concepts with recuperative braking are achieving more and more market share, and the use of brakes is thus changing in a revolutionary way.

This strategy panel discussion involving leading industry and academic experts will include consideration of the following:

- How concrete and influential are all these effects on the challenge of brake emissions?
- What opportunities and risks are to be expected in brake development over the next few years?
- Where will be the research and development topics of science and industry tomorrow?

We will discuss these issues with our high-caliber panel of top experts and visionaries, making strategic issues transparent for all and supporting follow-up discussions during and after EuroBrake2019.

Panellists:

- **Chair:** Jan Münchhoff
  AUDI AG

- **Chair:** Prof. Dr. Georg Ostermeyer
  TU Braunschweig

- **Dr. Armin Kunz**
  Senior Vice President Project Modular Braking System, Robert Bosch GmbH

- **Manfred Meyer**
  Senior Vice President Engineering Active Safety Systems, ZF Group

- **Adam Woolway**
  Managing Director, Plugsurfing GmbH

- **Luca Martinotto**
  Chief Innovation Officer, ITT Motion Technologies

- **Werner Lieberherr**
  CEO, MANN+HUMMEL International GmbH & Co
# Technical Programme

**Thursday 23 May 2019**

## 10:40 – 12:20  |  Technical Sessions

### ADT - Advanced Dynamometer and Vehicle Testing - Konferenz 5-6

- **Chair:** Mr. Michael Schog  
  ZF
- **Co-Chair:** Mr. Torsten Speier  
  Link Engineering Co.

**EB2019-MFM-003**  
Method for Extracting the Main Spectrum of Friction Materials Behavior (Batch to Batch Control) Using a New Scale-Dynamometer Specification  
Kang Li, Otto Schmitt  
Zhuhai Glory Friction Material Co., Ltd. China

EB2019-FBR-023  
Electrical Parking Brakes (EPB) – Considerations in the Design of Brake Shims from a NVH Performance and Durability Perspective, Especially in Cold Conditions.  
Mr. P-A Jarnestrom, Mr. Johan Stjärndahl, Mr. Mats Eliasson  
Trelleborg Sealing Solutions Kalmar AB Sweden

EB2019-EBS-030  
Image Segmentation and Object Tracking in Video in Real Time for Intelligent EMB (Electro Mechanical Brake)  
Dr. Abdessamed Ramdane  
Chassis Brakes International France

EB2019-MDS-001  
Non-Asbestos Organic (NAO) Disc Pad Wear Behavior: Divergence of Pad Thickness Loss from Pad Weight Loss  
Mr. Meechai Sriwiboon, Mr. Nipon Tieampaan, Ms. Kritsana Keawlob  
Compact International (1994) Co., Ltd. Thailand

EB2019-SVM-005  
Advantages of Improved Material Damping Handling for Brake System Simulation  
Dr.-Ing. Michael Klein  
INTES GmbH Germany

## 12:20 - 13:20  |  Lunch – Exhibition Hall

## 13:20 - 15:00  |  Technical Sessions

### EMB - Electromechanical Brakes – Hall 4

- **Chair:** Mr. Alessandro Monzani  
  Brembo S.p.A.
- **Co-Chair:** Mr. Jan Münchhoff  
  Audi AG

**EB2019-FBR-020**  
Layout of Electrical Parking Brake Systems Based on Field Use-Cases  
Dipl.-Ing. Olaf Metzler, Dr.-Ing. Marcus Schumann, Dr.-Ing. Gunther Seipel, Dipl.-Ing. Wiebke Wienands  
Continental Teves AG & Co. oHG Germany

**EB2019-MDS-010**  
The Journey of the Secrets - Cyber Security Industrialization Concept for Electronic Brake Systems  
Dipl.-Ing. Stephan Henkel, Mr. Dennis Kutschke, Mr. Michael Gerhard Schneider  
Continental Teves AG & Co oHG Germany

EB2019-SVM-015  
Damping Specifications of Vehicle Brake Components Based on Simulative and Experimental Investigations  
Mr. Philipp Diel, Mr. Steffen Horwath, Mr. Christian Rausch  
M Plan GmbH

**EB2019-MDS-021**  
Comparison on Melting Characteristics of Resin by Rheometer  
Mr. Takao Tanaka, Ms. Michiko Ishiguro, Mr. Tomoaki Natsume  
Nisshinbo Brake Inc. Japan

## 12:20 - 13:20  |  Technical Sessions

### FMC - Friction Material Characterisation – Konferenz 5-6

- **Chair:** Dr. Augusti Sin  
  ITT Friction Technologies
- **Co-Chair:** Mrs. Anne-Lise Cristol  
  University of Lille

**EB2019-FBR-027**  
Analysis of the Thermal Effect on Mechanical and Chemical Properties of a Friction Material  
Diego Severo Antunes, Juliana Favero, Natalia Pagnoncelli Lorandi, Ricardo Gilberto Lamb  
Trelleborg Sealing Solutions Kalmar AB Sweden

**EB2019-FBR-027**  
Comparison on Melting Characteristics of Resin by Rheometer  
Mr. Takao Tanaka, Ms. Michiko Ishiguro, Mr. Tomoaki Natsume  
Nisshinbo Brake Inc. Japan

**EB2019-MDS-001**  
Non-Asbestos Organic (NAO) Disc Pad Wear Behavior: Divergence of Pad Thickness Loss from Pad Weight Loss  
Mr. Meechai Sriwiboon, Mr. Nipon Tieampaan, Ms. Kritsana Keawlob  
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**EB2019-SVM-005**  
Advantages of Improved Material Damping Handling for Brake System Simulation  
Dr.-Ing. Michael Klein  
INTES GmbH Germany

**EB2019-SVM-015**  
Damping Specifications of Vehicle Brake Components Based on Simulative and Experimental Investigations  
Mr. Philipp Diel, Mr. Steffen Horwath, Mr. Christian Rausch  
M Plan GmbH

**EB2019-MDS-010**  
The Journey of the Secrets - Cyber Security Industrialization Concept for Electronic Brake Systems  
Dipl.-Ing. Stephan Henkel, Mr. Dennis Kutschke, Mr. Michael Gerhard Schneider  
Continental Teves AG & Co oHG Germany
# Technical Programme

**Thursday 23 May 2019**

<table>
<thead>
<tr>
<th>13:20 - 15:00</th>
<th>Technical Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LBR - Lightweight Brake Rotors</strong> – Hall 5</td>
<td></td>
</tr>
<tr>
<td><strong>Chair:</strong> Dr.-Ing. Matthias Leber</td>
<td></td>
</tr>
<tr>
<td><strong>Porsche AG</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Co-Chair:</strong> Mr. Paolo Pizzolato</td>
<td></td>
</tr>
<tr>
<td><strong>Brembo S.p.A</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EB2019-MDS-008</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Scalable Lightweight Concept for Composite Brake Discs with Steel Hub made of Stamped Sheet Metal</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dr.-Ing. Matthias G. Müller,</strong> Mr. Kamil Zawalich, Mr. Ulrich Lorenz</td>
<td></td>
</tr>
<tr>
<td><strong>Erdrich Umformtechnik GmbH</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mr. Wilfried Strauß,</strong> Mr. Tobias Müller, Mr. Reiner Becker</td>
<td></td>
</tr>
<tr>
<td><strong>Fritz Winter Eisengießerei GmbH &amp; Co. KG Germany</strong></td>
<td></td>
</tr>
</tbody>
</table>

| 15:00 – 15:20 | Break – Exhibition Hall |

<table>
<thead>
<tr>
<th>15:20 - 16:40</th>
<th>Technical Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FMF - Friction Material Formulation</strong> – Konferenz 5-6</td>
<td></td>
</tr>
<tr>
<td><strong>Chair:</strong> Dr.-Ing Hans-Günther Paul</td>
<td></td>
</tr>
<tr>
<td><strong>Akebono Europe</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Co-Chair:</strong> Dr. Raffaele Gilardi</td>
<td></td>
</tr>
<tr>
<td><strong>Imerys Graphite &amp; Carbon</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EB2019-MDS-002</strong></td>
<td></td>
</tr>
<tr>
<td><strong>A Comparison between Tin and Antimony Sulphides Tribolayers</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dr. Roberto C. Dante,</strong> Ing. Edoardo Cotilli, Mr. Michael Conforti, Ing. Mario Cotilli</td>
<td></td>
</tr>
<tr>
<td><strong>Quartz S.r.l.s.u. Italy</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Ing. Fabio Squadrani</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Applus IDIADA Group</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mr. John O’Leary</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IDIADA Automotive Technology UK Ltd. United Kingdom</strong></td>
<td></td>
</tr>
</tbody>
</table>

| **EB2019-MDS-032** |
| **Dry Sliding Wear and Fe Contamination of Investment-cast SiC Foam Reinforced Aluminum Matrix Composites** |
| **Mr. Guilherme Volpato,** Prof. Dr.-Ing. Marcio Fredel |
| **Federal University of Santa Catarina, Brazil** |
| **Prof. Dr.-Ing. Ulrich Tetzlaff** |
| **Technische Hochschule Ingolstadt Germany** |

| **EB2019-EBS-012** |
| **Lightweight Metal-Ceramic Hybrid Brake Disc for Electric-Powered Vehicles: Concept and Prototype** |
| **Dipl.-Ing. Thorsten Balzer,** Dr. Nico Langhof, Dipl.-Ing. Reinhard Hackenschmidt, Prof. Dr.-Ing. Frank Rieg, Prof. Dr.-Ing. Walter Krenkel |
| **University of Bayreuth Germany** |

| **EB2019-FBR-018** |
| **A Study on Piston Retract Mechanism by Using Phenolic Piston** |
| **Mr. Naohiro Yoshizawa** |
| **Sumitomo Bakelite co., ltd. Japan** |

| **EB2019-SVM-006** |
| **Efficient Large Multi Parametric Squeal Simulation and Analysis Using Advanced Model Reduction Tools** |
| **Dr.-Ing. Guillaume Vermot des Roches,** Prof. Dr.-Ing. Etienne Balmes |
| **SDTools France** |
| **Dr.-Ing. Oliver Stump** |
| **Daimler AG Germany** |

| **EB2019-MDS-018** |
| **Interplay between Composition and Electrochemical Performance at the Pad-Disc Interface** |
| **Dr. Federico Bertasi,** Dr. Alessandro Mancini, Mr. Marco Bandiera, Mr. Alessandro Casini, Dr. Andrea Bonfanti |
| **Brembo SpA Italy** |
| **Dr. Sonia Pin** |
| **Brembo SpA Saudi Arabia** |

| **EB2019-FBR-009** |
| **Residual Drag Due to Pad Suction** |
| **Mr. Florian Weichert,** Mr. Max Votteler, Mr. Johannes Mühlberger |
| **Mando Corporation Europe GmbH Germany** |

| **EB2019-EBS-032** |
| **Electric and Hybrid Vehicles: A Challenge for Rotors** |
| **Mr. Wilfried Strauß,** Mr. Reiner Becker |
| **Fritz Winter Eisengießerei GmbH & Co. KG Germany** |
Technical Programme
Thursday 23 May 2019

15:20 - 16:40  Technical Sessions

NVH - Brake Noise Test and Reduction Methods
– Hall 5

Chair:  Mr. Claus Thomas
Porsche AG

Co-Chair:  Dr. Jean-François Brunel
University of Lille

EB2019-EBC-003
Upcoming Requirements for NVH Testing and Development in the Light of Electrified Vehicles and Autonomous Driving
Ms. Meike Dorn, Dr. Nils Perzborn
ZF Group
Germany

EB2019-EBC-003
The Reduction Technology of Automobile Brake Noise by Piezoelectric-based Dither Control
Mr. Jaekeun Hwang
Hyundai Motor Company
Republic of Korea

EB2019-EBS-009
Experimental Study on Steering Brake Squeal Based on Vehicle Road Test
Mr. Ming Song, Mr. Xuegui Yu, Mr. Wei Li, Mr. Jiaxiong Huang
Shanghai Automotive Brake Systems Co, Ltd
Dr. Dejian Meng
Tongji University
Mr. Bo Kuang
Continental Brake Systems (Shanghai) Co., Ltd
China

EB2019-FBR-013
Development Methods Using AI to Cope with Today’s and Future NVH Challenges
Dr.-Ing. Hiie-Mai Unger,
Dr.-Ing. Milan Djurovic, Mr. Tilman Noack,
Dr.-Ing. Achim Romer
Robert Bosch GmbH
Germany

EB2019-FBR-013
Experimental Study on Steering Brake Squeal Based on Vehicle Road Test
Mr. Ming Song, Mr. Xuegui Yu, Mr. Wei Li, Mr. Jiaxiong Huang
Shanghai Automotive Brake Systems Co, Ltd
Dr. Dejian Meng
Tongji University
Mr. Bo Kuang
Continental Brake Systems (Shanghai) Co., Ltd
China

16:40 - 18:00  EuroBrake Farewell Reception  – Exhibition Foyer

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6. Automated and Connected Mobility
7. Vehicle Dynamics and Controls
8. Passive and Integral Safety
9. Vehicle Electronics and Software
10. Manufacturing, Materials and Lightweight Solutions

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**Hannah Evans**  
Membership Projects Assistant  
h.evans@fisita.com

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Exhibition Floor Plan

Exhibition hours

Tuesday 21st May  14:00-19:30
Wednesday 22nd May  08:30-18:00
Thursday 23rd May  08:30-16:40

Refreshments and lunches are served in the Exhibition Hall.

Floor plan accurate at time of printing. Visit www.eurobrake.net/exhibitors for the most current version.

Booth Index

15  Airoko GmbH & Co KG
31  Anhui Guida Auto Parts Co., Ltd.
42  Applus IDIADA
86  Asbury Graphite & Carbons NL B.V.
85  Atotech Deutschland GmbH
25  Automotive Components Floby AB
84  Beijing Tianyishangjia New Material Corp., Ltd.
45  Blum Novotest GmbH
27  Bruker Nano Surfaces
73  BSS Tec International Corporation
52  Came SRL
12  Cardolite Speciality Chemicals Europe NV
83  CeremTec GmbH
92  Cogan Graphite
59  COMEC Grinding Machines & Presses
82  Daico Automotive Products S.p.A.
71  Daishin Kako Company Ltd
48  Dekati Ltd
75  EIRICH
19  Erdrich Umformtechnik GmbH
64 & 65  ERLMANN GmbH & Co. KG
22  Frimeco Produktions GmbH
54  Fritz Winter Eisengießerei GmbH & Co. KG
99  Graphit Kropfmühl GmbH
64 & 65  Greening Inc.
4  Hascor Metals SA DE CV
33  HEAD acoustics GmbH
35  HORIBA Europe GmbH
78  IAG Industrie Automatisierungs GmbH
81  Imerys
62  IMT Engineering S.r.l
17  Industrial Measurement Systems Inc
40  Infra Tec GmbH Infrarotsensorik und Messtechnik
29  INTES GmbH
79  Itaprochim SRL
44  ITT Fine Blanking
49  ITT Friction Technologies
60  James Durrans & Sons Ltd
23  Karntner Montanindustrie GmbH
34  Kommerling UK
32  Lapinus
30  LF GmbH & Co. KG
74 & 76  Link Engineering Company
7  Linyi Hongtu Electron Co. Ltd
16  Lodige Process Technology
46  Logel Makine Otomotiv Sanayi Ve Ticaret A.S.
53  Lumag Sp z o.o.
17  MaGyc s.r.l.
68  Mann & Hummel GmbH
43  MENETA Group
| 18 | Microface Limited |
| 21 | Mineralmühle Leun Rau GmbH |
| 56 | Morgan Advanced Materials |
| 50 | NOF Metal Coatings Europe S.A. |
| 55 & 58 | NUCAp Industries Inc. |
| 13 | Otsuka Chemical Co |
| 38 | PALLMANN Maschinenfabrik GmbH & Co. KG |
| 72 | Palmer International |
| 39 | Polytec GmbH |
| 93 | Pomenton S.p.A |
| 95 | Procotex Corporation sa |
| 70 | Produco GmbH |
| 8 | Qingdao Brade Graphite |
| 28 | QUARTZ S.R.L SU |
| 80 | Raicam Industrie |
| 9 | Reichmann & Sohn GmbH |
| 6 | RENK Test System GmbH |
| 63 | Richard-Anton KG |
| 24 | Rimsa Metal Technology SA |
| 94 | RTE Akustik + Prüftechnik GmbH |
| 41 | Rtec-Instruments,Inc |
| 36 | Sadeca Automotive,S.L.U |
| 67 | Saint-Gobain |
| 3 | SBS Friction A/S |
| 10 | Schwarzer Textil-Werke Heinrich Kautzmann GmbH |
| 89 | Shoua Denko Carbon Inc |
| 77 | SHW Automotive |
| 57 | Speciality Lubricants Corporation |
| 2 | STAC Elektronische Systeme GmbH |
| 96 | Sterling Fibers |
| 26 | Superior Graphite |
| 91 | Taprath Elastomers LLP |
| 100 | Technical University of Applied Sciences Wildau |
| 69 | TecSA S.r.l |
| 51 | Teijin Aramid GmbH |
| 101 | Toho Material Co.,Ltd / Morimura Bros. (Europe) B.v. |
| 1 | Trelleborg Sealing Solutions Kalmar |
| 14 | Tribotecc GmbH |
| 98 | TSI GmbH |
| 64 & 65 | WALDRAFT Technologies GmbH & Co. KG |
| 61 | Walter Werner GmbH |
| 5 | Weckerle Lackfabrik GmbH |
| 20 | Winhiera Auto-Part Manufacturing |
| 90 | Wolverine Advanced Materials |
| 47 | Zhengzhou Zhongbang Superhard tools co ltd |
| 97 | Zhuhai Glory Friction Material Co., Ltd |
| 66 | Zhuhai Unimeral Co., Limited |
Aroko GmbH & Co KG
Germany
Telephone: +49 40 5300 450
Email: mail@aroko.de
Website: www.aroko.de

Aroko is the exclusive sales representative for many important producers of industrial raw materials and machinery manufacturers around the world and a reliable partner for all our customers. Our sales philosophy is to supply technically advanced products of constantly high quality, always emanating from the same established sources. Furthermore, we supply a variety of machines, mainly for producing and testing friction materials. More than 30 years of experience in our business field and the manufacture of nearly all products according to ISO-standards provide our customers with the security of supply and trust they need to produce excellent products themselves. We can also give you extensive technical advice as required.

Booth: 15
Week-at-a-glance Sponsor

Anhui Guida Auto Parts Co
China
Telephone: +86 553 812 7618
Email: goodbrakes@vip.163.com
Website: www.gdbrakes.com

Anhui Guida Auto Parts Co., Ltd. (hereinafter called Guida) was established in 2010, located in the “National Auto Parts Export Processing Base” – Machinery Industrial Development Zone. Guida mainly specializes in the production of backing plate, brake steel shoe and related accessories. The products are sold all over the world.

Booth: 31

Applis IDIADA
Spain
Telephone: +34 977 166 000
Email: info@idiada.com
Website: www.applisidiada.com

With over 25 years of history, Applis IDIADA is a leading engineering company providing design, testing, engineering and homologation services to the automotive industry worldwide. Applis IDIADA has more than 2,500 engineers specialized in vehicle development and an international network of subsidiaries and branch offices in 24 countries, ensuring its clients receive fast and customized services.

The headquarters, composed of a 360-hectare main technical centre which includes its own proving ground and a comprehensive set of laboratories, is located near Barcelona, Spain.

Applis IDIADA’s brake systems department offers complete solutions for brake development projects worldwide. The main asset is the successful integration of design, simulation and testing capabilities which maximizes efficiency in cost and time.

Booth: 42
Diamond Sponsor

Asbury Graphite & Carbons NL B.V.
Netherlands
Telephone: +31 43 760 0610
Email: nilp@asbury.com
Website: www.asbury.com

Established in 1895, Asbury Carbons is a family owned and operated company dedicated to developing high-performance products and engineered solutions that meet the demands of traditional and emerging friction applications. As the world’s largest independent processor of carbon and graphite, and an ISO-certified company, Asbury offers the largest selection of both high-quality carbon and non-carbon products.

Since January 2015, Asbury operated its first European production facility in Maastricht The Netherlands.

Booth: 86

ATotech Deutschland GmbH
Germany
Telephone: +49 303 498 50
Email: info@atotech.com
Website: www.atotech.com

ATotech is one of the world’s leading manufacturers of specialty chemicals and equipment for the printed circuit board, IC-substrate and semiconductor industries, as well as for the decorative and functional surface finishing industries. ATotech has annual sales of USD1.2 billion (2017). The company is fully committed to sustainability – we develop technologies to minimize waste and to reduce environmental impact. ATotech has its headquarters in Berlin, Germany, and employs about 4,000 people in over 40 countries.

Booth: 85

Automotive Components Floby AB
Sweden
Telephone: +46 515 776 847
Email: emil.vantesson@acfloby.com
Website: www.acfloby.se/en/

Automotive Components Floby was founded in 1957 and delivers parts such as brake discs, wheel hubs and connecting rods to manufacturing companies all over the world. Driven by key values of knowledge and tradition, all the company’s products are manufactured according to the industry’s highest standards in quality, precision and environmental impact. To further optimize the process for each product, AC Floby technicians work closely with customers to provide expert support and smooth workflow. AC Floby employs 563 staff – mainly in Sweden – and opened a Shanghai operation in September 2018.

Booth: 25

Beijing Tianyish New Material Corp.
China
Telephone: +86-010-82470817
Email: tysj@bjtysj.com
Website: www.bjtysj.com/en/

Established in November 2009, Beijing Tianyishangjia New Material Corp., Ltd. is located in Shangzhuang Town, Haidian District, Beijing. It is a high-tech enterprise specializing in the R&D, production and marketing of brake pads and brake block series products for high-speed train, EMU, rolling stock, urban rail transit vehicle, and now has production lines of sintered brake pad, brake block and organic brake pad, brake block and other products.

Tianyishangjia has a strong strength in research and development and made a major breakthrough in EMU brake pad material formulation, technology, production equipment, etc. Tianyishangjia obtained CRCC railway product authentication certificates for six kinds of products (TS122 / TS123 / TS355 / TS399 / TS566) of EMU models in September 2013 and CRCC railway product authentication certificate for high-power electric locomotive organic brake pad (T660) in January 2015, in June 2015, Tianyishangjia’s project “the R&D of Chinese EMU (speed of 350km per hour) brake pad” was rated as the development subject of “2015 Beijing Science and Technology Program”.

On October 26, 2015, “Beijing Tianyishangjia - University of Science and Technology Program”; On October 26, 2015, “Beijing Tianyishangjia - University of Science and Technology Program”; On October 26, 2015, “Beijing Tianyishangjia - University of Science and Technology Program”; On October 26, 2015, “Beijing Tianyishangjia - University of Science and Technology Program”; On October 26, 2015, “Beijing Tianyishangjia - University of Science and Technology Program”; On October 26, 2015, “Beijing Tianyishangjia - University of Science and Technology Program”; On October 26, 2015, “Beijing Tianyishangjia - University of Science and Technology Program.”

In January 2015, Tianyishangjia’s project “R&D, production and marketing of brake pads and brake block and other products.” was awarded the third prize of “2015 Beijing Science and Technology Progress Award” (provincial and ministerial-level).

Booth: 84
ESOP Sponsor

Blum-Novotest GmbH
Germany
Telephone: +49 731 600 80
Website: www.blum-novotest.com

Blum-Novotest – a global leader in technology and innovation in measuring and testing technology. A reliable partner to the global machine tool, automotive and aerospace industries. The specialist area of the measuring machines business division includes dimensional, geometry and crack testing primarily on rotationally symmetric components. Using tactile, non-contact as well as combined procedures, the service spectrum ranges from integrated post-process solutions to static and dynamic measurement and all the way to autonomous systems. Optional supplementary testing is possible, for example, for cracks, hardness or natural frequency.

Booth: 45

Bruder Nano Surfaces
France
Telephone: +33 017 286 6104
Email: productinfo.emea@brucker.com
Website: www.brucker.com/nano

Brucker is a global leader in design and manufacturing of high-performance measurement and characterization equipment. Our 3D optical microscopes and profilers, based on more than 30 years of Wyko™ technology, provide the flexible imaging and measurement capabilities for comprehensive, accurate characterization of surfaces. Brucker’s UMT mechanical testers are comprehensive and versatile systems for investigating tribology — friction, wear, load, hardness, and lubrication. Our metrology and test solutions help engineers and manufacturers better understand how their materials and parts will perform in real-world applications.

Booth: 27

BSS Tec International Corporation
Taiwan
Telephone: +88 662 018 988
Email: bss@bistec.com.tw
Website: www.bistec.com.tw

BSS Tec is a professional braking components manufacturer which originally focused on fine backing plates. With a customized progressive press and an experienced, professional team we created the BSS Stamping technology to manufacture the fine backing plates. In 2017, we expanded our scale and acquired a shoe core company which has more than 40 years of experience and the widest range in Taiwan. With our innovation and professional ability, we never stop improving ourselves and pursuing the highest quality in both products and customer service. Our vision is to work with our partners and become the most competitive suppliers in the brake industry and together with our partners provide precise and reliable products.

Booth: 73

CAME SRL
Italy
Telephone: +39 029 644 651
Email: info@camesrl.eu
Website: www.camesrl.eu

Leading company in sales and distribution of specialty chemicals. We represent major global producers of raw materials for different application. Our focus is the presence in the friction and sintering marketing worldwide.

Booth: 52
### Exhibitor Directory

#### Cardolite Speciality Chemicals Europe NV

**Belgium**  
Telephone: +32 926 588 26  
Email: frederique.catterman@cardolite.com  
Website: [www.cardolite.com](http://www.cardolite.com)

Cardolite Corporation is a privately held developer and manufacturer of the world's largest variety of products derived from cashew nutshell liquid (CNSL), a renewable natural resource. The unique properties of CNSL are used to develop and produce a wide range of products to service the coating, friction material, adhesive, composite and foam markets.

At Eurobrake Cardolite will be presenting its latest innovations for the friction materials industry. Think high performance brown friction particles based on high purity cardanol that offer superior properties at minimal cost and radical acid free black particles to minimize stiction and corrosion and related issues.

**Booth:** 12

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#### CeramTec GmbH

**Germany**  
Telephone: +49 716 316 6239  
Email: info@ceramtec.de  
Website: [www.ceramtec.com](http://www.ceramtec.com)

Your Brake Parts - Our Competence in Machining and Materials

SPK Cutting Tool Division of CeramTec GmbH can call on their knowledge and experience of high-performance machining of cast iron especially in the brake industry for nearly 60 years. These are the best qualifications for solving the whole range of machining tasks with optimal cutting tools and best in class cutting materials based on ceramics and PCBN. Our machining competence and application of cutting tools is not limited to brake parts only. It is comprising turning, milling and boring tasks of components made from a wide range of materials - Grey cast iron, Ductile cast iron - Compacted graphite iron - Hardened steels - Chilled cast iron - Super alloys and aerospace materials. With all our engineering services and cutting tool solutions, our main objective is to raise your productivity up to the high-performance level. The creation of individual, innovative and efficient machining solutions is our area of expertise.

CeramTec is a competent partner for ceramic materials such as oxide, nitride and ceramic carbide materials and components for numerous technical applications. The material and process development for the production of Al-MMC-materials with high ceramic content (30-50 v%) is currently in progress. A material with silicon carbide as ceramic component could be interesting for applications as MMC-brake disc.

For further information, please contact info@ceramtec.de

**Booth:** 83

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#### Cocan Graphite

**China**  
Telephone: +86 27 8265 3636  
Email: info@cocangraphite.com  
Website: [www.cocangraphite.com](http://www.cocangraphite.com)

We, Cocan Graphite, have grown up as a leader in Chinese powder carbon and graphite industry. Our product portfolios range from graphite to coke, from synthetic to natural types of carbonaceous materials. We dedicate to continuously improving our production technologies and processing systems in decades to come. All our inbound raw materials and outbound finished products are carefully tested and certified by our cutting-edge laboratory – Cocan Carbon Center. With ISO 9001:2015 certification, we have applied total quality management among all of our products while we are gradually practising to apply Vendor Management of Inventory and Just-In-Time delivery. Our passion, mission, ingenuity, and diligence are the main driving power for our global supply chains. Cocan, refines your life!

**Booth:** 92
The Premier Supplier of Machines and Raw Materials for the Friction Industry

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- low installation costs
InfraTec GmbH

Germany

Telephone: +49 711 784 9918
Email: info@intes.de
Website: www.intes.de

INTES is your competent partner for all aspects of numerical simulation using Finite Elements (FE). INTES develops and markets the standard software PERMAS to perform FE analysis tasks.

PERMAS enables the engineer to perform comprehensive analyses and simulations in many fields of applications like stiffness and stress analysis, contact analysis, vibrations, acoustic simulations, heat transfer, different kinds of optimization including topology, shape and sizing, as well as rodotymamics and reliability analysis. Brake squeal is widely understood as friction induced dynamic instability. PERMAS provides the fastest and most realistic squeal analysis tool by including various physical effects such as the contact area, gyroscopic and additional stiffness terms. The gyroscopic and stiffness terms are taken into account, which consider the disk as elastic structure in an inertial reference system. Additional stiffness and damping terms are derived from the frictional contact state previously calculated in the contact analysis. In addition, advanced methods, like optimization and sampling, are available as core features of PERMAS for numerical simulation of brakes. VoIPER serves as a complement to PERMAS. It delivers comprehensive functionality for model setup, including a tailored solution for brake squeal analysis (Brake Squeal Wizard). The analysis process is completed by exhaustive post processing functionality.

Booth: 29

Itapochrom SRL

Italy

Telephone: +39 02 537 3726
Email: info@itapochrom.it
Website: www.itapochrom.it

Itapochrom, leader in the Friction Industries, develops and produces raw materials based on its own technology. Itapochrom has always been focused on the research and development of new materials and technologies.

Our goal is to provide customers with a range of raw materials and auxiliary goods from reliable and qualified sources.

Booth: 79

Gold Sponsor - Lanyards

ITT Fine Blanking

Italy

Telephone: +39 011 925 0359
Email: stefano.demaria@itt.com

ITT Fine Blanking is a backplate supplier for brake pads destined to passenger cars, vans and truck applications. There are around 1,500 different references of back plates produced and distributed to the main European, American and Asian car manufacturers. ITT Fine Blanking operates in a proactive and serious way to provide solutions that address and exceed customers’ expectations for safety, performance and cost. ITT Fine Blanking is the only Fine Blanking Company that uses in its production standard hydraulic presses (10 lines) and the press مستوى (Process Double Tablet) - a unique line starting from steel coil up to final packaging without any intermediate handling from operators. ITT Fine Blanking today is producing back plates with two P7 lines, one with total tonnage 1,250 Tons and one with total tonnage 2,400 Tons. These lines are powerful and flexible thus adequate to the challenging Global platforms. Moreover, they are ideal for complex backing plate manufacturing like the reinforced back plate used for production of brake pads on Continental EMT calipers. Premium flatness for high performance brake pads and CRS system are also the first-class advantages that distinguish ITT Fine Blanking production. High quality standards are granted by ISO/TS 16949 certification.

Booth: 44

ITT Friction Technologies

Italy

Telephone: +39 0175 347 111
Email: keko klaesen @itt.com
Website: www.itftfriction.com

ITT is a diversified leading manufacturer of highly engineered critical components and customized technology solutions for growing global sectors in energy, transportation and industrial markets. ITT’s Friction Technologies develops, produces, and sells brake parts and friction materials for private and public transportation markets and major automotive manufacturing industries around the world. They are a leading supplier of technological innovations in automotive R&D services and are recognized by the market for quality, expertise and reliability.

Booth: 49

Gold Sponsor - Proceedings

James Durrants & Sons

United Kingdom

Telephone: +44 (0) 1226 370 000
Email: sboodwick@durrans.co.uk
Website: www.durransgroup.com

The James Durrants Group is a family owned group of companies established in 1863 with the head office at Penistone, Sheffield in England and three other UK manufacturing sites at, Bilton (West Midlands), Hanapepe (Co. Durham) and Scunthorpe (Lincolnshire). The group markets a complete range of Carbon-based materials supplying to a wide range of industries globally.

James Durrans Friction Division offers a full range of carbon-based materials to the friction industry. Supplying to Original Equipment, Original Equipment Suppliers and Aftermarket. With operations and sales offices at Willich (Germany), Tianjin (China) plus Joint Ventures in India, South Africa and France. We also have agents / distributors specialising in the friction industry throughout the world offering our materials. All providing a technical and sales service. We offer a full range of Natural Graphite, Synthetic Graphite, Petroleum Coke, Metallurgical Coke and Blended Carbons. We can also offer purpose made materials to customer's specifications.

Please contact Mr Steven Sherry Sales Manager at sherry@durrans.co.uk to discuss your requirements.

Booth: 60

Karnntner Montanindustrie GmbH

Austria

Telephone: +43 425 254 535
Email: g.kern@kmi.at
Website: www.kmi.at

KMI is leading global supplier of lamellar MoX for producer of Wollastonite, Mica Muscovite, Mica Phlogopite and Talc. These functional minerals are used as various industries such as friction materials and brake pads, polymers, coatings and ceramics. As a specialist in micronization of mineral raw materials KMI produces high quality functional fillers in a particle size range of 1µm - 1mm and is focused on high aspect ratios. The products of KMI contribute to the wide range of raw materials for brake pads. MoX is a mild abrasive, has a lamellar structure and provides a high aspect ratio. With its combination of properties, it is able to substitute Zirconium Carbide or Tungsten Carbide with similar or even better technical performance. MoX offers lower raw material costs, increase of thermal transmission, reduced thermal expansion and furthermore. Mica and Wollastonite are well-known fillers for brake pads and are provided at highest quality standards.

Booth: 23
Linji Hongtu Electron Co. Ltd
China
Telephone: +86 137 343 697 36
Email: lioo@lyhongtu.com.cn
Website: www.lyhongtu.com.cn

LINJI HONGTU ELECTRON CO., LTD is a leading manufacturer of brake pad wear sensor and a reliable supplier of ABS sensor and brake pad accessories in China. “HONGTU” has become a top brand of brake pad wear sensor in China and European countries. Thanks to our excellent reputation, our quality standards and our highly competitive prices, we export successfully to more than 40 countries. Over 40% are with final destination O.E. or O.E.S. We produce more than 1000 references for both passenger cars and commercial vehicles. Our quality system is certified according to IATF16949. Each product is extensively tested to ensure you are receiving a high-quality and reliable product. Till now, HONGTU has set up an office in Germany and a warehouse in Turkey. We are aiming to be a world leader in providing top quality brake pad wear sensor and wish to build long-term business relationships with you.

Booth: 34

Lapinus
Netherlands
Telephone: +31 475 353 555
Email: mike.palmen@lapinus.com
Website: www.lapinus.com/friction

At Lapinus, we offer premium quality stone fibres and strong technical support for the friction industry. We go beyond being just a raw material supplier by researching the functionalities of our products together with other materials in the friction matrix. Rise to global challenges for friction, our team has continuously driven innovation for better solutions together with our customers. Rooted in sustainability, our highly biosoluble products contribute to shaping a better world for today and tomorrow. Lapinus is part of the ROCKWOOL Group.

Booth: 32

LF GmbH & Co. KG
Germany
Telephone: +49 214 313 830 30
Email: info@lfiric.com
Website: www.lfiric.com

The company was founded in 2016 and is based in Leverkusen, Germany. The company develops, manufactures and sells liquid friction compounds to manufacture brake- and clutch-friction materials. The uniqueness of these products lies in the ease of application and pressure-less form giving. The company was awarded Second Place in Best Poster Competition at EB 2018 for 3D Printed Friction Material.

Booth: 30

Link Engineering Company
Germany
Telephone: +49 734 453 0800
Email: m.betts@linkeng.com
Website: www.linkeng.com

Established in 1935, Link Engineering Company is the global leader in designing and manufacturing a complete range of test systems and in providing test services to the transportation industry in the areas of brake, transmission, driveline, steering, wheel, hub, tire, bearing, and electric motor applications. Headquartered in Plymouth, Michigan (suburb of Detroit), LINK operates facilities providing test services, test system sales, and customer support across the United States, Brazil, China, Japan, Germany, Korea, and India. LINK allows its global customers to utilize its optimal test solutions through its in-depth industry knowledge, comprehensive test services and support, and state-of-the-art test systems.

Booth: 74 & 76

Gold Sponsor - Stationery

Lumag Sp. z o.o.
Poland
Telephone: +486728484822
Email: lumag@lumag.pl
Website: www.lumag.pl

LUMAG was founded in 1988 by Marek Zak, the current main shareholder and CEO. Initially we focused on the production of brake linings. Later we implemented our own brake pad manufacturing technology. Over the years, the company achieved enormous technological progress, which is showcased by our constantly upgraded collection of machines, applied engineering solutions, as well as the continuous rise of quality and safety standards. Apart from the friction materials production, Lumag company produces a wide variety of products, including brake pads. The investment of nearly 10 Million Euros made Lumag a serious supplier to the European OEM’s which require fineblanking backplates for their brake pads. Not only will Lumag continue its investment policy in further development of current products portfolio (backplates) but also will develop other metal components for the automotive industry.

Booth: 53

Gold Plus Sponsor

Magyc S.r.l.
Italy
Telephone: +39 0332 270 1775
Email: info@magyc.it
Website: www.magyc.it

Founded in 2001, Magyc is specialized in design and manufacturing of High Precision Testing and Measurement Systems for Industrial Quality Control. Magyc sculpts courses on over 15 years of experience in product and process innovation, quality control, assurance systems, problem analysis and customized solutions. Thanks to its knowledge and collaboration with the most innovative industries and research institutes, Magyc is today a leader of the quality control in industrial sector through its specialization in Industrial Problem Solving by use of NDT technologies.

Magyc is specialized in data acquisition and analysis by different techniques, also non-conventional ones as neural networks, fuzzy logic, TRIZ. Some of Magyc competences are:
- FRF Technology, successfully used to detect cracks, porosity, incorrect heat treatment, machining errors through “frequency responses” comparison and 0.5 sec tests. Application examples: disks, drums, pads, sintered materials, ceramics and castings.
- Ultrasound Analysis, used for the detection of cracks, porosities or void that may be present within any artefact’s, for thickness measurements even inside milling operations, for the detection of flaws or the characterization of material. Application examples: aerospace and rail industry, electrical contacts, control of weldings and joints obtained by Friction Stir Welding (FSW).
- Image processing, used to analyse surface and dimensions by real-time images analysis with integrating robots and proprietary software operating on industrial PC. Application examples: ceramics, automotive components like pistons, lead batteries, food just some of the sectors of application of image processing. Challenges always exist in production: Magyc finds the unique solution with the specific approach.

Booth: 37

Exhibitor Directory
MANN+HUMMEL GmbH

Germany
Email: vanessa.tietze@mann-hummel.com
Website: www.mann-hummel.com/en/

About MANN+HUMMEL MANN+HUMMEL is a leading global expert for filtration solutions. The company group with its headquarters in Ludwigsburg, Germany, develops solutions for motor cars, industrial applications, clean air in interior spaces and the sustainable use of water. In 2017 the group achieved sales of approx. 3.9 billion euros worldwide with more than 20,000 employees at more than 80 locations. The products manufactured by the group include air cleaner systems, intake manifold systems, liquid filter systems, plastic components, filter media, cabin filters, industrial filters and membrane filters. Further information about MANN+HUMMEL is available at http://www.mann-hummel.com

Booth: 68

MENETA Group

Denmark
Telephone: +45 661 889 34
Email: sales@meneta.dk
Website: www.meneta.com

A TRUSTED PARTNER
Our pursuit of the highest industry standards also applies to delivery and quality management.
We are IATF 16949:2016 certified – the automotive industry’s most widely used standard. This certification ensures adherence to stringent customer-specific requirements, and continuous focus on risk reduction and manufacturing efficiency through industry best practices.

FOR OVER 65 YEARS, MENETA HAS DELIVERED TECHNOLOGY
Our innovation is the result of world-class materials knowledge, unique testing capabilities, and quality assurance that meet the industry’s highest standards.

TRUST
As part of the automotive industry’s global supply chain, we understand the importance of stability and timing. We are dedicated to being a reliable partner – today, and in the future.

TERRACESS itself, brake pad and rotor after test and typical

Booth: 43

ESOP Sponsor

Microface Ltd

United Kingdom
Telephone: +44 1237 463 225
Email: sales@microface.com
Website: www.microface.com

Microface specialises in the automation and upgrading of all Link, Greening, Schenck and Jurid Test Equipment, and the same type of machines from other manufacturers.
We are generally regarded by our customers as the best in the world, having the fastest Constant Torque Controller on the market and the best solution for Graphics CAD, saving what can be many weeks of work on new graph layouts and making changes to existing layouts whilst providing easy auditing of mistakes.
The Testing automated by Microface is unsurpassed in its accuracy and repeatability of results.

Booth: 18

Mineralmühle Leun Rau GmbH

Germany
Telephone: +49 644 294 410
Email: info@mineralmuehle.com
Website: www.mineralmuehle.com

MLR - special and standard raw materials
Mineralmühle Leun has more than 30 years of experience as a leading supplier of high quality industrial raw materials to the global friction industry. We serve as the holding and distribution company for our international production companies with a vast range of industrial and special products.
Our worldwide customers recognize MLR as an outstanding strategic partner.
Supported by our technology and combined with our global network MLR provides excellent products and exceptional service. Our general product portfolio exceeds 1000 materials in the field of minerals, metal powders, alloys and chemicals.
Titantes:
Manufactured by our daughter company IWHTitan we provide several types of Potassium Titanates in various sizes, shapes and chemistry. Our REACH registered products find their application in many formulations around the globe.
Based on our experience in the friction industry we strive to develop new materials and to offer solutions to the changing requirements of the automotive industry.
Industrial Minerals and Chemicals:
Manufactured and/or traded by Mineralmühle Leun, we offer a broad range of friction raw materials; Zircon siltate (sand and fluor), various Alumina grades, Fused Silica, Feldspar, China Clay, Graphite, Metal oxides.
Metal and alloy powders:
Axalü GmbH is the sales organisation for our manufacturing company Kovovhuty Dolný Kubín. Together we offer milled and atomised powders of copper, bronze, tin, Fe-alloys, Non-Fe alloys and stainless steel. PKCtec GmbH provides mixed metal powders and special alloys to the automotive industry.
MLR continuously and reliably provides high quality products and services to our customers.

Booth: 21

Morgan Advanced Materials

United States
Telephone: +1 717 967 313
Website: www.morganthermalceramics.com

At Morgan, we engineer, manufacture and supply technologically advanced fibre and microporous materials to help the automotive industry solve complex thermal runaway and fire protection challenges in electric vehicles.

Booth: 56

NOF Metal Coatings Europe S.A.

France
Telephone: +33 344 646 362
Email: info@nofmetalcoatings.com
Website: www.nofmetalcoatings.com

NOF METAL COATINGS Group is the pioneer in zinc-flake coatings for metal corrosion protection and develops waterborne chemicals contributing to reduce impacts on the environment, health and security of people.
NOF METAL COATINGS Group aims at sustainable developments by decreasing impressively V.O.C. and CO2 emissions, complying with environmental directives and withdrawing products harmful to health.
An intensive industrial and research footprint in Asia, Europe and America allows us to work continuously on improving our chemicals and application technologies.
NOF METAL COATINGS Group is a member of a strong network of job coaters and captive users, has become the reference for brake rotors and has been specified by many car manufacturers worldwide such as AUDI, BMW (MINI), HONDA, HYUNDAI, KIA, FELGEDT, CITROEN, RENAULT, SEAT, SKODA, VOLKSWAGEN.

GEOPPER®, outstanding properties, is a new challenge. How to boost performance? How to build a new standard? How innovating coatings can target new steps? @Come and visit us!

Booth: 50

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NUCAP Industries Inc.

Canada
Telephone: +1 416 941 444
Email: info@nucap.com
Website: www.nucapbrakes.com

NR™ is NUCAP Industries’ patented process for the surface modification of disc brake backing plates, adding a consistent matrix of raised steel hooks that facilitate a mechanical bond between disc brake plate and friction materials.

Booth: 55 & 58

Platinum Sponsor

Otsuka Chemical Co

Japan
Telephone: +81 352 972 727
Email: Ogawa.Hiroshi.a@otsuka.jp
Website: www.otsukac.co.jp

Otsuka Chemical manufactures various types of Titanate (TISMO, TERRACESS) and its plastic compounds (POTICON).

The benefits of TERRACESS are as follows:
1) Stabilization of the effectiveness
2) Improvement of the NVH performance
3) Low wear both rotor and pad

TERRACESS itself, brake pad and rotor after test and typical data will be exhibited.

Booth: 13

PALLMANN Maschinenfabrik GmbH & Co. KG

Germany
Telephone: +49 6332 8020
Email: Paul.Kenneth.Amas@pallmann.eu
Website: www.pallmann.eu

PALLMANN specializes in size reduction and offers the widest range of machines and complete Systems for successful preparation of all soft to medium hard, brittle, tough, elastic or fibrous materials. As pioneers in the field of size reduction, we have made an important contribution today to the Art of size reduction and material preparation techniques resulting in numerous patents.
The technical solutions of PALLMANN contribute to an optimized utilization of existing resources and to increase productivity.

Booth: 38

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Exhibitor Directory

Palmer International
United States
Telephone: +1 610 584 4241
Email: info@palmerint.com
Website: www.palmerint.com
Palmer International has been developing and manufacturing innovative products based on Cashew Nutshell Liquid (CNL) for the global automotive friction material industry for over fifty years. Our liquid and solid particle CNL products are found in formulations from motorcycles to trains and everything in between. Please stop by our booth to learn about our new manufacturing plant in India.
Palmer. Innovation in a Nutshell.
Booth: 72

Polytec GmbH
Germany
Telephone: +49 724 360 40
Email: info@polytec.de
Website: www.polytec.de
Polytec develops and manufactures high-quality measurement systems for the non-contact analysis of vibration, length, speed and surface topography to solve our customers’ applications challenges in research, development and manufacturing quality and process control. Polytec 3D Scanning Vibrometers represent the gold standard for experimental and operation modal analysis in brake acoustics. Model updating on component and assembly level worldwide relays on the high-velocity test data generated by unique laser vibration sensor system. Using this technology, researchers have managed to track down and control the causes of undesired noises when braking.
Booth: 39

Pometon S.p.A.
Italy
Telephone: +39 041 290 3611
Email: marketing@pometon.com
Website: www.pometon.com
Pometon, founded in 1940, is today the largest European producer of water-atomized copper, and has skills and systems to retain its customers on multiple application fronts producing with three different structures, ferous powders, non-ferrous and stainless-steel shots. The Headquarters based in Maerne, Venice, controls three subsidiaries in Europe (UK, Spain and Germany) and two in Asia (India and Turkey), all equipped with warehouse, a second production site in Serbia for electrolytic copper, as well as a worldwide network of agents and distributors.
The most important markets for Pometon are the automotive industry with its “sintering” applications for the sintering of mechanical components and “friction” for the production of pads for disc brakes and clutches, the chemical industry for the production of catalysts, dyes and market of powders for diamond tools.
Pometon, which today works with all the major automotive brands, and with the best global players in the chemical industry (ISO 9001: 2015, ISO 14001: 2015, BS OHSAS 18001: 2007 certifications), is expanding, acquiring new customers in the aerospace and electronics sector. The Pometon R&D department works in collaboration with the most important Italian and international universities active in the world of powders.
Booth: 93

Procotex Corporation sa / Apply Carbon sa
Belgium
Telephone: +32 56 48 38 88
Email: info@procotex.com
Website: www.procotex.com
Procotex Corporation S.A. based in Dottignies, (BE), with factories in Lithuania, Turkey, Belgium and France. We are specialized in flax hacking, synthetic, natural & technical fibres recycling. Via its subsidiary Apply Carbon sa in France, Procotex offers and entire range of carbon & aramid fibers in milled, chopped, granulated, sized or un-sized form. In March 2018 Procotex Corporation sa acquired the assets of the company Herzoq AG in Switzerland who had decades of experience in supplying milled para-aramid fibers to the friction and gaskets industry. Production of milled aramid fibers has been relocated in 2018 from Switzerland to our plant Apply Carbon sa in France. Procotex Corporation sa and Apply Carbon sa are ISO 9001 certified companies and maintain the highest level of quality control and traceability. Thanks to our large-scale operations, extensive stocks and optimized production systems we can serve high volume contracts in aramids or other fibers.
Booth: 95

Producó GmbH
Germany
Telephone: +49 4151 207 9020
Email: reihard@producó.eu
Website: www.producó.eu
PRODUČO GmbH means: Consulting Development Rationalization Innovation
PRODUČO GmbH the innovative engine of the friction lining industry and offers the following achievements and product spectrum for friction lining industry and for raw material manufacturer:
- Competent consultation with market development, raw materials substitution, production - and pilot plant installation
- Implementation of economical friction lining formulations
- Project consultation, - co-operation, - support
- Common development of formulations for OE, OES and Aftermarket
- Planning and execution of tests and test series
- Selection of suitable raw materials and friction materials
- Development of adapting and testing formulations and special lining formulations
- ECE releases for existing friction linings
- Competent consultation with market development, substitution of raw material
- Expert in professional associations and technical committees
- Compilation of significant and technically founded market researches
- Technical training of selling staff
- Intermediation between producers, commercial enterprises and friction lining manufacturers
Booth: 70

Qingdao Braide Graphite
China
Telephone: +86 532 888 932 96
Email: sales@br-graphite.com
Website: www.br-graphite.com
Producer of natural flake graphite, expandable graphite, spherical graphite, synthetic graphite for over 15 years.
Booth: 8

QUARTZ S.R.L. SU
Italy
Telephone: +39 0925 518 7284
Email: quartz@quartzchem.com
Website: www.quartzchem.com
QUARTZ S.R.L. SU is an Italian Company established in 1997 with Headquarter in Milan and production plants located nearby Milan (Italy) and in Bangkok (Thailand). The Company has Certifications for ISO 9001:2015, ISO 14001:2015 and OHSAS 18001:2007. Production is mainly focused on Metal Sulphides i.e. Antimony TriSulphide, Zinc Sulphide, Tin Sulfides, Mixes of various ingredients, and recently. TITANATES manufacturing. A R&D Team with experts in Friction and professional PhD scientists (both Chemistry and Engineering) are constantly developing new environmentally-friendly products in cooperation with the most important Italian Universities and specialized independent Laboratories.
Booth: 28

RaiCam Industrie
Italy
Telephone: +39 011 937 1244
Email: crivoira@raicam.com
Website: www.raicam.com
RACAM develops and manufactures high quality brake pads for passenger cars and light trucks. Due to decades of experience in supplying milled para-aramid fibers to the friction and gaskets industry. Production of milled aramid fibers has been relocated in 2018 from Switzerland to our plant Apply Carbon sa in France. Procotex Corporation sa and Apply Carbon sa are ISO 9001 certified companies and maintain the highest level of quality control and traceability. Thanks to our large-scale operations, extensive stocks and optimized production systems we can serve high volume contracts in aramids or other fibers. Thanks to our large-scale operations, extensive stocks and optimized production systems we can serve high volume contracts in aramids or other fibers.
Booth: 60

Reichmann & Sohn GmbH
Germany
Telephone: +49 730 987 543
Email: slojewski@reichmann.com
Website: www.reichmann.com
The Reichmann & Sohn GmbH is a German engineering company with 100 years of experience in cutting and grinding. The division Reichmann Casting Finishing is the world’s leading supplier of machines for casting finishing and fretting technologies. A particular focus lays on automatic grinding systems for round parts such as brake discs and brake drums. Apart from that, Reichmann offers customer-tailored and innovative solutions for abrasive cutting and belt grinding. To ensure a further automation in foundries, the machines can be equipped with suitable robot solutions. The name Reichmann is known for robust machine constructions "Made in Germany", a long machine lifetime and reliable high availability. Foundries invest with a Reichmann machine in consistently high quality, economic processes and ergonomic working conditions.
Booth: 9

RENK Test System GmbH
Germany
Telephone: +49 821 570 00
Email: info.testsystem@renk.biz
Website: www.renk-ag.com
RENK offers over 10 years experience of manufacturing high-quality test systems for drive-train components, brake-systems and complete vehicles. Due to decades of experience in in-house R&D test equipment, today RENK is one of the leading manufacturers of customized test systems for the automotive, wind power, agricultural, aviation and railway industries. Worldwide, renowned OEMs take advantage of our extensive experience in drive technology, measuring technology, electronics and system design and rely on RENK test systems for R&D as well as for quality assurance after production and overhaul.
Booth: 6

Rialto International
United States
Telephone: +1 610 584 4241
Email: info@palmerint.com
Website: www.palmerint.com
Richard Anton KG

Germany
Telephone: +49 898 981 440
Email: klaus.wiessen@richard-anton.de
Website: www.richard-anton.de

Richard Anton KG is one of the world’s leading suppliers of synthetic Graphite and calcined Petroleum Coke for brake linings. Our products can be found in nearly all types of vehicles. Founded in 1904 in Munich, the German company is still a 100% family-owned business which is now already managed by the 4th generation. In our two plants in Germany we produce customised carbon products for nearly all major brake lining manufacturers worldwide. Since nearly 40 years Richard Anton KG has been supplying the first-class synthetic graphite and calcined petroleum coke for friction applications under the brand name RANCO. The selection of suitable raw materials of consistently high quality, state-of-the-art production facilities in combination with our know-how and production experience of decades, enable us to supply carbon products for brake linings for all kinds of vehicles - of course following quality and environmental certifications according to ISO standards.

Booth: 63

Rimsa Metal Technology SA

Spain
Telephone: +34 936 664 611
Email: sales@rimsa.com
Website: www.rimsa.com

Since 1985, we are leading manufacturers of non-ferrous materials, which are sold to more than 35 countries scattered across 5 continents. At rimsa, we have been continuously developing innovative products which meet the highest standards in the Automotive. Through an intense R&D program, we have developed a state-of-the-art technology to produce a wide range of synthetic metal sulfides, which can adapt to the specific requirements of our clients. We use our knowledge and expertise to provide efficient and flexible solutions to the prevailing challenges of our partners. In this way, our new products enhance the performance of brake pads at high temperature and are suitable for copper-free formulations. Please visit our booth # 24 to learn more about our Company and Products.

Booth: 24

RTE Instruments, Inc

United States
Telephone: +1 408 708 9226
Email: info@rtec-instruments.com
Website: www.rtec-instruments.com

RTE Instruments develops and manufactures advanced imaging and surface mechanical property measurement solutions for research and industrial applications. Based out of Silicon Valley, we are a leading provider of test instrumentation such as tribometer, optical profilometer, scratch tester, micro hardness tester etc. We share a philosophy that embraces collaboration and partnering with customers and other leaders in academia and industry to ensure that our products answer real needs with innovative solutions. Our San Jose, California headquarters houses all research, development, manufacturing and factory support operations.

Booth: 41

Sadeca Automotive, S.L.U.

Spain
Telephone: +34 937 153 354
Email: sales@sadeca.net
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Sadeca is located in Barcelona and was founded in 1983. After these 35 years of growing, automotive and progressive spirit we have become a leader in cable manufacturing for the automotive industry. We are specialized in the development, design and production of brake wear sensors, brake system hardware and several industrial wire harness arrangements for passenger cars, commercial vehicle and trucks for OEM/ OES and AM segments. Thanks to our quality standards, guaranteeing the compliance and strict supervision of the control and validation procedures required in the automotive industry, we have become a global supplier of the major brake pads and brake systems producers. We have the most complete range of products in the industry, an extensive, global sales network with manufacturing plants in 3 continents (Barcelona, Guangzhou & Tanger Free Zone) allowing us to follow our customers in their international expansion projects, providing our products with ease and proximity worldwide.

Booth: 36
Key Card Sponsor

Saint-Gobain

Germany
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Email: jan.faltin@saint-gobain.com
Website: www.biolink-tapes.com

Saint-Gobain Performance Plastics Tape Solutions offers solutions for bonding, protection and insulation to the automotive, transportation and other industry sectors. Through the support of our four global research and development centers and our advanced polymer technology expertise, we create innovative solutions that enhance performance in the most extreme environments. Backed by a proud heritage of product innovation, technological expertise and market leadership, we are dedicated to working with our customers to solve today's most extreme and demanding application issues and the challenges that lie ahead.

For more than 350 years, Saint-Gobain has consistently demonstrated its ability to invent products that improve quality of life. As one of the 100 most innovative companies, Saint-Gobain designs and manufactures materials and solutions which are key ingredients in the wellbeing of each of us and the future of all.

Booth: 67

SBS Friction A/S

Denmark
Telephone: +45 610 3808
Email: ej@sbs.dk
Website: www.sbs.dk

Supplier of high-end brake pads for most major system suppliers in the OEM segment across all types of motor-cycles, scooters and ATV/UTVs.

SBS masters all brake pad technologies, ceramic/organic, open sinter, conductive sinter. Documentation includes statistical process control methods and associated test and control equipment.

Booth: 3

Schwarzwalder Textil-Werke Heinrich Kautzmann GmbH

Germany
Telephone: +49 783 6570
Email: info@stw-faser.de
Website: www.stw-faser.de

Schwarzwalder Textil-Werke Heinrich Kautzmann GmbH develops and produces high-quality fibres for different industries and applications. As leading specialists in fibre technology, we supply different fibres and pulp, as well as customised solutions, we process all fibre materials from natural fibres to synthetic fibres through to high-tech fibres. Thanks to decades of experience, continuous research and strong customer orientation, we are able to react flexibly to new requirements with our bespoke fibre solutions. And since we are active in over 70 countries, you will always find a competent fibre expert in your vicinity.

Booth: 10

Showa Denko Carbon, Inc.

United States
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Email: sdkdcarbon@sdkd.com
Website: www.sdkd.com/english/

Showa Denko Carbon, Inc. is a member of the Carbon Division of Showa Denko K.K., a global company using aluminum, magnesium and organic/inorganic technologies to provide industrial and consumer products for energy, automotive, information/telecommunication, and environmental applications. The Carbon Division manufactures graphite electrodes for electric steelmaking and graphite particles for vehicle (friction) and industrial applications.

In 2017, the Carbon division acquired SGL Carbon GE, making Showa Denko Carbon, Inc. the world's largest producer of graphite electrodes. This includes production facilities in the U.S., Japan, Germany, Spain, Austria, Malaysia and China with a combined capacity of 250,000 MT/Year.

Showa Denko Carbon, Inc. in the U.S. (South Carolina) is the only manufacturing facility in the Carbon division that specializes in the production of artificial graphite particles for high performance friction materials used in O.E. OES and aftermarket vehicle applications. The use of high-quality raw materials, high temperature production processes, and a certified quality system results in Showa Denko Carbon providing artificial graphite particles with consistent and reliable material properties to our customers each and every time.

Booth: 89

SHW Automotive GmbH

Germany
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Email: info@shw.de
Website: www.shw.de

The Company was established in 1965, making it one of the oldest industrial companies in Germany. Today, SHW AG is a leading automotive supplier, providing products that make a substantial contribution to reducing fuel consumption and, consequently, to lowering CO2 emissions. In its Pumps and Engine Components business segment, the SHW Group develops and produces pumps for passenger cars (including circuit boards) and Truck & Off-Highway applications (e.g., trucks, agricultural and construction machinery, stationary engines and wind farms) as well as engine components. The Brake Discs business segment develops and produces monobloc ventilated brake discs made of cast iron and lightweight composite brake discs made of a combination of an iron friction ring and an aluminium pot. The SHW Group’s customers include renowned automobile manufacturers, manufacturers of commercial, agricultural and construction vehicles as well as other suppliers to the automotive industry. Currently, the SHW Group has five production sites in Germany located in Blaichach/Schweiz, Aalen-Wasseralfingen, Hermsdorf, Tuttlingen-Ludwigstal and Neuhausen ob Eck, sites in Brazil (Sao Paulo) and China (Kunshan) and a sales and development centre in Toronto (Canada). With about 1,350 employees on average, the Company achieved Group sales of slightly above € 400 million in the fiscal year 2017. Further information is available at www.shw.de

Booth: 77
Speciality Lubricants Corporation
United States
Telephone: +1 800 385 823
Email: ken@specclubes.com
Website: www.specclubes.com

Manufacturer and private label packager of Brake Lubricants that are proven to reduce N/H. Other products include brake assembly fluid and rotor cleaning solution. Private label packaging available in pouches, squeeze tubes, wipers and bulk containers.
Booth: 57

STAC Elektronische Systeme GmbH
Germany
Telephone: +49 215 193 7270
Email: info@stac.de
Website: www.stac.de

STAC manufactures fast and precise N/H-test systems, which are frequently used in automotive industry. STAC is featuring EVENTSCAN, a system for detecting and analysing brake noise events. EVENTSCAN enables laboratory-based dynamometer tests as well as in-vehicle tests on the road. The system acquires sound and vibration signals, other parameters like pressure, temperature, speed, etc. may be acquired via analogue inputs, CAN bus, GPS sensors, tachometer pulse inputs and others. All acquisition and analyzing tasks are performed on-line and in real-time. EVENTSCAN is used by US, European, and Asian car manufacturers, brake system suppliers, and friction and damping material manufacturers worldwide.
Booth: 2

Sterling Fibers
USA
Telephone: 001-850-994-5311
Email: customerservice@sterlingfibers.com
Website: www.sterlingfibers.com

Sterling Fibers is an ISO 9001 certified USA based company servicing the friction material industry since 1988. Sterling fibers offers a variety of acrylic based fibers and pulp for the friction material industry.
- Sterling's flagship product, CFP V110 pulp, provides preforming ability equal to aramid at a much lower price.
- Sterling's CFP 200 series products offer lower cost alternatives to CFP V110.
- Sterling's CFP 100 series pulps are utilized in wet mixing processes such as friction papers.
- Sterling's CFP 400 series technology allows shot cut fibers, such as acrylic and melamine, to be dry mixed and formed without balling thereby improving fracture toughness.
- Sterling's CTF products are short cut staple products used for friction toughness and crack resistance in products such as roll linings.
Booth: 96

Superior Graphite
Sweden
Telephone: +46 601 341 88
Email: CustomerService@superiorgraphite.com
Website: https://superiorgraphite.com/

Delivering unparalleled quality since 1917, Superior Graphite provides unique solutions for the friction market among others. Formaul™ materials utilize a variety of carbonaceous materials, from expanded graphite to carbonized petroleum coke, to offer a full spectrum of friction modifier materials, each with specialized performance and durability characteristics designed to meet specific industry requirements in every category. Resiliant Graphite Carbon™ (RG™) materials are one of the most specialized graphitic carbons available today. These materials are produced utilizing our patented high-temperature purification technology using premium raw materials offering specific morphological, high porosity, and resistivity. Achieved in low concentrations as a friction modifier for brake pad applications, it greatly improves performance parameters such as compressibility control and wear-noise reduction. Superior Graphite provides continuous electro-thermal treatment/purification of graphite & carbons, advanced testing, and custom made technologies for energy/thermal management, metallurgy (iron & steel), friction modification, drilling material additives, non-oede ceramics, and polymers/ CAE materials. Headquartered in Chicago, Illinois, USA, with locations in Germany, Sweden and China, Superior Graphite offers technologies and a consultation approach that give engineers access to purpose-manufactured materials, with unparalleled consistency that delivers confidence. In addition, our precision grinding and sizing technologies translate into an unmatched ability to alter and customize product attributes to suit specific requirements, making commercialization more efficient and reliable.
Booth: 26

Taprath Elastomers LLP
India
Telephone: +91 22 2631 3185 / 86
Email: taprathyapith@taprath.com
Website: www.taprath.com

Taprath combines the power of science and technology to passionately innovate and serve its partners. Taprath is one of the world’s leading suppliers of specialty Elastomer Powders, bio-soluble Mineral Fibers. Our Products include:
1. Taprath® - Nitrile Rubber Powders.

With 15 years of expertise in being associated with this industry and a team of technocrats to technically support our customers in all routes of development, TAPRATH works hand in hand with all customers to serve the best to the industry.
Customers are partners to us at TAPRATH and have been our pillars of growth. Our partners have helped us develop into tailor-made specialty Elastomer Powders and Mineral Fibre Grades to be a part of exclusive business and also keep us on a move for the increasing demands and modifications in the automotive industry. TAPRATH aims to provide the best possible support for their growth.

Global presence in all our current and potential markets is an essential element of our business strategy. We are present in all regions where our customers are active, so that we can respond as effectively as possible to their needs. Our wide geographical coverage (North America, Latin America and Asia Pacific, Europe, Middle East) enables us to identify and respond swiftly to new trends and opportunities.
Booth: 91

Technical University of Applied Sciences Wildau
Germany
Telephone: +49 3375 508 129
Email: transfer@th-wildau.de
Website: www.th-wildau.de

The University of Applied Sciences Wildau (TH-Wildau), founded in 1991, is the largest technical university of applied sciences in the State of Brandenburg, Germany. Its modern campus located right next to Berlin at the motorway junction A10/A13, reachable by all modes of transport. As an educational and research institution, the TH-Wildau does not only focus strongly in the capital region of Berlin-Brandenburg but also nationwide and internationally. The university’s hallmarks are its research capabilities, internationality and the practical focus on study branches such as mechanical engineering, natural sciences, photonics, telematics, economics, European management and law.

The Laboratory of Machine Dynamics and N/H, directed by Prof. Dr. Peter Bauschke, is part of the Faculty of Engineering and Natural Sciences. This research group is oriented in the area of the dynamic optimisation of structures, components and materials through a complete cycle of measurement, simulation and design. Its aim is the development of methods that allow the design of products optimized in terms of weight and noise. Products can be vibratically evaluated in early development stages by using goal-oriented and latest simulation methods validated by innovative measuring.
Booth: 100

Tece5a S.r.l.
Italy
Telephone: +39 011 980 4001
Email: info@tece5a.it
Website: www.tece5a-srl/index(en).html

We are manufacturers of Brake Inertia Dynamometers and test machines, we also do the Upgrade (electrical, mechanical, and system acquisition) of old test benches as automotive and truck brake testing.

Our line of products includes test machines for quality control (Friction Quality Test machine, Shear Strength Test machine, Mini-Dyna) and dynamometers of various sizes (both for brakes and clutches) and other machines for automotive, truck, railway and planes tests. We have also a strong experience in the Techron (/or Endurance), or high-performance race car sector. In our Laboratory we can perform the following test: Ak Master - AMS, Performance, Fade, Wear, Thermal shock, Thermal fatigue, Static Friction, Creep, Grain, Hill Hold.

Booth: 69

Tejin Aramid GmbH
Germany
Telephone: +49 202 322 317
Email: EMEA@tejinaramid.com
Website: www.tejinaramid.com

At Tejin Aramid, everything we do is guided by our ambition to shape a better future for generations to come. Day after day, we move forward, continuously improving our processes, our technology, and ourselves. As market leaders, we drive progress through collaboration and set new standards for high performance. We connect with our customers at every level, wherever they are in the world. Because we believe that, together, we can be something bigger. Together, we can challenge conformity. From a single thread to a strength, strength and protection and beyond, our products are empowering excellence in diverse markets and applications around the globe. By enabling lighter, stronger and more resistant materials. And by taking durability, protection and efficiency to new levels. Whether you choose Twaron®, Teijinconex®, Tegrax®, Teijinconex®, or Aramid*, we offer something for every industry and application. TAPRATH aims to provide the best possible support for their growth.

Booth: 51

Toho Material Co., Ltd. / Morimura Bros. (Europe) B.V.
Netherlands
Telephone: +31 35 656 4564
Email: info@morimura.nl
Website: www.morimura.co.uk

TOHO MATERIAL CO, LTD was established in 2009 as a subsidiary of TOHO TITANIUM Co, Ltd, which has been leading titanium business in the world for more than 60 years. Utilizing titanium related technologies of its parent company, TOHO MATERIAL developed and introduced Titanium Tzanate “TOK™” for automotive function material. With our unique, efficient, and environmentally friendly production process, “TOK™” series achieved stable quality and high friction performance (good wear resistance and μ-stability). As a result, we have established great relationship with numerous friction material manufacturers globally in a decade.

Booth: 101

48

Combine it to save time.

events\scan

Does it in real time. The new way of in-vehicle-testing.

Please visit us in Exhibit Hall!
Trelleborg Sealing Solutions Kalmar is the world leader in the production and development of brake noise and vibration damping solutions for automotive and industrial applications. Our main products are shims, but considerable achievements have been reached in sound damping of engine and chassis parts for the automotive O.E.M. and industrial markets. We are the world leader in the innovation of new rubber to metal sandwich-composite materials and very successful in the world market with noise insulation materials. This strength is the result of an ambitious, forward thinking Company Policy based on competence and quality, supported by a highly skilled Research and Development department. We provide a high level of customer service to support products manufactured by a unique process which is patent protected worldwide and are ISO/TS 16949, ISO 9001 and ISO 14001 certified.

Tribotec GmbH is the global market and technology leader of high-performance metal sulfide solutions for the friction industry. The tribological properties of metal sulfide systems with regard to chemical structure, polarity, lubricating ability and thermal behavior are essential for the functioning and performance enhancement of friction products and help to extend the lifetime of components motion. Sulfides of various metals have proven to be the most versatile and most effective additives for stabilizing the coefficient of friction at high level, prevent brake fading, reduce pad and disc wear and increase comfort by less noise and vibrations. A new generation of antimony free, environmentally friendly synthetic materials from Tribotec is suitable for use as copper replacement in brake pads. With our slogan more than performance we guarantee – the best quality under the toughest stresses – innovative products – fulfillment of all safety and environmental standards – customer satisfaction. Please visit us at booth no 14!

TSI Incorporated designs and manufactures precision instruments which are recognized in research and industry worldwide to perform advanced and reliable particle measurements such as brake wear emissions. Stop by our booth to discuss about your research and measurements. TSI has unique, fast size distribution solutions for conducting brake wear emissions testing: Engine Exhaust Particle Sizer (EEPS) and the 10 Hz Optical Particle Sizer (OPS). This allows you to measure a wide size distribution, 5.6 nm up to 10 µm, in combination with a high time resolution (10 Hz) in flexible configurations. In addition, TSI offers solutions for your sampling of size-fractionated particles while measuring the particle mass concentration in real-time: The Real-time Quartz Crystal Microbalance (QCM) MOUDI™. This extension of the well-known family of MSP MOUDI™ Impactors provides a full array of measuring solutions for your research. Stop by TSI’s booth #98 to learn how we can help you with your research needs!
WALDRAFF Technologies GmbH & Co. KG

Telephone: +49 221 949 9530
Email: rick@waldraff.info
Website: www.waldraff.info

Partner of Automotive Industries Planning, design and production of custom-made solutions for the automotive industry and their suppliers.

Specific production tooling sets consisting of: Pressing tool, Magazine (conveying to the press), Feeding tool (loading of the pressing tool), Pick and place equipment.

Booth: 64 & 65

Walter Werner GmbH

Germany

Telephone: +49 678 299 320
Email: info@walter-werner.de
Website: www.walter-werner.de

Walter Werner for a better finish. Your certified specialist for metal finishing. Our process portfolio yields decorative surfaces and protects metals and plastics against corrosion and wear. Our business segments are electropolishing, coating and bonding agent coatings. Certified under IATF 16949, AIAG and registered with EMAS II, our company applies environmentally friendly production processes for audited product quality each and every time. Walter Werner GmbH has been renowned for its professional surface finishing since 1957 based in Birkenfeld/Nahe (Germany). Whether for mass production or single pieces, we are the one source of all metal and plastic finishing services based on electropolished, chemical, and organic coatings. Operating on 32,000 square metres, over 150 engineers, master electropoliters, electropolishing technicians, and skilled workers commit themselves every day to the needs of our customers, most of them in the automotive, machine building, and electrical/electronic industries. Short routes and high flexibility are our strengths. From our location, we can even provide anywhere in Europe custom logistics services that are far from everyday routine. As a medium-sized family run enterprise we attach great importance to personal and partnership-based relations with our business associates. And equal importance to the value of quality and environmental awareness these must be moulding our corporate philosophy since the very outset.

Booth: 61

Weckerle Lackfabrik GmbH

Germany

Telephone: +49 711 82601 0
Email: info@weckerle-lacke.de
Website: www.weckerle.de

Weckerle Lackfabrik GmbH is a medium-sized company with staff of about 70. Since its founding in 1908 Weckerle develops and produces a wide range of high performance and innovative coating systems for many different tasks and areas of applications.

From its founding until being sold in 2000 Weckerle was exclusively a family business. This is still noticeable today - even after being sold to a group of investors in 2000 and to the Basler Group in 2011. This is thanks to the management policy which places great emphasis on sustainability both in our customer relations and in our employees.

Our long years of experience and the extraordinary continuity in all business units is naturally also reflected in our consulting and in our flexible customer service. This is the best way to develop tailor made solutions in cooperation with our customers for their applications and specifications.

Booth: 5

Winhere Auto – Part Manufacturing Co. Ltd.

China

Telephone: +86 532 857 611 11
Email: Autoparts@winhere.com.cn
Website: www.winhere.com.cn

Founded in 1996, Winhere is the largest professional manufacturer of brake discs and drums in China. Winhere is TS16949 quality certified by TÜV Rheinland, we produce more than 5,000 applications with 44 million unit’s annual capacity to service our customers globally. Winhere has received the world’s first ECE R90 certificate issued by KBA in Germany since August 2012, and we are extending full range of our brake discs and drums with R90 certified.

Winhere won gold award of “Best-in-Class” for its high carbon brake disc at the 2015 China international Foundry Expo in April 2015.

On June 11th, 2017, Winhere won the “China Foundry Industry Champion Enterprise” (brake disc) award at the 13th China Foundry Association annual conference in Shanghai. At the same conference, Winhere re-won the “excellent manufacturing of brake discs and drums” and achieved “AAA Business credit rating” honorary title.

Winhere has established its own R&D centre to design and produce brake disc/drum to meet different requirements from both automotive OE market and aftermarket.

Winhere is your reliable partner you can trust.

Booth: 20

Wolverine Advanced Materials

United States

Telephone: +1 313 749 6100
Email: inquiry.industrial@wamglobal.com
Website: www.wamglobal.com

Wolverine Advanced Materials is a leading developer and manufacturer of high-performance materials. Our core competency is in performance-critical, specialty elastomer-coated metals that offer damping and sealing solutions in the Automotive Brake NVH, and sealing industries. Extensive industry knowledge and innovative materials have made Wolverine a desired and trusted global supplier for over 80 years.

Booth: 90

Zhengzhou Zhongbang Superhard Tools Co ltd

China

Telephone: +86 371 860 767 65
Email: nancy.y@zhongbanggongju.com
Website: www.zhongbanggongju.com

Zhengzhou Zhongbang Superhard Tools Co.,Ltd established in 1996, located in the biggest grinding material and grinding tool base – Zhengzhou. We are member unite of CFSAM and CMTRA. We have dedicated to the research& development of the superhard grinding tools for many years. Expand from a small to a large force, from extensive to intensive, we build up perfect manufacture and quality control systems. We own many advanced producing and inspecting machines, such as high precision CNC lathe, high precision grinder, CNC milling machine, projector, profile meter, Carl Zeiss CMM, professionally producing grinding tools for brake pad, engine valve, screw compressor rotors, camshaft, casting composite, gear, high precision military industry,robot grinding as well as many other industries. We focus on the research and development of our products, and we have applied for National Invention Patent for the processing technology of the grinding wheel for engine valve and screw rotors. We focus on the excellence of our products and strictly implement the quality standard and responsible for every product to provide our clients high quality products and first-class service.

Booth: 47

Zhuhai Glory Friction Material Co., Ltd.

China

Telephone: +86 134 250 858 69
Email: doris.guan@zhglory.com.cn
Website: www.zhglicity.com

Glory was founded in 1986, its headquarters R&D center and main production base located in Zzhuhai.China.Glory is professional automobile braking friction materials company. There are nearly 65 engineers work for R&D center today with globally braking field rich experience experts from China, Germany, Japan and US. The main products are automobile using braking pad, braking lining, and brake block for OEM & Market and Global aftermarket including US, European, Asia, Pacific, etc with 10 Million car sets products annually.

At present, Glory are supporting more than 20 automobile OEM and tier1 such as Great Wall, Changan, Chery, SAIIC, General Motor, chung, JAC, Continental, CTCS, CIB, Banzhou Huacheng, BTL, Shanghai Wenshang and so on. As one of the largest local friction material suppliers, Glory is the only private enterprise to enter the international Tier 1 supply system.

Booth: 97

Zhuhai Unimetal Co., Limited

China

Telephone: +86 756 881 7016
Email: sales@u-metal.cn
Website: www.u-metal.cn

Zhuhai UnMetal Co., Ltd. engages in metallic wool fibers to friction industries, satisfies their applications of brake pad/lining manufacturing.

*Steel Wool Fiber - 5 Production Lines - Annual Capacity 7000MT* Copper/Brass/Bronze/604k - 7 Production Lines - Annual Capacity 650MT

Our metallic wool fibers are certified by IATF16949:2016. Selected material, excellent product consistency, good quality and professional service make us your first choice of supplier for OE products or assist brand customers to gain end user confidence and favor in aftermarket. Factory’s strict management in the whole processes, including raw material entry, orders scheduling, production and shipment, brings customers not only a long-term satisfaction of product quality but also good consumption experience by on time delivery. UnMetal doesn’t pursue low cost products but cost performance products. We are trying our effort to make this powerful alliance a raw material supplier of trustworthy and of good competition for friction.

Booth: 66
WE ARE YOUR PARTNER IN FIBRES FOR THE FRICTION LINING INDUSTRY.

For safety: Fibres from Schenkenzell, Germany.

Brake and clutch linings for passenger cars and commercial vehicles are safety-specific components. This is why raw material quality and well-designed, precision processing, play such an important role in STW’s fibre products. As your partner in fibres, we react flexibly with customer-specific developments to new requirements and your product ideas.

Many large friction lining manufacturers, worldwide, rely on our leading competence in the field of fibre processing.

PAN PULP  ARAMID PULP  ENGINEERED FIBRES

Schwarzwälder Textil-Werke Heinrich Kautzmann GmbH
Aue 3 • 77773 Schenkenzell

Tel +49 78 36 57 - 0  Mail info@stw-faser.de

BOOTH #10  stw-faser.de
Walter Werner GmbH – your metal finishing specialist

We provide for decorative surfaces and protect metals and plastics against corrosion and wear – professionally and flexibly.

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- **ELECTROPLATING**
  - Anodising, galvanizing, zinc nickel plating (acid and alkaline)

- **COATING**
  - Powder coating, wet coating, cathodic dip coating

- **BONDING AGENTS**
  - Bonding agents applied by rollers, drums and automated machinery

- **SERVICES**
  - Testing, sorting, assembling, packaging, delivering

For more information please visit: www.walter-werner.de
The BRAKE Report

The brake industry’s information source

thebrakeresport.com

Join thousands of your colleagues — subscribe to our free weekly newsletter
Discover Dresden

Following a successful EuroBrake in 2018, located in The Hague, we bid ‘Vaarwel’ to The Netherlands and return to Dresden, Germany in 2019 – the original venue where we first launched EuroBrake in 2012.

Dresden is the traditional capital of Saxony and the third largest city in eastern Germany after Berlin and Leipzig. It lies in the broad basin of the Elbe River between Meissen and Pirna, 19 miles north of the Czech border and 100 miles south of Berlin. Sheltering hills north and south of the Elbe valley contribute to the mild climate enjoyed by Dresden. Numerous parks and cultural monuments exist along the Elbe’s course, particularly a steel bridge (1891–93), a cable railway (1898–1901), and a funicular (1894–95).

The city is rich with cultural and artistic history; the great operatic composer Wilhelm Wagner debuted a number of works here in the 1800s and, today, an independent light opera company keeps the classical art form modern and fresh. Culture vultures will love the Gemäldegalerie Alte Meister and Grünes Gewölbe museums, and architecture buffs will salivate over the mélange of styles reflected in the cityscape.
Did you know?

- Another nickname for Dresden is "Jewel Box".
- Dresden hosts one of the largest porcelain tile artworks in the world.
- Dresden is one of the greenest cities in Europe – 63% of the city is covered in green areas and forests.
- The most prominent university in Dresden is The Dresden University of Technology. There is no need to wonder that technology is considered as the major sources of economy in the city. It earns the title as Silicon Saxony.

For those visiting Dresden for the first time, a casual stroll around the Old Town is easily achieved from the conference centre and offers delights such as the famous Semper Opera House, known for its premieres including major works by Wagner and Strauss, the Fürstenzug, a grand mural of a mounted procession of the rulers of Saxony, and the Grünes Gewölbe (Green Vault), a museum containing the largest collection of treasures in Europe.

More regular visitors to the area may wish to explore sights further from the beaten track. The Elbe Sandstone Mountains just outside the city offer fantastic hiking opportunities with unparalleled views and diverse terrain. Other notable attractions include the Dresden Armoury, the Transport Museum, the Dresden suspension railway (opened in 1901) and the beloved "Blue Wonder" bridge – allegedly originally green.

Across the river, New Town is a favourite hangout for those seeking bustling bars and beautiful boutique shops on tree-lined streets. At night, locals pour into lively bars, or cross back over the river to the paved streets surrounding the magnificent Frauenkirche, where a plethora of high-quality restaurants cater for all tastes with a wide range of traditional German fare and international delicacies.

For more information visit: www.dresden.de
Welcome Reception  
Sponsored by

**Exhibition Hall**  
Tuesday 21 May 18:00 – 19:30  
Meet your fellow EuroBrake participants over drinks and snacks in the Exhibition Area. All participants (Delegates, Exhibitors and accompanying person) are welcome. Don’t forget to bring your conference badges and collect your welcome pack from registration desks on Tuesday 21 May.

Drinks Reception  
Sponsored by

**Terrace**  
Wednesday 22 May 18:00 – 19:00  
Wind down after a busy day’s networking with the EuroBrake Drinks Reception. Free of charge to full EuroBrake participants.

EuroBrake Dinner  
Sponsored by

**Terrace Level**  
Wednesday 22 May 19:00 – 22:30  
A highlight of EuroBrake is always the Dinner. This year it will be hosted at the Terrace Level of the International Congress Center with its stunning views over the River Elbe and historic city of Dresden.

Featuring the EuroBrake Awards
  - **Best Written Paper, EuroBrake 2018**  
    - Dr. Jinghan Tang, University of Bradford, UK  
    - Experimental Investigation of the Dynamic Thermal Deformation and Judder of a Ventilated Disc Brake

  - **Best Presentation, EuroBrake 2018**  
    - Dr. Jens Bauer, Continental Teves, Germany  
    - Boundary Conditions in Test and Simulation and their Influence on the NVH Behaviour

If you have booked your place at the EuroBrake Dinner, don’t forget to have your ticket ready to hand over at the entrance.

Farewell Reception  

**Foyer**  
Thursday 23 May 16:40 – 18:00  
All participants are invited to attend the Farewell Reception where you can say goodbye to friends and colleagues new and old, in a relaxing atmosphere reflecting on your experiences in Dresden and make plans to keep in contact.

Free of charge to all EuroBrake participants.
Your Partner in high-end metrology for dynamic testing.

Geometrical measurement | Shape evaluation | Disc thickness variation (DTV)
Correction interface | Quick change-over by self-adjustment | Parts handling
Fully-automated measuring machines for 100% testing | In-line integration | Post-process measuring

www.blum-novotest.com
General Information

Language
The official language of the conference is English.

Programme Changes
The organisers are not liable for any changes made to the programme. Please visit the web site regularly for updates.

Final Programme
The Final Programme will be provided on-site in the delegate bag.

Official Conference App
The EuroBrake 2019 App is downloadable from all major app stores and will contain the most up to date conference information, including live technical programme updates.

Venue
EuroBrake 2019 will take place at the Internationales Congress Center Dresden (ICD). The ICD is a state-of-the-art conference centre located in the city’s old town on the bank of the River Elbe.

Address
Maritim Hotel & Internationales Congress Center Dresden
Ostra-Ufer 2 / Devrientstr. 10 – 12
01067 Dresden

Internet access
There is complimentary wireless internet access available.
Username: G-eurobrake.zm@telekom.de
Password: hotspot

Entry into Germany
EU-Citizens
No visa required. Entry is allowed with both passport and ID-card.

Non-EU-Citizens
Any foreign visitor entering Germany must have a valid passport. Visitors from countries whose citizens require visas should apply to the German consulate or diplomatic mission in their own country.

To view a list of countries whose citizens require a visa to enter Germany please visit: www.germany-visa.org/do-i-need-a-visa/

Do you require a visa application letter? When registering online you will be given the option to request a visa, should you require a visa please ensure you select ‘yes’ when registering online. If you have any further questions, please email Hannah Evans at h.evans@fisita.com

Currency
The official German currency is the EURO. Traveller’s Cheques are accepted by all banks and major hotels in principal cities. Their use in Germany for general purposes is not as popular as in some other countries, and may incur additional charges. International credit cards are accepted in hotels, department stores and restaurants. They are not widely accepted in smaller shops such as bakeries, butchers and news vendors where only cash is accepted or the German EC card. All convertible foreign currencies (www.oanda.com) are exchangeable at all major banks.

Business hours of most banks are
08:00 – 20:00 (Mon-Fri)
08:00 – 18:00 (Sat)
10:00 – 18:00 (Sun)

Tipping and Etiquette
Service charges and VAT are generally included in the price. It is typical to "round up" the price by 5 - 10% to amount to a round figure.

Shopping
Shops in central Dresden are usually open Monday to Saturday from 10:00-20:00. The Altmarkt-Galerie in the centre of Dresden is open until 21:00. Large supermarkets and shopping centres are open until 22:00. On Sundays, shops are closed, with some exceptions such as bakeries, train stations and petrol stations.

Climate
The amount of rain in May is normal with an average of 63mm (2.5in). The average maximum temperature lies around 18.0°C (64.4°F).
Pharmacies
Pharmacies can be found all over Dresden city and an emergency rota service provides care after-hours or on Sunday or bank holidays. To locate a pharmacy call: +49 (0) 351 8042251

Tax
The city of Dresden levies a Visitors Tax of EUR 1.30 per adult, per day. This additional tax is collected by the owner of the accommodation you are staying at. German Value Added Tax is included in all prices. Currently this tax is levied at 19%.

Electricity
Electric current in Germany is without exception AC 230V/50Hz. Sockets only fit round two-pin plugs (use of adapters is necessary for all devices).

Insurance
Participants are strongly advised to obtain travel insurance (medical, personal accident and luggage) in their home country prior to departure.

Public Transport
Dresden has a very well developed public transport system. Trams and buses in the city centre are operated by the Dresden Transport Services and regional transport is taken over by the Oberelbe Transport Services. Tickets can be bought on board the trams and buses, at stops and at service points. Riding without a valid ticket will result in a fine. City trains also run in Dresden and the surrounding area. Travel centres in the Dresden Hauptbahnhof (main train station) and in Dresden-Neustadt will provide you with further information.

Taxis
It is not customary to flag down a taxi cab. Instead, there are many taxi-stops in the city and you can order a taxi by telephone. Prices are set according to a basic charge and a set price per kilometre.
A taxi from the Dresden Airport to the ICD costs approximately EUR 27-30.

Getting to Dresden
Dresden is easily reached by air, rail or road.
The city’s international airport connects you with all major German cities and hubs, as well as over 40 international destinations.
Dresden’s main railway station, Dresden Hauptbahnhof, has excellent local, national and international links.
The city is well connected with the German Highway system.
W O M E N A U T O M O T I V E S U M M I T

Le Meridien Hotel, Stuttgart

working together for a better future

13th June 2019

A few confirmed speakers include:

- Sabine Scheunert
  VP, Digital & IT
  Mercedes-Benz

- Linda Jackson
  CEO
  Citroën

- Helen Emsley
  Exec, Director, Design
  General Motors

- Ellen Sarson
  Automotive Lead
  SAP

- Angelika Sedian
  UK MD
  NIO

- Uwe Kubers
  EMEA Chairman
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