3rd International Conference & Exhibition on Thermoplastic Composites

Conference Programme

11 – 12 October 2016
MESSE BREMEN, Germany

www.ithec.de

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TEN-CATE: materials that make a difference

Bremen: Join the future.
Dear Ladies and Gentlemen,

Given the wide range of thermoplastic composites components employed in the aerospace and automotive industry today, it’s obvious that a lot of progress has already been made. Based on existing applications alone, we can anticipate that the tonnage of these materials will still increase 200 to 300 percent in the coming decade, encroaching on a marked share now owned by metals and thermoset composites. Further advances in thermoforming, welding and bonding open new opportunities for thermoplastic composites in secondary and primary structures as well as high-volume interior components.

We hereby invite you to have a look into the future and present our recent Programme Brochure for ITHEC 2016, 3rd International Conference and Exhibition on Thermoplastic Composites. In six sessions we will be portraying the current state of the art and future trends. Based on the response of a newly introduced Call for Papers, our international Programme Committee has carefully selected the resulting 25 oral and 25 poster presentations. Of course, all contributions, including the posters, will be properly documented in the proceedings.

In addition, we are happy to announce two keynote lectures representing the automotive and the aircraft industry. Günther H. Deinzer and Florian Meyer from Composite Developments at AUDI AG will talk about the “Potentials & Requirements for Fibre Reinforced Polymers” as the “Next Generation of Lightweight Materials in the Automotive Industry”. Axel Flaig, Head of Research and Technology at Airbus S.A.S., will present “New Horizons at Airbus Research & Technology”.

We are sure that besides all these presentations there will be sufficient time for visiting the fully booked exhibition and for networking with the community.

The Programme Committee, the exhibitors as well as the organisers would be pleased to welcome you to the 3rd International Conference and Exhibition on Thermoplastic Composites in October 2016.

Looking forward to having you with us in Bremen.
Best regards,

Axel Herrmann
Conference Chair
Universität Bremen

Hubert Borgmann
Project Manager ITHEC
MESSE BREMEN

The organisers would like to thank all the sponsors and media partners!

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J.C.H. Wong, ETH Zürich, Zürich, CH
M. Würtele, KraussMaffei Technologies GmbH, München, DE

Tuesday, 11 October 2016

from 7:30 Registration
09:00 – 09:30 Opening / Welcoming (Hanse Saal)
09:30 – 10:15 Keynote Automotive (Hanse Saal)

Session A: Automotive I
(Hanse Saal)
10:15 – 10:40 A.1
10:40 – 11:05 A.2
11:05 – 11:35 Coffee break
11:35 – 12:00 A.3
12:00 – 12:25 A.4
12:25 – 12:50 A.5
12:50 – 14:50 Lunch break

Session B: Aerospace I
(Hanse Saal)
14:50 – 15:15 B.1
15:15 – 15:40 B.2
15:40 – 16:05 B.3
16:05 – 16:35 Coffee break
16:35 – 17:00 B.4
17:00 – 17:25 B.5
19:30 Conference Dinner at Bremer Ratskeller

Session C: Eco-Efficient Processes and Applications
(Focke Wulf Saal)
14:50 – 15:15 C.1
15:15 – 15:40 C.2
15:40 – 16:05 C.3
16:05 – 17:00 C.4
17:00 – 17:25 C.5

Wednesday, 12 October 2016

from 8:00 Registration
09:00 – 09:45 Keynote Aerospace (Hanse Saal)
10:00 – 12:00 Poster Session (Kaisen Saal)
12:00 – 14:00 Lunch break

Session D: Automotive II
(Hanse Saal)
14:00 – 14:25 D.1
14:25 – 14:50 D.2
14:50 – 15:15 D.3
15:15 – 15:45 Coffee break
15:45 – 16:10 D.4
16:10 – 16:35 D.5
16:40 – 16:50 Closing Remarks (Hanse Saal)
16:50 End of Conference

Session E: Aerospace II
(Focke Wulf Saal)
14:00 – 14:25 E.1
14:25 – 14:50 E.2
14:50 – 15:15 E.3
15:15 – 15:45 Coffee break
15:45 – 16:10 E.4
16:10 – 16:35 E.5
### 11 October 2016

#### Keynote
**Keynote Automotive (Hanse Saal):**
Fibre Reinforced Polymers – the Next Generation of Lightweight Materials in the Automotive Industry – Potentials & Requirements  
G.H. Deinzer, F. Meyer  
AUDI AG, Neckarsulm, DE

#### Session A: Automotive I (Hanse Saal)
**Session chair:** F. Henning, Fraunhofer ICT, Pfìnztal, DE  
M. Würtele, KraussMaffei Technologies GmbH, München, DE

| A1 | 10:15 – 10:40 | Design and Engineering of Structural Applications Based on Thermoplastic Composites  
A. Erber, S. Janetzko  
SGL Group, Meitingen, DE |
|----|---------------|------------------------------------------------------------------------------------|
| A2 | 10:40 – 11:05 | Coupled Heating-Forming Simulation of the Thermoforming of Thermoplastic Composites  
T. Baumard, Institut Clément Ader, Albi, FR, and Queen's University Belfast, Belfast, UK  
O. De Almeida, Institut Clément Ader, Albi, FR  
G. Menary, Queen's University Belfast, Belfast, UK  
F. Schmidt, Institut Clément Ader, Albi, FR  
P. Martin, Queen's University Belfast, Belfast, UK  
J. Bikard, Solvay R&I, Saint-Fons, FR |
|    | 11:05 – 11:35 | Coffee break |
| A3 | 11:35 – 12:00 | QSP®: How to Produce a Netshape Thermoplastic Composite Part in One Minute  
C. Callens, C. Champenois  
CETIM, Bougenais, FR  
J. Hubert, Pinette Emidecau Industries, Chalon sur Saône, FR |
| A4 | 12:00 – 12:25 | Automotive Crashbeam from UD Tapes by Tailored Blanks Production and its Optimisation  
R. van den Aker, Van Wees UD and Crossply Technology BV, Tilburg, NL |
| A5 | 12:25 – 12:50 | Influence of the Cathodic Dip Painting Process on the Mechanical Properties of Fibre-Reinforced Thermoplastic Composites  
T. Grätzl*, BMW Group, Landshut, DE  
N. Schramm, L. Kroll  
Technische Universität Chemnitz, Chemnitz, DE |

#### Session B: Aerospace I (Hanse Saal)
**Session chair:** I. Fernandez Villegas, TU Delft, Delft, NL  
A. Blom, The Boeing Company, Seattle, USA

| B1 | 14:50 – 15:15 | Overmoulding – An Integrated Design Approach for Dimensional Accuracy and Strength of Structural Parts  
M. Bouwman, T. Donderwinkel, S. Wijskamp  
ThermoPlastic composites Research Center – TPRC, Enschede, NL |
| B2 | 15:15 – 15:40 | Efficient Laser Cutting of High-Performance Thermoplastic Composites  
O. Meier*, LASER on demand GmbH, Langenhagen, DE  
P. Hansen, Element Materials Technology, Hitchin, UK  
R. Staehr, S. Bluemel  
Laser Zentrum Hannover e.V., Hannover, DE  
S. Royo-Perez, Element Materials Technology, Hitchin, UK  
J. Lindner, LASER on demand GmbH, Langenhagen, DE  
P. Jaeschke, Laser Zentrum Hannover e.V., Hannover, DE |
| B3 | 15:40 – 16:05 | Hybrid Textiles – The Novel Way of Forming High-Performance Thermoplastic Composites for Primary Structure  
M. Koerdt, Faserinstitut Bremen e.V., Bremen, DE  
C. Laugwitz, HBW-Gubesch Thermoforming GmbH, Wilhelmsdorf, DE |
|    | 16:05 – 16:35 | Coffee break |
| B4 | 16:35 – 17:00 | Sequentially Coupled Material Flow and Multi-Scale Stress Analysis of Discontinuous Long-Fiber Composite Helicopter Fairing Rib  
H. Kilic, Greene, Tweed & Co., Kulpsville, USA  
S. O’Neill, Greene, Tweed & Co., Ruddington, UK  
J. Hun, Greene, Tweed & Co., Kulpsville, USA |
| B5 | 17:00 – 17:25 | In-Situ Strain Monitoring-Based Simulation of Residual Stress/Strain Due to Skin-Core Effect in Thick CF/PPS Laminates  
T. Tsukada, S. Minakuchi, N. Takeda  
The University of Tokyo, Kashiwa-shi, JP |
11 October 2016

**Session C: Eco-Efficient Processes and Applications** (Focke Wulf Saal)
Session chair: J.C.H. Wong, ETH Zürich, Zürich, CH
P. Hansen, M-Tec Consultants, St Albans, UK

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| C1    | 14:50 – 15:15 Recycling of Thermoplastic CFRP with Electrodynamic Fragmentation | M. Roux, Fachhochschule Nordwestschweiz, Windisch, CH
N. Eguémann, Cross Composite AG, Steckborn, CH
L. Giger, Fachhochschule Nordwestschweiz, Windisch, CH, and Cross Composite AG, Steckborn, CH
A. Bian, C Dransfeld* Fachhochschule Nordwestschweiz, Windisch, CH |
H. Fischer, Faserinstitut Bremen e.V., Bremen, DE |
| C3    | 15:40 – 16:05 A Technique for the NDT Inspection and Reparation of a Continuous Manufacturing Process for the Offshore Oil and Gas Industry | A. Sharpe, Surface Generation LTD, Oakham, UK
N. Dodds, V. Jha
GE Oil & Gas, Newcastle upon Tyne, UK |
|       | 16:05 – 16:35 Coffee break                                           |                                                                        |
| C4    | 16:35 – 17:00 Wind Blades Using Cost-Effective Advanced Lightweight Design | F. Rapp, B. Beck, T. Huber
Fraunhofer ICT, Pfinztal-Berghausen, DE |
| C5    | 17:00 – 17:25 Resource-Efficient Production of Large-Scale Lightweight Structures | S. Nendel*, H.-J. Heinrich
Cetex Institut für Textil- und Verarbeitungsmaschinen gemeinnützige GmbH, Chemnitz, DE |

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12 October 2016

**Keynote**
9:00 – 9:45
**Keynote Aerospace** (Hanse Saal):
Airbus Research & Technology - New Horizons
A. Flaig, Airbus S.A.S., Toulouse, FR

10:00 – 12:00
**Poster Session** (Kaisen Saal),
see page 14 for details

**Session D: Automotive II** (Hanse Saal)
Session chair: F. Henning, Fraunhofer ICT, Pfinztal, DE
M. Würtele, KraussMaffei Technologies GmbH, München, DE

**D1**
14:00 – 14:25
**Structural Joining of a Steel Insert with a Thermoplastic Organic Sheet**
T. Renault, Faurecia, Nanterre, FR

**D2**
14:25 – 14:50
**VCSEL-Assisted Tape Placement Technology**
T. Weiler, Aachener Zentrum für integrativen Leichtbau, Aachen, DE, and Fraunhofer IPT, Aachen, DE
M. Emonts, Fraunhofer IPT, Aachen, DE, and Aachener Zentrum für integrativen Leichtbau, Aachen, DE
H. Janssen, Fraunhofer IPT, Aachen, DE

**D3**
14:50 – 15:15
**Individualised Production of Thermoplastic Composite Parts – Combining Additive Manufacturing and Thermoforming**
M. Hildebrandt, C. Hopmann, C. Beste
RWTH Aachen, Aachen, DE

15:15 – 15:45
Coffee break

**D4**
15:45 – 16:10
**A New Generation of Aesthetic Composites Based on Styrenic Polymers**
P. Juan, M. Blinzler, P. Deitmerg, N. Niessner
INEOS Styrolution Group GmbH, Frankfurt am Main, DE

**D5**
16:10 – 16:35
**New Reactive Resins for Thermoplastic RTM & Pultrusion**
M. Glotin, ARKEMA, Colombes, FR

12 October 2016

**Session E: Aerospace II** (Focke Wulf Saal)
Session chair: I. Fernandez Villegas, TU Delft, Delft, NL
A. Blom, The Boeing Company, Seattle, USA

**E1**
14:00 – 14:25
**Lightweight Thermoplastic Composite Fuel Tanks for Space Applications**
C. O’Bradaigh, University of Edinburgh, Edinburgh, UK, and ÉireComposites Teo., Galway, IE
D. Grogan, B. Murray, S. Leen
National University of Ireland, Galway, IE

**E2**
14:25 – 14:50
**Joining of Light Metals to Fiber Reinforced Thermoplastic Composites by Power Ultrasound for the Application in Hybrid Aircraft Structures**
J. Born, Composite Technology Center GmbH, Stade, DE
F. Staab, F. Balle
Universität Kaiserslautern, Kaiserslautern, DE

**E3**
14:50 – 15:15
**Modified Thermoplastic Foam Cores for Structural Thermoplastic Composite (TPC) Sandwich Structures**
J. Grünewald, Airbus Group Innovations, München, DE, and Universität Bayreuth, Bayreuth, DE
T. Orth, C. Weimer
Airbus Group Innovations, München, DE
V. Altstädt, Universität Bayreuth, Bayreuth, DE

15:15 – 15:45
Coffee break

**E4**
15:45 – 16:10
**Hybrid Laminates; Tuning Organosheet Properties**
H. Luinge, TenCate Advanced Composites BV, Nijverdal, NL
L. Warnet, University of Twente, Enschede, NL

**E5**
16:10 – 16:35
**Additive Manufacturing of Aerospace Composite Structures**
D. Hauber, R. Marcario, Z. August
Automated Dynamics, Niskayuna, USA
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| **P 01** The Development of an Engineering Approach to Find Cost-Effective Solutions for Hybrid Composite Structures  
D. de Vries*, Code Product Solutions, Schinnen, NL  
W. Schijve, SABIC, Elsloo, NL | **P 09** Thermoplastic Multi-Tows Winding Placement WOLF_TP Project  
E. Soccard, Airbus Group Innovations, Bougenais, FR |
| **P 02** COMPOSTAMP  
F. Ravisé, B. Duthille  
Airbus, Bougenais, FR | **P 10** Residual Strain Monitoring During Hot Pressing Processes of Thermoplastic Composites by a Distributed Optical Fiber Sensor  
N. Saito, H. Horizono, N. Ishikawa, T. Takayanagi  
Mitsubishi Heavy Industries, LTD., Nagoya-shi, JP  
N. Takeda, The University of Tokyo, Kashiwa-shi, JP  
K. Enomoto, SOKEIZAI Center, Minato-ku, JP |
| **P 03** Carbon Fibers and Thermoplastics – A Comparison of PEEK, PEKK and Epoxy Resins in UD Prepregs  
M. Roden, Toho Tenax Europe GmbH, Wuppertal, DE | **P 11** Thermoplastic Composite Fusion Welding (CoFusion)  
D. Conway, S. Cooper*  
AGC Aerocomposites, Crewkerne, UK |
| **P 04** Production Optimization of High Performance Carbon Fiber Reinforced Thermoplastic Composite Crash-Elements  
M. Beyrle*, F. Fischer, M. Endraß  
Deutsches Zentrum für Luft- und Raumfahrt (DLR), Augsburg, DE  
L. Häberle, Deutsches Zentrum für Luft- und Raumfahrt (DLR), Stuttgart, DE  
T. Gerngroß, M. Kupke  
Deutsches Zentrum für Luft- und Raumfahrt (DLR), Augsburg, DE | **P 12** SOfIA – Structural Organic Sheet Components for the Integration in Automobiles  
F. Jansen, Faserinstitut Bremen e.V., Bremen, DE  
A. Kunze, Stiftung Institut für Werkstofftechnik, Bremen, DE |
| **P 05** Processing UD-Thermoplastic Composites for Local Reinforcement  
C. Götze, Georg Kaufmann Formenbau AG (GK Tool), Busslingen, CH | **P 13** Mechanical Behaviour of Short Entada Mannii – Glass Fiber Hybrid Polypropylene Composites  
O. Balogun, Prototype Engineering Development Institute, Ilesha, NG  
J. Omotoyinbo, K. Alaneme, J. Borode  
Federal University of Technology Akure, Akure, NG |
| **P 06** Near Net Shape Thermoplastic Preforming with Continuously Automated Cutting and Robotic Pick and Place Processes  
M. Kühnel, A. Schuster, C. Rähtz, M. Kupke  
Deutsches Zentrum für Luft- und Raumfahrt (DLR), Augsburg, DE | **P 14** Study and Simulation for the Effect of Interface Microstructure on the Press Forming of Thermoplastic Composite Laminate  
H. Wu, Henan University of Technology, Zhengzhou, CN  
Z. Guo, Marlboro College, Marlboro, USA  
W. Ba, Henan University, Zhengzhou, CN |
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| **P18** | Resistance Welding of Carbon Fiber Reinforced Thermoplastic Composites Using Carbon Fiber Heating Element  
D. Tanabe*, Osaka University, Suita-shi, JP  
F. Kubohori, S. Shimada, K. Nishiyabu  
Kindai University, Higashiosaka-shi, JP  
T. Kurashiki, Osaka University, Suita-shi, JP |
| **P19** | New Self-Reinforced Polymeric Composites Made of Biobased PLA Commingled Yarns  
T. Köhler*, K. Vonberg, G. Seide, T. Gries  
RWTH Aachen, Aachen, DE |
| **P20** | Research of Carbon Fiber Non-Woven Fabric Reinforced Thermoplastic Composites Through Press Molding  
M. Matsushita, Yuho Co., Ltd., Osaka-shi, JP  
Y. Ogura, A. Imajo, H. Inoya, H. Hamada  
Kyoto Institute of Technology, Kyoto-shi, JP |
| **P21** | Experimental Investigation and Numerical Modelling of the Bonding Strength of Full-Thermoplastic Hybrid Composites  
R. Giusti, G. Lucchetta  
University of Padua, Padova, IT |
| **P22** | Investigation of the Processing Time of Fibre Reinforced Thermoplastic Composites with Improved Thermal Properties  
R. Brüll, G. Seide, T. Gries  
RWTH Aachen, Aachen, DE |
| **P23** | Multiaxial Non Crimp Fabrics for Reinforcing Thermoplastic Composites  
S. Bakker, K. Suhre  
SAERTEX GmbH & Co. KG, Saerbeck, DE |
| **P24** | Mechanical Behaviour of Novel Organo-Sandwich Components for Lightweight Structures in Automotive Applications  
A. Geyer, T. Gläßer  
Fraunhofer IMWS, Halle (Saale), DE  
J. Pflug, ThermHex Waben GmbH, Halle (Saale), DE  
R. Schlimper, M. Zscheyge  
Fraunhofer IMWS, Halle (Saale), DE |

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| **P25** | Manufacturing of a UD-Tape Reinforced Hybrid Thermoplastic Composite Test Component  
B. Rietman, E. Boxus, J. Wismans  
SABIC, Geleen, NL |
| **P26** | Innovative Hybrid Thermoplastic Composite Test Beam to Validate all Failure Modes for Automotive  
W. Schijve, R. Yaldiz  
SABIC, Geleen, NL |
| **P27** | Manufacture and Testing of Thermoplastic UD Tapes for Serial Production  
M. Risthaus, Evonik Resource Efficiency GmbH, Marl, DE |
ITHEC 2016, 3rd International Conference and Exhibition on Thermoplastic Composites, will take place in Bremen, Germany, on 11 – 12 October 2016.

ITHEC is a unique expert conference focusing on structural fibre reinforced lightweight constructions. The two day event covers the latest developments in high performance thermoplastic composite applications in aerospace, automotive and energy applications, as well as transport & engineering.

The invitation to attend ITHEC is directed at executives and researchers from industry (providers of raw materials for composite components, providers of manufacturing equipment, component manufacturers, end users) as well as institutes and universities in charge of these topics who are interested in an intensive exchange on the achievements in the industrial sector and the transfer of R&D results into industrial products.

**ITHEC Conference focuses on new results on**
- Thermoplastic Composite Lightweight Structures
- Manufacturing & Process Technologies
- Simulation & Modelling
- Raw Materials & Standardisation
- Process Automation & Production Machinery
- Process Monitoring / Material Quality & Testing
- Eco Balance & Recycling

ITHEC is the premium event to meet the leading international specialists, to share their expertise and to strengthen the business cooperations. About 400 attendees will gather to discuss the current results presented in oral sessions and an additional poster session.

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**ADVANCING THERMOPLASTIC COMPOSITE TECHNOLOGY**

The technological challenges faced by industry can be found on various technology and manufacturing readiness levels. Although specific thermoplastic composite components and substructures are already applied commercially, a limited understanding of the physical mechanisms and phenomena, governing the use and manufacturing phase, make product development expensive and time consuming and thereby hinders further (large scale) application of the technology.

TPRC provides the required thorough understanding of thermoplastic composite materials and processes to optimize existing and new manufacturing processes in terms of quality and productivity. The R&D results enable viable use of thermoplastic composites by eliminating technological barriers which are identified together with the TPRC member companies and universities.

Being a member of TPRC will give you access to the cutting edge research, the state-of-the-art laboratory and the TPRC expert network with 20+ years of experience in researching and developing thermoplastic composite applications.

Looking forward to enlighten you!

---

**www.thermoplastic-composites.com | info@tprc.nl**
Conference Fees

Two-day ticket (early bird discount) 645 €*
Registration until 31 July 2016

Two-day ticket 720 €*
Registration from 1 August 2016

One-day ticket 440 €*
no early bird discount available

Reduced fee for students (listeners only) 65 €*
including Proceedings on USB card and refreshments, but without lunches (registration to be accompanied by student ID)

Reduced fee for one author of a paper 440 €*

Conference fee for exhibitors incl.
One representative for free; two tickets for free are available if stand size is 12 m² or more

Printed version 30 €
of conference proceedings, if ordered (plus 7 % VAT)
by 31 August 2016 together with a conference registration

Conference dinner at Bremer Ratskeller 65 €*
(11 October 2016)

*(Prices plus 19 % VAT)

The conference fee includes a digital version of the conference proceedings, the entry to the exhibition, lunches and refreshments.

The official conference language is English; there will be no simultaneous translation.

Please make use of the online registration facilities on www.ithec.de
Please note: early bird discount is available until 31 July 2016. From 23 September 2016, registration is only possible on-site.
The accompanying **International Exhibition on Thermoplastic Composites** will present new lightweight concepts, material trends, innovative processing technologies and related inspection methods for thermoplastic composites.

**New results and services in the fields of**
- Raw Materials
- Textiles & Fibre Technologies
- Semi-Finished Products
- Production Technologies & Machinery
- Simulation & Modelling Tools
- Composite Structures
- Joining Technologies
- Process Monitoring & Quality Control
- Materials Testing

**Related to areas such as**
- Aerospace & Civil Aviation
- Automotive Vehicles
- Oil & Gas
- Wind Energy
- Transport & Engineering

**Rental Fees**  
(exhibition space only, minimum rental space 6 m²)

- **Row stand** (1 side open) 210 € / m²  
- **Corner stand** (2 sides open) 230 € / m²  
- **Head stand** (3 sides open) 250 € / m²  
  (All prices plus 19% VAT)

Pre-fabricated rental stands are available. In case of interest please contact the organiser for detailed information.

**Opening Hours of the Exhibition**
- **Tuesday**, 11 October 2016 9:00 – 18:00
- **Wednesday**, 12 October 2016 9:00 – 17:00

The exhibition will take place at the **Bremen Congress Center** (CCB) foyer close to the conference hall. Exhibitors and visitors will find an excellent environment for networking just in front of the conference lecture hall.

**List of Exhibitors** (updated 22 June 2016)

- Automated Dynamics, Niskayuna, USA
- Barrday Composite Solutions, Millbury, USA
- Cetex Institut für Textil- und Verarbeitungsmaschinen gemeinnützige GmbH, Chemnitz, DE
- CFK Valley Stade e.V., Stade, DE
- CompositesWorld / Gardner Business Media, Inc., Cincinnati, USA
- EcoMaT (c/o WFB Wirtschaftsförderung Bremen GmbH), Bremen, DE
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