



# Conference 22 Hamburg

**Date:** 15 - 17 November 2022    **Location:** Handelskammer Hamburg – Germany

## WEDNESDAY 16 NOVEMBER

- 8.00 - 9.00    **Registration**
- 9.00 - 10.00    **Opening**
  - Welcome by Prof Frank Henning, President SAMPE Germany
  - Plenary Session Chair Christian Keun, Organizing Cie. Conference Hamburg 22
  - Opening by Guy Larnac, President SAMPE Europe
- 9.15    • Keynote presentation by Claudio Dalle Donne, Head of Materials, Processes & Tests, Airbus Operations Bremen
- 9.45    • Presentation Winners 37<sup>th</sup> Students Seminar by the Jury Chair

10.00 - 10.30    **Coffee Break**

10.30 - 12.30    **Session 1 - 6 talks**

Room 1	Room 2	Room 3	Room 4
<b>37<sup>TH</sup> STUDENTS SEMINAR WINNERS</b>	<b>AEROSPACE &amp; SPACE</b>	<b>ADDITIVE MANUFACTURING</b>	<b>TESTING, DESIGN &amp; SIMULATION I</b>
<p><b>Session chair: Charlotte Salaun, Vice Chairman Jury, France</b></p> <ul style="list-style-type: none"> <li>• <i>Best Master Student</i></li> <li>• <i>Best PhD Student</i></li> </ul>	<p><b>Session chair: Guy Larnac, Ariane Group, France</b></p> <ul style="list-style-type: none"> <li>• <i>Sustainable Materials and Process Strategies for the Aircraft of Tomorrow</i> by Llorenç Llopert, Boeing Research &amp; Technology, Germany</li> <li>• <i>Rapid Cure Prepreg for Aerospace Applications</i> by Jens ter Braak, Teijin Carbon Europe, Germany</li> <li>• <i>Safety-relevant composite structures for future ressource saving jet engines</i> by Alrik Dargel, Rolls-Royce Deutschland \ TU dresden, Germany</li> <li>• <i>Manufacturing study on CFRP rear pressure bulkhead using Vacuum Assisted Process (VAP)</i> by Jan Faber, DLR, Germany</li> <li>• <i>A digital process-data-assessment method for tailored fiber placement preforms</i> by Jonas Kluger, TU Dresden, Germany</li> <li>• <i>Release properties of plasma polymeric coated polymer films and adhesive strength of transferred polyurethane coatings to fiber-reinforced thermosets</i> by Pascal Baur, Fraunhofer IFAM, Germany</li> </ul>	<p><b>Session chair: To be announced</b></p> <ul style="list-style-type: none"> <li>• <i>Hybrid Processing Advances Increase Versatility, Performance of Structural CFRTP Composites through Additive Manufacturing/Compression Molding</i> by Yannick Willemin, 9T Labs, Switzerland</li> <li>• <i>Innovative Thermoset Materials and Additive Manufacturing Processes to Eliminate Mechanical Anisotropy in Fused and Continuous Filament Fabrication</i> by Björn Riecken, CompriseTec, Germany</li> <li>• <i>Highly aligned discontinuous fibre composite filaments for fused deposition modelling: Layer investigation</i> by Narongkorn Krajangsawasdi, University of Bristol, UK</li> <li>• <i>Determination of optimal process parameters for selective laser melting for metal additivemanufacturing by scanning path simulation</i> by Joren Pelfrene, Flanders Make, Belgium</li> <li>• <i>Functional and lightweight composites using additive manufacturing</i> by Fidel Valega, Brightlands Materials Center, NL</li> </ul>	<p><b>Session chair: Victor Shulepov, UkrRiat, Ukraine</b></p> <ul style="list-style-type: none"> <li>• <i>Controlled delamination induced by symmetrical laser shock</i> by Marine Scius-Bertrand, Rescoll, France</li> <li>• <i>Analysis of transient response and failure initiation by impact demolding of composite parts</i> by Johannes Stolz, Faserinstitut Bremen, Germany</li> <li>• <i>Identifying design guidelines for inductive heaters in RTM process using numerical modelling</i> by Gero Förster, Faserinstitut Bremen, Germany</li> <li>• <i>Health monitoring of CFRP Laminates under cyclic loading via vibro-acoustic modulation based measurements</i> by Erik Willmann, TU Hamburg, Germany</li> <li>• <i>A Novel Method to Obtain Smearred Properties of a Fiber-Matrix System Including Stress Concentration</i> by Cihan Talebi, METU (Middle East Technical University) /Roketsan, Turkey</li> <li>• <i>Impact of Automated Fibre Placement Induced Defects on the Compression Behaviour of CFRP Structures</i> by Andreas Friedel, TU Braunschweig, Germany</li> </ul>

12.30 - 14.00    **Lunch - Sponsor Exhibition & Poster Presentations**

14.00 - 15.20    **Session 2 - 4 talks**

Room 1	Room 2	Room 3	Room 4
<b>HYDROGEN STORAGE</b>	<b>THERMOPLASTICS IN AEROSPACE I</b>	<b>AUTOMATION</b>	<b>TEXTILES AND PREFORMING</b>
<p><b>Session chair: to be announced</b></p> <ul style="list-style-type: none"> <li>• <i>H2 meets Aviation – A presentation on hydrogen application in aircraft systems</i> by Tobias Meyer, CTC, Germany</li> <li>• <i>Novel structure-integrated hydrogen storage systems for aerospace applications</i> by Nicole Motsch-Eichmann, Leibniz Institut, Germany</li> <li>• <i>Sustainable composite H2 tanks: 15% material saving by automated dome reinforcements</i> by Florian Lenz, Cevotec, Germany</li> <li>• <i>Novel matrix materials and design concepts for high pressure hydrogen storage composite vessels</i> by Markus Wolfarth, PCC Leoben, Austria</li> </ul>	<p><b>Session chair: Sebastiaan Wijskamp, TPRC, NL</b></p> <ul style="list-style-type: none"> <li>• <i>Development of an Out-of-Autoclave Thermoplastic Composite Spar</i> by Michael Wielandt, GKN Fokker, Netherlands</li> <li>• <i>Automated Fibre Placement (AFP) Consolidation with LMPAEK-Based Uni-Directional Tape: Achieving Thermosets Layup Speeds &amp; Complex Large Parts Manufacturing</i> by Gilles Larroque, Victrex, France</li> <li>• <i>Innovative multi-technology thermoplastic fuselage panel</i> by Lucas Binsfeld, Airbus Atlantic, France</li> <li>• <i>Thermoplastic Processing Technologies Towards Industrialization</i> by Stefan Jarka, DLR, Germany</li> </ul>	<p><b>Session chair: to be announced</b></p> <ul style="list-style-type: none"> <li>• <i>Simulation of the placement behavior of fiber patches including draping effects with a foam-based gripper</i> by Matthias Kornmann, University of Applied Sciences Augsburg, Germany</li> <li>• <i>Smart sensors for autonomous robotic panel assembly</i> by Alfons Schuster, DLR, Germany</li> <li>• <i>Influence of Powder-Epoxy Towpregging Line Processing Parameters on Towpreg Consolidation</i> by Hanisa Hasrin, University of Edinburgh, UK</li> <li>• <i>Application of a novel ultrafast manual and automatic joining process for thermoplastic aircraft brackets to metallic and thermoset fuselage components using ultrasonic technology</i> by Philipp Köhler, CTC, Germany</li> </ul>	<p><b>Session chair: to be announced</b></p> <ul style="list-style-type: none"> <li>• <i>Determination of the shear angle on the basis of the geometric surface slope</i> by Boris Manin, RWTH Aachen, Germany</li> <li>• <i>Serial Process for Customized and Sustainable Semi-Finished Prepreg Products</i> by Florian Brillowski, RWTH Aachen, Germany</li> <li>• <i>Process window and weld strength analysis of ultrasonic spot welds on bindered dry-fibre carbon tapes</i> by Nils Widmaier, TU Swinburne, Australia</li> <li>• <i>Development of automated preform technologies for complex shaped parts</i> by Henri de Vries, Royal Netherlands Aerospace Centre, NL</li> </ul>

15.20 - 15.50    **Coffee Break**

15.50 - 17.50    **Session 3 - 6 talks**

Room 1	Room 2	Room 3	Room 4
<b>INDUSTRIAL INNOVATION I</b>	<b>AEROSPACE MANUFACTURING I</b>	<b>AUTOMOTIVE &amp; TRANSPORT</b>	<b>MECHANICAL CHARACTERISATION</b>
<p><b>Session chair: to be announced</b></p> <ul style="list-style-type: none"> <li>• <i>Link between innovation and control – the sensitive balancing of standards and technological progress via superordinate closed-loop control</i> by Julia Beter, ENGEL Austria, Austria</li> <li>• <i>Hybrid Technology Development to Direct Print Thermoset Molds for Composites</i> by Ido De-La-Vega, Massivit 3D, Israel</li> <li>• <i>Enable Revolutionary Developments Sustainably and Scalably</i> by Max Schultes, RAMPF Group, Germany / USA / Canada</li> <li>• <i>Efficient manufacturing of composite components for aircraft interior applications</i> by Sebastian Bühler, Biontec, Switzerland</li> <li>• <i>Novel Composite Manufacturing Technologies for Green Mobility</i> by Jamie Snudden, Aiurborne, UK / Netherlands</li> </ul>	<p><b>Session chair: Tamara Blanco Varela, SAMPE Ibérica, Spain</b></p> <ul style="list-style-type: none"> <li>• <i>Investigating the Hybridization Effect of Towpreg on the Bending Properties of Sheet Molding Compound Part</i> by Hao Wang, RWTH Aachen, Germany</li> <li>• <i>Equipment and process for high-rate RTM production of large aerospace structures</i> by André Bertin, Coexpair, Belgium</li> <li>• <i>Design of Modular, CFRP-Encased Power-Electronic Converters for More-Electric Aircraft Applications</i> by Mark Higgins, University of Strathclyde, UK</li> <li>• <i>Design optimization procedure of autoclave loading based on process simulation and neural network</i> by Juhong Zhu, Faserinstitut Bremen, Germany</li> <li>• <i>Tailored non-crimp fabric for eVTOL propellers - optimized fiber materials for high mechanical performance and efficient manufacturing</i> by Rico Hubert, University of Applied Sciences Aachen, Germany</li> <li>• <i>Innovative translucent Epoxy-SMC for Applications with Flame retardant properties</i> by Simon Kaysser, CompriseTec, Germany</li> </ul>	<p><b>Session chair: to be announced</b></p> <ul style="list-style-type: none"> <li>• <i>High-speed compression of structural polymers</i> by Siebe Spronk, Solvay, Belgium</li> <li>• <i>Pathway Towards Inverse Design of Sandwich Panels: Equivalent Shell Model for Cellular Core Sandwich Panels</i> by Dilum Fernando, University of Edinburgh, UK</li> <li>• <i>Implementation of structural thermoplastic composites in a 45' intermodal container</i> by Jan Verhaeghe, Agesia - Structural Composite Technology, Belgium</li> <li>• <i>Ultrafast Terahertz Sensing for inline production control and automated inspection: Non-Destructive Testing and 3D Imaging of Composites and Bondings</i> by Uli Schmidhammer, TeraTonics, France</li> <li>• <i>Influence of compression behavior on skin formation in thermoplastic structural foams manufactured in a hot press process</i> by Maximilian Salmins, Leibniz Institut, Germany</li> <li>• <i>Analysis of the Fabrication and the Bending Strength of Bio-Based Sandwich Materials with Different Core Materials</i> by Mathias Engelfried, Stuttgart University, Germany</li> </ul>	<p><b>Session chair: to be announced</b></p> <ul style="list-style-type: none"> <li>• <i>Combined tensile and dynamic testing for the accurate measurement of mechanical properties of composite materials</i> by Hugo Sol, Bytec, Belgium</li> <li>• <i>Microplastic deformation behavior of epoxy resin</i> by Janina Mittelhaus, TU Hamburg, Germany</li> <li>• <i>Influence of the Boundary conditions on the low-velocity-impact behaviour of curved composites plates</i> by Jannis Hüppauff, Leibniz Institut, Germany</li> <li>• <i>Influence of processing parameters on matrix-dominated properties of CF/PEKK composites</i> by Helena Pérez-Martin, University of Edinburgh, UK</li> <li>• <i>Investigation into the mechanical and thermal properties of different powder epoxies for composites applications</i> by Arun Alapati, University of Edinburgh, UK</li> </ul>

18.30 - 21.30    **Happy Hour & Network Diner in Handelskammer Hamburg**



8.00 - 8.30

**Registration**

8.30 - 10.00

**Session 4 - 5 talks**

**Room 1**

**SUSTAINABILITY & RECYCLING I**

**Session chair: Prof. Ralf Schledjewski, Montanuniversität Leoben, Austria**

- *Hygrothermal ageing and durability of bio-based composites and structures* by Aart van Vuure, KU Leuven, Belgium
- *Multi-level circular process chain for carbon and glass fibre composites by Christian Eitzinger, Profactor, Austria*
- *Influence of Additives on the Properties of Recycled Sheet Moulding Compound (SMC)* by Vera Austermann, RWTH Aachen, Germany
- *Microwave technology for energy-efficient heating and drying in composite production* by Andreas Bündgens, RWTH Aachen, Germany
- *Bio-based fiber-reinforced composites – an approach to decarbonize* by Stephan Sprenger, Evonik, Germany

**Room 2**

**CTC**

**Session chair: Marc Fette, CTC, Germany**

- *Lightweight production 4.0 - requirements from Airbus perspective to enable the future of connected manufacturing* by Jan-Patrick Kalckhoff, Airbus, Germany
- *An Artificial Intelligence Approach for Creating Automatic Semantic Device Descriptions for Brownfield Industrial Robots* by Anna Nordhausen, Helmut-Schmidt-Universität Hamburg, Germany
- *Impact of alignment of the sonotrode on the quality of thermoplastic composite joints in continuous ultrasonic welding* by Maryam Ahanpanjeh, Helmut-Schmidt-Universität Hamburg, Germany
- *Potentials and future applications for direct embedded sensor technology by using Additive Manufacturing* by Marc Florian Meyer, Helmut-Schmidt-Universität Hamburg, Germany
- *Automated stress-constrained manufacturing process for 3D Fiber Layup* by Pezhman Pourabdollah, Airbus, Germany

**Room 3**

**SPORTS & LEISURE**

**Session chair: Hans Jürg Gysin, XYLOSH, Switzerland**

- *Dry fiber placement and sustainability for sporting goods* by Joerg Kaufmann, TU Chemnitz, Germany
- *Mechanical performances of innovative healable composites* by Cohades Amaël, CompPair Technologies Ltd, Switzerland
- *Moulding of thermoplastic nonwoven sheet materials in a vacuum membrane press. - Web Based Composites for sport and medical parts* by Felix Teichmann, ITA Augsburg, Germany
- *AFT, and How Does it Cut the Weight & Costs of Bike Components?* by Arne Buettner, 9TLabs, Switzerland

**Room 4**

**JOINING & BONDING**

**Session chair: Henrik Schmutzler, Lufthansa Technik, Germany**

- *Susceptor Aided Induction Welding of UD Peek/Carbon Fiber Composites* by Alfonso Maffezzoli, University of Salernao, Italy
- *Continuous ultrasonic welding of carbon fiber reinforced thermoplastic thin plies* by Saber Maamri, University of Salamanca, Spain
- *Robust Assembly - Quality Assured Welding Technologies for Full-Scale Applications* by Manuel Endrass, DLR, Germany
- *Analyzing of matrix hybrid composite joints* by Tobias Karrasch, University Augsburg, Germany

10.10 - 10.30

**Coffee Break**

10.30 - 12.30

**Session 5 - 6 talks**

**Room 1**

**SUSTAINABILITY & RECYCLING II**

**Session chair: Prof. Aart van Vuure, KU Leuven, Belgium**

- *Composites sustainability – Manufacturing, repair, and recycling are challenging* by Ralf Schledjewski, Montanuniversität Leoben, Austria
- *Effects of different environmental exposures on the properties of natural fibre reinforced biocomposites* by Hom Dhakal, University of Portsmouth, UK
- *Permeability, Compressibility and Relaxation Characteristics of Knitted Cellulose Regenerated Fibre Textiles* by Marcel Bender, Montanuniversität Leoben, Austria
- *Interfacial Characterisation of Natural Fique Fibre/Polypropylene Composites Using Single Fibre Fragmentation Test (SFFT)* by Ross Minty, University of Strathclyde, UK
- *Mono-Material Sandwich Structures – An Overview* by Sascha Kilian, Fraunhofer ICT, Germany
- *A novel thermoplastic rigid particle foam, meeting FST and Heat Release requirements of large (Interior) aircraft components* by Denis Holleyn, Evonik, Germany

**Room 2**

**THERMOPLASTICS IN AEROSPACE II**

**Session chair: Arnt Offringa, GKN Fokker, NL**

- *Assembly of the lower half of a Thermoplastic Multifunctional Fuselage Demonstrator* by Gabriele Ridolfi, GKN Fokker Aerospace, NL and Abhas Choudhary, SAMIXL, NL
- *Aircraft structural parts based on thermoplastic UD-tapes – A comprehensive processing approach including tape laying and injection overmolding using the example of an aircraft door outer skin* by Mathias Muehlbacher, Neue Materialien Bayreuth, Germany
- *Co-consolidation of metal-thermoplastic composite joints: analysis and optimisation of the interface* by Vanessa Marinosci, TPRC, NL
- *Innovating towards large scale Implementation of TPC's in Aerospace* by Tjitse Slange, Toray Advanced Composites, UK
- *Integrated solutions for large, complex stiffened thermoplastic composite structures* by Peter Boer, Collins Aerospace, NL

**Room 3**

**CIVIL AND MARINE ENGINEERING**

**Session chair: Prof. Conchúr Ó Brádaigh, University of Edinburgh, UK**

- *Development and validation of a gravity independent inline impregnation method for multi-tow robotic coreless fiber winding* by Marko Szczeny, TU Stuttgart, Germany
- *An Innovative Light-Weight FRP Composite Bridge Deck Panel* by Dilum Fernando, University of Edinburgh, UK
- *To be announced* by Andy Winistoerfer, Carbo-Link, Switzerland
- *Exploration of composite materials application on noise mitigation systems* by Duo Zou, Royal IHC, NL
- *Coextruded Polymeric Bicomponent Fibers for Concrete Reinforcements* by Jonas Herz, Rosenheim Technical University of Applied Sciences, Germany
- *Investigation of Recyclable Acrylic Monomer Resins for Marine and Renewable Energy Composite Applications* by Machar Devine, University of Edinburgh, UK

**Room 4**

**TESTING, DESIGN & SIMULATION II**

**Session chair: to be announced**

- *Reduction of emissions by means of improved materials testing and exploitation on basis of a digital twin* by Jan Seidel, Applus+ Laboratories and Jens Bold, Boeing Research and Technology Europe, Germany
- *Estimation of the permeability tensor based on machine learning approach* by David Droste, Faserinstitut Bremen, Germany
- *Towards a three-dimensional compaction model for non-planar geometries* by Dennis Bublitz, TU München, Germany

12.30 - 14.00

**Lunch**

12.30 - 14.30

**Plant Tours Leaving**

17.00 - 18.00

**Plant Tours back at Handelskammer Hamburg**

**POSTER PRESENTATIONS**

- *Co-Consolidation of Tape-Preforms to realize local reinforcements in stamp-forming* by Julian Weber, Leibniz Institut, Germany
- *Investigation of high performance elastic textile reinforcements for drapability to fabricate doublecurved textile reinforced concrete (TRC) elements* by Shantanu Bhat, RWTH Aachen, Germany
- *Implementation of the structural bonding process from the laboratory to the industrial application of aviation* by Samir Abdul, Helmut-Schmidt-Universität, Germany
- *Development of a Continuous Manufacturing Process for Wound Tubular Structural Elements Based on Thermoplastic Hybrid Yarns* by Dominik Granich, RWTH Aachen, Germany
- *Novel through-thickness reinforcement of foam-core sandwich composite panels* by Mohamed Saleh, Technology Innovation Insitute, United Arab Emirates
- *Introducing Fibrarforce Technology – Revolutionizing the high-volume production of customized multiaxial thermoplastic cross-plyies* by Lars Linnemann, Fibrarworks, Germany
- *Simulation-Driven Design (SFE) – A Concept for Forming Simulations* by Muhammad Saeed, Stuttgart University & TU Swinburne, Germany
- *A comparative study on using BESO and SIMP to optimize the design of laminated carbon fiberreinforced plastics using topology optimization* by Vinay Nagaraj, Leibniz Institut, Germany
- *New Particle Foam Core for automated high volume mass Production of Sandwich Aerostructures* by Alexander Roth, Evonik, Germany
- *Sustainable compression-molded composites using recycled polyester carpets and bottling discards* by Ranji Vaidyanathan, Oklahoma State University, USA
- *Development of an Insert Connection for Sandwich Structures under Localised Load* by Stefanie Zimmermann, Hochschule Mittweida, Germany
- *Test setup investigations for faster FE-calibration via advanced measurement techniques* by Christoph David, DLR, Germany
- *Simulation Based Forecast of Critical Quality Metrics for Thermoplastic Automated Fiber Placement* by Lars Brandt, German Aerospace Center (DLR), Germany
- *100% thermoplastic and recyclable sandwich panel for Aerospace* by Thomas Poumadere, DIAB, Sweden
- *Development of composites using waste mixed plastic and waste glass fibres for value-added products* by Kit O'Rourke, University of Edinburgh, UK
- *High barrier epoxy resin We developed epoxy resin for TypeV vessels that can retain gases well* by Kousuke Ikeuchi, Mitsubishi Gas Chemical, Japan
- *Modeling and simulation of the fabrication of glass/Elium® acrylic thermoplastic resin composites by the infusion process* by Nihad Siddig, IRT Jules Verne, France
- *Variable Angle Composite Plate's Thermal Buckling Analysis* by Fatih Baran, Istanbul Technical University, Turkey
- *Aerodynamic high-pressure hydrogen CFRP vessels with increased storage energy density for green aviation: Novel design and dimensioning method* by David Schlegel, Technische Universität Dresden, Germany
- *Study on edge resin outflow during prepreg CFRP cure* by Yusei Kondo, Mitsubishi Heavy Industries, Japan
- *Induction welding of recycled UD tape compounds* by Maarten Labordus, DAHER / KVE, France / Netherlands

**37<sup>TH</sup> STUDENTS SEMINAR 2022**

**Jury 37<sup>th</sup> SE Students Seminar 22**

*Chairman*  
**Christian Weimer, SAMPE Germany**

*Vice Chairman*  
**Charlotte Salaun, SAMPE France**

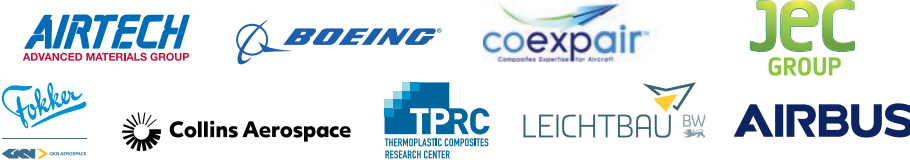
*Members*  
**Adrie Kwakernaak, SAMPE Benelux**  
**Matthias Geistbeck, SAMPE Germany**  
**Markus Zogg, SAMPE Switzerland**  
**Carwyn Ward, SAMPE UK**  
**Jim Johnson, SAMPE USA**

- *Exploring biaxially oriented polypropylene laminates for suitcase application: a time-dependency analysis of mechanical performance* by Arianna Tavano, KU Leuven, Belgium
- *Evaluation of the mechanical performance of short straw flax fiber reinforced polylactic-acid (PLA) composites* by Sofie Verstraete, KU Leuven, Belgium
- *Viscoelastic material model for nanocomposite* by Pradeep Ramanan, Tampere University, Finland
- *Vitrimer composites for Aeronautics* by Vincent Schenk, Université Toulouse III Paul Sabatier, France
- *Damage modeling of plasma sprayed ceramics under dynamic stresses using a discrete/continuous multi-scale approach* by Vincent Longchamp, Arts et Métiers Paritech, France
- *Investigation of the frequency influence on the fatigue behaviour of short glass fiber reinforced plastics using quasi-isothermal tests* by Daniel Fritsche, IKV - RWTH Aachen University, Germany
- *Design and Modeling of the ceramic femoral component of knee prototypes* by Anna Rita Terrizzi, University of Salento, Italy
- *Inorganic matrix composite strengthening systems: bond behaviour and durability in alkaline environments* by Giuseppe Bramato, University of Salento, Italy
- *Working on the development of thermoset recyclable resins* by Isaac Loreto Gomez, University Rey Juan Carlos, Spain
- *Composites - CFRP for cryogenic application in LH2 tanks for commercial aircraft* by Eduardo Gonzalo Miguel, University Carlos III, Spain
- *Machine learning based data-driven automated fibre placement* by Philip Druiff, University of Bristol, UK
- *Inter-ply friction in dry composite preforming* by Guy Lawrence, University of Nottingham, UK

**MAIN SPONSOR CONFERENCE HAMBURG 2022**

**TEIJIN**

**PARTNERS 2022/2023**



**EVENT SPONSOR**

**Hitachi Energy**

**STUDENT SEMINAR SPONSORS**



**TABLE TOPS HAMBURG 22**



**MEDIA PARTNERS**



*Preliminary Edition September 30 2022 - Subject to later Changes -*