

# **SAMPE Europe Symposium 2012 (SEMAT 12)**

## **“Symposium on Automation of Advanced Composites and its Technology”**

**Munich, Germany  
24-25 May 2012**

**Editors:**

**Mark A. Erath**

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## PROGRAMME on Tuesday, May 24<sup>th</sup>. 2012

09.00 – 09.30h

### OPENING AND KEY-NOTE PRESENTATION

**Opening** Welcome address by Prof. Klaus Drechsler, TU Munich, Past-President SAMPE Europe

**Key-Note Paper 13** **Status of Automation for Advanced Composite and Outlook for complementary developments**

Speaker & Author Otto Kellenberger, KUKA Roboter, Augsburg .....2

09.30 – 10.00h

COFFEE BREAK

10.00 – 12.00h

### SESSION 1: AUTOMATION TECHNOLOGY FOR CAR INDUSTRY

Chairman: K. Drechsler, TU Munich

**Paper 06** **Artificial Intelligence in high-volume Composite Manufacturing**

Speaker Christian Sorg, BMW Group, Landshut

Authors M. Kühberger, C. Sorg, K. Drechsler, BMW Group, Landshut .....40

**Paper 01** **Light Weight Production Technology**

Speaker & Author Karl-Otto Strömberg, FlexProp AB., S-302 41 Halmstad .....46

**Paper 05** **Tailored Fibre Placement - an Option for High Volume Preform Production**

Speaker & Author Stefan Carosella, Universität Stuttgart, IFB-Institut, Stuttgart .....52

**Paper 28** **Fibre reinforced plastics (FRP): application in automation**

Speaker& Author Ben Haugk, TRUMPF GmbH & Co. KG., D-71 254 Ditzingen .....58

12.00 -13.00h

LUNCH

13.00 – 15.00h

### SESSION 2: FIBREPLACEMENT & PREFORM APPLICATION

Chairman: U. Ebert

**Paper 02** **Dry-Fiber-Placement with a Standard Articulating Robot System**

Speaker Timo Dierssen, BROETJE-Automation GmbH

Authors T. Dierssen, BROETJE-Automation GmbH & C. Weimer, F. Dorn, Eurocopter Deutschland GmbH .....85

**Paper 12** **Automated Manufacturing of Carbon Fibre Preforms using the Braiding Technique**

Speaker Felix Fröhlich, Technical University Munich, Garching

Authors O. Rüger, F. Fröhlich, K. Drechsler, Technical University Munich, Garching .....87

**Paper 15** **Overcoming the challenges of automated preforming of semi-finished Textiles**

Speaker Daniel Brabandt, Karlsruher Institut für Technologie (KIT), Karlsruher

Authors J. Fleischer, G. Lanza, H. Wagner, D. Brabandt, KIT Karlsruhe.....114

<b>Paper 11</b>	<b>Automated Process Chain for the Manufacturing of Fiber Reinforced Plastics (FRP)</b>	
Speaker	Andreas Glück, iwB Anwendungszentrum Augsburg, Geschäftsfeld Montagetechnik, Technical University Munich, Garching	
Authors	G. Reinhart, C. Ehinger, A. Glück, iwB Anwendungs-Zentrum, Augsburg .....	144

**15.00 – 15.30h** COFFEE BREAK

**15.30– 17.00h** **SESSION 3: ADVANCEMENTS IN ROBOTIC**  
Chairman: U. Ebert

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Speaker & Author	Michael Muser, Ingersoll Machine Tools Inc., USA .....	151
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Speaker	Guido Jaeger, KSL Sondermaschinenbau, D-64653 Lorsch	
Authors	R. Keilmann, G. Jaeger, KSL Sondermaschinenbau, Lorsch .....	P IC
<b>Paper 18</b>	<b>Recent advances in robotic automated deposition of different materials</b>	
Speaker	Johannes W.G. Treiber, Coriolis Composites GmbH., D-86159 Augsburg	
Authors	N. Naumann, J.W.G. Treiber, Coriolis Composites GmbH., D-86159 Augsburg & D.D.R. Cartié, A. Hamlyn, Coriolis Composites SAS., F-56530 Queven .....	158
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Speaker	Anders Brodsjo, AIRBORNE Technology, NL-2497 GB Den Haag	
Authors	M. Verkade, M. Kremers, A. Brodsjo, AIRBORNE Technology, Den Haag .....	165

**17.30 – 22.30h** SEMAT DINNER integrated at AUTOMATICA BAVERIAN Evening at the AUTOMATICA ICM – Foyer 1 – next to the Entrance Gate West

**PROGRAMME on Friday, May 25<sup>th</sup> 2012**

**08.30 – 10.00h** **SESSION 4: AUTOMATION TECHNOLOGY FOR AEROSPACE INDUSTRY**  
Chairman: K. Drechsler, TU Munich

<b>Paper 07</b>	<b>Automated Assembly and Bonding Technologies for Advanced Helicopter Structures</b>	
Speaker	Andreas Strobl, EUROCOPTER Deutschland GmbH., Labor – Materialien – Prozesse, D – 81663 München	
Authors	C. Weimer, H. Wehlan, A. Strobl, EUROCOPTER Deutschland GmbH., Labor – Materialien – Prozesse, D – 81663 München.....	172
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Speaker	Stefan van der Elst, KE-works BV., NL-2629 JD, Delft	
Authors	J. Berends, J. Wildemast, S. van der Elst, KE-works BV.....	P IC

<b>P 08</b>	<b>Innovations for the manufacturing of Composite Helicopter Structures</b>	
Speaker	Florian Dorn, Eurocopter Deutschland, Ottobrunn	
Authors	U. Eberth, A. Rack, Eurocopter Deutschland, Ottobrunn .....	179

**10.00 – 10.30h** COFFEE BREAK

**10.30 – 12.30h** **SESSION 5: MATERIAL & MODELING ASPECTS**

Chairman: R. Ziegmann

<b>Paper 23</b>	<b>Modeling Material Kinematics Behaviour during Manufacturing Layup Processes</b>	
Speaker	Massimiliano Moruzzi, Magestic Systems Inc., Westwood, N.J. 07675	
Authors	D. MacLean, R. Blackburn, CYTEC Engineered Materials & M. Moruzzi, Magestic Systems Inc., Westwood, N.J. 07675 .....	210
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Author	M. Kupke, T. Schmidt, DLR.....	219
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Authors	T. Schmidt, O. Leonhardt, Schucker GmbH & Co. KG.....	241
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Speaker & Author	Samuel Hill, CYTEC UK .....	271

**12.30 – 14.00h** LUNCH

**14.00 – 15.30** **SESSION 6: NOVEL ASPECTS FOR AUTOMATION**

Chairman: M. Erath, ACMC Consulting

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Speaker	Martin Steyer, Manz Tübingen GmbH., Tübingen	
Authors	M. Steyer, Manz Tübingen GmbH., Tübingen & C. Breu, EADS Innovation Works .....	296
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Speaker	Stefan Thumfart, Profactor GmbH., A-4407 Steyr-Gleink	
Authors	W. Palfinger, C. Eitzinger, S. Thumfart, Profactor GmbH.....	301
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Authors	A. Di Pietro, Quickstep Technologies Pty Ltd., UK & J. Schlimbach, Quickstep Deutschland GmbH. ....	307

**15.30 – 15.45h** **Closing SEMAT 12**  
Chairmen: K. Drechsler – M. Erath

**15.45 – 16.15h** COFFEE BREAK