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19th WCNDT 2016

World Conference on Non-Destructive Testing

June 13 – 17 in **Munich** Germany

ICNDT

DGZfP

GERMAN SOCIETY FOR NON-DESTRUCTIVE TESTING

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GERMAN SOCIETY FOR NON-DESTRUCTIVE TESTING

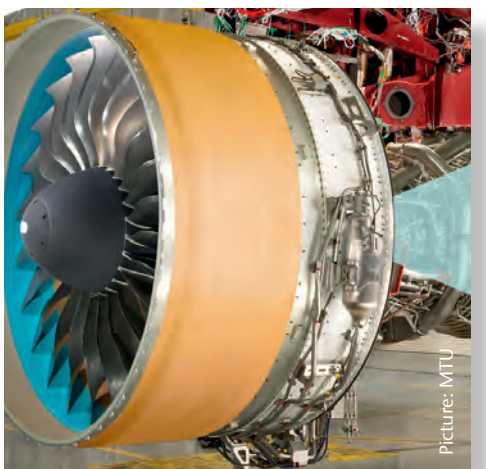
NDT in Aerospace

Fraunhofer EZRT

a cooperative department of Fraunhofer IZFP, Saarbrücken and Fraunhofer IIS, Erlangen

INVITATION & *PROGRAMME*

4th International Symposium on NDT in Aerospace



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November 13-15, 2012, Augsburg, Germany

GENERAL INFORMATION

Registration

until **October 31, 2012** please send to
German Society for Non-Destructive Testing (DGZfP e.V.)
Max-Planck-Str. 6, 12489 Berlin, Germany
Phone: +49 30 67807-121/122/123
Fax: +49 30 67807-129, E-mail: tagungen@dgzfp.de
Internet: http://www.ndt-aerospace.com

Fees

Registration fee	730.00 €*
Presenting authors (only one person per paper)	480.00 €*
Students (without university degree)	200.00 €*
Retired persons	200.00 €*
Additional Conference Evening	100.00 €

*incl. all conference activities, proceedings on CD-ROM, social programme, coffee breaks, lunch

Cancellation

by September 28, 2012: 50 % of the participation fee
from September 29, 2012: no refund possible

Payment

The payment of the participation fees is requested only in EUR and has to be done after receipt of invoice by October 31, 2012 (receipt of payment).
All payments after this date have to be done by credit card (Visa or Mastercard) or cash at the registration desk.

Bank transfer

DGZfP e.V., Berliner Volksbank, Kekuléstr. 2-4,
12489 Berlin, Germany
Acc. No. 5940 040 002, BLZ (code) 100 900 00
For international bank transfer please use our
International Bank Account Number (IBAN)
DE 57 100 90 000 59 400 400 02
SWIFT Code (BIC): BEVODE BB
Please quote invoice no. and name of the participant.

Conference Venue

Kongress am Park – Augsburg
Gögginger Str. 10, 86159 Augsburg, Germany
www.kongress-augsburg.de/index.php

Conference Secretariat
German Society for Non-Destructive Testing (DGZfP e.V.)
Steffi Schäske
Max-Planck-Str. 6, 12489 Berlin, Germany
Phone: +49 30 67807-120, Fax: +49 30 67807-129
E-mail: tagungen@dgzfp.de

Language

All technical papers will be presented in English, simultaneous translation will not be provided.

Proceedings

The proceedings will be published on CD-ROM and will be handed out at the conference.

Hotel Reservation

Hotels can be booked via the conference web page.

Social Programme

- Poster and Exhibition Show:
  November 13, 2012, 17:00 – 20:00 h
- Factory Tour at Premium AEROTEC:
  November 14, 2012, from 13:30 h
- Conference Evening: November 14, 2012, 20:00 h
  at Ratskeller Augsburg

Exhibition

A vendor exhibition will complement the technical presentations. If you are interested in booking an exhibition stand please contact the conference secretariat.

Exhibitors
Becker Photonik GmbH
ETher NDE
LOT-Quantum Design GmbH
North Star Imaging Europe
Olympus Deutschland GmbH
Profile Contrôles Industriels
Steinbichler Optotechnik GmbH
VisiConsult GmbH
Vogt Ultrasonic GmbH / ScanMaster Systems (IRT), Ltd.
Volume Graphics GmbH
VSG – Visualization Sciences Group
YXLON International GmbH

A Post Workshop on Simulation Supported Probability of Detection Methology will be held on Friday, November 16, 2012.
Information and programme please find in the programme at page 23.

Scope

Non-Destructive Testing and Evaluation (NDT&E) is one of the most essential assets in aerospace structural design. No component manufactured is allowed to pass without having been confronted with any of the various NDT procedures being around. As such, NDT is a guarantee for safety in aerospace and a subject of highest attention. Although aerospace industries have to clearly stick to certified NDT procedures, there is a large amount of technology being currently developed within engineering science which is worth to be discussed on the verge of applicability. The widespread use of modern materials as well as new manufacturing processes in the aerospace industry has also given rise to many new questions regarding their reliability and methods in the light of non-destructive evaluation, both from a research as well as a manufacturing point of view. The continuous discussion on carbon fibre reinforced composites versus high performance metals substitution and vice versa is just an example among many other aspects being discussed.

The Symposium for NDT in Aerospace has been established in 2008 with a first congress in Fürth, Bavaria, hosted by the DGZFP and Fraunhofer IIS to communicate the latest R&D results on the one hand to industrial users and on the other hand to discuss the advanced and improved methods both with scientists as well as with industrial researchers.

After a successful 2nd congress for NDT in Aerospace in 2010 in Hamburg and a 3rd symposium in Montreal/Canada, we will continue this event and a 4th symposium for NDT in Aerospace will now be held in November 2012 in Augsburg.

The main topics of this event will be the physics of NDT, sensors and material interaction, the system design of complete inspection machines and automated data evaluation. A special focus is given to improvement in inspection speed and transfer of laboratory NDT towards production and manufacturing process integrated testing for inline inspection.

Opportunities for exhibition of technology and posters will be provided, as well as technical visits to relevant aerospace companies.

Prof. Dr.
Randolf Hanke
Fraunhofer IIS and
University of Würzburg

Prof. Dr.-Ing.
Christian Boller
Fraunhofer IZFP and
Saarland University

Dr.-Ing.
Matthias Purschke
German Society for
Non-Destructive Testing

Scientific Committee

George Akhras	Royal Military College of Canada, Kingston, Canada
Hans-Uwe Baron	MTU Aero Engines, München, Germany
Clemens Bockenheimer	Airbus Operations, Bremen, Germany
Christian Boller	Fraunhofer IZFP, Saarbrücken & Saarland University, Saarbrücken, Germany
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Fu-Kuo Chang	Stanford University, Stanford, USA
Jean-Paul Charles	Eurocopter, France
Mark Derriso	US Air Force Research Laboratory, Wright Patterson, USA
Uwe Ewert	BAM, Berlin, Germany
Rainer Franke	IMA, Dresden, Germany
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Alfredo Güemes	Technical University of Madrid, Spain
Randolf Hanke	Fraunhofer IIS, Erlangen and University of Würzburg, Germany
Jeong-Beom Ihn	Boeing Research & Technology, Seattle, USA
Philip Irving	Cranfield University, Cranfield, United Kingdom
Johann Kastner	University of Applied Sciences Upper Austria, Wels, Austria
Markus Klug	Premium AEROTEC, Augsburg, Germany
Marc Kreutzbruck	BAM, Berlin, Germany
Andrew Malcolm	Singapore Institute of Manufacturing Technology, Singapore
Norbert Meyendorf	Fraunhofer IZFP, Dresden, Germany
Reinhold Oster	Eurocopter Deutschland, Germany
William H. Prosser	NASA Engineering and Safety Center, Hampton, USA
Veronique Rebuffel	CEA, Grenoble, France
Steve Reed	Fellow Structural Integrity and Ageing Aircraft, Salisbury, United Kingdom
Rainer Stössel	EADS Innovation Works, München, Germany
Afzal Suleman	Instituto Superior Técnico, Lissabon, Portugal
Shenfang Yuan	Nanjing University of Aeronautics and Astronautics, Nanjing, China
Simon Zabler	University of Würzburg, Germany

Organising Committee

Randolf Hanke	Fraunhofer IIS, Erlangen and University of Würzburg, Germany
Christian Boller	Fraunhofer IZFP, Saarbrücken & Saarland University, Saarbrücken, Germany
Matthias Purschke	DGZfP, Berlin, Germany
Steffi Schäske	DGZfP, Berlin, Germany

A Hall Dialog Lebensversicherungs-AG

10:00 – 10:30	**Opening**
10:30 – 11:15	**Tu.1.A Plenary Session**
Page 6	
11:30 – 12:30	**Tu.2.A Laser / Optical**
Page 6	
13:30 – 14:50	**Tu.3.A Radiography I**
Page 8	
15:20 – 16:40	**Tu.4.A Radiography II**
Page 9	
17:00 – 20:00	**Poster and Exhibition Show**

09:00 – 09:45	**We.1.A Plenary Session**
Page 11	
10:00 – 11:20	**We.2.A Data Evaluation**
Page 11	
11:40 – 12:40	**We.3.A Material Characterisation**
Page 13	
13:30	**Factory Tour at Premium AEROTEC**
20:00	**Conference Evening at Ratskeller Augsburg**

09:00 – 10:20	**Th.1.A POD I**
Page 15	
10:50 – 12:10	**Th.2.A POD II**
Page 17	
13:30 – 14:30	**Th.3.A Thermography**
Page 18	
15:00 – 16:20	**Th.4.A NDT „Out of the Box“**
Page 19	
16:20	**Closing**

B Room Mercedes-Benz

Tu.2.B **NDT Systems**

Tu.3.B **Structural Health Monitoring**

Tu.4.B **Components Inspection**

We.2.B **Production Integrated NDT I**

We.3.B **Production Integrated NDT II**

Th.1.B **Ultrasonic I**

Th.2.B **Ultrasonic II**

Th.3.B **Ultrasonic III**

A Hall Dialog Lebensversicherungs-AG

B Room Mercedes-Benz

10:00 OPENING

Tu.1.A
PLENARY SESSION

10:30 **Tu.1.A.1**

New Developments of NDT for Composite Structures
A Güemes, V. Cortes, Technical University of Madrid, Spain

11:15 Break

Tu.2.A
LASER / OPTICAL

Tu.2.B
NDT SYSTEMS

11:30 **Tu.2.A.1**

Shearography – New Possibilities in Composite Testing – Standards, Applications, Systems & Link-up to other NDT Methods
R. Schön, Steinbichler Optotechnik, Neubeuern, Germany

Tu.2.B.1

Quantitative SQUID Measurements for Eddy Current NDI of Fastener Hole Cracks
C.-C. Voulgaraki, T. Theodoulidis, University of Western Macedonia, Kozani, Greece; N. Poulakis, Technological Educational Institute (TEI) of Western Macedonia, Kozani, Greece

11:50	**Tu.2.A.2**	**Tu.2.B.2**
	Lockin Shearography and Lockin Thermography for NDT of Large Aircraft Components *M. Rahammer, G. Busse, P. Menner, University of Stuttgart, Germany*	**Non-Destructive Measurement of Paint Thickness on Curved CFRP Surfaces** *J.H. Hinken, M. Richter, FI Test- und Messtechnik, Magdeburg, Germany*
12:10	**Tu.2.A.3**	**Tu.2.B.3**
	Laser Adhesion Test for Adhesive Bonded CFRP Structures *R. Ecault, Université de Poitiers, Poitiers, France;* *B. Ehrhart, Fraunhofer IZFP, Saarbrücken, Germany*	**Automated Air-Coupled Ultrasonic Technique for the Inspection of the EC145 Tailboom** *W. Hillger, D. Ilse, Ingenieurbüro Dr. Hillger, Braunschweig, Germany; R. Stößel, EADS Innovation Works, München, Germany; S. Lang, Eurocopter Deutschland, Donauwörth, Germany; J. Schuller, Eurocopter Deutschland, München, Germany; R. Oster, Eurocopter Deutschland, Ottobrunn, Germany; J. Bosse, B. Thaler, Robo-Technology, Puchheim, Germany*
12:30	Lunch	

A	Hall Dialog Lebensversicherungs-AG	B	Room Mercedes-Benz

Tu.3.A
RADIOGRAPHY I

13:30 Tu.3.A.1

Digital Laminography and Computed Tomography with 600 kV for Aerospace Applications

M. Kurfiß, YXLON International, Hamburg, Germany; G. Streckenbach, YXLON International, Hattingen, Germany

13:50 Tu.3.A.2

Quality Control for X-Ray Systems – A Tool Chain for NDT Applications

S. Reisinger, A. Ennen, M. Schmitt, V. Voland, T. Wörlein, Fraunhofer EZRT, Fürth, Germany

Tu.3.B
STRUCTURAL HEALTH MONITORING

Tu.3.B.1

Nano & Smart NDE Systems – Applications in Aerospace and Perspectives

G. Akhras, Royal Military College of Canada, Kingston, Canada

Tu.3.B.2

A Compensation Method to Account for Environmental Effects on Active Lamb-Wave Based SHM

K. Schubert, T.B. Block, C. Brauner, A.S. Herrmann, Faserinstitut Bremen, Germany

14:10 **Tu.3.A.3**

An Acquisition Geometry-Independant Calibration Tool for Industrial Computed Tomography
J. Hess, P. Kühnlein, S. Oeckl, T. Schön, Fraunhofer IIS, Fürth, Germany

Tu.3.B.3

Technology, Functionality, and Reliability of Integrated Ultrasonic Microsystems for SHM in CFRP Airplane Structures
F. Schubert, G. Lautenschläger, N. Meyendorf, M. Röllig, Fraunhofer IZFP, Dresden, Germany; M. Franke, Cotesa, Mittweida, Germany; B. Böhme, TU Dresden, Germany

14:30 **Tu.3.A.4**

Fast Computed Tomography with Sub Micron Resolution for the Investigation of Microstructures
M. Salamon, M. Firsching, M. Khabta, N. Uhlmann, Fraunhofer EZRT, Fürth, Germany

Tu.3.B.4

Design of A WSN Strain Node with Self-Repairing Ability for Structural Health Monitoring
L. Qiu, S. Yuan, Y. Tong, Nanjing University, Nanjing, China

14:50 Break

Tu.4.A
RADIOGRAPHY II

Tu.4.B
COMPONENTS INSPECTION

15:20 **Tu.4.A.1**

Neutron Tomography as an Alternative Option for Non-Destructive Testing
C. Grünzweig, E. Lehmann, D. Mannes, Paul Scherrer Institut, Villigen, Switzerland

Tu.4.B.1

Non-Destructive Bond Quality Assessment of CFRP Structures – Status and Way Forward
C. Bockenheimer, Airbus Operations SAS, Toulouse, France

	A Hall Dialog Lebensversicherungs-AG	B Room Mercedes-Benz
15:40	Tu.4.A.2	Tu.4.B.2
	High Energy X-Ray Imaging for Application in Aircraft and Aerospace Industry *M. Salamon, G. Errmann, N. Reims, N. Uhlmann, Fraunhofer EZRT, Fürth, Germany*	**Real-Time Non-Destructive Testing of Composite Aircraft Structures With a Self-Adaptive Ultrasonic Technique** *S. Robert, O. Casula, CEA LIST, Gif-sur-Yvette, France; G. Neau, O. Roy, M2M, Les Ulis, France*
16:00	Tu.4.A.3	Tu.4.B.3
	Defect Site Detection in CFRP Composite Materials Using Interferometric X-Ray Phasecontrast Imaging *F. Bayer, G. Anton, J. Durst, W. Haas, T. Michel, G. Pelzer, J. Rieger, A. Ritter, T. Weber, Universität Erlangen-Nürnberg, Germany*	**Contact-Free Detection of Structural Defects by Analysing Structure-Borne Sound in a Wide Spectrum** *H.-J. Ott, H. Schröder, SeLasCo, Bellheim, Germany*
16:20	Tu.4.A.4	Tu.4.B.4
	Automated Practical System Qualification, Validation, and Reporting acc. ASTM E2737-10 for X-Ray Applications in the Aerospace Industry *P. Kramm, M. Kurfiß, YXLON International, Hamburg, Germany*	**Computed Tomography of Large Components in Aerospace Industry** *M. Luxa, Fraunhofer IIS, Fürth, Germany*
17:00 – 20:00	Poster and Exhibition Show	

	A Hall Dialog Lebensversicherungs-AG	B Room Mercedes-Benz
	We.1.A PLENARY SESSION	
09:00	**We.1.A.1**	
	NDT, Structural Integrity and Prognostics in Health Monitoring for Safety Critical Structures *P. Irving, D. Gagar, P. Foote, Cranfield University, Cranfield, United Kingdom*	
09:45	Break	
	We.2.A DATA EVALUATION	**We.2.B** PRODUCTION INTEGRATED NDT I
10:00	**We.2.A.1**	**We.2.B.1**
	Image and Data Processing Techniques Applied to Infrared Thermographic Non-Destructive Inspections of Aeronautical Composite Components *P. Venegas, J. Guerediaga, I. Jorge, I. Lopez, I. Sáez de Ocáriz, L. Vega, CTA, Minano, Spain*	**Quality Assurance for the Manufacturing of Oxide Fibre Reinforced Ceramic Composites for Aerospace Applications** *T. Ullmann, Y. Shi, DLR, Stuttgart, Germany; S. Becker, Becker Photonik, Porta Westfalica, Germany; N. Rahner, M. Schmücker, DLR, Köln, Germany; G. Busse, University of Stuttgart, Germany*

	A	Hall Dialog Lebensversicherungs-AG	B	Room Mercedes-Benz
10:20	We.2.A.2	**Real-Time 3D-Simulation Tool for Ultrasonic Transducers Used in Aeroengine Component Inspections** *M. Spies, A. Dillhöfer, H. Rieder, Fraunhofer ITWM, Kaiserslautern, Germany*	We.2.B.2	**Automated High Throughput Fan Beam CT Turbine Blade Wall Thickness Inspection and Fast 3D Casting and Composite Qualification by Fast Gantry Based Helix CT** *M. Taupitz, GE Sensing & Inspection Technologies, Neu-Isenburg, Germany; S. Telesz, GE Sensing & Inspection Technologies, Lewistown, USA; O. Brunke, GE Sensing & Inspection Technologies, Wunstorf, Germany; E. Ambos, Ingenieurbüro Ambos, Samswegen, Germany*
10:40	We.2.A.3	**Fiber Composite Material Analysis in Aerospace Using CT Data** *T. Dierig, B. Becker, T. Günther, C. Reinhart, Volume Graphics, Heidelberg, Germany*	We.2.B.3	**Demonstration of Novel Lamb Wave Detection of Flaws during the Layup Process of Composite Laminate Production** *N. Miesen, R. Benedictus, R. Groves, J. Sinke, Delft University of Technology, Delft, The Netherlands*

11:00 We.2.A.4

A Phase Synthesis Based Time Reversal Focusing Method for Impact and Damage Imaging of Complex Composite Structures

L. Qiu, M. Liu, S. Yuan, Nanjing University, Nanjing, China

We.2.B.4

Concept Development for Inline Process Control of the Preform-LCM Production Chain

S. Gubernatis, Eurocopter Deutschland, München, Germany; J.-M. Balvers, C. Weimer, Eurocopter Deutschland, Donauwörth, Germany

11:20 Break

We.3.A
MATERIAL CHARACTERISATION

We.3.B
PRODUCTION INTEGRATED NDT II

11:40 We.3.A.1

Advanced X-Ray Tomographic Methods for Quantitative Characterisation of Carbon Fibre Reinforced Polymers

J. Kastner, B. Plank, D. Salaberger, C. Heinzl, A. Reh, Upper Austria University of Applied Sciences, Wels, Austria

We.3.B.1

Automation in Production Integrated NDT Using Thermography

T. Schmidt, S. Dutta, DLR, Augsburg, Germany; T. Ullmann, DLR, Stuttgart, Germany

12:00 We.3.A.2

Study on CFRP Porosity Determination Based on Dual Energy CT

U. Haßler, M. Firsching, T. Fuchs, S. Mohr, G. Scholz, Fraunhofer EZRT, Fürth, Germany

We.3.B.2

Robotised UT Transmission NDT of Composite Complex Shaped Parts

P. Louviot, PROFILE Contrôles Industriels, Chalon sur Saone, France

	A	Hall Dialog Lebensversicherungs-AG	B	Room Mercedes-Benz
12:20	We.3.A.3		We.3.B.3	
	Study of the Influence of Corrosion on Material Properties on Aluminum Foams with Computed Tomography and Thermography *S. Hübner, U. Haßler, A. Osman, Fraunhofer, EZRT, Fürth, Germany; Y. Duan, X. Maldague, Université Laval, Québec City, Canada*		**Process Integrated Inspection of Fiber Composite Parts Using Computed Tomography** *S. Oeckl, M. Eberhorn, Fraunhofer IIS, Fürth, Germany; U. Haßler, S. Mohr, Fraunhofer EZRT, Fürth, Germany*	
12:40	Lunch			
13:30	Factory Tour at Premium AEROTEC			
20:00	Conference Evening at Ratskeller Augsburg			

	A Hall Dialog Lebensversicherungs-AG	B Room Mercedes-Benz
	Th.1.A POD I	**Th.1.B** ULTRASONIC I
09:00	**Th.1.A.1**	**Th.1.B.1**
	Simulation Supported POD Methodology and Validation for Automated Eddy Current Procedures *A. Rosell, Volvo Aero Corporation, Trollhättan, Sweden; G. Persson, Chalmers University of Technology, Göteborg, Sweden*	**Damage Assessment in a Stiffened Composite Panel Using Non-Linear Data-Driven Modelling and Ultrasonic Guided Waves** *M.A. Torres-Arredondo, C.-P. Fritzen, University of Siegen, Germany; L.E. Mujica, D.A. Tibaduiza, Technical University of Catalonia, Barcelona, Spain*
09:20	**Th.1.A.2**	**Th.1.B.2**
	Production of Real Flaws in Probability of Detection (POD-) Samples for Aerospace Applications *M. Kemppainen, I. Virkkunen, Trueflaw, Espoo, Finland*	**CFRP Bonds Evaluation Using Piezoelectric Transducer** *P. Malinowski, W. Ostachowicz, L. Skarbek, T. Wandowski, Polish Academy of Sciences, Gdansk, Poland*

	A Hall Dialog Lebensversicherungs-AG	B Room Mercedes-Benz
09:40	Th.1.A.3	Th.1.B.3
	PICASSO ,A New and Original Concept of "Simulation Supported Probability of Detection (POD)"' *N. Maleo, Snecma, Moissy Cramayel, France*	**Basic Investigations to Establish an Ultrasonic Stress Evaluation Technique for Aero Engine Materials** *S. Hubel, A. Dillhöfer, H. Rieder, M. Spies, Fraunhofer ITWM, Kaiserslautern, Germany; J. Bamberg, R. Hessert, C. Preikszas, MTU Aero Engines, München, Germany*
10:00	Th.1.A.4	Th.1.B.4
	Modeling of the X-Ray Diffraction Lines on the X-Ray Radiographies in the Framework of PICASSO Project *C. Force, A. Vabre, CEA Saclay, Gif-sur-Yvette, France; C. Gilles-Pascaud, S. Legoupil, CEA LIST, Gif-sur-Yvette, France*	**Mechanized and Automated Ultrasonic Inspection** *G. Vogt, VOGT Ultrasonics, Burgwedel, Germany*
10:20	Break	

	Th.2.A POD II	Th.2.B ULTRASONIC II
10:50	Th.2.A.1	Th.2.B.1
	Simulation Supported POD Methodology and Validation for Multi-Zone Ultrasonic Testing Procedure *R. Raillon-Picot, C. Gilles-Pascaud, CEA LIST, Gif-sur-Yvette, France; F. Schubert, Fraunhofer IZFP, Dresden, Germany; J.-Y. Chatellier, Snecma, Moissy Cramayel, France*	**Ultrasonic Techniques and Industrial Robots: Natural Evolution of Inspection Systems** *E. Cuevas Aguado, M. García Merino, Tecnatom, San Sebastian de los Reyes – Madrid, Spain; M. Lopez Asens, KUKA Robots IBÉRICA, Vilanova I la Geltrú, Spain*
11:10	Th.2.A.2	Th.2.B.2
	Simulation Supported POD Methodology for Radiographic Testing *C. Bellon, A. Deresch, U. Ewert, G.-R. Jaenisch, BAM, Berlin, Germany; H.-U. Baron, MTU Aero Engines, München, Germany*	**Modelling of the Ultrasonic Propagation in Titanium Alloy Materials** *L. Ducousso-Ganjehi, S. Châtillon, V. Dorval, F. Jenson, C. Gilles-Pascaud, CEA LIST, Gif-sur-Yvette, France*
11:30	Th.2.A.3	Th.2.B.3
	Progress in POD Estimation: Methods and Tools *N. Dominguez, CEA LIST, Gif-sur-Yvette, France; T. Yalamas, PHIMECA Engineering, Paris, France*	**Non-Contact Ultrasound for Monitoring Uni- and Biaxial Fatigue Damage in Composites** *M. Rheinfurth, G. Busse, University of Stuttgart, Germany*

	A Hall Dialog Lebensversicherungs-AG	B Room Mercedes-Benz
11:50	**Th.2.A.4**	**Th.2.B.4**
	Capturing the POD of SHM with Guided Waves *C. Boller, Fraunhofer IZFP, Saarbrücken, Germany; T. Hayo, Fraunhofer IZFP, Dresden, Germany*	**Looking into Other Industries – Qualification of NDT for Swiss Nuclear Utilities** *K. Dressler, D. Algernon, P. Kicherer, SVTI, Wallisellen, Switzerland*
12:10	Lunch	
	Th.3.A THERMOGRAPHY	**Th.3.B** ULTRASONIC III
13:30	**Th.3.A.1**	**Th.3.B.1**
	Active Thermography for Defects with Low Contrast in Thermo-Physical Parameters *D.V. Isakov, J.L.E. Chng, K.A.C. Lee, Singapore Inst. of Manufacturing Technology, Singapore*	**Development and Validation of Computer Models to Simulate the Ultrasonic Response from Complex Real Defects** *M. Felice, A. Velichko, P. Wilcox, University of Bristol, United Kingdom; T. Barden, T. Dunhill, Rolls-Royce, Bristol, United Kingdom*

13:50 **Th.3.A.2**

Improvement of Lockin-Thermographic NDT by an Iterative Adaption of Optical Excitation
M. Rahammer, K. Artzt, N. Holtmann, G. Busse, University of Stuttgart, Germany

Th.3.B.2

Non-Destructive Testing of Hollow Sphere Sandwich Plates Using Guided Waves
S. Hosseini, U. Gabbert, C. Willberg, Otto-von-Guericke Universität, Magdeburg, Germany

14:10 **Th.3.A.3**

Crack Detection at Aluminum Fuselages by Induction Excited Thermography
C. Srajbr, edevis, Stuttgart, Germany; K. Bräutigam, Lufthansa Technik, Frankfurt, Germany

Th.3.B.3

A Particle Filter and Lamb Wave Based On-Line Prognosis Method of Crack Propagation in Aluminum Plates
W. Yang, Nanjing University, Nanjing, China

14:30 Break

Th.4.A
NDT „OUT OF THE BOX“

15:00 **Th.4.A.1**

Aircraft Engine Blade Tip Monitoring Using Pulsed Eddy Current Technology
C. Mandache, National Research Council Canada, Ottawa, Canada; T. McElhinney, N. Mrad, Defence Research and Development Canada, Ottawa, Canada

P1 **Impact Monitoring in Smart Structures Based on Gaussian Processes**
M.A. Torres-Arredondo, C.-P. Fritzen, University of Siegen, Germany

P2 **Eddy Current Signal Response Predictions for Use in Model Assisted POD Estimations Based on Different Flaw Characteristics**
A. Rosell, Volvo Aero Corporation, Trollhättan, Sweden; G. Persson, Chalmers University of Technology, Göteborg, Sweden

P3 **Advances in Ultrasound Longitudinal Speed Characterization of Unidirectional CFRP Laminates: Simulations and Measurements**
P. Pereira Junior, T. Gomes Rodovalho, R. Gonçalves, R. Junqueira Leão, A.A. Santos, Universidade Estadual de Campinas, Campinas, Brazil

P4 **Corrosion Steel Bar Inspection under Steel Plate Using Pulsed Eddy Current Testing**
D. Suh, Raynar, Daejon, South Korea; J.E. Jang, K.S. Jang, D.H. Lee, SAE-AN, Seoul, South Korea

P5 **A Hybrid Formulation Using Transition Matrix Method and Finite Elements in a 2D Eddy Current Interaction Problem**
L. Larsson, Chalmers University of Technology, Göteborg, Sweden; A. Rosell, Volvo Aero Corporation, Trollhättan, Sweden

P6 **The Application of High Energy Industrial CT System in Aero-Engine Blades NDT**
Y. Xiao, Tsinghua University, Beijing, China; Y. Li, Granpect Company, Beijing, China

P7 **High Resolution Single Crystal Scintillator Plates Used for Light Weight Material X-Ray Radiography**
J. Tous, K. Blazek, Crytur, Turnov, Czech Republic

P8 **On the Application of X-Ray Computed Tomography for the Investigation of Aerospace Materials**
A. Zorrilla, C. Galleguillos, N. Gutiérrez, F. Lasagni, FADA-CATEC, La Rinconada, Spain

P9 **Determination of Damage Evolution in CFRP by Thermoelastic Stress Analysis at Dynamic Low Frequencies**
A. Zorrilla, R. Fernandez, N. Gutiérrez, F. Lasagni, FADA-CATEC, La Rinconada, Spain

P10 **Ultrasonic Phased Array Inspection of CFRP Radii**
F. Lasagni, M.d. Santamaria, FADA-CATEC, La Rinconada, Spain; J.M. Gallardo, Universidad de Sevilla, Spain

P11 **Practical Applications of Air-Coupled Ultrasonic Technique**
W. Hillger, L. Bühling, D. Ilse, Ingenieurbüro Dr. Hillger, Braunschweig, Germany

P12 **Practical Comparison and Requirements Using UV-LED-Lamps instead of Bulb-Based UV-Sources for Fluorescent Stimulation in Magnetic and Penetrant Testing**
M. Breit, RIL-CHEMIE, Kleinblittersdorf, Germany

Room Mercedes-Benz

Post Workshop on Simulation Supported Probability of Detection Methodology

The demonstration workshop is based on the results of the EU-supported research collaborative project PICASSO, implemented to develop a new and original concept enabling the use of simulated data to complement existing experimental data bases in order to produce "simulation-supported Non Destructive Testing (NDT) Probability of Detection (POD) curves".

The PICASSO Project assembles a team of 14 partners from five EU Member States, representing Industry, Academia & Research, and SMEs.

The main result of the PICASSO project is the development and the verification of a concept of "simulation-supported POD" by way of initial realistic results and verified methodologies. The workshop will provide insight on application cases from ultrasonic testing (UT), electromagnetic testing (ET), and radiographic testing (RT). The focus is on demonstration of different simulation tools with respect to these NDT reliability investigations.

Through realistic industrial applications, design offices and maintenance departments will benefit from the overview of the potential impacts.

The participation is included in the fee for the Aerospace Symposium.

Room Mercedes-Benz

09:00	**Fr.1.A** Introduction of the PICASSO Project
09:30	**Fr.2.A** Presentation and Demonstration of the PICASSO Approach to Simulation Supported POD for Radiographic Testing Simulation Softwares Involved: aRTist – CIVA RT
10:30	Break
10:45	**Fr.3.A** Presentation and Demonstration of the PICASSO Approach to Simulation Supported POD for Ultrasonic Testing Simulation Softwares Involved: EFIT – CIVA UT
11:45	**Fr.4.A** Presentation and Demonstration of the PICASSO Approach to Simulation Supported POD for Eddy Current Testing Simulation Softwares Involved: CIVA EC – VIC-3D – VAC
12:45	**Fr.5.A** Presentation and Demonstration of New POD Tools
13:15	Discussion & Lunch
14:00	Closing