

2ND EDITION

METALLIC MATERIALS AND PROCESSES: INDUSTRIAL CHALLENGES

OCTOBER 25-27, 2017 - DEAUVILLE (FRANCE)

PROGRAMME

PROGRAMME COMMITTEE

Jean-François BELON	JFB Conseils, France
Steffen BEYER	AIRBUS D&S, Germany
Florent BOURNEAUD	Ariane Group, France
Marjorie CAVARROC	Safran, France
Javad FATEMI	AIRBUS D&S, The Netherlands
Slaheddine FRIKHA	ESI Group, France
Tommaso GHIDINI	ESA, The Netherlands
Hervé GILIBERT	Ariane Group, France
Marie JACQUESSON	CNES, France
Daniel LECURU	AIRBUS Helicopters, France
Thierry LEVEUGLE	ASTech, France
Thierry MASSARD	CEA DAM, France
Pierre MICHAUD	ADIMADOUR, France
Joseph MORAN	RUAG Space, Switzerland
Bruno MORTAIGNE	DGA, France
Gérard OURY	CETIM, France
Vasily PLOSHIKHIN	ISEMP, University of Bremen, Germany
Stefan WEILAND	MT Aerospace, Germany
Stewart WILLIAMS	Cranfield University, United Kingdom

Organisé par



Sponsors



08:30 – 09:00

REGISTRATION

WELCOME SESSION

09:00 - 09:30

Welcome Address

- Nicolas AUBOURG, President – ASTech Paris Region (France)
- Thierry LEVEUGLE, Conference Chairman – ASTech Paris Region (France)

INTRODUCTION KEYNOTES

Chairpersons

09:30 - 10:00

Innovation for European Space Access – the Place of Metallic

- Marie JACQUESSON, CNES (France)

10:00 - 10:30

Development of the Next Generation European Launcher Ariane 6 :
Introduction of New Materials and Processes

- Isabelle TESSIER, MT Aerospace AG (Germany)

10:30 - 11:00

Introduction of Additive Manufacturing for Airbus Products

- John VAN DOESELAR, AIRBUS (France)

11:00 - 11:30

COFFEE BREAK

PLENARY SESSION - 1

11:30 - 12:00

Metal 3D Printing : a Cost-Effective Additive Manufacturing Process

- Benoit VERQUIN, CETIM (France)

12:00 - 12:30

Variable Insensitive Processing and Its Application to Friction Pull Plug Welding

- Jonathan SIMERAL, Lockheed Martin Space Systems Company (USA)

12:30 - 13:00

Cooling Efficiency Improvement of Porous Walls Obtained by Additive Manufacturing

- Cécile DAVOINE, ONERA (France)

13:00 - 14:30

LUNCH

S°1 • ALM - 1

S° 2 • RAW MATERIAL
PRODUCTION

S° 3 • NON DESTRUCTIVE
INSPECTION - 1

14:30 - 15:00

Control of Distorsion of Topology
Ti-structure Components Produced
by Additive Manufacturing

- Kai SCHIMANSKI, Premium
AEROTEC (Germany)

Induction Plasma Technology
Applied to Development and Mass
Production of Spherical Powders

- Manufacturing for Additive
Manufacturing Applications
■ Romain VERT, TEKNA (France)

Use of Advanced Ultrasound
Phased Array for Non Destructive
Inspection of Metallic Plate

- Benoit DUPONT,
CETIM (France)

15:00 - 15:30

Interface Properties Between
Substrate and Deposited Material
in Wire +Arc Additive Manufacture
of Dissimilar Alloy Alumin.

- Eloise EIMER, Cranfield
University (United Kingdom)

Ball Milling of Metal Powders :
State of the Art and Future
Perspectives

- Stefano DOSSI, Politecnico
di Milano (Italy)

Non-Destructive Non-Contact Im-
aging : State of the Art and Potential
for Additive Manufacturing

- Henri
WALASZEK, CETIM (France)

15:30 - 16:00

Topology-Optimization Based
Modeling of Large Aircraft
Structures

- Morgan COTEL,
CT Ingenierie (France)

Gas Atomized Powder Characteris-
tics for Additive Manufacturing

- Stefan DRAWIN, ONERA (France)

Galling Detection by Acoustic
Emission According to ASTM G98

- Pierre FRIEDRICH,
CETIM (France)

16:00 - 16:30

Additive Manufacturing : From
Elementary Flexible Structures to
Compliant Mechanisms

- Lionel
KIENER, CSEM (Switzerland)

Optimizing Titanium Powder Pro-
duction Using the EIGA Process

- Neil McDONALD,
MetaFensch (France)

Alternative to Magnetic Particle
Inspection for the Control
of Welds and Metal Components
by Infrared Thermography

- Henri WALASZEK, CETIM (France)

16:30 - 17:00

COFFEE BREAK

GIVING THE FLOORS TO SMES

17:00 - 17:30

Can Nano-Materials Improve the Metallic Alloys Mechanical Performances and Lighten Aero-Structures ?

- Jean-François PERRIN, Nanomakers

17:30 - 18:00

New Innovation Challenge of a SME Specialized in ALM for 25 Years in Normandy. Volum-e mobilizes its expertise throughout the industrial production cycles in the three major phases of AM customer specification: co-design and prediction, manufacturing optimization and certification of the supply chain.

- Eric BAUSTERT, Volum-e

20:30

MMP CONFERENCE COCKTAIL

	S°4 • ALM - 2	S° 5 • PROCESS SIMULATION	S° 6 • BONDING, WELDING AND ASSEMBLING
08:30 - 09:00	From Prototyp to Serial Production for Aerospace Industries : Experiences on Process Stability of Additive Manufacturing Structural Ti-coponents ■ Kai SCHIMANSKI, Premium AEROTEC (Germany)	Ti6Al4v Machining - Comprehensive Finite Element Modelling of Orthogonal Cutting And Slot Milling ■ Andrea BAREGGI, ESME Sudria (France)	Ageing the Microstructure of Ti-Cu-Ni Braze Alloy Used for Joining a Titanium Alloy ■ Sébastien BOILEAU, CRT Analyses et Surface (France)
09:00 - 09:30	Influence of Residual Stress on the Fatigue Behavior of Aluminium Alloy Specimens Obtained by Additive Manufacturing ■ Morgane PRESLE, LNE (France)	Macro and Meso-Scale Finite Element Modelling of the Laser Beam Melting Process ■ Yan Cheng ZHANG, Mines Paris Tech (France)	Detectability And Significance of Friction Stir Welded Defects, Consequences for the Process Industrialization in the Scope of Ariane 6 Program ■ Amarilys BEN ATTAR, Institut de Soudure (France)
09:30 - 10:00	The Potential of Wire/Arc-based 3DMP® Process for Rapid Manufacturing ■ Kamila ARMATYS, GEFERTEC (Germany)	Thermal Stress and Distorsion Simulation Applied to Improve Supports Design in INCO 718 Bracket Parts for Aircrafts Manufactured by Selective Laser Melting ■ Emma GIL, Ik4 LORTEK (Spain)	Experimental Investigation of Hyperjoints Metal-Composite Joining Technology with High Modulus Carbon Fiber Composite ■ Jean-Philippe LEARD, IRT Saint Exupery (France)
10:00 - 10:30	Additive Manufacturing of Metals by Stereolithography ■ Richard LAUCOURNET, CEA (France)	Experimental and Numerical Investigations in Difficult-to-Cut Aerospace Alloys ■ Andrea BAREGGI, ESME Sudria (France)	Introduction of Friction Stir Welding on Fuselage Primary Structures of Aircrafts ■ Amarilys BEN ATTAR, Institut de Soudure (France)
10:30 - 11:00	COFFEE BREAK		
	S°7 • ALM - 3	S° 8 • SURFACE TREATMENT AND FUNCTIONALIZATION	S° 9 • NON DESTRUCTIVE INSPECTION - 2
11:00 - 11:30	Influence of the Powder Quality on the Mechanical Properties of Ti6Al4V ■ Kai SCHIMANSKI, Premium AEROTEC (Germany)	CrIV - Free Anti-corrosion Protection and Adherence Promotion Through the Grafting of Organic Underlayer with a Diazonium Salt ■ Aurélien DOUBLET, PROTEC Industrie (France)	Stamping Monitoring by Acoustic Emission ■ Pierre FRIEDRICH, CETIM (France)
11:30 - 12:00	New Generation of Pre-Processing for Additive Manufacturing Based on Process Simulation ■ Vasily PLOSHIKHIN, University of Bremen (Germany)	Evolution of Functionalization of materials by LUBODRY® Nano And Micro Particles Impingement Processes and Contributions to the Industry : From Space Industry to Large Series ■ Arnaud LE GUIFFANT DE KERLEAU, LUBODRY PRODUCTIONS (France)	Contribution of X-Ray Computed Tomography in Additive Manufacture ■ Henri WALASZEK, CETIM (France)
12:00 - 12:30	Influence of Post Deposition Heat Treatments on Microstructure and Tensile Properties of Ti-6Al-4V Parts Manufactured by CMT-WAAM ■ Pedro ALVAREZ, Ik4 LORTEK (Spain)	Surface Laser Treatment ■ Pascal DURAND, CNES (France)	Characterization of Materials by Non-Destructive Methods ■ Henri WALASZEK, CETIM (France)

Thursday October 26th, 2017

12:30 - 14:00

LUNCH

14:00 - 16:00

Workshop on Surface Treatments proposed by CNES Materials CCT (Part 1):
REACH impact, qualified alternatives and on-going studies

16:00 - 16:30

COFFEE BREAK

16:30 - 18:00

Workshop on Surface Treatments proposed by CNES Materials CCT (Part 2):
REACH impact, qualified alternatives and on-going studies

Friday October 27th, 2017

PLENARY SESSION - 2

08:30 - 09:00

Main Aspects to Take Into Account When Designing a Metallic Component Against Fatigue Failure
■ Frédéric KIHM, HBM France (France)

09:00 - 09:30

Development of LBM HastellogX for Ariane 6
■ Renaud MERIADEG, ArianeGroup (France)

09:30 - 10:00

COFFEE BREAK

S°10 • ALM - 4

10:00 - 10:30

Control of Residual Stress, Distorsion
and Mechanical Properties in Wire+Arc Additive Layer
Manufactured Ti6Al4V Parts
■ Jan Roman HÖNNIGE, Cranfield University
(United Kingdom)

S° 11 • ADVANCED METHODS

Hydroforming Applied to a Thick Aluminium Blank
for an Aeronautic Part
■ Adrien BARROT, STELIA Aerospace (France)

10:30 - 11:00

Predicting Manufacturing Defect
in Selective Laser Melting Processes
■ Mustafa MEGAHED,
ESI Group (France)

IMPULSA Project : Advanced Numerical
Solution for Predicting the Quality Surface
Due to Machining Process
■ Gilles CROISSONNIER, ESI Group (France)

11:00 - 11:30

Technological Characteristics of Aerospace
Hardware Manufacturing by Selective Laser Melting
of Powdered Metal 316L
■ Bogdan USENKO, Yuzhnoye Design Office
(Ukraine)

Advances of Non Destructive Methods Used
for Stress Measurement : Application
in the Mechanical Industry
■ Henri WALASZEK, CETIM (France)

PLENARY SESSION - 3

11:30 - 12:00

ALM Process for Rocket Engine / Application to Prometheus
■ David TCHOU-KIEN, CNES (France)

12:00 - 12:30

The Dawn of AM in the Railway Industry
■ Juanma ROMERO, ALSTOM TRANSPORT (Spain)

12:30 - 13:00

ASPECT Project : Advanced Simulation and Control of Tribology in Metal Forming
Processes for the Northwest European
■ Coline FIQUET, EMC2 (France)

13:00 - 13:30

Materials for Bearings & Mechanisms
■ Pascal DURAND, CNES (France)

13:30 - 14:30

FAREWELL LUNCH



Objectives

ASTech, Competitivity Cluster for Aeronautics and Space in Paris/Ile de France area, has the pleasure to invite you to join the:

2ND INTERNATIONAL METALLIC MATERIALS MEETING

**to be held in Deauville,
October 25th to 27th, 2017**

This new and unique symposium will bring together scientists, designers, manufacturers and integrators, end users from the academic, institutional and industrial from "Advanced Metallic Materials & Structures World". It will constitute a unique opportunity to bring together all players in the use of Metallic Engineering Solutions for Advanced Applications.

Emphasis will also be given to the relationship between Schools, Universities and Industry, including training of professional actors.

There will be outstanding presentations and also many formal and informal opportunities for exchanges, networking and cross-fertilization.

The conference will address Metallic Materials and Processes Industrial Challenges in a wide range of domains:

- Aeronautics, Aerospace, Space and Defence
- Automotive Applications including High Performance Engines & Structures

- Railway Transportation
- Sea Transportation
- Industry, Off-shore, Construction and Buildings
- Energy Production including Nuclear and Wind Energy
- Medical and Bio Medical
- Extreme Environment including Radiative Environment

Fees*

Delegates	950€ TTC
Speakers & Session chairmen	750€ TTC

* VAT included

Conference Center

Amirauté hôtel *** • golf • club • congrès
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