Programme

Recycling in Aviation

Clean Aviation Workshop
November 16th – 17th, 2023
Paterna, Valencia
Introduction

In the Clean Aviation Joint Undertaking the aviation industry is searching for increased circularity and less material consumption. Material supplier, manufacturer, research institutions and aviation industry are working collaborative together to increase the re-use and recycling quota of the European aviation industry.

For decades, aircraft reaching the end of their operational life have been stripped down for parts, and some components refurbished and recertified. But with the increasing use of composite material in today’s airliners, it’s environmentally essential to find a solution for recycling of aircraft composites. Additional challenges will arise for hybrid electric aircraft for recycling of high-power electronics full cells and batteries. New solutions are expected by digitalization in industrial recycling processes.

Workshop topics

- Legislation and regulation in aviation recycling
- Treatment of production waste
- Disassembling and sorting
- Mechanical recycling of aircraft materials
- Chemical recycling
- Characterisation and certification

Agenda

**Technical tour**
16th November 2023
Technical visit at TARMAC, Teruel: 14.30 – 16.30
Shuttle transfer departure: 12.30 at AIMPLAS Paterna

**Networking dinner**
16th November 2023
Restaurant Esteban Montesinos, Paterna, 20.00

**Recycling workshop**
17th November 2023
Workshop, AIMPLAS Paterna: 08.30 – 16.30
General information

Venue

The workshop will be held in the conference room at:
AIMPLAS – Technological Institute of Plastics
C/Gustave Eiffel 4
46980 – Paterna
Valencia, Spanien

Registration

Please send an email with your complete address to:
gabriela.gromer@ict.fraunhofer.de
Please state your f2f or online participation.

Participation fee

One presenter per presentation is free of charge.
The other participants will get an invoice by our co-organizer

- Regular participation fee (f2f): 200 €
- Online participation fee: 100 €

Chairman

Rainer Schweppe
Environmental Engineering
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Organising committee

- Thomas Reichert, Fraunhofer ICT
- Gabriela Gromer, Fraunhofer ICT
- Sabine Aref, GUS e.V.
- Rocio Ruiz Gallardo, AIMPLAS
- Elisa Cones Sánchez, AIMPLAS

Hotel recommendation

Aparthotel Wellness Paterna
www.aparthotelwellness.com
recepcion@aparthotelwellness.com

Please book and pay directly at the hotel by using the key word. Key word for booking: “Clean Aviation Workshop“.
08.30  **Welcome and introduction**  
Anabel Crespo, AIMPLAS  
Rainer Schwegge, Fraunhofer ICT

08.50  **P 1  Design, manufacturing, and testing of a metallic fuselage panel out of 2198 Al-Co-Li alloy**  
Alexandra Karanika¹, Evangelos Carelas¹,  
Egoitz Aldanondo², Alexander Abramoivich³,  
Marc Van Der Geest⁴, Peter Visser⁴  
¹Hellenic Aerospace Industry  
²IK4-LORTEK  
³Israel Aerospace Industries  
⁴AkzoNobel

09.15  **OP 2  Eco-design tips and EOL strategies for enhanced recyclability of integral welded fuselage panels made of Al-Li alloys**  
Clara Delgado¹, A. I. Fernández-Calvo¹,  
B. García², P. Dufour³  
¹AZTERLAN, (BRTA), Spain  
²CIDETEC, BRTA, Spain  
³SONACA, Belgium

09:40  **P 3  Circularity and end-of-life studies on magnesium alloys for the aircraft industry**  
Luis Antonio S. A. Prado¹, Selim Coskun¹,  
Abdul Rafay¹, Andres Robelo Roberg¹,  
Felipe Andia de Campos Leite¹, Andreas Kötter¹, Thomas Reichert², Haim Rosenson³  
¹Capgemini Engineering, Hamburg, Germany  
²Fraunhofer Institute of Chemical Technology ICT, Pfinztal, Germany

10:05  **P 4  German national project on light aircraft recycling**  
Peter Brantsch  
Fraunhofer Institute for Chemical Technology ICT, Pfinztal, Germany

10:30  **Coffee break**

10:50  **P 5  Automated recycling of unidirectional preimpregnated carbon fibre scraps**  
Oscar Gonzalo, Jose Maria Seara,  
Gotzone Aizpurua, Kepa Garmendia,  
Jose Antonio Gonzalez, Javier del Pozo  
Tekniker, Gipuzkoa, Spain

11:15  **P 6  ELIOT Project: new ways to recycle bio-composites from airplanes**  
Nora Lardiés Miazza¹, Sergio Fita Bravo,  
Rajesh Mehta²  
¹AIMPLAS, Paterna, Spain  
²TNO, Den Haag, Netherlands

11:40  **P 7  Sustainable scrapping method of thermoplastic composite materials**  
Rocío Ruiz-Gallardo  
AIMPLAS, Paterna, Spain

12:05  **P 8  Eco-friendly frame clips and system brackets for a fuselage demonstrator**  
Elena Rodríguez Senín  
AIMEN (MAVA), Vigo, Spain
12:30  

**Lunch break**

13:20  

**P 9**  

**DIGESTAIR** – a novel anaerobic digester solution in air transport for on board efficient waste management.  

*Development of a DSS tool*  

Eric Rovira-Cal	extsuperscript{1,2}, T. Fernández-Árêvalo	extsuperscript{1}, J. González	extsuperscript{1}, E. Aymerich	extsuperscript{1,2}  

	extsuperscript{1}CEIT-Basque Research and Technology Alliance (BRTA), San Sebastián, Spain  

	extsuperscript{2}Universidad de Navarra, Tecnun, San Sebastián, Spain

13:45  

**P 10**  

**Chemical recycling for sustainable aviation** – a case study on aircraft seats  

Ronny Hanich-Spahn  

Fraunhofer Institute for Chemical Technology ICT, Pfinztal, Germany

14:10  

**P 11**  

**Circularity studies on high performance thermoplastic demonstrators for the aircraft industry** – end-of-life concepts for PEKK/carbon fibre composites  

Selim Coskun  

Capgemini Engineering, Hamburg, Germany

14:35  

**P 12**  

**How to define a reuse and recycling quote for LCA in aviation**  

Thomas Reichert, Peter Brantsch, Ronny Hanich-Spahn  

Fraunhofer Institute for Chemical Technology ICT, Pfinztal, Germany

15:00  

**Coffee break**

15:25  

**OP 13**  

**Industry 5.0 and social inclusion: a new vision for end-of-life aircraft recycling in aviation**  

Samira Keivanpour  

Polytechnique Montreal, Montreal, Canada

15:50  

**Open panel discussion**

16:30  

**Closing remarks**