

PROJECT

## ECO-COMPASS

### Ecological and Multifunctional Composites for Application in Aircraft Interior and Secondary Structures

**Funding:** European (Horizon 2020)

**Duration:** Apr 2016 - Mar 2019

**Status:** Complete

**Total project cost:** €1,893,685

**EU contribution:** €1,893,685



**Call for proposal:** H2020-MG-2015\_SingleStage-A

[CORDIS RCN : 199913](#)

#### Objectives:

Composites are important materials used in aircrafts due to their excellent mechanical properties combined with relatively low weight enabling the reduction of fuel consumption. Expensive carbon fibre reinforced plastics (CFRP) are used in fuselage and wing structures and increasingly replace classic metals. Glass fibre reinforced plastics (GFRP) are mainly used for the interior panels. All these composite materials used in aviation have one thing in common: they are man-made. Renewable materials like bio-fibres and bio-resins are under investigation for a long time for composites but they did not make it into modern aircraft yet.

The project ECO-COMPASS aims to bundle the knowledge of research in China and Europe to develop ecological improved composites for the use in aircraft secondary structures and interior. Therefore bio-based reinforcements, resins and sandwich cores will be developed and optimized for their application in aviation. Furthermore the use of recycled man-made fibres to increase the mechanical strength and multifunctional aspects of bio-composites will be evaluated. To withstand the special stress in aviation environment, protection technologies to mitigate the risks of fire, lightning and moisture uptake will be investigated. An adapted modelling and simulation will enable the optimization of the composite design. Electrical conductive composites for electromagnetic interference shielding and lightning strike protection will be investigated as well. A cradle to grave Life Cycle Assessment (LCA) will be carried out to compare the new eco-composites with the state-of-the-art materials.

8 European partners will be involved in ECO-COMPASS. The duration of the project is three years.

#### Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

**Institute type:** Public institution

**Institute name:** European Commission

**Funding type:** Public (EU)

#### Lead Organisation:

**Deutsches Zentrum Fr Luft Und Raumfahrt E.v**

**Address:**

Linder Hhe  
12489 KLN  
Germany

**Organisation Website:**

<http://www.dlr.de>

**EU Contribution:** €336,501

## Partner Organisations:

### Airbus

**Address:**

2 ROND POINT EMILE DEWOITINE  
31700 BLAGNAC  
France

**Organisation Website:**

<http://www.airbus.com>

**EU Contribution:** €280,245

### L - Up Sas

**Address:**

Avenue De Friedland 32  
75008 Paris  
France

**EU Contribution:** €124,125

### Manchester Metropolitan University

**Address:**

All Saints Building, Oxford Road  
MANCHESTER  
M15 6BH  
United Kingdom

**Organisation Website:**

<http://www.mmu.ac.uk>

**EU Contribution:** €273,624

### Airbus

**Address:**

2 ROND POINT EMILE DEWOITINE  
31700 BLAGNAC  
France

**Organisation Website:**

<http://www.airbus.com>

**EU Contribution:** €0

### Centre Internacional De Metodes Numerics En L'enginyeria'

**Address:**

C/ GRAN CAPITÀ, S/N; EDIFICIO C-1; CAMPUS NORTE UPC  
8034 BARCELONA  
Spain

**Organisation Website:**

<http://www.cimne.com>

**EU Contribution:** €238,716

### Acondicionamiento Tarrasense Associacion

**Address:**

Carrer De La Innovacio 2  
8225 Terrassa  
Spain

**EU Contribution:** €340,063

**Inegi - Instituto De Ciencia E Inovacao Em Engenharia Mecanica E Engenharia Industrial**

**Address:**

Rua Dr Roberto Frias 400  
4200 465 Porto  
Portugal

**Organisation Website:**

<http://www.inescporto.pt>

**EU Contribution:** €157,911

**Panepistimio Patron**

**Address:**

University Campus- Rio  
26500 Patras  
Greece

**Organisation Website:**

<http://www.upatras.gr>

**EU Contribution:** €142,500

**Technologies:**

Computer-aided design and engineering  
Modelling and simulation tools for bio-materials

**Development phase:** Research/Invention

Aircraft design and manufacturing  
Combining recycled carbon fibres and bio-fibres in a hybrid non-woven and bio-based epoxy resins

**STRIA Roadmaps:** Vehicle design and manufacturing

**Transport mode:** Air transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Environmental/Emissions aspects

**Geo-spatial type:** Other