

PROJECT

HITCOMP

High Temperature Characterization and Modelling of Thermoplastic Composites

Funding: European (Horizon 2020)

Duration: Oct 2019 - Sep 2021

Status: Complete

Total project cost: €699,330

EU contribution: €699,330



Call for proposal: H2020-CS2-CFP09-2018-02

[CORDIS RCN : 225272](#)

Objectives:

Heat and fire cause more damage on composites than on metallic counterparts. In order to improve the current epoxy-based composites behaviour under thermal affection, an alternative is going to be addressed: thermoplastic composites.

Additionally, the sector is making a transition to a more electric aircraft, increasing the thermal affection on the structure since the number of heat & fire sources.

Hence, there are several reasons behind the drastic shift from aluminium and steel to thermoplastics: weight reduction, better fuel economy and lower operation costs, emissions reduction, corrosion and fatigue resistance or, in some cases, flame resistance and retardancy.

The framework of this topic is AIRFRAME ITD Work Package B-2.1 and B-2.2 whose objective is to achieve lighter and more cost-effective structures. In this line, current tendency at A/C level is to increase the structural contribution of the more efficient composites substituting metallic structures, developing fuselages with optimized usage of volume and minimized weight, cost and environmental impact.

Under this framework, the research project HITCOMP aims to characterize the behaviour, under fire and thermal affection, of new high-performance thermoplastic composites based on PAEK family resins, for comparison to the current thermoset, epoxy based, composites. HITCOMP aims as well to establish an innovative methodology allowing an affordable characterization of thermoplastics and the prediction of their behaviour and resistance when submitted to fire or high temperature events and to mechanical load. For this purpose, a thermo-mechanical model based on FEM permitting an innovative "virtual" characterization of specimens will be developed. An innovative testing lab based on two co-registered IR cameras will be developed too. It will allow accurate, non-intrusive measurements of the actual temperature of both sides of the samples during the fire tests and for the adjustment and validation of the model.

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)

Other programmes: JTI-CS2-2018-CFP09-AIR-02-70 - Development and application of an innovative methodology devoted for high temperature characterization of high efficient composite structures

Lead Organisation:

Universidad Carlos III De Madrid

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Organisation Website:

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EU Contribution: €249,986

Partner Organisations:**Sensia Solutions SI****Address:**

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EU Contribution: €149,718

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Organisation Website:

<http://www.inta.es>

EU Contribution: €299,626

Technologies:

Composite materials
Thermoplastic-based composite materials

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Other specified

Geo-spatial type: Other