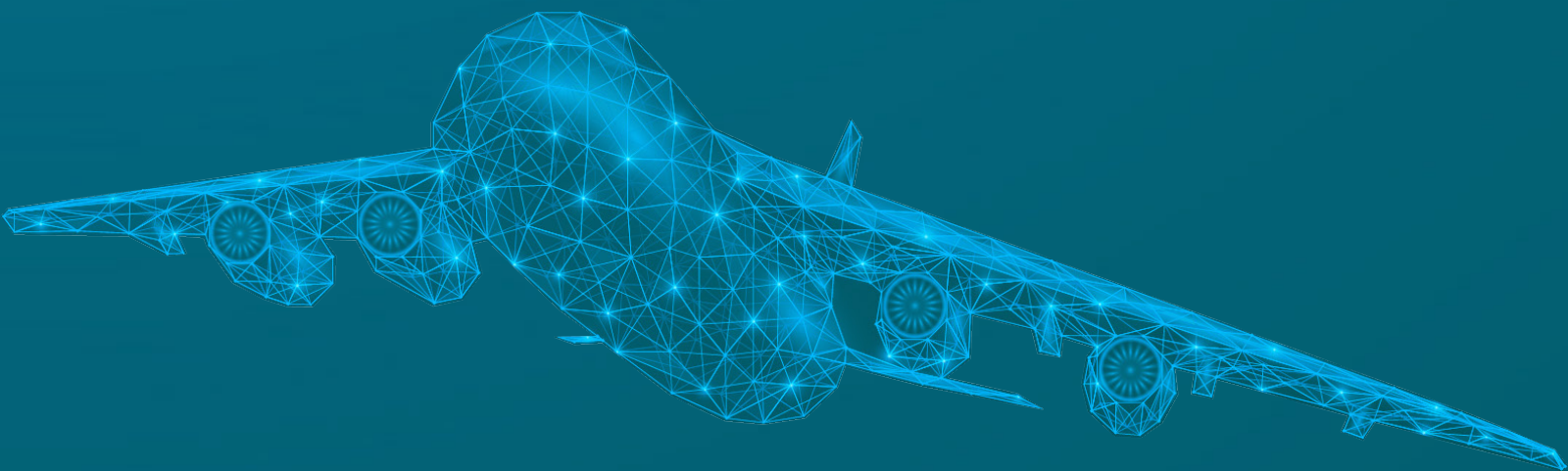


INFINITE

NEWSLETTER I



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Dear reader,

Welcome to the first newsletter of the INFINITE project. We took off in June 2021 with the aim to contribute to the EU aeronautic industry goals by developing sensors and analyser based on the usage of ferromagnetic microwires to be embedded in composite structural parts, in order to monitor manufacturing and structural health throughout the whole life cycle of the component.

The INFINITE project therefore aims to develop the know-how to incorporate advanced sensing technology in advanced composite components for aerospace applications. The principal achievement of the project will be to develop a calibrated system capable of supplying powerful data useful for the SHM process. This will provide the means to develop accurate, cost-effective and tailored quality assurance of aerospace composite components throughout their whole life, ensuring aerospace structures are well positioned to comply with current but highly demanding circular economic strategies.

In this period we have worked on defining the framework that will guide the R&D work in the following work packages, by identifying the aerospace industry requirements, considering both technology and business perspectives was made, concluding it successfully.

The development of the sensor system has been another task that has kept us busy during the early months of the project. A complete definition of the sensor and the portable reading system was defined and a significant progress has been made regarding the characterization of the materials to develop the necessary simulations and calibration.

The incorporation of sensors based on ferromagnetic microwires to NCFs was another hot topic, in which we have had some promising results.

All this work carried out in the first months of the project, has enable to validate the sensors for the future aeronautical structures. I hope you enjoy reading our newsletter and invite you to check our website regularly, follow us on social media or contact us directly for more information.







Yours sincerely

Peio Olaskoaga

About INFINITE

INFINITE aims to develop sensors and analyser based on the usage of ferromagnetic microwires to be embedded in composite structural parts, in order to monitor manufacturing and structural health throughout the whole life cycle of the component. The wireless monitoring system will permit producing digital signals and vast sets of data linked with the specimen to create an as-built digital twin of the structure that will also account for the whole history since it was manufactured through all maintenance operations performed.

The INFINITE project therefore aims to develop the know-how to incorporate advanced sensing technology in advanced composite components for aerospace applications. The principal achievement of the project will be to develop a calibrated system capable of supplying powerful data useful for the SHM process. This will provide the means to develop accurate, cost-effective and tailored quality assurance of aerospace composite components throughout their whole life, ensuring aerospace structures are well positioned to comply with current but highly demanding circular economic strategies.

<p>Objective 1</p> <p>Demonstration of the capacity to integrate sensors on the composite parts.</p> 	<p>Objective 2</p> <p>To develop integrated technologies and methodologies towards next generation of composite SHM.</p> 	<p>Objective 3</p> <p>To monitor and control the on-line manufacturing process of sensorised fabrics composites.</p> 
<p>Objective 4</p> <p>To ensure the safe and efficient composite aircraft structures maintenance and repair processes.</p> 	<p>Objective 5</p> <p>To improve sustainability of aerospace components, defining suitable end of life strategies and assessing the environmental impact of sensorised composite materials.</p> 	<p>Objective 6</p> <p>To demonstrate and validate the project concept and solutions. Ultimately providing guidance for aircraft certification requirements.</p> 

11

Partners

7

Countries

5.5 M€

EU Funding

June 2.022

Until May 2025

Partners

The INFINITE consortium has been designed to deliver the know how to manufacture sensorised composite component for aerospace applications. Airbus the number one Airframer manufacture in Europe is supporting this programme of work leading the IAB. INFINITE counts with the participation of 2nd largest global supplier of carbon fibre NCF aerospace material (**TCE**), one of the most influential Aerospace Component manufacture and Avionic provider (**UTRCI**) the 3rd aerospace testing laboratory in the word in terms of Airbus approvals for composite manufacture and testing of composites (**TITANIA**), a well-known aerospace repair company with substantial experience delivering solutions for aerospace primes (**AEROFORM**), the only producer of microwire sensors with the required configuration to deliver this technology in the world (**TAMAG**) and one of most successful companies focus on Carbon fibre recycling (**Reciclalia**). Furthermore, the consortium involves research and innovation organisations from the major research streams which are being merged into the INFINITE programme (**IDEKO, GAIKER, RISE and USFD**). These RTO are devoted to transfer technology to the industry, therefore, they will apply the new sensor material knowledge in the improvement of composites in additional industrial sectors. Between all of them INFINITE will have links with over 200 Industrial partners, related to field of electronics, optics, communication techniques, software and sensor systems, Aerospace PRIMES, material manufactures, composites manufacturers and end users to whom the project will be communicated and possible avenues for exploitation explored. Finally, the presence of a university which has been researching magnetic fields and sensor technologies for the las 20 years bringing the world scientific experts to support INFINITE (**UPV/EHU**).



Ideko



Gaiker



UPV/EHU



Rise



Tamag



Titania



Teijin



Aeroform Composites



CAE Simulation Solutions



Collins Aerospace



AMRC

Events

Events

Deep Dive BDIH

2022/10/06

Our colleague Francisco Javier Vallejo talked about the processes of automation in the production of composites currently being developed at IDEKO. Interesting use cases applied to the aeronautical and transport sectors, in terms of energy efficiency, decreasing manufacturing times and defects, were exposed. Technologies for automatic carbon fiber lamination and fabrication of fiberglass composites with alternative curates such as ultraviolet were presented.



A&DM Sevilla

2022/06/07

Over the past five editions, A&DM Sevilla has established itself as the most prominent matchmaking program for the aerospace and defense industries in Spain.

A&DM Sevilla connects OEMs and their Tier 1 & 2 suppliers, with manufacturers and service providers from both civil and defense aviation, through a series of individually tailored one-to-one meetings.



Events

Workshop in Seville

2022/10/05

Workshop on developments in composite materials through industrial applications and R & D & I projects. The free workshop was held at FADA-CATEC (Seville) and its objective was to learn about industrial and R&D&I developments in the manufacturing field, outside the compound materials autoclave.



Airbus Summit 2022

2022/12/30

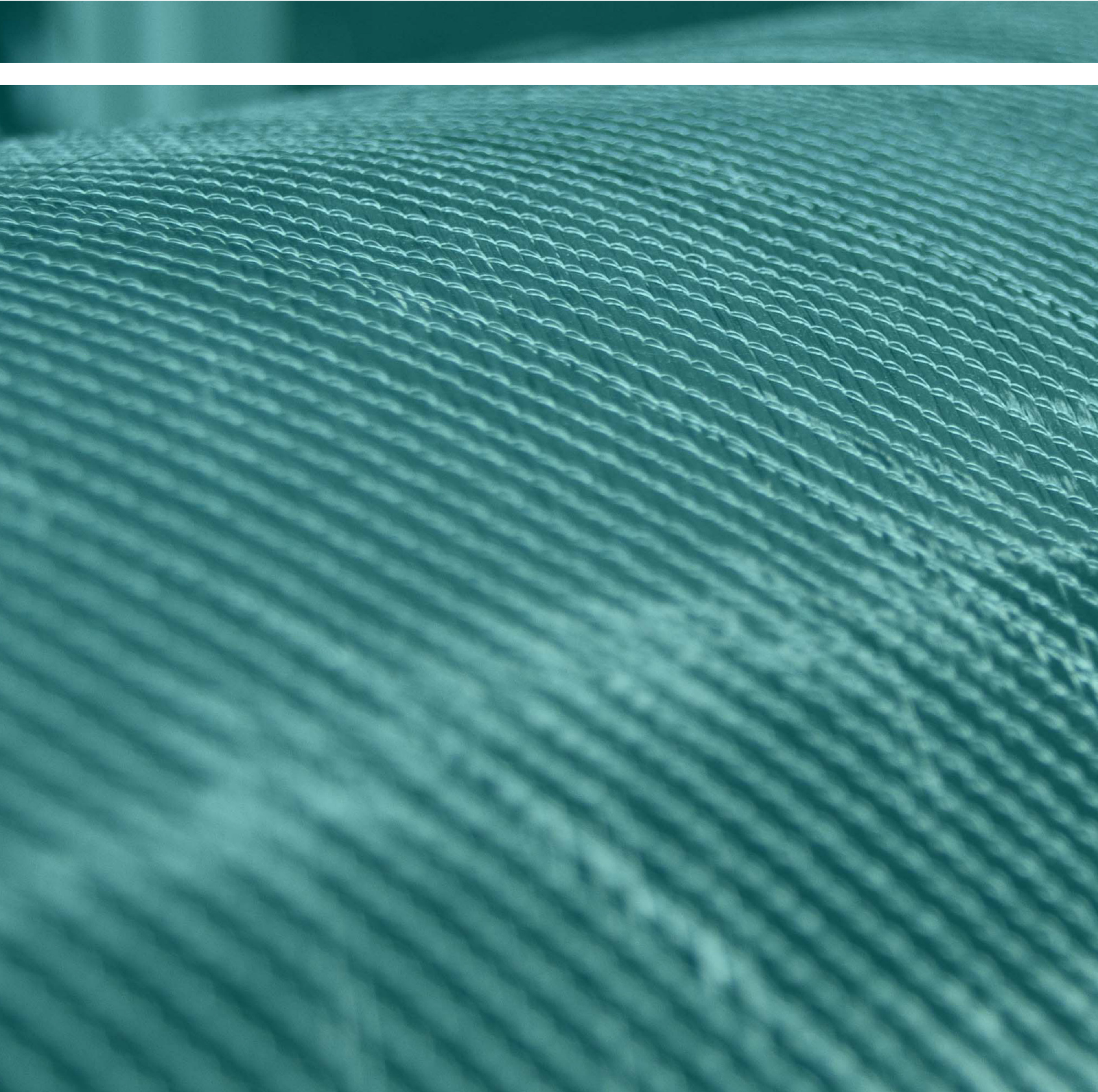
The Airbus Summit 2022 showcased the best in international cooperation and build on the momentum of last year's event. It brought together business leaders, partners, and industry experts to exchange ideas and debate the challenges and opportunities that will transform our world. What has been achieved? What are the challenges that still lie ahead?

AIRBUS SUMMIT 2022

Gathering pace towards sustainable aerospace

30 Nov - 1 Dec 2022

Highlights



Wireless sensors for lifelong monitoring of aircrafts

Control of manufacturing processes and operating conditions of aerostructures while bringing down their cost are some of the main challenges facing the European aeronautics industry. To come to a better understanding of how to achieve this, the behaviour and condition of materials throughout their life cycle must be studied more in detail, to ensure their maximum quality and to optimise the components at each stage of their life cycle.

With this objective in mind, the European project INFINITE- HORIZON-CL5-2021-D5-01-06- Next generation digital aircraft transformation in design, manufacturing, integration and maintenance, an initiative led by the IDEKO research centre, a member of the Basque Research & Technology Alliance (BRTA), was launched at the beginning of June, which will develop a technology based on the incorporation of wireless sensors at the early stages of the manufacture of aeronautical structures.

This advanced monitoring has great potential for the European aeronautics industry as it will have an impact on the cost reduction and reliability of components, providing a competitive advantage to key players in the sector in Europe such as equipment manufacturers (OEMs), component manufacturers and maintenance and repair operators (MROs).





In this context, experts from Europe's major players in the European aeronautical landscape have joined the project with a seat in an industrial advisory panel to ensure that both the objectives as well as the developments of the project are always in line with their needs. The first meeting of the project consortium took place on Tuesday 7 June at IDEKO research centre's facilities in Elgoibar (Gipuzkoa) and was attended by all the consortium partners.

The Consortium is formed by R&D entities and industrial companies with complementary skills and capabilities. The leader of the Consortium is the Spanish R&D centre specialized in advanced manufacturing IDEKO. GAIKER (ES) as IDEKO, member of Basque Research & Technology Alliance, BRTA, the research centre specialising in electronics and magnetism RISE (Sweden), the University of Sheffield Advanced Manufacturing Research Centre (AMRC), the University of Basque Country UPV/EHU (ES) are other RTD entities participating in the Project.

The Consortium is completed by industrial companies, such as TEIJIN (DE), manufacturer of carbon fabrics, TAMAG (ES), a spin-off of the aforementioned UPV/EHU group that will manufacture the sensors to be incorporated into the composites, AEROFORM (FR) specialist in composites repair, the aeronautical components manufacturer COLLINS Aerospace (IE), an austrian company working in simulation of complex systems, CAE Simulation Solutions, and two other Spanish companies, TITANIA, working on testing and validation of aeronautical components, and RECICLALIA, a start-up working on recycling, that seeks solutions for the end of life cycle of composite material structures.

More information on the [website](#).

M08 General Meeting of INFINITE

On January 18 and 19, the general meeting corresponding to month 07 of the project was held at the School of Engineering of the University of the Basque Country (UPV) in San Sebastián.

In addition to sharing the general considerations of the course of the project with all the Partners of the consortium, a summary of the work carried out in WP1, aimed to define the framework that will guide the R&D work in the following work packages, by identifying the aerospace industry requirements, considering both technology and business perspectives was made, concluding it successfully.

Subsequently, the meeting focused on the development of the sensor system, included in the WP2 led by the research center of Sweden, RISE. Interesting discussions were held that bring us closer to the complete definition of the sensor and the portable reading system.

This productive meeting ended with a visit to the facilities of the magnetism group of the UPV, focusing mainly on the activities related to the development of INFINITE. The attendants visited also TAMAG facilities, where they witnessed the microwire production process at work.

More information on the [website](#).

