



CATALYZING PROGRESS: PRIVATE COMPANIES SHAPING THE FUTURE WITH GIANCE

Companies comprising the consortium of the GIANCE project play a pivotal role in driving innovation and industrial development in the field of advanced materials. By closely collaborating with research institutes, governmental organizations, and other industry entities, the companies within the consortium play a key role in translating scientific discoveries into tangible commercial solutions that can have a positive impact on industries and society at large.

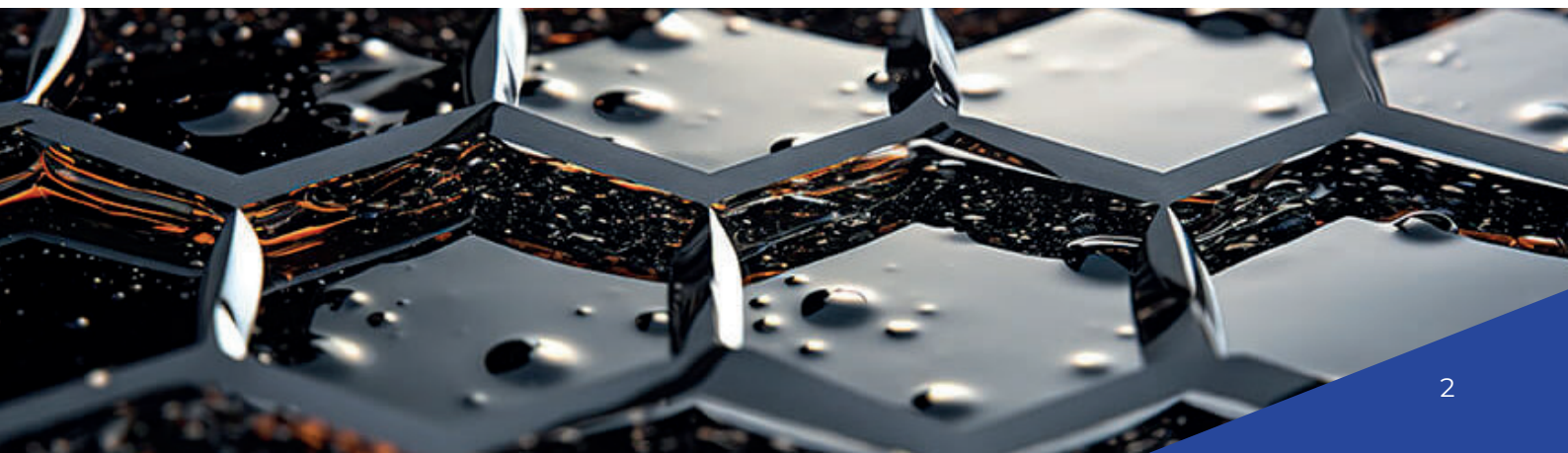
Let's see each company in GIANCE at a glance:

CRF is an industrial research organisation incorporated in STELLANTIS Europe having the mission to promote, develop and transfer innovation throughout all the STELLANTIS functions: Product, Product Engineering, Manufacturing, and Purchasing. The latter beside negotiating parts volume and prices has the specific mission to grant the solidity of the plurality of supply chains from the raw material extraction, synthesis, and transformation, cradle to grave in the view of promoting the full reuse, and recycling of EoL materials. In the GIANC project, the CRF role is to define the requirement of two automotive use cases to demonstrate a fruitful use of graphene and steering the consortium to focus onto the automotive needs according to the company roadmaps and always in compliance with the European directives in the use of resources.



Boeing Turkey Aviation and Trade Ltd. Co.

Boeing Turkey Aviation and Trade Ltd. Co., a subsidiary of The Boeing Company, is actively involved in industrial feasibility and demonstration through its Engineering and Technology Centre located in Istanbul, Turkey. The centre develops technologies that Boeing implements globally by collaborating with the partners from academia and industry. GIANC plays an important role in laying the groundwork for new collaborations in the fields of composite research, technology, and intellectual property generation. As part of Use Case 6, Boeing engineers will assess the impact of graphene coating, which is much lighter than the metallic protection, on thermoplastic aerodynamic surfaces (trailing edge) in terms of lightning strike protection (LSP).



FHS, a company of the Group FORVIA, pioneers hydrogen storage solutions for mobility, transport and distribution. First global supplier of hydrogen storage systems, FHS develops and produces cutting-edge pressure vessels made with composite. Today, the company is at the heart of a range of projects and partnerships accelerating hydrogen mobility on a global scale. In the frame of the GIANCE project, FHS will develop with GIANCE partners new composite material with incorporation of graphene for final product design optimization. Evaluation from material scale to prototype will be performed. Final project objective will be to produce several prototypes to validate product performance and its carbon footprint reduction.

**Dawn Aerospace Nederland B.V.**

Accelerating Access to Space - Dawn Aerospace's mission is to accelerate the next generation of space users with scalable and sustainable space transportation. The rapid response, scalable operations of our rocket-powered aircraft, which can fly multiple times a day from a runway, is key to delivering on this vision of a future-proof space industry.

End Use Cases of Graphene for Dawn Aerospace

Dawn Aerospace is involved in end use-cases of the technology being research in the Giance project. Graphene will be added to the leading edge of the tail of Dawn's Mk-II Aurora rocket-powered plane (aka spaceplane) to improve the performance related to thermal cycling.

This is interesting from:

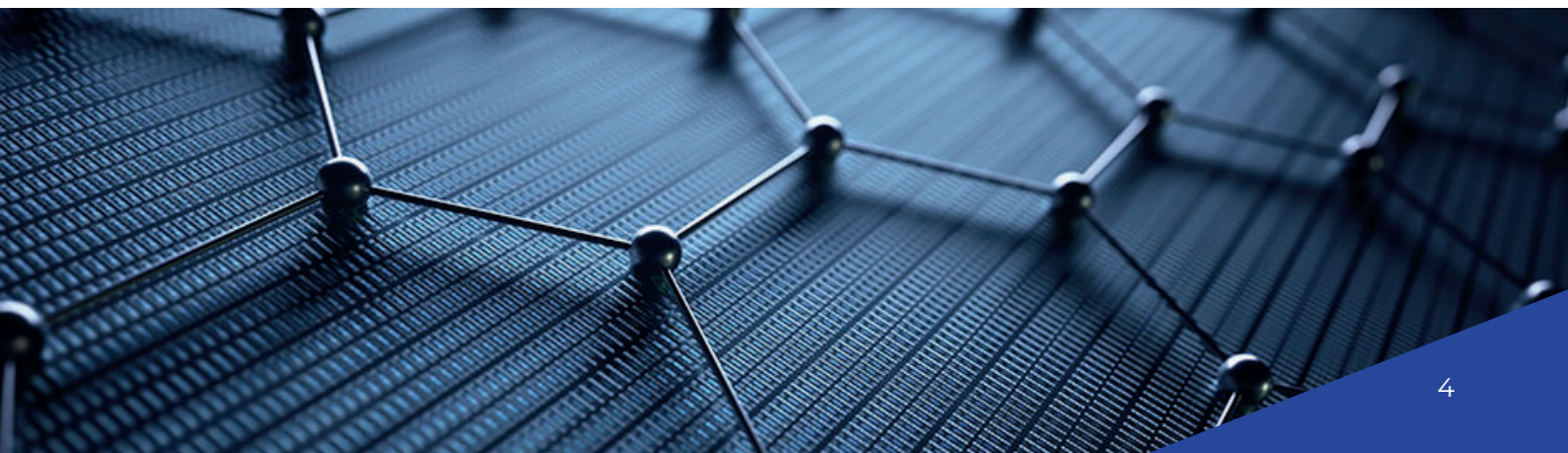
- **a sustainability and reusability point of view** - it could increase the lifetime of the part, which is of course important for the rocket-powered aircraft flying multiple days to space (100km altitude)
- **researching end of life recycling** - this will also be evaluated, as we are not yet sure yet how this will turn out for our application.

IRIS SRL is an SME dedicated to pioneering water treatment technologies and exploring the synergies between membrane separation processes and Advanced Oxidation Processes (AOPs), field in which IRIS holds a patent for Pulsed Discharge Plasma (PDP) treatment. PDP utilizes high current and high voltage pulses in water, which generate high-power mechanical shockwaves, ultraviolet light, and reactive species such as ozone and hydroxyl radicals—potent oxidizing agents that efficiently degrade pollutants in water, including contaminants of emerging concerns (CoECs), without the need for additional chemicals. In the GIANCE project, IRIS is coupling the PDP process with two innovative catalysts: a GO/TiO₂ photocatalyst and an rGO/Fe₃O₄ Fenton catalyst. This combination is designed to break down pollutants more effectively while significantly reducing energy consumption, and without using extra chemicals. Collaborating with experts from the GIANCE consortium, IRIS is gaining valuable insights and advancing its knowledge in the application of these innovative catalysts.



Crossfire Srl

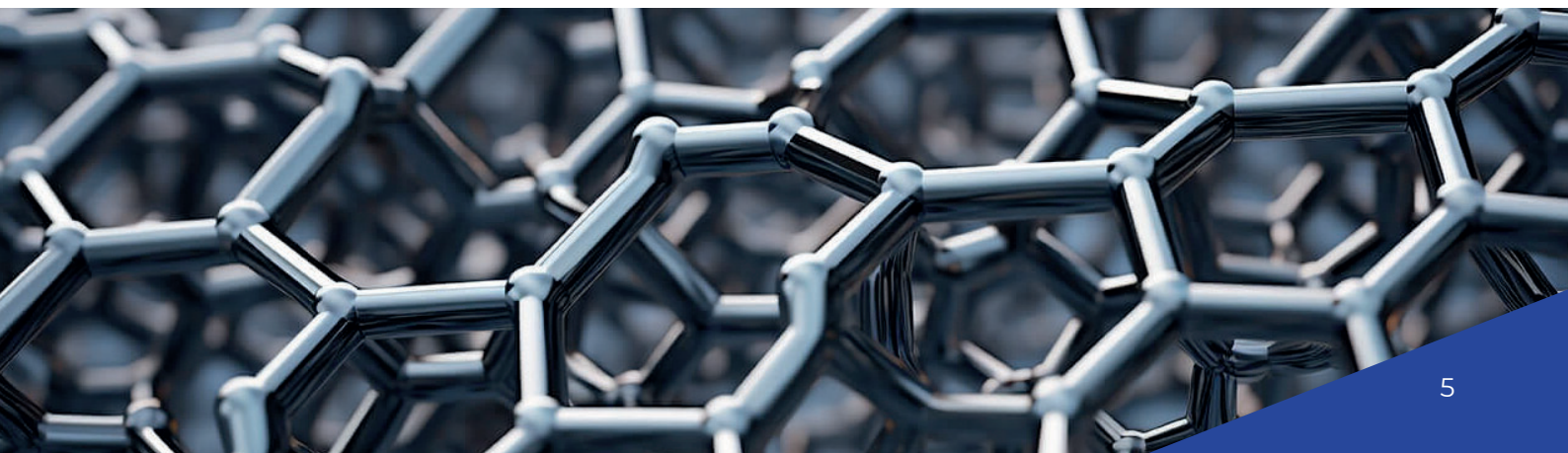
Developing innovative, mass productive, circular recyclable Composite laminates is the Crossfire existing challenge. Entering GIANCE meant an additional step forward to the creation of even more lightweight performing composites. The weight further reduction at equal mechanical performances represents a great improvement in the direction of Energy consume reduction. GIANCE went offering Crossfire a unique opportunity to enter the Graphene Flagship Community and share their innovative Vision. GIANCE initiative represents a Visionary Challenge in the Crossfire revolution toward Sustainable and Circular, more performing, materials.



HydroSolid leverages advanced technology to store hydrogen in significantly smaller volumes, thereby setting new standards for the safety of hydrogen applications. Our patented nanotechnology achieves substantially higher storage capacities compared to conventional energy storage systems, with a strong emphasis on environmentally friendly development and production. As a start-up in the hydrogen sector, we bring our expertise to two clearly defined use cases: hydrogen production via electrolysis and hydrogen storage in graphene materials. Additionally, we are responsible for the development and validation of the prototype. Our participation in this project is of great importance, as we strive to establish long-term partnerships in industry, science, and research and development, fostering strong collaborations. Furthermore, it is essential for us to gain recognition as a start-up and expand our product portfolio.



GRAPHENEA is an SME leader in the production of graphene-based materials and it is focused on the development of applications based on these novel family of materials. GIANCE will give the opportunity of positioning the graphene-based solutions in different sectors as composites, water treatment, sensors and H₂. GRAPHENEA will fabricate custom materials for each use case and will ensure the quality and the batch-to-batch reproducibility of the produced graphenes. After the project, GRAPHENEA expects to increase its portfolio and to be well connected with experts of the different industries.



UNIVERSAL MATTER INC (UM) is leading the transition toward a more sustainable supply chain and the crucial circular economy by using biomass, plastic waste and recycled carbon materials to create stronger, lighter, and more resilient products with graphene and related advanced materials. Utilizing Flash Joule Heating technology, UM is transforming carbon-rich raw materials into a range of high quality, performance enhancing additives based on a variety of graphitized carbon morphologies.

Through collaborations with the industry experts across the GIANCCE consortium, UM is confident that its industry-leading graphene-based dispersions will play a pivotal role in delivering the creative solutions set out in each of the associated projects. Ultimately, helping to deliver the project objectives of delivering affordable, eco-friendly, lightweight, and recyclable materials based on graphene and related materials.

LENNTECH

Lenntech BV

Lenntech (LENN) is an international company supplying integrated water treatment systems for industrial wastewater streams. Lenntech aims at recovering water for reuse in industrial processes, or separating and concentrating compounds of interest. Participating in GIANCCE allows to evaluate the added value of graphene materials for membrane technology in this field of application and take active part in the development of innovative solutions for treatment of challenging waters.

Lenntech will be most involved in “Industrial feasibility & demonstration” and “Testing, validation and assessment” work packages by testing the graphene membranes produced by the material experts on a representative wastewater stream.



Nanoprom Chemicals is focused on the development of silica-based coating solutions using the sol-gel process.

In the GIANCE project, our role is centered around leveraging our expertise in silica coating design and material sciences to develop and scale the production of graphene and related materials (GRM). These efforts are crucial for creating the next generation of lightweight, recyclable, and high-performance materials. Our contributions involve not only the synthesis of these materials but also their integration into real-world applications, ensuring they meet industrial standards and contribute to sustainable practices.

Participating in GIANCE is significant for us for several reasons. First, it aligns with our commitment to sustainability and eco-friendly practices, as the project emphasizes the development of recyclable and environmentally benign materials. Additionally, it allows us to be at the forefront of technological advancement in graphene applications, enhancing our product offerings and market competitiveness. Finally, this collaboration helps us to expand our network and influence in the European market, aligning with strategic goals to enhance our industry presence and contribute meaningfully to Europe's technological leadership in advanced materials.



BAX is a strategic consultancy firm specializing in open innovation. Our mission is to empower changemakers with the tools and support they need to transform innovative ideas into tangible societal impacts. We conceptualize and develop pilots, tools, and collaborations that drive these ideas forward.

Within the GIANCE project, BAX will spearhead the exploitation of project results, including materials, manufacturing technologies, methodologies, and products. We will manage the innovation process with a focus on driving the industrialization of the project outputs.

GIANCE provides a unique opportunity for us to gain deep insights into the dynamics and interests of the graphene-based materials market. We will engage with stakeholders across five different sectors, understanding their challenges and needs. This knowledge and the extensive network we develop will position BAX at the forefront of cutting-edge technologies. Post-GIANCE, we plan to develop services that support the commercialization of the project's results, further enhancing our expertise and market positioning.

Introducing Innovation Engineering S.r.l. (INE), a key part of PNO GROUP, located in Rome, Naples, and Milan. We specialize in cutting-edge IT solutions for enterprise knowledge management, leveraging Java and Open Source technologies. With a strong track record, we develop robust tools for accessing and analyzing critical information across web and database platforms. Trusted by private companies and governmental bodies, we excel in crafting bespoke knowledge management solutions.

In the GIANCE project, INE leads technological innovation through our R&I Wheesbee platform, driving dissemination and communication efforts for impactful outcomes. Join us in shaping the future of innovation with INE at the forefront of tomorrow's technological challenges

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