

# The third dimension of transport

Discovering a unique Advanced Air Mobility project in Southern Europe by Manta Aircraft and its network of partner companies, including Pantecnica and Powerflex

**H**ybrid Electric Vertical Short Take Off and Landing (Hevstol) aircraft and verti-ports enabling environmentally friendly point-to-point connections, intra-city and inter-city, decongesting inter-regional and partly urban car traffic. Vehicles capable of optimising travel times, reducing fuel consumption. This is not science fiction, but the reality of the third dimension or Advanced Air Mobility, which will characterise the near future. This is a real cultural revolution in the field of transport that will affect the strategic conception of territories, offering a fundamental alternative to land transport, under the banner of technological innovation, environmental sustainability and time saving, and connecting geographical areas that are currently difficult to reach. In this context, Manta Aircraft's ANN family of vehicles stands out, starting with the Ann2, the advanced air mobility aircraft that is the

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result of the work of a pool of high-profile engineers from different sectors of specialisation. We spoke to Lucas Marchesini, CEO of Manta Aircraft, Andrea Pavone, founder of the Advanced Air Mobility Hub and Davide Fatigati, Executive Chairman of Pantecnica.

"We started working on the ANN2 prototype at the end of 2019, combining the fast and flexible mindset and technologies of Formula 1 with the aviation background.

This is quite different from the traditional, institutional approach of aeronautics: the speed of design typical of the motorsport sector has been fully embraced in this case.

ANN2 is a perfect example of the integration of excellence from the automotive and aeronautical worlds" says Lucas Marchesini, who also emphasises how technological transitions today are much more dynamic and faster than in the past, thanks in part to the contribution of fresh ideas, linked to open innovation, from start-ups and companies like Manta Aircraft.

Considering the ease of piloting and performance - 300 km/h with a range of 300 to 1,000 km - the ANN2 is reminiscent of a flying sports car, with an ergonomic and winning design.

"The aircraft, with hybrid propulsion, recharges its batteries in flight and features a canard configuration, with two empennages and a total of eight ducted fans, four of which can be tilted vertically for take-off and landing, and horizontally for translation and cruise flight. Everything is controlled by a new generation of software.

Thanks to the hybrid propulsion, there is no need for heavy batteries on board or recharging ground infrastructure, and the aircraft is also ready to switch to hydrogen, and therefore to totally avoid CO<sub>2</sub> emissions. Moreover, thanks to the electric ducted fans, noise pollution is also reduced", Andrea Pavone enthusiastically explains.

The project is still in the development phase, but the prototypes will soon be completed thanks to the contribution of excellent companies such as Pantecnica and Powerflex.

"We are partners with Manta Aircraft to contribute to the development and supply of anti-vibration systems and acoustic shielding to improve vibro-acoustic comfort on board, further mitigating the residual noise generated by the occasional operation of the generator, whether it



From left to right Andrea Pavone, Lucas Marchesini, Aurelia Annovazzi and Davide Fatigati

is powered by "bio fuel" or hydrogen. Powerflex, on the other hand, will contribute to the structural analysis using the finite element method (FEM) and to the execution of the necessary environmental qualification tests for the aeronautical sector," explains Davide Fatigati of Pantecnica.

"The aim is to involve in this project the companies that represent the best Made in Italy technology to develop an ecosystem of Italian

excellence to be exported abroad.

The Advanced Air Mobility sector is incredibly promising and will enable us to take aviation to a more personal level, halfway between automotive and aerospace, opening the doors to the future," concludes Lucas Marchesini. ■