FUN-FLY PROJECT

The Fun-Fly project was born from the vision and experience of Engineer Michelangelo Antonelli, a name that represents innovation, research, and passion in the world of aviation. Antonelli, known for designing and building high-performance aircraft, has always believed that flying should be accessible to everyone, especially young people. With this philosophy in mind, he created a truly unique aircraft capable of combining aerobatic performance with uncompromising safety.

In the 1990s, Fun Fly 3D model aircraft took the world of radio-controlled flight by storm thanks to their extraordinary maneuverability and ability to perform extreme aerobatics at low speed. Inspired by these models, Engineer Antonelli developed an ultralight kit aircraft aimed at young pilots, maintaining the same agility and responsiveness while paying meticulous attention to safety and ease of assembly.

Project Objectives

The Fun-Fly project, developed by the Italian company AVIO-SMA, pursues three main objectives:

- Extremely high safety
- Low flight speeds and exceptional low-speed maneuverability
- An aircraft within everyone's reach, designed to be easily built and flown

After an extensive research and development phase, including the testing of innovative materials such as honeycomb Nomex composite boards with carbon fiber layers and 4130 steel structures, the final construction material chosen for the aircraft was aluminum alloy. This material proved to be the ideal solution, offering the perfect balance between strength, lightness, and long-term durability.

State-of-the-Art Production

Building this aircraft requires very few tools: a riveter and a simple toolbox with wrenches and hex keys. The kit is so intuitive to assemble that it recalls the old Meccano sets many of us played with as children, perhaps with our dads.

Assembling the Fun-Fly is a hands-on and rewarding activity that brings back the authentic joy of "working with your hands," making the entire process accessible even to those without much experience.
This project is designed to be simple, practical, and also satisfying at every step, as the aircraft comes to life piece by piece.

All components of this aircraft are manufactured using CNC machines. The entire production process is regulated by an ISO 9001 certified structure, ensuring the use of cutting-edge manufacturing and control technologies.

Each stage of the build is subject to rigorous strength and quality tests, carried out directly in SMA’s laboratories, ensuring every component meets the highest standards of safety and reliability. Thanks to this top-tier production process, the Fun-Fly offers uncompromising structural reliability, reaffirming AVIO-SMA's commitment to producing innovative and high-quality aircraft.

The AS993 Engine: Power and Performance Without Compromise
One of the defining features of the Fun-Fly Extreme is the AS993 engine, a two-stroke twin-cylinder powerplant developed directly by AVIO-SMA to guarantee maximum performance. This engine was designed specifically for the Fun-Fly project, delivering 135 HP at 6800 RPM, paired with a 1:4 mechanical reduction gear.

This configuration provides over 380 kg of static thrust—an extraordinary figure considering the aircraft’s maximum takeoff weight is 300 kg. The result is an unprecedented thrust-to-weight ratio, allowing the Fun-Fly Extreme to perform pure vertical climbs, maintain thrust even in unusual attitudes, and easily execute aerobatic maneuvers typically impossible for an ultralight.

Thanks to its high power and low weight, the Fun-Fly Extreme delivers an extremely dynamic and responsive flight experience, opening new possibilities never before seen in the ultralight aviation world.

Innovative Structure and Easy Assembly
The decision to use square-section tubing for nearly the entire structure of the Fun-Fly was made to simplify the assembly of all components. This approach allows for work on flat surfaces, making the assembly extremely simple and intuitive, even for those with no experience in aircraft construction.

The use of square-section tubing drastically reduces the need for advanced alignment equipment during assembly, as the components naturally fit together with no risk of misalignment. Moreover, thanks to this design, the aircraft can be assembled directly on a standard workbench, without the need for complex jigs or support structures.

This design choice not only makes assembly easier but also improves the structural precision of the aircraft, ensuring a robust build free from imperfections. Every connection is pre-drilled and threaded with millimetric precision, eliminating the need for complex measurements or adjustments during assembly. This construction principle recalls the simplicity and modular logic of classic mechanical construction kits like Meccano, offering a clear and satisfying assembly experience.

Thanks to this innovative solution, the Fun-Fly can be assembled in a very short time, allowing any enthusiast to quickly transform a set of components into a real aircraft ready for takeoff.

Structure Designed for Maximum Loads
The Fun-Fly's airframe has been engineered to ensure exceptional structural strength, enabling the aircraft to safely handle high-load maneuvers. The entire structure is rated to withstand working loads of +6G and -3G at 300 kg, making it perfect for aerobatic flight and ensuring safety margins beyond the standards required for ultralights.

This means that the Fun-Fly not only delivers extreme performance but does so with the robustness and reliability typical of professional aerobatic aircraft.

Flight Envelope and Aerodynamic Profile
The Fun-Fly’s flight envelope ranges from 40 km/h to a maximum of 100 km/h. This performance has been achieved thanks to an aerodynamic profile specifically designed to limit speed during vertical aerobatic maneuvers.

As speed increases, aerodynamic drag rises progressively, preventing the aircraft from exceeding dangerous thresholds and making the aircraft extremely safe. This feature allows the pilot more response time than classic aircraft, ensuring optimal control during all phases of aerobatic flight.
The Fun-Fly's design thus ensures spectacular performance while maintaining a high level of safety at all times.

Materials Used
The aircraft is built entirely from aluminum alloys 6060-6061-6082-2024-7075, while the outer skin is made from a plastic laminate containing carbon fiber.

Quick Disassembly and Reassembly
The Fun Fly Sport was designed with a modular and lightweight structure that allows the entire aircraft to be disassembled and reassembled directly at the airfield, without the need for special tools.

Quick-release connections and mounting points simplify operations, allowing the aircraft to be easily transported in vans or trailers and quickly returned to flight configuration.
This feature makes it ideal for sport pilots and operators who require maximum logistical flexibility in field operations.

Authentic Flying Emotions
Climbing aboard the Fun Fly means experiencing pure and engaging flight sensations. The cockpit is surprisingly spacious for a sport aircraft of this category, with a comfortable and snug seat.

The control stick offers a wide range of movement, giving the pilot direct and precise control that enhances the joy of flight. The overall feeling once onboard is like being at the controls of a World War II fighter plane.
Adding to this experience is the special two-blade propeller, approximately 2.5 meters in diameter, which ensures powerful and responsive thrust at takeoff.

In the 65 HP version, the thrust is already thrilling, but with the 135 HP engine, takeoff becomes breathtaking, delivering acceleration that leaves a lasting impression.

Conclusion
The Fun-Fly is not just an aircraft; it’s a dream brought to life by those who build it with their own hands. Thanks to the ingenuity and vision of Engineer Michelangelo Antonelli, this project represents the evolution of ultralight aviation, making aerobatic flight accessible to all. Safety, ease of assembly, and exceptional performance come together in an aircraft that redefines the concept of fun and freedom in the skies.
AVIO-SMA: the future of flight made accessible to all!