

*DESIGNING & 3D PRINTING  
AN FPV RACING DRONE  
— WITH SELECTIVE LASER  
SINTERING (SLS)*

**A SINTRATEC CASE STUDY  
AUGUST – 2023**

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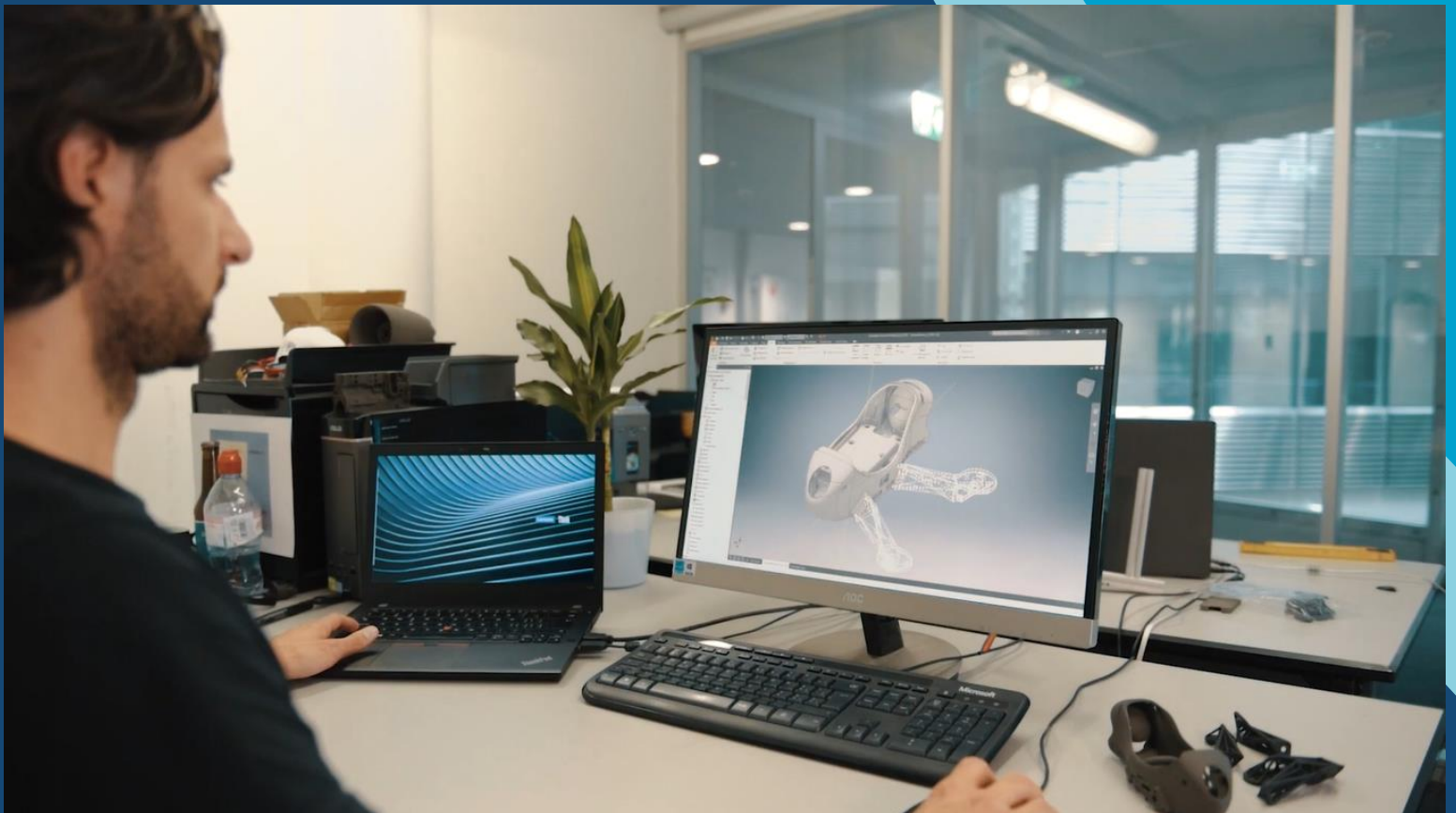


 SINTRATEC

Designing & 3D printing a  
**RACING DRONE**

## Introduction:

In the world of remote-controlled hobbies, few things capture the thrill and excitement quite like First Person View (FPV) racing drones. These agile, high-speed machines provide an adrenaline rush for both pilots and spectators alike. What adds an extra layer of fascination to these drones is the process of designing and manufacturing them. This two-part series delves into the captivating journey of crafting an FPV racing drone using Selective Laser Sintering (SLS) technology, with a spotlight on the renowned company, Sintratec.



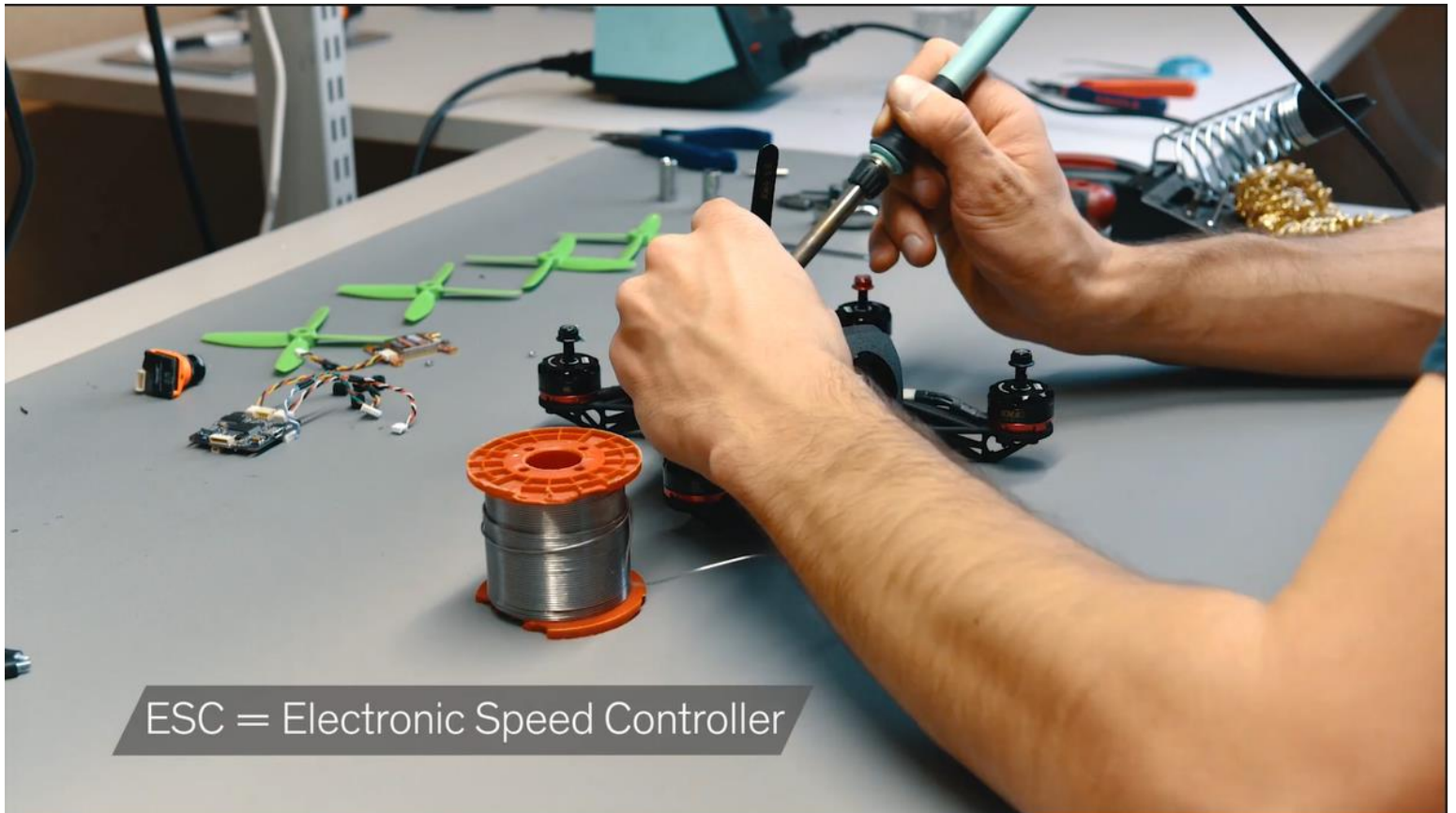
## Understanding FPV Racing Drones:

FPV racing drones are unlike your conventional aerial drones. They are purpose-built for speed, agility, and maneuverability. Unlike camera drones that prioritize stability and aerial photography, FPV racing drones focus on delivering an immersive, real-time flying experience to the pilot. Equipped with a small yet powerful onboard camera and video transmission system, these drones allow pilots to see exactly what the drone sees, as if they are sitting inside the cockpit.



## The Role of 3D Printing:

3D printing has revolutionized the way products are designed and manufactured. It has found a particularly significant application in the world of FPV racing drones. The complex and aerodynamic designs, along with the demand for lightweight yet durable components, make 3D printing an ideal manufacturing method. Enter Selective Laser Sintering (SLS), a cutting-edge 3D printing technology.



ESC = Electronic Speed Controller

## Sintratec: Pioneering SLS Technology:

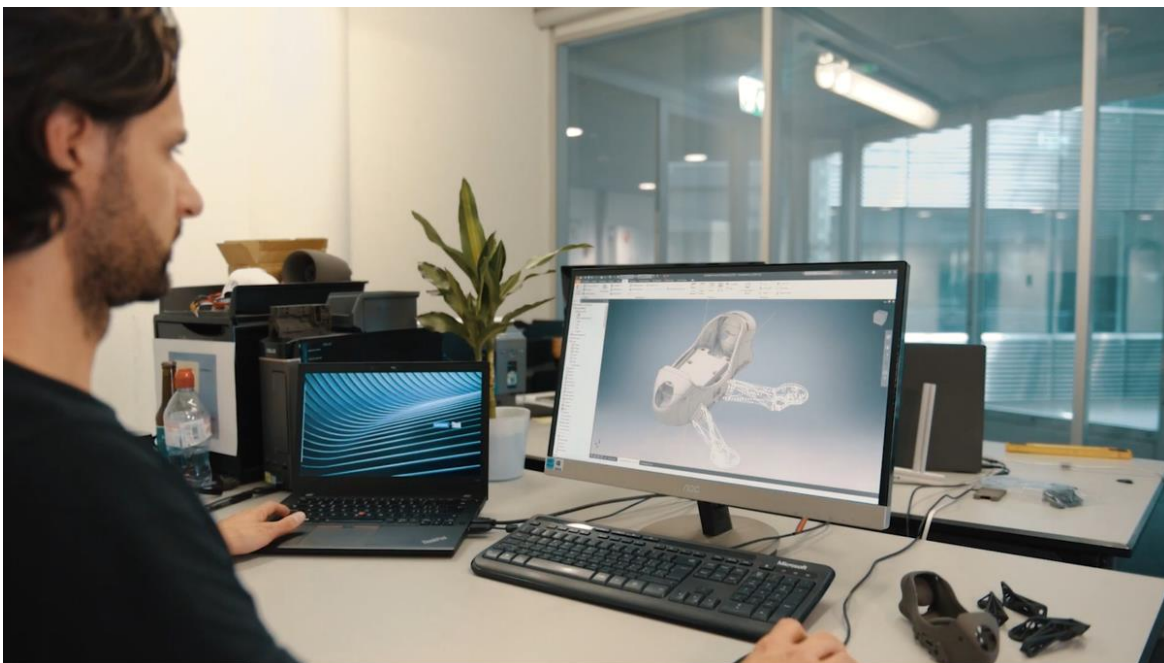
Sintratec, a prominent player in the 3D printing industry, has been at the forefront of driving innovation through SLS technology. Their printers are renowned for their precision, speed, and versatility, making them an excellent choice for creating intricate components of FPV racing drones.



## Designing the Drone:

The journey of creating an FPV racing drone begins with design. Utilizing specialized computer-aided design (CAD) software, engineers and designers meticulously craft every aspect of the drone, from the frame and propellers to the camera mounts and electronic housing. In this process, emphasis is placed on aerodynamics, weight distribution, and structural integrity.

SLS technology comes into play during this phase. Traditional manufacturing methods often struggle to produce intricate and lightweight structures required for FPV racing drones. However, with SLS, designers can bring their visions to life by sintering layers of powdered material, typically nylon, into solid objects. This additive manufacturing process ensures exceptional strength-to-weight ratios and allows for the creation of complex geometries that were previously unattainable.



## Benefits of SLS for FPV Racing Drones:

- 1- **Lightweight Strength:** SLS-produced components exhibit remarkable strength while remaining incredibly lightweight. This characteristic is pivotal for high-speed racing drones as it contributes to improved maneuverability and speed.
- 2- **Customization:** FPV racing drones often demand customization to suit a pilot's unique style and preferences. SLS allows for easy modifications to designs without incurring excessive costs or time delays.
- 3- **Reduced Assembly:** Traditional manufacturing methods might involve assembling multiple parts to create a single component. With SLS, intricate designs can be produced as a single piece, reducing the need for complex assemblies.



## Conclusion:

Designing and 3D printing an FPV racing drone using SLS technology is a thrilling journey that showcases the marriage of cutting-edge innovation and a passion for remote-controlled flying. SINTRATEC's role in this process cannot be understated, as their advanced SLS printers empower designers and engineers to bring their concepts to life with unprecedented precision and quality. In Part 2 of this series, we will shift our focus from the manufacturing process to the exhilarating world of FPV drone racing, where the drone's capabilities truly come to life on the racetrack.

