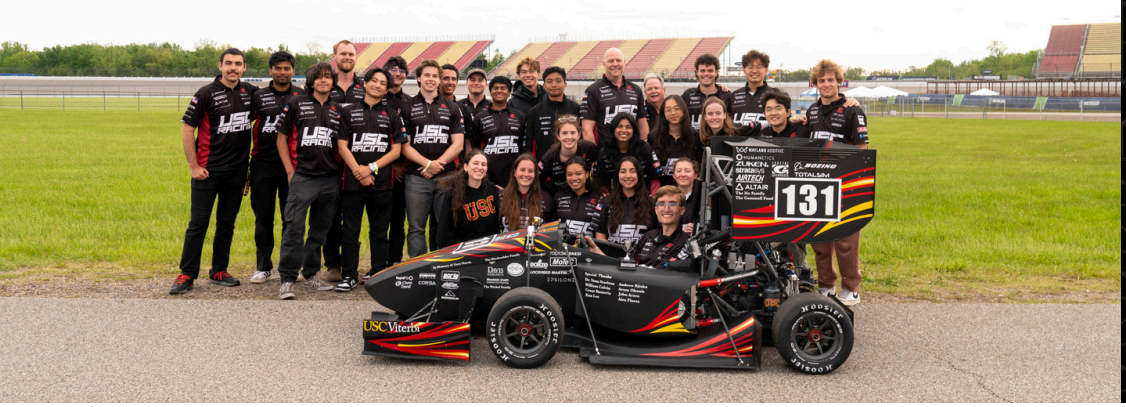

University of Southern California's Formula SAE Team

Customer Profile

USC Racing is the University of Southern California's Formula SAE team, made up of 150 students designing, building, and racing formula-style cars. The team blends classroom knowledge with hands-on engineering experience, competing against top universities worldwide. In 2025, the team built its most advanced car to date, SCR25, with a mission to become a top-ten FSAE team while training the next generation of engineers.

FDM Nylon 12CF Electronics Enclosure

Challenge

Building a high-performance race car demands speed, precision, and constant iteration, but traditional manufacturing limited the USC Racing team in several ways: complex aerodynamic components and molds were too expensive or impossible to fabricate, tight timelines between design, testing, and competition required faster turnaround than conventional methods allowed, and resource constraints made it difficult for student engineers to explore new concepts without significant cost or time risks. To remain competitive, the team needed a way to rapidly design, test, and deploy advanced components.

Solution

Partnering with Stratasys, USC Racing leveraged additive manufacturing to transform its design and build process:

- **Aerodynamics:** Over 100+ 3D-printed components, including wing elements, louvers, and molds, improved airflow and boosted downforce by 54% over the previous year.
- **Tooling & Fabrication**: Custom AM jigs and fixtures cut frame welding time in half and enabled in-house titanium header fabrication.
- **Rapid Prototyping & End-Use Parts**: FDM Nylon 12CF dashboards, ULTEM™ 9085 heat shields, and a large Nylon 12 CF electronics enclosure provided lightweight, durable solutions that saved weeks in fabrication.
- **Battery Development**: ULTEM™ 1010 shells and spacers insulated and protected the new 400V electric battery pack, reducing cost and complexity.

Impact

They secured their first-ever podium at the FSAE Michigan International Speedway, finishing 3rd out of 120 teams in Autocross. They also set record-breaking performances in the design, skidpad, and endurance events. Their success came from building a faster, more capable car—utilizing technologies that students will carry with them into their future engineering careers.

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