



# Formula for Success

3D PRINTING HELPS STUDENTS BUILD RACE CAR FOR INTERNATIONAL COMPETITION

*“3D printing has definitely helped us sharpen our competitive edge.”*

*– Nathan Tarlinton, Formula-SAE Team Leader,  
University of Wollongong*

## CASE STUDY



Finished race car prior to competition.

## LIFE LESSONS

For students from the University of Wollongong in Australia, designing, building and racing a Formula-style car is providing invaluable lessons in how to thrive in the highly competitive “real world” environment that awaits them after graduation. One of those lessons is how 3D printing technology can create a valuable competitive advantage in many areas of business.

Sponsored by the Society of Automotive Engineers, the Formula-SAE program is an international competition for university-level engineering student teams to design and build small, high-performance race cars that would be suitable for mass production and sale to the amateur autocross driver market. Each team effectively works as a small start-up business, and it is this experience that makes Formula-SAE graduates stand apart from their peers when entering the job market.

The program offers young engineers the opportunity to work on a meaningful, complex engineering project in a dedicated team environment. Students manage the complete project including scheduling, budgeting, cost control, design, sourcing equipment, materials and components, manufacturing, and testing. But they also must also attend to the non-technical aspects of the project as well like fundraising, marketing and managing people. Finally, as part of the competitive process, prototype cars are subjected to rigorous testing and race track competition. Winners are determined based on design, cost, dynamics, safety, acceleration, fuel economy and handling.

## Creating a Competitive Edge

Since the inception of the program, Australian teams have figured prominently on the global scene by winning contests in the U.S. and Europe. Quite naturally, each team is constantly looking for ways to achieve a competitive advantage. That is why the University of Wollongong installed two 3D printers from Stratasys® in their research facility in 2011.

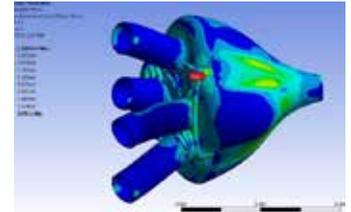
Have the printers helped Wollongong establish a competitive edge? Team leader Nathan Tarlinton thinks so.

“With our 3D printers, we can design and make prototype parts quickly and efficiently,” he states. “Printing a part now takes about three days. Previously it took two to three weeks to get a final result. What’s more we save thousands of dollars in development costs. This automatically makes us more competitive because cost is a key element in the competition.”

And because 3D printing has simplified the design process, the team can experiment with various unique and complex solutions to problems that they might not have been able to produce otherwise.

“Previously we used an aluminum fabricating style system,” Tarlinton continues. “This meant that if we wanted to create new complex shapes and parts like a manifold, it was extremely difficult. We had to cut up aluminum and bend tubes before welding them into appropriate shapes. This was very time-consuming and inaccurate. Now, thanks to our 3D printers, we can create the parts we want faster and with greater accuracy.”

“3D printing had definitely helped us sharpen our competitive edge,” concludes Tarlinton.



New manifold design.



Manifold on 3D printer.



3D printed manifold installed on car.



Finished race car with student team.



Race car on course.

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