



Penn Electric Racing breaks a US record with student-built car

After winning four out of eight events at Formula SAE Electric 2016 and breaking a US record, Penn Electric Racing is already planning for next year's race.

As part of an engineering design program for undergraduate and graduate students, SAE International's Formula SAE competition is a way to encourage the development of new engineering designs for the automotive industry. Students are allowed to apply classroom theories in a challenging competition, and have the opportunity to meet their peers from other universities. The competition entails the development and manufacturing of a one-seat Formula-style race car for a fictional manufacturing company. The prototype vehicle has to comply with a number of rules and is judged by its design, construction, performance and cost, as well as by its potential as a production item.

The first SAE competition took place in Austin, Texas, in 1981, with six registered teams. Since then, the number of participants and spin-off events has grown steadily. One of these events is Formula SAE Electric, which took place for the first time in 2013. As the name reveals, it is all about constructing an electric race car, furthering new ideas within car engineering and manufacturing.

Penn Electric Racing has its home at the University of Pennsylvania. Each year, the team builds an electric car to participate in the race and to prove that electric vehicles are the future of transportation. Over the past four years, the team has grown to include 106

engineering students. The team's aim is of course to educate the students and give them practical experience from a large-scale engineering project, but also to shift focus to the most current clean technologies and find a way to prove that electric vehicles are the future means of transportation.

After the successful construction of three electric cars over four years, the team can boast no fewer than 14 trophies and, in the latest race, an American record. In the competition that took place in Lincoln, Nebraska, in the summer of 2016, Penn Electric Racing broke a US FSAE record. "With the fastest 75m acceleration run in the country, at a blistering 3.807s, the REV2 became the fastest FSAE race car in America", say Sina Golkari and Connor Sendel, managers of Penn Electric Racing. The team finished the competition in an honorable second place overall (and first place among the US teams): "We also claimed first place in the Engineering Design Event, as well as in the Cost Report and Business Presentation events."

Among other materials, Penn Electric Racing used [Divinycell H45](#), a low-density foam from Diab, in the construction of their car. "The material was instrumental in our composite manufacturing process, and helped make our aero wings possible", say Golkari and Sendel. "Through our sponsors, we were able to build America's fastest student-built electric race car, but above all, we managed to build a tight-knit team of next-generation engineers. The STEM education and hands-on experience for the 50 students on our team are far more valuable than anything learned in the classroom".

Although justifiably proud of the successful outcome, the team thinks that the competition was a humbling experience. The students interacted with participants from all over the world and brainstormed ideas for the upcoming years. "The competition may be over, but we're certainly not resting on our laurels," say Golkari and Sendel. "It's time for Penn Electric Racing to reach the next level of performance, and in order to accomplish that, we've set some ambitious goals for this upcoming year. This is an exciting time for the team, and Penn Electric Racing will see major growth within the next year."

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