TSA CO_2 racing events are more popular than ever

A record 340 cars were checked in for the racing events at the 2010 Technology Student Association National Conference in Baltimore, Maryland. That's 340 1:20-scale CO_2-powered racers – rocket cars, if you will – set to battle for top honors on the drag strip, a 65-feet, 6-inch elevated raceway in the Grand Ballroom of the Baltimore Marriott.

The CO_2 racing events have been a staple of the TSA conference for more than 30 years. This is a hands-on contest where student competitors engineer their cars for speed. It has often been described as "like pinewood derby, but much, much faster." The cars, propelled by high-pressure gas escaping from an onboard cartridge, cover the race distance in about one second. It's a spectacle that must be witnessed to be fully appreciated.

And witness they did. Enthusiastic spectators crowded in to watch the excitement during the two-day event. Students represented their schools by cheering on their team, some sporting wild costumes.

This year's Transportation Modeling theme focused on cars in movies. This inspired the best field of TMod Cars to date. Exquisitely crafted renderings of Batmobiles, General Lees, Mustangs, Mystery Machines, and a beautiful Aston Martin of James Bond notoriety graced the track.

Justin Arickson and Ryan McGary

More than just shaping a block of wood

Middle School Dragster Design champ Ryan McGary knows that creating a winning car involves much more than simply shaping a block of wood. To him, it's truly an engineering process. Ryan, a student at Carlos E. Haile Middle School of Bradenton, Florida, started by building his car in virtual form – using professional *SolidWorks 3D* design software.

The software enabled Ryan to simulate airflow testing on the computer. He was able to tweak his designs many times before beginning the actual construction of the car. This is part of a learning process facilitated by Ryan's TSA advisor and teacher, Justin Erickson. "We're taking everything in-house. We're trying to manufacture in-house to show these kids the manufacturing process," he said.

In addition to his computer simulations, Ryan built five real cars – the last one was the champion racer. The car wheels are Ryan's own creation. Once again, he began by designing them in *Solidworks*, and then he manufactured the final product using a CNC lathe. The hard work culminated in success – he took home second place in the Florida TSA state competition, followed by a national title in the 2010 TSA Dragster Design middle school event.

Although Ryan and his classmates are just in middle school, they have experienced the real-world engineering process more thoroughly than most people will in a lifetime.

Perseverance pays off for 2010 high school winner

You might once have called Brennon Hocker a CO_2 racing journeyman. This high school senior has certainly been on a journey, building more than 50 cars in his TSA career, which started in eighth grade. When Brennon was a ninth-grade student at Lakewood Ranch High School in Bradenton, Florida, his entry placed sixth overall at the TSA national competition. His sophomore year was a disappointing one – his car was disqualified due to a violation of official event specifications. Undaunted, he returned his junior year to take third place.

Don't call him a journeyman any longer. Call him champ. After striving for years and overcoming obstacles, he's won the highest honor – first place in the high school division of TSA's National Dragster Design event for 2010.

Contributing to his success is the engineering process he has refined over the years. Brennon starts by selecting just the right wood blank – he prefers medium-density balsa wood. Unlike many car builders, Brennon crafts his cars by hand. He does use advanced technology, however. He designed his wheels in *SolidWorks* and then used a rapid prototyping machine at an area school to produce the real versions.

Advisor Greg McGrew wants to make it clear who deserves all the credit for Brennon's success – Brennon. "It's all about him. . . . I'm there if they need this or that, but he did this entire car by himself. I've watched him grow as a student. He helps everyone else out." McGrew went on to say that Brennon helped students at other schools with their cars, even those who would be competing with him. "The winning is awesome, but all the other things about him are even better. It's capped off a milestone. He's deserved it."

Brennon plans to attend the University of Central Florida next year to study aerospace engineering. His love for engineering classes, drafting, math, and challenging activities like CO_2 racing has encouraged him to pursue engineering as a career. With Brennon's great character, tenacity, and engineering skill, one can only imagine what he will accomplish in college and beyond.

Greg McGrew and Brennon Hocker