SAE and F1 in Schools—Making a Difference

By Miles Free, PMPA :: mfree@pmpa.org

"F1 in Schools" is the Formula One Technology Challenge presented to middle school and high school students. The process is holistic and integrative, covering not just the design, programming and CNC machining skills needed to produce an entry, but also incorporating team building, business planning, sponsorships, fundraising and much more.

The Society of Automotive Engineers (SAE) in Warrendale, Penn. recently hosted the F1 in Schools Pennsylvania State Championship. That's no small undertaking considering the needed floor space, manpower and support to host 17 3- to 6-person teams, their coaches/instructors and interested parents.

The end product for each team is the design, fabrication and racing performance of a Formula One CO_2-powered car. The team starts with a block of wood and uses 3D CAM Software and CNC machining. Some teams use 3D printing to produce airfoils and wheels for their racers.

Cars are evaluated to a rigorous multi-page spec before being permitted to race. Each team's design is analyzed using virtual wind tunnel software before the first prototype is made. After the prototype is produced, it is tested using an actual wind tunnel. Part of the team's presentation focuses on how it used that test data to improve the car's design.

W. Edwards Deming gave us the "Plan-Do-Check-Act" cycle as a model for best practice. Interestingly, F1 in Schools uses a "Design-Analyze-Make-Test-Race" process to give the students a best practice for skill development, thinking and learning by doing.

SAE's mission, "to advance self-propelled vehicle and system knowledge in a neutral forum for the benefit of society," was certainly fulfilled by its hosting of the Pennsylvania State F1 Championship last month. Almost 100 students demonstrated the skills they had learned and implemented at the SAE-hosted event. It made them all winners and proved their experience in the why's and how's of advanced manufacturing. This is one way our future, advanced manufacturing workforce is being developed.

There were a number of teams that won awards for various criteria, such as fastest car and best documentation. However, we'd like to showcase here the car produced by the team from Elizabethtown Middle School's Team Infinitum. How does the car in the photo compare to your "work product" when you were in middle school?

Why Join PMPA?
Connect!

As the premier provider of programs and services for the precision machining industry, the PMPA represents the interests of manufacturers, suppliers and manufacturing-related educational institutions. We do this by providing members with many opportunities to connect with one another. Through PMPA networking meetings, our online forums and other means, members access the collective strengths of our industry in order to reach common goals.

Connecting with fellow members allows distributed problem-solving. You have the wealth of knowledge of the entire membership at your disposal. By sharing this collective wisdom, PMPA members help one another address issues and solve problems that are common to our businesses.