



EEVC NEWSLETTER

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Special June 2018 Jr. Solar Sprint Edition

Marian McKeown Elementary School - Newton, New Jersey

Wins the EEVC “Over-all Best Car Award” in 2018 Jr. Solar Sprint



TEACHER: DAN WEISSMAN, RYAN HUDOCK, ANGELA OCHRYM, ROSE DOHERTY, JAKE GRUBB, TEACHER: BRENDA DELGROSSO

THEY CAME: THEY SAW: THEY CONQUERED

The EEVC judges what we feel are the most important aspects of the Jr. Solar Sprint cars. The technical aspects which enable a car to WIN the competition, namely SPEED.

A car has to be constructed in such a way that it can be the fastest, over and over again on the track. It has to last and it has to be fast. The fastest three are presented speed awards. In addition the Jr. Solar Sprint committee presents three awards for technical merit. Frequently the same cars win both speed and technical merit awards. It makes sense. If the car deserves technical merit it should be fast and tough enough to last for all of its races. The main intention of the competition is to race. (However, some, as in real life, are designed to be attractive while carrying cargo from A to B. Thus artistic, innovation, and "green" awards are also presented.)

When it comes to racing, luck plays a roll, both good and bad. Sometimes the fastest car has bad luck on a run and gets eliminated. But such a car, designed and constructed to win, can still earn a top technical merit score even if it does not win all of its races.

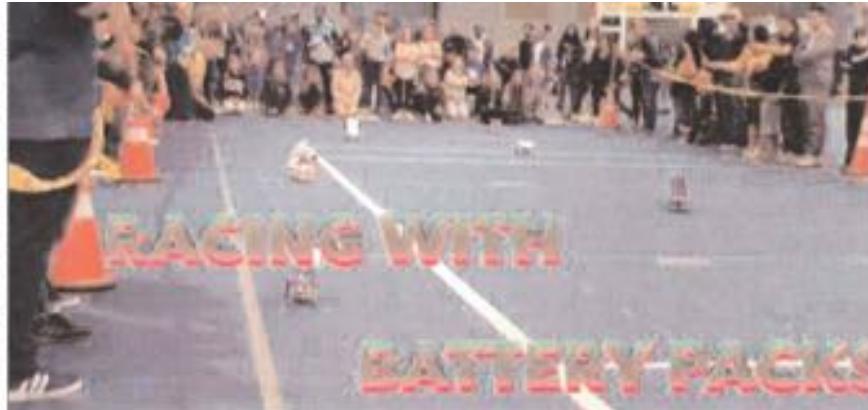
McKeown Elementary won all three places in speed and two out of three in technical merit. When it came to what counted most, they dominated the competition, including winning the most prestigious EEVC Over-all Best Car Award.



Carl Grunwald EEVC

The Story

The 25th Junior Solar Sprint, held Saturday, May 25 at Drexel University, was met with a severe challenge from the weather. The rain came thundering down in buckets on the rounded roof



Rainy weather made it necessary to run the cars indoors, on battery power.

of the Drexel Armory, as volunteers, participants, and their parents assembled in the new venue for the Sprint, provided by Drexel University. Joe Bruno, director of the Philadelphia Jr. Solar Sprint, decided, since a number of schools would be unable to attend Sunday, the back-up date, to go with Saturday rain or shine.

As our most of our readers know, we, the EEVC, have supported the Jr. Solar Sprint in Philly for close to twenty years. The The 25th annual Junior Solar Sprint, held Jr. Solar Sprint is an activity for middle school aged students. Each competitor constructs and races a small toy sized car, measuring approximately one foot in length. The cars are hooked to guide wires on seven parallel prepared tracks. All students must use the

same standard solar panel and electric motor and build their racers within the same maximum sized footprint. And, the cars must be able to operate on batteries in the event of rain.

The EEVC provides technical merit judges and presents our annual "Over-all Best Car Award" to the student team that constructs a competitive racing solar vehicle, that is tops when it comes to design, engineering, quality of construction, and performance. Our best car award does not have to be presented to a winning racer, as long as the vehicle finishes a minimum of one race.

This year our award went to a team from Northern New Jersey, Hampton McKeown Elementary School.

Here in their own words is the story of our winners.

Teacher Question: What was your original design?

We went through a lot of different steps





At the starting line

and changes to our design, Sirius- "The Scorcher" before we went to the solar sprint race in Philadelphia. Our original design was made from a 3-D printer and drawn on the computer. One of our team members has a 3-D printer and was responsible for the design. We chose the 3-D printed base because we could design two small trenches in it so that our wheel and axle mount would always be straight. We found a plastic material spool that was very interesting and went with our Sirius "The Scorcher" theme. We named our car after the bright star, Sirius. The base actually turns red when it is put in the sunlight much like ultraviolet beads do.

We chose wheels from an ultralight model airplane that we found in an online hobby shop. The wheels were tall and very thin. The tall design of the wheels allowed us to use a larger gear ratio. We chose a 5:1 ratio. (Our driver gear had ten teeth and our follower had 50). However, after we raced the car, we observed that it started out quickly, but would be surpassed by other cars in our school that used the largest ratio of 6:1. We also noticed that some glue had slipped onto the gear and would not come off. For this reason, we remade our entire wheel-axle assembly.

To hold up our solar panel, we used a Lego Bionicle ball joint that we attached to a thin piece of balsa wood covered in Velcro. We had to adjust the size of the wood several times so that we got the right movement. This idea allowed the solar panel to move and swivel but it left little room for the motor. For this reason we decided to put the motor on the bottom of the car. Our teacher then drilled a hole and connected the motor ports with wire. This allowed us to easily connect the solar panel.

Finding a place for our soda can passenger

was a problem. We had made our car chassis quite small. For this reason, we attached a can holder made from two pieces of carbon fiber. We made our can holder from a mesh material bag and paper mache to make it rigid so that it conformed to the NJ rules.

The Junior Solar Sprint was a great experience. It forced us to think and change our ideas to make improvements. We already have new ideas for next year!

Award winners

The EEVC judges cars for technical merit and selects the Best Over-all Car.

The Jr. Solar Sprint awards speed prizes for 1st, 2nd, and 3rd Place.

It was of great note that the winners of the completion came down to just two schools: Cedarbrook Middle from PA and McKeown from NJ.

Cedarbrook Middle School from the Cheltenham School District in Pennsylvania entered 39 cars — by far the most entries per school. They dominated the artistic and innovation awards but didn't win any speed medals.

McKewon Elementary won all three speed positions in addition to our Best Car and two of the three technical merit awards.

Three awards each are given for Artistic Design, Innovation, and for best at using recycling materials in the construction of the car.

Artist Merit

1st - #43 You Better Be'Leaf It, Cedarbrook Middle School

2nd - #23 The Sunshine Car, Cedarbrook Middle School

3rd - #12 The Battle Bus, Cedarbrook Middle School

Technical Merit

1st - #55 McKeown School (6:1 gear ratio, well thought out, 3D printed)

2nd - #59 McKeown School (good gear ratio, unique wheels designed for speed)

3rd - #12 Cedarbrook School (solidly, well balanced car)

Innovation

1st - #8, Cedarbrook Middle School

2nd - #42, Cedarbrook Middle School

3rd - #37, Cedarbrook Middle School



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