EEVC NEWSLETTER

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NOTES FROM THE MAY MEETING
Oliver Perry

At the May EEVC meeting we had the chance to see Don Auker's newly acquired Tesla Roadster. Don unexpectedly arrived at Plymouth Whitemarsh High School driving his Tesla and spent twenty minutes in the parking lot answering everyone's questions and showing off his car. Earlier in the month Don called me having located our organization on line and asked about making an appearance at one of our meetings. He lives a considerable distance away, but was able to make the trip because the Tesla has around a 200 mile range. Don says that he is the first Pennsylvanian to receive delivery of a Tesla.

EEVC members look over Don Auker's Tesla Roadster

In addition to having the Tesla on display Alan Arrison, Ken Barbour, and I each brought out electric cars: the VW pickup, the Geo Metro convertible, and the converted Ford Escort. We not only displayed the vehicles but we provided a few rides. The young lady that won the Physics Olympics Best Car Award last February came to the meeting with her mother and brother fulfilling our promise to provide them rides in an electric vehicle. Mindy Coleman also showed our members the electric car that she built to win the Olympic competition. Her brother spoke briefly about his veggie oil diesel truck.

At nine o'clock most of the members who attended the meeting traveled over to John Murphy's home to see the status of the Jaguar

Kit car that John is making into an electric vehicle. He already has put most of this interesting kit car together and installed lithium ion batteries in the front. He still has to put in a AC three phase electric motor which is resting nearby and a two speed custom built transmission.

2009 JR. SOLAR SPRINT A SUCCESS
By Oliver Perry

The 2009 Jr. Solar Sprint took place Saturday, May 30th at the Wissahickon Charter School, on Wissahickon Ave. in Philadelphia, just off from Route 1 near the Schuylkill River.

The annual event is sponsored by the Philadelphia Solar Energy Association (PSEA). This is the second year that the competition has been organized and directed by Joe Bruno, a volunteer from Upper Frederick Township, PA, near Boyertown; Joe is a basic research scientist for Merck & Co., Inc. West Point, PA.

Another Adventure with "Big Al"

EEVC member Alan Arrison and I provided our services as technical merit judges, as well as the agents of selection for the EEVC Overall Best Jr. Solar Sprint Car. When I arrived on site at 8:00 AM the main gate was closed and Lisa Rose Bryant, former Jr. Solar Sprint director, and her son Tyler, returning as volunteers, helped me squeeze through a small opening. Tyler, now in high school, has served as a general helper since he was five years old. As I walked up to the school I spotted Alan Arrison carrying tables to the display area beside his electric VW Rabbit pickup truck, which he had driven to the event. The PSEA crew headed by Jon Costanza was at work laying down the rubber mat race lanes on the outdoor asphalt basketball court. Due to the expansion of a playground, the racing area was cramped but still adequate for a great event. To make more room I helped our chief mechanic move a basketball backboard to the side. Seth convinced me that WD-40 is a waste of money when he is around. It only took him 20 minutes of muscle screaming torque to take off one nut. By 9:00 AM over 100 teams were lined up in front of the registration table, supervised by Lisa Rose Bryant and her assistant Maggie Michael. By 9:30 AM "Seth the Solar Car Repairman" was at his table ready to fix and repair a number of cars that needed attention; Vincent O'Grady from EPV Solar Inc in Trenton, NJ, seated at the first inspection table, began to check each entry for legalities. Alan and I began selecting the cars we would later score for technical merit.

Unlike last year, when we barely escaped the downpour of rain, the skies May 30th were mostly sunny with little threat of rain. Clouds did occasionally put some pressure on Bob Nape to keep things moving. Bob had driven down from Ithaca, New York to resume his lifetime position as race track supervisor. Over the solar powered microphone system (annually set up and operated by Ron Celentano) we consistently heard Bob urge the students to get their cars to the line quickly before passing clouds cut off their source of power. But most of the time the students had to hold cardboard covers over their solar panels to keep their cars from leaving the start line prematurely, and we had to make sure we had applied sunscreen to our noses.

Background

Early in the spring middle school instructors who wished to participate in Jr. Solar Sprint competition acquired standardized kits suitable for building a solar powered vehicle capable of traveling 20 meters on a flat surface attached to a guide wire. These kits contained a solar panel, an electric motor, some gears, (in some cases a flat sheet of balsa wood) and wheels, along with a specific set of rules and guidelines. Students turn the components into little racing machines powered by the sun. Awards for speed, technical design, and artistic creativity are presented at the end of the meet by PSEA. Alan and I traditionally select and present the EEVC Best Sprint Car Award to the student or team of students who construct and race what we consider to be the best overall Jr. Solar Sprint vehicle.

This year's winners

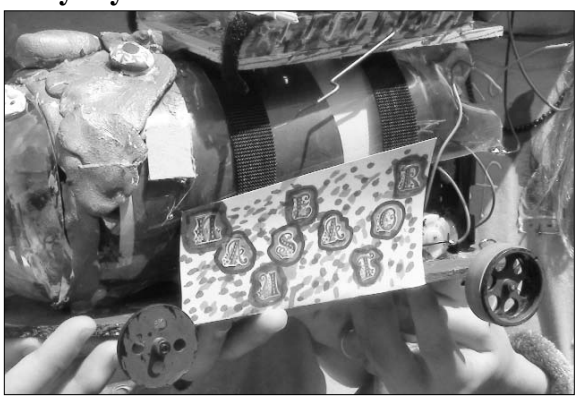
The 2009 EEVC Best Jr. Solar Sprint Award went to a team of three girls from Schwenksville Elementary School in Schwenksville, PA. Pictured (from left to right) holding their car and the EEVC award are Elizabeth Tcheiguine, Becky Hane, and Anna Hansen. Michael Hane, volunteer coach of the team, and parent of one of the girls, is pictured on the left. On the right is the team's teacher, Tracy Moreno. The select three girls are currently in the fifth grade.

Look at those shirts and head visors

Teacher of the gifted support program, Tracy Moreno, found out about the Jr. Solar Sprint program this past spring while preparing a special unit on green energy for her classes. Tracy happened to be friends with Kira Costanza, whose father Jon Costanza owns and operates a solar panel installation company called Sun Power Builders. Since Jon is a member of PSEA, and annually participates in setting up the racing track for the Jr. Solar Sprint, he gladly introduced Joe Bruno to the Schwenksville Elementary School. Joe in turn informed Tracy of the upcoming Jr. Solar Sprint event at the Wissahickon Charter School.

The Schwenksville team began preparations during the week of April 16th. The girls were introduced to the program, provided the kit of materials, and were challenged to design a winning vehicle.

Body Style



The vehicle had several features that merited our award. The body that held the required cargo, an aluminum soda can, was made from a two liter soda plastic soda bottle. The bottle, when positioned on its side with the cap pointing forward, provided the majority of the vehicle an aerodynamic shape. The top portion of the bottle was cut off and reattached by a hinge that allowed the funnel looking hood to be opened or closed. The bottle cap (reinvented to look more like a creature's tongue) served to act like a hood ornament. If cargo was to be placed inside the" bottle body" all one had to do was lift the bottle cap hood and insert the can.

Solar Panel

The solar panel was attached to a wooden rectangular frame by means of a wire frame which allowed the panel to be raised or lowered. The wooden frame was in turn attached to the top of the cylindrical car body by means of Velcro strips. The solar panel could be raised to any angle by its wire frame hinged on the back of the solar panel, The base (or feet) of the wire legs slipped into a series of slots cut into the wooden base. The solar panel angle was determined by the slot the wire feet were placed in. The wooden base that held the solar panel could in turn be positioned on any part of the bottle and held

firmly in place by the Velcro strips which encircled it. Thus the solar panel could be positioned at an angle which placed its surface perpendicular to the sun's rays no matter where the sun was in the sky. As most readers know, maximum electrical energy from a solar panel is achieved when the sun's rays hit its surface at a 90 degree angle.

Drive Train

The motor, which was glued to the top surface of the rectangular piece of balsa wood flooring, had a plastic gear on its drive shaft which connected to a larger gear rigidly attached to the rear drive axle. Proper gear ratio between the motor and the drive is very important for racing speed. The Schwenksville team experimented with several gear ratios before selecting the better. (My notes do not make it clear whether the 2.5 to 1 or 2 to 1 ratio was their final selection.) The rear drive axle was a stiff wire sized piece of metal which was in turn attached to the underside of the balsa wood floor by short pieces of plastic soda straw. Both front and rear axles were inserted into the hollow straws which were precision glued in place on the underside of the balsa wood floor. The wheels were rigidly attached to the ends of the axles which spun freely inside the plastic hollow straw axle supports.

Hooks to Guide Wire

All vehicles had to have hooks or devices that allowed the vehicle to be attached to a guide wire positioned slightly above each lane of track. The guide wire prevented cars from leaving their racing lane and swerving into another's. The Schwenksville car made use of two pinch and hinge type paper clips to hold the vehicle to the wire, one on the front end and one on the back end. The pinch clips easily could be opened and closed to quickly attach or detach the car from the wire. Since two clips were incorporated in the design, the car could be kept perfectly aligned for the whole race.(In theory a single hook on the front or back of the car, which many students had, allows the cars to run a slightly crooked path as the unattached section of the vehicle wanders off track.) And since the two clips on the girl's car were not tucked under the body, but positioned out in front and out the back, the operator had easy access to them.

Overall

The scoring for technical merit considers craftsmanship and strength, as well as innovative design. The "green soda bottle" vehicle was reasonably rugged and durable and achieved a good total score. It also raced reasonably well. To win our award, in addition to the accumulation of merit points, the car must run the full length of the track in a competitive length of time. Unfortunately a large number of the competing cars lacked the craftsmanship and strength to unable them to complete a full race. The soda bottle vehicle, named the Nauseator because of the soda bottle,* was well constructed, featured a reliable design, and also scored well in artistic design.

*Soda in the stomach of someone riding on a fast roller coaster will nauseate that person. The girls wanted to name their car Hippo, but for some reason they felt it was more appropriate to call it the Nauseator. The girls added some clay putty to the front of the bottle to make an ugly face and make the car take on the appearance of an animal.

In addition to competing with their solar car the team brought the following solar energy displays:

1. Solar Oven with a magnifying glass
2. Port-O- Potty ventilation system
3. Solar Emergency Traffic Light
4. Diagram of a solar powered home.

Summation

The team of girls, parent coach, and instructor began the project about the second week of April. They met every Thursday after school and put in several weekends to complete their very successful endeavor. It is always a pleasure for the EEVC to honor such a gifted team. When parents, teachers, and students work together, great things can be accomplished. Success does not just happen. Great parents and teachers beget great students who in turn repeat the cycle. For success to occur we must not assume it will automatically evolve. Successful projects require creative forces to make them happen. Congratulations Schwenksville Elementary School!

Next Year

After Jr. Solar Sprint 2009 in Philly was finished, Ron Celentano invited us over to his home to have some pizza in his back yard. Jon showed us the way to Ron's and gave us a great tour of that part of Philly. Al and I enjoyed Ron's place and the people assembled. While there, Joe Bruno discussed with me his plans to expand the Jr. Solar Sprint event. As we said goodbye to this year's local Jr. Solar Sprint, Joe was at work planning next year's (even considering an event in Boyertown at the end of the summer.) Before pulling away from the curb I left a message and a contact number on the windshield of an Insight parked directly in front of my van. The owner had a license plate that read Elect -Man. As we moved up the street past Ron's house, Bob Nape, who was still sitting on the grass talking on his cell phone, waved goodbye with a happy smile. Bob meant well when he gave us instructions back to the charter school to pick up Al's truck. But the best directions in the city led us into a mammoth traffic jam, forcing us to take a 40 minute detour. Al told me that is what he likes about Philly. You never know when you will get plenty of time to look at the scenery from a crawl. We were thankful that we were not driving Al's electric truck or we would have really been in trouble. By the time I got home it was late enough for the Insight owner to respond to my message. He will be attending one of our EEVC meetings in the near future.

Another adventure with Big Al is history. Those of you who didn't attend missed a great time.

PRESIDENT'S MESSAGE
Oliver Perry

A few news excerpts of interest:

Darker Times for Solar-Power Industry

Wall Street Journal Monday May 11. 09:
Anto Milner, chief executive of Q-cells, the world's biggest solar cell manufacturer by volume was quoted as saying, "Last year we couldn't make enough solar cells to keep up with demands. Now its a buyers market- customers are coming back to ask if they can buy lower volumes and have lower prices than planned." "The dramatic cost reductions now happening in the solar industry may be good for us in the long term," said Sven H. Hansen, chief investment officer of Good Energies LLC, which invests in renewable energy, "but in the short term the outlook for solar companies has never looked more difficult."

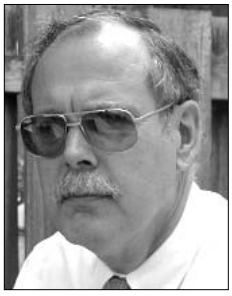
Pepsol Pins Turnaround on Brazil Drilling

The Wall Street Journal, May 11, page B3
"Promising new Brazilian oil and gas discoveries point to rising future output." The biggest of Repsol's recent discoveries lies in a block in Brazil's promising subsalt oil region which lies further off Brazil's shore about 4000 meters below the water surface. The article says that the six billion barrels of predicted oil make it one of the biggest discoveries in recent years. Actual production still may be years away.

Hybrids Battle for Green

WSJ Monday May 11, 09 page B7
In discussing the highly advertised battle between the Toyota Prius and the Honda Insight, writer Suzanne Vranica observes that the allure of hybrids has waned with the decline of oil prices. Prius sales have declined 50% between Jan and May of this year. "And for all of their earth friendly cachet, hybrid cars represent only 2% of the light vehicle market." "Its stunning," says Ms. Lindland of IHS Global Insight, "Despite all the successes of the Prius and the emphasis on global warming we can't get significant hybrid penetration."

ONLY IN SAN FRANCISCO
By California Pete



San Francisco prizes its reputation for being, well, different from other cities, and there's no shortage of examples. Here are a few to give you the idea.

The ultimate garage?

The Special City has to have a special garage, and SF has one. In the increasingly trendy South of Market neighborhood is the Luscious

Garage, according to a May 25 story in the *San Francisco Chronicle*. Run by a self-taught English and Physics major named Carolyn Coquillette, it services only hybrids. With 100,000 of these in the Bay Area, there's no shortage of customers, who get more than just good service for their cars (and conversion to PHEV, if they want it, plus a long list of available mods and hacks): there are plants everywhere, a piano in the waiting area, and a rotating art display on the walls.

Homeless guy beats bureaucrats

San Francisco has its share of homeless people of all types: the crazies, the drug addicts, the drunks, the down-on-their luck working folks, and so on. But one guy stands out. As pointed out by *Chronicle* columnist C.W. Nevius, a man named Larry Moore, who ended up on the street as a result of uncontrolled alcoholism, managed to turn his life around part way, but was thwarted in his bid to complete the process by an overly-officious city bureaucrat. Larry shines shoes on Market Street, and he wears a coat and tie while he does it. He's become something of a local celebrity, and had managed to save up almost enough money for the first month's rent ($600) on a room to get off the street. But an official from the Department of Public Works, who had read about him in the *Chronicle*, dropped by to tell him he needed to pay $491 for a sidewalk vendor's permit — but was unable to tell him how to apply for one.

Larry's faithful customers were appalled, and the Public Works folks were quick to backpedal after Nevius questioned them (and put the results of his inquiries in the paper). And then a good thing happened: people began donating money; first a few dollars, then hundreds, and in a few days Larry had close to a thousand bucks, with which he was able to begin the process of getting that permit, open a bank account, and get himself a room. Let's hear it for the power of the press.

Our street vendors are the best, too

Of course Larry isn't the only street vendor with something special to offer. *Chronicle* staff writer Tara Duggan reports that in recent months the selection of street food has gotten way past the the usual tacos and tamales. Now you can get creme brulee, barbecue pork sandwiches, "Thai curry al fresco, mobile pho and escargot-on-a-stick." Many of the vendors don't have permits, but they're pretty open about what they do, and they "connect to their customers via social networking Web sites like Facebook and Twitter."

NO JULY OR APRIL MEETINGS

Remember that, as per our usual practice, there will be no club meetings in the months of July or August. Regular meetings will resume in September, and the Newsletter will continue as usual.

NEWS UPDATE

Tesla orders a recall

No car manufacturer can avoid them, it seems. Now Tesla has had to recall 345 electric Roadsters out of the nearly 500 delivered by April to deal with a problem with the vehicle's steering, accordng to AP. It seems that Lotus, which builds the cars chassis under contract, didn't properly assemble some rear bolts, resulting in poor handling.

In other Tesla news, a May 19 AP story by Matt Moore reported that Daimler AG had acquired a stake of nearly ten percent in the company "as part of plans to ramp up its own electric car production." Daimler has been testing a fleet of electric Smart fortwos, and plans are to equip them with the a Tesla battery pack.

Lithium-ion battery plant planned for MA

On June 1 Boston-Power, Inc. announced that the company is hoping to build an advanced battery manufacturing facility in Auburn, MA. The company is seeking a $100 million DoE grant and other federal funds; the Commonwealth of Massachusetts will offer up to $9 million in matching financing.

Swiss electric sports car shown

Greencar.com reports that a highlight of the EVS-24 event, held May 13-16 in Stavanger, Norway, was the Brusa Spyder, built by Swiss electric component supplier BRUSA Elektronik AG.

Lithium-air batteries show good results

A May 19 article by 19 May 2009 by Colin Barras in *New Scientist* reported that researcher Peter Bruce at the University of St Andrews has found a way to greatly increase the energy density of lithium ion batteries. Conventional Li-ion batteries, says the article, use "a negative electrode of graphite, a positive electrode of lithium cobalt oxide, and a lithium salt-containing electrolyte," and the lithium cobalt oxide is bulky and heavy. By replacing the lithium cobalt oxide positive electrode with one made of porous carbon and using atmospheric oxygen the cell's energy density can be increased by a factor of eight compared to a regular cellphone battery.

Mitsubishi shows production iMEV

On June 4 Mitsubishi Motors Corp. unveiled the production version of its i-MiEV1 2 new-generation EV, scheduled to go on sale on the Japanese market in late July. The company expects to distribute, on a maintenance lease3 basis, some 1400 i-MiEV models in fiscal 2009 principally to corporations and to local authorities. The company plans to start sales of i-MiEV to individuals in April 2010 and will start taking orders in late July of this year. The company's break-even point, says AP, is 30,000 units per year. The price will be ¥4.59 million ($47,560).

Think plans US.. manufacturing plant

Norwegian EV maker Think has announced plans to open a new manufacturing plant and technical center in the United States. The company is currently in discussions with eight states, including Michigan, hoping to host the facility, which will initially employ about 300 workers with a starting capacity of 16,000 cars per year. The technical center will provide jobs for another 70 engineers and electric drive specialists. Plans ultimately call for up to 900 employees and a capacity of 60,000 electric vehicles per year.

The plant will build the TH!NK city, which has a range of up to 112 miles per charge. U.S. production is expected to start in 2010, with the first-year volume of 2500 units being available to pilot and demonstration fleet projects.

CA rule may cost Toyota $3 billion

On June 4 MarketWatch reported that under California's rule that 3 percent of vehicles sold by any company be zero-emission, "Toyota may may need to sell more than 16,000 plug-in hybrids and all-electric models over a three-year period, based on a calculation by Bloomberg." The company has estimated that extra cost would amount to $3000 for each vehicle.

Nissan shows EV "mule"

On May 19 an article by Paul Weissler of *Automotive Engineering* reported that Nissan Americas held a press event in Bear Mountain, NY at which it was announced that the company's upcoming EV "will be a well-equipped five-passenger model with a 100-mi (160-km) range and a price tag equal to that of a comparable gasoline-engine vehicle."

The event, said the article, "included brief test drives of a 'mule,' a previous-generation Cube equipped with the electric-drive system, and the production model will have a lithium-ion battery hidden in a "sandwich" floorpan. "[T]he batteries are rated at 140 Wh/kg, and the 100-mi range is for at least five years or 60,000 mi (100,000 km). When a battery pack no longer delivers satisfactory in-car performance, it will be replaced."

Plans call for fleet/commercial sales in 2010 and 2011, "starting along the U.S. west coast and in Arizona." Sales to individuals would begin in 2012, "and the all-electric is expected to reach 10% of Nissan sales within five years," the article concluded.

Altair, Amperex working on lithium titanate batteries

On May 18 Altair Nanotechnologies (Altairnano) and Amperex Technology announced a joint development agreement to accelerate the commercialization of next generation high-performance lithium-titanate battery cells. Under terms of the agreement, Altairnano and ATL will provide respective technical resources to focus on the engineering, design and testing of the next-generation of rechargeable cells. The cells are the core technology supporting Altairnano's energy storage and battery systems designed for electrical grid stability, renewable energy integration, and transportation applications.

CA moves ahead with H2 Highway

On May 27 Environmental News Service reported that "Governor Arnold Schwarzenegger joined the 2009 Hydrogen Road Tour ... in West Los Angeles at the Shell hydrogen fueling station." The event was designed to show that the state's effort is continuing, and to showcase the locations between San Diego and Vancouver, BC where hydrogen is being made available.

The fact — as well pointed out by EAA last year — that hydrogen makes little sense as a vehicle fuel does not seem to matter.

Volvo in EV deal

A june 1 story by the AP's Malin Rising reported that Volvo has entered into a joint venture with Swedish electric utility Vattenfall to develop diesel PHEVs. Market introduction is planned for 2012.

Death by wind turbine

The mysterious Penghu goat death mystery has been solved, according to the *Guardian* (UK). It seems that 400 goats on the windy archipelago off the Taiwanese coast had died for no apparent reason, but that the trouble had started when eight power-producing wind turbines were installed three years ago. The current theory is that the noise of the turbines, which continues night and day, had given the goats a case of terminal insomnia, and they had died of exhaustion.

COMING EVENTS

Plug-In 2009
August 10-13, Long Beach, CA. For info go to www.plugin2009.com/

One Gallon Challenge
August 19-20, Greenfield, MA. For information go to www.moonbeamplans.com.

Fifth IEEE Vehicle Power and Propulsion Conference
September 7-11, Dearborn, MI. For information go to www.vppc09.org/

Energy Conversion Congress and Expo
September 20-24, 2009. San Jose, CA. Go to www.ecce2009.org/

eCarTech 2009 1st International Fair for Electric Mobility
October 13-15, Munich. For info go to www.ecartec.eu/index.html

The Business of Plugging In
October 19-21, Detroit. For info go to www.pev2009.com or or contact Center for Automotive Research, 734-662-1287, CAR_EVENTS@cargroup.org

Battery Power 2009
October 20-21, Denver, CO. For information go to www.batterypoweronline.com/bpptconf09/bp09_index.php

MEETING SCHEDULE

Meetings are held in Room 49, Plymouth-Whitemarsh High School, 201 East Germantown Pike in Plymouth Meeting, PA, and begin at 7:00 p.m. As in previous years, there will be no July or August meetings.

September 9

October 14

November 11

December 9

*** FOR SALE ***

1974 FIAT X 1/9 Electric Conversion
96 Volt with PMC controller

Currently equipped with two 96 volt battery packs. Battery trays set up to carry 16-6 volt golf cart type batteries. General Electric motor with 120 volt off-board charger Painted "Electric Blue" in 1995 Newer interior, tires, removable top Vehicle has been in storage. Pennsylvania Title. $1400.00. Contact Edward F. Kreibick, 215-396-8341, ekreibick@verizon.net