

# EEVC NEWSLETTER

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## TOUR DE SOL: GOOD RESULTS DESPITE SHORTENED EVENT



*The Methacton H.S. Lorax, built by John Murphy, shown at an earlier event.*

The EEVC should be proud: Two vehicles associated with the club were entered in the 2004 Tour de Sol, and both came home winners.

John Murphy's three-wheel car, which he donated to Methacton High School, received the grand award for the most efficient light duty vehicle with 136 MPGe in a battery-electric vehicle. This is five times as efficient as a conventional gasoline vehicle. The Methacton car also took first place in the Battery-Electric Vehicle category and received a cash award from the Advanced Lead Acid Battery Consortium.

Close behind was the Cinnaminson High School Olympian, under the guidance of club president Oliver Perry, which was first



*The cinnaminson team: (l to r): left to right Brad Silver, Ryan McElean, Joe Horton and Kevin Latonic*

in the range competition, coming in with a best one-day score of 105.6 miles, more than 10 miles ahead of Methacton and far ahead of the other battery vehicles.

Cato-Meridian High School (MA) received the award for the most efficient one-person commuter vehicle, while Personal Electric Transports Inc. (PET) received the award for the most efficient vehicle overall with its electric Road Ski stand-up scooter.

In the Solar-Electric Vehicle category, the University of Maine took first place with its two-person vehicle while Cato-Meridian High School took first place for its one-person vehicle.

Winner in the Hydrogen Vehicle category

# Tour de Sol 2004 Race Summary



Car #	Team - Car	TOTAL SCORE	Veh Typ	Div	Cat	Tech 100 pts max		Range Event 200 pts max		Reliability Event 100 pts max		Acceleration Event 100 pts max		Efficiency Event 200 pts max		Greenhouse Gases Event 200 pts max		Autocross Event 100 pts max		Special Points		Penalties		Solar	
						Score	Distance (miles)	Score	Distance (miles)	Score	Time (sec)	Score	Time (sec)	MPG (mpg)	Score	GHG per Mile	Score	Time (sec)	Score	Time (sec)	Score	Miles	Score	Miles	Score
ALTERNATIVE FUEL & HYBRID VEHICLES																									
12	Vogelblit	560.1	AFV	Ind	LD	B100	48.1	140.0	104.0	75.3	100.0	7.5	65.1	19.7	64.8	163.6	159.7	32.5	65.8	2.5	50				
70	S&S Autosports	688.8	HEV	Pro	LD	Gas	58.5	234.5	160.7	75.3	100.0	8.4	51.5	50.0	87.5	227.0	139.0	27.9	96.7		5				
10	Trenton High School	701.2	AFV	Stu	LD	BioD	59.0	224.7	154.8	75.3	100.0	9.2	39.7	40.0	80.0	80.6	186.8	31.0	75.9	7.5	2.5				
6	Sterling College	690.6	AFV	Stu	LD	B100	59.0	222.9	153.7	75.3	100.0	9.3	38.2	44.5	83.4	72.4	189.4	33.1	61.8	7.5	2.5				
32	W. Washington U.-Viking 32	685.7	HEV	Stu	LD	CNG	53.9	159.7	115.8	75.3	100.0	6.4	80.9	45.4	84.0	205.5	146.0	27.4	100.0	5.0	0				
52	University of Waterloo	665.0	HEV	Stu	LD	E85	58.0	247.8	168.7	75.3	100.0	7.9	58.8	31.7	73.8	284.2	120.4	28.1	95.3	5.0	15				
17	U. of Tulsa	492.3	HEV	Stu	LD	Gas	39.8	217.9	150.7	22.7	42.1	10.5	25.0	34.1	75.6	334.8	103.9	32.6	65.2		10				
23	W. Washington U.-Viking 23	458.6	HEV	Stu	LD	B100	46.5			55.6	73.8	8.1	55.9	52.5	89.4	61.4	193.0			5.0	5				
BATTERY ELECTRIC																									
19	Electrovaya Inc.	445.3	BEV	Ind	LD	Elect	47.8	13.6	50.0	75.3	70.5	10.4	25.0	77.5	108.1	241.0	134.5	36.8	37.1		27.5				
4	PET Inc.-Bamboo Transport	715.3	BEV	Pro	ONE	Elect	57.1	63.8	63.8	74.7	94.9	14.9	25.0	64.8	225.0	29.1	220.9	37.7	31.0	2.5	5				
3	SVDC/PET Inc.-Road Ski	680.4	BEV	Pro	ONE	Elect	56.8	25.2	50.0	68.0	91.3	20.3	25.0	61.8	225.0	30.2	219.8	38.6	25.0	2.5	15				
45	Methacton High School	674.3	BEV	Stu	LD	Elect	55.5	94.0	76.4	75.3	100.0	9.5	35.3	136.3	152.2	137.0	168.4	28.3	94.0	5.0	12.5				
16	Cinnamon High School	659.9	BEV	Stu	LD	Elect	66.4	105.6	83.4	75.3	100.0	9.4	36.8	106.3	129.7	175.7	155.8	29.2	87.9	5.0	5				
38	Union Endicott High School	648.7	BEV	Stu	LD	Elect	58.5	75.6	65.4	75.3	100.0	9.4	36.8	132.1	149.1	141.4	166.9	31.2	74.6	7.5	10				
HYDROGEN																									
2	UW-Madison	388.1	Hyd	Stu	ONE	GH2	64.5	62.0	62.0	32.2	44.9	9.3	79.5	89.6	94.8	208.5	50.0				7.5				
SOLAR																									
20	U. Maine-Orono	664.3	Sol	Stu	LD	Solec	30.0	75.5	65.3	69.7	67.5	15.0	25.0	64.7	98.5	268.1	125.6	35.0	49.1		17.5	10.3	220.744		
56	St. Marks High School	600.1	Sol	Stu	LD	Solec	52.8	89.5	73.7	75.3	100.0	10.5	25.0	68.3	101.2	270.0	125.0	33.2	61.2		22.5	2.42	83.7818		
92	Cato-Meridian High School	664.5	Sol	Stu	ONE	Solec	60.4	73.6	73.6	69.7	67.5	11.3	58.9	167.6	133.8	107.4	142.6			5.0	10	4.87	132.759		
7	Irondequoit High School	564.1	Sol	Stu	ONE	Solec	56.3	64.0	64.0	31.8	47.4	13.4	37.3	122.3	111.1	144.9	105.1			5.0	0	4.5	137.914		

Codes: AFV All Fueled Vehicles, BEV Battery Electric Vehicle, HEV Hybrid Electric Vehicle, Sol Solar-Electric Vehicle

Team: Ind Independent Production Student, Pro Student, Stu Student

Fuel: B100 BioDiesel, BioD BioDiesel from Cooking Oil, CNG Compressed Natural Gas, E85 Ethanol 85%, Elect Grid Electricity, Gas Conventional Gasoline, Solec Solar-Electric

was the University of Wisconsin at Madison with its vehicle named Zero Carbon. UW also won the NESEA Technology Innovation award for building a vehicle that demonstrates the ultimate goal of the Tour de Sol: The team generated the energy used by the vehicle on board from wind and solar, used hydrides to store its hydrogen fuel, and then used the hydrogen in a fuel cell. NESEA awarded a second Technology Innovation award to ElectroVaya of Canada for developing practical advanced lithium polymer batteries for EV applications.

In the Production Division, Toyota's Prius captured first place for the third year in a row. Personal Electric Transports and RunAbout Cycles took top honors in a competition, new to the Tour de Sol this year, for electric bikes and scooters.

An interesting statistic was that in this year's event the internal combustion vehicles (biodiesel, CNG, E85 and gasoline) outnumbered the battery electrics eight to six, and only by adding in the solar and hydrogen vehicles did the zero-emission entries exceed the IC vehicles.

The grand award for the light-duty vehicle with the lowest greenhouse gas emissions was awarded to the Western Washington University's CNG-powered Viking 23, which emitted only 61 grams of greenhouse gases per mile, compared to a gasoline vehicle that emits 420 grams of greenhouse gas emissions per mile, according to the U.S. Department of Energy. PET received the award for the lowest greenhouse gas emission vehicle overall with its electric Road Ski which emits 30 grams of greenhouse gas emissions per mile.

Central Trenton High School (NJ) took first place in the Hybrid and Alternative Fuel category, while Sterling College (VT) received a cash prize for from the National Biodiesel Board as the best vehicle using commercially-produced biodiesel fuel.

**TOUR DE SOL:  
TWO EEVC SUPPORTED CARS,  
TWO WINNERS!  
Oliver Perry**

The American Tour de Sol 2004 at its closing ceremonies at South Seaport in New York City presented first place in the battery powered category to EEVC club member John

Murphy's #45 "The Lorax" and second place to The Cinnaminson High School converted Ford Escort, #16.

In reality the two cars are very different from one another and can't be compared apples to apples. Just as a motorcycle and a sedan cannot compete equally on the same track neither could the Lorax and the Olympian compete on the same highway. In retrospect the two cars should have been placed in different categories.

But, regardless of their differences, it was good to see both Lorax and the Olympian perform well. John's car never got off the starting line last year because of a failed electronic part which could not be replaced until the competition was nearly over. That was heartbreaking. But a first place finish this year helped to make up for last year.

As far as the Olympian, the old faithful and reliable converted Ford Escort, is concerned, it finished first among the other full sized battery powered passenger cars, for the first time in seven years of sequential competition. We have always done well but never first. Last year's number one car, a Solectria from Union-Endicott High School in New York State, placed third behind the Olympian. Finishing ahead of last year's winner is a tribute to all of the faithful club members who have assisted the Cinnaminson High School program, and a compliment to our GNB battery pack. Special thanks goes to Paul Kydd who got me interested in getting the car back on its feet, and to Mike Deliso who spent a lot of time helping us to ready the car this year. Mike also pitched in and helped during the Tour. We had a good team.

All of that being said, both vehicles performed well. John's car set a personal record in mileage going over 90 miles on a single charge operating on the new Eagle Pitcher manufactured Horizon sealed valve regulated battery. The Methacton High School team who operated John's car had to feel good about that.

Meanwhile the Cinnaminson car (all 3600 pounds of it) won the long range event going more than 100 miles powered with Champion GNB Exide Sealed Valve Regulated Batteries.

Hats off to the EEVC and their two winning cars! Hopefully we won't have to com-

pete against each other in the same category in the future.

## **JUNIOR SOLAR SPRINT RACING UNDER THE SUN Oliver Perry**



*Ron Groening, environmental educator Janet Castellini and Oliver Perry at the judging table.*

We had sun! It was very hot. Excellent weather for the event. There were close to 80 cars that we evaluated.

Ron Groening came down to the Franklin Institute to help us in picking the EEVC best car and to help PSEA judge the cars for technical merit.

The winning car was superbly constructed with strong thin metal axles and sturdy CDs for the drive wheels. They had a rugged gear box that gave them the proper gear reduction for the event. The car was very strong and suitable for the competition which required numerous trials and a lot of handling. Many of the cars fall apart or break down during the competition.



*Winners Luke Dixon and Sam Odle*

The boys who won the EEVC award, Luke Dixon and Sam Odle, each attend the Wyndcroft School in Pottstown Pa. 270 students attend the school which is from early childhood thru eighth grade.

The boys stated that they had participated in Pinewood Derby events when they were younger and this had helped give them background for the Jr. Solar Sprint event. Both boys like science class and are obviously considering engineering as a possible career when the time comes.

Credit should also be given to the boys' teacher, Miss Kristen Nagurmy and her assistant Mr. Cliff Haugen who has a background in engineering from the University of Pennsylvania.

## **IS THE PRICE OF GAS A BLESSING, A CURSE, OR AN OPPORTUNITY?**

Both the popular and business press are full of stories about the possible effects of oil staying at or above \$40 per barrel. There can be no denying that the effect, at least in the short run, will be to depress the economy and to increase inflationary pressures. The price of petroleum affects just about every segment of the economy, and acts as a tax. It reduces the amount of money available for other things, and hence slows economic activity.

It can also add to inflation. One could make an argument that there is a price that the market is willing to pay for oil, and will adjust itself to bring the price to that level. Consider what happened the last time there was a severe and sustained increase in oil prices: The general economy inflated to the point that the price of oil, in relative terms, was back nearly to what it had been.

### **The effect of Asia**

The main reason for the low oil prices of the late 1990s was the economic near-collapse of many Pacific-rim countries. Starting with the problems with the Thai Bhat in 1997, one Asian Tiger after another was driven into recession. Economies slowed down, manufacturing fell, and demand for all raw materials decline. The result was a worldwide oil glut and a collapse in prices.

That was then, this is now. Not only have the Asian Tigers substantially recovered, but

China is now the second-largest oil consumer, after only the U.S., and is poised to become the top consumer before long.

Since Chinese demand can only increase, we should not expect to see substantial decreases in the cost of oil any time soon—or more likely, ever.

That is not to say the Chinese are content to be in thrall to foreign oil sources, even though they are taking steps to increase their influence, if not control, of production in the Caspian basin. With its rapid growth driving an import surge, China is now running an overall current account deficit (except with the U.S.). Consequently, they have about 28 nuclear power plants under construction, even though the country has substantial coal reserves, and the Chinese government has set a goal of generating 10% of the country's power from renewable resources by 2010.

One undeniable effect of rising gas prices in the U.S. has been an increase in interest in alternate energy. In recent weeks AP has run a story on cars that run on waste cooking oil from restaurants, Reuters discussed the whole range alternate-energy schemes, a story from CNN reminded us that the last major oil find in 30 years was off the Kazakhstan coast,

### **GOODBYE PETE, CALIFORNIA WELCOMES YOU** Oliver H. Perry, EEVC president

Even as I type this depressing news release for our Newsletter, Pete and his good wife Sue are busy sorting and packing their last items. The house in Plymouth Meeting has been sold, and another place purchased in Sunny California (Hopefully Pete may include a personal update either in this or a later newsletter).

Our club said good bye to Pete at a farewell party held for him after our May monthly meeting at an Irish Pub on German-town Ave.

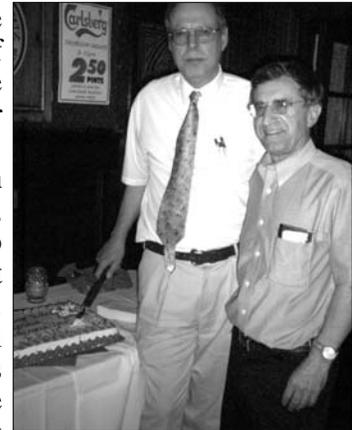
About twenty club members turned out for individually ordered meals and a good bye cake for Pete. Irish music blared in the background as club members got their last glimpses of Pete in the dimly (but properly) illuminated party room. Some enjoyed the atmosphere while others endured it. But the



attempts to make an enjoyable evening out of the sad occasion were futile. It was fun to gather at the Pub but sad to say good by to the single most important member of our organization.

Pete has been the "life blood" of the EEVC since its formation over twenty years ago.

Pete, through the use of e-mail, is planning to continue to edit our Newsletter. Electronic mail may keep us going as if Pete were still living



in Plymouth Meeting. But as I drove home from the Pub Party I could not help but ponder what the absence of Pete at the monthly meeting will translate into. Pete's wit, knowledge, and deep understanding of the physics principles that undergird electric transportation will not be present on our Wednesday evenings. Pete is widely read and keeps abreast on the latest happenings in the EV world. A most valuable source of information and explanation will be absent. You could always count on Pete to finish an incomplete explanation, to summarize meandering thoughts, and to pose thoughtful questions. He knew where to find any answer to any question if he didn't already know it. And, he added immensely to every topic that we ever discussed at our meetings. Such a person, fellow clubmember, cannot be replaced.

Hopefully Pete will be able to continue to share his personality and wealth of information with us in print. I hope that he will have

a monthly column, maybe called "California Pete." And in that column we can garnish a fraction of the person who will be missing from our meetings.

Words cannot express just how much Pete will be missed. Pete must include his picture next to every future editorial that he writes for the EEVC Newsletter so that we will never forget what he looked like.

Good Bye Pete.

## NEWS UPDATE

### **Nissan shows hybrid Altima**

On June 2 Nissan unveils a prototype of the 2007 Altima Hybrid, a hybrid based on the Altima mid-size sedan. The car is planned to be launched in 2006 for the US market.

The car uses a Nissan four-cylinder gasoline engine and Toyota hybrid technology.

### **Prius wins another award**

A Kyodo News Service story dated May 27 reports that the new engine system for Prius has won the 2004 International Engine of the Year title and three other awards in a vote by motor journalists, with the four awards in one year marking a record for any carmaker.

A jury comprising 56 journalists from 24 countries gave 1.5-liter motor combo housed in the Prius family car the top title as well as the awards for Best New Engine, Best Fuel Economy Engine and Best 1.4-liter to 1.8-liter Engine.

### **Hydrogen storage contract for Quantum**

Quantum Fuel Systems Technologies Worldwide, Inc. has been awarded a \$1.4 million contract by a major automotive OEM to develop a unique fuel cell vehicle hydrogen fuel delivery system. This technology adaptation will allow precise flow of hydrogen into the vehicle's fuel cell power module enabling optimized system performance.

## COMING EVENTS

### **Power of DC Electric Drag Racing**

June 19, Mason-Dixon Dragway, Hager-

stown, MD, organized by the Electric Vehicle Association of Washington DC and sanctioned by the National Electric Drag Racing Association. For information, go to [www.powerofdc.com](http://www.powerofdc.com).

### **2004 Future Car Congress**

June 27-30, Washington, DC. Contact SAE Meetings, 202-328-2000, [meetings@sae.org](mailto:meetings@sae.org), [www.futurecarcongress.org](http://www.futurecarcongress.org)

### **FedFleet 2004: The 4th National Federal Fleet Manager Workshop and Information Fair**

July 20-22, New York. Call 800-315-4333

### **Advancements in Battery Charging, Monitoring & Testing Technology Symposium**

August 18-19, Denver, CO. For information go to [www.batterypoweronline.com](http://www.batterypoweronline.com).

### **World Renewable Energy Conference VIII**

Aug 28-Sep 3 Denver, CO. Call Robert Noun, NREL, 303-275-3062.

### **Electric Transportation Industry Conference 2004**

Sept 21-25, Kissimmee, FL. Call Kara Elden, 202-408-0774

### **Alternative & Advanced Energy Technologies: Manufacturing Challenges & Opportunities**

October 12-13, Dearborn, MI. Contact Irene Spanos, SME Communications, 313-425-3155, [communications@sme.org](mailto:communications@sme.org).

### **EVS-21: The 21st Worldwide Battery, Hybrid and Fuel Cell Electric Vehicle Symposium & Exhibition**

April 2-6, 2005, Monte Carlo, Monaco. Contact the EVS-21 Monaco Organization, +377 97 77 54 21/+377 97 77 54 22.

## MEETING SCHEDULE

Due to difficulty in obtaining a meeting venue during the summer, club meetings will be suspended until September 8. Look for a notice of possible change in location.

September 8

October 13

November 10

December 8