



EEVC NEWSLETTER

Published by the Eastern Electric Vehicle Club

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Vol 24 No 5

MAY, 2004



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CINNAMINSON HIGH SCHOOL ENTERS THE AMERICAN TOUR DE SOL FOR THE SEVENTH CONSECUTIVE YEAR

Oliver Perry

The converted 1986 Ford Escort (named The Olympian) has entered the 2004 American Tour de Sol. The car was named The Olympian by the instructor Mr. Perry and his number one electric car student

Ben Fratton back in 1998. And the car has lived up to its name. An Olympian never quits. An Olympian runner can go the distance. The car may be old but it has been revived one more time for at least one more run.

I would like to thank a new EEVC club member, Paul Kydd, for asking me questions about the Olympian, back a few months ago. The car had actually suffered a serious mishap at the end of last year's Tour. During the 2003 Tour we suffered because of our



The Cinnaminson High School Olympian, shown at the recent Green Car Club rally in Limerick, will be competing in the Tour de Sol one more time.

lack of success in replacing about four batteries. We were not able to properly match the batteries. Some discharged faster than others and some reached their capacity before others.

We thought that we had the problem

solved when one of our two strings of twelve, 12 volt batteries reached completion of charge and automatically shut the charger off. But we did not successfully get the second string to do the same. When we charged them in parallel on the Tour our charger never went into automatic shut off. And our input kilowatt-hrs was very high, wrecking our efficiency rating.

We towed the car home from Washington with several batteries drained down to nine volts. When we put the charger on at the

school it did not shut down automatically after a seven hour charge, probably because of a battery problem, and we cooked a number of batteries. It was a very sickening moment. A few days later our charger was stolen. Another sickening moment.

I was not able to muster the courage to face a discouraging situation so the car sat for about six or seven months unattended behind the auto shop at school. When Paul Kydd came along and asked to see the car and offered to help diagnose our battery situation I said, "Okay." However I didn't expect him to show up the very next day.

After Paul got me involved testing batteries and I overcame the initial sickness over our previous disasters, I was able to consider another entry into the Tour de Sol. When Mike Dvorak, from GNB battery (Exide), informed me that they could outfit us with another new set of 24 batteries, and several sponsors sent in great contributions, we found ourselves back in competition. The old car is becoming new. Right now club member Mike Deliso and auto shop teacher Bob Deats are assisting me in getting things ready for May 21st. New rear brakes, including new drums one inch larger in diameter, and a new master cylinder have improved braking. Modifications to our electrical system are in process. The batteries are being cycled and the car performance has never been better. On the outside it looks like the same old converted Ford. But, maybe, just maybe, it will score a little higher when the competition begins Saturday May 23 in Burlington City, New Jersey.

Next issue I will introduce "Team 2004" and inform you how well we performed in the Tour.

TOUR DE SOL GETS READY TO ROLL

The American Tour de Sol is almost here. Scheduled for May 21-25 in New Jersey and New York, the Tour has attracted sponsorship from General Motors, Honda, Toyota, Ford, and Allison Transmission, as well as 31 participants.

School entrants

Among the student participants are Cinaminson High School's Olympian (for per-

haps the last time) and John Murphy's Lorax, entered by the Methacton High School Car Club. Since both the Olympian and the Lorax will be in the same class (Battery EV category, Student Division, one-of-a-kind light duty vehicles) it will be interesting to see which one comes out ahead.

Other school entrants will be familiar to long-time TdS fans, including the SunPacer from Cato-Meridian High School in Cayuga County, NY; the Solar Black Bear, from the U. Maine Solar Vehicle Team; the Vegginator veggie oil vehicle from Trenton H.S.; the Greased Lightning biodiesel vehicle from Sterling College; and several others. Sadly absent this year is West Philly High, which last year had several vehicles.

The big boys

Major auto companies are represented this year as well, with Toyota, Honda and Ford showing Prius, Civic GS and Escape hybrids, respectively. In addition, GM Allison Transmission will have a gasoline/battery hybrid bus.

Hydrogen vehicles

General Motors will not be showing a hybrid this year (aside from the Allison bus), instead showing the Zafira HydroGen3 minivan, which runs on liquid hydrogen.

GM's big Trek

The Tour de Sol will not be GM's only fuel cell vehicle trip. GM's Opel division has embarked on a long trip with a fuel cell vehicle: 10,000 km across Europe from Hamarfest, Norway to Lisbon, Portugal. The run began May 3, and is scheduled to finish on June 11.

The run by the Hydro-Gen3 (based on the



2004 American Tour de Sol Participant List
CATEGORY: HYBRID & ALTERNATIVE FUEL VEHICLES

Veh. #	Make/Model	Propulsion System	Participant -Team Name	State	Vehicle Name
PRODUCTION DIVISION: light duty vehicles					
11	2001 VW TDI Jetta	ICE Biodiesel (B100)	American Biofuels	CA	American Biofuels Jetta
70	2001 Toyota Prius	ICE Gasoline + Panasonic NMH (Hybrid)	S&S Autosports	OK	Toyota Prius
Demo	2003 Honda GT	ICE CNG	American Honda Motor Company	CA	Honda Civic GX
Demo	2004 Toyota Prius	ICE Gasoline + Panasonic NMH (Hybrid)	Toyota Motor Sales, U.S.A.	CA	2004 Prius
Demo	2004 Escape Hybrid	ICE Gasoline + Battery (Hybrid)	Ford Motor Company	MI	Escape Hybrid
PRODUCTION DIVISION: heavy duty vehicles					
60	Allison Transmission hybrid bus	ICE Diesel + Battery (Hybrid)	GM's Allison Transmission	IN	New Flyer Bus
STUDENT DIVISION: one-of-a-kind light duty vehicles					
6	1984 Volkswagen Rabbit	ICE Biodiesel (B100)	Sterling College	VT	Greased Lightning
10	1985 VW Golf conversion	ICE Veggie Oil	Tornado Fuel Masters (Trenton HS)	NJ	Vegginator
17	Purpose-built	ICE RFG + Hawker Pba (Hybrid)	U. of Tulsa Hurricane Motor Works	OK	Proxima
23	Purpose-built	ICE Biodiesel (B100) + SAFT NMH (Hybrid)	Western Washington University	WA	Viking 23
32	Purpose-built	ICE Bio-methane + Panasonic NMH (Hybrid)	Western Washington University	WA	Viking 32
52	1997 Chevy Malibu conversion	ICE Ethanol (E85) + Hawker Pba (Hybrid)	University of Waterloo	ON	Eski-mobile
INDEPENDENT DIVISION: one-of-a-kind light duty vehicles					
12	2004 Ford F250 Pickup	ICE Biodiesel (B100)	Vogelbilt	NY	Vogelbilt Vehicle
44	"Purpose-built, 3-wheeled"	ICE Gasoline + Battery (Hybrid)	Personal Electric Transports, Inc. (PET)	CA	Sunray
CATEGORY: HYDROGEN-POWERED VEHICLES					
PRODUCTION DIVISION: light duty prototype vehicles					
Demo	Zafiro HydroGen III minivan	Fuel Cell Hydrogen	General Motors	MI	HydroGen3
STUDENT AND INDEPENDENT DIVISION: one-of-a-kind light-duty and neighborhood vehicles					
2	Corbin Sparrow conversion	ICE Hydrogen + Panasonic NMH (hybrid)	UW-Madison Future Energy Challenge	WI	UW-Madison HZ Sparrow
26	2002 Ford Explorer conversion	ICE Hydrogen + Pba (Hybrid)	HEVT (HEV Team of Virginia Tech)	VA	Magellan
demo	GEM conversion	Fuel Cell Hydrogen	WPI Fuel Cell Center and FASTec E-Plane	CT	Fuel Cell-Powered GEM
CATEGORY: BATTERY ELECTRIC VEHICLES					
STUDENT DIVISION: one-of-a-kind light duty vehicles					
16	1986 Ford Escort conversion	Electric (Battery: GNB Pba)	The Pirates (Cinnaminson HS)	NJ	The Olympian
38	1994 Geo Metro conversion	Electric (Battery: GNB Pba)	UEHS Electric Car Team (HS)	NY	Electro
45	1998 Lomax kit car conversion	Electric (Battery: Eagle Picher Pba)	Methadon Electric Car Club (HS)	PA	Lorax
66	Renault	Electric (Battery: Trojan Pba)	Rosato (Lake Region HS)	VT	Little Blue
INDEPENDENT DIVISION: one-of-a-kind light duty vehicles					
19	2002 Tracker conversion	Electric (Battery: Electrovaya Lilon)	Electrovaya	ON	Maya-100
CATEGORY: SOLAR-ASSISTED ELECTRIC VEHICLES					
STUDENT DIVISION: one-of-a-kind one-person light duty vehicles					
7	2001 Purpose-built	Electric (Solar+Battery; Trojan Pba)	IHS SolarCar Team (HS)	NY	Zodiac
92	Purpose-Built	Electric (Solar+Battery; Ovonic NMH)	SunPacer (Cato-Meridian HS)	NY	SunPacer
STUDENT DIVISION: one-of-a-kind two-person light duty vehicles					
20	1986 Chevy S-10 Pickup conversion	Electric (Solar + Battery: Trojan Pba)	U. Maine Solar Vehicle Team	ME	Solar Black Bear
56	1994 Ford Ranger conversion	Electric (Solar + Battery: Trojan Pba)	St. Mark's EV Club (HS)	MA	Woodstock
CATEGORY: ELECTRIC BIKES, SCOOTERS, AND NEIGHBORHOOD VEHICLES					
trike	"purpose-built, 3-wheeled"	Electric (Battery: Lead acid, quick-change)"	Personal Electric Transports	CA	LaBomba
NEV	"purpose-built, 3-wheeled"	Electric (Battery: Lead acid, quick-change)"	Personal Electric Transports	CA	L.A. Globe Cooler Transport
scooter	"purpose-built, stand-up scooter"	Electric (Battery: Lead acid, quick-change)"	Personal Electric Transports	CA	Metro
trike	"purpose-built, 3-wheeled"	Electric (Battery: Valence Lilon)	RunAbout Cycles	MA	The RunAbout
trike	"purpose-built, 3-wheeled"	Electric (Battery: Lead Acid)	RunAbout Cycles	MA	TBA

Opel Zafira) will be divided into 20 stages covering an average of 500 km a day. The vehicle is propelled by a 60 kW/82 hp electric motor, with a fuel cell generating the necessary electrical energy from liquid hydrogen stored in the on-board tank. During the trip the vehicle will stop over in 14 cities, during which experts from GM's fuel cell development center will give lectures on the current status of fuel cell and hydrogen technology at local universities.

The vehicle will be driven by journalists and celebrities from the 14 countries (certainly not engineers), and the company admits that the outcome is not predictable, with an enormous variety of road conditions, temperature differences of more than 40° C, steep mountain passes in the Alps, and violent downpours around the Mediterranean.

For more information go to www.marathon.gm.com.

ALL OUT FOR THE JUNIOR SOLAR SPRINT

The annual Junior Solar Sprint is scheduled for May 15th at the north side of the Franklin Institute (on Winter Street) in Philadelphia, beginning at about 8:15 (at least that's when volunteers should show up—the 350 kids and their entourages will arrive at about 8:30).

According to organizer Lisa Rose-Bryant, if you do get there by 8:15, you can likely get a parking spot on the block of the race free and unlimited time. If not, you can look for other metered street parking, or park in the Franklin Institute parking garage.

The event should wind up by 1:00 pm.

The reason for this notice is that those who have not volunteered are still welcome to attend and lend a hand.

A LITTLE ROAD TIME IN A PRIUS

On a recent trip to California your editor got a chance to ride in his son's new top-of-the-line Prius, and to drive it (al little). Junior, we can report, is delighted with the vehicle, which gives him about 40 mpg even though he drives aggressively and does a lot of highway travel (which in not the Prius's best suit).

As reported, the car drives like any other, but what Junior likes best about it is that he can stamp on the pedal without excessive penalty, although the instantaneous fuel

mileage meter shows pretty poor numbers when he does that. On the other hand, 25 mpg during hard acceleration is pretty good.

The feature that junior likes best, however, seems to be the built-in GPS navigation system, which gives directions while you drive, and doesn't get confused if you ignore the directions. Make a turn off the planned route and the system recalculates and goes from where you actually are (even though it sounds a little miffed when you ignore its advice).

NEWS UPDATE

Gas prices to rise—permanently

An April 27 story by Rex Nutting of CBS MarketWatch reported on testimony by Federal Reserve chairman Alan Greenspan, in which the chairman said that projections for increased oil and natural gas prices six years out may well lead to significant changes in the way the United States does business. "These elevated long-term prices, if sustained, could alter the magnitude of and manner in which the United States consumes energy," said Greenspan. He added that it is likely that natural gas markets will become more global in scope, and that trade in liquefied natural gas will expand, according to the article.

Permanent increases in the price of gasoline are bad for the U.S economy, but if sustained they just may start to discourage SUV buyers. Let's hope so.

GM to deliver full-size hybrid pickup

On May 3 General Motors delivered the world's first full-size hybrid pickup, presenting a Chevrolet Silverado to Miami-Dade County at the 10th National Clean Cities Conference and Expo in Ft. Lauderdale, Fla. Later this month, Miami-Dade County will take delivery of a total of 50 Chevrolet Silverado extended cab hybrid pickups for inclusion in its fleet.

The hybrid pickups are far from the technological sophistication of a Prius or other Japanese hybrid, of course. For one thing, they're powered by a 5300 Vortec V-8 and use an automatic transmission, so the hybrid technology boosts mileage by just 10 to 12 percent. They do, on the other hand, have the ability to generate wall-quality electrical

power for use in remote locations.

The hybrid part seems to consist mostly of automatic engine shutoff at stops and regenerative braking. The electric motor/generator fits between the engine and transmission and can generate up to 14,000 watts of continuous electric power.

Hybrid versions of the 2005 model year Chevrolet Silverado and GMC Sierra pickups will be available to retail customers starting this fall.

DaimlerChrysler does one better

DaimlerChrysler has delivered the first fuel cell vehicle used in a real-world business application in North America, in a collaborative effort between DaimlerChrysler, EPA and UPS, which is using a DaimlerChrysler F-Cell fuel cell vehicle on an established daily express-delivery route in Southeast Michigan. The F-cell is based on a Mercedes-Benz A-Class and powered by a Ballard fuel cell. It was delivered to UPS in February. The vehicle is fuelled at a hydrogen refueling station at the EPA National Vehicle and Fuel Emissions Laboratory.

Hybrids are selling

R. L. Polk & Co. reports that hybrid vehicle registration in the United States increased by 25.8 percent in 2003, with the Honda Civic pulling ahead of the Toyota Prius. Nationwide registrations for hybrid vehicles rose to 43,435 in 2003 according to Polk, with the Honda Civic hybrid accounting for 50 percent of all registrations with a total of 21,750. Toyota Prius reached 20,387 registrations or 47 percent of the market, with the Honda Insight accounting for the remaining three percent, with 1298 total registrations.

As more hybrid models reach the market their appeal should broaden, Polk goes on.

During calendar year 2003, California and Virginia retained their number one and two positions with 11,425 and 3376 hybrid registrations respectively. Florida rose to third place with 1996 registrations, followed by Washington with 1972 registrations. Rounding out the top five was Maryland with 1851 registrations.

Los Angeles was the number one market for hybrid registrations, with 4701. Washington, D.C. and San Francisco/Oakland/San

Jose, CA took second and third places, with 4024 and 3813 respectively. Rounding out the top five markets were New York City and Seattle/Tacoma, WA, with 1768 and 1700 registrations respectively.

European battery makers fault EV cadmium battery ban

Back in January Adalie Schnider of 1st-in-batteries.com reported that The Association of European Storage Battery Manufacturers (EUROBAT) has expressed displeasure with a European Commission decision to propose a ban on cadmium batteries in electric vehicles by the end of 2005. The group insists that all batteries for electric vehicles are easily traceable so all the batteries would be collected and recycled. Out of around 11,000 electric vehicles, some 8000 are equipped with nickel-cadmium batteries.

No more oil-based paint in PA?

An article by Tom Avril in the *Philadelphia Inquirer* for April 27 reports that Pennsylvania and Delaware are requiring the sale of "low-emission" paint starting in January 2005, with New Jersey and eight other Eastern states expected to follow suit. The reason is the VOCs—volatile organic compounds—given off by oil-based paints and lacquers. The rules are already in effect in California, and soon the Eastern states are expected to adopt new rules for nail-polish remover, air fresheners, and gasoline cans, among other household items.

Paint manufacturers are reportedly not amused—even latex paints using current formulations do not meet the new standards, and coming up with products that will is not easy.

A flap over hybrid safety

A few weeks ago an Associated Press story reported that emergency workers could be endangered when working on crashed hybrids because high-voltage cables ran through the doors (!) and could be contacted by emergency workers cutting into the vehicles to free trapped passengers.

That report started a small tempest among the hybrid makers, who quickly issued statements that their cars are safe even in a crash, that there are no high voltage wires in the doors, and that all information needed to han-

del emergencies is readily available.

We did some checking and sure enough, there were articles in *Fire Chief*, *Firehouse.com*, and from Toyota and Honda. The lesson to be learned is that general-coverage reporters tend to lack technical credentials, and seemingly blatant errors can get past them.

Tests set for Quantum hydrogen storage

Automotive Industries for May 6 reports that Quantum Fuel Systems Technologies Worldwide, Inc. has finalized the contractual terms with the U.S. Department of Energy and has commenced Phase I of its \$2.6 million program for the development and advancement of next generation hydrogen storage technologies.

Quantum and DOE will work to advance hydrogen storage systems in preparation for fuel cell vehicle commercialization. The overall project will optimize Quantum's 10,000-psi technology, previously developed by Quantum and the U.S. Department of Energy, to deliver the next generation hydrogen storage.

The Governor comes out for hydrogen

The Car Connection reports that California governor Arnold Schwarzenegger has kept a campaign pledge by signing an executive order creating a public-private partnership designed to encourage development of fuel cells. The governor also promised to sign an executive order creating a public-private partnership creating hydrogen highways all over the state of California by the year 2010.

COMING EVENTS

Tour de Sol 2004: The Great American Green Transportation Festival

May 21-25, Westchester County, NY to Washington, DC. Contact NESEA at 413-774-6051, www.nesea.org

Green Car Club Rally

May 22, Burlington, NJ, in connection with the Tour de Sol. To register or for more information go to www.GreenCarClub.org or call NESEA at 413-774-6051.

3rd EVer EAA Chapters Conference

June 4-6, Vancouver, BC in conjunction with

VEVA's 8th Annual "REV!2004" ("Ride Electric Vehicles!2004"). Call EV Chapter Relations East, 520-432-3227

Power of DC Electric Drag Racing

June 19, Mason-Dixon Dragway, Hagerstown, 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.

2004 Future Car Congress

June 27-30, Washington, DC. Contact SAE Meetings, 202-328-2000, meetings@sae.org, www.futurecarcongress.org

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

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

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 Elsdon, 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.

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

Meetings are held in Room 35, Plymouth-Whitmarsh High School, 201 East Germantown Pike in Plymouth Meeting, PA, and begin at 7:00 p.m.

June 9

July 14

August 11

September 8

