

EEVC NEWSLETTER

Published by the Eastern Electric Vehicle Club

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Affiliated with EAA

2015 EEVC MEMBER OF THE YEAR Oliver Perry

Every year the Eastern Electric Vehicle Club seeks to recognize a special member who we feel has made outstanding contributions to our organization. Usually these contributions have occurred over a period of more than just one year. Several members this past year were excellent candidates for the 2015 Member of the Year award.

Longevity played a role in our selection. Our final choice for the year 2015 is Denny Stichter.

For many years Denny has demonstrated consistent commitment to the ideals and objectives of the EEVC. His dedicated and unselfish efforts have benefited our organization and expanded our outreach. His home, well over an hour's travel west of Plymouth Meeting,



Denny Stichter, 2015 EEVC Member of the Year

makes it difficult for regular attendance at our monthly meetings. But despite the lengthy trip Denny and his wife have still managed to annually attend and contribute to meetings over the years. They bring a well-balanced world-view to the discussion table and lend credibility to our collective membership's

expertise and body of knowledge.

Each year the EEVC participates in several events that interact with organizations in the Delaware Valley. The 21st CAC is our most demanding participatory annual event. Those who make the trip to Penn State in order to participate must devote both time and money in order for the event to happen. Those who bring their own conversions to the track must



Denny and Connie Stichter were a team at the 2015 21st CAC.

make additional sacrifices when preparing their vehicles for the event. Responsible members such as Denny are needed in order for the EEVC to participate in the 21st CAC.

Denny competed in the 21st CAC with a home converted Ford Ranger for several years. He accepted the challenge when he purchased ownership of Don Young's donated Ranger. The gift came with the understanding that the new owner would compete in the 2014 21st CAC.

The truck required considerable upgrading in order to compete. Don appropriately provided the parts, materials, and labor needed to make the vehicle competitive.

A few months after Denny successfully competed in the 2014 21st CAC he experienced an unfortunate electric motor runaway. Someone mistakenly allowed the transmission to slip into neutral under load. The motor raced out of control. Replacing a motor is not an easy task. Frequently owners at this point put the vehicle up for sale at a give-a-way price and move on. But Denny took the time and trouble to replace his blown motor and readied the truck for the 2015 CAC.

Shortly before the event date arrived Denny decided that it was time to pass the vehicle on to someone else who might benefit from ownership. It so happened that a young man from Penn State, who regularly competes in the 21st CAC, was looking for a Ford Ranger conversion. Denny's truck found a buyer before it was

hauled out to Penn State. The truck's title was passed on at this year's event to a worthy recipient at a very reasonable price. Denny and Connie intended to finish the competition before actually transferring the vehicle to the student. But, another test of Denny's patience and determination awaited him on a downhill portion of one of the competitive driving loops.

An electric vehicle with a series wound D.C. motor cannot be allowed to roll freely downhill in a low gear. Letting gravity have total control of a vehicle risks having its motor spun at a faster rate than its armature can endure. (It is no different from allowing a motor under an electrical load to rev freely without a mechanical load.) A steep hill on the course reinforced this truth. One segment of the motor's D.C. commutator lifted from its position and rendered the motor inoperative. Luckily the brushes were not torn to shreds or related parts mangled. But, nevertheless Denny was forced to undertake some motor repair in place of competing in the Sunday autocross. Using his machine shop skills and technical expertise Denny patiently made the repair at the test track while the other cars rocketed through the cones. Our 2014 Top Gun was sidelined.

Being unable to finish the competition due to a mechanical failure was not what Denny had envisioned for his last experience with the truck. Sometimes such is life. He handled the situation with the dignity and class characteristic of an EEVC Member of the Year.

Denny Stichter in his own words

My dad learned to fix things out of necessity on the farm. As I was growing up in IN I enjoyed watching and working with him as he repaired and/or made projects.

Curiosity got me started taking things apart and trying to figure out what made them tick and sometimes getting them back together! Bicycles, mini bikes, scooters and then cars seemed to be a natural progression. In high school I took all the shop courses available. My Industrial Arts teacher was also into antique cars which provided additional inspiration. During college and subsequent jobs — building and machinery maintenance, truck driving, machine shop and farming, and teaching — I have continued tinkering with antique cars.

Transportation while my wife Connie and I were dating was a '34 Ford coupe that I had built from pieces and parts. After marriage to my wonderful and tolerant bride, I decided to pursue a degree in Industrial Arts Education. Then I taught Antique Auto Restoration at McPherson College in KS where we averaged 2½ completions per year. Seven years later I was offered a job designing and building machinery at Supreme Corp. in Indiana which builds truck bodies. In 1990, I was asked to move to PA as a branch General Mgr to help get a manufacturing plant started. 21 years later, I moved back into designing and building machinery for Supreme but this time in my machine shop at home. As of May 12, 2014, I am now in my own business continuing to design and build machinery as well as driving semi one week a month to the Midwest along with being part time Maintenance Supervisor at our church.

In the early 70s, I was inspired to build an EV. Parts collecting began but I did not follow through since antiques and motorcycles consumed my spare time. We have three sons — one is an architect and two are mechanical engineers. We all enjoy working together, mostly on motorcycles, and about ten years ago we were discussing how we would build an EV. I went on line, found the closest EV club — EEVC, and joined. Then I was fortunate enough to acquire the Bob Young Ranger EV. I learned a lot from driving and rebuilding the Ranger (unfortunately more than once!). Over the years I have owned nearly 70 vehicles- mostly antique cars and trucks, one EV Ranger along with one potential Honda Insight EV. There are recurring dreams of future projects, as well as being open to assisting in disaster relief, so who knows what the future holds?

STATE OF THE EEVC Ken Barbour

I am impressed and excited that when you google “eevc” we are the first website that is listed. As long as we can get people to at least google us they can find out about our organization. Our website is much improved and is way easier to find than when I joined in 2008.

After I just watched the state of the union address, can I reflect a little on the state of the eevc over the past eight years?

We've added electronic delivery of the newsletter. Old newsletters can be downloaded from our website.

You can pay for your membership by check, cash, and now even PayPal!

We have a very active eevc google group.

There are now usually summer meetings when there were none before.

We have snacks and beverages at meetings!

The Tour de Sol and Kempton Alternative Energy Fair are done, but the Jr Solar Sprint and Physics Olympics soldier on with our help.

The 21st CAC just celebrated its 7th event at Penn State.

There is talk of a new event in South Jersey/Philadelphia for electric vehicles.

There are now 27 different plug in electric vehicles you can purchase with a J1772 plug. Eight years ago we didn't know what a j1772 plug was and there were no production EVs for sale.

Members actually drive their vehicles to meetings now and some charge there too.

You can now purchase EEVC branded apparel from LL Bean thanks to Jurgen.

Five of us have driven our 100 percent electric vehicles to Penn State now rather than towing because of the public charge stations that are available now.

Many members have bought one of the new production EVs that are available and use them everyday including our president.

We now have a drive electric week with plenty of events to attend!

I am in no way taking credit for any of this. I would like to thank Pete for being our newsletter Editor since 1980, Ollie for running for President every year unopposed since 1995, Jim for taking over as Webmaster and Treasurer, Tullio for almost 35 years as Treasurer, Gregg for starting the google group, Jay for picking up the mail, and Jurgen for the eevc branded apparel. Anyone I forgot, I'm sorry and it wasn't intentional.

The state of our organization is Strong just like EVs right now and according to Obama our Union.

Disclaimer: this message is approved by Ken Barbour (not for president). Any coincidences between anything that occurred in the last eight years and something that Obama wanted is purely that (coincidental). I do not

support Obama's views on most things just electric vehicles. Any similarities to any person living or dead is also purely coincidental.

Good night and thanks members for making this a way better organization every year that goes by.

A BIT ABOUT RAY CARR

There has been some discussion recently about Ray Carr and his coast-to-coast trip in a Baker electric. Since we have covered Ray in the past (and were at least peripherally involved in the effort), now seems like a good time to bring everyone up to date.

Ray made his money as a commercial real estate developer, with industrial parks, hotels, and even an incorporated township to his credit. He also had a life-long love of cars, and kept a considerable fleet of them.

In 1993 he drove a 1902 Northern runabout with a 5 hp single-cylinder engine from San Diego to Jekyll Island, GA, entering the Guinness Book of World Records for having driven the oldest production car across the country.

On May 7 of 1995 he set out from Astoria, OR, and on July 3, 3400 miles later, drove onto the Dock and Harrah's Marina Casino in Atlantic City. As stated in the July, 1995 Newsletter, "after the requisite handshakes and speeches Ray and Mike [Wyka, his crew chief] proceeded to the edge of the pier, where they poured a silver flask of Pacific Ocean water into the Atlantic.

"The ride across the country had covered eleven states, and had been a true adventure. Ray had to put up with rain, wind, hail, scorching sun and even a late-season snow-storm to complete the trip. The average day's travel was 89.5 miles, with usually two stops for quick charges. One day the car actually went 85.6 miles on a charge, and 160 miles in a day. And not bad for a set of 6-V Exide modules.

"Interestingly, the only equipment problems he had were with today's technology. An oil line on the generator brought along for charging failed several times, there were problems with the high-rate charger, the Curtis PMC controller tucked under the seat of the Baker overheated several times (until better heat sinking was added), and the accessory battery was found discharged. The Baker itself never missed a beat, suffering only from some

squeaking from the wheel spokes after driving in the rain, a small tear in the antique upholstery, and the loss of some wheel weights. On top of that the batteries installed at the start of the trip lasted the whole time with no problems and didn't even take any water, despite being charged several times a day at high rates and run flat more times than not."

In 1996 he drove a 1909 Stanley Steamer from Alaska to Maine.

His obituary from the West Chester *Daily Local News* sums it up nicely: "In addition to his business accomplishments, Ray was a collector of antique and vintage automobiles. Ray holds 2 Guinness Book Records for driving the oldest vintage car across the US and the only vintage electric car from coast to coast. He also drove a 1909 steam powered car from Anchorage, Alaska to Bar Harbor, Maine making him the only person to drive gasoline, electric, and steam powered vehicles across the country. Ray also drove car rallies from Peking to Paris, Around the World in 80 Days, South Africa, and Morocco. He was a member of the Horseless Carriage Automobile Club, The Antique Automobile Club of America, Pierce Arrow Society, and The Royal Automobile Club of England, along with various other organizations."

2016 PHYSICS OLYMPICS

The EEVC annually participates in the February Physics Olympics meet. We help to supervise the (small toylike) electric car event and we present an award.

Rules for the event

Electric Fan Catamaran 2015-2016 Doug Macauley, Pennsbury High School

Objective:

Build the fastest electric catamaran that can travel along a given distance.

Number of Boats:

Each school may enter up to 4 boats in this event.

Requirements:

- The boat must use ONE official motor and up to two propellers from this kit (Edmund Scientific #3081713 Motor, DC, High Speed, Pkg/3) and ONE standard 9-volt battery.

- The boat must be activated by a switch. Your hand may touch the switch and boat at the same time but the boat may not be pushed. (If a judge decides that a push is involved, the run will be disqualified)
- The boat must be student-built and not from a kit.
- The boat must be powered only by a 9 volt battery.
- The boat must have a legible flag securely affixed on the stern (back) of the boat, located 3-5 cm above the hull. This flag must have the school name, student's name and numbered boat. (#1-4 for each boat entered). The flag may extend beyond the end of the track.
- The boat must not fall apart or capsize in any way from when it starts to when it crosses the starting line.
- The boat must operate autonomously once the switch is pressed, with no remote control of any kind.

Restrictions:

- The hull of the boat may be made of any household or common product. It must be constructed by students and a noticeably hand-made hull. (3-D printing may not be used). The hull must be a catamaran style vessel that offers part of the boat in each track.
- The track may not be used to offer leverage to the hull or to keep it afloat in the starting box.
- The boat may not have any type of guide rail that touches the side of the track in the starting box.
- The boat must fit in the starting box area, however, it may extend beyond the width of the two tracks to a maximum 30 cm total width, but must remain afloat. The boat must fit into a 40.0 x 40.0 x 40.0 cm³ volume.
- Part of the boat must be in contact with the water in both gutters at all times. The clearance for the middle portion of the track must be taken into account. This means that when the boat is afloat in the water, it may not touch the side or middle of the track. The track will have clamps in this space and will impede the boat from moving along.

The Race:

The track will consist of four total gutters (K style) side by side, two running parallel to each other and two connected to make the track longer. The flat parts of the track will be connected by butterfly clips in the middle. Two parallel and two end to end consist of the track. Each track will be 9 cm wide and 6 meters long. The depth will be set to a 2 cm line below the top of the middle portion of the track. There will be a starting line at the "starting end" of the track 40cm from the end. This is defined as the starting box. Each boat must start anywhere behind the starting line. Competitors will have 30 seconds to start the boat and remove their hands. Once the bow (front) of the boat crosses the line, the time will begin to start.

Each run will be timed by three timers using stopwatches and an average time (t) will be recorded. If a boat stops for 3 seconds before crossing the finish line, the trial has concluded and will be called. The distance achieved (?x) will be measured and used in the calculation.

Schools may have up to four boats, and each school will have a total of four runs. School names will be drawn randomly to determine the race order.

Scoring:

Individual score will be calculated by distance divided by the time if the car finishes the entire length of the track. It must hit the end of the track with any part of the boat to count. The fastest boat to complete the track will be the winner. Team Score = Sum of the best two runs

Tier 1: Schools with at least three runs completing the track

Tier 2: Schools with two runs completing the track

Tier 3: Schools with one run completing the track.

Tier 4: Schools with 0 runs completing the track. In this tier, distance will be considered as the defining factor. The longest distance will win in this tier.

The school with the highest score will get 200 points, the school with the second highest score will get 190 points, etc. Any school with no boats will have zero points.

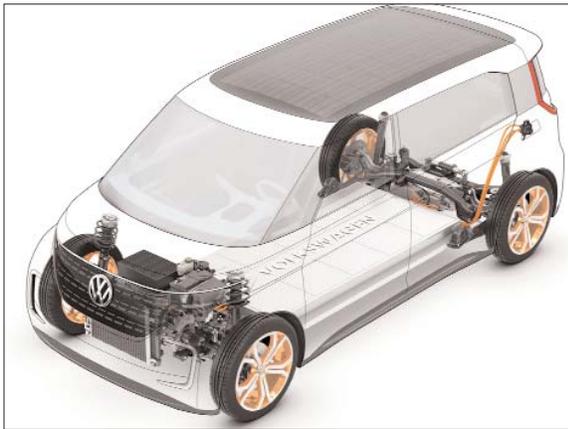
The EEVC Prize:

EEVC members will award a prize to the boat that (a) exemplifies high standards of engineering and craftsmanship and (b) is entered in the EEVC competition and (c) completes the competition in the fastest half of the qualifying runs.

To enter the EEVC competition, the EEVC logo must be visible on the body of the boat AND on the flag.

Students may be required to fill out an entry form.

VW SHOWS EV CONCEPT



Jumping on the EV bandwagon (and perhaps trying to get people to forget the diesel debacle), Volkswagen showed off two EV concept cars at the 2016 Consumer Electronics Show. One, the e-Golf Touch, was apparently mostly a display, and very little information was provided on it. The other, the BUDD-e, was considerably closer to being a real vehicle.

According to *CNN Money*, the car is a microbus. It's not too much like the old Beetle-based microbus that brings sighs of nostalgia to aging hippies but according to CNET, still has some of the old styling cues. "While crash test standards have put the kibosh on the traditional flat-front nose, it still sports the long wheelbase and short overhangs that many remember from the old Microbus, and the style lines along the front come together not in a sharp point, but rather in a way that harkens back to the original, while still looking towards the future."

Estimated range is given as 373 miles on the New European Drive Cycle (NEDC) or 233 miles on the EPA drive cycle and recharge time for the flat 101 kWh battery is given as

80% in 30 minutes. The car is the first of a planned series based on the company's Modular Electric Toolkit (MEB) platform. And of course it includes every gadget you can imagine except, perhaps, a refrigerator.

The van is 181 inches long, 76.3 inches wide and 72.2 inches high, placing it between the Touran and the Multivan T6.

FIAT CHRYSLER HYBRID



At the North American International Auto Show in Detroit Fiat Chrysler unveiled a plug-in hybrid version of its Pacifica minivan. Scheduled for delivery some time in the second half of 2016, the car delivers 248 horsepower and uses a dual-motor electrically variable transmission (EVT) with a specially modified version of the upgraded 3.6-liter Pentastar V-6 gasoline engine that features an Atkinson cycle combustion system and is expected to achieve 80 miles per gallon equivalent (MPGe) in the city and 30 miles of all-electric range from a 16-kWh Li-ion battery. Recharge time is listed as two hours on a 240-V system.

CITICAR AT HERSHEY MUSEUM



Theo Padavano sends the above photo of a 1977 Sebring-Vanguard CitiCar at the Micro Car exhibit at the AACA Museum in Hershey, PA. A real blast from the past.

NEWS UPDATE

A cure for burning batteries

High energy density batteries are tricky beasts, because they can easily become unstable, releasing their pent-up energy as heat instead of voltage and current to a load, in a process generally called thermal runaway. Clubmember Mike Manning has told several stories of mishaps with these, including the time he came to work at the Exide battery lab in Yardley one morning and discovered that the shed where the experimental batteries were stored had vanished overnight. More recent news has concerned hoverboards with cheap Chinese lithium batteries that burst into flame unexpectedly.

But researchers at Stanford University may have found a simple and elegant solution: a heat-sensitive shutoff mechanism. The idea uses tiny particles of nickel with nanoscale spikes protruding from their surface. These particles are coated with graphene, an atom-thick layer of carbon, and embedded in a thin film of elastic polyethylene. “To conduct electricity, the spiky particles have to physically touch one another, says researcher Zheng Chen. “But during thermal expansion, polyethylene stretches. That causes the particles to spread apart, making the film nonconductive so that electricity can no longer flow through the battery.”

When the researchers heated the battery above 160 °F (70 °C), the polyethylene film quickly expanded like a balloon, causing the spiky particles to separate and the battery to shut down. But when the temperature dropped back down, the polyethylene shrank, the particles came back into contact, and the battery started generating electricity again, according to an article by Mark Shwartz in *Stanford News*.

The Solar Industry Now Employs More People Than The Oil Industry

That’s the headline of an article in *IMPO* by Megan Crouse that cites data from the nonprofit Solar Foundation: “The organization’s sixth annual National Solar Jobs Census found that 208,859 people were employed in the solar industry in the United States in 2015, compared to 187,200 people in the oil and gas industry.

“This means that 35,052 solar workers were added over the past year, representing 20.2 percent growth between November 2014 and November 2015. This is almost 12 times faster than the national employment growth rate, which was 1.7 percent during that one-year period.

“Conversely, the oil and gas industry lost 9,500 jobs from November 2014 to November 2015, partially due to layoffs caused by declining price of oil. The solar industry is also larger than the coal-mining industry, which employed 67,929 people as of the third quarter of 2015.”

Stop with the fuel cell cars

A recent article by Jay Cole in *Inside EVs* reports that Toyota is quietly telling dealers to stop selling its Mirai hydrogen fuel cell car in California (its target market) because the refueling infrastructure is not there. There are only eight hydrogen filling stations in the whole state, and many of these cannot provide a complete fillup.

The best laid plans...

New batteries for your conversion

Ken Barbour has informed us of an online *Inside EVs* video that explains how to replace a set of lead-acid batteries in a converted Chevrolet S-10 pickup with a pack from a Nissan Leaf. It’s at <http://insideevs.com/putting-nissan-leaf-battery-modules-chevrolet-s-10-truck-video>.

NATURE AND MAN CONSPIRE AGAINST US By California Pete



In Porter Ranch, CA the earth is farting.

A depleted oil field used to store natural gas has sprung a leak, and is discharging as much as 130,000 pounds an hour into the air. Repeated attempts to stop it have failed, as the gas pressure is so great that plugging materials sent down the well that connects to it are blown back out. The only cure, according the Southern California Gas Company, is to drill a relief

well (similar to what was done in 2010 to stop the runaway BP oil well in the Gulf of Mexico) to intercept the leaking well deep in the earth and plug it with drilling mud and then concrete. The relief well was started in December 4, and is expected to be completed in late February.

In the mean time the well continues to spew. It is, of course, a terrible fire hazard — planes have been routed away from the cloud it emits, lest a spark from an engine ignite it — and the odorant in the gas is sickening people in the area. And of course methane is a potent greenhouse gas, some 21 times as effective as CO₂ at trapping the sun's heat.

Let it rain, let it rain

With El Niño, this “winter” has seen more rain than usual: rainfall totals for some places in the state are running at or above normal (although many are not, and must be well above normal for some time to begin to make a dent in the long-term deficit), and the Sierra snowpack, upon which the central and southern regions depend for water during the summer, is above normal, with several feet of snow in areas that had none last year.

Yet the drought is most assuredly not over, and while some would like to go back to the old, wasteful ways, support seems to be building for better water policies. Let's hope.

You're not on camera

After a recent shooting on our regional rail system (BART), it was revealed that three quarters of the surveillance cameras aboard BART cars are dummies. The shooter was spotted on a station camera, but the actual incident went unrecorded. Come to the Bay Area. Ride public transportation. Feel safe.

COMING EVENTS

SAE 2016 Hybrid & Electric Vehicle Technologies Symposium

Feb 9-12, Anaheim, CA. www.sae.org/events/hybridev/

2016 Physics Olympics

Feb 20, at Henderson High School, West Chester, PA. Contact Oliver Perry at perrydap@aol.com.

2016 Clean Low-Carbon Fuels Summit

Feb 23, Sacramento, CA. <file:///C:/Documents%20and%20Settings/All%20Users/Documents/Nov%202015%20Newsletter/Events/CALSTART%20Events%20%29%202016%20Clean%20Low-Carbon%20Fuels%20Summit.htm>

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SAE 2016 World Congress & Exhibition

April 12-14, Detroit. www.sae.org/congress/

WAVE TROPHY 2016 ++ 11 - 19 JUNE 2016

June 11-16, from the North Sea to the Alps. www.wavetrophy.com/en/

2016 American Solar Challenge

July 22 - Aug 6, traveling through seven states from Brecksville, OH to Hot Springs, SD. <http://americansolarchallenge.org/the-competition/ascfsgp-2016/>

SAE 1016 Convergence; Theme: Personal Mobility – Creating a Smart and Autonomous Journey

Sept 19-22. Detroit. <https://www.sae.org/events/convergence/>

NOTICE ON DUES

Annual EEVC dues are \$20 with electronic delivery of the Newsletter, or \$25 for a printed copy. Mail checks payable to EEVC to James Natale, 3307 Concord Dr, Cinnaminson NJ 08077, or pay via PayPal to jnatalemicro@comcast.net.

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.

Feb 10

Mar 9

Apr 13

May 11

June 8

July 13