



EEVC NEWSLETTER

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BUD RICH FIRST TO RIDE 48 STATES ON AN ELECTRIC MOTORCYCLE

Ben Rich is an electric motorcyclist; he rides a 2014 Zero SR with the Power-Tank, which increases the bike's range from 161 miles to 197 miles in the city and from 98 miles to 120 miles on the highway (at 55 mph). Summer being riding season, Ben decided to make a 48-state tour. He



August 9th, Ben Rich, after completing his tour of the Lower 48 States on his Zero Motorcycle, shoves off from Ken Barbour's charging station in Deptford, NJ for his home in North Jersey. (all pictures from Oliver Perry video)

rode from NJ to Seattle to LA, over to Florida and back to New Jersey; on August 9 he arrived at Ken Barbour's place in in Deptford for a charge on the way home, where EEVC president Ollie Perry video-taped his account of his trip.

Ben is the first to ride in all 48 states on an electric motorcycle, beating Terry Hershner of Santa Cruz, CA (near the Zero factory), the first to go across the country on an electric

motorcycle in 2013 on a Zero S modified with an 18 kW battery and aerodynamic fairing to give it a 200-mile range, according to a June 6, 2013 article by Christopher DeMorro in *Gas2*. (His trip took less than a week, but he raced the whole way.)

Ben began his trip on June

16 and finished 50 days later on August 9.

"I've had a terrific trip and had a bunch of adventures," Ben said. The motorcycle goes 100 miles at a time, at which point he will charge for 45 minutes, "and then I'll be on my way again."

When he's near a city he charges at electric car charging stations, while in the country he charges at RV parks, which have 50-amp hookups and can provide 8 or 9 kW.



The overall purpose of the trip, he says, “is to highlight electric vehicles, and also to visit friends.” He has friends across the country whom he doesn’t get to see very much during the winter, so during the summer he goes from friend to friend, stopping at their places and staying with them. During the day he’s alone, by himself on his motorcycle. “Meeting people at RV parks, meeting people at restaurants where I stop, but also at night I stay at a friend’s house almost all the time.” He stayed at other places, including Airbnb and hotels, only about eight nights.

Ben has done long-distance trips for the last four summers. In 2013 he went cross-country; in 2014 he did a 2000-mile loop, in 2015 he went almost 7000 miles from Mexico to Canada. This year’s trip was 8000 miles.

MOVING FORWARD: WHAT DOES THE FUTURE OF THE EEVC LOOK LIKE?

Oliver Perry

Unlike many, if not most, EAA chapters which have long since folded, the EEVC continues to function as a small but stable organization with regular meetings, an updated website, a quality monthly newsletter and an active chatline. We also provide enthusiastic support for several other organizations in the Delaware Valley. In addition we remain a contributing chapter in the EAA.

Anyone interested in learning more about electric cars and interacting with us can find us if they “Google around” and do some looking. We have members who will quickly drop whatever they are doing and ride to the rescue of anyone honestly in need of EV

advice and help.

The EEVC was formed in 1980. If we last until 2020 we will be able to celebrate our 40th anniversary.

Can an organization last for 40 years without changing?

Clubs and organizations come and go. A growing number of clubs, groups, and organizations are dying out, losing relevance as their members die, leave, or simply fade away. Some try to maintain relevancy by making adjustments. Some succeed while others fail.

There are all sorts of reasons why some gain ground as others lose. Keeping a club or organization alive and well can be a challenge. There is no spelled-out secret plan available for club members to follow that guarantees success.

In the case of the EEVC we have reached a point in time for us to consider our roots, re-analyze our purpose, and plot out a future. Most of our early EEVC founding fathers have passed away. The emphasis at the time of our club founding was on homemade EV conversions. There seems to be a lot less interest these days in making conversions due to readily available production vehicles. The interest of our current EEVC members has shifted. In addition, our society has experienced an explosion in the number of things “out there” to grab everyone’s attention. We have the ability to travel wider and further and to experience novel activities like we never have before. As a result it has become more difficult for clubs (like the EEVC) to maintain a priority level of commitment among its members.

A good analogy of what has happened in our culture can be glimpsed from observing how simple church and home weddings of yesterday have evolved from simple to “complicated” destination weddings. We live in a very different world than we did 40 years ago.

Alan Arrison points out that we used to come to the EEVC meetings to gain and share information that was not as readily available to us. Now any news that a member brings to the meeting is frequently old because of our explosive communication technology. Many have already learned about the topics members bring up for discussion

because they have access to the Internet. The Internet has drastically changed how we acquire and share information. We no longer have as great a need to attend a central location as we once did in order to pass around magazine articles, share VHS programming, review technical articles, and listen to a presenter provide us with information that we could not get on our own. Today all we need is “the link” and we have a ticket to everything there is to know about most topics. In fact frequently our club members are on their i-phones checking out details related to the presenter’s topic and adding details as the presenter speaks that the presenter himself was not aware of.

The format we have used over the years in club meetings, that is the sharing of information, is no longer as relevant. In this age of instant information most people prefer to download the information themselves and quickly go to the points of interest to them rather than sit in a desk in a school room and listen to somebody else lead them through a topic. They also prefer to watch videos by themselves, using the fast forward buttons, rather than go at a group pace. Just like a music band attracts one set of ears and turns off another, so do topics of discussion. We all want to quickly get our brand of information without having to listen to somebody else’s first.

On the Plus Side

What we do offer is face to face contact and personal interactions for those who attend a meeting. True, a student no longer needs a teacher to find out what he has to learn or to directly teach him. He can learn it all through downloads and on YouTube. But, the personal interaction between the teacher and student has some advantages. Attending a meeting with a group of “like minded” folk who enjoy getting together and sharing topics of mutual interests can be very gratifying.

The EEVC is not a “like minded” group

A cross section of the EEVC membership reveals that we are not like-minded individuals, but are rather divergent in terms of our educational backgrounds, political views, economic status, ages, work experience, and family experiences. So hanging out together

for long periods of time might not be something that everyone really enjoys over the long haul. Sharing experiences with electric cars and the charging infrastructure does bond almost everyone in the EEVC together, since we all have an interest in electric cars. But, are there others who are less enthusiastic about cars out there who may still want to be associated with us? How many of them are there? And what portion of their likes and dislikes should we be concerned about?

So What Should We Do?

Should we limit our discussions to just electric cars and the charging infrastructure? Might that turn out to be too narrow? Once the familiarity with something has been established there comes a point where continued meetings discussing the same related topics can become boring. Broader interests can sometimes keep relationships functioning longer. Discussing related topics that directly or indirectly affect the electric car world, like climate change, political activity, carbon and petroleum industrial discoveries, the economy, and overall environmental movements provide mental and cultural stimulation that some members enjoy. Sometimes coaches and company leaders take their players and workers on trips to something totally different from the sport or work which they are practicing, just for a break and for mental and emotional stimulation.

We have already opened up discussions relating to our focus of interest on the chat-line. Join in. Voice your opinion. This is a time when we all want to hear from you. And, this coming September meeting at Plymouth Whitmarsh High School will be a meeting for such discussion.

A few related concerns for discussion

A number of members wish us to consider modifying or even moving our meeting place. Driving distance and traffic seem to be the major problem. Others prefer a restaurant setting to a school room.

Any organization needs working officers if it is going to function. Any ideas we have are mute unless we have people to carry the work load. Today there are few people who want to be a treasurer, newsletter editor, or secretary of an organization. Even modern positions

such as “webmaster” lack luster enough to attract long lasting laborers. We all are busy. We all have demands on our time and schedules. Nobody is looking for more work to do, more responsibility, or more obligations.

If there are no individuals with the time and ability to serve as officers within the EEVC then it is feasible to consider a totally “different” club. And, there is nothing wrong with that. When people lose interest in sailing, we see fewer sail boats on the bay. Did the jet ski make sailing obsolete? Sailing is no longer what it used to be. Neither is finding people that really enjoy serving as officers in a club as easy as it used to be. That is why we no longer have elections. Nobody wants to run for any office.

We look forward to continued discussion regarding these issues in the days to come.

NIKOLA MOTOR COMPANY: THE TESLA OF ELECTRIC TRUCKING **Jim Natale and Oliver Perry**



Finally, we are reading about a possible near term reality of hybrid technology being applied in the massive tractor-trailer business. The amount of fuel it takes to drive these mammoth vehicles down the road is enormous, 5.5 mpg per their website. Nikola Motor Company is a premium electric vehicle company. The Nikola One hybrid turbine/battery electric tractor prototype is expected to debut in December 2016. The company has reservations for more than 7,000 of its revolutionary hybrid long-haul truck cabs promising 10 to 15 mpg.

In addition to building the revolutionary new tractor, Nikola plans to build more than 50 CNG (compressed natural gas) stations

nationwide, spaced at around 500 mile intervals. Fully loaded this CNG hybrid, the Nikola One, is expected to average up to 15 miles per gallon and the operating costs will be half that of traditional rigs. The company believes that by ditching the heavy diesel engine its one ton lighter weight would allow it to haul more freight, adding \$1000 per load in revenues.

This prototype is a series hybrid with six in-wheel 800 Volt electric motors that produce 2000 horse power, four times that of a conventional diesel tractor engine. The tractor will have a turbine capable of running on CNG, gasoline, or diesel to charge the batteries capable of putting out 320 kWh.

Nikola is a privately held company, which owns natural gas wells in the U.S. and Canada. It designs, manufactures, and sells electric energy storage systems and EV drive trains. Trevor Milton is the founder and CEO, not a well known name in the business.

Nikola, which is based in Salt Lake City claims \$10.5 million in reservations for 7000 tractors with delivery starting in 2020. Their website is www.nikolamotor.com.

Editor's note: A little research reveals that the tractor uses a turbine engine running on natural gas to run a generator and charge a battery; the 2000 hp is obtained by drawing from the battery and turbine at the same time. The turbine can also run on diesel or other fuels, but would not be emission-free.

JOEL ANSTROM COMMENTS ON THE TOYOTA MIRAI

Editor's note: On the EEVC Chatline Jay Beckerman recently expressed curiosity as to the opinion of Penn State's Joel Anstrom on the Toyota Mirai hydrogen fuel cell car. Here is Joel's response:

EVs enjoy the advantages of an already built out electrical grid. The only infrastructure challenges they face is deployment of public charging stations which are relatively inexpensive and simple.

There are some areas such as on the southern California coast with hydrogen pipelines that allow similar ease of fueling infrastructure deployment. Everywhere else a hydrogen station is a million dollar investment. Hydrogen

purity is also a challenge with liquid hydrogen the only trustworthy source at this time. Unfortunately, LH₂ is \$12-\$24 per kg compared to \$1-\$3 per kg for pipeline gaseous H₂. A kg of H₂ is the energy equivalent of a gallon of gasoline. Bottom line, the fuel cell vehicles are ready but significant research and investment remains to build out a hydrogen fueling infrastructure across the country.

A STRONGER EV MANDATE? By California Pete



From an August 12 piece by the AP's Jonathan Cooper:

“With the extension of California’s landmark climate change law stalled, a legislative plan is emerging to significantly up the ante on California’s commitment to electric vehicles by

requiring that 15 percent of all new automobiles be emission-free within a decade.

Assemblywoman Autumn Burke, D-Los Angeles, told The Associated Press on Friday that she’ll introduce legislation next week to ramp up the pressure on carmakers.

Automakers that fail to sell enough electric vehicles would be required to make payments to rivals that do or pay a fine to the state.

“If we create more competition in the market, that automatically will trigger a more affordable vehicle,’ Burke said in an interview.

“The legislation comes as an effort to extend the state’s landmark climate change law until 2030 falters in the state Assembly and sets up a showdown between powerful environmental advocates and automakers in the frenzied final weeks of California’s legislative session.

“Burke’s proposal would beef up California’s existing vehicle mandates, which require automakers to gradually introduce cleaner vehicle technology.

“Under current law, automakers accumulate credits for selling vehicles with cleaner technology and must hit annual targets. Vehicles with longer range get extra credit.

“Because longer-range technology has advanced faster than expected, environmental advocates say, automakers have stockpiled credits for future use and won’t have suffi-

cient incentive to sell electric vehicles at affordable prices, preventing the state from meeting its goals for greenhouse-gas reduction.

“‘The current credit program just does not appear to be working,’ said Kish Rajan, a spokesman for CalInnovates, an industry group for the technology sector, and a former Brown appointee. “At least it’s not working fast enough to get toward the goals that the governor has laid out and that CARB is seeking to enforce,’ he said, referring to the California Air Resources Board.

“Vehicles that now get credits toward complying with the environmental mandates, such as plug-in hybrids, would not be eligible to meet the 15-percent mandate.

“Electric and plug-in hybrid vehicles now account for about three percent of California new-car sales, according to the Air Resources Board, which administers California’s climate laws.

“Wade Newton, a spokesman for the Alliance of Automobile Manufacturers, characterized the legislation as a giveaway to Tesla Motors, which was the largest seller of electric vehicles in the United States last year. The Palo Alto, California-based company, which has never made a full-year profit, wants to grow from a niche maker of luxury vehicles to a full-line producer of affordable vehicles.

“‘Automakers are striving to meet California’s long-term (zero-emission vehicle) program by providing consumers with innovative vehicles, so we oppose this last-minute, fundamental change to the program,’ Newton said in an email. “Tesla shouldn’t be able to rig the market for their own purposes.’

“Tesla did not respond to a request for comment Friday.

“Another industry group, Global Automakers, which represents 12 foreign brands, said lawmakers should focus on shoring up incentives — including tax credits and access to restricted highway lanes — to spur consumer demand. Sales of zero-emission vehicles are lagging in part due to low gas prices and improved efficiency of gasoline engines.”

“‘The proposal would cut consumers out of the equation,’ Damon Shelby Porter, director of state government affairs for Global

Automakers, wrote in a letter to lawmakers.

“Democratic Gov. Jerry Brown issued an executive order in 2012 calling for 1.5 million zero-emission vehicles on the road by 2025; 192,000 have been sold since 2010, according to the air board.

“Brown supports Burke’s proposal, spokesman Gareth Lacy said in an email.

“It ‘will lead to more zero emissions vehicles and more Californians able to purchase them — and that’s a smart investment in cleaner air,’ he wrote.

“Brown has traveled the world promoting California’s ambitious agenda to fight climate-changing emissions. But he has struggled to advance legislation to continue the programs for another decade and set more stringent goals.

“Moderate Democrats in the state Assembly, some backed by the oil industry and hailing from less-affluent inland districts, have been reluctant to bless the most strident emission standards for fear of raising energy prices. The coalition of lawmakers blocked previous Brown-endorsed legislation that aimed to cut petroleum use in half by 2030.

“Burke said she believes her electric vehicle legislation is more likely to succeed in the Assembly than the overall climate package because it would encourage the sale of lower-priced electric vehicles that would be available to larger swaths of the middle class.”

What goes up...

San Francisco, like much of the Bay Area, has experienced a building boom for several years now, with most construction being either office space or luxury housing. But one recently-completed building is showing the drawbacks to building things as fast as you can (despite the fact that building *anything* in San Francisco faces multi-year delays from both local residents who resist any change at all and a laundry list of advocacy groups that insist on rigorous environmental impact studies (which are often demanded by businesses seeking to impede competition).

A case in point is the Millennium Tower, “a leading symbol of San Francisco’s new high-rise and high-end living,” according to a piece by *San Francisco Chronicle* columnists Phil Matier and Andrew Ross. The building, says the column, which is “[r]ated by *Worth*

magazine as one of the top 10 residential buildings in the world ... [and] is home to such A-listers as Joe Montana and [SF Giants player] Hunter Pence,” has a problem. It’s sinking — by 16 inches so far. The 58-story tower has also tilted about 2 inches since it was completed 2008 at a cost of \$50 million. As it turns out, the thing was built on landfill (essentially mud), and rather than supporting it on pilings that would have had to go 200 feet down to reach bedrock, the builders decided to drive the piles down just 80 feet, into what is described as dense sand. Which is the same technique, says the builder, that was used for many notable building in the city. But they’re not sinking.

What was the old saying about building a house on sand? And in earthquake country?

Leaving your heart here

Philadelphia has a statue of the fictional prizefighter Rocky, and now San Francisco will finally have an 8-foot statue of Tony Bennett, due to be unveiled on August 19, outside of the Fairmount Hotel, where he made his local debut in 1954. Tony gets the first view of the completed work before the unveiling. One hopes it wins his heart.

THE RETURN OF THE CORBIN SPARROW?



Remember the Corbin Sparrow? This was a single-seat, three-wheeled EV made from 1999 to about 2003. Production stopped at fewer than 300 vehicles with the bankruptcy of Corbin Motors.

An upgraded version of the Sparrow called the MM NmG is now manufactured by Myers Motors, although the company’s Web

site (www.myersmotors.com) gives the impression that they're built only to order.

But there's another company building a redesigned Sparrow: Vancouver, BC-based Electra Meccanica, which plans to produce a vehicle called the Solo, with first production in September of this year. The vehicle looks like a cross between a Sparrow and an early Honda Insight.



There is some confusion as to what company owns what rights (as shown by a year-ago article in *Inside EVs* by Ted Dillard, <http://insideevs.com/corbin-sparrow-lives-three-wheeled-electric-car/>), and this may all come to naught, but it will be fun to watch.

Corbin motorcycle

Mike Corbin is still around, building (among other things) what Ken Barbour says are really comfortable seats for motorcycles. A June 25 article by Ted Dillard (<https://evmc2.wordpress.com/2016/06/25/made-it-the-corbinmacarthur-bike-sees-the-summit-of-mt-washington-40-years-later/>) describes the author's ride up Mount Washington on a 1974 Corbin XLP-1 motorcycle.

Toyota sponsors classroom program on fuel cells and EVs

Toyota is partnering with Horizon Educational Group to bring the Hydrogen Horizon Automotive Challenge to 20 California schools in Los Angeles and Orange Counties.

The Hydrogen Horizon Automotive Challenge is a semester-long, afterschool program focused on alternative fuels and climate change. During the unique, hands-on program, teams of high school students have the opportunity to build their own fuel cell remote con-

trol vehicles and learn first-hand about the future of fuel cell technology. The program kicks off today with a teacher training event at Toyota's offices in Torrance, California and will cross the finish line when student teams race their fuel cells vehicles in March 2017.

"The Hydrogen Horizon Automotive Challenge provides an opportunity to introduce the next generation of innovators to fuel cell technology," said Doug Coleman, Toyota national vehicle marketing manager. "We hope this challenge encourages students to join Toyota in the effort to create a more eco-conscious and sustainable future."

The customized, interactive STEM curriculum is rooted in the design principles of the Toyota Mirai, including exploring challenges and solutions Mirai engineers experienced during vehicle development, with a focus on renewable energy technology. In addition to support from Toyota fuel cell engineers, the students will be coached by trailblazing Mirai owners and work with members of a Toyota NASCAR Pit Crew for their final race.

NEWS UPDATE

Some thoughts as solar plane completes circumnavigation of the earth



The Solar Impulse 2 electric airplane completed its historic round-the-world flight on July 26 after completing the 17th and final leg of its trip, which covered more than 25,000 miles and took more than a year.

While it's an inspiring accomplishment, one wonders about its significance. Granted it's an inspiring story of human persistence, and an indication of what modern technology can accomplish, but what has it actually done? It is unlikely that future aircraft will be solar powered, and the project wasn't big enough to lead to any fundamental breakthroughs in technology.

One might wonder, however, about the world's fourth-largest producer of petroleum sponsoring a highly-public demonstration of a vehicle that uses no fossil fuel; an AP article

entitled “Solar plane’s arrival highlights Arab nation’s clean-energy push” brings up the same question, and points out that the UAE is looking ahead and diversifying its domestic energy mix, with increasing emphasis on solar — a resource they have in abundance.

Yet despite their efforts to wean themselves from fossil fuels domestically, this does not alter the fact that oil is the reason many such countries exist. They have no natural resources other than oil and sand, so when the oil is gone, what will they do? It has been pointed out that Japan’s natural resources are rocks and salt water, yet the country built itself into an industrial powerhouse. Yet Japan has had a history of adopting industry (and of working hard). One wonders about the oil countries, which have no history of industrialization and have been keeping their people pacified for generations with money from oil, importing foreigners to do the actual work.

Is storage the answer?

One area in which the Solar Impulse has helped push the of the art is in high energy batteries. An August 10 article in *The Daily Telegraph* by Ambrose Evans-Pritchard makes the point that advances in battery technology may well spell the end of not only conventional fossil fuel power plants but nuclear plants as well. “The US Energy Department is funding 75 projects developing electricity storage, mobilizing teams of scientists at Harvard, MIT, Stanford, and the elite Lawrence Livermore and Oak Ridge labs in a bid for what it calls the ‘Holy Grail’ of energy policy.” Technologies under study include “hydrogen bromide, or zinc-air batteries, or storage in molten glass, or next-generation flywheels.” The article quotes Ernest Moniz, “the US Energy Secretary and himself a nuclear physicist. He is now confident that the US grid and power system will be completely ‘decarbonised’ by the middle of the century.” The original article is at www.telegraph.co.uk/business/2016/08/10/holy-grail-of-energy-policy-in-sight-as-battery-technology-smash/, and one illustration shows a Harvard researcher working on organic flow batteries who looks remarkably like EEVC President Oliver Perry

COMING EVENTS

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

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

SAE 2016 North American International Powertrain Conference

Sept 21-23, Chicago. Go to www.sae.org/events/naipc/

SAE 2016 New Energy Vehicle Forum

Sept 21-22, Shanghai. Go to www.sae.org/events/nev

Paris Motor Show

Oct 1-16, Paris. Go to <http://www.nextgreen-car.com/event/6929/paris-motor-show/>

SAE 2016 Range Extenders for Electric Vehicles Symposium

Nov 2-3, Knoxville, TN. Go to www.sae.org/events/rex/

IEEE – ESARS ITEC 2016

Nov 2-4, Toulouse, France. Go to [stx wtx, www.esars-itec.org/](http://stx.wtx.www.esars-itec.org/)

SAE 2016 Vehicle Electrification and Connected Vehicle Technology Forum

Nov 30-Dec 1, Shanghai. Go to www.sae.org/events/vept/

SAE 2017 Hybrid and Electric Vehicle Technologies Symposium

Feb 7-9, 2017, San Diego-Mission Valley, CA.

NOTICE ON DUES

Annual dues are \$20 with electronic delivery of the Newsletter, or \$25 for a printed copy. Make checks payable to EEVC and mail to James Natale, 3307 Concord Dr, Cinnaminson NJ, 08077, or pay via PayPal to www.paypal.me/EEVC.

MEETING SCHEDULE

Meetings are held in Room 49, Plymouth-Whitmarsh High School, 201 East Germantown Pike in Plymouth Meeting, PA, and begin at 7:00 p.m.

September 14

October 12

November 9

December 14