

**Fox Valley Electric Auto Association
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Wheaton, IL 60187-0214**

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November 2010 FVEAA Newsletter

The FVEAA is a Not-For-Profit Illinois Corporation and the Chicago Area Chapter of The Electric Auto Association

Next Meeting

**Friday, November 19th, 2010 - 7:00PM (doors open at 6:30PM) at
Packer Engineering, 1976 N Washington St, Naperville, IL 60563**

Packer Engineering is the on East side of Washington St, just North of the I-88 Tollway (North of Diehl, South of Warrenville Rd). Turn off of Washington onto Bighorn at the Packer Engineering sign, then take the first right into Packer Engineering and then an immediate left. Park in the lot between the buildings. 1976 is the new building up the hill. Enter the building in the middle of the North side.

Agenda

- Call To Order
- Old Business
- Committee Reports
- New Business
- Intermission: Refreshments, Networking and EV Viewing.
- Program: Michael Duoba of Argonne Laboratories. He'll be describing the Progressive Insurance Automotive X PRIZE cars, and also reviewing an international electric car exhibition he just attended in China.

President's Words

Rich Carroll

"Things, they are a changin'" - Bob Dylan

J1772 connectors

You can now find J1772 inlets and adapters at several major EV suppliers. I have been purchasing J1772 inlets from CurrentEVTech, and have them on order from ITT (a major manufacturer). Several charger manufacturers have announced adapters to work with their

chargers; some have determined that meeting the J1772 standard is more difficult than they imagined.

There are several adapters on the market. These have a J1772 inlet and a NEMA 14-50 outlet in one box. Plug your charger into the NEMA outlet, and insert the J-1772 plug into the other port and you have a connection. These come in boxes with both connections on one side, or in boxes with the connections on opposite sides. I should have samples at the meeting.

Two months ago, only a couple of charging stations existed in the Chicago area on the Coulomb map. Looking at only the Coulomb map, I can see more than two dozen J1772 charging stations in the downtown Chicago area. More charging stations from other installers will appear, and the CEVC project should be starting to produce results in the next few months.

Pioneer purchased an early production inlet from CurrentEVTech and I had initially installed it in my truck, but had not wired it up. Todd Dore asked if he could test it, to see if it would work with his Rudman charger in his E-Bug. I pulled the inlet from my truck, and gave it to Todd, along with the resistors and diodes suggested for use. It did not work for Todd, failing to fool the Charging station (Coulomb) into starting a charge.

Since then, both Dave Kerzel (at Modular EV Power) and CurrentEVTech offer commercial adapters that accept a NEMA 14-50 plug (what some chargers, including Rudman, are shipped with) and a J1772 plug, mating the two into a connection. I ordered one of each, and Todd tested the Dave Kerzel connector, and reports it works well with the Coulomb unit. Such adapters are now here to stay, and working inlets will be here soon for current EV's.



The first two images are the adapter from Dave Kerzel, and this is the one that Todd found works for his E-Bug. He added a NEMA 14-50 back to his Rudman charger, and used the connector. This connector is wired internally with 8GA THHN wires, and is suitable for 40A or less. These two smaller pictures are the pictures of the Current EV Tech adapter; we expect it to work as well as the Kerzel unit. Todd can be our guinea pig, he parks regularly downtown and can use the Coulomb units. The CurrentEVTech adapters (smaller pictures) are rated up to 50A

Both the Kerzel and the Current EV Tech units are available in small numbers right now, and will be in larger production within weeks.

If you are interested in pricing, the Current EV Tech units are:

- Top mount: \$225 (plus shipping) <http://currentevtech.com/Cables-and-Connectors/SAE-J1772-Connector/SAE-J1772-to-NEMA-1450-Adapter-Top-Mount-p179.html>
- Compact: \$225 (plus shipping) <http://currentevtech.com/Cables-and-Connectors/SAE-J1772-Connector/SAE-J1772-to-NEMA-1450-Adapter-Compact-p178.html>

and the Kerzel units are \$275 (plus shipping) on ebay, <http://cgi.ebay.com/ws/ eBayISAPI.dll?ViewItem&item=260685914129&ssPageName=ADME:L:OU:US:1123> or \$265 (plus shipping with PayPal) or \$255 (plus shipping with a check) <http://modularevpower.com/Sales.htm>

If you want to do them yourself, the J1772 inlet is about \$125 (plus shipping) (<http://currentevtech.com/Cables-and-Connectors/SAE-J1772-Connector/SAE-J1772-Socket-p164.html>) and add a NEMA 14-50 receptacle (about \$30) and an enclosure and a couple of resistors and a diode. I don't yet have a price on the ITT brand J1772 inlet, but it does promise to be \$20-\$30 cheaper than the CurrentEVTech unit, although the CurrentEVTech inlet is rated for 70 amps, and the ITT inlet is rated for 32 or 40 amps.

You should note that none of the above solutions do any amperage checking. You could easily connect a Rudman 50A draw charger to a J1772 rated for only 32A, which is a VERY BAD IDEA. Regardless of what the breaker is set for on the charging station you are overloading the connections. I believe that those of us with 30A chargers and below are probably OK in connecting to the J1772 charging station, but those with more powerful chargers SHOULD NOT use any piece that is not rated high enough for your current draw.

Revision: At press time, Todd Dore has been borrowing my J1772 adapter (the one from Dave Kerzel) and has found that it has worked well all week, allowing him to plug his electric VW Bug into the J1772 connectors on Coulomb charging stations. Ask Todd at the meeting about how well this works!

Rapid DC Charging

Just as we are starting to see commercially available inlets for the J1772 connectors from multiple sources, the next level in charging has begun to appear. Brian Levin sent me a brochure for the new Coulomb DC Fast Charging stations. This greatly augments the J1772 charging stations that numerous companies have been installing in the last few weeks. The new Coulomb Fast Charge Station (made by Aker-Wade) is capable of 50 kW of charge, giving an output of as much as 125A at 400 V DC. This direct DC charge station will fill a Nissan Leaf (24 kWh pack) from 20% State of Charge to 80% SOC in under 30 minutes.

Networked the same as the other Coulomb charging stations, these will appear if you look for nearby charge points on the Web or your Smartphone. These come in both single and twin units, and are available now. They use the CHAdeMO protocol (sometimes spelled CHAdeMO) quick charging method, which will be standard on the Nissan Leaf and the Mitsubishi iMiEV.

Curiously, this will require a different thinking for charging stations. No longer will an EV be connected to a charge point for a lengthy time; with this system, vehicles will have to be moved to and from the charging station more frequently, necessitating more planning.

While J1772 inlets are available for hobbyist and converted vehicles, the only cars and trucks to use the CHAdeMO connection will be the factory equipped cars for now. Do I expect this to change? No, not in the short run. The technical hurdle for the converter to adapt a J1772 plug is not high, most do-it-yourselfers are capable of this. The CHAdeMO protocol is substantially different:

- The connector is unique
- The system does not connect AC power, it connects DC.
- The system does not use an on-vehicle charger, it simply shunts current to the batteries.
- The battery system in the vehicle (actually the battery chemistry) must have a high enough C rating to allow quick charging. A system with 100 AH Thundersky LiFeYPO4 batteries can only accept 300 Amps at pack voltage. (Thundersky batteries carry a 3C rating) We converted a car last year with 40 Thundersky 100 AH batteries. (128V nominal) This car could take 38.4 kW even though the Charge Station is rated for 25% more.

Many factors come into play, including size of wiring, battery chemistry, and connectors. All must be considered when establishing a charge rate for fast charging.

Tax Credits for Charging Equipment

These tax credits are available through 2010, and are for the purchase and installation of electric car charging stations. The federal form 8911 will allow people who install alternative fuel refueling stations (including charging stations for electric vehicles) to receive up to 50% of their expenditures as a tax credit. The federal government has not yet printed the 2010 form, but you may use the form 8911 from 2009 and change the year . [Here is a form that can be filed out online, and printed from the IRS site.](#)

Electric Vehicles

In the past month, I have driven the Nissan Leaf, and been invited to drive the new Ford Focus Electric and the Chevy Volt. These and several others will be here soon. Members of the FVEAA were early adopters of the Electric Vehicle market, and kind of proud to say they were around during the developmental years. But as much as we have a history in EV's, we have a duty to welcome in the new EV folks, who share the same concern for minimal maintenance, the same concern for charging places, and similar concerns about new legislation.

Meeting Speakers

The speaker for November 16th will be FVEAA member Michael Duoba of Argonne Laboratories. He'll be describing the Progressive Insurance Automotive X PRIZE cars that were run through their paces at Argonne laboratories for final dynamometer testing in August. See your July Popular Mechanics Magazine for a full article, as one of the XPrize cars he tested is on the front cover, or check out the story at <http://techcrunch.com/2010/09/16/automotive-x-prize-winners-share-10-million-for-100mpg-car-designs/>

The Progressive Insurance Automotive X PRIZE contest was an event that awarded \$10 Million to be split by the top three winners who built and ran their unique commercially viable vehicles through a grueling series of tests, and were able to get over 100 miles per gallon of gasoline. Propulsion was provided by internal combustion, or hybrid electric systems. Having just returned on November 9th, Mike will also provide us with a review of what he found at an international electric car exhibition he just attended in China.





Financial Assistance Committee

George Vergara

The committee has been actively trying to focus its efforts. From a long list of possible projects, these look like the ones that have the most promising future.

1. Providing an educational program
2. Selling acquired FVEAA information
3. Providing compensation for showing of electric vehicles.

George has promised (and done so in the past) to keep us posted.

Meeting Minutes - October 2010

Bruce Jones

October 15, 2010 FVEAA Meeting Notes by Bruce Jones

Fox Valley Electric Auto Association Members at the Oct. 15th Meeting



**President
Rich
Carroll**



OPENING

President Rich Carroll called the meeting to order at 7:00 p.m. and welcomed the new visitors.

After first time visitors introduced themselves Rich opened with announcements and a request for someone to help publish the monthly newsletter. Keith Baubkus stepped forward and volunteered to be newsletter editor. Way to go Keith!!

Next a discussion began on J-1772 connectors, their availability, special circuitry and costs. The parts are available now, are UL listed based on manufacturer, and rated 30 to 75 amps, 110 or 220 volts depending on supplier. Other topics included car charging stations such as Clipper Creek, Leviton, GE and their associated costs.

Rich displayed a small electronic circuit, telling everyone it was a very common circuit, and asking if anyone could identify it. Many guesses were made, but no one recognized the innards of a GFI outlet.

OLD BUSINESS - None
NEW BUSINESS - None

COMMITTEE REPORTS

Committee reports were provided by George Vergara Director of Financial Assistance who is making headway on gathering ideas for money raising opportunities.

UGANDA

Bruce Jones then gave a short presentation on his recent renewable energy /missions trip to Uganda. The ten day trip included meetings with the head of renewable energy at Makerere University, and other business leaders involved in green technologies, and promoting women-owned sustainable businesses.

Break

Several electric cars were on display at the break and the raffle netted about \$80.

GEORGE HAMSTRA - HOW THE ELECTRIC CAR INDUSTRY PARALLELS THE HISTORY OF THE PC

NetGain Motors, Inc. President George Hamstra and FVEAA Secretary Bruce Jones



George Hamstra, President of Netgain Motors, Inc. provided a detailed and insightful presentation on how the amazing growth of the Personal Computer bears a striking resemblance to the current (no pun intended) electric car industry. George delved into the history of the PC and reminded us that those who cannot remember the past are condemned to repeat it. Basically history may be repeating itself right now as we look closely and see events unfolding in the nascent electric car marketplace.

The presentation highlighted major innovations in PC technology for each of the early years in the 1970s through the 1990's. Then George showed uncanny parallels between the history of the PC and the current electric car industry. Controllers, batteries, DC motors versus AC motors, battery chargers, management systems and electric cars are all making great strides in technology, cost and capability, with more innovations to come. The point is, whoever controls the car charging infrastructure controls the electric vehicle market and electric cars are the next great emerging market. We all thank George for the wonderful presentation.

For more information on George's company NetGain, and Warp electric motors see www.Go-ev.com.

For Sale: 1981 Ford Escort EV

Ted Sanders

Only 19,600 miles on conversion. No rust. Original yellow with added lightning flashes. Converted immediately after purchase in 1981. Has always been housed. Longest drive between charges is 40 miles. My normal driving is trips of 5 to 30 miles. Street legal, 65 + MPH; 120 volt battery pack, Asking \$10,000

Contact Ted Sanders
847-625-0745
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Gurnee, IL

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Ted Lowe

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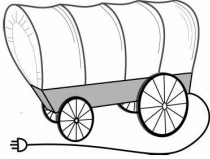
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