Electric Auto Association

CURRENT EVENTS

August-September'99 Promoting the use of electric vehicles since 1967 Vol. 31 No. 8&9

MAJOR EV POLITICAL VICTORY AB 71 PASSES INTO CALIFORNIA LAW

In a day and age when CARB has backed down on it's California mandates and Honda wants to move to gas powered hybrids victories seem far and few between. But by any measurement public law AB 71 represents a major political victory for the EV movement. Called by some the diamond lane law, AB 71 will allow electrics and ULEVs the right to run in the diamond lanes of California with only one passenger. Many predict that AB 71 will provide the critical additional incentive for new car buyers and users to go electric. Anyone who commutes at rush hour on our urban freeway system understands the power behind AB 71. In the view of many people now, the key to promoting EVs in California is in the use of AB 71 in marketing.

Seven Year Incentive

This incentive will be available from July 1, 2000 through 2007. The California Highway Patrol will develop distinctive decals or labels so the vehicles can be identified by law enforcement and the motoring public. EV owners and prospective owners that wish to take advantage of this incentive will apply to the DMV who will issue the decals.

Side Effects

Overlooked by most people are the possible adverse effects on the fledgeling CycleCar industry. Vehicles such as the Corbin Sparrow looked as if they had the potential to hold a monopoly on single passenger, fully enclosed, diamond lane commute vehicles. Now with AB 71 the type and weight of vehicles possible is wide open. The new diamond lane law will also put a premium on performance. Diamond lanes are high speed lanes, any electrics designed for them must have good acceleration and the ability to sustain freeway cruse for many miles. This performance criteria will leave out many older home built conversions, it will also put a premium on aerodynamic design.

New Goals

All said and done, this is our chance to make a great advancement in our movement. As it's always been, our job is to demonstrate in practice that EVs work in the real world. Now the high speed electric is to become our new focus. Every time we race past frustrated commuters, parked in their gas cars at rush hour, we send a message that no amount of advertising can buy, that EVs are the way to GO!

Continued on page 14

In This Issue

CALL FOR BOARD MEMBER NOMINATIONS

It's election time again and the EAA is looking for volunteers to serve on it's board of directors. If you think you would enjoy working on the board why not be placed on the EAA national ballot ? Nominations should be sent to:

Scott Cornell
EAA Election Committee
P.O. Box 6661
Concord, CA 94524

or E-mail:

Scott Cornell at
spcorn@pacbell.net
- or -
ebeaa@juno.com

PHOTO CREDIT - COVER

A Corbin Sparrow, ready to compete for the diamond lane.

Editor
Clare Bell
E-mail: CE96ed@aol.com
Tele: (510) 864-9293 Fax: (510) 864-9293
2701 Monarch Street, Hanger 20, Suite 136
Alameda, California 94501

News In Brief
Ruth Shipley

CE Reporters/Contributors
Kurt Bohan, Lee Hemstreet, Bruce Parmenter,
Terry Wilson, John Mattingly

Photo credits:
Kurt Bohan, Bruce Parmenter,
Terry Wilson

Calendar of Events
Anna Cornell

Advertising Manager
Roy Kaylor
E-mail: Kaylor@access1.net
Tele: (831) 338-2200 Fax: (510) 864-9293
1918 Menalto Ave.
Menlo Park, CA 94025

Production/Publishing
Graphic Design/Schedule Editor
Kurt Bohan
E-mail: eaanews@aol.com
Tele: (510) 814-1864 or (510) 864-9293
Fax: (510) 864-9293
EAA News,
2701 Monarch Street, Hangar 20, Suite 136
Alameda, California 94501

Article Submissions
The deadline for articles is the 25th of each month for the next issue of CE. Articles received after this date will be retained for future issues of CE. Contact the editor for more information.

Advertisements
A full advertisers information package and Rate Sheet can be sent by U.S. Mail, Fax or E-mail. Please contact advertising manager or CE staff for details.

National EAA
www.eaaev.org
Tony Cygan tonyc@144volts.com

Membership/Address Changes
Electric Auto Association
P.O. Box 6661, Concord, CA 94524

Letters to the Editor

Dear Editor:

It is sometimes suggested that gasoline fuel cells will permit us to move to fuel cells more quickly than methanol fuel cells, and that it is a good vehicle for the transition while building the hydrogen or methanol infrastructure required. What do you say to this argument? It is also suggested that there will be less carbon dioxide per mile because of an efficiency greater than that of the internal combustion engine. Finally, it is suggested that the sulphur and nitrous oxides and particulate matter pollution would be much less with gasoline fuel cells than with the internal combustion engine and a swifter transition available through the gasoline fuel cell would have a beneficial effect on the environment and would be better than waiting for the hydrogen or methanol infrastructure which must be created. I would greatly appreciate your responses to those contentions.

Wallace Edward Brand
webrand@brandlaw.dgsys.com (Wallace Edward Brand)

Dear Wallace:

In all ways the gasoline fuel cell is better than the IC engine and the benefits you state are to a large extent quite true. What you must ask yourself is what we might be buying into if we take this route? The best technology is not always the winning technology (Beta vrs VHS). What starts out interim technology can become long term technology once profits start flowing back from it. If we retain gasoline as our primary auto fuel we will only be encouraging the continued use of older piston IC based technology. If we replace one of the fuel choices presently available at your corner gas station with a fuel cell dedicated pump, it would greatly accelerate the decommissioning of explosion based propulsion technology. Keep in mind that gasoline reformer is not as mature a technology as the methanol reformer. For the company that is looking for a sure technical bet to put on the road today, methanol fuel cells are the technology of choice. As far as the problem of setting up a methanol infrastructure, many major players in the field today do not see this as the biggest problem. However things work out, gasoline fuel cell technology will have no chance at all until we see cost effective working prototypes on the streets in fair numbers. Up until this time, this has not been the case. - **KB**

Dear Editor:

The DMV is currently working on a project to remove 40-60 Neighborhood Electric Vehicles from operation on Oregon highways. The registrations are being cancelled because "there is no classification in the vehicle code for registration of these types of vehicles".

DMV contact:
Debbie Clark (503) 945-5243

Richard D. Barnes
19100 SW Vista St.
Aloha, OR 97006
rfbames@mindspring.com
503-642-3659

Dear Editor:

Thank you for all the hard work on the newsletter which has evolved into a fine magazine. The Industry News for example is excellent information.

In the March issue, the "call for letters to the editor" on page 13 caught my eye. Well, here are some comments:

On page 1, the APS rep is quoted as saying how important it is to share technical information. This benifits the cause and works well in a world based on existing knowledge. Unfortunately, the "free information" view tends to de-value the act of creating original technical information. That may be ok if all inventions occur accidentally, but it tends to discourage individuals from investing their life in creative endeavors.

Also on page 1, An Arizona legislator is quoted as comparing EV progress to the calculator, computer, VCR, etc. I find this amusing, because none of these fast-growing product lines had to compete directly against pre-existing products which super-ficially seemed the same to the typical consumer. Selling EV's to a public accustomed to 300 miles between 5-minute fillups is a far greater challenge than convincing everyone to play movies with the TV instead of a film projector. "More power" to those who are taking on the tougher task!

The same article's continuation on page 10 includes an update on fuel cell progress. It states, "Methanol of course does not rely on foreign oil." Please solicit an article from someone who can explain where methanol comes from, and specifically what the energy source is. If U.S. methanol production had to expand to a hundred million gallons a day, how would it all work?

The article about pollution from the power plants that charge electric cars was a breath of fresh air. It's encouraging that EV owners can now choose to buy combustion-free electricity. Unfortunately, the easy sources are limited in total quantity. For example, if everyone wanted to buy large hydro, where would the new dams be built? Currently, the practical solar limit is daytime charging in good weather. Perhaps the market will ultimately demand 100% solar at vastly higher prices. This can't work locally, but the sun always shines somewhere. Will it then be feasible to build and maintain a global superconducting grid?

John Whitehead
Davis, CA
jcw@dcn.davis.ca.us

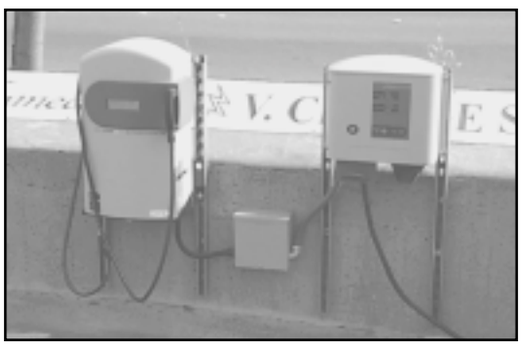
Bank of Alameda unveils new EV charging station Leaves out standard outlets

By Bruce "EVangel" Parmenter

This morning (Sept. 1st), I attended the opening ceremonies and ribbon cutting for the bank of Alameda's new EV charging site, located on 2130 Otis Drive in Alameda. This site is the first of 26 sites that are to be partially funded by the Bay Area Air Quality Management Districts Charge program. The Charge program has made available a total of $350,000.00 grant funding to help establish the next 26 sites in the Bay Area.

Unfortunately the charging infrastructure installed left out standard outlets, eliminating over 90% of the vehicles that might want to use it. This mistake was made despite the fact that both the Alameda Board of Electricity and CalStart consulted on the project. Installed was one Magnecharge and one EVI ICS-200. Anyone with a need for a standard outlet will need to go elsewhere. At least this installation is better than the Larkspur site which only has Inductive chargers. Of the two connectors installed the AVCON connector will get the most use because the Bank of Alameda leases a RAV 4. For the opening, GM had to bring in an EV1 because there are no GM electrics on the Island. Why no standard connectors? You can understand this better by looking at the funding sources: $3,000.00 - from General Motors, $500.00 - From Ford, $500.00 - from Honda, $500.00 - from Toyota, $5000.00 - from the Charge program, $4,500.00 - from the Bank of Alameda. For an additional investment of about $750.00 ten times the number of vehicles could have used this infrastructure by adding a stan-dard outlet!

Kurt Bohan, EAA Publisher, and I discussed with David Burch of the Bay Area Air Quality Management District the fact that these chargers are not usable by EV conversions. He admitted that he was not as informed as he would like to be of EV chargers. The chargers he was offered were basically off the shelf from Edison EV. David liked the idea of an ICS-200 model that would also have a 14-50 and a 5-20 built-in (like a combination MCS-100 & ICS-200 unit). Thus, this modified EVI unit would be used by EV conversions long after the "EV charger wars" are over, and save money for the businesses buying them (one box does 'conductively' much more). EV conversions will still be on the streets for some time. All they ask for, is a simple outlet to keep the EV parking spots used, bring public visibility to the public's use of EVs, and more business to the merchants that install EV charging.



The charge stations at the Bank of Alameda, plenty of room for standard outlets.

Since the auto manufacturers are now, not providing the same level of support for the conductive EVI units, their opinions have less influence. Consumer feedback will educate EV charger purchasers of what type of conductive chargers are 'really' needed' (units with standard 5-20 & 14-50 outlets, with the AVCON). I encourage California EV drivers to express your desire for this combination conductive EVI unit directly to BAAQMD & EVII:

David Burch bburch@baaqmd.gov
David Packard dpackard@evii.com

Bruce "EVangel" Parmenter
BruceDP@iname.com
http://members.aol.com/brucedp/
Electric Vehicle List Editor:
http://crest.org/ev-list-archive/

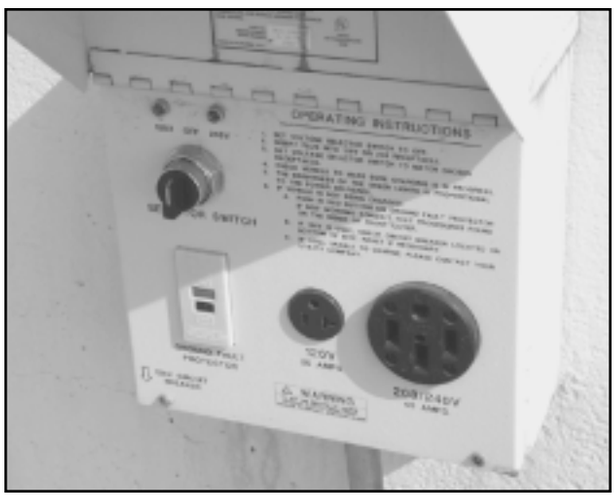
Conductive charging
How it should be used and how it works

Combined EVI MCS-200 & ICS-100 model needed to maximize charger usage

By Bruce "EVangel" Parmenter

Long before the AVCON, EV conversions have been using conductive charging by plugging their EVs in at night to a standard 120 VAC 20 amp outlet. By electrician nomenclature, this outlet is know as a nema 5-20 receptacle. This readily available almost everywhere in the USA. Later, it was also found that a 220 VAC charger would give faster and better charge. By electrician nomenclature, this outlet is known as a nema 14-50 receptacle. This is commonly used by Recreational Vehicles (RVs) in the public or can be found at home as a electric range outlet.

When the "Electric Vehicle' push occurred when CARB had it's mandate to put a percentage of EVs on the road, a convention of involved industries was formed. These industries included the automakers, utilities, EPRI and more. The convention did not include the very people that drive EVs daily, and they were not invited or heard. These industries satisfied their own global market perspective, the charging types implemented were of two camps: inductive (GM's design, high technology, expensive and unavailable to anyone who isn't a automaker that has paid for the right to use their design) using the Magnacharger, and conductive (Ford and Honda) using the AVCON connector.



This is how simple an EVI unit can come boxed. This one is mounted behind Hangar 20.

Both of these inductive and conductive chargers use a hard wired 220 VAC 40 amp circuit to power their chargers. This is the same power used by the EV conversions having a 220 VAC charger but not accessible to them because it is hard wired = no 14-50 outlet. This is level 2 charging. Both charging types allow for a 120 VAC adapter plugged into a 5-20 outlet, called an emergency / overnight charger. This is the same commonly found outlet the public is familiar with, and is also used by EV conversions. This is level 1 charging.

Both CalStart and Alameda Power and Telecom have this EVI unit, but the Bank of Alameda was left out.

EVI's Micky Orros is the only conductive charger company representative to 'take on' the big automakers. Their ICS-100 unit is safe and affordable for public EV charger installations. EVI should recognized for their efforts to bring 'common sense' to EV charging. Major funding from GM to install their proprietary inductive MagnaCharger continues today. The combined funding from Honda and Ford has now been reduced to just Ford, since Honda has stopped production of the Honda EV plus. Ford is alone in it's efforts to promote the AVCON connector they use. Neither of these EV charger technologies, allow use by the EV conversions already 'in place and in daily use'.

While it is hope of all EV drivers that the major automakers do produce production EVs, it is clear the direction their

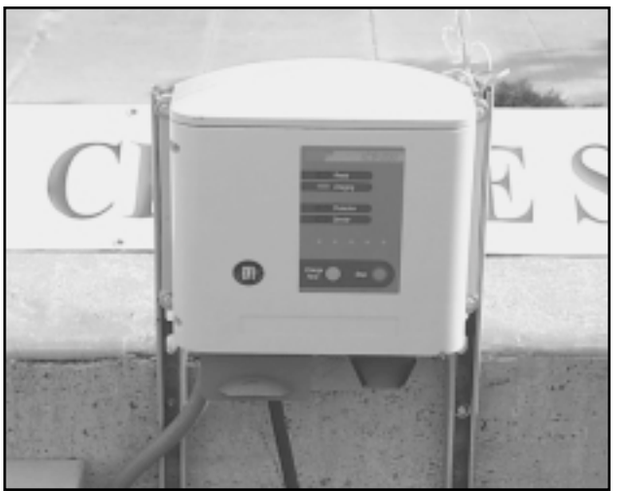
manufacturing is going is different than what had been publicly stated to appease CARB. The major automaker's credibility has once again, waned. Currently the major automaker energies are focused on Electric enhanced gasoline vehicles (hybrids or HEVs). These are technologies that the automakers are more familiar and comfortable with. They do this with the brevity of what is in 'fashion' for the moment. The EV conversions are here, and will continue to be 'on the road'. They should be included in using the public EV charging stations.
The installation of the EV chargers at the Bank of Alameda is a good example of uninformed buyers (BAAQMD) with good intentions being manipulated by the major automakers who don't drive EVs daily.

(ref: http://www.crest.org/ev-list-archive/msg14668.html inductive 1, avcon 1, outlet 0 : Bank of Alameda EV chargers)

BAAQMD's goal is to have more EVs on the road, reducing the pollution of the air, water, land, etc. Installing public chargers is an 'Excellent Way' to achieve that goal. But the chargers that were installed at Bank of Alameda were:

♦ one inductive magnacharger (GM)
♦ one EVI ICS-200 (Ford Ranger / Honda EV plus - only)

The numbers of production EVs by the major automakers available to public are minor. The expenditure of money for these types of chargers that only affect a small number of ex-isting production EVs on the road, and leaves the majority of EVs (EV conversions) without access to power, does not make good business sense. EV conversions can not use the chargers that were installed, they need standard 14-50 & 5-20 outlets. Why put a charger in if it does not get used?



This EVI system could easily have standard outlets added to it.

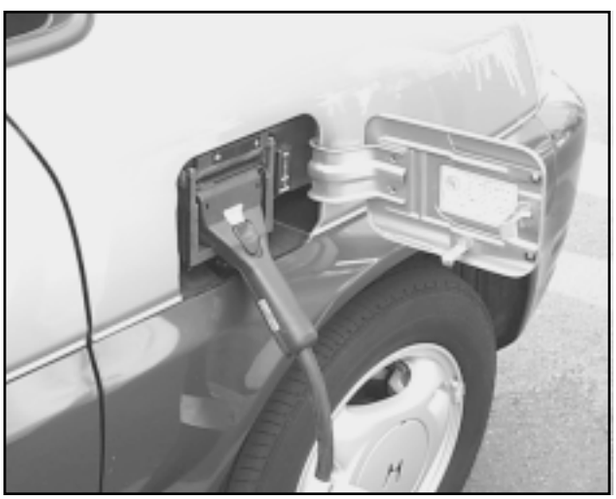
The cost of an EV conversion owner to adapt to the AVCON conductive connector usually means:

1.) Buying and installing an additional 220 VAC on board charger

2.) Buying and installing an AVCON (female) port in the front of their EV.

Both of these actions are costly, and would only be used when they find a rare public AVCON charger. At this time, 'Common Sense' dictates, those additional expenditures to adapt to an AVCON are not a viable option for the majority of EV conversion owners. The majority of EV conversions, are light efficient vehicles, that perform the majority of there charging needs on 120 or 220 VAC power. An EV that uses even less power to operate, means less electricity used, and even less pollution yet.

However, if a combined conductive charger (AVCON and outlets: 14-50 & 5-20) had been installed, the money spent on the EV chargers would be maximized. Both the Production EVs and EV conversions could use the combined conductive charger. Isn't that the goal? Long after the EV "Charger Wars" are over, the EV conversions will still be on the road, sipping lightly on the outlet. EV driver feedback will educate EV charger purchasers of what type of conductive chargers are 'really' needed (an EVI model with combined AVCON and outlets: 14-50 & 5-20). I encourage California EV drivers to express your desire for this combination conductive EVI model, directly to BAAQMD & EVII:

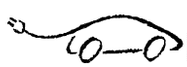


An Avcon plug charging a Honda EV.

David Burch BAAQMD:
dburch@baaqmd.gov
EVI 530-823-8077:
spengs@evii.com, dpackard@evii.com

Note:
I am currently in a dialog with Jason France of EVI (Electric Vehicle Infrastructure Inc. http://www.evii.com) to ask that they offer a charger model that combines both conductive types:
AVCON (ICS-200)
outlets: 14-50 & 5-20 (MCS-100)

Bruce "EVangel" Parmenter
BruceDP@iname.com
http://members.aol.com/brucedp/
Electric Vehicle List Editor:
http://crest.org/ev-list-archive/



Historians Report

By Terry Wilson

I am Terry Wilson, a member of the Silicon Valley chapter. I was appointed, EAA Historian, by the EAA Board in April of '98. My intent is to preserve the history of electric vehicles and the EAA. I also want to make this material available to all.

I have the original Silicon Valley library, started by the late Earl Dolby. This library is stored in 2 large cabinets. Each is 4 1/2 ft. tall by 1 1/2 ft. wide by 2 1/2 ft. deep, with 4 drawers in each. There is an index, 14 pages, which is roughly about 50% of what we have now. Many new books and manuals have been added. A complete Aurenthetic (24 volt electric mini bike) manual, 8 different aircraft generator manuals, driver manuals from several electric cars; Pivco, Kewitt, Toyota Rav EV, and I will add; Dodge Epic, and Honda EV+, soon. My favorite part of the job is scavenging for items. I beg, borrow, or buy items for the collection all the time. I found 2 turn of the century dash gauges from electric cars, one from a Baker, the other from a Rausch Lang. Soon I will purchase a dash gauge from an electric Studebaker (1902-1912).

Bruce Parmenter of the San Jose chapter, has supplied me with a computer, donated to the EAA, and has taught me to use it. I got a scanner , Mike Thompson (SJ. chpt.) has donated a number of software programs, Curt Hutchings (SJ. chpt.) donated a CD Rom writer. I am scanning what I perceive to be the most useful info, first. The scans will be put on CDs, with distribution to be addressed later. Many members, and even some who are not, have contributed, many boxfulls of items. A few examples are: from John Newell (our co-founder), a picture of the first EAA rally (Oct.27, 1968), Bob Murray,(Sil Val chpt.) a #7 Willy controller, (we have that manual too), Chuck Olsen,(Sil Val chpt.) seven of the 8 Keith Crock binders, Hal and June Munro,(Sil Val chpt.) many boxes of Poloroids of EAA events and people. There are far too many contributors to list here, but I appreciate all the help, in fact, all the EAA people I have talked to have contributed, sometimes with just an idea.

Also working to preserve the historical movement is Ed Holsinger, past East Bay President, who has started the, EV Mobile Museum, at his home in Berkeley, Ca. Many components I've gathered are on display there, as well as Eds collection. During rallies and other events I borrow them to display. Ed also sent me a list from a bookseller, that resulted in us getting a 1905 Audels guide, that has 4 chapters on electric cars. Ed also told me that there was an antique electric car at the History Museums of San Jose.

Museums have been very cooperative. The History Museums of San Jose has made me copies of everything they've collected on their 1916 Detroit electric car. I have given them copies of the ads, (the actual pages we have)from magazines for Detroit electrics. The Silicon Valley chapter took a film crew from Channel 36 in San Jose, to the museum to film the Detroit, for a show they were doing on electric cars. The museum allowed the Silicon Valley chapter to trailer the Detroit to Stanford University, for the Concourse, and the Detroit will also be at the Silicon Valley rally at Stanford, Sept.18th. The Hays Truck Museum, in Woodland, Ca., has 2 electric trucks, a 1916 CT (5 ton flatbed), and a 1918 Walker (3 1/2 ton flatbed). They have given me copies of the information they have on these vehicles. We also worked together to get information from Exide on their early batteries. They sent us 18 pages on electric trucks.

In the future I may request specific items missing from our library, and also I hope to add items such as newspaper articles from our other chapters, local papers.

Terry Wilson
eaa.historian@juno.com
20157 Las Ondas Wy.
Cupertino,Ca.95014
(408) 446-9357

Pictured above (left) A Studebaker gauge. Studebaker made electric cars from 1902-1912. The gauge we have had the amp meter replaced. According to the repair sticker on the back this repair took place in 1909. (right) A Weston model 240 gauge made by Weston Electrical Instrument Co., Newark, N.J.. These were in use before the turn of the century, they were also in use at least up to 1916. The patent dates are: Nov. 6, 1888; April 28, 1890; Feb. 17, 1891; Oct. 4, 1898; and July 16, 1901. There is a museum in Freemantle, Australia, looking for a Sangamo meter for their 1917 Detroit, does anyone knows where a working one is?

AC and DC Electric Motors, an Alternat View

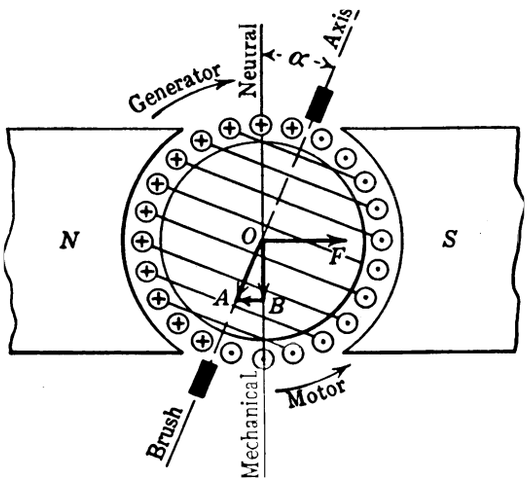
By
John Mattingly

The article by Fred Miekka on AC and DC Electric Motors encouraged me to review my own outlook on the subject. I design power electronics for motor controllers, power supplies and battery chargers, so I'm always interested in what other folks think on the subject in general. The author seems to define the difference between AC and DC motors as to whether power is switched based on rotor position or not. If they're switched they're DC motors, if not they're AC motors. I don't know of any real definition of the two, so I will give my view of motor action and see what follows.

The force produced between rotor and stator can be modeled as the interaction of two magnetic fields. For the fol-lowing discussion I will assume ideal two pole machines. The fields could be produced by electromagnets, or permanent magnets, or a combination of the two. How these fields are physically structured and electrically controlled determines the various types of motors.

One very Important distinction in controls is whether one of the magnetic fields of a motor produced by electromagnets is synchronized to shaft position. The "true DC Motor'" is a wondrous invention. Its stator and rotor magnetic fields are DC and are spatially 90 degrees apart and stationary in space. The two fields try to align, rotating the armature around under them, courtesy of the commutator and armature winding design. This is one case of synchronization. The series DC Motor used in the universal motor application is usually optimized for one operation or the other. In the AC application the sinusoidal changing of the magnetic fields induces current into the windings shorted by the brushes during commutation, causing resistance to be needed to limit it. This application is for small loads such as tools. In the DC case these magnetic field changes are minor.

The other motors are all similar to each other in that AC Current in the stator fields cause a rotating magnetic field in the air gap. The armatures are either salient pole permanent magnets, or electromagnets, or they are smooth Iron rotors with imbedded electrical conductors.



A DC electric motor

The imbedded conductor types are called induction motors since currents are induced in the conductors by the rotating magnetic field in the gap. These currents in the rotors generate a magnetic field which is rotating spatially 90 degrees behind the field produced in the gap by the stator currents. The magnitude of the rotor field decreases as the rotor speed catches the magnetic field speed. This is due to the fact that the rate of change of the flux in the armature, caused by the rotating stator magnetic field, is slowing as the armature speeds up to the stator field speed.

The salient pole types have magnetic fields which will vary in angle from each other. The magnetic field of the rotor is spatially fixed to the rotor itself. To function properly the rotor magnetic field position needs to be from zero to less then 180 degrees behind the stator magnetic field position. When the angle is zero no torque is generated. When the angle is 90 degrees, max torque is generated. If the angle gets to be between 180 to 360 degrees behind, the sign of the torque reverses.

These motor types are synchronous machines because the rotor position has to be synchronized to the stator field position. This can be accomplished by spinning up the rotor to match the stator magnetic field speed and making sure the load is not so great that the rotor magnetic field doesn't lag behind by 180 deg. If the stator fields are synchronized to the shaft of the motor they can become brushless "DC Motors" or sine drive torque motors. The magnetic fields of these motors are kept in phase by control systems which are typically external to the "mo-tor".

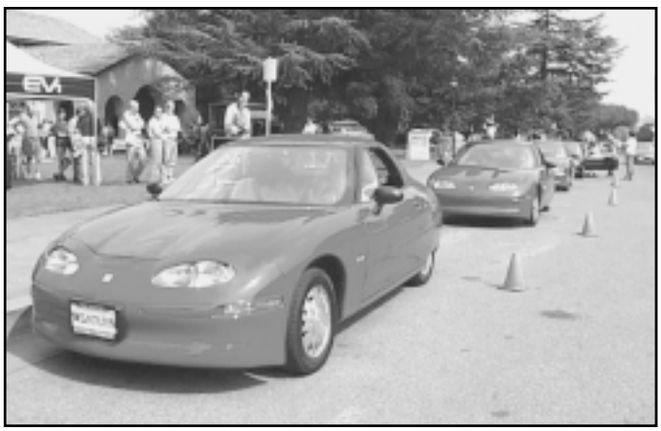
So I suggest that motors be classified as to their primary magnetic field activity. DC motors have stationary DC fields while all others have rotating fields.

John Mattingly <johnm@kajon.com>

SILICON VALLEY RALLY 99

Still the BIGGEST
Still the BEST

A Corbin Sparrow ready for the freeway diamond lane.



GM's EV1 ride and drive stole the show.

Nissan showed off their Altra Lithium-ion super battery car.

Stan Skokan pose's with one of his electric postal vans.

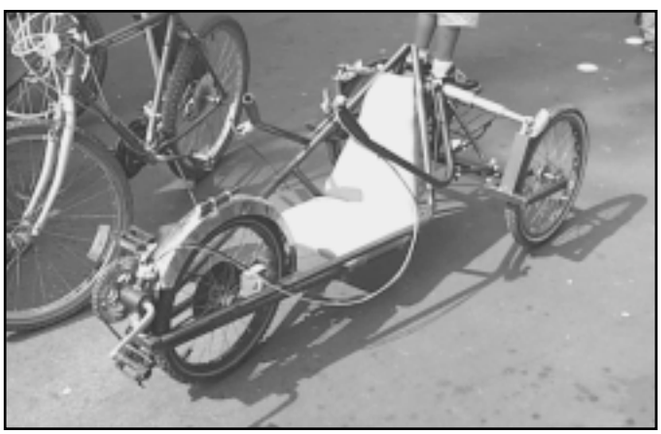
The Burning Man Eater with it's jaws open.

Anna Cornell tries out a Gizmo.

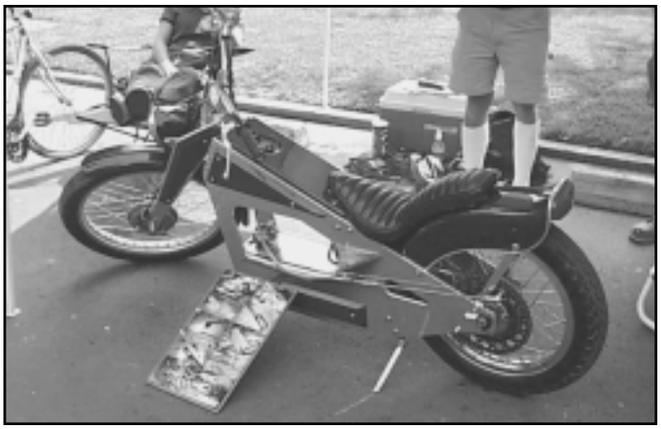
Bob Snchneeveis at the controls of his "Man Eater".

Mike Saari on one of his tandem E-bikes.

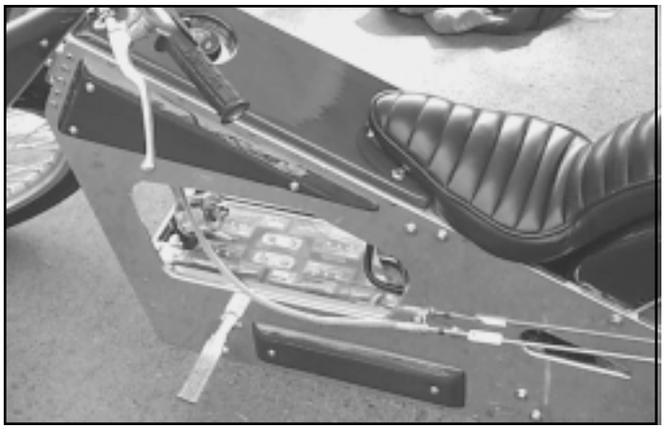
Bob Snchneeveis's "Man Eater" was first built for the Burning Man event.



Another Bob Lang leaner. This one both banks and steers from the rear.



Bob Langs electric bike shows a high degree of craftsmanship.



Close up of Bob Lang's cycle showing low CG battery placement.

Bill Palmer and his Palmermobile, one of the first EVs built in the association over 30 years ago.

RECAP, Silicon Valley EAA Rally, 9/18/99

There were 11 EVs registered to run the 2.2 mile course and those which did not stop for a charge competed for distance.

Awards:

Distance award - Mike Crumrine of Milpitas on his recumbent bike #3. He travelled 57 miles and was still running at 4PM.
Best looking factory car - Andrew Staley's Honda EV Plus, car #10.
Best looking conversion - Scott Cornell's Karmann Ghia, car #2.
Best Conversion, Mazda RX-7 shown by Rich Brown (Nedra Car)
Best classic car - The San Jose Historical Museums 1916 Detroit Electric.
"coolest" award - The Nissan Altra, powered by a lithium-ion super battery.

Terry Wilson, EAA Historian covers the history table.

The History Museums of San Jose 1916 Detroit Electric.

GM's historical EV1 Sunny Side Up.

Student built, solar powered, educational vehicle cruises the rally grounds.

Special Attraction:

Bob Schneeveis's "Man Eater" kinetic EV sculpture. Built on a flat bed EV truck, this creature had colorfull moving wings, skirts all around, and seats for 6 and driver. It was beautifull and the kids loved it.

Displays:

Bill Palmer's 1904 replica Oldsmobile runabout (The Palmermobile).
GM's original Impact, and many EV-1 cars for ride and drive, and display.
Toyota RAV4
Corbin Sparrow
Neveo Gizmo

Solectria Force
Zap & Saari bikes
Electric scooters

Special thanks to:

Rallymaster, Allen Downs.
Bob Wheeler, for charging provisions.
SF/Peninsula chapter, for food booth and provisions.
Stanford University, for the use of their campus property.
The judges
The radio operators.
Bruce Parmentor, for providing car numbers.

Bruce Parmenter selling the Idea of EV's.

The car you can't see in this photo is Scott Cornell's ever popular Karmann Ghia.

AB 71 *Continued from page 1*

The following represents AB 71 as it has been passed into law:

BILL NUMBER: AB 71 - ENROLLED

BILL TEXT

PASSED THE ASSEMBLY - AUGUST 26, 1999
PASSED THE SENATE - AUGUST 24, 1999
AMENDED IN SENATE - JULY 14, 1999
AMENDED IN SENATE - JUNE 28, 1999
AMENDED IN ASSEMBLY - APRIL 26, 1999
AMENDED IN ASSEMBLY-FEBRUARY 3, 1999

INTRODUCED BY Assembly Members Cunneen and Margett
(Principal coauthor: Assembly Member Knox)
(Coauthors: Assembly Members Leach, Leonard, and Scott)

DECEMBER 7, 1998

An act to amend, repeal, and add Section 40000.13 of, and to add and repeal Sections 5205.5 and 21655.9 of, the Vehicle Code, relating to vehicles.

LEGISLATIVE COUNSEL'S DIGEST

AB 71, Cunneen. High-occupancy vehicle lanes: low-emission vehicles.

(1) Existing law authorizes the Department of Transportation, with respect to highways under its jurisdiction, to authorize or permit the exclusive or preferential use of highway lanes for high-occupancy vehicles.

This bill would require the Department of Transportation whenever it authorizes or permits exclusive or preferential use of highway lanes or highway access ramps for high-occupancy vehicles, to also extend the use of those lanes or ramps to vehicles that have been issued distinctive decals, labels, or other identifiers because the vehicles meet (1) California's ultra low-emission vehicle (ULEV) standards beginning July 1, 2000, and through December 31, 2003, or (2) California's super ultra-low emission vehicle (SULEV) standards on and after January 1, 2004, and through December 31, 2007, for exhaust emissions, as specified, and (3) the federal inherently low-emission vehicle (ILEV) evaporative standard, as defined in federal regulations, regardless of vehicle occupancy or ownership.

In addition, for the purpose of implementing these provisions, the bill would require the Department of Motor Vehicles to make available for issuance distinctive decals, labels, or other identifiers for vehicles described above that clearly distinguishes them from other vehicles. The Department of the California Highway Patrol would be required to specify the placement and design of the decals, labels, or other identifiers. The bill would require the Department of Motor Vehicles to include a summary of the provisions relating to the distinctive decals, labels, or other identifiers on each motor vehicle registration renewal notice or on a separate insert, as specified.

(2) The bill would prohibit any person from operating or owning a vehicle that displays a decal, label, or other identifier if that identifier was not issued to that vehicle. Because a violation of this prohibition would be a crime, the bill would impose a state-mandated local program.

(3) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

(4) The bill would provide that its provisions shall remain in effect only until January 1, 2008, and as of that date are repealed, unless a later enacted statute deletes or extends that date.

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. The Legislature hereby finds and declares all of the following:

(a) The federal Clean Air Act Amendments of 1990 (Public Law 101-549) sought to accelerate the deployment of inherently low emission vehicles (ILEVs) through the use of nonmonetary incentives in areas that do not meet federal ambient air quality standards.

(b) Federal regulations to implement these federal Clean Air Act Amendments were adopted by the United States Environmental Protection Agency in 1993, and are set forth in Part 88 (commencing with Section 88.101-94) of Title 40 of the Code of Federal Regulations. These federal regulations direct states to exempt federally certified and labeled ILEVs in fleets from high-occupancy vehicle (HOV) restrictions for single-occupant vehicles (Sec. 88.313-93, Title 40, C.F.R.). Five years later, California has not yet conformed to those federal regulations.

(c) In addition to these federal requirements pertaining to ILEVs in fleets the Transportation Equity Act for the 21st Century (Public Law 105-178), commonly known as TEA-21, encourages and permits states to extend the HOV lane access exemption to nonfleet owners of ILEVs.

(d) In most instances, existing HOV lanes in California are uncongested and underutilized, resulting in less than optimal traffic flow. Traffic flow efficiency and air quality would, therefore, be improved by an exemption for ILEVs from the HOV lane access restrictions in these uncongested HOV lanes.

(e) The federal regulations provide a mechanism for California and other states to remove congested HOV lanes, or portions thereof, from having access by single-occupant ILEVs, thus guaranteeing that ILEVs cannot be a cause of congestion in HOV lanes.

(f) The federal regulations affirm a state's authority to establish ILEV identification requirements, in addition to the EPA requirements, that are necessary and appropriate to facilitate enforcement.

(g) California's urban air quality is the worst of any state in the United States, with

over 80 percent of our population living in areas that do not meet federal or state ambient air quality standards, and approximately 75 percent of our urban smog coming from mobile sources, primarily light-duty cars and trucks.

(h) The people of California want and need healthful air quality, and are well served by incentive-based approaches to encourage early deployment of cleaner vehicles at little or no cost to the state.

SEC. 2. Section 5205.5 is added to the Vehicle Code, to read:

5205.5. (a) For the purposes of implementing Section 21655.9, beginning July 1, 2000, and through December 31, 2003, the department, in consultation with the Department of the California Highway Patrol, shall make available for issuance, for a fee determined by the department to be sufficient to reimburse the department for actual costs incurred pursuant to this section, distinctive decals, labels, or other identifiers for vehicles that meet California's ultra-low emission vehicle (ULEV) standard for exhaust emissions and the federal ILEV evaporative emission standard, as defined in Part 88 (commencing with Section 88.101-94) of Title 40 of the Code of Federal Regulations, in a manner that clearly distinguishes them from other vehicles.

(b) For the purposes of implementing Section 21655.9, beginning January 1, 2004, and through December 31, 2007, the department shall make available for issuance, for a fee determined by the department to be sufficient to reimburse the department for actual costs incurred pursuant to this section, distinctive decals, labels, and other identifiers for vehicles that meet California's super ultra-low emission vehicle (SULEV) standard for exhaust emissions and the federal inherently low-emission vehicle (ILEV) evaporative emission standard, as defined in Part 88 (commencing with Section 88.101-94) of Title 40 of the Code of Federal Regulations, in a manner that clearly distinguishes them from other vehicles.

(c) The department shall include a summary of the provisions of this section on each motor vehicle registration renewal notice, or on a separate insert, if space is available and the summary can be

included without incurring additional printing or postage costs.

(d) The Governor may remove individual high-occupancy vehicle (HOV) lanes, or portions of those lanes, during periods of peak congestion from the ILEV access provisions provided in subdivisions (a) and (b), following a finding by the Department of Transportation as follows:

(1) The lane, or portion thereof, exceeds a level of service C, as discussed in subdivision (b) of Section 65089 of the Government Code.

(2) The operation or projected operation of the vehicles described in subdivisions (a) and (b) in these lanes, or portions thereof, will significantly increase congestion.

The finding also shall demonstrate the infeasibility of alleviating the congestion by other means, including, but not limited to, reducing the use of the lane by noneligible vehicles, further increasing vehicle occupancy, or adding additional capacity.

(e) For purposes of subdivisions (a) and (b), the Department of the California Highway Patrol shall design and specify the placement of the decal, label, or other identifier on the vehicle. Each decal, label, or other identifier issued for a vehicle shall display a unique number, which number shall be printed on, or affixed to, the vehicle registration.

(f) This section shall remain in effect only until January 1, 2008, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2008, deletes or extends that date.

SEC. 3. Section 21655.9 is added to the Vehicle Code, to read:

21655.9. (a) Whenever the Department of Transportation authorizes or permits exclusive or preferential use of highway lanes or highway access ramps for high-occupancy vehicles pursuant to Section 21655.5, the use of those lanes or ramps shall also be extended to vehicles that are issued distinctive decals, labels, or other identifiers pursuant to Section 5205.5 regardless of vehicle occupancy or owner ship.

(b) No person shall drive a vehicle described in subdivisions (a) and (b) of Section 5205.5 with a single occupant upon a high-occupancy vehicle lane pursuant to this section unless the decal, label, or other identifier issued pursuant to Section 5205.5 are properly displayed on the vehicle, and the vehicle registration described in Section 5205.5 is with the vehicle.

(c) No person shall operate or own a vehicle displaying a decal, label, or other identifier, as described in Section 5205.5, if that decal, label, or identifier was not issued for that vehicle pursuant to Section 5205.5. A violation of this subdivision is a misdemeanor.

(d) This section shall remain in effect only until January 1, 2008, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2008, deletes or extends that date.

SEC. 4. Section 40000.13 of the Vehicle Code is amended to read:

40000.13. A violation of any of the following provisions is a misdemeanor, and not an infraction:

(a) Section 16560, relating to interstate highway carriers.

(b) Sections 20002 and 20003, relating to duties at accidents.

(c) Section 21200.5, relating to riding a bicycle while under the influence of an alcoholic beverage or any drug.

(d) Section 21651, subdivision (b), relating to wrong-way driving on divided highways.

(e) Section 21655.9, subdivision (c), relating to illegal use of decals, labels, or other identifiers.

(f) Section 22520.5, a second or subsequent conviction of an offense relating to vending on or near freeways.

(g) Section 22520.6, a second or subsequent conviction of an offense relating to roadside rest areas and vista points.

(h) This section shall remain in effect only until January 1, 2008, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2008,

deletes or extends that date.

SEC. 5. Section 40000.13 is added to the Vehicle Code, to read:

40000.13. A violation of any of the following provisions is a misdemeanor, and not an infraction:

(a) Section 16560, relating to interstate highway carriers.

(b) Sections 20002 and 20003, relating to duties at accidents.

(c) Section 21200.5, relating to riding a bicycle while under the influence of an alcoholic beverage or any drug.

(d) Section 21651, subdivision (b), relating to wrong-way driving on divided highways.

(e) Section 22520.5, a second or subsequent conviction of an offense relating to vending on or near freeways.

(f) Section 22520.6, a second or subsequent conviction of an offense relating to roadside rest areas and vista points.

(g) This section shall become operative on January 1, 2008.

SEC. 6. No reimbursement is required by this act pursuant to Section 6 of Article XIIIB of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIIIB of the California Constitution.

Help EAA Grow

Support

Cars for Clean Air

Donate a car and receive a tax deduction

EAA has already received its first donated gasoline car (in Sacramento), made $700 on it and generated a handsome tax credit for its owner. Help continue this program by finding other cars. Donate your own, persuade a friend or relative, or talk to your local mechanic, who often has customers that decide not to repair a car and need to get rid of it. Do yourself a favor by knocking something off your income tax while helping EAA.

Contact information:

For the San Francisco Bay Area:
Kurt Bohan
EAA, Hangar 20
2701 Monarch St. Suite 136
Alameda, CA 94501
Tel. (510) 814-1864
Fax (510) 864-9293
E-mail: eaanews@aol.com

For the Sacramento area:
Tim Loree
7428 Wisconsin Dr.
Citrus Hights, CA 95610-7432
Tel. (916) 967-3044
Fax (916) 863-0303
E-mail: loreet@2xtreme.net

EAA Membership Drive

The goal is to **double** our membership by year's end '99

The Board of Directors approved the first recommendation of the membership committee, consisting of Roy Kaylor and Scott Cornell

For each new member sponsored by an existing member, the existing member will receive a free three-month extension of his or her membership!

This **trial benefit** is good for a test period of six months, ending August 31, 1999.

Sign up four new members before August 31, 1999 and get a **free** extension of your membership for a whole year! (A $39.00 reward)

Just think;
Sign up a hundred new members and get a 25 year **free** extension of your membership (A $975.00 reward)

Hey! Sign up a thousand new members and get a 250 year free extension of your membership plus a **free** license plate holder. (A 9750.00 + reward)

With a hundred thousand members, we could be a real **political force.**

If this membership drive is **successful**, then the other recomendations may also be implemented, which would be
of benefit to all

For more Info. call:
Roy Kaylor
831-338-2200
(kaylor@access1.net)

A CALL FOR LETTERS TO THE EDITOR

Read something in CE you would like to comment on? Do you feel something is being left out? Send us a "Letters to the Editor". You can E-mail us, Fax us or use snail mail at the addresses below:

E-mail: eaanews@aol.com
Fax: 510-864-9293
-or- Snail mail at:
EAA/Current Events, Hanger 20, 2701 Monarch St., Suite 136 Alameda, CA 94501

Call for builder write-ups

Proud of your car ? Would you like to share what you have done with others ? Why not send in photos and a short (or long) written description to CE so we can print it. For the last 30 years the EAA has grown strong by members sharing with members the technology they have used in creating their cars. Help continue this tradition. Take some pictures of what you think stands out most about your vehicle and send it in with a description (photo essays are OK). Don't forget to send your contact information, including, telephone number, mailing address, and E-mail if you have it, to:

Kurt Bohan
EAA Current Events
2701 Monarch Street, Suite 136
Alameda, CA 94501
Tel. (510) 814-1864
Fax (510) 864-9293
- or E-mail to -
EAANEWS@AOL.COM

EVents Calendar

August 17-19

SAE Future Transportation Technology Conference and Exposition, Costa Mesa, CA. The FTT Conference will feature advanced transportation technologies that have the potential for making real, practical improvements in vehicle and highway systems. Contact: Karin Bolcshazy, SAE. (724) 776-4841, Fax (724) 776-6622, E-mail: karinb@sae.org

August 19-20

The Changing World of Industrial and Specialty Electric Vehicles, Orlando Florida. Conference sponsored by EPRI on electric off-road vehicle technologies . Discussions of applications of new technologies and exhibits of related products. Contact: Michele Samoulides, EPRI. (650) 855-2127, Fax (650) 855-2900.

August 28

EAA National Endurance Range Rally. Hosted by the East Bay chapter of the Electric Auto Association. To be held in San Ramon, CA. Event runs on a 3-mile endurance course, just like the old Silicon Valley rallies. Shade trees, too! Public hours: 10am -4pm. Limited charging available; lots of trailer room. Contact Anna Cornell at (925) 685-7580 10am - 4pm M-F. Or E-mail Anna at ebeaa@juno.com

September 11

Triangle EV Education Day, 10 am - 3 pm, Chapel Hill, NC. EV display, ride-and-drive. Town lot #5, West Franklin Street, Chapel Hill, NC. For more information, contact Jon Mauney at (919) 834-4077 or E-mail: teaa@rtpent.org

September 18

Silicon Valley EAA Rally ,10:00 a.m. - 4:00 p.m. The big yearly EV rally! Stanford University, Palo Alto, in front of Encina Hall & Burnham Pavilion (just south of Hoover Tower on the corner of Galvez & Serra).
Website http://www.evcl.com/eaa-sv/
Contact: Will Beckett
BeckettW@corp.hp.com 650-857-3859

September 19-20

Canadian Electric Vehicle Conference 99, Montreal, Quebec, Canada. A two-day conference on electric vehicles. Focus is on the close between an organization's business success and its environmental stewardship. Conference will also offer advice on managing a company's environmental public image as well as provide information on clean air technologies and products. Contact: EVAC. Phone: (613) 723-3127. Fax: (613) 723-8275. E-mail: evac@evac.ca

October 13-16

16th International Electric Vehicle Symposium and Exhibition (EVS 16), The 16th annual Electric Vehicle Symposium and trade show in Beijing, China will be hosted by EVAAP, CES and SEA-C.
86-10-6853-3347 Web: www.ces.org.cn
E-mail: evs16@ces.org.cn

October 17 - 26

5th World Solar Challenge in Australia! This event is for Solar cars ! 42 entries will represent 11 nations in this event! No other entries accepted at this time. Runs from Darwin to Adelaide. It's a grueling, yet beautiful test of technology and wits!

October 18 - 24

ETSA Power World Solar Cycle Challenge in Australia. Starts in Alice Springs and finishes in Adelaide. There are four classes of converted bicycle entries; 1. Non-

Aerodynamic Standard bicycles. 2 Non-Aerodynamic Experimental bicycles, 3. Experimental 3-wheeled vehicle, 4. Aerodynamic 3- wheeled production vehicles. Entries are still accepted at this event. Contact Chris Selwood for event information at Phone: 61 8 8303 2337 Fax 61 8 8303 2339 or website: www.wsc.org.au.

November 1-3

California Transit Association Annual Fall Conference, Oakland, California. The annual conference of CTA discussing topics important to transit operators. An expanded all-day maintenance track, a general managers' panel discussion, and indoor bus vendor show are part of the event. Contact: Donna Pate, Phone (510) 891-4778

November 8-12

6 th World Congress on Intelligent Transportation Systems, Toronto, Canada. Conference will focus on the latest ITS components, deployment, how systems architecture is being used, the role of public-private partnerships, and issues surrounding telecommunications. Exhibit Opportunities available. CALL FOR PAPERS due Febuary 1, 1999. Contact: ITS America. Phone: (202) 484-4542. Fax: (202) 484-3488.

November 15-17

SAE International Truck and Bus Meeting, Detroit, Michigan. Meeting and exhibits of trucks and buses. Contact Karin Bolscshazy Tel. (724) 772-4007 Fax (724) 776-1830 E-mail: karinab@sae.org

November 18-19

North American Electric Vehicle and Infrastructure Conference (NAEVI), Atlanta, Georgia. Conference focuses on commercialization issues of electric and hybrid electric vehicles and EV infrastructure in North America. Contact: Pam Turner, EVAA. (650) 548-9464, Fax (650) 548-9764. E-mail: firstopt@aol.com

November 20-21

SAE Automotive Electronics and Alternative Energy Vehicles, Kenpur, India. This symposium is designed to bring scientists, engineers, experts, and policy makers together to discuss the increasing use of electrical and electronics in vehicles and their contribution toward fuel efficiency and pollution reduction. Contact: Professor V. Sinha, Secretariat for international Symposium on Automotive Electronics and Alternate Energy Vehicles. Phone: +91-512-597070 Fax: +91-512-590063 E-mail: vsinha@iitk.ernet.in

November 30 - December 2

Technology Advances, Relative Marketability and Policy Implications. A Three-day workshop reviewing and assessing the advancements in electric, hybrid and fuel cell vehicle technologies. Also to be discussed are the marketing and economics of these technologies relative to emmissions and fuel economy standards. Contact: Michele McGuire, ITS-Davis Tel. (530) 752-4909 E-mail: mdmcguire@ucdavis.edu

Year 2000

March 6-9, 2000

SAE 2000 - SAE International Congress, Detroit, Michigan. International technical conference on automotive technologies and design. Exhibit Opportunities Available. Contact SAE at:
Tel. (724) 772-4027 Fax (724) 776-1830
E-mail: congress2000@sae.org

March 20-21

California Strategic ITS Planning Retreat, Yosemite, California. Meeting of the California Alliance for Advanced Transportation Systems to discuss ITS applications in transportation in California. Contact: Randi Dixon.
Phone: (916) 325-0473.
Fax: (916) 325-0471
mail: RandiDixon@caats.org

April 2-6

Future Car Congress, Arlington, Vergina. A government-industry conference focusing on a collaborative approach to the development of new automotive technologies. Discussion topics range from fuel cells to supercomputer applications and high-tech transportation workforce for the 21st century. Contact: Meeting Promotion, SAE. (724) 776-4841 ext. 7340. Fax (724) 776-1830. E-mail: rodman@sae.org

April 12-14, 2000

Commercializing Fuel Cells, Berlin, Germany. Symposium on market entry strategies and barriers involved in introducing fuel cells into mainstream vehicular use. Includes feature speaker, presentations, workshops, and exhibits. Contact: Intertech Tel. (207) 781-9800 Fax (207) 781-2150
E-mail: info@intertechusa.com

May 28-31, 2000

The Hydrogen Millennium, Trois-Rivieres, Quebec. Conference focuses on the opportunities for hydrogen energy systems and applications. Contact: Canadian Hydrogen Association.
Tel. (819) 376-5139 Fax (819) 376-5164
E-mail: IRH@UQTR.Uq uebec.ca

October 16-18, 2000

International Electric Vehicle Symposium, Montreal, Canada. EVS-17 will be hosted by the Electric Vehicle Association of the Americas. Contact: EVAA
Tel. (415) 249-2690 Fax (415) 249-2699
E-mail: ev@evaa.org

For more information, or to add an EVent to this calendar, please call Anna Cornell (925) 685-7580 (10 AM to 4PM, PST only, please!)

News in Brief

Compiled by Ruth M. Shipley from information supplied by EIN Publishing. If reprinted, please credit CE and Ruth Shipley.

FCV Conference to be Held in Berlin

Intertech Conferences will hold its 6th international advanced energy and transport conference, titled Commercializing Fuel Cell Vehicles 2000, April 12 through 14, 2000 at the Grand Hyatt Hotel in Berlin, Germany. The conference will focus on market entry strategies as well as existing barriers for implementing fuel cell technology in passenger cars, buses, delivery vehicles, fork lifts, and off-road and utility vehicles. In addition, the conference will feature 20 speaker presentations, two preconference workshops on fuel cell technology and market entry scenarios for fuel cell vehicles (FCVs), an exhibit area, and a variety of catered social functions. All fuel cell and auto manufacturers, fuel suppliers, policy makers, business development managers, and technologists who have a business or technical interest in fuel cells for use in mainstream transportation as well as specialty vehicle applications are invited to attend. The conference will also highlight opportunities for FCVs in developing regions, including China, India and South America. Intertech is a Portland, ME-based consulting firm specializing in the fields of advanced energy systems, electronics, specialty chemicals and magnetics.
(EIN STAFF: 7/26)

Companies Develop Fuel Cell Storage System

SRT Group, Inc., a Miami, FL-based developer of hydrogen and renewable energy storage systems, said it has finalized a cooperative agreement with National Power PLC (NP), a major electric power generating company in the United Kingdom. Under the agreement, the two companies will develop a low-cost reversible fuel cell for a hydrogen production and electrical energy-storage system. The SRT/NP system reportedly will provide distributed high-quality, reliable electricity without the need for more transmission lines or power plants. SRT said the system will produce and dispense hydrogen to refuel the transportation vehicles that are now under development by all major vehicle makers. The SRT/NP system will link low-cost, off-peak power generating capacity and hydrogen production through an energy-storage system. The dual use of this system will permit the production of inex-pensive hydrogen while providing a reduction in on-peak energy costs. Analysis of the system revealed potential costs to be highly competitive compared with conventionally delivered hydrogen and on-peak generating systems. The SRT/NP agreement is one of two cooperative agreements that SRT has with DOE. The agreements, announced in May, are valued at $7.7 million.
(SRT GROUP RELEASE: 7/19)

PowerDesigners Introduces PowerCheq Equalizers

Madison, WI-based PowerDesigners recently introduced its new line of PowerCheq charge equalizers. PowerCheq provides users with a modular, non-dissipative and cost-effective solution to charge equalization, and the company says the charge equalizers can easily be configured into existing and new electric vehicle battery systems. The PowerCheq is connected to each pair of battery modules in a staggered manner to provide equalization for the entire stack. This allows energy to be diverted from overcharged batteries to batteries with the lowest charge, without loss of power. Conventional centralized equalizers are connected to each battery module within a stack. Kutkut designed the PowerCheq to operate without additional sensing or an eternal power source. Modules are disabled while idle, which reduces power consumption and battery loading to enhance the PowerCheq's efficiency.The equalizers also can be used for balancing in situations where loading is unequal among individual modules.
(POWERDESIGNERS RELEASE: 7/14)

Shell, ECD Work on Hydrogen Storage

Shell Hydrogen and Energy Conversion Devices, Inc. (ECD) signed an agreement last week to examine the feasibility of a joint venture to develop and commercialize solid hydride storage technology. The move is seen by some as the first step in the creation of a commercially viable hydrogen storage system for fuel cell vehicles. "We believe hydrogen is becoming an increasingly important fuel for the transportation indus-try," said ECD president and CEO Stanford Ovshinsky. "Distribution and using clean hydrogen could be a critical breakthrough to extending the viability of internal combustion engines by burning hydrogen fuel. Further, most major global manufacturers are pursuing the development of automotive fuel cells. This hydride storage technology could be pivotal to the success of this endeavor." ECD has developed proprietary solid hydride storage technology that can be used to safely store hydrogen for later use in either internal combustion engines or onboard fuel cells. The company expects to develop a prototype storage system by 2001. "This collaboration with ECD is a signifi-cant additional option to bringing clean fuel cell-powered cars onto the road from 2004 onwards," said Shell Hydrogen CEO Don Huberts.
(SHELL HYDROGEN, ECD RELEASE: 7/15)

Prius Cross-Country Trip Completed

The historic Staten Island Ferry recently carried a group of Japanese adventurers and environmental enthusiasts to New York City, completing a 4,200-mile, cross-continent trip in the world's first mass produced hybrid electric vehicle, the Toyota Prius. Team ACP began its trek in Torrance, CA on June 4, traveling across the southern tier of the United States to reach New Orleans. The team then zig-zagged through Kentucky and Washington, D.C., up to Toronto, Canada and circling Lake Ontario before turning south to traverse New York, Pennsylvania and New Jersey. Along the way,

the team visited with environmental groups and observed ecology projects from coast to coast. The so-called Eco-Mission '99 was led by Paris-to-Dakar rally driver Kiichiro Yokota. The team included eight people, two support vehicles, a navigator, a translator, a mechanic and a TV crew. The Prius is powered by both an electric motor and a small gasoline engine. It uses a sophisticated computer system to allow the vehicle to operate on either electricity or gasoline alone, or a combination of both, depending on vehicle speed and load. More than 27,000 Prius sedans have been sold in Japan since the hybrid was introduced in December of 1997, Toyota said. The Prius will be sold by Toyota dealers in the United States starting next year.
(TOYOTA MOTOR SALES RELEASE: 7 / 9)

Sparrow to Challenge Big Three

Although officials at Corbin Motors, Inc. realize they face a daunting task in taking on major automakers like Ford and Honda, they are optimistic that a market for environmentally sound vehicles will develop. The company, a joint venture of Costa Mesa, CA-based MCM Engine Technologies and Corbin Pacific, Inc. of Hollister, C A , launched a $15 million private stock sale last month which has raised about $1 million, and production of its three-wheeled, electric-powered Sparrow is scheduled to begin this month. While the company's one-seater Sparrow EV is registered in California as a motorcycle and is street legal, Corbin doesn't plan on attacking U.S. and Japanese automakers head on. The company hopes to use joint venture partner Corbin Pacific's extensive worldwide network of 6,000 motorcycle equipment retail-ers to help crack the market. The company has already signed 28 retail distributors, and recently received a big boost when Nike unveiled a specially painted Sparrow it ordered for a promotion during the Women's World Cup soccer championship in Pasadena, CA. In addition, Corbin is currently developing a hybrid commuter vehicle that features both a gasoline engine and an electric motor.
(LOS ANGELES TIMES: 7/7)

Companies Develop Zinc Air FCV

Metallic Power, Inc., a leading developer of zinc air fuel cells, recently announced it has joined with Textron Turf Care and Specialty Products to develop a prototype zinc air fuel cell-powered non-road industrial utility vehicle. The new fuel cell vehicle will be able to be recharged within five minutes using Metallic Power's rapidly refuelable zinc air fuel cells. The zinc air fuel cell system contains a zinc regeneration and recycling "vending" machine. While the fuel cell generates electricity by combining zinc with oxygen in the presence of an electrolyte forming harmless zinc oxide powder, the separate regeneration unit reconverts the powder into fresh zinc. The new zinc powder is then recombined with the electrolyte to be reused as fresh "fuel."
"It's an entirely closed-loop system — with nothing to add, nothing to discard and nothing wasted," said Colborn. "The completely safe fuel cell has three times the energy efficiency of a gasoline engine, and it reuses its zinc and electrolyte over and over." Metallic Power said the system reduces operation costs by requiring fewer batteries, reducing vehicle downtime, and increasing productivity. In addition, the fuel cell provides seven times more energy per pound than traditional batteries.
(BUSINESS WIRE: 7/6)

Honda to Introduce Insight Hybrid

Honda recently announced that it will introduce the new Insight hybrid electric vehicle to the U.S. market in the fall. The Insight will feature Honda's Integrated Motor Assist System, which combines a motor and a battery to power a one-liter gasoline engine. The Insight reportedly is the world's most fuel-efficient mass-production vehicle, getting 84 miles to the gallon. Emissions from the Insight are also lower than will be required by future clean air regulations. Honda will also use a lightweight aluminum body that is 40% lighter than a conventional steel body to increase the vehicle's efficiency. Honda says the Insight will be priced to compete with the Toyota Prius hybrid vehicle, the first mass-produced hybrid that was introduced at the end of 1997. The Prius currently sells for 2.15 million yen (about $17,600).
(KYODO: 7/6)

Around-the-World EV Trip Begins in China

A Japanese university group has begun an unprecedented around-the-world trip in a car converted to run on electric power. Professor of electronics engineering at Tokyo Denki University Masaharu Fujinaka is leading the group on the 18,000-kilometer trip. "I want to show the world our evolved, environmentally 'clean' car — a pioneer of the age of the electric car in the 21st century," Fujinaka said. The trek started in Kobe, Japan where the team of students and theEV boarded a ferry for Tianjin, China. Then they will travel to Ulan Bator via Beijing, next crossing Siberia to Moscow.

After traveling across western Europe to Belgium, they will travel by ship to New York and drive across the United States, reaching the west coast in mid-October. Then they will cross the Pacific Ocean to Japan. Members of the group will take turns driving, with three to five students accompanying the EV in a conventional automobile. Fujinaka said the most challenging part of the trip will be the Gobi Dessert and the rough roads of Siberia. He said the group also is concerned about whether it will be able to recharge the batteries each night. The team modified a gasoline-powered car by installing 24 high-performance nickel-hydrogen batteries. Also, solar panels were affixed to the top of the car to provide additional power. The same group set the world record in March for distance traveled in a car converted to run on electric power. On that trip, the team traveled 520 kilometers from Tokyo to Osaka on a single charge. They say they hope to break that record on this trip.
(KYODO: 7/5)

Japanese Carmakers Unsure on Battery Choice

EV industry analysts in Japan recently said car companies in that country are working to develop several battery technologies for both hybrid EVs and battery-powered EVs. However, they noted that no single battery technology has emerged as a front-runner in the move towards commercialization. Some analysts predicted that hybrid EVs will use either lithium ion or nickel metal hydride batteries within 10 to 20 years. While lithium ion batteries provide greater performance than nickel metal hydride batteries, they are more expensive. In addition, analysts said the automobile industry hopes to shift from cobalt to manganese, both of which supply cathode material for the batteries, in an effort to reduce costs and guarantee stable supplies. Although manganese offers lower performance, cobalt is much more expensive, with prices fluctuating greatly. Cobalt-bearing lithium ion batteries produce about 100 kilowatts (kW) per kilogram (kg), while manganese-bearing batteries generate about 83 kW per kg. Nickel metal hydride batteries can generate about 63 kW per kg. A spokeswoman with Nissan, which is currently developing manganese-bearing lithium ion batteries, said the company plans to launch a small EV powered by lithium ion batteries later this year.
(REUTERS: 7/5)

Think City Car Coming to Norway in November

Think Nordic AS and Hertz Norway said they will work together to commercialize the two-seat EV produced by the former Pivco, which is now owned 51 percent by Ford. A Think spokeswoman said both long-term and short-term vehicle rentals will be available in Norway at first, with initial deliveries expected in November. The city car, dubbed the "Think," will be offered only through a lease. The deal with Hertz "allows Think Nordic to utilize an already existing (leasing and service) infrastructure rather than building a new one," the companies said. Under the arrangement, Hertz will handle delivery of the Think cars to homes and businesses and will pick up cars that need service, supplying temporary replacement vehicles. "Customers will have one single number to call which gives access to a convenient package of leasing, distribution and service," said Think Nordic president Per Lilleng. "This customer-driven approach is something completely new to the automotive industry. "We're making the process as easy and convenient as possible. Because they receive a replacement vehicle, customers will never be without a car," he added.
(FLEETS & FUELS: 6/28)

Ergenics Demonstrates Hybrid Battery Prototype

Ergenics, Inc. of Ringwood, NJ said it has successfully demonstrated its high-power nickel-hydrogen bipolar segmented battery which was developed to provide high power acceleration in hybrid electric vehicles (HEVs). With support from the Defense Advanced Research Projects Agency (DARPA), Ergenics said the 15-cell battery prototype produced a sustained, full-capacity power pulse of more than 830 watts, providing more than 14 volts at a 60C discharge rate. Moreover, the battery weighs less than 1.6 kilograms and delivers more than 520 watts per kilogram of specific power. The 15-cell prototype battery is the base design for a 240-cell bipolar battery to be built specifically for HEVs. Though the battery will weigh only 26 pounds, it will produce more than 15,000 watts of power and will have an energy capacity of 450 watt-hours, according to the company. The battery provides the high power needed for acceleration and increases fuel economy by storing energy from regenerative braking. HEV batteries are made up of many single cells grouped together in series. Ergenics said its battery uses a unique "bipolar" design to permit easy assembly of lightweight, multi-cell batteries. The bipolar configuration also achieves higher specific power because it does not need the ancillary weight of large wires, connectors and heat exchangers that are required by other batteries to conduct electricity and dissipate heat.
(ERGENICS RELEASE: 6/28)

EVs Come to Martha's Vineyard

The Massachusetts Department of Environmental Protection (DEP) has been conducting an experiment to bring clean and quiet EVs to the popular vacation destination of Martha's Vineyard. The DEP Electric Vehicle Program has provided access to EVs to residents and tourists alike all summer. The project involves eight neighborhood EVs (NEVs), six electric bicycles, and one electric-powered pickup truck. The low-speed and narrow roads on the island are a perfect fit for the efficient vehicles. The NEVs are said to be 90% cleaner than conventional vehicles, and can be fully recharged in 70 minutes. The Massachusetts DEP received funding for the project through a grant from the Environmental Protection Agency's Office of Mobile Sources, as well as contributions from Boston Edison, EV Global Motors, the Electric Transit Association, Global Electric Motorcars, Bombardier and ZAP Power Systems.
(MA DEP RELEASE: 8/17)

Fuel Processor Converts Diesel to Hydrogen

A new fuel processor technology that converts diesel into high-purity hydrogen was demonstrated by Northwest Power Systems (NPS) at the recent dedication of the University of Alaska - Fairbanks (UAF) Energy Lab Center. NPS developed the diesel fuel processor earlier this summer under a 50% cost-sharing contract with Sandia National Laboratories, a prime contractor to the Department of Energy (DOE). The company said its device produces hydrogen pure enough for a proton exchange membrane (PEM) fuel cell system. The design, invented by company co-founders David Edlund and William Pledger, incorporates a purification stage that produces greater than 99.8% pure hydrogen with less than one part-per-million (ppm) of carbon monoxide (CO) and less than one ppm of carbon doxide (CO2). CO and CO2 can damage a PEM fuel cell irreversibly. UAF's Energy Lab will integrate the NPS fuel processor with a PEM fuel cell to determine the commercial viability for providing electricity and heat in remote, arctic environments in Alaska. NPS already has developed a fuel processor that converts methanol to hydrogen.
(NPS RELEASE: 8/17)

Ford Gives Details on Hybrid EV Program

Ford recently gave more insight into its Low Storage Requirement (LSR) hybrid EV. The LSR is said to be lighter and less complex than other hybrids currently being marketed by other automakers, and represents a "high-value" hybrid alternative. According to Ford, the LSR relies on a 74-horsepower, four-cylinder aluminum DIATA engine that's lighter and more efficient than traditional engines. The vehicle also uses a small high-power nickel metal hydride battery and power electronics module that can restart the direct injection diesel engine in less than 0.2 seconds. The battery is also recharged when the brakes are used. The entire system is 85% efficient in generating power, compared to less than 60% for traditional engines. Plans are underway for a delivery of a test model of the hybrid to the federal government by fall.
(GREEN CAR JOURNAL: AUGUST 1999)

Fuel Cell Uses Natural Gas

Researchers at Northwestern University have succeed in building a fuel cell that operates on natural gas instead of pure hydrogen. Some observers say this could be an initial step toward the production of more affordable fuel cells. While larger fuel cells operate at high temperatures and can generate enough heat and steam to extract the hydrogen directly from natural gas, smaller fuel cells need an external reformer to accomplish the same thing. By eliminating the need for a reformer, fuel cell production costs could be drastically reduced. The scientists' work was published in the August 12 issue of the journal Nature. In earlier efforts, higher temperatures caused damage to experimental fuel cells, while the cells were able to produce limited amounts of electricity at lower temperatures. The researchers were able to make a fuel cell function effectively at lower temperatures by using cerium oxide, a compound used in catalytic converters that enabled the natural gas to react more quickly. The experimental development has been greeted with mixed reviews so far.
(AP: 8/12)

Israelis Develop New Rechargeable Battery

Scientists in Israel recently announced they have developed a rechargeable battery that is able to last 50% longer than conventional batteries. Researchers at the Israel Institute of Technology in Haifa said the battery is similar in design to existing alkaline batteries, but utilizes a high-energy form of iron that can store more electrons than current energy-storing materials. In conventional batteries, the negatively charged anode is usually made of zinc, and the positively charged cathode is made of manganese dioxide. The battery developed by the Israeli scientists replaces manganese dioxide with an unusual form of iron known as "iron (VI)." This iron is able to store more energy because each molecule can absorb more electrons from the anode than manganese dioxide. Scientists previously considered iron (VI) to be too unstable for use in batteries, however, the team in Israel discovered that the instabilities disappear when certain impurities are removed. Stuart Licht, a chemistry professor at the institute who headed the team, said the batteries could be cheaper to manufacture than conventional batteries.
(WALL STREET JOURNAL: 8/13)

Scientists Develop New Fuel for Fuel Cells

Researchers at Kogakuin University in Tokyo, Japan have developed a liquid fuel that can supply hydrogen to fuel cells more effectively than existing methods. The system does not utilize a converter, extracting hydrogen through the use of a metallic catalyst that functions without the need of complicated equipment. "Our technology will...allow manufacturers to make fuel cell vehicles that are as light as existing vehicles," said Kogakuin professor Seijiro Suda, who heads the research team. The technology reportedly offers 5 to 10 times the hydrogen absorption capacity of alloy hydrogen storage systems, which can only retain a maximum of one to two percent of their weight in hydrogen. The fuel consists of a chemical compound of metals and hydrogen. Normally metal and hydrogen compounds are too volatile to handle safely, but the team has developed a way to keep the compound stable while easily extracting hydrogen as needed. About 10% by weight of the fuel is hydrogen, which provides sufficient energy for a vehicle to travel 400 kilometers on 50 liters. This volume is comparable to the amount of conventional gasoline required to travel the same dis-

tance.
(NIKKEI WEEKLY: 8/9)

Budget Rents EVs in Sacramento

Budget EV Rental Cars, a joint effort between EV Rental Cars and Budget Rent a Car Corporation, has announced the opening of its first EV rental fleet in Sacramento, CA. Budget EV Rental Cars said it will initially offer a combined fleet of 20 EVs including the Ford Ranger EV, General Motors' EV1, the Honda EV PLUS and Toyota's RAV4-EV. The rentals will be offered at a special introductory rate start-ing as low as $44 per day depending on the model. When customers rent one of the vehicles, a Budget EV Rental Car employee will give drivers a 10-minute orientation on the vehicle and review travel plans with them. Many of the EVs can travel up to 100 miles before needing to be recharged, Budget said. Currently, there are 100 electric charging stations in the Sacramento area, all of which offer free charging. Until recently, EVs were available only for long-term lease. But now short-term renters can test drive an EV on a daily basis.
(BUDGET EV RENTAL CARS RELEASE: 8/10)

EVs to Join LAX Shuttle Program

Los Angeles International Airport (LAX) will feature the world's first emissions-free airport shuttle service as a fleet of 10 DaimlerChrysler minivans enter service at the airport later this year. Project organizer Sam Smith said the plan is to make a big "media splash" with the introduction of the EVs and show Southern California residents "that we can put [EVs] in service and make money with them." Smith said the electric minivans are virtually "grant-free," with the only public money being the utility that's providing the chargers. Xpress Shuttle will operate the vans for door-to-door service from LAX to locations in the downtown area of Los Angeles. The company will pay $450 per month for each of the Epic minivans, with the total fleet size expected to reach 50. The Los Angeles Department of Water and Power (DWP) will install Minit-Charger EV quick charge units from Canada's Norvik Traction at LAX and in the downtown area. DWP hopes the network will expand to 10 chargers at half a dozen sites.
(FLEETS AND FUELS: 8/9)

Scientists Discover Hydrogen Storage Substance

Scientists in Singapore say they have synthesized a substance that can store hydrogen gas better than any other material. The National University of Singapore (NUS) researchers developed the substance during ongoing efforts to produce a practical hydrogen fuel cell to power automobiles. General Motors already has expressed interest in the NUS finding and may work with the university to further develop the substance. The NUS team began working on the fuel cell project two years ago after a new form of carbon called carbon nanotubes was identified by a Japanese researcher in 1991. The new substance attracted attention because it had several properties that promised practical commercial applications. One of the properties was its ability to absorb more gas and liquid than many other materials, making it a candidate for use in hydrogen fuel cells or tanks. Though the new substance was promising, researchers needed to find a way to produce a large amount of it with high purity and consistency. The NUS team says it has developed a method to produce very pure, consistent samples of the substance, which could absorb up to 20% of its weight in hydrogen.
(INTERNATIONAL MARKET INSIGHT REPORTS: 8/9)

Swiss Company Banking on Electric TWIKE

The TWIKE, an electrically-powered three-wheel vehicle, was a class project thought up by students in Switzerland five years ago. Now the creators of the TWIKE have started a production company and hope to go public within five years. Inventor Ralph Schnyder says his new company, TWIKE AG, hopes to increase production of the vehicle to 150 this year and 300 in 2000, with the goal for 2004 of producing between 2,000 and 3,000. The TWIKE currently retails for between $16,000 and $18,000. The TWIKE can be charged at any 220/230-volt electrical socket, and can travel as many as 55 miles on a single charge at speeds in excess of 50 mph. A prototype version of the TWIKE debuted more than a decade ago, although it did not feature an electric engine. That modification was added in 1991, and the first models came off the assembly line in 1995. In addition to producing the TWIKE, Schnyder and his collaborators have established a distribution network and regional service centers to support customers.
(REUTERS: 8/2)

Police Agencies Look at EVs

More law enforcement agencies may start to refuel their vehicles via an electrical outlet, rather than at the gas station, according to Bombardier Motor Corporation of America. "We began getting a lot of inquiries from local law enforcement" after introducing the Bombardier neighborhood EV in 1997, said Bryan Taylor of Melbourne, FL. Bombardier said it began looking at market potential for small EVs in the early 1990s. It conducted studies that found 87% of vehicle trips involved only one or two persons and generally took only 10 minutes or less. "We found there's an opportunity to bridge the gap between the automobile and a golf cart," he said. Bombardier then developed its neighborhood EV, which can travel at 25 mph and has a range of up to 30 miles. It costs only about 40 cents to fully recharge the vehicle. The neighborhood EV costs as little as $7,100. Since the vehicle was introduced, the number of police departments and law enforcement agencies using the company's vehicles also has grown

For Sale - Circuits Published in DEVC

For folks interested in baking from scratch, here is a list of circuits of my '95 home-built Electro-Metro with associated experiments, published previously in the DEVC. The schematics are **$2** per page, and the software (3.5" floppy) for projects using a microprocessor is **$10**. For those who want a pre-programmed microprocessor chip, they are **$25**.

Order from:
Solectrol
184 Vista Lane
Fincastle, VA 24090
540-473-1248

- ♦ DC-DC Converter, 300 W buck converter, non-isolated-used in Commuta-Car.....**(3 pgs)**
- ♦ PPM variable frequency motor speed control used in Commuta-Car, tractor.....**(4 pgs)**
- ♦ Individual Battery Charger, used on Electro-Metro to keep batts at + or -0.1**(5 pgs + micropr)**
- ♦ Commuta Car Speed Control 2, 60V controller for tractor, NEV, or golf.....**(5 pgs + micropr)**
- ♦ LiteBar, LED lightbar for brake lights, etc, using HP ultra-brights.....**(1 pg)**
- ♦ Solar Heating System_Controller, controls Grundfos circulating panel.....**(3pgs. + micropr)**
- ♦ Metro Charger and dashboard display, batt gauge, tach, temp, amps etc....**(6pgs + micropr)**
  (uses PFC Ferro-Resonant transformer, or individual secondary transformer)
  (36% more power to batts with PFC <PF of .91> Ferro, 12A vs 7.5A <PF .64>)
- ♦ Metrol, 800A 120V motor speed control.....**(2pgs + micropr)**
- ♦ 1800W Switching charger with PFC, if into pain, lotsa parts.....**(5pgs + micropr)**
- ♦ 300W Individual Supply (one per battery) charger with PFC, if into pain.....**(4pgs)**
- ♦ Instructions for converting a microwave oven transformer to a battery charger.....**(1pg)**
- ♦ Log Annunciator, controls fan & plays "Put Another Log on the Fire".....**(2pgs + micropr)**
- ♦ Golf-Tractor speed control & charger 48V, 400A.....**(3pgs + micropr)**
- ♦ Battery Scanner, my favorite, displays all batteries & indicates bad batt.....**(3pgs + micropr)**
- ♦ Surround Sound Demystified, shows simple hook-up for surround sound.....**(l pg)**
- ♦ 200 W Class-D amp 95% efficient audio amp for batt applications.....**(2pgs)**

Federal Funds Help Hawaiian EV Program

Senator Daniel Akaka (D-HI) recently announced that the Department of Transportation and Department of Defense will provide $1.6 million for three EV demonstration projects in Hawaii. The Hawaii Electric Vehicle Demonstration Project (HEVDP) will also receive another $2.9 million in matching contributions from participating organizations. HEVDP initiated its EV Ready State program in 1998. The project is a joint venture between the Hawaiian Electric Company and Hawaii Electric Vehicles, Inc. with the goal of creating a rapid EV charging infrastructure in the state. Part of the new funds will be used for the second phase of the EV Ready State program. The first phase of the program procured the first nine of 18 rapid chargers intended for installation on the island of Oahu. The second phase of the program completed the purchase of the remaining nine, while phases three and four of the project will bring rapid chargers to Maui, Hawaii and Kauai counties.
(AKAKA PRESS RELEASE: 7/23)

Call / Request for Technical Articles

A new emphasis will soon be placed on technical articles in Current EVents. Anyone who would like to share their design ideas, or experience in hardware are encouraged to submit articles to CE. For those interested, please contact Kurt Bohan at: eaanews@aol.com -or- Call (510) 814-1864.

SWAP FOR GOOD

BATTERIES THROUGH THE USED BATTERY EXCHANGE
CALL DON AT
(408) 225-5446

EAA CHAPTER LISTING

ARIZONA

PHOENIX EAA
Kathy Watson, President (602) 821-0646
1131 East Flint St., Chandler, AZ 85225-5470
Meetings: 4th Saturday/month, 9:00 am
location varies in Phoenix Arizona, contact (602) 250-2131
Homepage: http://www.primenet.com/~evchdlr/

CALIFORNIA

NATIONAL EAA HEADQUARTERS
Anna Cornell, Membership Secretary
60 Alan Dr., Pleasant Hill, CA 94523-1902
HomePage at http://www.eaaev.org/
Tel. (925) 685-7580

EAST BAY EAA
Scottt Cornell, President (925) 685-7580
E-mail: spcorn@pacbel.net -or- ebeaa@juno.com
60 Alan Dr., Pleasant Hill, CA 94523-1902
Meetings: 4th Saturday/month, 10:00am (call for Nov-Dec date)
2701 Monarch St., Hangar 20, Room 215
Alameda Point, Alameda, CA (old Alameda Naval Air Station)
From Hwy 880, take Broadway turnoff to Webster St.; from Webster, go through the tube to Atlantic, right on Atlantic to the old Alameda Naval Air Station

Los Angeles EAA
Saxe Dobrin, President (310) 453-1531
1630A Franklin, Santa Monica, CA 90404
Meetings: 1 st Saturday 10:00 am
Cal Tech, Winnet Lounge, Pasadena, CA

NORTH BAY EAA
Chuck Hursch, President (415) 927-1046
13 Skylark Dr. #13, Larkspur, CA 94939-1270
Email: gandhi!chuck@uunet.uu.net
Homepage: www.ecoalliance.com/nbeaa/
Meetings in Santa Rosa, CA: Call (415) 927-1046 for time and exact location.

SAN FRANCISCO/PENINSULA EAA
Jean Bardon, Acting President (650) 355-3060
540 Moana Way, Pacifica, CA 94044
Homepage: www.geocities.com/MotorCity/1759
Meetings: 1st Saturday/month, 10 a.m.
San Bruno Public Library.
701 West Angus St. (at El Camino)
San Bruno, CA

SAN JOSE EAA
Michael Thompson, Pres., Contact Person (408) 997-2404
E-mail: m.t.thompson@ieee.org
US Mail: Roy Paulson, 1592 Jacob Ave. San Jose, CA 95118 USA
HomePage: http://members.aol.com/sjeaa Tel. 408-269-7937
Meetings: 2nd Saturday/month, 10:00 am (call to confirm), Reid Hillview Airport, 2350 Cunningham Ave. San Jose. (Hwy 680, Capital Expressway (South), right onto Cunningham)

SACRAMENTO ELECTRIC VEHICLE ASSOCIATION
Tim Loree, President (916) 962-3044, (916) 568-3100 ex 2833
2428 Wisconsin Dr. Citrus Heights, CA 95610-7432
E-mail: Loreet@2extreme.net
Meetings: Call Tim for new meeting time, place and date
HomePage: www.calweb.com/~tonyc/sevahome.html

SAN DIEGO ELECTRIC VEHICLE ASSOCIATION
Scott C. Kennedy, President, (619) 658-4152
1621 San Elijo Ave., Cardiff, CA 92007
Meetings: 4th Tuesday/month, 7pm
San Diego Automotive Museum
2080 Pan American Plaza,
San Diego, CA.

SILICON VALLEY EAA **(Founding Chapter)**
Will Beckett, Pres., Contact (650) 494-6922, fax (650) 852-8384
4189 Baker Ave, Palo Alto, CA 94306
HomePage at http://www.geocities.com/MotorCity/1754/
Meetings: 3rd Saturday/month, 10:00-12:00 am
Hewlett-Packard, Santa Clara facility
5301 Steven Creek Blvd.
Santa Clara, CA
(Lawrence Expressway and Stevens Creek)

COLORADO

DENVER ELECTRIC VEHICLE COUNCIL (DEVC)

George Gless, President (303) 442-6566
2940 13th St., Boulder, Co, 80304
Meetnigs: 3rd Saturday/month. Contact George for time and location

MASSACHUSETTS

NEW ENGLAND EAA

Tony Ascrizzi, President (508) 799-5977
34 Paine Street, Woercester, MA 01605
E-mail: tonyascrizzi@juno.com
Meetings: Every 2nd Saturday 2:00 p.m. (call for directions)
HomePage:www.norfolk-county.com/users/ws3f/neeahome.htm

PIONEER VALLEY

Karen Jones, President (413) 549-4999, (413) 253-1633
P.O.Box 153 Amherst, MA 01004
Meetings: 3rd Saturday/month (Jan.-Nov.), 2pm
Jones Library (Amhurst Rm), Amherst, MA

MISSOURI/KANSAS

MID-AMERICA

Bruce Edgeworth, President (816) 524-4734
Mike Chancey, Treas., 1700 East 80th St. Kansas City, MO 64131
E-mail: Mike Chancey evtinker@hotmail.com (816) 822-8079
HomePage at http://www.geocities.com/MotorCity/Downs/4214/
Meetings: Contact Mike for meeting time and location.

NEVADA

LAS VEGAS EAA

William Kuehl, President (702) 645-2132
4504 W. Alexander Rd. North Las Vegas, NV 89030
E-mail: billk@anv.net
Meetings: call (702) 642-4000 for time and place.

NEW MEXICO

ALBUQUERQUE EAA

Neil Wicai, President (505) 899-8420
19 Santa Maria, Corrales, NM 87048
E-mail: neilwicai@upaznm.com
Meetings: 1st Tues/month, 7:00 PM
Shoney's Restaurant, 6810 Menaul NE, Albuquerque, NM

NORTH CAROLINA

TRIANGLE EAA

Jon Mauney, President (919) 834-4077
409 Brooks Ave., Raleigh, NC 27607
Meetings: 3rd Tuesday of the month, 5:30 PM, location varies (Call Jon Mauney for details at 919-834-4077)
Email teaa@rtpnet.org
HomePage: www.rtpnet.org/teaa/

SOUTHEASTERN EVA

Lawson Huntly, President (704) 283-1025
PO Box 1025 Monroe, NC 28111-1025
Meetings: Call Lawson for date, time and location

TEXAS

HOUSTON EAA

Ken Bancroft, Contact Person, (713) 729-8668
4301 Kingfisher St., Houston, TX
Meetings: 3rd Thursday each month 6:30PM
Citizens National Bank - Activity Center
5217 Cedar St., Bellaire TX (Take Bellaire exit off West 610 Loop go west on Bellaire about 1 mile to Ferris, turn right one block to Cedar, Activity Center on right)

NORTH TEXAS EAA

Paul Schaffer, President (972)-437-1584
430 Ridge Crest, Richardson, TX 75080-2532
Email: pshf@cyberramp.com
Meetings: 3rd Thursday/mo, see www.engr.tcu.edu/nteaa for time and location

UTAH

WEST VALLEY CITY EAA

Harry Van Soolen, President (801) 989-1130
3622 S. 4840 W., West Valley City, UT 84120
Meetings: Contact Harry for date, time and location

VIRGINIA

CENTRAL VIRGINIA EAA

Brian Murphy, President, (804) 530-7734
1902 Riggers Station Dr., Colonial Heights, VA 23834
Meetings: 3rd Wednesday/month, Richmond Technical Center, Westwood Ave., Richmond, VA 23834

WASHINGTON

PORT TOWNSEND / NORTHERN OLYMPIC PENINSULA ELECTRIC CAR CLUB (NOPEC)

Karl Schreiber (360) 385-3532
11 Kanu Dr. Port Townsend, WA 98368
Meetings: 3rd Saturday/month, 10 AM
Port Townsend High School Shop

SEATTLE EVA

Steven S. Lough, President, (206) 524-1351, Fax (206)526-5348
6021 32nd Ave., N.E., Seattle, WA 98115-7230
Meetings: Contact Steve for time and location
E-Mail: slough@halcyon.com
WWW Site: http://www.halcyon.com/slough/seva.html

WASHINGTON DC

ELECTRIC VEHICLE ASSOCIATION OF WASHINGTON DC (EVA/DC)

Dave Goldstein (President) (301) 869-4954
9140 Centerway Road, Gaithersburg, MD 20879-1882
E-mail: goldie.ev1@juno.com
Meetings: 2nd or 3rd Tuesday/month at 7 p.m.
National Institute of Health (NIH) Building 31-C, 6th floor conference rooms, in Bethesda, MD. Call for more information or directions.

CANADA

VANCOUVER ELECTRIC VEHICLE ASSOCIATION

P.O. Box 3456, 349 W. Georgia St., Vancouver British Columbia, Canada, V6B 3Y4
Bill Glazier, Contact (604) 980-5819
3344 Baird Rd. North Vancouver, B.C. Canada V7K 2G7
HomePage at http://www.veva.bc.ca/ E-mail: info@Veva.bc.ca
Meetings: 3rd Saturday/month 7:30 p.m., BC Transit Center Cafeteria. (Located off of Kitchener between Boundary and Gilmore in Gilmore in Burnaby)

EAA Chapter List

Chapter contacts and meeting locations. Most verified as of 9/1/99. For information about the Electric Auto Association, call 1-925-685-7580

- FOR SALE - MEMBER WANT ADS - FOR SALE -

For Sale: 1980 Citi-Car/Comuta-Car by Sebring-Vanguard. Body white/white interior, excellent condition. (8) good batteries. Only runs in low + mid-range, needs hi-range contactor or Curtis controller conversion. 1300 original miles. Asking $2500 as-is or $4500 after conversion. Come see in Colorado. Call Charlie at (970) 879-5300 days or (970) 879-2408 even.

For Sale: VW Bus. Good daily driver, converted 6 years ago - very reliable. New battery pack. New tire, brakes, front end. AM/FM cassette. Have spent over $12,000 on conversion and rebuild. Seats 5 plus lots of room for "stuff". Price $7,900 Call James (408)5061

For Sale: 1982 VW SCIROCCO VoltsRabbit conversion. Reliable daily driver since 1994. Great condition. Come see in foster City, CA. $5,000. Call Steve Lee at (650) 345-0674.

For Sale: 1980 Jet Dodge Omni Hatchback Electric Car. 120 volts with Trojan Batteries. Gas Heater, 4 speed, pmc Controller. Invicta tires. White with blue interior. All electric gauges work as original car gauges. $4,000.00 Call Daniel Rivest at (415) 388-0838.

1979 Cushman 3 wheeled "meter maid" vehicle. 72 volts professional conversion complete with on board charger and DC-DC converter. Less batteries (use's six 12 volt), 700 original miles, like brand new. $1400.00, will entertain offers or trades. Comes with all manuals, Contact Anthony at: (415) 682-7142 or S2dee@aol.com

For Sale: 1981 Bradly GT II. Fully licensed in CA. Always garaged. Mint condition. 2,700 miles, $5,000, includes 110/220 charger. (760) 721-2454. I have been a member for a long time now and, pushing 82 years, am in the position where I can no longer care for my Bradley GT II Electric. It is with some reluctance that I must find a new home for this faithful vehicle. Robert M. Linden, Col. USAF (ret.) 5253 Harvest Court, Oceanside, CA 92057-1825. Tel. (760) 721-2454.

MEMBER WANT AD RATES

WANT ADS: Print clearly or submit typed copy of your ad with your name, address, and phone number. The EAA is not responsible for the accuracy of ads. Want ads must be received before the 1st of each month and must include payment to run in the next issue of CE.

$10 for the first 35 words. Each additional word, 25 cents. Want ads are available to EAA members for the sale of electric vehicles, equipment and parts only. If you want to run your ad in more than one issue, please specify and include payment for each issue requested.

For corrections or updates, please send a written note or fax to EAA Want Ads at (510) 864-9293. Photographs of your vehicles may be submitted with your ad. If room is available, we run one photo each issue. These photos will not be returned. Send your Member Want Ad request and check payable to:

EAA Want Ads, Hanger 20
2701 Monarch Street, Suite 136
Alameda, California 94501

Electric Auto Association (EAA)
Membership Application

New Member: ._____ USA: ._____ Note: EAA membership dues are
Renewal: ._____ Canada: ._____ tax deductible in the USA
Other Country: ._____ as allowed by the IRS.

Date: ._____/_____/_____

Name: ._____ Company: ._____
Street: ._____ Phone: . Hm-_____ Wk-_____
City: ._____ Fax: ._____
State: ._____ Zip:_____ Country: ._____

If a new member, where did you hear about the EAA ?_____
EAA Chapter you attend or support:_____
I need chapter information:_____

Membership / Vehicle Information — Please complete if new or changed

Please identify your primary areas of interest relating to EAA
(Please rank your your choice with a "1" being most important, "2" second, etc.)

1: ._____Hobby / Builder
2: ._____Professional (EVs are a source of income for you)
3: ._____Competition (Rallies, Races, and Records)
4: ._____Environmental and Government Regulations for EVs
5: ._____Social (Rallies, Shows, Dinners, Other)
6: ._____New Technology and Research
7: ._____Promotion and Public Awareness of EVs
8: ._____Student or General Interest
9: ._____Electrathon / Bicycle / Off-road Vehicles
10: ._____Owner / Driver of Electric Commute Vehicle
11: ._____Other: Please Specify:_____

Number of total EVs you have ever owned ?:_____
Number of EVs you now own ?:_____

Please describe any Electric Vehicles you now own or are building: (if more than one, attach information on each)

Vehicle Lic#:_____ State:_____ Country:_____
Vehicle Type:_____ Make/Model:_____ Model Year:_____
Converted Yr:_____ Number of Wheels:_____Motor Type:_____
Controller type:_____ Batteries: No./Type:_____/_____ %Completed_____
Pack Voltage:_____ Avg. EV Mi./Week:_____ Avg. EV Trips/Week:_____
Other Features:_____
Comments:_____
_____

Please make your check or money order for appropriate amount (see below), payable to the Electric Auto Association, fasten it to this form and mail it to :

Electric Auto Association
P.O. Box 6661
Concord, CA 94524

USA $39 /yr (U.S. Dollars only)
Canada $42 /yr International $45 /yr

Note: All information and statistics in this application are for the exclusive use of the EAA. We never sell or loan our mailing lists.

ver 8/29/97

EAA Store Order Form

Printed materials

CE	Selected Current EVents (specify specific issue)	$3.00 each issue
CEFY	Current EVents - Full year {specify specific year)	$20.00 each year
PB001	Discovered: The Perfect EV Battery	$2.00
FW001	Flywheel Energy Storage	$5.00
PV 2000	1998 Preview 2000 by Electrifying Times (Nov./Dec. 98 CE)	$5.95
BG 1997	1997 Buyer's Guide to Electric Vehicles (April 97 CE)	$5.00
BG 1996	1996 Buyer's Guide to Electric Vehicles (Feb. 96 CE)	$4.00
TT001	Team Tucson Land Speed Record Plans	$5.00
IDX001	EAA Current Events Index - 10 Years!	$4.00
XA100	EAA XA-100 Hybrid	$5.00

Other EV items

BS800	Bumper Sticker with 800 number 3.75x15 inch	$3.00
BS002	Bumper Sticker with "the Switch is On", 3.75x15 inch	$3.00
CAP001	100% Cotton Cap, Forest Green with Yellow Ink	$8.00
DC001	Decal - black and red, 3x9 inch, for Window	$3.50
KC001	Key Chain with LED light and "30 Years 1967-1997"	$2.50
MUG002	Thermal Mug	$6.50
MUG003	Porcelain Mug	$5.50
PS001	Polo Shirt w/ embroidered logo select shirt color & size: Teal Green, Forest Green or Navy (s,m,l,xl)	$30.00
SS001	Auto Window Sun Shade with Logo	$8.00
PN001	Ball point writing pen with EAA and 800 number	$1.00
CS001	Current Solutions/Motor Show Video Tape (14 minute runtime)	$15.00
WL001	Window Literature Holder (fits pages 8 5 x 11 inch)	$25.00
PARK01	"EV Parking Only" Sign (18"x12") green icon	$25.00

Electric Auto Association Store Order Form

Send order to: EAA Store
5820 Herma St.
San Jose, CA 95123-3410

Name _____ Phone _____ _

Address _____ _

City _____ St, _____ Zip _____ _

Item #	Size/Color	Quantity	Item Description	Unit Cost	Amount

Subtotal	
Postage (10% of subtotal, for USA*)	
Handling	$2.00
Total	

* for Canada add 15% or for other foreign destination add 25 % for postage

KTA
p32a999

ELECTRIC AUTO ASSOCIATION
P.O. Box 6661, Concord, CA 94524

● Address Correction Requested ●

NON-PROFIT
ORGANIZATION
U.S. POSTAGE
PAID
SUNNYVALE CA
PERMIT NO.
420

● Time Dated Material - Please Do Not Hold ●