Electric Auto Association

CURRENT EVENTS

December-January'99/00 Promoting the use of electric vehicles since 1967 Vol. 31/32 No. 12&1

GENERAL MOTORS TO CONTINUE PRODUCTION OF EV1

Four major news agencies carried it. The news spread across the country almost instantly. General Motors had pulled the plug on the EV 1. It was not hard to believe. Honda had stopped production of the EV Plus to build their hybrid Insight, would not all the auto companies go in that direction now? It was so believable, for months the new hybrids had pushed the straight electric's into the background by the press, always looking for a fresh news angle. But only for one thing, it was not true.

In retrospect it never did seam to make sense. GM is not in the same position as Honda. Honda has a hybrid to take the EV plus's place. GM had nothing to replace the EV 1. GM also had a lot to lose politically. There was still plenty of political mileage to get out of their controlled limited leasing program. For GM their electric car is also a good test bed for EV components that will someday go into a hybrid car of their own . At least for now the EV 1 is safe, but when the day comes that GM has it's own hybrid vehicle, only the future will tell.

The following are GM press release's explaining the facts behind the whole affair.

GM ADVANCED TECHNOLOGY VEHICLES

You may have become aware of some recent articles and radio broadcasts that imply that "GM has pulled the plug on Electric Vehicles". I want to assure you that those stores are not true.

GM remains committed to electric vehicles and we have not made any changes in our policies or plans that would warrant any new news. In short, we have not given up on the program as these stories imply.

The basis of the stores were apparently from comments made by Vice Chairman Harry Pearce at the North American International Auto Show in Detroit when he said that the company had sufficient supply of EV1s on hand and while GM could build more, there was "no particular need." I had hoped that the articles would have included a context reminding readers that we currently have a sufficient supply of vehicles

Continued on page 15

In This Issue

1 Happily the news was not true. GM was not pulling the plug on EV 1. According to GM spokesman Jeff Kuhlman GM has said all along that it would continue to build EV 1s as long as there was demand. He said GM's commitment to the EV 1 hasn't stopped, it's greater than ever! CE covers the story this issue.

4 Six members of the Los Angeles chapter of the EV 1 club make a "test run" to Blythe and back. Each driver traveled over 500 miles in two days, for a total of more than 3,000 miles for all the participants. One of the six EV 1 drivers, Bob Hadden recounts his story.

9 Every activity or event has one major spark plug. A person who starts it and keeps it going to the finish. For the big Silicon Valley Rally Will Beckett is the man. This month Will gives us an inside look at the highlights of Silicon Valley's Rally 99. He describes a behind the scene view of what it takes to pull it off.

10 Even more in depth than last year, Mark Hanson covers last November's NAEVI 99 EV conference. All the major manufacturers of EVs were displaying their vehicles. Present was Honda, Ford, Daimler-Chrysler, GM, Toyota and Nissan to name just a few. Mark covers the technical improvements shown for the year along with a conference summary.

12 The 1999 all chapters annual meeting was actually held on January 15 th, 2000. For those of you who missed it, the meeting started out with a power point presentation by chairman Kurt Bohan, was followed by committee reports, and closed with the traditional open forum. CE prints the minutes in it's entirety, hope to see you next year.

14 The San Francisco 1999 Auto Show this year was held at Moscone Center. Unlike past years hybrid cars were now on display. Despite the progress of the hybrid car revolution straight battery powered electric cars were pushed to the back corner of the show. Terry Wilson shares with use his view through his excellent coverage.

20 News in Brief - Six more pages of the most interesting news releases we could find.

29 Member Want Ads - Why lease an expensive new EV when you can find a real bargain through our want ads?

SHOP AT THE EAA STORE SEE PAGE 31

PHOTO CREDIT - COVER

A General Motors EV 1 shown outside CalStart's Hangar 20 in Alameda

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Good Luck Clare

Well the cats out of the bag. As many EAA members already know our long time CE Editor and EV evangelist, Clare Bell, has taken a job in Norway. It was indeed hard for her to leave CE and her friends behind, but the opportunity was too good. After having worked several years on Pivcos, Clare was offered a full time permanent engineering position with Think in Norway. Think is the new name for Pivco. As it might be, everything lined up in her favor. Just as the Pivco based station car project was shut down at hangar 20, Ford Motor Co. bought Think out. All of a sudden Think Nordic had lots of money coming from America and Clare an American had lots of knowledge she could bring to Think. And so the cat slipped away, much to the EAA's loss, and a gain for the world at large.

After seven years working on Current Events it will be hard to imagine CE without Clare's stories of number 13 or her new Tiger Car. I think though I will be the hardest hit of all. After two years of working with Clare on CE I have lost a close work-mate and friend. We made a good team, it will not be the same to go it alone. Change though creates opportunity and I'm already encouraged with the increased offers of help.

I believe the cat will someday return to stock her old ground. When she does return she will bring with her more stories and knowledge than she could have gained by staying. So all I can say is good luck Clare till we see you again.

Kurt Bohan, Pubisher/Editor Current Events

Clare Bell in the new Think EV

The Cat using her tail to shift in reverse

Cats love to get into everything

Sometimes not everything fits

A trip to blythe

By Robert Hadden

In March a small group of EV1 Club members started making plans to organize a road trip where the California EV1 owners could meet the Arizona EV1 owners. A trip to Blythe, California was suggested, because it is a town about half way between Phoenix and Los Angeles, on the AZ/CA border. Plans started to materialize, and a date was set for the weekend of April 10 and 11. Primarily because the desert starts to get very hot in May, and everyone wanted to do the trip while the weather was still cool during the day. Unfortunately, the Arizona folks couldn't get together in time to make the trip by that date. Not to be discouraged, six EV1 owners, the real 'wing-nuts' of the bunch, in the California group decided to make a 'test run', just to figure out all the logistics of how to make it happen. One of the six EV1 drivers, Bob Hadden recounts his story:

Driving into the sunrise on a cool, California morning in a fully loaded EV1 was how I started my weekend adventure. The trunk was loaded with a tent, blankets, lawn chair, other camping gear, and a portable Magna-charger. Not having a passenger with me, I was able to utilize that space for more camping gear and an ice-chest full of refreshments. It was a refreshing feeling, driving east on such a clean-air morning. The rainstorm from the previous day had blown away all the LA smog, and while humming down the highway in my EV1, I knew that my car was going to keep it that way. I stopped at the Cerritos Saturn dealer first for a quick charge, a breakfast snack, and a 20-min. morning walk for a little exercise on such a beautiful day. With a full charge in both the car, and me, I set out for the next stop in Corona, keeping my speed at a steady 55mph. Such a beautiful day needed to be savored slowly so why rush?

The charger in Corona was easy to find at the Wal-Mart shopping center. I knew that I would have to wait about two hours for a charge, so I spent the time catching up on some necessary reading. The car's comfortable seats and the stereo in accessory mode made this an enjoyable, relaxing way to pass the time. Because the Wall-Mart charger operated at 240 volts, I could charge to a higher level slightly faster than I could at my next stop, so I waited a little longer before heading on my way to Moreno Valley.

Photo proof that many of the miles traveled were by freeway

The trip to Moreno Valley was a little quicker, only 20 miles, but I was behind schedule now. Finding the chargers was easy, since I had spent a lot of time in preparation to locate all my stops on the map, including landmarks. Also, I had spoken to Greg Hanson, the leader of our rally, and he wanted me to get going a much sooner without reaching at least a 90% charge. His analysis was that I could spend less time charging since I would gain back much of my range after the town of Banning, because it was a long 20 mile, down-hill stretch to Palm Desert. Still, I had my reservations, and I was reluctant to take the risk. I felt that my car's performance wasn't doing as well as I had expected, and I was worried I would not make the climb up the steep hills to Banning. I decided they would just have to wait a little longer in Palm Desert for me. It was important not to get stuck halfway, and so I waited until I reached at least 92%. Besides, the Moreno Valley Mall was a nice place to visit, and lots of people were visiting me, asking me questions about my EV1. I hated to give up an opportunity to plug electric transportation.

The moment of truth finally came for me to leave Moreno Valley for Palm Desert. I would be saying good-by to the Los Angeles area, the land of opportunity charging and public Magna-Chargers. My excitement overcame my trepidation, and I headed up the highway, up the steep hills to Banning and beyond those imaginary

A typical stretch of road

boundaries I had thought would certainly consume all my battery power, and would break my EV. Such thoughts were squashed by my positive spirit, and as I reached the crests of highway in Banning with 3 bars to spare on my range-meter, and the downhill slope approaching, I knew that this electric car could make it to Palm Desert. Flying downhill past the wind-turbines spinning on the hillsides of the San Gregonio pass, I felt proud that some of the electrons in my battery pack had come from those renewable sources. At that point I smiled and knew that nothing could stop the movement toward electric powered transportation, because the renewable source of power for my car was right in front of me.

Turning off the highway into Palm Desert, after coasting downhill for such a long time, my car felt like it was just floating along on the flat, smooth desert roads. When the light turned red at the traffic light, I really hated to stop because the car had so much momentum. I followed the signs to the Desert Center, and arrived at 1:20 PM in the afternoon at a very well equipped EV charging station. I was a little late, but still very welcome. Walt LeFrancini had prepared an event for the arrival of all the EV1 drivers, so it was an impressive picture to see all six of our EV1 cars parked together, lined up in the shade. Everyone was discussing the details of their trip, comparing watt-hours, range displays, number of bars, amp-hours, charging sites, and all the other EV related topics that most EV techno-nerds get jazzed about. Food, restrooms, good company, and shade helped me fall into that relaxing, warm desert atmosphere that can only be found in this area of California. No one seemed to notice the time passing while our electric cars gulped down that precious electric fuel needed for the next major leg of the trip.

It was soon time for the first wave of EV drivers to leave, their cars charged over 92%. One other late-arriving driver, Bill Mason, and myself stayed behind to continue charging our batteries for another hour. Our host, Bill, and I had a good opportunity to discuss many EV related topics, so the time passed quickly. I had made it to this beautiful oasis in the desert and I was tempted to just be satisfied with my current progress, and stay behind. As the desert sunlight passed through the lattice roof over the parking spaces, narrow striped shadows were cast over the curvaceous shapes of the EV1s. This effect made the electric cars appear to be sleeping fish, resting in the shade under the rippling surface of some desert oasis pond.

The sun had already passed its zenith, and the "Empty/Full" meter on my EV1 dashboard had reached it's climax. The leader of our first-wave team was calling us on his cell phone, urging us to get started right away. It was time to go. Bill Mason and I packed up our chargers and other gear, then bid farewell to our Palm Desert hosts. One thing to note about roads in the desert - they are usually very straight, and very smooth. Gliding along these roads in an electric car is as close to silent soaring through the air without actually leaving the ground.

As I lead and Bill followed, we talked to each other on our portable phones. Both of us were having serious doubts that this was a rational thing to do, but we were doing it anyway just for the adventure of it. Heading out of the urban areas of Indio and the Cochella valley, we could see the Interstate highway sloping up into the barren, desert hills. Our next major goal was to reach Chiraco Summit, the highest elevation of the whole trip, a good 40+ miles and 1000 ft up. The bleached, dry hills encroaching from the east would not offer any measure of forgiveness if my EV failed to reach their summit. The risk was formidable, but I couldn't give up, it was not in my nature to do so. There was still another 96 miles to go, and one more charging stop to make before reaching Blythe.

Happiness is finding a charge station

Our leader, Greg, was calling us frequently on his cell phone letting us know

that they had made it to the top with a little juice to spare. They were continuing on for another nine miles to the RV Park where we had reserved two sites for charging. He encouraged us that we would be OK, and not to worry. Realistically, no one else had problems, there was no reason that we could not make it. In the back of my mind I could think of lots of reasons that it couldn't be done, but I didn't listen to them, and I kept going.

It wasn't long before we were heading up the steep incline towards Chirocco summit. We needed to go as slow as we could to conserve energy, while still keeping up with traffic. Fortunately, I was able to slink in behind a slow moving truck, laboring up the hill. I could follow it and not feel so bad while all the other recreational traffic passed us at 70+mph. Soon the steep hills relaxed to more gradual hills, and my range meter didn't drop quite so fast. Still, it had dropped significantly, and I knew there were 19 miles to go before reaching the summit. My range meter displayed 21 miles and I was still climbing. My doubts began to dissolve my positive spirit. Through the wonders of cell-phone communication, I was able to contact the lead drivers ahead of me, and get encouragement and motivation to keep going, and not to worry.

EV 1's sipping juice in the sade

The other drivers had already reached the RV Park and their cars were all just fine. I kept my speed at 46 mph in order to conserve my little remaining battery power, knowing full well that I had to drive farther to Desert Center than the numbers displayed on my range gage. This was going to be a real trick of faith to resist stopping, and hope that the car did not switch into "Reduced Performance" mode. That would mean sure disaster for my batteries, and I was in the middle of the desert, surrounded by no human technology for support. It was definitely faith that would get me there.

A group shot along the way

Never have 18 miles seemed to take such a long time to pass. As I approached the Chirocco summit rest stop, my range meter displayed 2 miles of range, and the "Empty/Full" gage displayed 1 lonely bar of remaining battery power. Much to my chagrin, a highway sign indicated that the turn-off for our charging site was 9 miles away. I knew that I would be beyond zero state of charge when I arrived, and I was becoming more skeptical that I would even arrive at all. More cell phone communication to the group ahead of me, and my companion in his EV1 behind me, gave a boost to my spirits.

At that point the desert highway seemed to be pretty flat, but the 'as-promised' downhill grades didn't materialize like I had expected. I tried to maintain a steady speed of 46 mph despite the faster traffic encroaching on my tail, and passing me in defiance of the roads resistance. With the sun sinking slowly in the west, on this lonely, flat stretch of desert highway, there were no stops. There were no turn-offs. There was no turning around. I focused all my thoughts on reaching the RV Park with the rest of our group, and ignored the car's range meter when the last bar vanished. The triple-diamond display lit up the dash, indicating empty. The EV1, being the fantastic car that it is, alarmed me that battery failure was immanent, that charging was necessary, that I should check my messages. I had to ignore it all, and keep gliding along that desert road at a steady 44-mph, focusing only on the goal of reaching my destination.

Minutes passed, the turn-off road finally appeared, and I coasted off the highway, trying to spare what precious voltage that I had remaining. The long gradual slope down to the RV Park allowed me to coast the whole way, and I finally arrived at the charging site among cheers, and applause from our lead group. What a sight to see all these exotic, shinny, curved EV1's corralled together in the desert like space craft from an unknown universe that had come to rest in this hostile earth environment.

Relaxation, laughter, food, beverages, and good stories ensued for more than an hour while our vehicles charged their batteries. They sucked up their precious amps

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from chargers strewn about in the grass; their electrical umbilical cords attached to vacant RV power posts. The sun gleamed above the edges of the desert brush, casting long shadows that tickled the gleaming panels of our vehicles.

The first group of drivers was anxious to get to Blythe before sunset. We made arrangements to meet in town and coordinated our destination schedules, then the first group packed up to leave this quiet park for the final stretch of the trip. Bill and I needed more time to charge, so we decided to wait a while longer in this peaceful desert atmosphere.

It wasn't long before our portable phones were ringing with calls from the lead group. They had arrived in Blythe, and we were encouraged to get started again. With strong promises that the final stretch of road was flat, and an almost full charge on our meters, Bill and I agreed that it was time to drive. We said goodbye to this quiet, deserted rest stop, leaving not even a sound behind. The added power to the batteries seemed to boost the car forward onto the flat desert highway. I couldn't keep the speed below 60 mph, as the car sliced through the still desert air into the darkness encroaching from the East. The lights of Blythe twinkled before me just 40 miles in the distance.

Bill and I rolled into Blythe with a whisper, and were immediately surrounded by the beaming lights of billboards and gas-station signs. Motel-6 was one of them, and the destination of our lead group of EV drivers. Slipping into the parking lot in 'stealth-mode', we had to wait for a crowd of locals gawking around a straight line of electric vehicles parked under the lights. They appeared quite amazed and curious when they realized that there were even more electric vehicles to contend with. Certainly more than they had ever seen in one place before.

Charging spots were setup at the motel, and some other cars drove up the road to charge at an another RV park. Knowing that all our vehicles were safe, and feeding on electronic power, the rest of us could relax in the local tavern to dispense with the day's worth of stories and observations. The day's excursion was a complete success, with no complications or complaints. It felt both strange and euphoric to have driven so far from home, and to have not stopped at a gas station. The thrill of success had completely overwhelmed any doubts that I may have had earlier in the day.

THE TRIP HOME

When dawn arrived the next day, all of the vehicles were completely charged and ready to go again. When all the drivers were sitting around the breakfast table at the nearby restaurant, we agreed to drive home in small groups. This strategy would allow us to charge at different sites in the Palm Desert area without conflicting with each other.

The parts that made the return trip so memorable were the rest stops along the way. Waiting to charge the cars at the desert RV Park was quite peaceful, and relaxing in the morning sun. The Marriott resort in Palm Desert was an exquisite oasis of luxury. At the Palm Springs Hilton, the hotel staff was very friendly, and there was much to do in the center of town. Heading out of Palm Springs, all six electric vehicles managed to meet up on the highway and formed a caravan all the way to Banning. Eventually, the highway split and we had to follow our separate directions. When I finally made it back to the Wall-Mart parking lot charger in Corona, there was an excellent restaurant nearby. I was able to have a pleasant, delicious dinner in a relaxing atmosphere where I had no problem lounging for two hours waiting for a charge. Unfortunately, a heavy rainstorm had settled over the Los Angeles and Orange counties, making the remaining part of the trip somewhat treacherous at night. But there were no disasters, and all of my fellow travelers were able to finish the complete trip, driving their electric cars safely home.

This road rally was a phenomenal event for all of us. The significance being that we proved that electric cars could be driven for long-range trips. Each driver traveled over 500 miles in two days, for a total of more than 3000 miles for all EV participants. The trip went so well that I expect that all of us will be planning many more long-range trips with our EVs in the future.

DID THE DOG EAT YOUR EV PREVIEW 2000?

Or did your gasoline car leave oily tire tracks on the cover?

Well, never fear! EAA in its wisdom bought EXTRA copies (for those unfortunates who harbor magazine-eating puppies or vengeful petro-mobiles). So just order up another for your friendly EAA store and it'll be right in your mailbox. Just be sure that the above-mentioned malevolent entities don't get to it first.

For those unfortunates who aren't members and did not receive this excellent survey of EVs and HEVs available by the year 2000, JOIN EAA NOW! and order a copy via the EAA store order form, conveniently located on p. 31.

Electric Auto Association Election 2000 Results

Ed Holsinger	244
Ed Thorpe	244
Will Beckett	2 (write-in)
Jerry Asher	1 (write-in)
Jon Mauney	1 (write-in)
Bruce Edgeworth	1 (write-in)
Jeff Simpson	1 (write-in)

Our 2 new board members are Ed Holsinger and Ed thorpe.

Total ballots sent	1023
Total ballots returned	250
Percent returned	24.4%

Thanks again to those who took the time to vote and return ballots on time, especially those who made the extra effort to air mail their ballots back from out of the country to get them in on time. This election was done at no cost to the EAA. Time, materials, and postage were donated.

Scott Cornell
EAA Election Committee Chairman

Highlights of SV Rally 99, an insiders view

By Will Beckett

Behind the scenes of the event are the people that year after year put in time to make this event a great success. Bob Wheeler has managed to coordinate the electrical connections which make charging possible for many EVs. One station includes a wide variety of connections totaling 150 amps at 220 vac. There is also another 100 amps in the display area. The Silicon Valley Chapter purchased cable to make this connection annually. The chapter feels this is an important benefit to offer and expects to continue to provide power to all rally participants.

This year I happened to be listening to my police scanner the night before the event and heard the Palo Alto dispatcher talking about a person needing to open a gate to get to the charger so they could charge their cars for the event. Since there is no gate to get to the charging I was very confused by this message and decided to go over to Stanford and see what was going on (I live only 10 minutes for the site) . I found many Saturn people standing around and asked what was going on. They indicated that no one had said there was a lock on the generator and they wanted to start it so they could charge the vehicles over night. here were six inductive chargers connected to the generator. So I opened the lock and started up the generator and the charging began. The Saturn folks were very pleased and I contacted the police department to let them know they could cancel the call.

I arrived at the event the next day sometime before 7:am and began to setup signs and garbage containers. Unlike previous years I had taken many of the event materials to Stanford the night before. There is a great place to stash these so they cannot be seen.

Although we suggest that vehicle's in the rally arrive by 8:am many don't come until 9 and some don't show up until the start of the event at 10. Saturn was there first with the big semi truck and unloaded the full "road show" display. The Impact race car and a very sharp EV-1 with a special iridescent paint job. Both vehicles were setup in the display area next to the Nissan Altra, Solectria Force, Corbin Sparrow, the Gizmo, the BAAQMD and RAV-4EV. NEDRA was represented by Rich Brown's Mazda RX-7 (Duelin-7). Also in this years show were many project cars from the J.L. Stanford Middle School Electric Car Club run by Brad Booth (and consultant Bob Schnevise). Rich Lange had his usual collection of home built projects which included a beautiful motorcycle that was an absolute masterpiece. Our usually club member vehicles were there and looking very sharp.

A line of GM EV 1's giving rides at SV's big Rally 99

The layout was much the same as other EVents we have done at Stanford except that this year we used the closed off area leading up to Hoover Tower as a test track for ZAP, Sparrow and other personal EVs. This worked very well and gave visitors lots of room to enjoy what they were most interested in. During the day when there was some time I moved through different areas of the event and observed the usual EV Rally activities. People were looking under hoods, crawling under the cars, asking lots of questions (mostly the same ones we are all use to) and all with big smiles on their faces. Clearly we had another big hit.

On this day I also had to leave for a dress rehearsal of Madame Butterfly done by West Bay Opera. I had a non signing role in the production and rehearsal was scheduled for 5:pm but I had enough help that all of the basic items were done and when I checked back that evening there were only a few Saturn people waiting for the last few cars to be pick up by flat bed trucks to be taken back to Fremont Saturn.

Our sponsors have received their thank you letters and in some cases a copy of the video of the day's activities. Now we can start getting ready for next year. Thanks to all who contributed to this year's successful EVent!

Will Beckett <will_beckett@hp.com>

NAEVI 99 Technical Improvements Report

by Mark E. Hanson

All the major manufacturers of EV's were displaying their vehicles, Honda, Ford, Daimler-Chrysler, GM, Toyota, and Nissan. None of these were for sale however. Only Ford had a lease program that the general population could buy although on a limited basis. For now the Ford Think may be available in 2001. The two hybrids, which are essentially high mileage gas vehicles are for sale. The Honda Insight $18k 70 mpg (EV1 2-seater lookalike) available in December and the Toyota Prius $22k 55 mpg (four door family sedan) in July 2000'

I asked a Nissan spokesman why the ICE and hybrid vehicles are always available as soon as they come out and the same EV's I have seen for 5-10 years are always "under development" and "not for sale to the general population". He said that the major manufacturers have no intention of directly selling EV's and that they will always be leased on a limited basis due to battery exchange requirements and high voltage liability. A GM spokesman said that they loose money for every vehicle leased so they don't want to mass sell (loose money) on a wide scale. This goes back to reducing cost through high volume sales which won't occur unless excessive gas prices or government subsidies. He said they were presently meeting government requirements for EV introduction. Only Solectria and smaller converter companies were selling vehicles outright. Contact EVAA.com for a complete listing of available vehicles. And there are kits of course for those inclined.

Another EVE manufacturer was VAS buses (was GE-EVE, sold to PT, sold to VAS) who built their 100 th bus this week. Half were pure electric and half hybrid. Another zero-pollution technology that I found very interesting was compressed air vehicles, which the two attending spokesmen I met from Zero Pollution Motors, Inc. (http://www.zeropollution.com) said was "disruptive technology" since it didn't fall into any pre-praddled category and didn't use batteries. Mike Frippel and Shiva Vencat showed me a video of their vehicle and gave me a spec. claiming 60 miles range at 60 MPH or 120 miles at 30 MPH after a 4 hour compressed air charge from an onboard 240V 5.5kwh compressor generating 812 cubic ft/hr. This is accomplished with 3 carbon fiber tanks under the vehicle pressurized to 3200 cubic feet @ 4500 psi. (160 cubic feet @ 5k psi = 1 kwh of energy stored). This is about 20 kwh stored similar to an EV without the additional weight. The three vehicle types used in Europe were a London Taxi version, a small delivery van and a pick-up all with a 1100 lb payload. The vehicles weighed 1543 pounds due to no battery to carry around. I asked them about what happens in an accident and Mike said due to the construction of the carbon fiber tanks they emit a loud hissing sound when punctured but no explosion since compressed air is non-combustible. The vehicles will sell for about $14k in the US Mike said.

Leading the pack, the honda Insight

Test Drives:

The EV-1 drove with sports car like performance with its 102 kw motor at 312 volts. The most potentially affordable looking car was Toyota's Ecom (since 97') and the Think (since 95') (formerly Pivco Citybee). The Ecom generally appeared to be the favorite car due to its styling and two-seater commuter car design. The Ecom handled a little better around corners but both were good designs and would make a nice daily drive to work car but alas not presently for sale. The Daimler-Chrysler E-van handled remarkably well for a 5k pound vehicle. A Chrysler spokesman said that these vans will only be sold to airports and military bases where they make sense. They will never be sold to the general public since vans are used for trip vehicles. Typically

the 2k pound vehicles (most aluminum) were .3 kwh per mile and 4k pound vehicles were .6 kwh per mile requiring 240V charging, double size controllers/motors/batteries. This was especially true for the ICE converted vehicles like the E-van and Ford Ranger. Thus the lightest vehicles made the most cost effective commuter cars. All were AC drives which drives up the cost $3-10k per vehicle over a similarly DC shunt drive control at same 95% efficiency. Toyota's Ecom switched to inductive charging which will add some cost if they decide to sell the vehicle. Both hybrids operated seamlessly from electric to gas drive.

Both the Honda 2-seater Insight and the Toyota 4-seater Prius were parallel hybrids. The Prius was more complicated under the hood but ran quieter from outside the vehicle. Other aluminum fuel efficient cars are the Audi A2, Opel G90, BMW Z8 and Z9. It is noted that direct injection diesel engines using no-sulfur fuel for no particulates (if available) can get similar mileage and pollution levels as hybrids with substantially reduced cost and complexity. Presently no-sulfur diesel is only tested in California and the oil companies don't want to make it due to the additional refining process.

Conference Summary:

Mike Anderson with Georgia Power (part of Southern Company) introduced 400 more EV's into their fleets, more than Southern Edison and presently have the largest employee lease program. Georgia governor Roy Barnes said that Atlanta is 3.5 million and will grow to 20 million in 20 years surpassing New York so we must turn to pollution free vehicles. This will be a mix of vehicles, hybrids for trips, EV's for commuter vehicles etc. Air quality will effect economic development so alternative vehicles will be put into operation in order to continue expanding.

Dr. Peter Horrup from England had a EV marketing survey which showed that presently Fork Lifts are the dominant EV sales but will become less significant in the next 10 years as EV drive trains will be required for hybrids and pure ev's. In ten years EV sales will go from 13.5 billion to 44.5 billion annually. John Wallace with Ford said we have to start selling ev's for a profit in order to grow the market and this will be done with hybrids which will fall out cheaper parts for lower volume pure electrics. All of these vehicles must be made with aluminum frames. Hybrids will be profitable presently and fuel cell vehicles won't be for 10 years. Ron Cogan with Green Car Journal said that the major barrier to EV sales is the cost and must come down to $10k for a small commuter vehicle to be purchased on a mass scale.

Mike Clemer with Daimler-Chrysler said their Epic minivan now has 200 miles with NiMH batteries and is used for the Post Office, airport shuttles and government/military fleets.

Mark Perry with Nissan added 300 R&D engineers to work on hybrids and EV's. Their Altra EV uses Lithium-ion batteries and sold 130 to utility fleets with a 80 mile real world range. The Hypermini (similar to the Ecom) has a 70 mile range with a CVT (constant variable transmission) he said.

Doug Anderson with Solectria said they have sold 400 Solectria Forces (Geo Metro conversions) since 89'. They grew to $10M in sales and now make the drive trains for AVS (Chatanooga and New York) buses (was GE drive before GE-EV business was sold).

Bill Biermann with AVS implemented electric buses at Logan airport where they have proven to be 30% more cost effective over gas vehicles. Ground equipment and air-side bag handling equipment is more desirable as EV's since they go inside the airport on pick-up and delivery. American Airlines had the biggest push for 600 EV's. United purchased 475 EV T-135 tractors with Curtis and Sevcon controllers using Advanced DC motors.

Dick Baxter with Tug Manufacturing talked about improving technologies and said that airports are going to electric push-back tugs due to lower maintenance and cheaper operation. The M3A model had a low center of gravity with the batteries between the wheels 50-50 weight distribution like all well designed EV's should.

Joe Furguson with AVS talked about how electric and hybrid buses were more cost effective and lower polluting to operate. He also pointed out that (for safety and fires) when operating any EV at >300V to keep local points away from each other to <75 volts. Thus single wire cables to & from the batteries instead of having dual connectors. The AVS buses got 80 miles range (.8 kwh per mile eff) in summer and 55 (1.1 kwh per mile eff) in winter. Opportunity charging required weekly equalization charges. If the EV follows the standard dv/dt=0 taper shut off on each cycle then weekly equalization is not needed but never occurs in practice do to between shift charging.

Mike Savonis with the Federal Highway Administration talked about federal funding for EV programs. Look at fhwa.dot.gov/environment he said. Dave Rodgers pointed out a good sight for comparing "green" vehicles at www.fueleconomy.gov. The EV funding office is at 1-800-423-1DOE or 1-800-CCITIES. John Wilson head of SCAT talked about how to get government funding for EV projects. jwilson@advtrans.org for SCAT info.

Batteries:

Last but not least was the battery summary starting with Tadek Borys talking about commercialization of the lithium-polymer battery. Cost is of course the barrier and operation at 60C. He said that the batteries could be brought up to 60C in two minutes after sitting in a parking lot with internal battery box heaters.

Mike Saft with Saft Batteries showed that $150/kwh is the target to make new battery technologies affordable and the 4 market release requirements are volume, technical improvements, cycle life, secondary use markets. Hybrids will bring battery cost down. NiMH is the best with $300/kwh in 3 years.

(NAEVI 99' Atlanta Nov 17-20 conference proceedings with audio available at evworld.com)

Mark Hanson
<mhanson@valcom.com> - or
<mhanson@roanoke.infi.net>

Minutes from 1999 Annual EAA General Meeting held on 1/15/2000 at the HP Facility 5301 Stevens Creek Blvd. San Jose, CA

Annual meeting convened at 10:20 by Kurt Bohan, Chariman

It is noted that we do not have a membership quorum present, so no motions can be made or carried at this meeting.

Minutes summary from 1998 were summarized (written minutes were not available). Since no hard-copy minutes were available, the minutes were not approved.

Agenda for 1999 meeting presented (as shown below) and approved

Agenda for EAA Annual Meeting

To be held on January 15 th, 2000 , starting 10:00 am
At Hewlett Packard, 5301 Stevens Creek Blvd, Santa Clara, CA

10:00 - Call to order by Chairman Kurt Bohan

Introduction of board
Roll Call, Quorum established
Approval of minutes from 1998 annual meeting
Approval of January 15 th 2000 Agenda

10:10 - Chairman's Summary of 1999

Committee Reports

10:25 - Finance - Treasurer Stan Skokan
10:40 - Publications - Kurt Bohan
10:55 - Membership - Anna Cornell
11:05 - Election committee - Scott Cornell
11:15 - Historian's Report - Terry Wilson
11:30 - Tech Committee - Bruce Parmenter
11:45 - Advertising Report - Roy
11:50 - Cars for Clean Air - Kurt Bohan
11:55 - June Munro Appreciation Award - Stan Skokan
12:00 - Open Forum - Membership Feedback - Q & A - Membership
1:00 - Meeting Adjourned

Chairman presented summary of 1999 - a powerpoint presentation including the following points:

Invasion of the Hybrids
Honda drops EV Plus
Founder John Newell dies
CE Moves 5 times
Clare Bell moves to Norway
Bruce Takes us deeper into cyberspace
History movement picks up speed
Scott and Anna redo EAA database
Silicon Valley rally - still the biggest, still the best + Photo (EV1s at rally)
Commercial electrics come into use
Second generation batteries come of age
Hybrid cars go on sale to the public
Cars for clean air makes it big + Photo (Bradley GT II)
CE gets an office
EAA must have a vision
EAA must create projects and Activities members want to get behind
EAA must maintain stability
Maintain a stable environment
Adopt PDF as universal standard
Make better use of the Internet
Why PDF ?
Reduce cost with the printer
Is the best bridge between cyberspace and the printed world
Is the best presentation tool to sell CE
Is the best format for the preservation of an historic document
Helps protect legal copywrite
Write grant proposals for government money
Work on hardware projects using donated materials
Use Hangar 20 infrastructure
Machine Shop + Photos of shop
Hangar 20 floor space
Runways (test track)

Financial report presented by Stan Skokan, Treasurer. Copies of the financial report were passed out to board members, and made available to the general membership present.

Publication report presented by Kurt Bohan, Publisher. Direction toward bi-monthly publication with addtional "special" editions in between Need additonal material sent to CE for publication

Membership report presented by Anna Cornell, Membership Committee. New processes for renewal notification and complete address listing distribution were presented

Election committe report presented by Scott Cornell - Election Committee

There were 2 openings on the board to be filled this year. Results were:

Ed Holsinger	244 (elected)
Ed Thorpe	244 (elected)
Will Beckett	2 (write-in)
Jerry Asher	1 (write-in)
Jon Mauney	1 (write-in)
Bruce Edgeworth	1 (write-in)
Jeff Simpson	1 (write-in)
Total ballots sent	1023
Total ballots returned	250
Percent returned	24.4%

Historian's report presented by Terry Wilson, EAA Historian

- Ammeter repair of SJ museum's car
- Drive of curved dash olds successful - good range
- 16mm film of Mr. Aaronson converting a car to electric from PG&E - to be converted to VHS tape
- Pacific Coast Dream Machines - Half Moon bay - last Sunday in April

Tech committee report presented by Bruce Parmenter - Technical Committee

- PDF vs HTML presentation / debate - input wanted
- EAA web page layout presented
- Bruce was asked to shorten his presentation (during his presentation)

Advertising presentation made by Roy Kaylor - Advertising

- Advertising rates reduced this year because of membership drop, and to attract and hold advertisers.
- Push for additional members via membership drive
- Reciprocal advertising deals in the works with other related publications

Cars for Clean Air - To be handled during question and answer session

Appreciation presentation for June Monro - former membership representative, made by Stan Skokan

June Munro was presented with a gift, and received a standing ovation by all present

Short health break - meeting re-convened at 12:40 by Kurt Bohan, Chairman

Open forum

Cars for Clean Air - The concept was described to the general membership

- Input received on disposition of the donated Bradley GT II
- Sale (selective), lease, use for show / EAA presence
- Machine Shop at Calstart - question about accessability to general membership
- Not for hobby use, only for use on EAA coordinated projects

Presentation by Terry Wilson - A letter to the board signed by 8 or 9 EAA members from San Jose area summarized:

- Board accessability - the board doesn't seem to be accessable or too responsive
- C.E. needs to come out on time
- Need to look for new office space starting now, Calstart lease will be up in less than a year
- Backups needed for data for C.E. and completed C.E. files
- C.E. on-line (web) availability is needed soon

Much debate among the board and the membership about publishing and backups of CE, as well as many other items occurred at this time: The significant output was:

The Board needs help from the membership to continue with publication of C.E., as well as a few other items.

The board needs to publish a detailed list of items for which help is being requested, along with expected outputs, approximate donated time needed. Michael Slominski will provide a list that was established several years ago as a starting point.

The board needs to take action on setting up a method to respond to e-mail in a timely fashion

General Meeting adjourned at 2:15 by Kurt Bohan, Chairman

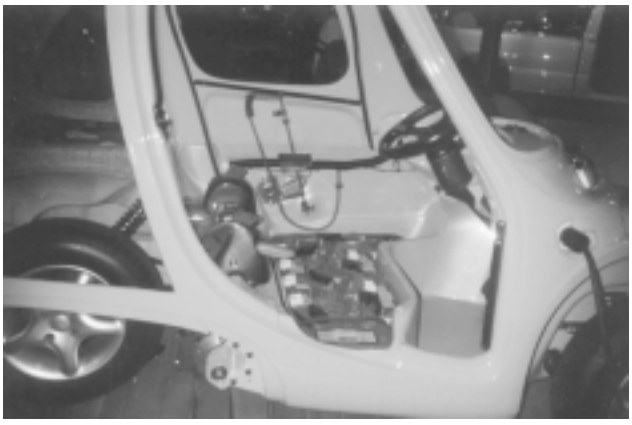
Scott Cornell - Secretary

1999 San Francisco Auto Show at Moscone Center

By Terry Wilson

The electric and hybrid vehicles at this show, were shown in a variety of ways. Toyota displayed their, Prius, along with all their other models. There was a lighted panel which featured the Prius. Brochures were available for all the Toyota models, except the Prius, which is not available until the end of next year.

Hondas hybrid, Insight, got the star treatment. A red one was on an elevated, well lighted stage. A speaker with a microphone told the audience about the car and answered many questions from them. I asked about the battery pack, and was surprised to learn it uses, 120 batteries. C



A cutaway view of the Corbin Sparrow

cells. The batteries have an 8 year warranty. The Insight uses an automatic engine shut off which turns the gas engine off when you stop at a light. When you take off from a light, the electric motor spins the engine as it accelerates the car, then the electronics will turn on the gas engine. Brochures were available.

Saturn displayed their EV1 along with their other models. They also had a large lighted panel featuring the EV1, and 3 EV1 reps standing with the car. Brochures were available.

Ford told me their Ranger electric was in the Synergy display, but only after the first rep. I talked to said she didn't know they made one. They had a gigantic booth with tons of brochures on all their models, except of course the electric Ranger. Same thing at Chrysler, same thing at Toyota, same thing at Nissan, no blanking brochures.

Corbin displayed several, Sparrows, including one which was modified so you could see most of the components. You could see the; motor, controller, charger, batteries, interior, and rear wheel with belt drive. They have had to change to a brushed DC motor, and controller, having had problems with the brushless DC system they had been using. This resulted in the need to regear. They have gone to a 13 inch wheel with wider tires. As of the end of November they have delivered about 30 Sparrows around the United States

Now for the pure electrics display. The sponsors were; PG&E, Calstate Parks, U.S. Department of Energy, and Clean

The Honda Insight was well displayed

Cities. This display was run by Synergy EV Inc.

The electric cars on display were; Toyota Rav, Ford Ranger, Nissan Altra, and Chrysler Epic (minivan). In addition there was an electric; Toyota forklift, Denali motorcycle, tractor/mower, ambulance/ maintenance vehicle, airport tram, and a display on the California State Park EV program.

Although it was great to have electric cars at the show, and despite the best efforts of the folks at Synergy, I really feel the best way to display them is to have each dealer display them along side all their other models. EV's shown at dealer displays got a lot of attention, where as those that weren't got almost none. As long as the dealers treat electric cars as freaks, to be ignored, so will the public.

Terry Wilson
eaa.historian@juno.com

EV 1 lives *Continued from page 1*

already produced as compared to current demand.

Unlike more conventional vehicles, our EV1 production has always been built in batches or blocks of about 500 cars. We built Block #1 in 1996 for the 1997 model year. We built Block #2 in 1998 and 1999. While sales and marketing of the Block #2 vehicles continues. GM made a decision to utilize the space in the EV1 assembly plant for other production uses.

We have maintained all of the equipment and tooling for the EV1 - none of it has been destroyed. The EV1 assembly line requires a relatively small amount of floor space and is designed with a freedom from many of the traditional complexities of high volume lines.

For example, none of the assembly operations require trenches to be provided in the floor for under-vehicle access. Thus, we can reconstruct the production line should there be sufficient demand for additional EVs.

The EV1 remains a key part of General Motors' leadership position in technology and innovation. Further evidence of GM's commitment to electric vehicles is apparent in the introduction of the Triax concept vehicle where Gen III electric drivetrain components, based on EV1 advancements would be used for a ZEV as well as a hybrid electric vehicle.

General Motors has taken some proactive steps to counteract recently published negative press on the EV1. An example of this effort appeared in the Detroit Free Press and on the WestStart-CalStart website. The Sacramento Bee has already indicated that they would be among the first to reprint this Detroit Free Press article. In addition, the Los Angeles Times published a correcting article on Friday, January 21.

We are pleased that accurate information is now being presented. In addition to initiating these retractions, General Motors Vice Chairman, Harry Pearce and Advanced Technology Vehicles Executive Director, Bob Purcell, conducted a follow-up conference to correct any mis-impressions on Thursday, January 20, with the following organizations:

Organization journalist
Carconnection.com - Paul Eisenstein
Associated Press - Justin Hyde
Chicago Tribune - Jim Mateja
Los Angeles Times - Nancy Rivera Brooks
San Jose Mercury News - Matt Nauman
San Diego Union Tribune - Mark Maynard

GM remains committed to the EV1 and to the development of EV technologies.

We are continuing to work on all aspects of the marketing plan to grow the owner base and generate more customer enthusiasm.

Ken Stewart
Brand Manager
GM Advanced Technology Vehicles
Mail Drop 483-619-122
1996 Technology Drive

EV1 Owners and Enthusiasts, Here is a message from Ken Stewart:

January 26, 2000

I'm pleased to update you on some of the proactive steps General Motors has taken to counteract recently published negative press on the EV1. An example of this effort appeared in the Detroit Free Press and on the WestStart-CalStart website. The Sacramento Bee has already indicated that they would be among the first to reprint this Detroit Free Press article. In addition, the Los Angeles Times published a correcting article on Friday, January 21 via the Dow Jones.

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L.A. Times - Nancy Rivera Brook
Wsan Jose Mercury News - Matt Nauman
San Diego Union Tribune - Mark Maynard

Furthermore, a letter stating our continued EV1 support has been sent to Government agencies, news publications, suppliers, and utility companies to supplement our calls and personal visits to our key constituents.

Again, I want to emphasize that GM remains committed to the EV1 and the development of EV1 technologies. We appreciate the active support you have contributed to set the recorded straight. We will continue efforts to restore perceptions among key constituents and the general public.

Ken Stewart
Brand Manager
GM Advanced Techology Vehicles
Mail Drop 483- 619-122
1996 Technology Drive

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.

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 142
Alameda, CA 94501
Tel. (510) 814-1864
Fax (510) 864-9293
E-mail: eaanews@aol.com

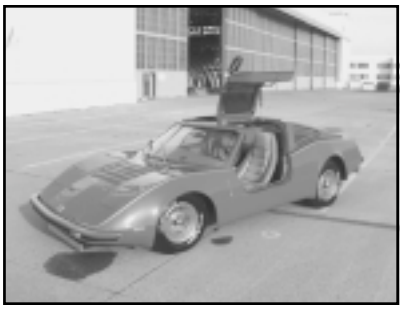
For the Sacramento area:
Tim Loree
7428 Wisconsin Dr.
Citrus Hights, CA 95610-7432
Tel. (916) 967-3044
Fax (916) 863-0303
E-mail: loreet@2xtreme.net

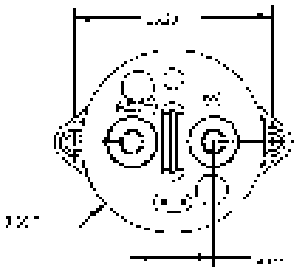
EAA AUCTION

Help EAA raise money, put in your bid to buy this beautiful 1981 Bradley GT II sports car. Save yourself money, drive away with this real classic.

GE Motor
Kodiak controller
96 Volt system
Russco charger
VW based
50+ mile range
$5,000 Starting bid

Contact: Kurt Bohan
Electric Auto Association
2701 Monarch St. Suite #142
Alameda, CA 94501
Tel. (510) 814-1864
E-mail: eaanews@aol.com

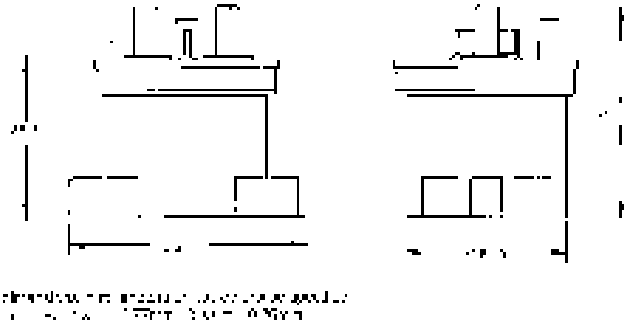




New from Kaylor Energy Products

KILOVAC Czonka 3

High Power Switching Contactor



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E-Bike is easy to ride! The **E-BIKE** is far more comfortable than an ordinary "head-first = sore back/neck" bicycle. Pedal as much as you want or as little as you want.

Prices starting under
$2,000

Mike's E-Bikes
2270 Yale Street
Palo Alto, CA 94306

Tel. (650) 493-7633
E-mail: saari@aol.com

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, Hangar 20, 2701 Monarch St., Suite 142 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 142
Alameda, CA 94501
Tel. (510) 814-1864
Fax (510) 864-9293
- or E-mail to -
EAANEWS@AOL.COM

AMERICAN TOUR DE SOL

MAY 12-19, 2000
NEW YORK CITY
to
WASHINGTON, DC
with additional events in
New Jersey, Delaware and
Maryland

It's the Millennia!
& 12th Annual Electric Vehicle Championship!

NORTHEAST SUSTAINABLE ENERGY ASSOCIATION

Please send me more information on:
☐ Entering ☐ Attending
☐ Volunteering ☐ Exhibiting or Sponsoring

Name _____
Company name _____
Address _____
City, State, Zip _____
Phone _____ Fax _____

Looking for good charge locations ?

Try checking into these URL's next time you are on the Web

http://ev1-club.power.net/chglist.htm
http://www.hondaev.org/chg.html
http://www.evc3.com/chargingsites.html
http://www.smud.org/evs/ICS.html
http://www.calstart.org/fleets/rechargerefuel.html

EVents Calendar

March 6-9

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

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

April 20-21

Transportation 2000, Portland Oregan. A one-day regional confrence and vehicle exhibit featuring the latest information on alturnative fuel vehicles, efficient fleet operations, and other transportation alternatives. Contact: Mark Kendall, Oregan Office of Energy. Tel. (503) 378-4040
E-mail: www.energy.state.or.us

May 3-5

Enviromenmentally Sustainable Transport, Vienna, Austria. The conference will discuss policies, strategies and instruments for achieving environmentally sustainable transport (EST) by presenting the main results of the OECD project. Conference will provide a forum for dialogue with different stakeholders and discuss best practices and innovative approaches to EST. Contact: Peter Wiederkehr, OECD Environment Directorate. Tel. 33 1 45 24 78 92
Fax 33.1 45 24 78 76
E-mail: peter.wiederkehr@oecd.org
Web site: www.oecd.org/env/ccst/est/

May 11-12

SAE/NESEA Hybrid-Electric Vehicle Conference, New York, New York. A two-day TOP-TECH symposium will present operational experience and the latest technology and research on heavy-duty hybrid-electric vehicle technology. Focus is on buses and trucks. Contact: SAE Tel. (724) 772-7148

May 12-18

12 th Annual Tour de Sol, New York, New York. The annual electric vehicle championship from New York to Washington, D.C. Entries are built by major OEMS, students, individuals from around the world. Contact: NESEA Tel. (433) 774-6051
Fax (413) 774-6053
Web site: www.nesea.org

May 28-31

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.Uquebec.ca

August 21-23

2000 Future Transportation Technology Conference, Costa Mesa, California. SAE annual conference discussing the latest developments in vehicle technologies. Contact: Karin Bolcshazy, SAE
Tel. (724) 772-7179 Fax (724) 776-1830
E-mail: karinb@sae.org

September 25-29

ISATA 2000, Dublin Ireland. International Symposium on Automotive and Transportation Technology. Contact: ISATA
Tel. +44 1372 720 620
Fax +44 1372 720 101
E-mail: isata@compuserve.com

October 16-18

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.

EV1 Alive and Well

General Motors (GM) Corporation recently countered allegations that it plans to halt production of the EV1. GM Vice Chairman Harry Pearce assured EV1 supporters that although GM is experimenting with hybrid cars, the company has not given up on the EV1 program. When the company revealed a concept EV powered by a fuel cell at the Detroit auto show, environmental groups suspected the EV1 was history. Roland Hwang, transportation programs director for the Union of Concerned Scientists in Berkeley said "[we] were really upset when this came out because we had no choice but to view it as a political maneuver rather than a marketing decision." GM manufactures the EV1 at a facility in Lansing, MI in blocks of 500. So far, GM has manufactured 1,000 EV1s, but only 600 have been leased. It is unlikely that the company will begin another batch of EV1s with 400 still waiting to be shipped. However, the company will "watch the market" and keep all of its EV1 equipment and the manufacturing space in Lansing. "The headlines suggested that we were shutting down the EV1 program, and, quite frankly, nothing could be farther from the truth," said Pearce.
(DETROIT FREE PRESS: 1/12; LOS ANGELES TIMES: 1/21)

Ford Delivers Ranger to Presidio

The Presidio Trust recently received 15 Ford Ranger EV pickup trucks. The trust was formed when the Presidio military base in San Francisco was converted into a National Park. The Ford Ranger EV is powered by nickel-metal hydride (NiMH) batteries. The Presidio Trust hopes to set an example for other national parks by instituting the use of the Ford Ranger EV. The vehicle has a single charge range of 70 to 90 miles and can accelerate from zero to 50 miles per hour in 12.5 seconds. Ford said the Ranger EVs are also well-suited for highway driving, with a top speed of 75 mph. The Ford Ranger EV recharges using a power control station (PCS). The Presidio has already installed 12 PCS units for use with the Ranger EVs.
(FORD RELEASE: 1/19)

EFC Participates in German HEV Project
Electric Fuel Corporation (EFC) recently announced its Electric Vehicle Division will participate in a hybrid electric vehicle development and demonstration program in Germany. The four-year, $12.4 million program will include German companies such as DaimlerChrysler and Varta Batterie. The goal of the program is to develop and demonstrate a hybrid EV (HEV) based on DaimlerChrysler's cargo vans. The HEV will be powered by EFC's refuelable zinc-air batteries, high-power booster batteries from Varta, and ultracapacitors that are currently under development. EFC said the consortium was organized by the Bremen Institute for Drive Technology and Ergonomics at the University of Bremen. Germany's Federal Science Ministry provided funds for the consortium after selecting its project proposal, titled "Electrical Power Supply for Vehicles with Long Range and High Acceleration," from a pool of 68 applicants vying for the ministry's energy initiative known as "Energy Production and Storage for Peripheral and Mobile Applications."
(EFC RELEASE: 1/19)

Companies Develop Next-Generation Fuel Cell
A flexible graphite material manufactured by UCAR International, Inc. subsidiary UCAR Graph-Tech will be an essential component of next-generation fuel cell stacks to be produced by Ballard Power Systems, Inc. The fuel cells, to be known as the Mark 900, were officially unveiled recently in Detroit. The Mark 900, a proton exchange membrane (PEM) fuel cell, is "more powerful and compact than any proton exchange membrane fuel cell publicly shown to date," according to Ballard. It is expected to be a viable alternative for vehicular, stationary, portable and other power applications. Ford already has unveiled the TH!NK FC5 family-sized sedan - the first prototype vehicle to use the Mark 900 series fuel cell power module. Ballard said the new fuel cell stack is able to produce 75 kilowatts of power and is approximately half the size of the company's previous fuel cell series, the Mark 700. In addition, the fuel cell stack provides a power density of 1,310 watts per liter, an increase of almost 30%. The company said its new Mark 900 module uses a single integrated fuel cell stack which will replace the various Mark 700 stacks used in prototypes currently powered by Ballard fuel cells.
(BUSINESS WIRE: 1/19, 1/9)

Pininfarina Shows EV Hybrid at Auto Show

Italian automotive design firm Pininfarina recently unveiled its Metrocubo, a hybrid EV (HEV) partially powered by Exide Corporation batteries at the North American International Auto Show in January. The Metrocubo has a distinctive box-like shape that bears little resemblance to that of a traditional car. It is powered by the Tudor Drysafe Multicraft battery, which was introduced a decade ago by Exide Corporation. Special features of the battery include its zero maintenance and corrosion-proof tight seal. Its standard rather than oversize dimensions result in a smaller, lighter-weight EV. Inspiration for the Metrocubo came from the Michelin's Pax System, a revolutionary tire technology that eliminates previous limits on the vehicle's architectural design. Other components of the Metrocubo include a Lombardini Motori-supplied auxiliary power pack, Siemans electric drive technology, and BBS-Riva wheels.
(EXIDE RELEASE: 1/12)

Automaker to Roll Out Electric Three-Wheeler

Indian auto maker Bajaj Auto Ltd announced that it will soon unveil its three-wheel EV. The company is currently working out a way to manufacture the three-wheeler cost-effectively. "We have been working on the plan to launch an electric three-wheeler vehicle and prototype testing is being carried out at our factory in Pune," said Bajaj Auto Vice President Rajiv Bajaj. "We are planning to operate our plant at Pune at full capacity for the manufacture of four-stroke engines for three-wheelers so they can provide increased efficiency and performance." Bajaj also said the company would no longer offer two-stroke engine vehicles, with a total phase-out scheduled to be completed by the end of the year. The company has already unveiled its 175 cubic-centimeter, four-stroke engine pickup van and its compressed natural gas (CNG)-powered four-stroke autorickshaw. Bajaj said the three-wheeler has logged as many as 130 kilometers in a day. With the anticipated success of the vehicle, Bajaj said that the company was "reinventing the entire three-wheeler range" in an effort to offer performance, economy, and cleaner vehicles.
(ASIA PULSE: 1/14)

Ford to Unveil Hybrid EV in 2003

Ford Motor Company recently announced that it will offer a family-sized hybrid EV (HEV) in 2003. Ford President and CEO Jac Nasser said the HEV will offer superior fuel economy, low emissions, and roominess, all for a reasonable price. The HEV will utilize two separate propulsion systems, including an internal combustion engine (IC) and a three-phase, alternating-current electric drive system that will provide extra power to the IC during acceleration, and be able to recapture energy during deceleration through a process called regenerative braking. Ford HEV Chief Program Engineer Prabhakar Patil said the hybrid will be more functional than HEVs that are currently available. "The hybrid electric powertrain system we are developing is designed to work in a variety of vehicle configurations and will be available in vehicles that most meet consumers' needs for space and versatility," said Patil. The projected cost for the HEV system will be approximately $3,000 more than the standard gasoline-powered engine. However, federal tax incentives will offset up to $3,000 per vehicle, which will increase the vehicle's appeal, said Patil.
(FORD RELEASE: 1/10)

Impco Ships Hydrogen Storage Cylinders

Impco Technologies, Inc. recently announced it has shipped three prototype hydrogen storage modules to both domestic and international automakers for use in fuel cell vehicles. The company said the modules represent a breakthrough in hydrogen storage technology because of their light weight and low cost. Impco said its new hydrogen storage cylinder technology will help further the commercialization of hydrogen-powered fuel cells. Because of the module's all-composite design, the cylinders are not vulnerable to the same permeability issues as metal storage cylinders, such as hydrogen embrittlement and the diffusion of hydrogen fuel through the storage cylinder side wall. The storage cylinders hold more fuel than conventional hydrogen storage cylinders, and can be produced in sizes ranging from "thermos bottle" size to more than 20 feet long. In addition, the modules feature a 5,000 pounds-per-square-inch (psi) operating pressure and a designed hydrostatic failure pressure of 14,000 psi for increased safety. The module also includes Impco's H2R 5000 In-Tank Regulator, which only allows pressure to build in the storage cylinder and reduces pressure in the fuel lines throughout the vehicle.
(IMPCO RELEASE: 1/11)

Honda to Expand Use of Hybrid Technology

Honda Motor Company recently announced that it will expand its Integrated Motor Assist (IMA) gasoline and electric hybrid technology to other market models. Honda President and CEO Hiroyuki Yoshino also said the company plans to launch cleaner, high-performance internal combustion engines and a fuel cell vehicle by 2003. Honda set the stage by becoming the first auto maker in the U.S. to sell its Insight, a gasoline and electric hybrid vehicle last year. The Insight relies on Honda's IMA system, which combines a 1.0-liter, 3-cylinder gasoline engine with an electric motor. Yoshino said the IMA hybrid technology will be used in Honda's "Next Generation Engine Series," a new line of lightweight, gasoline-powered internal combustion engines. The Next Generation Engine Series will debut in Japan this fall, will come to the U.S. in 2001, and will be used in all Honda models by 2005. Yoshino also indicated that plans to market a fuel cell vehicle in 2003 were on target. Currently, Honda is developing fuel cells that rely on either hydrogen or methanol.
(HONDA RELEASE: 1/12)

Ford Unveils New Line of Th!nk Vehicles

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a new brand of environmentally sound personal mobility products. The new line of EVs will be produced by Ford's Think Group, which is made up of two organizations - Think Technologies and Think Mobility, LLC. Think Mobility consists of a line of battery-powered EVs, including the two-seater Think city vehicle and the low-speed Think neighbor. The Think city vehicle has a single charge range of approximately 55 miles and is currently available in Norway. Ford said the Think neighbor is designed for the transportation needs of closed communities, industrial sites, golf courses and private roads. The vehicle meets all U.S. requirements for low speed vehicles and will be available in two or four seat configurations later this year. Both of the EVs will be available from Ford retail outlets and from the Think Mobility website at http://www.thinkmobility.com. Ford said its recently unveiled Think FC5, or Fuel Cell, 5th Generation, is based on Ford's model year 2000 Focus sedan and is powered by a state of the art methanol reformer fuel cell.
(FORD RELEASE: 1/10)

LADWP to Support USPS EV Project

The Los Angeles Department of Water and Power (LADWP) recently announced that it will provide support for more than 100 electric-powered U.S. Postal Service (USPS) delivery vehicles that will be coming to the city. Under the agreement, LADWP will help install charging stations located at the four post offices within city limits, train USPS employees about EV usage, and provide $800,000 to offset the costs of the project. This will be the government's first full-sized electric-powered vehicle fleet. Overall, the government plans to provide 500 EVs to the USPS in both California and the Washington, D.C. area in an effort to improve air quality and help boost the EV market. In coming years, USPS hopes to operate more than 6,000 electric delivery vehicles throughout the country.
(LADWP RELEASE: 1/6)

Researcher Develops Wireless Charging System

Researcher Ronald Parise has developed a new concept that could allow EVs of the future to be recharged while in operation through the use of a wireless transmission network. Parise will present a paper on his invention - which he calls the Vehicle Remote Charge - on March 8 during the Society of Automotive Engineers (SAE) 2000 World Congress in Detroit, MI. Under the Vehicle Remote Charge scheme, recharging power will be supplied through a roadside wireless network, which he says could be installed on existing infrastructure such as telephone poles. EV drivers would be able to pre-purchase "energy credits" in much the same fashion as prepaid phone cards are used today. A high-technology guidance system, perhaps laser - or microwave-based, would be used to send power directly from roadside transmitters to vehicle energy storage units. Parise indicates the technology to be used in such a network already exists in the defense and automotive industries. The system could help to overcome limited range and lengthy charging times, some of the major obstacles facing the commercialization of EVs.
(SAE RELEASE: 12/30)

Ford Introduces Hybrid Family Sedan

Ford Motor Company recently introduced a new a hybrid EV (HEV) that is able to achieve fuel economy of more than 70 miles per gallon. The Prodigy HEV was scheduled to be unveiled at the North American International Auto Show. "The vehicle represents an interim stage between our P2000 research programs and our plans for an affordable, production hybrid," said Ford Chief Technical Officer and Vice President of Research and Vehicle Technology Neil Ressler. The HEV is powered by a low storage requirement (LSR) hybrid powertrain that uses an aluminum DIATA (direct injection aluminum through bolt assembly) engine, alternator, and high-power battery. Ford said the Prodigy is designed to provide the same comfort, affordability and performance as a conventionally-fueled family sedan. The car weighs about 1,000 pounds less than current family sedans and features an aerodynamic design that reduces air resistance and increases fuel efficiency. The HEV has a 0.199 coefficient of drag, which is 33% lower than previous Prodigy models.
(FORD RELEASE: 12/29)

GM's Precept Travels 80 mpg

General Motors (GM) recently unveiled the Precept, a new test car that seats five passengers and has a fuel efficiency of 80 miles per gallon. The Precept follows "six years of research and hundreds of millions of dollars," said GM. Although it fulfills some of the standards set in 1993 by President Clinton and leaders in the automotive industry, its diesel technology makes it unfit to meet the emissions standards set last November by the Clinton Administration. Ford Motor Company's Prodigy, which can travel 70 miles per gallon, is another recently made test car that would not meet the new emissions standards. The Precept's three-diesel cylinder is made by Isuzu and is located in the car's rear to promote greater airflow. An electric motor is used for front-wheel powering, and another is attached to the engine to provide additional power and to recharge the car's battery pack. Development of the Precept resulted from the Partnership for a New Generation of Vehicles, a project in which $250 million in federal funds were added this year to $980 million provided by GM, Ford and DaimlerChrysler.
(AP: 1/1)

Delphi and Global Test Fuel Cell

An integrated solid-oxide fuel cell system that uses automotive gasoline has been successfully tested, according to recent statements by its joint developers, Delphi Automotive Systems (DAS) of Michigan

and the Canadian company Global Thermoelectric, Inc. of Calgary. The system's new gasoline reformer was designed and built by DAS, which is the largest international supplier of automotive parts. Stack components of the solid-oxide fuel cell were produced by Global Thermoelectric. "The successful testing of this integrated system is a significant event in progress toward an economically viable fuel cell system that will use commonly available fuel for automotive applications," said a DAS official. The gasoline is broken down through a process called "reforming," after which it enters a solid-oxide fuel cell to produce electrical power. The only significant by-product of the fuel cell process is water, which makes the new technology environmentally friendly.
(REUTERS: 12/22)

Honda Unveils Insight Hybrid

Honda recently introduced its Insight hybrid vehicle in Washington, D.C., the first gasoline-electric hybrid to be made available in the U.S. Honda will begin selling the Insight in December. The Insight features Honda's Integrated Motor Assist hybrid system, which includes the world's lightest one-liter, three-cylinder automotive gasoline engine. The Insight's nickel metal hydride battery pack is used to enhance the vehicle's performance, and the electric motor is used as a generator during deceleration and braking to recharge the batteries. The Insight achieved a fuel economy of 70 mpg in Environmental Protection Agency highway tests, and it meets California's ultra-low emission vehicle standard. The Insight never has to be recharged, and can travel between 600 and 700 miles on a single tank of gasoline. The Insight is a two-seater coupe. The vehicle will cost around $19,000 and includes antilock brakes, electric power steering, dual air bags, power windows and mirrors, power doors, keyless entry, and the Immobilizer anti-theft system.
(AMERICAN HONDA RELEASE: 9/23)

Ford to Test Diesel Hybrid

Ford Motor Company recently announced it will soon test a family-size hybrid EV powered by a diesel-electric engine that can run 60 miles on a gallon of fuel. The P2000 LSR is expected to be delivered next month to the Department of Energy (DOE) for testing. Ford said it is the first to deliver a full-size hybrid EV that engineers can drive daily and test its engineering. The P2000 features the same passenger room, trunk space and acceleration of Ford's Taurus model, with about 40% less weight. The car is composed mostly of aluminum and other lightweight materials, and weighs about 2,000 pounds. The hybrid power system features a small diesel engine that does most of the low-speed driving, and an electric battery that is used to help with climbing hills and sudden acceleration. In addition, the car's engine turns off while the car is idling. DOE said the P2000 is different from other hybrid EVs because it aims for the mass market with a full-size car that seats five people.
(AP: 9/20)

Carmakers Vie for Methanol Pumps and Tanks

The auto and oil industries may possibly join forces to offer the first generation of fuel cells and fueling stations. DaimlerChrysler and Ford are currently talking with British Petroleum, Texaco, and Exxon to develop the fueling station infrastructure for liquid methanol fuel cell vehicles. The automakers are encouraging the oil groups to install liquid methanol pumps and tanks for the near zero emission vehicles. Fuel cells for vehicles were developed in the early 1990s in an effort to replace existing combustion engine technology. Fuel cells operate by generating a so-called "cold combustion" between hydrogen and oxygen which powers an electric motor. Automakers have considered hydrogen, methanol, and gasoline systems as the main fuel source. Ford and DaimlerChrysler have been working along with Ballard Power Systems, the Canadian company that pioneered the fuel cell technology. DaimlerChrysler hopes to have a test fleet of fuel cell cars on California's roads by 2002 and production underway by 2004.
(FINANCIAL TIMES: 9/20)

DOE Funds Electric Drive Effort

The Department of Energy (DOE) recently announced a new government-industry initiative aimed at developing smaller, more powerful and cheaper electric motor drive systems for the vehicles of the future. DOE will contribute $6 million in initial funding to the project. That sum will be matched by private partners. Under the initiative, two industry research and development teams will work to develop drive motors to be used for advanced hybrid gas-electric, diesel-electric and fuel cell vehicles. Indianapolis, IN-based Electricore, Inc. will manage both research and development teams. One team will be lead by the Delphi Automotive Systems Energenix Center in Kokomo, IN, while the other will feature a partnership between Lynx Motor Technologies of New Albany, IN and Anderson, IN-based Delco Remy International. Teams will deliver first prototypes for testing after one year, with final pre-production versions due in three years.
(DOE RELEASE: 9/16)

Shell Plans Hydrogen Stations in CA

Royal Dutch Shell says it hopes to establish an initial hydrogen filling station market in California. The company says it could take 15 to 20 years to build the infrastructure needed to supply hydrogen fuel to fuel cell vehicles. Shell's hydrogen business development manager Harald Schneider, interviewed at the recent Frankfurt International Motor Show in Germany, said California's stringent air quality standards make it the obvious place to deploy a hydrogen filling station network. Shell hopes to have a prototype filling station ready by 2001, with commercial availability starting in 2004. Shell also hopes to form a partnership with an automaker, al-

though no such announcement is pending. The company is working with DaimlerChrysler on the development of fuel cell vehicles that use a reformer to extract hydrogen from conventional fuels such as gasoline. The reformer-based fuel cell technology would likely only serve transitional usefulness, while automakers develop fuel cells that can operate using a metal hydride powder.
(UPI: 9/15)

CA Drivers Test Drive Toyota Prius

Toyota is taking the unusual step of lending pre-production versions of its Prius hybrid electric vehicle to Northern California consumers for test driving. Although the Prius is for sale now in Japan, Toyota won't bring it to the U.S. until next summer. Right now, however, the company wants to know what potential buyers think about the vehicle. The vehicles being lent to test drivers in Northern California use a 1.5-liter gasoline engine and a 30-kilowatt electric motor powered by nickel metal hydride batteries. One of the things Toyota wants to learn from the project is the importance of performance to American drivers. The company says it may boost the performance of the Prius — whose engine has a peak power of 58 horsepower at 4,000 revolutions-per-minute — by as much as 20%. Toyota is expected to make final decisions about the vehicles it plans to sell in the U.S. some time this fall.
(AP: 9/13)

Japanese Cancel Round-The-World Trip

A Japanese group that had planned to travel around the world in an EV they remodeled themselves has been forced to discontinue the trip, according to team members. The group reported that it has not been given permission by the Chinese government to travel China's roads. It also faced trouble crossing the Mongolia-Russian border, members said. They returned home from Novosibirsk in Siberia last week, blaming their failure not on technical problems, but rather on administrative procedures in the various countries. "We hope to use this experience to attempt another round-the-world trip to Europe along the trans-Siberia railway from Vladivostok next summer," said Masahara Fujinaka, a professor of electrical engineering at Tokyo Denki University who headed the group. The team started its EV trip in Tokyo in early July, with plans to go to China, Russia, Western Europe and the United States before returning to Japan.
(KYODO: 9/10)

DOE Provides Incremental Funding for EVs

The Department of Energy (DOE) is providing support to the recently announced purchase of 16 EVs by the U.S. Postal Service (USPS) in California. USPS will purchase 16 Chrysler EPIC electric minivans equipped with nickel metal hydride battery technology. The minivans will be used at post offices in Harbor City and Huntington Beach, CA. DOE will provide incremental funding assistance for the USPS purchase. The agency already has provided similar funding assistance to the U.S. Department of Agriculture for vehicles used at the Miami, FL airport, the Department of the Interior for vehicles used in various national parks, and other agencies. DOE has provided nearly $300,000 in incremental funding support to various federal agencies. A total of 60 EVs have been leased using this funding, and are being deployed in eight states. Of the 60 EVs, 44 are electric Ranger pickup trucks from Ford. DOE will provide incremental funding support to any federal agency that leases a light-duty EV that has been approved for highway use. Funding will be disbursed through DOE's Field Operations Program, which is managed by the Idaho National Engineering and Environmental Laboratory.
(DOE RELEASE: 9/8)

Michelin, TM4 Pair Develop E-Wheel System

Technologies M4, Inc. (TM4) and the Michelin Group recently joined to develop a leading-edge, high-performance electric drive system that "expands the range of vehicle control and safety solutions." The new E-Wheel control system integrates Michelin's PAX system technology with TM4's innovative direct drive and control system based on the electric motor-wheel. The companies said they will work together to integrate and configure their systems, and promote the E-Wheel control system for all types of electric vehicle power supply, including batteries, hybrids and fuel cells. The new E-Wheel control system integrates the power and control electronics of a high-efficiency motor with Michelin's PAX system, which offers improved handling, as well as increased load capacity and security. Advanced in-vehicle electronic controllers communicate with the "smart" wheels, providing optimal control of the vehicle. Montreal, Quebec-based TM4 is a leading developer of advanced drive and control systems based on electric motor-wheels. (MICHELIN, TM4 RELEASE: 9/9)

Solectria Introduces Hybrid Components

Solectria Corporation has unveiled a new line of drive system components for hybrid EVs that reportedly are fully compatible with internal combustion engines, fuel cells, supercapacitors and other sources of energy. Solectria has begun promoting this new line of components for vehicles ranging in size from 22-foot shuttle buses ideal for use at airports, resorts and campuses, to full-size 40-foot buses for mass transit applications. The company said its ongoing development of a hybrid drive system for a delivery truck will lead to the introduction of hybrid systems for smaller vehicles. "We believe that the availability of superior Solectria hybrid systems will accelerate the early adoption of hybrid electric systems into many applications," said James Worden, Solectria's CEO and long-time leader in the effort to commercialize electric vehicles. The company already has provided hybrid drive systems to several leading international bus makers, with several

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**.

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initial projects successfully underway. (SOLECTRIA RELEASE: 9/7)

NGM Drive Popular With Solar Cars

Ashburn, VA-based New Generation Motors Corporation (NGM) recently noted that cars participating in the Sunrayce 99 held earlier this summer achieved positive results using the company's SC-M150 electric drive system. Of the 29 solar-powered cars entered in the race, 27 used NGM's new drive system, including the top 22 finishers. "In the field of solar car racing, where efficient drive systems are an absolute requirement to be competitive, national solar car racing teams are almost exclusively using NGM drive systems," said NGM vice president for business development and strategic planning Bob Piacesi. In the World Solar Car Rallye, held earlier this year in Japan, seven of the cars entered used NGM drive systems, including the first, third and fourth place finishers. In the race's Free Class category, the most technologically competitive, the two top finishers used NGM drive systems. The SC-M150 has a peak power rating of seven kilowatts, and is offered in nominal voltage ranges from 48 to 53 and 84 to 108.
(NGM RELEASE: 9/8)

Ford, Budget Offer EV Rentals

Ford Motor Company and Budget EV Rentals have announced a special EV rental rate of only $19.95 per day for Ford Ranger EVs at Budget EV Rental locations at Los Angeles International Airport and Sacramento Airport. "We want to encourage people to try out the Ranger EV," said Jeff Pink, president of Budget EV Rentals. "This low rate makes renting one as affordable as renting a gasoline vehicle. And it's a totally unique, very quiet driving experience." Ford has been working with Budget EV Rentals since December of last year to offer rental EVs to consumers. Ford said the partnership gives the automaker a chance to show its vehicles to the general public, while giving Budget EV Rentals a chance to contribute to the lowering of greenhouse gases in California. Ford said it sold about 370 Ranger EVs last year around the U.S. Budget EV Rentals currently offers 10 Ranger EVs for lease throughout California and will offer 20 more by the end of 1999.
(FORD RELEASE: 9/1)

Bay Area Gets More Charging Stations

The first in a new network of EV charging stations in the San Francisco Bay Area has begun operating. Under the new Charge! EV charging station grant program, the Bay Area soon will enjoy a convenient widespread network of publicly accessible EV charging stations throughout the region. At least 25 more charging stations are set to come on line over the next six months through the program, bringing the total number of charging stations in the Bay Area to about 70. The Charge! EV program supports the use of EVs by creating a convenient network of sites where EV owners can recharge their vehicles for free in the course of conducting their normal business, errands and shopping. Improved vehicle range, combined with a network of charging stations, means EVs are now considered practical vehicles for the vast majority of destinations within the Bay Area. The Charge! grant program is a

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SAN DIEGO ELECTRIC VEHICLE ASSOCIATION

Scott C. Kennedy, President, (619) 658-4152
1621 San Elijo Ave., Cardiff, CA 92007
Meetings: 4th Tuesday/month, 7pm (except December)
San Diego Automotive Museum
2080 Pan American Plaza, San Diego, CA.
Enter North-East door and go to the second floor conference room
E-mail: EVASD@WorldNet.ATT.net
Web: http://home.ATT.net/~EVASD/

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 - or -on the Web at:
http://www.geocities.com/MotorCity/Boulevard/2176/index.html
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. (Large white building near Rockville Pike and Cedar Lane) 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 Lougheed Highway between Boundary and 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

Board of Directors
Electric Auto Association

Chair
Scott Cornell
60 Alan Dr., Pleasant Hill, CA 94523-1902
Tel (925) 685-7580,
E-mail: spcorn@pacbell.net -or- ebeaa@Juno.com

Vicechair, CE Editor/Publisher
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Alameda, CA 94501
Tel. (510) 814-1864 Fax (510) 864-9293
E-mail: eaanews@aol.com

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Ed Thorpe
2 Smith Court
Alameda, CA 94502
Tel. (510) 864-0662 E-mail: ethorpe@jps.net

Treasurer
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1020 Parkwood Wy, Redwood City, CA 94061-3691
Tel (650) 366-0643 Fax (650) 306-0137

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60 Alan Dr., Pleasant Hill, CA 94523-1902
Tel (925) 685-7580,
E-mail: ebeaa@juno.com

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2127 Russell St.
Berkeley, CA 94705
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E-mail: kaylor@access1.net

Bruce Parmenter
331 E.Evelyn, Mtn.View, CA 94041
Tel (650) 694-2392
E-mail: brucedp@yahoo.com
-or-
brucedp@iname.com

- FOR SALE - MEMBER WANT ADS - FOR SALE -

For Sale: 1984 S-10 P/U. Great condition. $5,500. Pwr steering, pwr brakes, and air-conditioning. Good battery pack, tires like new. Located in Tempe, AZ. Pictures and more info at http://www.steve.behappy.com
Contact Steve at: (480) 966-4277 - or E-mail at: steve@behappy.com

WANTED: ONE K&W BC-20 CHARGER AND ONE DC-DC CONVETER 108 VDC OR 120 VDC. CALL BRUCE AT (510) 864-9900

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: 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, on board charger and DC-DC converter. Less batteries , 700 original miles, like brand new. $1500.00, will entertain trades. Comes with all manuals. Value of the electronics alone exceeds $2,500. Contact Anthony at: (415) 251-0985 or S2dee@aol.com

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: 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.

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 every even numbered 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 142
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
p32a100

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 ●