

# Electric Auto



# NEWS

## Association

APRIL 1987

Vol. XIX No. 4

"GMC-US G-VAN ON TRACK, DESIGN DUE IN MAY, PROTOTYPE THIS FALL"

SEE: US Electric Van, Dec. 86

Jerry Mader, EVDC

EAA APPLIES FOR GRANT FROM THE CALIFORNIA  
ENERGY COMMISSION (CEC):  
"ALL-SOLAR RESIDENCE AND AUTO SYSTEM"

### OVERVIEW OF THE PROPOSAL

The proposal (submitted in response to an RFP from the Energy Technologies Advancement Program (ETAP) is to research, develop, and test an advanced hybrid electric vehicle that can operate synergistically with a solar photovoltaic residence.

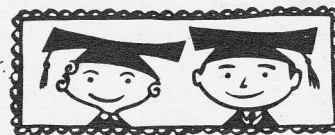
The 15-month project as proposed would be organized and operated in the same way as the present Residential Education-sponsored undergraduate special course UGS 60 "Solar Car Project." (undergraduate and graduate) will work together on teams with faculty, staff, and members of the EAA.

As is now the case for UGS 60, the project will be housed in the project room at the Elliott Program Center (EPC). (Although UGS 60 now uses all of the space (700 sq. ft.), the new project would not). Lectures and seminars will be held in the commons room at the EPC, and our use of this space (and the Lakeside Room and Computer Room at EPC) will be scheduled to mesh with other users.

Research, development and test of the vehicle will be the focus of the CEC funded portion of the project. Students will participate in all tasks of the project including support task--e.g., planning, "PERT" charts, critical path analysis, administration, video history--as they do now in UGS 60. As compared to the emphasis upon individual performance that is common to most courses, this project will develop each student's skills in leadership, team-work and cooperation.

### SUPPORT FOR STANFORD/EAA SOLAR CAR PROJECT

National Semiconductor has contributed \$1,500.00 and offered support with technical reviews, public relations contacts, and contacts with overseas research projects. EAA member Randall Davis, Interface Product Marketing Manager for National was instrumental in obtaining this much needed help. Randy has also offered to serve as liaison between the Stanford research group and the Japan Electric Vehicle Council in Tokyo. EAA and the Stanford group would like to thank Randy and National Semi for their timely participation in this worthwhile effort.



As in UGS 60, some students will wish to work on the environmental, economic, social and political issues that are raised by solar houses and cars. A portion of these activities will be residence-based.

It is not clear from the RFP whether the CEC would be willing to provide funds for such analyses. If not, then it would be necessary to organize these activities separately from the work related directly to the vehicle.

The RFP requires that at least 50% of the project cost be cost-shared, and in-kind services are an acceptable form of cost-sharing. The EAA proposal asks for \$173,150 in funds from the CEC and identifies possible sources of up to double that amount in in-kind services from members of the EAA, students, faculty and staff.

John Reuyl

# THE CASE FOR SHUNT MOTORS

"FOR SIMILAR MOTOR DESIGNS, THE TOTAL FIELD EXCITATION POWER REQUIREMENT DOES NOT CHANGE, FOR IT DOES NOT MATTER WHETHER THIS IS OBTAINED BY SHUNT OR SERIES FIELD COILS." PM WOULD ALSO APPLY IF/WHEN AVAILABLE IN POWER RANGE NEEDED.\*

SERIES MOTORS HAVE BEEN ALMOST COMPLETELY ELIMINATED FROM MODERN ELECTRIC VEHICLE DESIGN, "BECAUSE OF PROBLEMS WITH CONTROLLERS, POORER EFFICIENCY AND THE ADDED COMPLEXITY NECESSARY FOR REGENERATIVE BRAKING."\*

THE MOST POPULAR MOTOR FOR THE 30 VEHICLES STUDIED WAS THE LUCAS CAV TYPE MT305 40 KW DC SHUNT, 216 VOLTS. THIS SAME MOTOR WILL BE USED IN THE NEW GM VAN PROGRAM. LARGER VEHICLES, 90 PASSENGER BUSES AND 3.5 TO 7.5 TON TRUCKS USED BOSCH MOTOR 90 KW, 360 VOLTS ALL SHUNT. THESE VEHICLES ARE FROM FIVE COUNTRIES AND SIX MANUFACTURES.

I have not found any vehicle designed in the past five years, or now under development, that uses a series motor. It is of course true that a series motor has very good start up torque, however, there is an old saying "you don't get nothing for nothing". In our case this means high torque, high current so if you want a dragster maybe you should use a series motor. The main problem here is the chain reaction set up by this more torque more current characteristic, since the motor current flows through the series field this means more current more torque, more torque more current etc. This also sets up another chain, with battery power the more current the lower the voltage, the lower the voltage the higher the current etc. again. If you would like a real shock (no pun intended) use two volt meters one directly on the motor terminals and the other directly on the battery terminals and observe the difference in readings under normal driving conditions, and this is not all the voltage drop because you probably have at least double that in the inter-connections on your battery pack. The only problem I have ever found with a shunt motor driving an electric vehicle is that many designers including some professionals do not seem to know what to do with the field. When the field current in a shunt motor under load is reduced the armature current rises very rapidly, with battery operated equipment the idea is to keep the armature current as low as possible so my recommendation is to ALWAYS RUN FULL RATED FIELD CURRENT. Many designs use the shunt

field to vary the speed at the high end since the motor does run faster as the field is lowered, I do not believe the small change in speed is worth the extra current. You do need a field controller to regulate the regenerative braking and charge rate. Bypass field controller in drive mode.

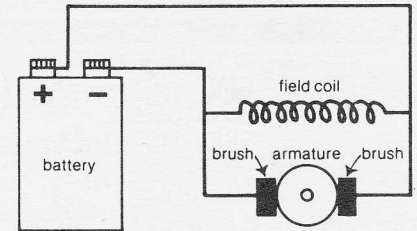


Figure M-6. SHUNT MOTOR

Notice how the field coil (electromagnet) and the armature receive current independent of each other.

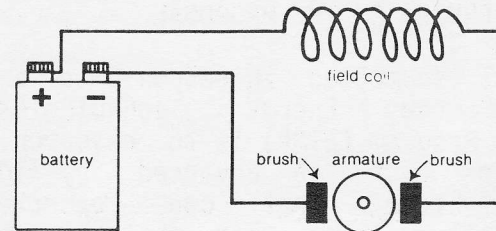


Figure M-5. SERIES MOTOR

In the series wound motor, the field coil is in "series" with the armature. The energy must go "through" the field coil before reaching the armature.

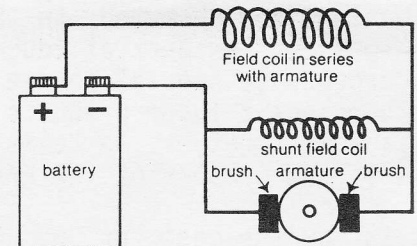


Figure M-7. COMPOUND MOTOR

Notice the two field coils. If a switch were provided to isolate the series field, there would be an even greater flexibility, allowing the unit to start out as a compound and run as a shunt motor.

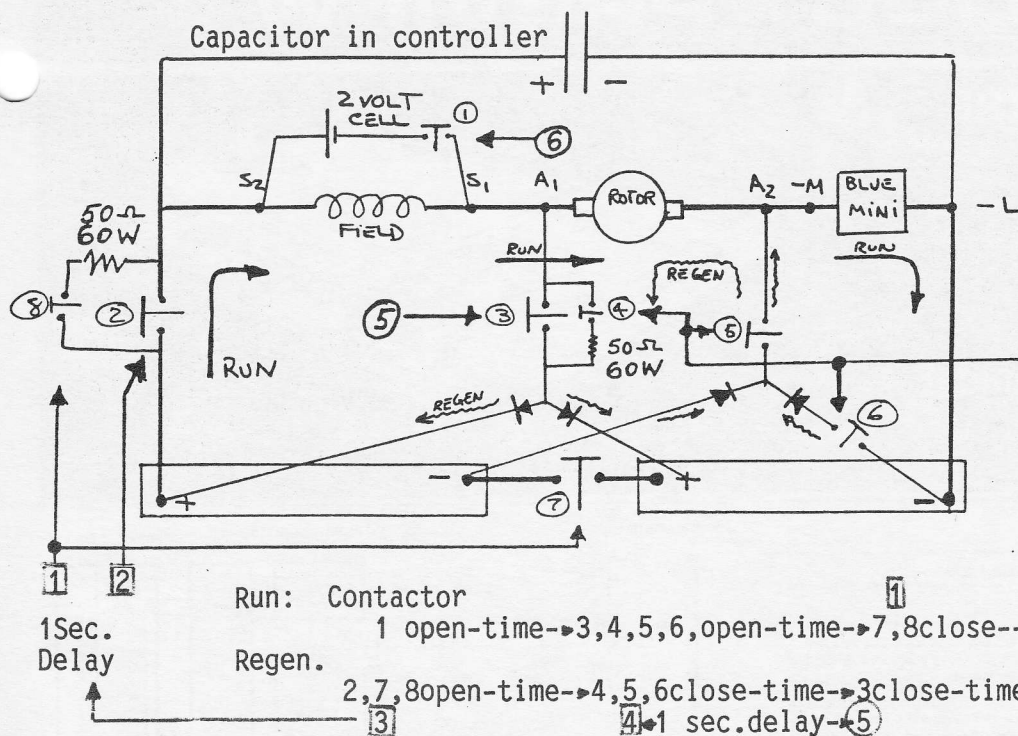
## AC PROPULSION SYSTEM

Several systems have been delivered to DOE for test, Eaton, Soleq and General Electric. The latest GE/Ford ETX-II (see Dec '86) should be under test now. With a compact modular drive unit, IPM synchronous motor using neodymium-iron-boron (NdFeB) permanent Magnets and sodium-sulfur battery this should really be a winner.

\*QUOTES: From Presentations to DOE for contracts, GE, Fiat, Minicars, and South Coast tech.

NOTE: FULL FIELD, means saturation not name plate. CAUTION!! Over current can burn out field winding.

By Clarence Ellers



Motor: Prestolite (Series)  
Controller: Blue Mini SES

With any regeneration system batteries must be paralleled to maintain current at lower speeds.

I trigger my regen. with a small normally closed relay energized from the main contactor, so when the main contactor is off the regen & parallel is on. This gives full time regen.

2-Volt Cell From Trojan

EAA HAS PR TEAM

## STANFORD UNIVERSITY RALLY

The Solar/Electric project at Stanford, co-ordinated by John Reuyl, presents an ongoing opportunity for EAA members to share their knowledge with a new generation of EV enthusiasts. Now the project also offers an unprecedented opportunity to showcase EVs to the public.

On May 16, Stanford University will sponsor an EV rally on campus. This will coincide with Stanford's centennial celebration. A crowd of 2,000 or more alumni and guests are expected. The opening portion of the rally will involve using EVs to shuttle centennial guests across the campus.

This is our chance to present EVs to an influential audience which could do much to further the industry. We need to impress this these visitors with the untapped potential of EVs, and the seriousness and professionalism of the EAA. Members should support this project as much as possible by offering technical assistance, entering cars in the rally, and attending the event.

Watch for details elsewhere in this newsletter.

By Shari Prange

New member, Leonard Byers of Santa Fe, NM and Charter member Bill Palmer, Los Altos, CA will team up to write promotional articles for electric vehicles. Articles to publicize EV's in their own right rather than as a competitor to IC powered cars to be published in National/International magazines. Any one with helpful ideas should send them to Leonard Byers, 2526 Calle Delfine, Santa Fe, NM 87505, or Bill Palmer, 44 Dior Terr. Los Altos, CA 94022

## Fuel cell sets record

A new and lightweight fuel cell has set a performance record at the Dept. of Energy's Argonne National Laboratory. Called a monolithic fuel cell, it has produced 2.2 A/cm<sup>2</sup> — the highest current density yet recorded for a solid fuel cell, according to Darrell Fee of Argonne.

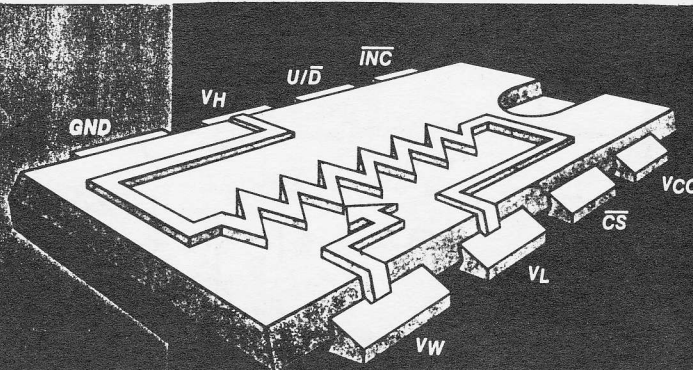
The key to the device, says Fee, "is that all its active parts are made of very thin, lightweight ceramics bonded together like corrugated cardboard. We call it the monolithic fuel cell because it is all in one solid piece."

Several years of further R&D are needed to make the device a practical power plant, he acknowledges. But for the power it produces, "it is so light that it could even power airplanes some day."

# PRODUCT PREVIEW

## XICOR PRESENTS THE E<sup>2</sup>POT™ DIGITALLY CONTROLLED POTENTIOMETER

The solid state  
alternative to mechanical  
potentiometers  
and trimmers.



### X9MME

#### E<sup>2</sup>POT™ Digitally Controlled Potentiometer

##### FEATURES

- Solid State Reliability
- Single Chip MOS Implementation
- Three Wire TTL Control
- Operates From Standard 5V Supply
- Wide Analog Voltage Range  $\pm 5V$  Min.
- 99 Resistive Elements
  - Temperature Compensated
  - $\pm 20\%$  End to End Resistance Range
- 100 Wiper Tap Points
  - Wiper Position Digitally Controlled
  - Wiper Position Stored in Nonvolatile Memory Then Automatically Recalled on Power-Up
- 100 Year Wiper Position Retention
- 8 Pin DIP

##### DESCRIPTION

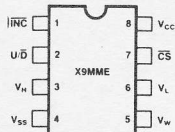
The Xicor X9MME is a solid state nonvolatile potentiometer, packaged in an 8 pin minidip and is ideal for digitally controlled resistance trimming.

The X9MME is a resistor array composed of 99 resistive elements. Between each element and at either end are tap points accessible to the wiper element. The position of the wiper element on the array is controlled by the CS, U/D, and INC inputs. The position of the wiper can be stored in nonvolatile memory and is recalled upon a subsequent power-up.

The resolution of the X9MME is equal to the maximum resistance value divided by 99. As an example; for the X9503 (50K ohms) each tap point represents 505 ohms.

Xicor E<sup>2</sup> products are designed and tested for applications requiring extended endurance. Refer to Xicor reliability reports for further endurance information.

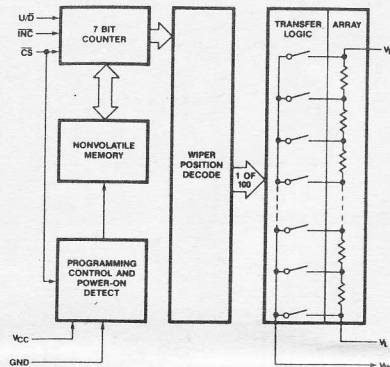
##### PIN CONFIGURATION



##### PIN NAMES

|                 |                                |
|-----------------|--------------------------------|
| V <sub>H</sub>  | High Terminal of Pot           |
| V <sub>W</sub>  | Wiper Terminal of Pot          |
| V <sub>L</sub>  | Low Terminal of Pot            |
| V <sub>SS</sub> | Ground                         |
| V <sub>CC</sub> | System Power                   |
| U/D             | Up/Down Control                |
| INC             | Wiper Movement Control         |
| CS              | Chip Select for Wiper Movement |

##### FUNCTIONAL DIAGRAM



# RALLY

# STANFORD UNIVERSITY

# RALLY

SATURDAY MAY 16 IS ELECTRIC VEHICLE DAY ON THE STANFORD CAMPUS!!

We're hosting a big EV rally then in conjunction with the Stanford Centennial Celebration. Activities start with the arrival of cars at 10:00 a.m. in the parking lot across Campus Drive from Maples Pavillion, point A on the map. At 11:00 we would like to move the cars for display at Encina Hall, point B, where Centennial visitors can stop by to talk as they take their lunch break. From 1:30 to 2:15 we will run a shuttle service transporting spectators in your electric vehicles from Encina to their afternoon program at Maples along route 1. Then at 2:15 the main rally will commence around route 2 and will last until 4:00. Campus Drive at point A will serve as a pickup and dropoff point for visitors desiring rides in electric autos. Also during this time there will be several electric vehicle and electric power displays in area A for the education and enlightenment of the many visitors who will be on hand.

We think this is really going to be a great opportunity to spread the word about electric vehicles and the more EV's participating in the rally the better. But if for some reason you won't be able to drive in the rally please plan to attend and take part in the day's festivities anyway, if only to discuss the issue of electric cars with some of the visitors to the Centennial Celebration.

The students of the Stanford Solar Car Project are very excited about this rally but if it is going to be a success we will need a great deal of help from all the EAA members. Please mark MAY 16th with a big red star on your calendar and plan to join us on campus for what should prove to be a great day. SEE YOU THERE!!

By Bobby Arnsdorf

FOR INFO CALL: (415) 322-9991 or 322-8886

# STANFORD UNIVERSITY

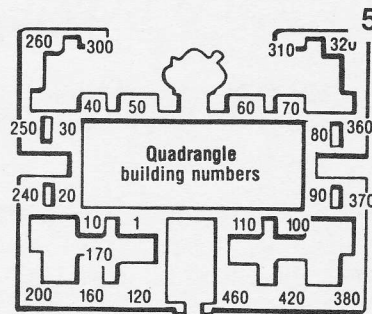


North

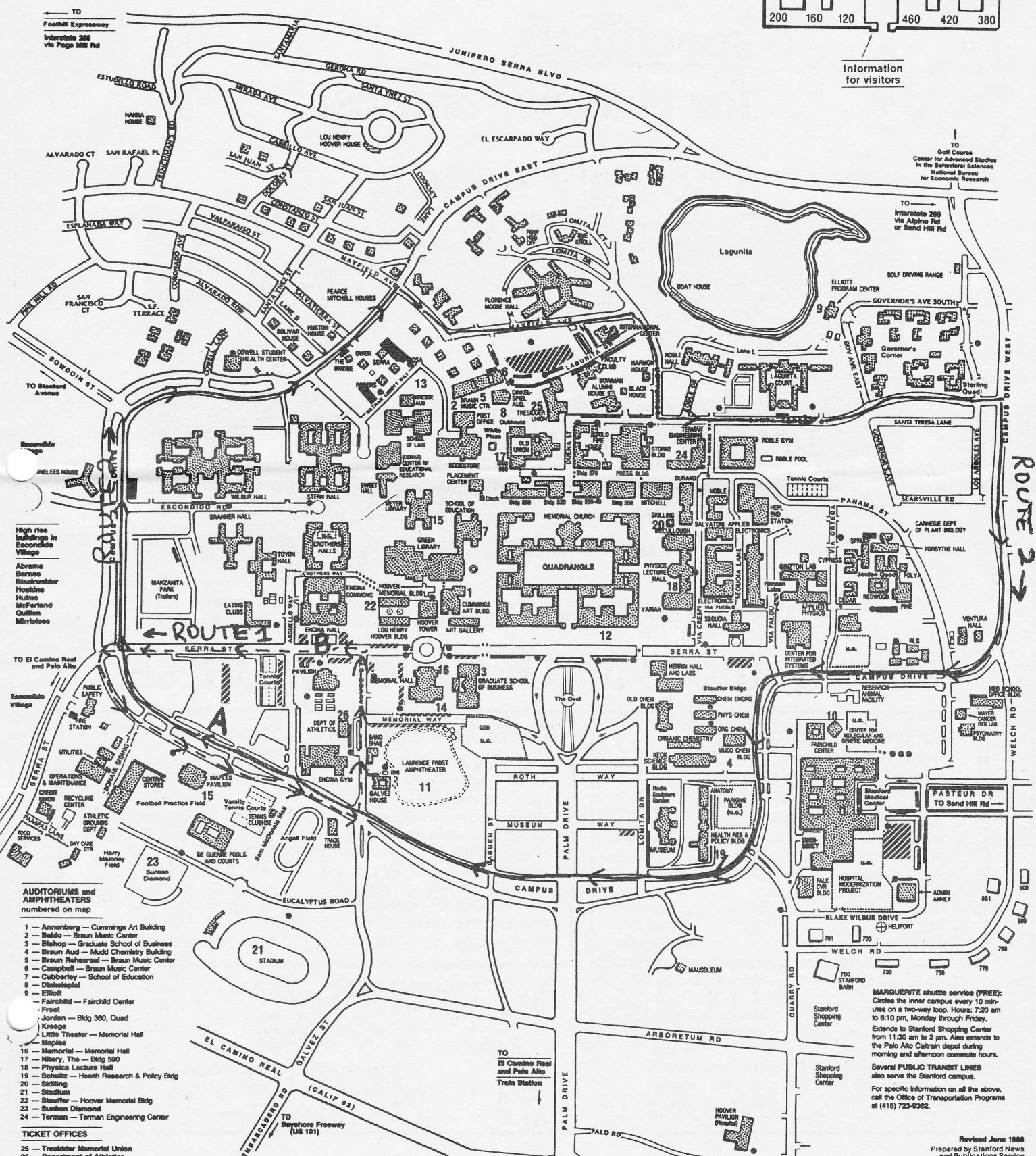
- Free TIME LIMIT Parking**  
8 to 5, Monday through Friday
- PAY LOT and/or METER Parking**  
(coins needed except at Medical Center)  
8 to 5, Monday through Friday

- HANDICAP Parking**  
For use only by persons with handicap parking permits.  
Enforced at all hours every day. \$50 minimum fine for parking in these zones without proper permit.

Parking permits are required in 'A' and 'C' lots from 8 to 5, Monday through Friday. At other hours, these lots are free and open to the public.



Information for visitors



## AUDITORIUMS and AMPHITHEATERS numbered on map

- 1 - Annenberg - Cummings Art Building
- 2 - Baldo - Braun Music Center
- 3 - Bishop - Graduate School of Business
- 4 - Braun Aud - Mudd Chemistry Building
- 5 - Braun Rehearsal - Braun Music Center
- 6 - Campbell - Braun Music Center
- 7 - Cullen - School of Education
- 8 - Dinkelspiel
- 9 - Elliott
- 10 - Fairchild - Fairchild Center
- 11 - Front
- 12 - Jordan - Bldg 380, Quad
- 13 - Kroege
- 14 - Little Theater - Memorial Hall
- 15 - Maples
- 16 - Memorial - Memorial Hall
- 17 - Niles, The - Bldg 580
- 18 - Physics Lecture Hall
- 19 - Schull - Health Research & Policy Bldg
- 20 - Stilling
- 21 - Stadium
- 22 - Stauffer - Hoover Memorial Bldg
- 23 - Sunken Diamond
- 24 - Terman - Terman Engineering Center

## TICKET OFFICES

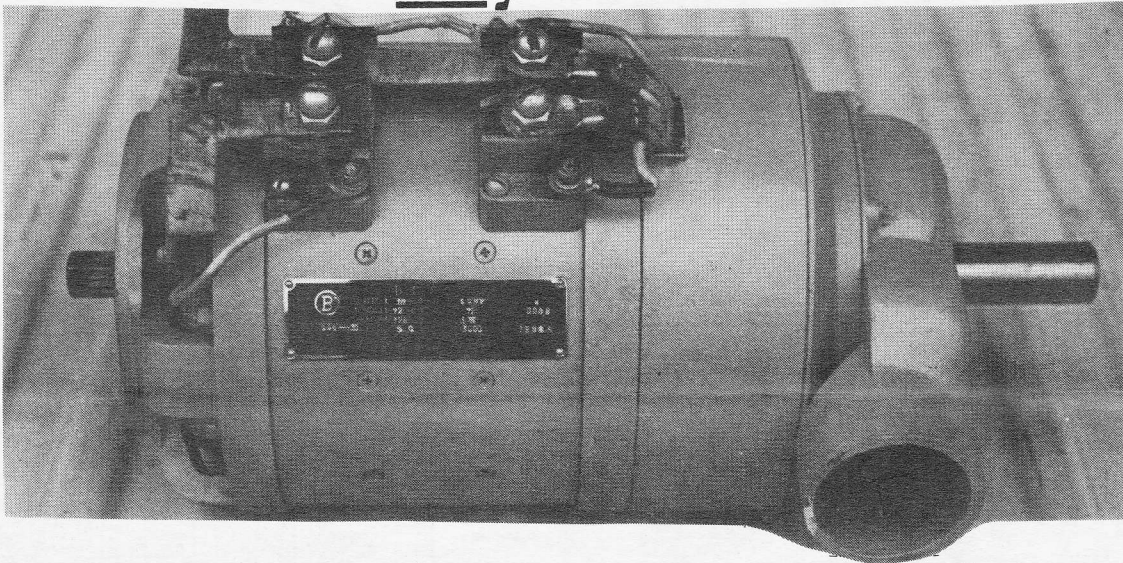
- 25 - Treadwell Memorial Union
- 26 - Department of Athletics

**MARGUERITE shuttle service (FREE):**  
Circles the inner campus every 10 minutes on a two-way loop. Hours: 7:20 am to 6:10 pm, Monday through Friday. Extends to Stanford Shopping Center from 11:30 am to 2 pm. Also extends to the Palo Alto Caltrain depot during morning and afternoon commute hours.

Several **PUBLIC TRANSIT LINES** also serve the Stanford campus.

For specific information on all the above, call the Office of Transportation Programs at (415) 723-9362.

**The CHINA Motor . . .**  
**. . . this is the**  
**only motor designed**  
**specifically**  
**for electric vehicles!**  
**The only motor.**



**How long have you waited for specifications and features like these?**

**THESE ARE THE SPECIFICATIONS:**

- |                                               |                      |
|-----------------------------------------------|----------------------|
| 1. Nameplate Continuous Horsepower            | 10 hp.               |
| 2. Continuous Horsepower @ 96v and 200 amps   | 20 hp.               |
| 3. Intermittent Horsepower @ 96v and 400 amps | 40 hp.               |
| 4. Nameplate rpm.                             | 3,000 rpm.           |
| 5. Allowable rpm.                             | 6,000 rpm.           |
| 6. Type Field                                 | Compound             |
| 7. Shunt Field Voltage                        | 36 or 72 volts       |
| 8. Shunt Field Current                        | 8 or 4 amps          |
| 9. Weight                                     | 110 pounds           |
| 10. Mounting                                  | 6" C Face            |
| 11. Shaft Type (front)                        | 3/8" 16 Tooth Spline |
| 12. Shaft Type (rear)                         | 1 1/4" Keyed Shaft   |

**THESE ARE THE FEATURES:**

- Direct Replacement for aircraft generator! No need to change adaptor plates!
- Low rpm/High Torque Design! Capable of running up to 120 volts without overspeed damage! Motor will not overspeed when unloaded because it is Compound Wound!
- Power Shafts on both ends! Ideal for Parallel Hybrids! Run Air Conditioner, Hydraulics, or Power Brakes from Rear Output Shaft!
- Air Plenum for Super Cooling! Just like aircraft generator!
- Only 110 Pounds! May be hung on Adaptor Plate without rear support! Easy installation!

**PLUS:** WE HAVE MOTOR-TO-TRANSMISSION ADAPTORS, GAUGES, AND A VERY FULL LINE OF EV ACCESSORIES.

**\$795** SAVE \$100!  
ORDER MOTOR  
AND CONTROLLER.

**ELECTRO AUTOMOTIVE**  
 ELECTRIC CARS - CONVERSIONS - COMPONENTS

P.O. Box 1113  
 Felton, CA 95018-1113



**(408) 429-1989**

## EV Marketplace

### SOLAR ELECTRIC ENGINEERING, Inc.

New Lightweight, Flexible SOVONIC Solar Panels, 2 Amps. 12 volts only \$200.00 !! Stocking Dist. for many exciting SOLAR Products. CALL Gary Starr, Solar Electric, 175 Cascade Ct. Rohnert Park, CA 94928. (707) 586-1987.

\*\*\*\*\*

#### FOR SALE

2CM65C2 DC Gov. Surplus Gen. 167 Amps, 120 Volts. \$75. CALL: (408) 736-9327 Home, or (408) 749-4916 Work.

\*\*\*\*\*

#### FOR SALE

SES 500 Controller 500A, 120V, NEW Condition \$250. 76 Ford Pinto, Good Paint & Body, No Engine, Adaptor for Prestolite Motor, Make an OFFER. Don Orcutt, 1553 Koch Lane, San Jose, CA 95125. CALL: (408) 266-8795.

\*\*\*\*\*



#### FOR SALE

**LARGE ENGINE/DC GENERATOR ON A TRAILER**  
**\$2,000.00**  
**CONVERTS YOUR EV INTO A FREEWAY CRUISER**

WIRED TO PROVIDE 30 - 80 AMPS DC  
 50-150 VOLTS FOR BATTERY CHARGING  
 SEPARATE 12 VOLT START/RUN SYSTEM  
 INTEGRAL GAS TANK, TIMER, & GAUGES  
 STREET LEGAL - 2FJ3059 / 12V LIGHTS

ENGINE - ONAN INDUSTRIAL NHC - 20HP  
 ENOUGH TORQUE TO DRIVE A HEAVY CAR  
 OPPOSED TWIN CYL. FOR LOW VIBRATION  
**\$1,000.00**

GENERATOR - RELIANCE DYNAMO - 12KW  
 DOUBLE SHAFT-FOOT MOUNT-HEAVY DUTY  
 SHUNT WOUND WITH SERIES COMPOUNDING  
**\$700.00**

TRAILER - NEW DICO WITH 2 NEW TIRES  
 LEAF SPRINGS & SHOCK ABSORBERS  
 2 INCH BALL, STAND, CHAINS, WIRING  
**\$300.00**

ERV ULBRICH - 213-696-4886 - HOME  
 213-593-8612 - WORK  
 213-945-6220 - TAPE

# GO WITH A WINNER!

## ALCO BATTERIES

MORE RALLY WINNERS USE ALCO BATTERIES  
 THAN ANY OTHER BRAND. THE EXTRA  
 MEASURE OF QUALITY THAT GOES INTO ALCO  
 BATTERIES MEANS EXTRA MILEAGE AND  
 LONGER LIFE FOR YOUR BATTERY PACK.

**\$49.95 DELIVERED IN THE SAN FRANCISCO BAY  
 AREA.**

### ELECTRO AUTOMOTIVE



THE SYMBOL OF EXCELLENCE  
 IN ELECTRIC VEHICLE COMPONENTS  
 P.O. #1113, FELTON, CA 95018  
 (408) 429-1989

PLEASE ADD TO MARCH LISTINGS:

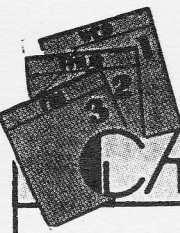
SOLAR ELECTRIC ENGINEERING  
 175 Cascade Court  
 Rohnert Park, CA 94928 (707) 586-1987.

ELECTRIC POWER RESEARCH INSTITUTE (EPRI)  
 3412 Hillview Ave. P.O. Box 10412  
 Palo Alto, CA 94303. (415) 855-2981

ELECTRIC VEHICLE DEVELOPMENT CORP. (EVDC)  
 20833 Stevens Creek Blvd. Cupertino, CA  
 95014. (408) 253-5262

XICOR--See Pg. 4. Spec. Sheet for X9MME  
 851 Buckeye Ct. Milpitas, CA 95035-9985

ADS must be received with payment by the  
 10th of the month, for the following  
 month's issue. AD rate is min. 1 to 5 lines  
 \$5.00, 1/4 Pg. \$15.00, 1/2 Pg. \$25.00, full  
 Pg. \$50.00, full Pg. 2 sides \$100.00. For  
 Sale, Wanted, Trade, etc. Mail to EAA 1249  
 Lane St. Belmont, CA 94002.



# CALENDAR

**VANCOUVER ELECTRICAL TRADE SHOW: FREE BOOTH FOR VEVA**

April 7-9: ELECTRO '87', Jacob Javits Convention Center, New York, NY (213) 772-2965

April 11: EAST BAY, Will show the EPRI Electric Vehicle Research Tape. VERY GOOD AND CURRENT!!

April 18: SANTA CLARA, Composite/Fiberglass Construction Demonstration at FRANKS BODY SHOP 3245 El Camino, Santa Clara, corner of Pomeroy, behind do it your self car wash. PARK: behind Loy's Chinese Restaurant on south side of El Camino.

April 19: VANCOUVER Electrics Join the Easter Parade Antique Car Rally

April 27-29: AMERICAN POWER CONFERENCE, Palmer House, Chicago, IL. (312) 567-3000.

## DENVER - Aug INTERNATIONAL

A CHANCE TO PROVE EAA IS REALLY AN INTERNATIONAL ORGANIZATION,

### EAA Chapters

Call the contact person for meeting times and places.

**ARIZONA: Phoenix**  
Roger Smith 602 969-9667  
P.O.Box 16800 #273  
Mesa, AZ 85202

**OREGON: Willamette**  
Leslie Brundidge 503 - 390-3871  
4040 Gary St NE  
Salem OR 97303

**CALIFORNIA:**  
**Burbank**  
Irv Weiss 818 - 841-5994  
2034 N Brighton #C  
Burbank CA 91504

**TEXAS: Houston**  
Ken Bancroft 713 - 729-8668  
4301 Kingfisher  
Houston TX 77035

**East Bay**  
Scott Cornell 415 - 798-0909  
60 Alan Dr  
Pleasant Hill CA 94523

**WASHINGTON: Seattle**  
Bryan Lowe 206 - 632-4496  
5011 9th NE  
Seattle WA 98105

**North Bay**  
Gordon Schaeffer 415 - 456-9653  
211 Bellan Blvd  
San Rafael CA 94901

**WISCONSIN: Milwaukee**  
Dave Pares 414 - 481-9655  
3251 S Illinois  
Milwaukee WI 53207

**Peninsula**  
Mae Benson 415 - 992-5453  
8 San Juan Ave  
Daly City CA 94015

**NEW JERSEY: Hackensack**  
Kasimir Wysocki 201 342 3684  
293 Hudson St  
Hackensack NJ 07601

**Sacramento**  
Carl Metcalf 916 - 486-6321  
3654 Bausell St  
Sacramento CA 95821

**Vancouver, BC**  
Bob Rickey 590-1188  
7160 152nd St Surrey

### Non-Affiliated Groups

**San Jose**  
Don Gillis 408 - 225-5446  
5820 Herma St #3410  
San Jose CA 95123

**Southern CA EVA**  
Vic Schisler (714)842-9990  
6841 Jardines Dr.  
Hunt. Bch. CA 92647  
**Denver, CO DEVC**  
Genny Clark (303)451-5051

**Santa Clara**  
Lee Hemstreet  
787 Florales Dr  
Palo Alto CA 94306

**Fox Valley IL**  
John Stockberger  
25643 Nelson Lake Rd.  
Batavia, IL 60510  
**Eastern (215)696-5615**  
PO Box 717  
Valley Forge, PA

For information on forming a chapter in your area write Electric Auto Association, 1249 Lane St. Belmont, CA 94002. For a sample copy of the newsletter send SAE #10 envelope.  
PHONE (415)591-6698

EDITORS: - Walter Laski - John Newell - Bill Palmer - Paul Brasch - COMPILED AND PUBLISHED by Clarence Ellers. SEND IN YOUR PERSONAL AND CHAPTER NEWS AND COMING EVENTS. ARTICLES-Comments etc. all correspondence to address below

**Electric  
Auto**



**NEWS**

APRIL 1987

1249 Lane St.  
Belmont, CA  
94002

Address Correction  
Requested

NON-PROFIT  
ORGANIZATION  
U.S. POSTAGE  
**PAID**  
SAN JOSE, CALIF  
PERMIT NO. 3821



HELP !!

**EAA BASEBALL CAP**  
**\$25 "RALLY" DONATION**  
787 Florales Dr.  
Palo Alto, CA 94306

**TIME DATED MATERIAL - DO NOT HOLD**