

EAA NEWS

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Walter V. Laski, Editor

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Using Evs in Winter.

Owners of electric cars living in cold climate regions should be prepared to overcome the effects of cold weather in winter - low temperatures reduce the capacity of the batteries, down to about 50% at 0° F, so energy requirements per mile rise every time available supply is reduced.

The first step to prevent this effect is to insulate your batteries by using one inch of styrofoam, protected on the outside with thin aluminum sheeting, formed into a box. In order to keep batteries' temperature at above 20°, it is necessary to heat them by using carbonized, conductive cloth heaters, which will produce heat over the whole bottom surface of the batteries. A protective fiberglass sheet over the top of the batteries will also help to keep the heat in. A thermostat on the underside would also be helpful to keep the temperature range of 80° - 120°. The heater will consume about 350W or about 4 Kwh in twelve hours. Battery heating is essential if daily trips exceed ten miles, however, high capacity batteries would be required to stand the 50% drop, if heating is not applied.

A car heater will also be necessary for passenger comfort and window defrosting. The heat created by the engine in an ICE vehicle is almost taken for granted when it is used for personal comfort in cold weather - and vehicle heating comes as high priority in cold climate areas. In an electric vehicle the source of heat is not so clear, and a fresh look at EV heating has been necessary.

Since it is probably impractical to consider the use of electric source for that purpose an alternative fuel source is necessary. At present, propane or butane gas and diesel-kerosene have fulfilled this need and several heater units using these fuels are available; such heaters have been termed independent or fuel-fired units.

Gas heaters are available as direct or indirect units; the indirect systems are similar to the diesel-kerosene units in that a DC motor draws in ambient air to pass over a heat exchanger which exhausts the flue gases to the atmosphere. The direct version of gas heaters are based on a catalytic type with open combustion system, with the production of condensation remaining in the vehicle; this type is significantly lower in cost than indirect type.

The diesel-kerosene heaters are usually a pressure-burner type with flexible intake and exhausts well separated to avoid fumes reaching the interior; they are also higher in cost.

Fuel-fired water heaters are also being tested now; the system has advantages and the most significant of these is perhaps the similarity to the traditional system and the already existing heat exchanger/fan heater which would require a water heater of sufficient capacity to complete the system. This type of water heater will have to be developed soon, since electric vehicles will be used in cold climates also.

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ELECTRIC CAR SUPPLIES, PARTS, ETC.

ELECTRIC VEHICLES INC., and AA ELECTRACAR are Northern California EV Dealerships located at 2170 Old Middlefield Way in Mountain View. They offer full line of new U.S. factory-built EVs from \$9,995 and up. They have clean, used EVs from \$4,000 up. For hobbyists they have complete, fully operational Electric Engine™ units for one-day Conversions at \$2,200 with discount to EAA Members. They also sell separate components, such as Prestolite Motors at \$775 - Transistor Speed Controllers at \$650 - Transmission and Shaft Adapters at \$250 - and Batteries from \$65 to \$99. For information call EVI (415) 964-3974 or AAE (415) 968-5329.

Valley Technical Services is the certified Flight Systems EV Service facility on the West Coast. We offer quality EV components, plans and service at a competitive price. Call Order Desk 1-800-227-3800, ext. 211. In California: 1-800-792-0990. VTS, 1816 25th Ave. NE, Puyallup, WA 98371. Local messages: 382-6629.

HUNTLEY ELECTRIC AUTO - offers Baldor Compound Motors at \$674.49. Also complete systems from \$2,685. Write for price list: Charles Huntley, 286 Eureka Street, San Francisco, CA 94114.

SES - Siskiyou Energy Systems offers the SES EV Control System as advertised in Electric Vehicle News (February '82 issue). This is an inexpensive and complete Control System which is ideal for the EV hobbyist. For details call Ric Barline (408) 356-0289.

Custom Motor-mount Adapters with motor shaft-to-wheel couplers for most cars and motors made to order. For description write or call Bill Palmer, 44 Dior Terrace, Los Altos, CA 94022. Phone (415) 948-7677.

FOR SALE

Flight Systems Catalog - \$3.00
EV Conversion Plans for VWs,
Pinto, Chevette, Hybrids - \$17.50
VTS, 1816 25th Avenue NE
Puyallup, WA 98371

VW Dune Buggy - Second Place
in Rally - \$4,000 Call after
6 p.m. (415) 431-8179

Wiley-9 Controller (96V/240A)
with Blower-New Paint
Only \$350!!
(408) 867-5930 evenings

WANTED - Shafts for J&H G-23
& Westinghouse EA-40 Generator
R. Mensing (415) 493-8220

12/72V Lester Charger - \$400
(2) 2CM76 Generators - \$250/ea
J. Allison, 1313 Lencoe Drive
Stockton, CA 95210
(209) 952-7370

FOR SALE

Annual EV Components
Clearance Sale - 10% Off
thru Nov. 30 - Write to SES
16892 Mitchell, Los Gatos,
CA 95030 (408) 356-0289

'79 Commuta Car-3500 miles
Asking \$3,000 - Ivan Marts
(415) 752-0880

2CM76 - 400A DC Motor
Rewired for Series with
Belt Adapter - \$350
J. White (805) 769-8319

Prestolite 20Hp-96V Motor-\$175
GE M-500 SCR Control 96V-\$150
R. Meyers (201) 763-9182

(2) 2CM76 Generator-\$300/ea
(1) 2CM73 Generator-\$200
(2) Bendix 30V Gener.-\$125/ea
(1) Briggs & Stratton 16Hp 2 Cyl,
New, never used-\$450
E. Klaus, 37675 Dequindre
Troy, MI 48084 (313) 689-2668

FOR SALE

Baldor 8Hp-72V DC Motor
GE JB 4Hp-72V Motor
Motor-mount Adapter for VW, etc
M. Schimmelman, 1101 Ethel Ave.
Hancock, MI 49930

H-M Freeway EV - like new
Asking \$4,000/offer
N. McWhinney (408) 377-6414

New Reliance Shunt Motor
106V, 14.5Hp - \$750/offer
Baker & Reliance Motors
\$250/ea (216) 286-6232

VW with Viking Kit with
Prestolite Motor - \$5,000
Call Scott (408) 266-2397

Baldor 72V DC Motor, Brazed
Armature, Excellent Condition
Used about 6 months
\$500/best offer - Call collect
Bill Borden (916) 428-6987

RESULTS OF 1982 ELECTRIC AUTO ASSOC RALLY, SANTA CLARA -- RANKED BY EFFICIENCY RATING

ENTR NO.	OWNER NAME	CAR TYPE	GROSS WEIGHT	AREA SQ-FT	NO. BATT	ACTUAL MILES	EFFIC FACTOR	EFFIC IENCY	PLACE/AWARD
61	MARCO R GROW	MERCURY CAPRI	2800	23.0	4	106.6	13.1	8.1139	FIRST PLACE
3	BILL WILLIAMS	1975 HONDA WGN	3130	21.3	16	118.9	64.3	1.8480	** MOST EFFICIENT **
3	BILL WILLIAMS	1975 HONDA WGN	3130	21.3	16	118.9	64.3	1.8480	FIRST PLACE
8	JOHN WASYLINA	74 HONDA CIVIC	2830	22.0	16	90.2	50.1	1.7996	FORTH PLACE
53	JOE D. LIMA	RENAULT LE-CAR	2720	22.0	14	82.0	47.7	1.7189	
7	PHILIP LAGUE	HONDA-BROWN	2950	22.0	20	102.5	61.3	1.6713	THIRD PLACE, MOST PRACTICAL
1	JACK H. HIGGINS	SAAB 96	3300	25.0	20	118.9	72.5	1.6396	FIRST PLACE
9	SAIED MOTAIE	4 DR GREEN PASS	3430	22.0	20	114.8	75.4	1.5231	SECOND PLACE
2	BRUCE MCCASKIE	61 VW DUNE BUG	3000	20.0	20	127.1	84.7	1.5006	FIRST PLACE
54	VIC SCHISLER	AZTEC 7	2900	17.5	16	73.8	55.0	1.3430	FORTH PLACE, BEST LOOKING
10	LLOYD WENZEL	CHEVY VEGA	3500	20.0	19	73.8	55.3	1.3339	
29	ISRAEL TILLEN	RED HONDA	2800	22.0	12	53.3	40.3	1.3226	
33	CHARLES HUNTLEY	1968 DUNE BUGGY	2725	17.0	16	86.1	65.9	1.3074	SECOND PLACE
35	MICHAEL P BROWN	DATSUN TRUCK	3300	25.0	12	41.0	32.6	1.2559	FIFTH PLACE
62	ED RANNBERG	ORANGE HONDA	2550	20.0	16	90.2	73.8	1.2219*	
43	LEON GIRDNER	ORANGE HONDA	2300	20.0	12	53.3	43.7	1.2194	
18	AL HARDAGE	81 VW AQUILA	2600	17.5	12	53.3	43.8	1.2168	
14	DONALD ALLMAN	FORD CORTINA	3150	24.0	16	53.3	45.5	1.1721	
12	DAN WILLIAMS	BRADLY VW-WHITE	3100	20.0	16	57.4	49.9	1.1496	
64	JON TSCHARNER	BRADLY	3100	17.5	12	45.1	39.6	1.1374	
60	RUSS KAUFMAN	VW	2300	17.0	14	82.0	73.7	1.1125	THIRD PLACE
57	CARL SCHAEFFER	60 RENAULT-YEL	2340	30.0	8	32.8	30.6	1.0709	
23	BOB STEINFELD	HOMEBUILT SPORT	2000	17.0	10	57.4	54.5	1.0535	
4	BOB KIDDER	VW	2950	22.5	16	65.6	64.7	1.0141	
44	GENE T. IZUNO	WHT FIAT SPYDER	2580	15.6	12	49.2	49.4	0.9969	
20	LEN GOODELL	71 PINTO-2000	3640	22.0	16	57.4	58.3	0.9843	
28	PAT HARDAGE	68 FIAT SPYDER	2490	17.5	12	41.0	44.8	0.9144	
15	DAN RIVIST	VW	2900	17.5	16	65.6	73.2	0.8956	
26	JOE HERBNER	CHEVY VEGA	3540	20.0	12	41.0	46.3	0.8862	FIFTH PLACE
55	MCCASKIE/WHITE	63 VW	3000	24.0	10	32.8	37.5	0.8757	
36	LEE HEMSTREET	VW BUG	2650	21.3	12	41.0	52.6	0.7790	
63	MARGARET MILTON	DATSUN	3450	24.0	12	28.7	43.3	0.6622	
11	GILLIS & FREESE	BRADLEY ELECT	3100	20.0	16	28.7	49.9	0.5748	FIRST PLACE
45	DALE F YEE	NORDSKOG FLIBED	1900	14.0	12	32.8	57.5	0.5708	
19	J & L NEWELL	1974 FIAT 128	2500	20.0	12	24.6	44.7	0.5499	
21	CLARENCE ELLERS	ELLERS SPECIAL	3200	17.5	16	36.9	69.2	0.5336	
34	PAUL MAUCH	1975 NSU-AUDI	2300	24.0	8	16.4	35.2	0.4661	
56	CHARLES OLSON	AM METROPOLITAN	3490	23.0	18	24.6	54.1	0.4545	
32	CLARENCE ELLERS	78 DATSUN PKUP	3300	25.0	14	20.5	49.0	0.4186	
22	ROBERT MCGREW	68 FIAT 124	2860	20.0	12	16.4	41.7	0.3931	
25	ED SCHANZ	68 KING MIDGET	1550	16.0	6	12.3	31.5	0.3902	
27	DON CHEESMAN	YEL KARMANGHIA	2780	20.0	12	16.4	42.4	0.3872	
38	MARGAUT W. WING	73 SUBARU	3260	20.0	15	16.4	60.6	0.2704	
13	GREG GIBBONS	VEGA - GREEN	3100	21.0	16	12.3	48.8	0.2518	
5	STAN SKOKAN	79 HMV 3 WHEEL	1950	10.0	16	20.5	93.1	0.2201	
39	ROBERT Y. WING	59 MGA ROADSTR	3050	16.0	12	8.2	53.4	0.1536	\$100 - FARTHEST FROM HOME
37	TED BENSON	VW BUG	0	0.0	10	4.1			
41	DONALD STEINHAUS	GREEN VEGA	3600	20.0	13	65.6			
47	KEN AKMAN	MINIBIKE-ORANGE	525	0.0	3	20.5			\$50 - 3D FARTHEST FROM HOME
48	TERI AKMAN	MINIBIKE	610	0.0	2	20.5			\$75 - 2ND FARTHEST FROM HOME
49	PAUL AKMAN	MOTORCYCLE	610	0.0	8	49.2			FIRST PLACE
58	IRVING WEISS	BUICK CO.	2340	0.0	16	0.0			
59	BILL BRENNAN	VW	3050	0.0	14	16.4			
65	RALPH MATHESON	MOTORCYCLE	790	0.0	2	20.5			

** NOTE: ENTRIES WITHOUT AN EFFICIENCY RATING WERE MISSING ONE OR MORE REQUIRED VALUES **

Hybrids

One of the first hybrid electric systems was patented in Switzerland in 1907. The deisel electric locomotive of the past 50 years has been the only practical use of the dual power system. Because of the large power requirments of the locomotive, the syste proved very efficient, however with the power range used in passenger cars the series system has proved very inefficient (25 MPG max.).

The DOE and the industry have accepted the possibility of a parallel system having much better results. The DOE has commissioned two prototypes. One from G. E. and the other from Mini Cars. The method of calculating MPG for Hybrids has been to add the battery range to the (1) gal. of gas milage and coming up with some unrealistic MPG such as 75 and 85 MPG. It is my opinion that MPG should ONLY be accurate if the batteries are recharged to the same state of charge at the end of the test as when the test was started. The industry has a committee working on this problem at the present time, headed by Dr. Victor Wouk.

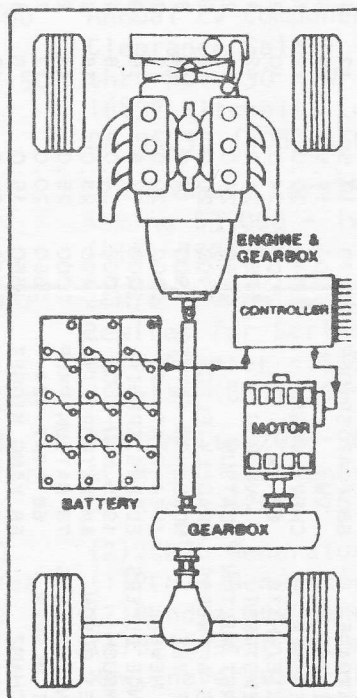
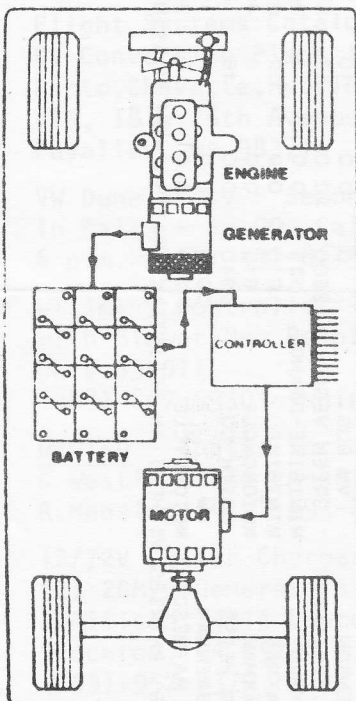
If you want your hybrid to perform at least close to normal either series or parallel you will need at least a 25 to 30 HP engine. There are three main problems . NOISE, HEAT, FUEL CONSUMPTION. Noise--I have yet to find a small engine that I would like to be in the same county with. You can mount the engine or engine/generator set, on rubber or spring suspension system and install the best muffler you can find, but you will still have too much noise. Anybody having an answer to this problem let me know. Heat-- Most small engines are designed to be operated in open space (air cooled). When enclosed in an automobile and run at or near rated output they will overheat. I use an exhaust fan belted to the output shaft and an electric fan blowing on the opposite side. Fuel Consumption--Small engines running at rated output use a lot of fuel. So do not expect miracles.

If you would like to install a small engine/generator set in your electric to extend your range a small amount or to charge batteries when no power is available fine, but again don't expect a free lunch.

I would rather see 40 million pure electrics replacing the 40 million gas guzzling polluters that drive less than 30 miles per day.

SERIES HYBRID

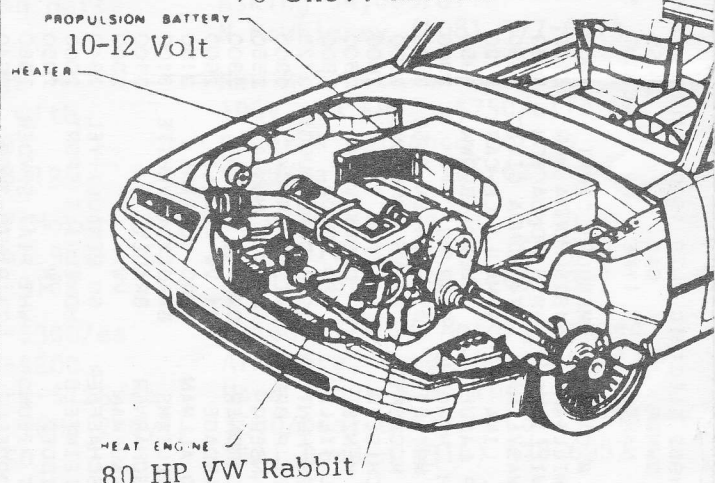
PARALLEL HYBRID



The schematic shows the difference between a series and parallel hybrid. In the series hybrid (left), the engine is used to drive a generator which charges the battery; in the parallel hybrid, the engine can be directly coupled to the wheels.

With all weight in front may be worlds first 5 passenger 2 wheeler.

Baseline ICE vehicle
79 Chev. Malibu 3930 lbs.



24 HP GE 108 Volts
Near-Term Hybrid Vehicle,

Please send in articles or subjects that you wouldlike covered to: Clarence Ellers P O 2781 Santa Clara, Ca. 95055