

ELECTRIC AUTO



NEWS

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ASSOCIATION

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MARKETING EVs

It's not very often something can be sold if none of the things are around to be seen, but it has been done. The market has to be created. People have to WANT the article for some reason. In our society it has to be eye-catching, or more convenient, or save us money, or make us money, or it's good for us, or we are forced to get it to be able to carry on the job.

Well, we know that our transportation is using up our petroleum supplies rapidly. We know that the exhaust products from the thermal engine use are dangerous to our health and to our environment. We know that there are alternatives BUT these SEEM to be not available, too expensive, not convenient, too slow, funny looking, unfamiliar-- So how do we make a MARKET?

EVDC's strategy is to get some good EV van types, get a number built, farm them out to Utilities whose requirements can be met by those EVs, persuade the Utilities to use and show them off. They may catch on.

The Utilities Plenary at EVS-9 encouraged the Utilities to get into EVs. HYDRO QUEBEC is a member of EVDC, and Omer Lemay of Hydro Quebec had some excellent remarks:

--"for the time being, we own and operate, very successfully I must say, two GRIFFON vans; one is here in Toronto for you to ride and see. We also are active EVAC members as well as EVDC partners. Why do we do these things? Why do we get involved? Why should a utility get involved?

BECAUSE WE ARE IN THE BUSINESS OF SELLING ELECTRICITY AND THAT EV WILL HELP US SELL MORE ELECTRICITY AND MAKE MORE MONEY. ----It is also because we are believers. Believers in the future of the EV and its emerging technology. Listen to these EV advantages in regards to a utility:

EVs --use electricity produced from any sources, renewable or not.

EVs --use electricity produced and sold at off peak times.

EVs --are cheap to run, very reliable, require low maintenance, are pollution free, are low noise vehicles.

EVs --have long lives.

EVs --are bound to be winners!

Once you have gotten to believe all this you cannot resist getting involved.

For those who are not yet convinced and true believers, I have one other good reason to get involved.---Environmental groups love EVs; why wouldn't you be on their side this time?

If you cannot justify your involvement with long term development of new sales, ask for a public relations budget that puts you on good terms with the environmental groups!

We believe we must league with the environmental groups or agencies or departments of governments at all levels to raise the funds and human effort to bring the EV to market.

Utilities are excellent and reliable channels to develop the EV market and serve as the technology try-out groups. With utility involvement and environmental funds you can now afford to buy an EV and become a motivator to the auto industry.

Don't expect the fossil fuel industry to help us develop EVs but try to get closer to them. Know them better, their good points, their bads. Do the same with the LPG and gas people--know their programs, how they succeed or don't in the transportation industry. The more you know about them the easier you will beat them on their ground. The better you understand the competition, the better your chances to gain a share of the market.

--We in Quebec province and in Canada in general, have an economic incentive to find an alternative fuel to drive our vehicles. The higher the cost of fuel, the higher the interest is for EVs. For example, in Montreal now, at \$.55 CAN/litre or \$1.70 US/US Gal, we are interested in EVs. We would be much more interested if fuel was twice that cost. Ask our European friends!

Utilities can put pressure on--on the technology developments, on the auto manufacturers, on the government, on policy-making groups.

EVs are not present because the technology is not ready.

Technology is not available because the market demand is too low.

The market demand is too low because the price is too high.

The price is too high because the sales volume is too low.

Break this chicken and egg situation!

Don't be chicken! Take the wheel of the EV development in your area and drive away with the market of the future!"

Well said, Omer! Thanks a million! Utilities please take note!
Fred D. Green.

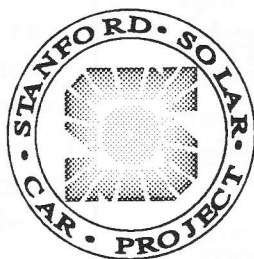
First Filter System for Diesel Soot Ready for Serial Production Gathering and Burning the Soot Directly Inside the Car

(grs) The exhaust readings in *Diesel* engines are as positive as those registered in normal combustion engines equipped with catalytic converters, even if the Diesel engine is not fitted with any auxiliary devices. Nevertheless, the Diesel motor has lately been come under fire as an environmental hazard. The soot engendered by burning the fuel is considered to be a carrier of cancerogenic substances. Soot or particle filters are expected to retain the soot in the future. One of the largest Diesel engine producers in the world, *Klöckner-Humboldt-Deutz (KHD)* in Cologne, recently introduced a system capable of being produced serially. Production is expected to begin in 1989.

Dietrich Zimmermann

Contact: Deutscher Forschungsdienst, Ahrstraße 45, D-5300 Bonn 2

The German Research Service, Special Science Reports, Vol. V, No. 4/89



Benefits of SSCP

Environmentally safe transportation

Technology demonstrator/tester

National and international publicity

Support of science and engineering
education

Basis for future innovation in efficient
energy systems

The SSCP Story

It all started with a mutual dream — to build a vehicle entirely powered by sunlight, the cleanest and most abundant energy source. Then in October of 1988, the dream began to turn into reality: General Motors had considered its options of how to continue from its victory in the 1987 World Solar Challenge. This high technology vehicle, the Sunraycer, completed the race across the Australian continent two and a half days and 620 miles ahead of its competitors. Out of the awareness that this victory could not be surpassed grew the idea of sponsoring a race of solar powered vehicles across the United States. That race has begun. Thirty two teams from universities across the country have begun to design, build, and test their entries for the GM Sunrayce USA in 1990. In the

(continued on page 2)

Solar Energy

The world we live in today may not exist for our children tomorrow, we are told. The truth in this statement lies in the fact that every day we continually exploit the earth's resources in a fashion that is destroying our environment.

Some claim the we have no choice in the matter, for there exists no alternative. It is true that such an alternative does not exist, but many fail to see that one is rapidly emerging: solar energy. Today, solar power plants in the southwest produce power at costs similar to those of other utilities, but without pollution. Concentrator cells have broken the 30% efficiency mark while thin film cells are now more than 20% efficient. Solar cells have already proven to be the only cost effective source of energy in many developing countries.

A handful of organizations, like GM, have recognized the great potentials in solar energy, and have turned their efforts to it by sponsoring the first annual long distance American solar car race...the GM Sunrayce.

Advisory Board

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Professor Alan Miller, MS

Professor Richard Swanson, EE

Professor James Plummer, EE

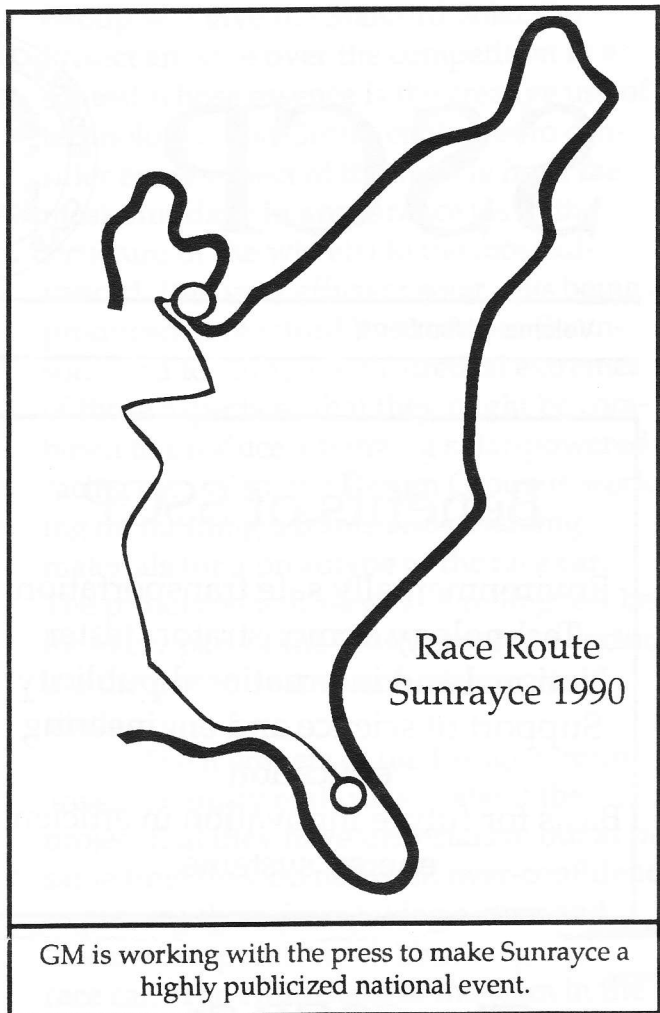
The SSCP Story (Cont)

forefront of these teams is Stanford University with its tradition of research and development.

The Stanford team is basing its efforts on the 60 page proposal lauded by GM as one of the best of 61 proposals submitted. Since the time of the proposal, the team has gathered momentum; from the original team of about 20 students the Stanford Solar Car Project (SSCP) was born. Now grown to about 75 students and 15 faculty members, this dynamic group has commenced a vast organizational and engineering effort. A fundraising campaign to support the \$500,000 budget, a comprehensive strategic planning group to survey the race route and analyze factors involved in the actual race, and a gargantuan design effort using simultaneous engineering—design of the vehicle simultaneously in theory and practice—have commenced.

Formally endorsed by the Stanford School of Engineering, the team is exploiting all the resources available at a major research institution. We are using the vast University libraries, fabrication facilities, professorial advice, campus computer facilities and networks, corporate contacts, University development offices, and the enormous experience of the carefully selected student body.

Out of the year-long concerted efforts of the entire team, the Stanford entry will take form; it will be an exemplary combination of advanced technologies from the inner workings of the power system to the outer shell. High-efficiency silicon solar cells invented by Stanford Professor Richard Swanson and built at the Stanford Center for Integrated Systems will supply the power to advanced technology batteries. A microprocessor controlled power system will then feed a lightweight motor which utilizes the newest magnet technologies, while also allowing re-



versal of the power flow on long downhill stretches of the race course to recharge the batteries. All of these systems will be borne by a lightweight yet resilient aluminum frame and housed in an aerodynamic composite shell. The use of advanced materials will serve to optimize the efficiency of the vehicle by reducing its weight, while not compromising its structural strength and driver safety.

The control of the vehicle and its energy systems will be in the hands of the well-trained and tested driver. He or she will carry out the decisions made by the team leaders in the command vehicle, which will follow the race vehicle wherever it goes. The command group will base its decisions on topological data, detailed knowledge of the race course, continually updated weather information, and realtime telemetry from the

solar race vehicle, combined into an advanced on-board computer system. These two vehicles will be guided by a third car, which will handle the navigation and also serve to warn the team of upcoming road features. To support this closely knit group, the team will also employ a scout vehicle several miles ahead, and a truck with a full maintenance suite, repair crew, and other supplies trailing behind the group.

We are thus looking forward to a highly educating experience, excellent cooperation with corporations, national and international publicity, a successful race and ultimately a voyage across Australia and on to the future, paving the way for revolutions in transportation.

Finance & Budget

The Finances group of the SSCP has been subdivided into four categories:

- (a) accounting
- (b) fundraising, parts
- (c) fundraising, cash
- (d) newsletter

Both Lon Raily, Financial Director of STARLabs, and Carole Miller of Electrical Engineering Research Administration have graciously offered to assist in our accounting efforts, which will be headed by SSCP member Canyon Chan. The solicitation of parts, headed by Thomas Lee, will involve all the members of the SSCP. Each member will be responsible for making contacts with parties who can contribute some part of the vehicle. The solicitation of cash will be handled solely by members of the Finance Group.

We expect to raise \$150,000 cash out of a total projected budget of \$490,000. This includes a \$307,000 budget for parts, most of which we hope to have donated. \$94,000 has been allotted to travel and transportation expenses, operating costs, simulation equipment, weather instruments, and support

vehicles. Support vehicles will include a command vehicle (Astro van), a supply truck, a lead vehicle, a long range scout vehicle, and the Electric Auto Association (EAA) hybrid Gas-Electric Car.

The EAA project, an independent project running parallel with the SSCP and sharing many of the same facilities here at Stanford, is serving as a source of invaluable technical expertise from some of the most qualified engineers in the world. The EAA vehicle will travel with us in the race marking the practical application of the technology demonstrated in the racecar.

Communications

The SSCP computer classes are designed to teach the over 70 members the necessary skills to effectively communicate with the rest of the team.

Stephanie Moore-Fuller designed a mainframe database on Forsythe to record all aspects of the project. It will be accessible to all members. We will continue to adapt this database to fit our needs as they may change in the future.

We have already established a local computer bulletin board to which all members of the Stanford community may read and write. Most members have this feature automatically included in their login programs of whatever mainframe system they use most often. In this way, information can be spread quickly and efficiently to all members, or just to selected members (e.g. group leaders).

There is also an electronic mail connection with all of the other teams in the nation competing in Sunrayce. The main purpose of this is to post ideas and problems each group may encounter so that they may learn from other groups' thoughts. First and foremost, this is a research project, and the more people

we can get to become involved and interact with each other, the more we can learn.

We also put out monthly "progress reports" newsletters compiled from brief statements from each team member or group leader. Thus, ALL the members are kept up to date not only on what is going on within his or her own group, but also what other groups have accomplished and are planning. This also allows for a great deal of interaction between members of the various groups, so that brainstorming and problem solving can be opened up to larger groups of people, and also serves a good summary for people not yet intimately connected with the project.

Design

In the last two months, with the invaluable advice of many professors from the School of Engineering, the Design Group has begun to formulate its design philosophy and to approach from a qualitative viewpoint the challenge of building a winning solar-powered race car. The design philosophy is centered around the concept of simultaneous engineering, in which research on the theoretical aspects of the project is conducted at the same time that vehicle sub-assemblies are being built and tested.

The innovative nature of the Design

Group will give the Stanford Solar Car Project an edge over the competition in a contest whose essence is the creative use of technology. The Group continues to consider every aspect of the vehicle from the most mundane in appearance (as in the structure of the wheels) to the most advanced (the very efficient solar cells being produced at Stanford by Professor Swanson), and to study the theoretical extremes of those aspects so that they might be combined to produce a winning solar-powered racing car. Also, the Design Group is working on building a frame and obtaining materials for a prototype of the race car. The prototype will serve as a rolling test bed for every part of the finished vehicle, including the motor, suspension, steering and shell.

The members of the Design Group are enormously enthusiastic about the project that they have undertaken, but at the same time they do not want over-confidence to prevent them from taking a clear and dualistic approach to the building of the race car. The enthusiasm of the team in the areas of research and production, coupled with the creative intellects of the members, will enable the SSCP to produce a vehicle for the G.M. Sunrayce which will demonstrate the potential for the wide-spread use of safe, high speed, high technology solar-powered transportation.

The Stanford Solar Car Project

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Bush Seeks Big Changes To Cut Air Pollution

'Ambitious' Plan Would Cost Billions

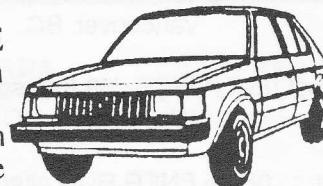
**** INVENTORY REDUCTION SALE ****
KING ELECTRIC VEHICLES, INC. IS
SELLING THE FOLLOWING COMPONENTS
AND COMPLETE ELECTRIC VEHICLES:

- 1) New GE EV-1C SCR Controller, 84-144 V, including main and bypass contactors, plus accelerator pedal assembly; \$799.00. This controller provides smooth control of DC series motors connected through fixed gear ratio for cars, trucks, fork lifts or electric trolleys.
- 2) New GE DC Motor, model 5BT2364C-22, 29.3 Hp @ 5845 RPM, 105 V and 240 A, dual output shafts, 1.375" and 1.125 "; \$899.00.
- 3) Complete system, items 1 + 2; \$1598.00.
- 4) 1981 SCT Electric VW Rabbit, Diesel heater, 120/240 V On-Board Charger, less than 2,000 actual miles. Original price over \$16K, sell for \$6900 without batteries, or \$7999 with new batteries installed. All systems tested and are fully operational. For more information or quantity discounts, write to KEV, P.O. Box 514, East Syracuse, N.Y. 13057, or call 1-518-356-0700 after 7 PM EDT.

ALL ELECTRIC CAR

1980 DODGE OMNI BY JMJ

This vehicle has *less* than 1500 miles on it since new. There are 16 nearly *new* 6 volt deep cycle batteries. A GE controller system was recently installed, for which parts and service are readily available. Heavy duty charger is included (110 v. or 220 v.).



Asking \$3795.00

JOEL PETERS
 500 LAKEPORT BLVD.
 LAKEPORT, CA 95453
 (707) 263-3192

New DieHard battery built in Geneva

Sears and Johnson Controls recently introduced the Sears DieHard Gold.

The DieHard Gold, now the top-of-the-line battery for Sears, will be available in Sears automotive centers nationwide.

Johnson Controls designed, engineered and now manufactures the DieHard Gold at nine of its 12 battery assembly plants including the facility in Geneva.

This second generation DieHard is the most powerful battery in its class.

It outdistances all other national brands in the group 24 size with its combination of 900 cold cranking amps and 135 minutes of reserve capacity.

A feature exclusive to the DieHard Gold is an electro-flo system (patent pending) that was developed by Johnson Controls engineers. A plastic pump located along the interior wall of each battery cell prevents acid/electrolyte stratification.

The electro-flo system con-

tinuously mixes acid during the vehicle's normal stop-and-go driving. The pump mixes the sulfuric acid and water, then helps circulate the electrolyte evenly across the plates which hold the active materials.

Since the DieHard name was introduced in 1967, 67 million units have been sold.

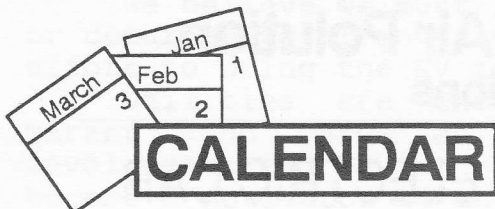
The partnership between Sears and Johnson Controls dates back to the 1920s when Johnson Controls first built manufacturing plants to supply Sears with batteries.

ST. CHARLES CHRONICLE, BATAVIA CHRONICLE, GENEVA CHRONICLE, ELBURN CHRONICLE

BOARD ELECTION: Plans are underway for an election of members of the EAA Board of Directors, see April EAA News page 4. Your nominations for Board members are solicited at this time. Please give us a brief summary of your background and how you would promote the FAA activities. Please limit yourself to three or four hundred words. We will publish all nomination statements in the News at an early date.

Send your nominations to John Newell at EAA NEWS address.

You will gain a sense of fulfillment on the Board that few jobs can match.



Notice of Rally: Aug. 12, 1989 9:00 A.M. Check In .
P G & E Service Center, Oakland, Ca. West of 880 near
Coliseum. Use High Street off ramp.

August 07-10 SAE Conf&Expo Future Tran-Technolgy,
Vancouver, BC

August 06-11 IECE '89 Intersociety Energy Conf.
Washington, DC

Sept. 08-16 ENER RUN alternatively powered
Vehicles, Temecula, Ca.

Notice of Santa Clara Rally: Sept. 16, 1989 9:00 AM Check
In Mountain View, Ca.

Sept. 18-21 15th Intern. Human Powered Speed Champs,
Adrian, Mich.

'76 ELCAR ITALIAN 1000, 15 MPH 52"X80", 8-12V. Bat. 48v
charger Willey Mod. 9, 300A Controller, + Trailer to haul it.
\$1500. Box 103, Finley, Ca. 95435

CONVERT IT

A 58 Page step-by-step manual for converting a gas car to
electric power. Michael P. Brown, P.O. #1113, Felton, Ca.
95018. Phone (408)429-1989

ASSOCIATED PRESS

WASHINGTON — Americans
are generating more than half a ton
of garbage a year per person and a
clear national policy is needed to
deal with ways to dispose of it, a
congressional study says.

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415 591 6698

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Send your chapter news, coming events, articles to the address below

ELECTRIC

AUTO

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ASSOCIATION

NEWS

July 1989

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