

F.V.E.A.A. NEWSLETTER

April 1992

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NEXT MEETING

April 17th @ 7:30
Marsh Products, Inc.
336 McKee Street
Batavia, IL

See Instructions below and map enclosed.
Nonmembers are always welcome!

Director

John Stockberger
2S643 Nelson Lake Rd.
Batavia, IL 60510
(708) 879-0207

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TEMPORARY LOCATION CHANGE!

Due to the fact that the meeting April 17th falls on Good Friday, our regularly scheduled meeting place is unavailable. Therefore, we have elected to temporarily have the meeting at Marsh Products in Batavia. I have included a Map on the back of the newsletter. It is very simple to get here by either Interstate 88 or Interstate 90/94. If you are familiar with the location of FermiLab, we are right across the river. If coming from the South or due East I recommend taking I88 to the Farnsworth/Kirk road exit and travel north roughly 5 miles to Wilson street. Follow Wilson street West across the river to Route 31 (Batavia Ave). Travel North for two blocks and turn East on McKee street. Travel 1/2 a block and park.

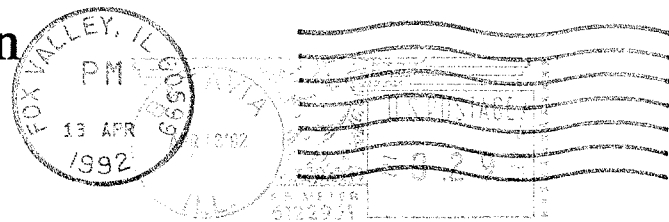
If coming from the north or O'hare region. Take Interstate 90/94 to the Randall road exit and travel roughly 15 miles south past route 64 and route 38 to McKee street. Take McKee street all the way to the end and back up 1/2 a block.

If you get to Batavia and get lost, find Burger King and go around the block.

Doug.....

Fox Valley Electric Auto Association

336 McKee Street
Batavia, IL 60510



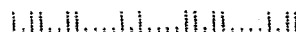
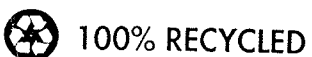
First Class

ADDRESS
CORRECTION
REQUESTED

John Emde
6542 Fairmount Avenue
Downers Grove, IL 60516

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PRESEZ

Its Race Season! This year appears as though it is going to be the most interest year ever for electric vehicles, largely due to the EV races occurring all of the world. The Solar and Electric 500 in Phoenix will have nearly triple the number of contestants, it has greatly enhanced its sponsorship, the field is building with very large players and the turn out is expected to be tremendous. The same goes for the American Tour de Sol. These two races, dedicated to electric vehicles, are grabbing major publicity and producing substantial prize money. The Phoenix race concentrates on oval track competition, while the New England race focuses on cross country terrain. Both emphasizing efficiency.

However, the single greatest event in EV history is likely to occur this summer. If Larry Burton succeeds in entering his electric Indy vehicle, public opinion of electric vehicles will change forever. This is exactly why racing is so important to the development automotive technology. It puts the technology on the tube in front of millions of people world wide. Technology used in racing quite often trickles down to the consumer level. One of the best examples is Disc brakes, first used in the Indy 500.

This year also precedes the two largest solar races, the World Solar Challenge and the Sunrayce 93, held every 3 years. Which means that a large number of companies and Universities will use this years events to try out sub assembles as well as prototype vehicles. Member Carl Chapman and I will be at the Phoenix Race, and Ken Woods and I will be at various legs of the American Tour de Sol. We will present slides and the full scoop at the May meeting.

As a result, I have chosen this month to include articles about races and race vehicles to get the electricity flowing.

I have also included a reprint from the Amoco newspaper, the Torch, that I think clearly points out the resistance that legislation is running into. They are very quick to point out the job loses, but never mention or investigate the jobs gained by the new legislation. I have stronger comments that I will keep out of the newsletter and save for side conversation.

Doug.....

ELECTRIC CAR + PARTS FOR SALE

1976 Chevette. Body in excellent condition; new front tires. Purchased from Carl Swick last April. Added air bags to rear coil springs to improve carriage. Complete notebook of charging log; schematics, diagrams. Presently licensed, titled, insured, and running. 42 mph top speed. Recently converted from solid state controls to simple and reliable series-parallel mechanical switching control (Fork lift contactors).

Also available: 200 amp 2CM63C6 D.C. Motor.

Complete with commercial towing bar and harness; I have pick-up with hitch - can help you transport it home if long way. Custom Charger.

Having satisfied my curiosity about electric vehicles, and needing the space in the garage, I am ready to deal. Asking \$1800 for everything above.

Dan Rubino
977 Royal Glen Lane
Carol Stream, IL 60188
(708) 830-0559

MINUTES OF FVEAA MEETING ON MARCH 20, 1992

The meeting in Room 1045 at the College of DuPage was convened by President Marsh at 7:42 PM. Sixteen member and 2 guests attended.

Treasurer Corel reported a balance of \$ 1600.28 in the savings account and \$ 1997.54 in the checking account.

President Marsh noted the April 17th meeting falls on Good Friday and that COD would be closed. After discussion, it was agreed that the meeting would be held on that date at Marsh Industries, 336 McKee Street in Batavia, Illinois unless otherwise noted in the April Newsletter.

The FVEAA has again been invited to participate in the Midwest Energy Fair in Amherst, Wisconsin June 19-21st. Members agreed to make available one vehicle and a workshop program. Member Steve Clark agreed to make available his Unique Mobility car, one not yet exhibited.

The FVEAA has been invited to present a program on electric cars at the Oswego High School which has funding to build a car. Member Shafer agreed to present the slide record of his Mazda conversion.

Members complimented President Marsh on the excellent quality of the March Newsletter. As agreed last month, it was mailed to all past FVEAA members. He noted it would be the final issue for anyone not renewing their membership for 1992.

President Marsh noted there will be a Chicago Earth Day Exhibit on the Daley Plaza, April 22nd. The Phoenix Electric 500 is scheduled for April 24-26th. This year's Tour-de-Sol is May 18-23. Members thought the FVEAA should organize a summer event and Member Shafer agreed to investigate the possibilities and report at the next meeting.

New member Tom Cartwright from Dixon asked if the FVEAA could help him locate a suitable electric motor for his TR-7 conversion project.

Member Richard Marsh presented additional material relating to the design of a conversion system. He has accumulated considerable technical information on semiconductors and motors. It was the consensus the project should utilize a DC motor and controller, even though an AC system offered motor performance and cost advantages which would likely be more than offset by controller complexity and cost.

Guest Dan Schmidt from Sheboygan, WI made a presentation of his senior engineering design project for a 350-pound go-cart style car to be driven by a child, age 8-12. It included a 24-volt system, a 1 HP permanent magnet motor, and a DART controller. Members critiqued the design and offered suggestions.

The meeting was adjourned at 10:35 PM.

Submitted by:

William H Shafer
Secretary

Debate Rages Over California LEV Standards

Reprinted from the Amoco Torch
March 23, 1992

By John b. Henao

Federal Clean Air Act amendments passed by the U.S. Congress in 1990 require that by 1996 all new cars and trucks that are part of a centrally refueled fleet of at least 10 vehicles should not exceed certain emission standards. The state of California has since expanded on this mandate for lower-emission vehicles (LEVs) by asking that all of its cars surpass federal requirements. Ozone pollution standards are exceeded about 10 times more in California than in any other area of the country.

Amoco Corporation and the rest of the American petroleum industry have been head-to-head with environmentalists on whether or not other states also should adopt the stringent California LEV standards. This is a particularly hot issue in the Northeast where the proximity among states calls for similar legislation in each so that the efforts of one are not thwarted by the actions of another.

Amoco has been part of an industry effort, coordinated by the American Petroleum Institute (API), to prevent legislators and regulators in the Northeast from committing their states to California's standards before they've had a chance to evaluate for themselves the consequences of such a commitment. States have until 1994 to develop their strategies on combatting ozone-related pollution.

"Because of its poor air quality, California is required by the Clean Air Act to adopt some type of low-emitting vehicle," says Jerrold Levine, Amoco Oil Company's director of corporate studies, "but Maryland and other northeastern states, where pollution levels are not as bad, are not required to do that. Furthermore, they have the time to research the benefits of an LEV program and weigh those benefits against costs.

"Introducing the California vehicles into Maryland, for example, could cost its consumers \$250 million per year and could result in the loss of up to 16,000 jobs - money that could be better spent in a host of other critical areas."

But some environmentalist groups and even the American Lung Association have been lobbying steadily in favor of adopting the California standards.

"We're in support of measures that will reduce hydrocarbon emissions, and our bottom line is the attainment of the ozone standards from a human-health perspective," says Norman Anderson, director of environmental health for the American Lung Association of Maine.

"The more LEVs penetrate the market, the greater the overall reduction in pollution would be realized," Anderson says. "The cost-effectiveness arguments are important criteria in determining how attainment is reached, but our first goal is to attain healthful air quality in as short a time as possible."

"Amoco's commitment to conduct its operations in an environmentally responsible fashion remains steadfast," Levine says, "but what constitutes 'healthful air quality' is debatable."

API studies have shown that adopting California standards in the Baltimore-Washington area, for example, "would only lower pollution levels by one one-thousandth (0.001) of a part per million, which - at a very high cost - might save one life in the next 2,000 years," Levine says.

"As far as cost is concerned, I've seen a number of assessments on the impacts of emission-reduction measures as well as their costs, but I haven't seen many independent organizations come out and say: 'this is what we have and this is what we should do.' I don't get the sense that there's an objective voice, and it seems to be like a shouting match between extreme viewpoints," Anderson says.

"That's really true," Levine says, "and that's a tough call for legislators who aren't experts and can only make decisions based on what they hear from both sides. They'll tend to err on the side of health. That might be OK when the economy is good, but not now that it's not. We can't afford to waste our money by prematurely jumping into something that might not make a difference.

"Politically, the real problem isn't the health impact because there's no real agreement on the health hazards of ozone pollution. The real problem, politically, is aesthetics. No one wants to see a dark cloud engulfing his or her city and, obviously, it's better not to have pollution - but it's also nice to get results from your investments."

The real kicker will come when the consumer reaches into his increasingly shallow pocket to pay more for gasoline and realizes that the environment hasn't really been improved, he says.

"For the individual car owner, especially in a rural state like Maine, the results we are going to see may not be so dramatic, especially in light of all the other efforts," Anderson says. "But Maine is part of an overall problem and I think that's how the pollution issue has to be addressed. I think that Maine has to do its fair share, and most of the people in the state realize that."

Amoco maintains that California LEV standards, while perhaps appropriate to California's special needs, would ask other states to go beyond the reasonable, beyond what is fair, Levine says.

"We feel that if the states do a legitimate study, they will see that our conclusions are justified and will not go ahead with adoption of the California standard because they will see it is not cost-effective," he says.

States' reactions to these opposing viewpoints have been mixed, Levine says. Massachusetts has already adopted the LEV regulations. Maine plans to do the same. What the other northeastern states will do is still up in the air. Connecticut's gov. Lowell Weicker has refused to endorse the California standard, but its legislature is trying to overturn his decision.

Of 12 northeastern states and the District of Columbia involved in this debate, six have given their regulatory agencies authority to act on LEV legislation. Frank Jandrowitz, API vice president, says part of API's efforts will now have to concentrate on the regulatory agencies of those states and, in concert with others, convince them that California's answers are not necessarily the right ones.

"We're not making this a strictly economic argument," he says, "we're telling states to find their own solutions on an economic and environmental level [because] what's appropriate for California might not be appropriate for other states."

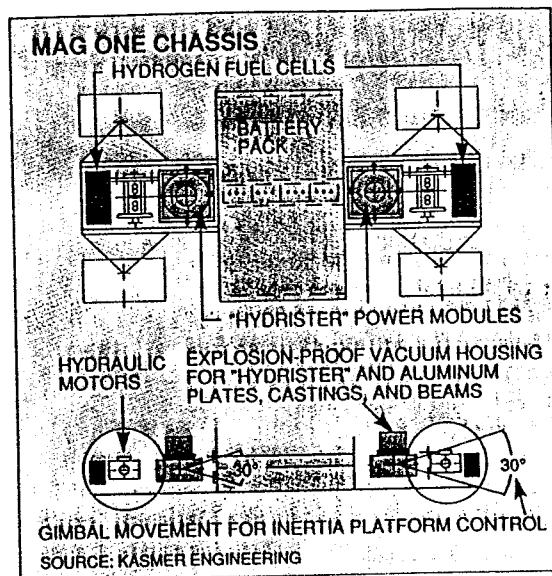
Draft EPA Study Projects Big Revenues For Air Pollution Control Firms by 2000

Reprint from Air/Water Pollution report
January 27, 1992

New business revenues in the air pollution control industry could top \$70 billion by 2000 according to a draft study commissioned by EPA.

The study, Business Opportunities of the New Clean Air Act: the Impact of the CAAA of 1990 on the Air Pollution Control Industry, was done by ICF Resources Inc. and Smith Barney, Harris Upham and Co. Inc. It provides EPA with a rebuttal to charges that the law will spell disaster for much of the economy.

The study comes on the heels of a report done for the American Petroleum Institute that projects massive revenue shortfalls and job losses in the Northeast due to the 1990 CAA amendments and the region's intense interest in adopting the strict California vehicle emissions program.



Prototype chassis features twin fuel cells, hydraulic motors at wheels, battery pack for 'surge' performance, and flywheel-moderated generator/motor, and hydrostatic transmission or 'hydrister' units.

Electrohydraulic Car Claims 1,200-hp ride

reprinted from DESIGN NEWS

by Terrence Lynch

Johnson City, NY - A prototype solar-electric car represents the sort of iconoclastic thinking that may fulfill the need for zesty performance, low pollution, and fuel affordability in future cars.

The Mag One sports car uses electronic controls to manage a variety of power sources and reservoirs to provide long - perhaps unlimited - range, as well as race track performance. Its approach is so unconventional that it may be able to change the definition of what cars do.

A product of Kasmer Engineering, Johnson City, NY, Mag One features a 10-kW proton-exchange-membrane (PEM) fuel cell that takes its fuel, hydrogen, from a metal hydride storage tank. Electricity from the fuel cell drives electric motors that spin twin, 14-inch, 160-lb, dual-flywheel accumulators to as many as 12,000 rpm.

The flywheel energy, 2,000 hp-sec, is metered to hydraulic motors at each wheel by a proprietary continuously variable hydrostatic transmission capable of 90% efficiency. Augmented by eight conventional lead-acid batteries that form a "surge" pack, the Mag One can summon as many as 1,200 hp.

Cells produce hydrogen. Photovoltaic cells cover some 100 sq ft of the car's body to augment the power. Computerized series-parallel switching of the cells via field-effect transistors yields 2-3 hp per hour on a sunny day, figures designer Thomas Kasmer. This energy runs an on-board electrolytic cell that dissociates water to produce hydrogen for the fuel cell. With solar-powered hydrogen production and regenerative braking, the car should have a range of 1,200 miles without loss of performance, says the inventor.

Kasmer's prototype is the fruit of some 20 years of thought on the problems of car design. "I wanted to power the system without shifting the burden to the power grid," he says. Modern cars are more economical than ever, but they are still only about 25% efficient at converting gasoline's latent energy into vehicular motion.

Kasmer's system of computer-managing flywheel energy delivery and generation, photovoltaics, and fuel cells should achieve more than 50% efficiency, he claims. Sunlight and an occasional water fill-up should power typical commuter driving.

Econo car possible. A sports car dramatically illustrates the solar-electric-hydraulic approach, says Kasmer. Sports car also command higher profits which, he says, will be plowed back into the development of a less powerful, practical "green" car for the masses.

The \$100,000 Mag One design stresses safety. The hydrogen production and storage system, for example, operates only when each is actively powered. The counter-rotating dual flywheels cancel precessionary gyroscopic forces, making the car an inertial platform. The flywheels eliminate weight transfer during acceleration and strongly resist any roll-over forces in a crash.

Performance should also be awesome. Active traction control from the independently powered wheels and a variable vacuum system that creates low pressure beneath the car will eliminate skidding. With 2,000 lb-ft of torque available, 1,200 hp, and controlled tire adhesion, the car may be capable of 3-G accelerations. Decelerations will be similarly affected: calculations predict 60-0 mph in just 40 ft. One second 0-60 times may be possible.

Unthinkable agility. Add the car's four-wheel power and direction control to the vacuum traction system and some very unusual maneuvers become possible. Quick lane changes and fast cornering are the most mundane capabilities. With differential wheel spin, the car can turn on a dime.

The gyroscopic forces from the car's flywheels, normally kept in check, can be controlled by hydraulic gimbal mountings. By moving the gimbal actuators, the car can be made to stand up like a horse on two legs. Coupling this ability with the complex steering permutations results in near-3-D control over where the car goes.

Plans Well Along for Indy's First 'Electric'

National Speed Sport News, Sept. 18, 1991

Remember all the jokes about the early electric cars? "How long's the cord? Where do you plug it in?", were just a sampling.

LONG A LAUGHING MATTER

Race fans have also long laughed at electric-powered cars, but if Larry Burton's plan succeeds there may well be an electric-powered car in the starting field for the 76th running of the Indianapolis 500 next May.

Burton, in a wheelchair since a bout with polio in 1959, is a veteran Indy Car mechanic, having first ventured to the Speedway in 1966 with the Michner Petroleum team. Over the years he has worked with such Indy legends as Jim Hurtubise, Clint Brawner, Grant King and A.J. Watson.

The 54-year-old Burton says his aim is not to go to Indy and "pull off some sneaky deal and beat everyone," but rather to "Demonstrate technology and stimulate public awareness and interest in electric vehicles and address environmental issues."

Currently Burton and his wife are alone at the helm of the project with some help from a few electrical laboratories. He envisions it as a \$10 million project, but says only \$2.2 million is needed to start. That money would cover the construction costs of the car, transporter, parts, logistics and a test program.

Burton told NSSN a standard Indy Car chassis would be used with a "spacer" or chassis extension replacing today's engine that serves as a stressed member of contemporary Indy Cars.

Burton says his electric motor can be made to fit the current USAC regulations, but USAC's new technical director Mike Devin told NSSN the rules will need revising before an electric car can run at the Speedway.

According to Burton, his electric motor, which is 12 1/2 inches in diameter and 22 inches long, weighs only 78 pounds. The batteries, the type and design of which are being kept secret, will weigh more than the engine.

"In today's Indy Car the engine and other power items require 26.8 cubic feet," said Burton. "Our motor and batteries need no more."

Burton says .746 kilowatts of electric power equal one horsepower. He says a 600-kilowatt electric motor creates about 800 horsepower, approximately the amount created by the current internal combustion Indy Car engines.

From USAC's standpoint, Burton says a circuit breaker could be inserted that would be the equivalent of the popoff valve currently used on turbocharged engines. The circuit breaker could be set for the same horsepower level as the popoff valves, says Burton.

CONSTANT WEIGHT

An Indy Car weighs 1,550 pounds dry and some 2,000 pounds fully fueled with a driver. "Our car will weigh in that range, but its weight will not change during the race," Burton said.

Burton says the electric car would not have a transaxle, but rather a system where power to each driving wheel can be controlled - much like a ABS brake system to eliminate wheelspin.

The electric-powered car also will need no refueling as such, but the energy source must be "revitalized" during tire stops. Asked how long this would take, Burton said, "About as long as a normal Indy pit stop first time out and a lot quicker in '93." Burton says today's Indy Car, with a 40-gallon fuel tank with 38 usable gallons of fuel can go 28 laps at Indy before needing more

fuel. "our car will go 26 laps before we have to stop, so we're close."

In describing his electric car concept, Burton points out that an internal combustion engine is only 45 percent efficient whereas an electric motor is 94 to 96 percent efficient. In other words only 360 horses of today's 800-horse Indy engines winds up at the rearwheels, whereas 750 of an electric car would.

Burton said no driver has been chosen, noting, "There's a lot of good drivers standing around."

The last non-traditional powerplant at Indy arrived in 1967 when Andy Granatelli introduced his famous STP turbine car powered by a helicopter engine. Parnelli Jones dominated the race, but dropped out while leading with only four laps remaining.

Granatelli returned with four turbines in 1968. Mike Spence was killed during practice in one while Joe Leonard and Graham Hill put theirs in the front row and Art Pollard lined up 11th. Hill was eliminated in a lap 110 accident while Leonard and Pollard fell out in the closing laps among the leaders, both suffering the same problem which eliminated Jones in 1967 - a broken fuel shaft.

Prior to the 1969 race, a new USAC regulations sharply reduced the size of the turbine's air intake, making it uncompetitive.

Earlier this year, Ernie Holden hosted this country's first race for electric-powered cars at Phoenix Int'l Raceway in Arizona and electric cars have also caught the fancy of the powers in Detroit as General Motors has plans to produce an electric-powered car in the near future.

Stationary electric motors have been creating huge amounts of power for many years, but recent advances in batteries and mobil power supplies have resulted in increased activity in the electric car arena.

In Burton's electric-powered Indy Car project comes to fruition, it could well be a "Shocking" experience to Indy Car fans used to the old ways.

MORE ELECTRIC INDY CAR

Keith Waltz, National Speed Sport News,
November 20, 1991

PHOENIX - Many in the auto racing fraternity are still scratching their heads over Larry Burton's plan to field an electric-motored Indy Car in the 1992 Indianapolis 500, but Burton's plans have apparently created a great deal of interest inside and outside the racing community.

TWO INDY WINNERS

Burton reports he has lined up former Indy winners Al Unser and Johnny Rutherford to drive his cars. In fact, a rendering of an electric-powered Indy Car in Burton's office carries Al Unser's name on the bodywork and the four-time Indy winner was on hand for a recent demonstration run of one of the motors.

"We've got several people, both potential investors and potential sponsors, interested in the project," Burton said. "If you're going to demonstrate what you can do, what better place to do it than the Indianapolis Motor Speedway?"

Burton reports they are currently working on several methods to "refuel" the car.

Still at a sensitive point in the project, Burton is reluctant to reveal details as to who has expressed an interest in his project, but there is speculation that the United States Government may be among those who will have a hand in the project.

In that vein, Burton is currently talking with Truesports' Steve Horn and hopes to use an American-built Truesports chassis. He plans to obtain a 1991 model in the near future for testing and "we'll order at least three 1992 cars," he said.

Since announcing his project in September, Burton said there have been additional advances in battery technology which will benefit the effort.

"This stuff changes so fast," Burton said. "When we first announced the project we thought we were three or four laps short of being able to match the other cars before pitting. Now we are sure we can match them on the number of laps before a fuel stop.

Burton would not reveal how the electric cars would be "refueled," but did say it would be a matter of changing the battery electrolyte during a pit stop and he is confident the change can be made in the same time it takes to fill a present car with methanol.

Plans currently call for the first motor to be in an Indy Car chassis and running in six to eight weeks. Burton plans to demonstrate the car at the Indianapolis Motor Speedway in January. He is currently demonstrating the motor technology to potential investors.

Indianapolis Motor Speedway President Tony George recently met with Burton and Burton said, "He's very interested in what we're doing."

FOUR CARS?

Burton says he plans to field at least two electric-powered cars at Indianapolis and perhaps as many as four, "and all four will be driven by former Indy winners."

On the CART side of the ledger, Burton reports he has talked with CART's Kirk Russell and CART is reportedly interested in the project.

Interestingly, Burton points out the electric motors have a unique property which would be a benefit on road and street courses. "When you are on the power all the time like we would be at Indianapolis, the electric motor is constantly consuming energy. But any time you back off, an electric motor becomes a generator, thus helping to replenish the power supply. That could give us an advantage on a road course."

many people think of batteries as being quite heavy, but Burton says after all the components needed for an internal combustion engine, such as radiators, oil tanks, and the fuel cell, are removed, he will actually have to add ballast to his cars to meet USAC's minimum weight requirement.

Burton said his motors will produce power equivalent to the fuel-fed engines currently running at the Indianapolis Motor Speedway. He says they can be equipped with circuit breakers which will cut the motor once it reaches a certain level of power output, exactly as the current pop-off valves do on turbocharged engines.

Burton first became interested in electric-powered cars when he attended Ernie Holden's Solar and Electric 500 last year at Phoenix Int'l Raceway.

Being a veteran Indy Car mechanic, Burton began investigating the electric technology and when he decided to get into the electric car racing end of the sport, he decided to go all the way.

"I worked for a lot of guys who were innovators, such as Smokey Yunick and Mickey Thompson," Burton said. "I loved the sounds of those Offies and Novies, but this is 1991 and electric is the only sensible option."

Burton says when his cars first appear at Indianapolis, "It will wipe any doubt about the future of electric cars off the earth."



Jim Hackett loads up his new electric truck with recyclable items.

High-tech truck silently glides down WS streets

Entrepreneur Jim Hackett not only has a hand in the recycling market, he also has an edge in transportation. His English, custom-made electric recycling truck.

For the past few weeks, Hackett's sleek white truck has cruised silently down Western Springs streets, picking up residents' bright blue recycling bags.

"The heads just turn when the truck moves down the street in silent mode," Hackett laughed.

The truck is battery operated and can crank up to 25 mph, the village's speed limit. At the end of the day, the truck is plugged into a generator and recharged.

"You just step on a button and it takes off," Hackett said. "And to stop, you just take your foot off the button and it glides to a halt. There is no gear shifting, no brakes."

With an eye toward preserving the environment, Hackett said his electric truck is pollution free, compared to the smoke-belching gas or diesel trucks found on most streets.

The truck also can carry twice the load capacity that the converted mail trucks Hackett and his partner, Workman Service, Inc., used, allowing the company to expand its collection list of recyclable material to include magazines, cardboard and telephone books.

Hackett said he got the idea of using an electric truck after driving around in an electric warehouse cart and noticing how easy it was to maneuver.

Hackett said he has visited England a few times and noticed how electric trucks are used to deliver milk. He was able to track down someone who was able to design an electric truck to fit Hackett's recycling needs.

"The truck is quiet for the early morning hours, it is easy to maneuver through traffic and it conserves fuel," Hackett said.

Solar & Electric 500

April 24, 25, & 26, 1992

Also Known as the Phoenix 500, this race is the second annual. The race unlike most other EV races takes place on a closed loop standard oval race track, in Phoenix Arizona. There are over 40 entries racing this year in a total of four events.

- Solar Car Race. Exotic, lightweight, experimental racers powered by the sun.
- Electric Stock Car Race. Features street registerable stock autos with electric powerplants.
- Electric Hybrid Competition. Stock electrics with auxiliary internal combustion engines for longer range.
- Open Competition. "Funny Car" types, three-wheelers, "rail jobs." Wide open to new concepts!

This event gets large amounts of media attention for an EV race largely due to the unique vehicles that are entered. Known attention getters for this year's race are two Saturn SC's with experimental Zinc-Air batteries, Solectria's James Worden is entering with a very experimental battery, large corporations are expected with their Solar Racers, as well as the Swiss Biel team that won the World solar challenge in 1990.

American Tour de Sol

May 18-23, 1992

This race is the oldest EV race in this country which is put on by the Northeast Sustainable Energy Association. The race is modeled after the Swiss Tour de Sol race held every year in the Swiss Alps. The race runs for five days from Albany, NY to Boston, Mass, finishing each leg in Great Barrington, Mass., Avon, CT., Storrs, CT., Thompson, CT., and Brooklyn, Mass. Both solar racers and commuter class vehicles race each day making their way through the Berkshire mountains. Each leg is a race from start to finish allowing the racer to drive additional laps to demonstrate range and gain race time credits. This event also grabs a great deal of media attention.

The US Department of Energy is offering up to \$7,500 in cash prizes for student built solar and/or electric commuter cars. To be divided amongst the following categories.

1. Winning Commuter Car.
2. Commuter car with the greatest range.
3. Most Efficient Commuter Car.

The grand prize includes a trophy, cash prize, and free exhibit space at the Solar/Electric Vehicle Symposium on October 9-10 at the world trade center in Boston.

A cash prize is also offered for the best video, documenting the teams involvement in the American Tour de Sol.

Canadian Solar Cup

Coupe solaire et électrique
May 29 to 31, 1992

This years race will be on the international race track in Montreal Canada. This is a departure from last years event which raced from Toronto to Montreal. There are three categories, the electric and solar-electric daily use, the solar high tech, and the electric high tech. The purse in each category is no less than \$8,000 \$ CDN

FROM THE HISTORY FILE

Westinghouse's New Electric Car

Chicago Tribune, Wednesday, April 5, 1967



The Markette, electric vehicle, which will be produced by Westinghouse Electric corporation.

[N.Y. Time-Chicago Tribune Service]

Los Angeles, April 4 - Westinghouse Electric corporation joined the entrants in the electric runabout sweepstakes today when it announced the start of production of a snubnosed, two-passenger vehicle.

The car has a top speed of 25 miles an hour and a range of 50 miles.

Designed strictly for short range transportation, the car, called the Markette, will have conventional lead-acid batteries. Company officials acknowledged that the batteries are "not the ultimate power source for electric cars ... but are the only ones practical now."

Production will be at a rate of 10 vehicles a day with the first cars available in June at just under \$2,000, the company said.

The Markette weighs 1,730 pounds - about as much as a Volkswagen - with its 12 six-volt batteries accounting for 800 pounds of the car's weight. The car will use about a penny's worth of electricity per to travel a mile, and the batteries will be good for two years of driving before needing replacement at a cost of \$300, the company reported. The batteries can be recharged overnight from conventional 110-volt outlets.

Whatever happened to the Markette?

by Douglas F. Marsh, April 10, 1992

Westinghouse's plans to produce 10 electric vehicles a day, dubbed the Markette fizzled quickly. In fact only 10 were ever produced. Of those ten, 8 were destroyed. One ended up in the Westinghouse museum in Pittsburgh, and the other has landed into the hands of an electric vehicle collector by the name of Gail Lucas. Lucas, who resides in Las Vegas Nevada, is president of the Nevada Electric Auto Association and has managed to collect a number of short lived production electric vehicles.

Lucas believes that Ralph Nader dubbed the vehicle unsafe and Westinghouse cancelled the project and destroyed all in their possession for fear of bad publicity.

Westinghouse has recently joined forces with Chrysler corporation to develop electric vehicles to meet that the California legislation, that begins in 1998.

DIRECTIONS TO MARSH PRODUCTS

