

By PETER BLAIS

# Golf car makers see minimal impact from increased oil prices

Golf car makers have watched oil prices triple from roughly \$12 to \$34 a barrel over the past year, but so far have seen little shift away from gas-powered vehicles due to the higher prices.

"It has not had any impact so far. The golf cars we're building now are orders that have been in house for some time," said Ron Skenes, manager of communications and media relations with E-Z-GO. "Long term, we haven't seen any signs of an impact. When you consider that it takes about a quart of gas to run a golf car for 18 holes, even at today's gas prices, that's about 40 cents a round.

"Obviously, if the gasoline price continues to increase that could have an impact on people's decisions. But there are a lot of other factors to consider when changing from gas to electric cars."

Over the past 10 years, there has been a steady shift in the market away from gas and toward electric to the point where roughly 60 to 65 percent of golf cars at U.S. courses are electric and 35 to 40 percent gas, Skenes said. "We anticipate electric's lead will continue to get stronger," he added.

ClubCar spokesman Mark Burriss said the company's electric cars far outsell gas models. "The 48-volt power-train system virtually eliminated the traditional reasons for using gas," Burriss said. "People buy gas vehicles for one of three reasons. One, they always have bought them. Two, they don't have a storage facility for electric vehicles. Three, the hills on a golf course make one think gas is needed for the power.

Our 48-volt battery [is powerful enough that it] has eliminated the perceived need for the power from gasoline vehicles. There has been a steady 1- to 2-percent shift toward electric cars since 1995."

Asked if increased oil prices are changing the golf car marketplace, Yamaha Division Manager Mike Muetzel replied: "We haven't seen anything so far. And I don't anticipate that we will. Part of that is

just the efficiency of the engines. The gas cars will go 40 to 45 rounds on a tank of gas.

"And the guys buying gas cars are mainly the Mom-and-Pops who keep them five, six, seven, eight years and maintain the trade-in value. Although they are

number of recently built upscale, daily-fee courses, which prefer to offer their customers an electric vehicle. "New construction courses are probably 90 percent electric and 10 percent gas," he estimated.



The Sun Caddy system installed on this car reduces the frequency of golf car battery recharging.

watching the energy costs, the significant equity they can maintain by keeping the car longer won't go away.

"You look at guys like the Jemseks at Cog Hill in Chicago. He has 1,100 gas cars. Fuel prices could probably go to \$2 a gallon, and he won't vary what he's doing because he's going to run those cars for 10 years. He buys 100 cars a year and rotates them."

The overall shift away from gas and toward electric cars, Muetzel said, is less a matter of economics, or even air pollution concerns, than the growth in the

A secondary petroleum-related problem involves suppliers of materials to make golf car bodies. Most golf car bodies are made out of thermo-plastic materials that are petroleum-based, Muetzel explained. "We've been very conscious about locking in long-term deals on that stuff with our suppliers," he said. "Periodically we'll send out letters requesting a 5-percent price reduction because of our volume, which other large manufacturers do as a course of business. Sometimes they acquiesce, sometimes they can't do it."

## UTILITY VEHICLES

The utility vehicle market, on the other hand, is still predominately gas, E-Z-GO's Skenes said. "It's a different application. They run pretty much all day long. And with the type of applications [power and range are more important] for utility vehicles, gas makes more sense."

Added Yamaha's Muetzel: "But we [utility vehicle manufacturers] are banking on that [a shift from gas to electric] happening very, very soon. It won't be due to petroleum pricing, but because of environmental concerns. The problem has been that utility vehicles used in high-stress situations, so far, have not been supported by the technology on the electric side. With the advent of 48-volt cars with more power, better reserves and greater hill-climbing capacity, that will lend itself to a new series of electric work vehicles.

"That's the big race. The industry is waking up to the fact that the industrial/commercial market is far larger than anyone ever knew... ClubCar and E-Z-GO have a real good handle on the potential of that market. We're trying to get our arms around it. We think it's so significant that rather than developing a series of vehicles for that market, we are in dialogue with a number of prominent companies to step into that market via acquisition rather than product development. We're looking at a couple of companies that would make us a player in that market immediately. Right now we basically have one vehicle with a number of derivatives of that vehicle."

## ALTERNATIVE POWER

E-Z-GO has experimented with prototype compressed natural gas- and liquid propane-powered vehicles, Skenes said.

"There has not been a tremendous demand from the market for anything other than what we are already providing," he said. "If the environment is the issue, then you'll see most courses just shifting to electric. An alternative fuel would have

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## NEW TORO WORKMAN

BLOOMINGTON, Minn. — The new Workman 1100 and the Workman 2100 offer extraordinary traction and ride provided by a unique Active In-Frame suspension. This allows all vehicle tires to remain on the ground and to twist over rough terrain. Additional features on the Workman include corrosion- and dent-resistant hood and bed, multiple integrated storage areas, quiet 11- or 16-hp pedal start Briggs & Stratton Vanguard engines and an easily customizable bed. Floatation tires come standard on the Workman. For more information, contact 612-888-8801 or [www.toro.com](http://www.toro.com). (More new golf car and utility vehicle products on pages 40-41).

## Columbia acquires Legend Electric Vehicles' line



ACQUISITIONS

REEDSBURG, Wis. — Columbia Industrial/Commercial Vehicle Group, has acquired the specific assets and the product line of Legend Electric Vehicles of Redlands, Calif. The acquisition will increase Columbia's industrial and commercial product line. Legend manufactures a line of electric industrial and commercial vehicles ranging from a 12-volt single-person personnel carrier to 48-volt, 5000-pound capacity, 75-inch deck-size flatbed burden carriers.

Of particular interest for increasing the Columbia industrial and commercial product line are Legend's flatbed "driver up front-over front wheels" configuration vehicle, and the popular Legend Chariot, a single-person/stand-up personnel carrier.

Columbia will be relocating the manufacturing, marketing and servicing of the Legend products to its existing Reedsburg facilities. This activity was completed in February, while insuring current needs for Columbia and Legend production vehicles and service parts are addressed.

Responsibility for sales of Legend vehicles will be headquartered in Reedsburg. The Columbia sales staff and company sales offices in Anaheim, Calif., and Leesburg, Fla., will assume responsibility for field sales. No immediate changes are planned in either the Legend or Columbia dealer organizations. Both lines will be available to both dealer organizations.



## Metallic Power receives additional financing

SAN DIEGO — Metallic Power, a developer of rapidly refuelable zinc/air fuel cells, has closed its second round of venture capital funding, with \$4 million in new investments and two new corporate investors.

Hydro-Québec Capitech and Minnesota Power join current investors Nth Power and Arete

Corp., each investing \$1 million in Metallic Power.

"Adding Hydro-Québec Capitech and Minnesota Power to our growing list of investors will give Metallic Power the resources it needs to take the technology to the next level," said Dr. Jeff Colborn, chief executive officer and president of Metallic Power.

"This support enables us to rapidly move our product development forward and prepare us for the testing of 50 customer-evaluation units at the end of this year."

Said Denis Lévesque, director of investments for Capitech: "Metallic Power's zinc/air fuel cell technology is in line with Capitech's mission of investing in

enterprises offering energy-related technologies and allowing our shareholder, Hydro-Québec, one of the world's largest electric utilities, to become commercially more efficient."

Metallic Power's zinc/air fuel cell system consists of zinc air fuel cells and a zinc recycling unit. The fuel cell generates electricity when it combines zinc pellets with oxygen from the air

in the presence of an electrolyte, forming zinc oxide, a safe white powder commonly used in skin creams and sun block. The recycling unit uses wall electricity to convert the zinc oxide back into fresh zinc, which is then recombined with the electrolyte to be reused as fresh fuel. In a backup power application, the two components can be packaged together to form one complete power and regeneration system.

According to Metallic Power, the zinc/air fuel cell system can reduce operating costs dramatically.

## Alternative fuels

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to be economically competitive with the systems out there."

ClubCar has several alternative fuel-powered golf cars and utility vehicles on the drawing board, but nothing ready to hit the market, Burris said. The company's Carryall II electric is a popular model, but gas-powered utility vehicle sales far outpace electrics, he added.

Yamaha has looked at natural gas conversions and solar energy.

"But the technology race, at least from Yamaha's perspective, is geared around radically new battery technology," said Muetzel, adding that the company is considering joint ventures with other companies in the battery area.

"We're looking at batteries that are lighter, smaller and will go much longer. The risk is that the companies we're talking with are small, venture capital start-up companies. In the next six months we'll have to decide whether we want to put our eggs in that basket or not."

Products that can help make electric vehicles more efficient are starting to show some promise.

PowerLight Corp. of Berkley, Calif., is moving ahead with its Sun Caddy solar-powered golf car system. The system uses high-efficiency solar cells similar to those used in satellites. The panels are fitted to the golf car roof and help reduce the amount of time and money cars spend recharging in the maintenance facility. Existing electric-powered golf cars can be retrofitted to use the Sun Caddy system, which was on display at the recent International Golf Course Conference and Show in New Orleans.

"We had people lined up four deep at our booth during the entire show," said PowerLight President Daniel Shugar.

Many of the golf car manufacturers have been interested in the product, Shugar said. Several courses have signed contracts to convert existing fleets, including Mauna Lani Resort in Hawaii along with pending deals in Hawaii, California, Arizona and Florida.



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