

GOLF COURSE NEWS

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Versatility drives the manufacturer as well as sales among golf superintendents 22



JONES, BUSH TOUR SHADOW HAWK
HOUSTON — Rees Jones (left) visited Houston recently to survey the progress of the Shadow Hawk Golf Club and give President George Bush (right) a walking tour of the course Jones is designing for The Redstone Group.

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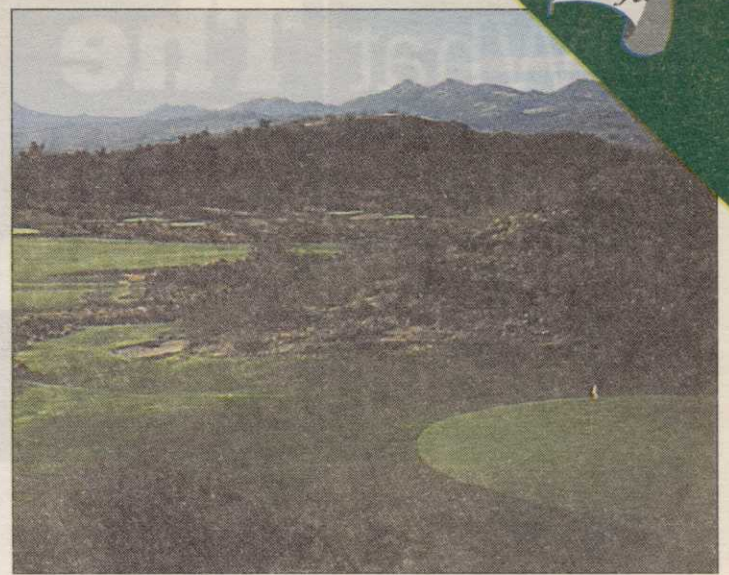
ASGCA panel targets dangers to the health of golf

By MARK LESLIE

CHARLESTON, S.C. — Trying to head off dangers to the health of golf, leaders of the game's major associations are targeting equipment and balls that add too much distance, the cost to play, the "intimidation factor" in learning, and attracting and keeping new golfers.

Speaking at the annual conference of the American Society of Golf Course Architects here, U.S. Golf Association (USGA) President F. Morgan "Buzz" Taylor warned that, if measures are not taken, golf's popularity could sink like tennis's. It was an ominous statement, illustrated by the fact that NBC Sports is dropping its contract for coverage of Wimbledon because "it can't sell the time," Taylor said.

Similar remarks, pointed toward fixing any holes in the dike of the expanding sport of golf, came from PGA of America Executive
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NEW DOAK TRACK RISES ABOVE PHOENIX

GLOBE, Ariz. — Golf course architect Tom Doak ventured west of the Mississippi River for the first time to design Apache Stronghold for the San Carlos Apache Nation to augment its Apache Golf Casino. Doak had a couple thousand acres of land to choose from in designing what he called "a newfangled" type of course for the desert. This photo of the 4th hole shows its wide fairways and rough along the edges instead of the norm: instantly going from manicured to desert. See page 23.



AN "UNPLAYED" DYE CANVAS

The cornerstone of a new luxury community in suburban Savannah, Ga., called Ford Plantation, features a golf course Pete Dye designed in 1983 for a wealthy Saudi Arabian. The public has never played this course, which Dye describes as one of his best Southern layouts. Dye's flamboyance is obvious on this hole on the plantation's Ogeechee Golf Club, formerly called Sterling Bluff. See story, page 24.

USGA turns over U.S. Open management reins

By PETER BLAIS

PINEHURST, N.C. — The United States Golf Association (USGA) has handed over responsibility for managing June's U.S. Open at Pinehurst No. 2 to an outside party — Pinehurst Championship Management (PCM).

PCM is the sports mar-

keting division of ClubCorp, the Dallas-based firm that owns and operates Pinehurst. PCM will be responsible for everything from handling transportation issues to developing corporate partners.

The USGA will retain control over what occurs "inside the ropes," according to the USGA's Tim Moraghan, who oversees course preparation for U.S. Open events for the USGA Rules and Competition Committee.

"Outside the ropes," said PCM head Jon Wagner, "everything with regard to marketing, corporate hos-
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ALTERNATIVE ENERGIES

Metallic Power gets \$350,000 boost for zinc/air power

By MICHAEL LEVANS

SAN DIEGO — Metallic Power Ltd. has been awarded a \$350,000 contract from the California Energy Commission's South Coast Air Quality Management District to demonstrate a prototype zinc/air fuel cell-powered riding electric greensmower by January 2000.

The company will collaborate with the Toro Co. on the project.

"With this contract we're now on a rapid trajectory to develop the zinc/air fuel cell technology," said Jeff Colborn, Metallic Power's chief executive officer. Founded in 1995, the company has won more than \$1.5 million in government research and development contracts.

The zinc/air fuel cell combines zinc pellets, approximately 1 mm in diameter, with oxygen.

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Metallic Power

Continued from page 1

The reaction takes place in the presence of potassium hydroxide, the liquid electrolyte found in alkaline disposable batteries.

"In a lead/acid battery you're using the lead/hydrogen reaction. In this you're using the zinc/oxygen reaction which generates electrons," said Dana Lang, director of advanced turf care at Toro. "This device consumes zinc and creates zinc oxide and in the process gets electrical energy out of it."

When the zinc/air fuel cell is exhausted, zinc pellets are pumped into the cell along with a liquid electrolyte from a "vending-machine-sized" recycling/refueling unit. At the time of refueling, the zinc oxide byproduct produced by the reaction is pumped into the unit and is turned back into zinc pellet form.

According to Colborn, this refueling takes approximately five minutes, while the recycling inside the "vending machine" is continuous.

"Aside from the recycling advantage, there's up to seven times the energy per pound in zinc/air versus lead/acid," said Colborn. "We're not promising that at the beginning, but we are promising nearly double the range of the lead/acid system as development continues."

"What excited us [Toro] about this is that we can get something on the order of 4,000 watts for three hours for about 250lbs. of weight on the mower. That's very viable," said Lang. "Electrical power can be different from mechanical power because what we're talking about is an average power. We can generate 4,000

watts continuously for three hours.

"For the greensmower prototype what we'll probably end up doing is supplying peak power with small lead acid batteries that are essentially charged by the fuel cell. Those small lead acid batteries will be able to provide us peak power, maybe 20 horsepower, so we can climb as well as we climb with a 20 horsepower engine but you don't burn 20 horsepower all the time," said Lang.

While the idea of recyclable energy for turf care equipment is sure to spark the interest of superintendents, there are several barriers that have to be overcome — as in any new technology.

"The capital cost will be comparable to gas, but it's going to be more expensive than lead/acid," said Colborn. "But it's a totally new technology and at this point the principal downside is that it hasn't been proven yet."

"While Metallic Power has a good change at making this work, the big question is will it be commercially produced?" said Lang. "We've been talking about new battery technology for many years and nothing new has been commercialized."

But according to Colborn, it's going to be one step at a time.

"It's not going to happen tomorrow," said Colborn. "We're producing Alpha prototypes this year. Next year we're planning a field demonstration with 50 units. The following year we go into production."

"There are many advantages to an electrical product," said Lang. "You have zero emission, you can have a complete, electric computer-controlled machine. You can do things to make the machine more reliable, like limiting and controlling deceleration and acceleration rates."

Utility vehicles

Continued from page 22

because it keeps all wheels on the ground at the same time."

Club Car's new XRT 272 due out in June 1999, also features a suspension upgrade. "We not only have 11 inches of ground clearance, but also a fully independent front suspension and semi-independent rear suspension that enhances traction and gives the vehicle a better ride," said David Turner, brand manager for Club Car.

However, Club Car also designed the XRT 272 to be at home in both construction and turf applications. "The differential lock can be disengaged to make it safe for turf applications as well," said Turner.

Indeed, utility vehicles have to keep a low profile on the golf course. For that reason, John Deere is introducing the E-Gator utility vehicle to offer superintendents a quiet and efficient option. "Yet this is a true work vehicle," said Collis Jones, manager for golf and turf vehicles for John Deere. "It offers the same capacity as the Turf Gator and will run all day on a single charge."

Kawasaki will also be introducing a quieter version of their Mule 2520 later this year. "It will feature turf tires and sound deadening to tune it specifically to turf applications," said Mike Mount product specialist for utility vehicles at Kawasaki.

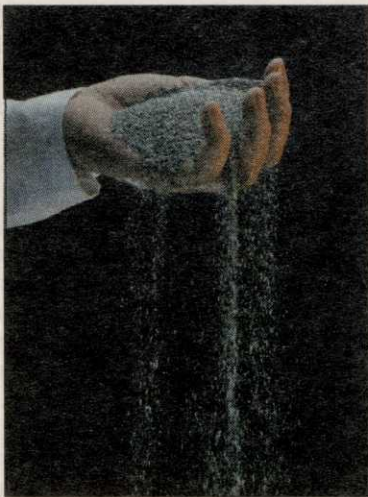
When it comes to vehicle durability, plastics are making a huge impact—or avoiding them according to Textron's Whurr. "On the Turf-Truckster, plastics help to cut down on costs, especially when used on the front end where collisions are likely to happen," said Whurr.

While many of the vehicles have plastic hoods, Toro's new Workman 1100 features a plethora of plastic parts. "We even put a plastic bed on the back, which is not only quieter, it is dent and rust proof,"

said Bornstien. In designing the 1100, plastics and computer aided design also allowed Toro to integrate storage features under the seat and in the dash board to give superintendents more places to stow their gear.

Other product innovations key in on making utility vehicles more comfortable to operate. Many manufacturers, like John Deere and Club Car will be featuring increased leg room and high-back bucket seats.

"It is all well and good to make it do everything from a work perspective," said Whurr. "But the vehicles also have to provide operator comforts."



A handful of zinc pellets used in the charging of the zinc/air fuel cell.

Terresolve

Continued from page 39

gasoline...You're mixing in three ounces in premix. So it goes from a \$1 to \$1.70 for that gallon."

But cost concerns, said Miller, should be overlooked once superintendents embrace the oil's most marketable property — it's kind to turfgrass.

"The largest volume selling product that we do is a bio-degradable hydraulic fluid for greens mowers, the EnviroLogic 100 series," said Miller. The 100 series has been on the market for three years.

'Anything you take that's hot will wilt the leaf...But when our product penetrates the grass it biodegrades, so the plant lives.'

—Mark Miller

"When the oil drops out of the hydraulic system onto the grass the heat does kill, or wilt the blade. The real damage to the plant comes when the petroleum saturates the root structure. With petroleum, you wilt the blade and you kill the plant structure. Anything you take that's hot will wilt the leaf, as every superintendent knows. But when our product penetrates the grass it biodegrades, so the plant lives."

Miller calls it "bounce back." Once a Terresolve product hits the grass "The grass is green in five days to two weeks. With petroleum you have to dig it up and cart it away."



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