



# Charging forward

The latest models of electric and hybrid walk-behind greens mowers have superintendents buzzing over the benefits they offer. *By Jason Stahl*

Looking at the latest offerings in hybrid and electric walk-behind greens mowers, superintendents have all gotten a charge out of the noise reduction, fuel savings and more precise cut they provide over gas-powered models. But the real buzz has been over technology that allows users to control reel speed independent of walk speed for better cut quality.

"I think it is one of the most revolutionary advancements in our industry in some time," says Mike Reinzi of Kiva Dunes in Gulf Shores, Ala., who uses a Jacobsen Eclipse 122S hybrid. "You take most of the control away from the operator and subsequently get greater consistency. Every single green gets cut exactly the same."

Ken Mangum of Atlanta Athletic Club, who uses

a John Deere 220 E-Cut hybrid, has equal praise for the technology that allows users to control Frequency of Clip (FOC).

"It's one of the real innovations in the last few years in our industry because you can almost get a double cut in one pass," says Mangum. "For the PGA Championship, we single-cut Thursday and Friday with those mowers at .125 – for a major championship."

Chris Fox, product manager for Jacobsen, says he was encouraged to see all the interest in FOC at this year's Golf Industry Show (GIS). "We had been educating the industry on FOC for a couple years, and at GIS this year it seemed more people were interested in that," he says. "It was cool to see how the industry has come around and understood what

FOC could do for them.”

Fox explains that with gasoline chain or belt-driven engines, the ratio of walk speed to reel speed is always fixed. But by separating those two speeds, it allows the superintendent to walk at, say, 3.2 miles per hour but spin his reel at 1,900, 2,000 or 2,200 rpm. Reel speed is also controlled as he slows down to turn or does a clean-up pass.

“A customer of ours at Twin Orchards in the Chicago area was able to take his height of cut on greens up from .110 to .115 and maintain the same ball speed but achieve a better FOC,” Fox says. “That’s really what we’re after. Plus, the superintendent has healthier grass on the greens to withstand stress and summer heat.”

Jacobsen introduced the first electric walk-behind greens mower, the E-Walk, in 2003. The primary drivers for introducing this machine, Fox says, were controlling reel speed and traction speed independently and also reducing noise. Fuel savings wasn’t a big motivator because gas prices weren’t that high at the time, plus greens mowers don’t use a huge amount of gas com-

pared to, say, fairway mowers.

“We had already been strong in the riding tri-plex market since the mid-1990s with the all-battery E-Plex, so it was a natural progression to take the technology to the walker platform,” says Fox.

One of the features of the current Eclipse 100 series is a two-battery system that enables users to mow up to eight or nine greens before running out of power, depending on the size of the greens, Fox says. Users can change batteries in under a minute and place the spent one in a holding tray on the mower.

“When you look at mowing practices, usually a guy sends out four to five walking greens mowers, so if each one mows four greens, he’s getting most of his course done,” says Fox. “If there is an issue with large greens, the extra battery pack allows for cutting the entire course without running out of power.”

Fox says there had been some anxiety on superintendents’ part regarding the range of these machines, but the gen-set (battery power) introduced in 2007 alleviated those concerns.

Explaining why Jacobsen de-



New electric and hybrid mowers offer a higher level of control.

ecided to go hybrid instead of all-electric, Fox says, “Guys says they liked the advantages of electric but weren’t so sure on the range. The majority of our sales are in the gen-set versions where guys know that if they have a unit down, they can have a guy cut a little bit longer. Plus, if you look at the demands of groomers on a unit, they use more power and you may not get the same life out of an all-battery unit.”

Fox says he sees more walk-behind greens mowers moving to all-electric in the future. Toro is coming out with a lithium-ion battery-powered (versus Jacobsen’s lead acid battery) mower this year but Fox says the technology is very expensive.

“Plus, with our ability to put two batteries on the mower, we still feel that’s an acceptable solution for right now,” he says. “Down the road, we would move to lithium-ion, but it becomes more of an issue of price point and cost-effectiveness.”

Ana Voorhees, marketing associate at Toro on the greens mower team, says Toro’s all-new Greensmaster eFlex models are the only models of their kind in the industry right now.

“Lithium-ion technology offers many benefits over lead acid, such as increased range, longer battery life, minimal maintenance and lower weight,” says Voorhees. “Our Greensmaster eFlex models can mow up to nine greens or up to 45,000 square feet on a single charge. During the development of the product, this was the range customers demanded out of an all-electric walk greens mower.”

The eFlex has an advanced battery management system that enhances control and offers other benefits to the quality of cut and after cut appearance. An “EZ-Turn” feature on the eFlex 1800 and 2100 offers more control, especially in turnarounds, says Voorhees.

“At the end of a mowing pass, when the operator lifts the mower to turn it around, the unit will automatically slow down,” she says. “Improved operator control in turns reduces damage to turf, particularly in tight turns near a bunker or hazard, and produces better alignment on the return pass without sacrificing productivity.”

Voorhees says what superintendents like most about the eFlex, especially those whose greens are located near houses, is its quiet operation. Quiet operation allows superintendents to mow earlier in the morning, without disturbing neighbors or bystanders.

Another benefit, says Voorhees, is when you buy the eFlex, you’re purchasing five years’ worth of fuel up front. “In addition to buying fuel up front, no CO<sub>2</sub> emissions, disposal of hazardous materials and no engine maintenance makes the eFlex a strong environmental choice for golf courses.

“We have to balance the trade-off between range, weight and cost,” she says.

As to what the future holds, Voorhees sees more and more

## Man vs. Computer

Never before have superintendents been able to “talk” to their mowers than now. With the sophisticated technology being introduced in today’s walk-behind greens mowers, user interface options have exploded.

Take, for example, Jacobsen’s “In-Command” control system. Superintendents and/or mechanics can preset certain password-protected codes via an LCD screen that keeps the actual operator from making changes.

“For instance, they can select the FOC they want and then lock it out,” says Fox.

Says Jacobsen customer Mike Rienzi, “I can tell the computer exact numbers, like my height of cut is .110 and FOC is .090. I just don’t see the precision and exactness on other brands like Jacobsen has.”

Toro’s eFlex has an LCD display monitor, InfoCenter, on the operator console that provides machine feedback and operation information such as battery charge status, speed, power consumption and battery current and voltage. The InfoCenter also helps technicians pinpoint and troubleshoot issues quickly, enhancing productivity.

John Deere features a no-nonsense dial indicator on the backside of the handlebar that allows users to set FOC. **GCI**

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## EQUIPMENT



Using batteries or a hybrid setup, mowers cover more greens than ever before on one trip.

expansion into alternative energy.

“I believe that lithium-ion and other alternative energy sources will expand far beyond greens mowers into other golf maintenance equipment in the very near future,” she says. “Demand for electric and alternative energy sources will also increase with rising fuel costs and more stringent environmental regulations.”

Tracy Lanier, product manager for John Deere, says the company’s main focus with its 220 E-Cut hybrid has been to offer the customer better contour following.

“The cutting unit out front has full contouring ability because there are no mechanical linkages going out to it – just a harness going out to the electric motor,” says Lanier. “So a key benefit is ground following. No longer do you have to worry about cutting lower on undulations or scalping. Plus, our system gives the cutting unit the ability to follow the curve of the green when golf crews are doing their clean-up paths – something they do every day – so they get less damage.”

Another feature is on-board backlapping, which can be accomplished by simply flipping a switch. Also, via a dial indicator, users can adjust the FOC.

Lanier says the hybrid walk-behind mower is superior to an all-electric one, considering the number of attachments one runs on these machines: groomers, rotary brushes, lights for early morning, etc.

“What you get with all-electric is that your battery starts to drain down as soon as you start to use it. And when you get into double cutting for a tournament and other things, you just don’t have the reserve power to get all the jobs done,” Lanier says. “Our customers says they wanted a machine that could mow one to 18 greens, and that’s what the 220 E-Cut does.

After coming out with the 2500E hybrid tri-plex riding greens mower in 2005 that removed all the hydraulics from the reel circuit (which reduced leak points), reduced noise and reduced fuel cost because it could run at a lower RPM, Lanier says it wasn’t a great leap to apply that technology to the walk-behind greens units.

This year, Deere introduced the 180 E-Cut at GIS, similar to the 220 but an 18-inch version. As far as what could be introduced in the future, Lanier says the possibilities are endless.

“With technology always changing, we’re always looking at the latest and greatest to bring solutions for our customer’s concerns on golf courses,” he says. “With electric, hybrid and different technology coming on board, there are lots of possibilities that could come into play.” **GCI**

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