

Greens mowers ...*more choice or more confusion?*

James de Havilland casts his net over the range of greens mowers and marvels at the technology involved



Eclipse, eFlex and E-Cut. Jacobsen, John Deere and Toro. The 'big three' all have some electric trickery up their sleeves to help golf courses cut greens in a greener fashion. Or should you substitute greener for more efficient?

There are several ways in which you can approach the adoption of all-battery and hybrid power for both walk behind and ride-on greens mowers. For some, the development of some form of hybrid or full electric power is just a knee jerk reaction by manufacturers to be seen to be making an effort to reduce the production of greenhouse gasses. For others, electric power is the future and marks the beginning of the end of hydraulic drives and internal combustion engines.

At this point, however, it is

perhaps best to relish the fact that there is a choice. The best way to look at any form of alternative drive and power is to skip straight to the ability of the mower to do its job. If a given model does what you want the next step is to work out if it does it in a cost effective fashion over its whole life.

At the moment, opting for an all-battery pedestrian mower over a petrol-powered alternative will cost more up front. Hybrid versus 'mechanical' pricing is not as clear cut as manufacturers have been known to adjust hybrid prices to make them more competitive in response to supply and demand. So you need to ask before just assuming 'hybrids are too expensive' or 'battery power is 'too left field'.

One issue that is difficult to address is the life span of lithium based battery packs. All batteries

have a finite number of charge cycles and all designs will lose their ability to hold a full charge as they age. So while lead acid battery technology is now well understood, lithium based package life for mowers is something of a 'known unknown'. That said, the way in which purpose developed lithium battery chargers work is fully automatic. There are no electrolyte levels to check and the charger will 'manage' how the battery is charged to enhance its lifespan.

Power choice is nothing new

Not so long ago, courses looking to buy a ride-on greens mower would have 'only' to choose between petrol or diesel power; cheaper to buy versus cheaper to run. Now you have to think of hybrids and full battery power. Again, cheaper

It is all too easy to concentrate upon the latest greens mower developments, overlooking existing proven designs. The Baroness LM56 and LM66 pedestrian models from Kyoeshia UK are tough 'conventional' mowers with independent gear drive to the split rear roller. Available in a contour hugging 18 inch and 22 or 26 inch cutting widths, these and other traditional designs of mower can deliver an exacting finish.



Drawing its power from a 58 volt, 35 amp-hour Lithium-Ion battery, the recently launched Toro Greensmaster eFlex offers a nominal nine-holes per overnight charge capacity. Offered in 18 and 21inch widths, the all-electric model shares its key mowing components with its petrol-powered Greensmaster Flex alternative. This means both petrol and battery powered variants can be specified with a brush or groomer and choice of cylinder.

Jacobsen offered an all-electric E-Plex back in 1997, with the company suggesting many of these original machines are still in service. Modern electronic control and improved motor and generator technology ensure current Eclipse models offer high levels of efficiency, with dependability to match.



to buy and cheaper to run? The key is to look at costs to buy and run and to also try as many machines as you can. Moving towards hybrid or full electric power suits some but not all. It also pays to talk to those who have adopted alternatives to 'just' internal combustion power. Have they had to make changes to fit a hybrid or battery powered mower into their routine?

What is perhaps of greater interest is that electric drive to cutting units is now both well proven and 'familiar'. Because electric drive to the wheels of a ride-on calls upon a different type of drive, full electric power as per the Jacobsen Eclipse 322 is more adventurous but still based around proven technology. The same applies to Jacobsen fitting electrically powered units to raise and lower the units into work and of course electric power steering.

The upshot of this is that it may well be that some ride-on mowers will soon only be offered with a hybrid drive, doing away with hydraulic hose runs and reducing the chance of hot oil spills on precious greens. But a 'conventional' pedestrian mower still has a lot of life left in the concept and for many will still be the best choice.

One final point. It is possible for a golf course to generate electricity; it is difficult to create your own petrol diesel! Cover the greenkeeper's

shed with photovoltaic panels and use these to help cut the cost of charging up a fleet of electrically powered mowers and potentially you could cut your daily operating costs.

Not so long ago this would have been considered a pipedream but now there are hundreds of companies installing photovoltaic systems. Many of these are now looking for work following the sudden announcement that the feed in tariff has been cut from 43p/kW to around 21p/kW. Time to get your calculator out?



(LEFT) Toro will offer its Greensmaster 3400 TriFlex in hybrid form. As with the walk-behind pedestrian models, a key design aim has been to reduce maintenance, using sealed bearings to cut the need for greasing. The mower also has a 'modular' design, with all the key components being shared between the various power options offered. This advanced thinking in mower design is critical in enabling manufacturers to offer a choice of power units and adapt to changes in demand.



(RIGHT) Because the electrical system powers the traction drive motors, cutting reels, steering and reel lift and lower, Jacobsen is able to offer its Eclipse 322 in both hybrid and full battery forms. Hybrid models are said to cut fuel consumption by up to 43%, the all-electric version returning claimed savings of up to 80% -based on annual operating costs. Features include programmable frequency of cut. A swing-out centre unit is carried over from existing Jacobsen greens mowers.



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(BELOW) John Deere has offered its E-Cut hybrid 2500e ride-on greens mowers since 2005, with the company's commitment to hybrid power now extending to its 8000E three-wheeled ultra-light and 7500E and 8500E fairway models. A key claim for hybrids is their ability to offer a reduction in running costs. This is primarily down to the ability to run the engine at a lower speed than is needed with hydraulic drives.



Walk-behind pedestrian greens mowers like the John Deere 220 are offered in conventional and hybrid variants. As with a ride-on, it is the ability to work the mower at a reduced engine speed that will appeal to some. But it is the precision with which the cutting speed can be set that also appeals.