

James de Havilland takes a closer look at the intricacies of current machinery

The anatomy of...

Battery powered kit

These days there seems to be a rush to adopt any green technology. Nothing wrong in that. But sometimes there is a great deal more to 'green' options than just cutting down on your carbon footprint.



Unlike its 'hybrid' small diesel or petrol powered siblings, the all-electric version of the Jacobsen Eclipse 322 relies solely on six 8-volt deep cycle lead acid batteries for its power. Modern CAN bus digital control improves efficiency and operating costs should be considerably lower than a fossil fuel burning alternative.

Step-by-step Analysis... Battery powered kit



The armrest control on the all-electric Eclipse 322 will look familiar to existing Jacobsen greens mower users. The steering is also electrically assisted, the mower having no hydraulics on it at all.



Loppers, power pruners, chainsaws, hedge trimmers, brushcutters, branch tiers and a power hoe. The pictured kit provides a snapshot of the battery powered items available from Pellenc. An impressive range matched to first class build quality.



The battery charger is an integral part of the Eclipse 322, as is a centralised electrolyte top-up system. Although lithium-ion and other battery types grab the headlines, modern control systems and intelligent chargers ensure there is still a lot of life left in lead-acid battery technology.



Pellenc equipment is powered by Lithium-ion batteries linked to the tool via a cable. The Poly5 unit on the right represents the latest technology, its 'polymer' design packing more punch into a smaller, lighter package. All feature a capacity indicator. (Inset).

It is tempting to concentrate on the fact that here we are looking at battery powered equipment. But pick up a diminutive Pellenc Selion C20 chainsaw or take a test drive on the Jacobsen Eclipse 322 ride-on greens mower and the chances are the power source will not be the first point of interest.

These tools are well engineered items of equipment that deserve close inspection for what they are as opposed to how they are powered. In short battery driven equipment can now be looked at for reasons other than just its power source.

"A key modern demand is not just to produce a quality mown finish but to deliver it consistently," says Richard Comely, Ransomes Jacobsen's Product Manager. "With the battery-powered Eclipse 322 ride-on greens mower, advanced CAN bus digital control enables the mower to be set up so it will deliver a consistent and repeatable

frequency of cut every time it is operated. The clip rate will remain constant, adjusting the speed of the cutting cylinder to precisely match variations in forward speed. This cannot be achieved on a hydraulic mower but it is a standard feature of our battery and hybrid powered Eclipse 322 models".

The important point here is not so much that the battery powered Eclipse draws its top-up energy from the mains but that it just happens to be a pretty decent greens mower. Approach it from this angle first, and by all means compare it to its hybrid and all-hydraulic alternatives, and that is perhaps a better way to consider the mower. Look at it solely because it is the only battery powered model of its type on offer and you run the risk of overlooking what it is designed to do; cut greens to a high standard.

Taking a sideways glance at a completely different set of kit, the Pellenc battery powered range of brushcutters, loppers, saws, prun-

ers and trimmers is completely different. Powered hand tools are now well established so on the surface the offering from Pellenc is not really that 'new'. But where Pellenc is different is in the way it builds its equipment.

Modern battery powered tools, such as drills and impact drivers,

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are now designed to be battery powered from the outset. You get the impression, however, that some hand held tools now offered with a battery pack are developed from a petrol powered equivalent. With Pellenc, all the kit the company makes is battery powered. There

are no engine powered alternatives. Although companies to include Stihl and Husqvarna do offer some well proven battery powered tools, the survival of these companies does not depend upon them being any good. With Pellenc it does.

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Pellenc kit is engineered to be used for extended periods every day. It shows. Similarly, the all-electric Eclipse 322 has taken a long time to come to market simply because Jacobsen have to ensure it will do the job reliably over an extended period. It has to stand comparison not just to its all-hydraulic alternatives but to hybrid mowers to.

Making the most of lead acid batteries

In the case of Jacobsen, existing lead acid battery technology is matched to modern electronics. The Eclipse 322 is able to maximise the capacity of its batteries by using it more efficiently and, of

equal importance, having the battery pack managed to optimise the storage of electrical power. An argument against battery power in the past was that you stood a very real chance of the batteries giving up on you in the middle of the course.

“We have taken the proven charging technology of our E-Z-Go electric vehicles and adapted it to suit the all-electric Eclipse 322,” says Richard Comely. “The mower has its own integral digital battery charger.

This intelligently manages the amount of electricity that is used to recharge the batteries and will not over charge. A centralised system also makes it simple to keep the electrolyte topped up to exactly the right level, points that combine to make it much easier to look after the power pack which in turn means consistent working periods between charges”.

So how long will the Eclipse 322 run between charges? Sensibly Ransomes Jacobsen suggests a lot will depend upon the distances between greens and terrain, but most operators should expect 18 to

21 greens per charge, this dropping if attachments, such as a groomer, are also operated.

With regard to operating costs, running a battery powered Eclipse 322 will save on red diesel and, all too easily overlooked, hydraulic oil too. Servicing times are also reduced, so this can also help reduce the costs of mowing overall.

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Hand tool battery technology

Pellenc uses Lithium-ion batteries and again these are replenished using an intelligent charging system. This ensures the battery can be charged at anytime, with no ‘memory effect’. In simple terms this means you can top up the bat-



Designed for the light trimming typically carried out by a 30cc brushcutter, the Pellenc Excellion has a telescopic pole to give a reach of up to 1.5m. The speed of the cutting head can be set from 5,000 to 6,200rpm.

teries without first having to fully discharge them to optimise their service life.

This used to be a problem with other early small battery designs.

Of equal importance, Pellenc claim the batteries have an extended life. After 800 charges, the company suggest the batteries will still retain at least 80% of their original capacity, with no reduction in the actual power delivered by the battery.

And when the batteries are not in use for more than four consecutive days, the batteries will automatically manage how they discharge to optimise their service life.

Designed by Pellenc, it is the in-built software that is the clever part behind the optimisation of the batteries. A dealer can use the software, for example, to interrogate the battery.

This can be used to list the number and duration of charges made, operating temperatures, duration and loads placed on battery and even shock loads.

The benefit of this is that users can be given a clear outline not just of how much work a battery

has done but also how much life remains.

Typically, Pellenc expect professional users to get as much as three years out of a battery pack.

Now actual life expectancy can be monitored so you know how much life a battery has remaining. All useful information that can help keep an accurate tab on equipment running and operating costs.

Why no advanced batteries for larger kit?

The clever batteries used by Pellenc, and as will be fitted to cars like the forthcoming Nissan Leaf, are extremely expensive.

For small hand held tools the price can be more easily justified.

But the cost of a Lithium-Ion battery pack needed to power a ride-on mower has to be carefully balanced against the operating and cost benefits it would deliver over the whole life of the mower.

At present the sums do not stack up.

The Nissan Leaf, incidentally, will benefit from a £5,000 government

subsidy when it goes on sale. But even then the car will cost in excess of £23,000. That is a lot of money for a car that will 'only' do 100 miles between charges and is only the size of a VW Golf.

Put these figures into a mower context and it could be that a lithium-ion powered fairway mower would perhaps cost pretty much twice the price of a diesel hydraulic or diesel hybrid equivalent.

This is not to suggest only lead acid technology will be used to power electric mowers of the future as there almost certainly going to be alternatives available.

The question is what those alternatives will turn out to be and when they will become mainstream.

For more details on Jacobsen Eclipse 322 and operating costs, Ransomes Jacobsen has a website www.eclipse322.com.

This provides detailed information that is claimed to demonstrate the return on investment that can be achieved by switching to the all-battery powered 322.

BIGGA Regional Conferences

All forthcoming conferences are as follows...

REGION	DATE	LOCATION	FOR FURTHER DETAILS, CONTACT...
Scotland	1 March 2011	Carnegie Conference Centre, Dunfermline	Peter Boyd, Regional Administrator, 0141 616 3440
North Midlands	To be announced 30 March 2011	To be announced Newark Golf Club	Peter Larter, Regional Administrator, 01476 550115 Peter Larter, Regional Administrator, 01476 550115

