Although pictured installed in a golf cart, the battery packs on Yamaha U-MAX utility vehicles can also incorporate a self-levelling battery top up system. This makes adding distilled water to the battery pack both easier and more accurate. Features like this are well worth specifying. This installation also incorporates an on-board charger. This allows charging from any mains outlet, a useful feature that allows 'opportunist' charging

All Charged and Ready to Go

Electric utility vehicles are gaining popularity, but they are still regarded as inferior to petrol or diesel power on many courses. Are the latest models now able to offer the capacity and stamina to cope with every need? James de Havilland discusses...

Put a five or even 10 year old electric powered utility vehicle next to one fresh from the factory and play spot the difference. Styling apart, it would be fair to say there will only be only subtle visible differences in the battery pack and drive motor. Although it could be argued that would apply to most other items of kit, great things have been expected of electric vehicles. Yet the 'big break through' still seems a long way off.

This is actually quite a handy argument for those who have a dislike of electric utility vehicles. Having to go out and rescue a stranded unit that has decided to die on its way back from the 18th or having a machine that struggles to scale modest slopes once the batteries are past their first flush of youth are a couple of reasons given to outline electric power is not acceptable. But why is it that when golf carts suffer in the same way, they tend to be cursed but forgiven? Utilities that repeat the 'failure in service' trick are not so lucky.

Those less than impressed following experiences of older electric models, however, do need to give more recent models another chance. Improved batteries are one important development, but there have also been subtle changes to battery chargers, motors, regenerative braking systems and even tyres. All have helped improve stamina and duty cycles between charges. Well cared for modern batteries have longer lives as well. But what remains is the need to understand how these machines operate.

Many problems relate not so much with the vehicles themselves but the way in which they are firstly marketed and secondly operated. On the promotion front, a given manufacturer or, more accurately the dealer selling the unit, can only sell from the range of machines they offer. Although 'misleading selling' it is less likely to arise with a reputable supplier, it is not unknown for a machine to be recommended that frankly is not up to the job.

This comes back to the opening paragraph. Compare any current electric utility vehicles side by side and they seem pretty much the same. The reality is that they differ in terms of not just load capacity but battery capacity too. Unless you choose a machine with the battery power and load capacity to cope with what is going to be demanded of it, it will not do the job.

At this point it can be all too easy to scan the spec sheets and look for some help. Well be prepared for a let down. A typical specification example will merely list the units operating power. This may well be 48 volts provided by six 8 volt batteries and 20 amps output. That is about it on what you will get. How long it takes to fully charge and discharge those batteries will be harder to find, but as a guide most manufacturers will suggest a 12 hour overnight charge will be enough for a days work.

Frankly, this broad outline is not a great deal of help. For a start it gives no clear idea of actually how long a given vehicle can be expected to run between charging and, of equal importance, how 'powerful' the machine is. It is only when trying two different vehicles side-by-side that differences can be picked up despite pretty much the same specification on paper.

The only way to find out if a given unit is up to the job is to try it. By try, however, it is not a case of just using the machine for a couple of days but more working it over at least a week. New batteries take a while to reach their peak condition. Then there is the matter of charging disciplines. As soon as an electric vehicle is unplugged from its charger, the batteries start to discharge. Although the rate of discharge is slow, expecting a machine to perform as well as it could following a couple of days off-charge will see its performance suffer. A good dealer should allow time for the vehicle to prove itself and help ensure it is worked properly.

So if one type of utility vehicle proves not up to the job, will another make and model also fail? This is where it gets difficult to give a clear answer. Some manufactures claim the systems they employ are better than others. Features

No, the Cushman Turf-Truckster is not electrically powered, but it helps define why diesel and petrol powered utility vehicles remain so popular. A well-proven golf course workhorse, it can be fitted with a range of attachments, such as a Turfco WideSpin top dresser. This sort of application is currently not as easily done with an electric vehicle, but the future may well see electric models with more power and capacity to take on this role

like regenerative braking, which helps to recharge the batteries as the vehicle slows or goes downhill, help increase battery life, but not by a significant amount.

In truth, the basics between most models are pretty similar. It is in the details that there are subtle tweaks that can make one model a better bet as a long term buy. On a short demonstration, however, these details are unlikely to come to the fore. So if a utility from one of the key players proves to be inadequate there is every chance an alternative make and model will also have the same limitations.

Another point to consider is temperature. All the battery designs rely on pretty simple chemistry to store electric power. As temperatures drop, all batteries tend to become less efficient. This can mean a utility vehicle that would do a days work on a single charge in summer will struggle to do half a day in really cold weather. It is in these conditions where remembering to plug the machine in for a charge at every opportunity comes into play.

COST OF OPERATION

Electric utility vehicles can be less expensive to operate, although this point is often over exaggerated. A key cost, often missed out of the equation, is that of renewing the batteries. Although a well cared for set may well last five years, it is best to assume they will need replacing perhaps at three. Getting into the dangerous waters of mentioning replacement battery costs, eight 6 volt Trojan T105 batteries will not leave much change from £800 at current retail prices.

Fair enough, the style police may have something to say about the looks of a Yamaha U-MAX when fitted with a weather break style of cab. Keeping weight down, however, is critical not just for ground bearing pressures but also for battery range. When looking at electric utility vehicles, check the options on offer. It does vary between makes and models

So on top of the cost of charging the vehicle, which will be from a conservative 25p per night, the annual cost of the batteries needs also to be considered. Add in the need for a day time top up charge, and the daily electricity bill may be around 30p. For the sake of argument, say the vehicle takes a charge for a conservative 300 days. That is a low £90 annual charge cost. Factor in the batteries, however, and the annual costs are nearer £356 per annum.

A diesel utility consuming three litres of rebated fuel a day at 45p/litre will, over 300 days, get through £405 worth of fuel. On top of that, the cost of an engine service should be added, say around £45 to bring the total up to £450. A simple set of figures, but ones that are all too easy to dispute. For a start, how many clubs know how much fuel they put into a utility vehicle a year? How can you determine exactly how much it costs to charge up a set of eight 6 volt batteries?

The truth of the matter is that electric vehicles either work for a given set of end users or they fail if they are not embraced with enthusiasm. Most clubs could justify using at least one electric utility, even if this means having other diesel or petrol powered alternatives available. But one point is clear. Those that have stuck with electric power would miss it if it were suddenly to become unavailable.

With a top speed of 15.5mph, the John Deere TE Gator should be nippy enough for most applications. It can tow up to 272kg and has a total payload capacity of 408kg. A control is fitted to slow the vehicle to a stop before changing direction. This is claimed to put less stress on the drivetrain and produce smoother operation

COMPARING MAKES AND MODELS

It is fair to say that all the electric utility vehicles on offer from the key players are soundly engineered and well proven. But that is not to say they are all the same. Each design will have its own plus and minus points. It is really important to give a range of models a decent try, preferably in colder weather. Some will come with battery packs that are better able to hold a charge when the weather turns chilly. There are other points to bear in mind too.

What about towing performance? Can the model be specified with a safety frame, partial or even full cab? How are the batteries kept topped up with distilled water? What tyres are fitted? Can the load platform be fitted so it tips? How high is the load platform from the ground? Can the machine scale a steep slope fully laden? These are all points that need to be assessed during a demonstration.

Aixam Mega Ltd imports MultiTrucks from France. Primarily aimed at the urban utility and delivery market, these fully road legal electric models can top nearly 30mph and will do 12,000 miles on a claimed £180 worth of electricity. Add the fact that they do not need road tax, and they look attractive buys at under £8,000. The company is looking to fit tyres suitable for off-road use by the end of the year, hence their inclusion

KEEP THEM CHARGED

Leave a lead-acid battery discharged for an extended period, and it will be less able to hold a full charge when next topped up. Allowing the batteries to go completely flat repeatedly can be see them 'destroyed' within 18 months.

It is important to charge batteries correctly to optimise both performance and longevity. When new, batteries will need an uninterrupted charge of at least 12 hours, and as a guide allow perhaps four hours more charging time than when the batteries have started to reach their peak condition.

Check that the machine is supplied with the right type of charger for a deep cycle battery. Although the supplying dealer should ensure this is the case, it is not unusual to find an existing vehicle charger is pressed into service to charge a new machine. This can be a mistake. More recent chargers have intelligent features that prevent over charging and work pretty much automatically. This allows then to condition charge batteries on vehicles that may be inactive for extended periods.

An external charger, such as supplied with the JD TE Gator, will plug into a standard single phase mains 240V ac, 60hZ wall socket. The charger senses when the charge cycle is complete and shuts down automatically. Vehicle regeneration is a common feature on modern electric vehicles, Deere suggesting the system on the TG Gator puts between three to five per cent of the full electrical charge back into the battery during a typical day's work. A single charge should last the average user a day

To optimise battery life, a recharge is necessary when they are only 20% discharged; this is when the specific gravity of the electrolyte drops to 1.233 and the power of a 48 volt pack falls to 37.38 volts. Hands up those who will go to that level of detail? Perhaps it is more important to avoid over discharging the batteries.

Although most vehicles will alert the user when charging is needed, the key issue to avoid is draining below 80% discharged of to a specific gravity of 1.148 and a 48 volt pack reading down to 35.94 volts. Deep discharge significantly reduces battery life. When not in use, vehicle batteries should not be allowed to drop much below a specific gravity of 1.240. The rate of self-discharge varies directly with temperature.

Specific gravity is determined by using a hydrometer; this is arguably the most reliable way of establishing the health of a battery but needs carrying out with care. If in doubt, seek advice.

Toro, as with the other major players in the electric vehicle market, has seen steady sales of its e2050 Workman. The rear platform has a capacity of 385kg, this load being well within the machines ability over les forgiving terrain. A key to getting the best from this type of machine is to keep them charged and to not let the batteries fully discharge

The Ransomes Jacobsen E-Z-GO MPT 1000 Electric models feature a single point battery filling system as standard. This identifies individual cells low on electrolyte and tops them up automatically. This helps reduce maintenance and equally importantly keep the batteries in tip-top condition. Also fitted with an onboard charger, the MPT 1000E can be recharged using any 13amp mains socket

The optional Mega MultiTruck tipping body lifts to reveal a useful load area over the sealed battery compartment. Gel batteries, as opposed to conventional lead acid, are used to save space and add range. But they will be more expensive when it comes to replacing them. Payload will depend upon specification, but it is around 435kg with a tipping body