



With the recent fuel crisis now behind us, but only perhaps for the time being, Richard Comely, Product Manager at Textron's Specialty Products division, looks at the case for alternative fuels for golf course applications

Fueling the economy?

Legislation, pressure groups and technology, not to mention the recent fuel crisis that affected the UK and some parts of mainland Europe, are just some of the factors driving research and development into the use of alternative fuels. Before looking at how alternative fuels will impact upon the golf course, it is perhaps pertinent to look at some of the influences that will affect their use over the next decade.

A recent report by Dr. Peter Harrap, entitled 'Electric Vehicle Markets, Players and Forecasts', provides a fascinating insight into the predicted growth of various markets up to the year 2010.

This report and other factors, such as the commitments from the authorities in Paris to have low or zero emissions for many new delivery vehicles in the French capital by the end of 2001 and London's mayor, Ken Livingstone, pressing for a fleet of electrically-powered buses as soon as possible, all help fuel the argument that alternative sources for vehicle

power will gather momentum in the coming years.

Dr. Harrap's report states that the global market for electric vehicles was US\$14.02 billion in 1999 and will grow by 11% by the end of 2000 to US\$15.5 billion, representing a total of 7 million electric vehicles in use worldwide. In the next decade he predicts that the global market for electric vehicles, including manufacture and after-sales, is expected to exceed US\$48.3 billion.

So, from these brief statistics and the undoubted pressure that will come from governments to reduce emissions, together with advances in battery technology, we can see that one of the major sources of alternative fuel for vehicles will be electric power.

How will this affect golf course operations here in the UK?

At present the main use of electric vehicles is restricted to golf cars and utility vehicles and here in the UK the split between petrol and electric is

60% and 40% respectively. However, in Europe, the trend is very much the other way with 76% electric and 24% petrol. In America they have embraced the use of electric power and there we see a 62%-38% split in favour of the electric buggy over its petrol driven cousin.

So why is there this disparity as we cross the English Channel and the Atlantic?

In the United States, they believe that the electric golf car offers better efficiency and more flexibility than the petrol-driven version. For example, the electric-powered E-Z-GO TXT golf car with Precision Drive System (PDS) allows course operators to specify a golf car with very specific performance characteristics, optimised to suit the topography of their individual courses. This golf car is now available with three options - All Terrain, Mild Hill and Steep Hill, and can be programmed to ensure optimum efficiency relative to the design of the course.

From an economic standpoint, the electric golf car has added benefits. The solid-state technology of the drive system and high efficiency of the electric drive motor reduces maintenance costs over the lifespan of the vehicle. Improved battery technology means that batteries now have a minimum lifespan of at least three years. And then there's the fuel storage problem. Ideally, petrol should be stored in underground tanks and although at present some clubs turn a blind eye to this HSE requirement, the laws governing storage are bound to be strengthened and enforced more enthusiastically in the future. In terms of security, petrol can be stolen, whereas electricity is pilfer-proof.

Looking at the comparative running costs of petrol versus electricity for golf cars, it makes interesting reading. The figures given below have taken into consideration that overnight electricity charges can vary between £0.50p and £0.70p depending on the tariff and that a golf car requires an average of 6kW hours of electricity. The petrol figures are based on a golf car using between 0.5 and 1 litre per round. However, it is pertinent to recall that charging facilities have to be installed, but this could be offset by the reduced maintenance requirement of the electric buggy.

Electricity

£0.70p per night for 7 nights a week =
£4.90 per week.

Petrol

14 litres per week at £0.81 per litre =
£11.34 per week.

That's a saving of £6.44 per week per car. Using the above figures and looking at a fleet of 10 golf cars we see an initial annual saving of £3,348.80 (£64.40 x 52).

It's not only the golf car market where growth is foreseen. Electric power is now being introduced on course maintenance equipment, especially mowers. Again America is leading the way with stricter laws on noise pollution being implemented and existing laws being enforced more diligently. In the UK, with increased pressure on our green areas for housing development, more and more golf courses will have residential properties adjacent to their borders.

California, one of the most environmentally aware states in America, is introducing legislation restricting the use of petrol-powered equipment within 250 feet of residential property between 9 a.m. and 5 p.m., Monday to Saturday and banning all use on Sundays and holidays. This will have major implications for course operators who are aware that homeowners will not tolerate being woken at dawn or have their weekends polluted with the noise of greenkeeping teams going about their business.

All the major turf equipment manufacturers are looking at producing mowers that are quieter and cleaner. Some are investigating the use of dual fuel, using lean-burn, highly efficient petrol engines for moving between greens and using electric power for cutting. Here in the UK, Textron Turf Care is the only company currently marketing an electric ride-on greens mower.

Sales of the Jacobsen E-Plex II have seen a steady increase in the past two years and one of the major advocates of the electric-powered mower is the course management company, American Golf (UK) Ltd, which has recently included three units in a major order for new equipment.

Commenting on the inclusion of the E-Plex II's in their latest round of orders, Laurence Pithie, Director of Maintenance, said, 'We have been impressed with the two E-Plex

Below: The ST350 Workhorse proves that LPG can now be used successfully to power smaller, air-cooled engines, ideal for golf course utility vehicles





Above: Advanced technology allows course operators to specify a golf car with very specific performance characteristics, optimised to suit the topography of their individual courses

machines that we currently operate and these three additional units will be deployed at The Hertfordshire, Addington Court and Sunbury which all have residential properties close by. I must admit that I had reservations initially, but they have exceeded all our expectations. Battery life is good, giving us a very acceptable operational range, and when it comes to maintenance there's no oil filters, oil changes and absolutely no question of accidental hydraulic oil leaks onto the greens.

Having looked at golf cars and mowers, lend themselves to electric power? Textron have recently adapted their

E-Z-GO Industrial 875 platform to take a series of alternative body derivatives. The platform model now offers the option of a Chelsea refuse collection tipping body, a tipping litter cage for the collection of refuse sacks or a water bowser complete with lance and 12 volt pumps for watering hanging baskets - all could be adapted for use on tomorrow's golf course.

However, it's not just electric power that provides an alternative to petrol and diesel. LPG technology has been around for many years mostly for use in industrial applications, i.e. powering forklift trucks in warehousing and logistic operations. Also, car manufacturers such as Volvo have introduced bi-fuel powered vehicles that can run on LPG, then switch to conventional fuel if the need arises.

At Saltex this September, Textron introduced an LPG conversion kit for their popular ST350 utility vehicle, which is powered by an 11hp, 350cc twin cylinder, four-stroke petrol engine.

For many years LPG has not proved popular when used on small, air-cooled engines, the cost of the installation often outweighing the savings to be made in fuel. As petrol prices continue to rise LPG is becoming a viable alternative even in relatively low cost vehicles such as golf cars.

Using LPG results in greatly reduced emissions, the fuel is cleaner and safer to use, the period between oil changes can be increased as less carbon is produced in the combustion cycle and the fuel can be stored in bulk tanks above ground, unlike petrol, and it is unlikely to be a target of pilfering.

LPG will appeal to many golf courses that are not on mains gas and already use this fuel for heating and cooking. When purchased in bulk it can be very cost effective and, like red diesel, taxation is lower for off road use offering further significant savings.

These LPG conversion kits are also available for E-Z-GO Workhorse utility vehicles and the petrol-driven TXT golf cars.

Calor Gas has produced some interesting comparative figures for petrol and LPG powered golf carts. In order to provide an accurate comparison the calorific value of LPG has to be taken into account and 10% extra LPG consumption is included in these figures to account for this factor. Also the costs exclude VAT, as most clubs will be VAT registered and claim the tax back.

Petrol
20 litres per week at £0.70p per litre =
£14.00 per week

LPG
22 litres per week at £0.22p per litre =
£4.84 per week

That's a saving of £9.16 per week per car. Using the above figures and looking at a fleet of 10 golf cars we see an initial annual saving of £4,763.20 (£91.60 x 52). Even allowing for the rental of a 2000 litre tank and electric pump at £283.92 (£5.46 x 52), the annual saving is still £4,479.28. Definitely fuel for thought for golf course operators!

Although the recent fuel crisis has highlighted our dependence on petrol-powered products, Textron has been researching and developing turf maintenance equipment that runs successfully on alternative fuels. High levels of excise duty, tougher regulations on emissions, stricter environmental laws and greener purchasing policies by multi-national organisations will all ensure that the quest for alternative fuels remains on the political agenda. It is an issue that golf course management will ignore at their peril and, most probably, to their cost.

*Electric Vehicle Markets, Players and Forecasts is written by Dr Peter Harrap and published by Footnote Publications. Tel: 01256 862163

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