



## Efficient course management machinery and vehicles

### The challenge

The cost of purchasing, running and maintaining a fleet of course management machinery and vehicles that are required by the average golf club in Scotland, can be a significant proportion of the course management budget, often reaching £35-100k per year.

The fuel used in many of these vehicles and machinery can impact on air quality and emit CO<sub>2</sub> into the atmosphere contributing to climate change.

Course management machinery can include walk behind and sit on mowers, aerators, rakes, blowers, sprayers, top dressers, turf cutters and edgers, tractors and other specialist equipment.

Course management utility vehicles are required to transport staff, equipment, materials and waste over the whole facility which is often over 60ha.

Golf buggies are used on many golf courses and these also require power and maintenance.

In a time where capital and operational costs need to be kept at a minimum, many clubs are looking to improve the longevity of their fleet of course management machinery and vehicles and golfer buggies by improving maintenance and management practices, introducing more energy efficient and cleaner fuel options and reviewing their purchasing agreements. All of these decisions need to be made without reducing the quality of the presentation of the golf course.

### The Solution

#### Maintenance

Attention to the upkeep and efficiency of greenkeeping equipment is an essential part of general best practice golf course management that results in higher quality playing surfaces, and ensures longevity and better value from your fleet of machinery.

Careful monitoring of the performance of all greenkeeping equipment will help to identify problem individual units which may be due to faults or poor maintenance. In mixed fleets of equipment, you can compare performance of different makes.

Use of the wrong type or grade of lubricant can add 5% to energy costs. Some high performance lubricants can reduce energy cost by more than this amount.

Correctly set and sharpened mower blades give a better quality of cut, with less drag and thereby improve fuel efficiency and machine life. A programme for regular checking and maintenance of mower blades will increase lifespan and reduce costs.

Leaks from compressed air equipment are responsible for a large proportion of wasted energy but are simple to control. Losses through a 1.6mm hole (size of a match head) require 1kW of power to compress the air lost. It is easier to check for leaks during periods when there is no demand for air. During quiet periods listen for loud and obvious leaks and repair them immediately. Smaller leaks can be detected using a soapwater solution. Testing and repairing all joints, plug-in connectors, gauges flexible hoses and other fittings will reduce long term costs.

### **Fuel efficiency**

Fuel costs are likely to keep on increasing. Correct fuel consumption monitoring for each piece of machinery or utility vehicle against operating hours will help influence future purchasing decisions.

Poor driving or operating techniques can also lead to fuel wastage. Staff training and careful planning of frequency and routes for various activities will reduce fuel used.

Producing compressed air is very expensive so usage should be minimised e.g. by brushing down machinery prior to washing. Reducing blowgun operating pressure with pressure regulating valves to 30psi (2bar) from a higher general system pressure can significantly reduce operating costs.

Most equipment and machinery consumes a considerable amount of energy even when in an idling mode so a procedure should be in place to ensure that machinery is switched off during stoppages. Low cost automatic controls can be set to switch off machinery after a set period of idling, therefore saving money both in terms of energy and wear and tear.

## **Alternative Fuel Sources**

Petrol/diesel powered machines are noisy and polluting and the fuel costs are going up. Clubs can spend anything from £5k to £25k per year on fuel for their machinery and vehicles. Changing to alternative forms of fuel such as electric powered machinery and vehicles may prove more cost effective (and potentially reduce CO2 emissions if from a renewable source). Recharging can be done overnight using cheaper electricity tariffs.

LPG (Liquefied Petroleum Gas) is duty free and therefore considerably cheaper than both petrol and diesel. LPG vehicles also produce significantly cleaner exhaust emissions than petrol or diesel alternatives. Oil changes are less frequent as less carbon is produced in the combustion cycle.

Hybrid vehicles that are powered by a combination of petrol/diesel and electricity are becoming more popular for a variety of machinery and utility vehicles reducing costs by up to 60%.

## **Types of machinery**

Multi use machinery and trail gang mowers are popular with many clubs where one powered vehicle has a variety of attachments to do a variety of course management activities. A rough mower, overseeding, topdressing, scarifying all attached on the back of a tractor is cheaper than separate machines.

Adapting machinery for other uses e.g. as using the Graden scarifier and sand injector for overseeding can also reduce the amount of machinery required.

## **Ownership**

Traditionally clubs would own their fleet of machinery and vehicles and replace every 5-8 years as required when they had reached the end of their useful life. As financial challenges increase for clubs they are keeping machinery longer than normal before upgrading and replacing.

Switching from outright ownership to a lease agreement with machinery suppliers can suit many clubs. Fleets are upgraded and replaced regularly so clubs have the newest machines and latest innovations. They often include a maintenance agreement which helps clubs budget and can save a club £10k-20k per year. There is less downtime as temporary replacements can be available under a lease deal.

Clubs have more options to buy pre-owned machinery, effectively recycling products that have not yet reached their end of useful life.

Local machinery sharing schemes can benefit groups of clubs, sharing the costs.

## **The Outcomes**

Many Scottish clubs have addressed their machinery and vehicle maintenance and course management procedures, their fuel choices and their purchasing arrangements successfully in recent years.

This has resulted in a reduction in their capital and operational costs and reduction in potential pollution without reducing the quality of their course management.

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