

NEW TRENDS IN TURF MAINTENANCE EQUIPMENT

PART 2

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A subject such as this usually invites the reader to anticipate miracle products and sensational solutions to the everyday job. Advancement in technology is rather rapid when you consider it in 50 year increments. But please keep in mind, the process in bringing to market, machines that are better than 10 and 5 years ago, is a slow painstaking one. This article will discuss a variety of maintenance considerations and what better products may be available for handling them more effectively. Last month we covered weight, noise and reliability. Here are the remaining considerations.

DIESEL VERSUS GAS

There is a place for both. The preference for diesel has been driven by the perception of lower fuel costs, durability and lower maintenance. Today, fuel is less of an issue as the price of diesel and gasoline is closer. Diesel power plants have played an important role in delivering steady and powerful energy at reasonable economy and high durability. However, gas engines are improving, and the liquid cooled, durable gas engines of today are better than they were five years ago. New materials, higher attention to specific applications, better manufacturing processes, are all sending gasoline engines upward on the scale of durability. Usually, the weight of diesel engines are heavier. The option for either gas or diesel is most likely to have less preferential differences. The historic advantages of diesels lower maintenance, durability and lower fuel costs are lessening and may be offset by a gas engine's lighter weight.

ENGINES

Both American and foreign auto industries have demonstrated much in downsizing and compacting power plants. This same trend will carry into the lower horsepower ranges from three to fifty horsepower,

bringing stronger power plants with less weight and size. Here again, technology and materials are playing a key role. Two to twelve horsepower engines now have overhead valves, cast iron sleeves, mechanical oil pumps, are more efficient and lighter weight. Toro's 2 cycle Suzuki, Hondas 4 cycle units plus Yamaha and Kawasaki are bringing new competitive pressure on the U.S. manufacturers to increase quality and innovation. For some time the auto industry dreamed of having a turbine engine, and have been testing this concept for years. While it is unlikely at this time that the turf industry will see such power plant in a practical, affordable application, it may well be the beneficiary of this experimentation. This may include the use of ceramics, in gas powered engines, that allow operations at substantially higher heat levels than is currently possible. Other materials used in the wearing parts of pistons, valves, crankshafts, motor casings, plus solid state electrical systems, will, in a combined way, contribute to less weight, more compactness, yet yielding higher horsepower. This engine trend adds support to the forecast of lighter weight, more compact products for the turf industry.

PRODUCTIVITY

Sometimes this can be an over used word, but it does mean a greater yield per manhour worked, and/or a greater application of a product investment to a wider group of tasks. The return on investment is the driving force behind versatility where products offer more options for custom outfitting and more attachments for multiple tasks. The versatile, multiple task machines will most likely require a higher initial investment, but when amortized over the years of its durability, will result in a better return on investment for the end user. This trend is likely to use a more universal type prime mover, specifically tailored for turf applications with a wide variety of easy-on, easy-off functional attachments. New power trains now allow custom attachments to function as well as specialized whole machines.

One recent trend that raises a question about productivity is the use of riding greensmower tri-plexes for cutting

fairways. This trend can add a good number of hours plus maintenance costs plus capital investment to gain the visual and horticultural benefits that are perceived by the end users. While this trend towards high care of fairways is mushrooming, industry recognizes the higher cost and lower productivity. Industry will react and you most likely will see new units of less weight and bigger mowing capacity, substantially enhancing the efficiency and still meeting the job specifications.

TRENDS IN LEVEL OF TURF CARE

In order to balance budgetary concerns, return on investment and the needs of the public we may well see less maintenance in selective areas such as parks, highways and other general purpose turf properties. Areas such as golf courses will likely have more intensive care, particularly on the higher budget golf courses where desire is affordable. Turf cultivation and aeration will most likely increase with better products coming along. The

picking up of clippings on fairways is a newly perceived benefit and products will be developed to allow grass catching, on a more affordable basis. Top dressing frequency is another care practice that will increase in intensity. All of these maintenance procedures will be pointed to extending the grass growing season, and/or the quality of turf. The extension of the season most likely has a bigger benefit in the southern areas of the country as opposed to the north.

POWER DRIVES

The use of hydrostatic and hydraulic drives is growing and are meaningful improvements over belt and chain drives. While the durability, smoothness and convenience of these drives had been well recognized, they are relatively inefficient and require more horsepower. Improvements in efficiency for power transmissions is continuing. Better and more diverse controls are being added to the hydrostatic and hydraulic drives to extend the efficiency of these systems while reducing horsepower consumption.

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ELECTRICAL DRIVE

Oil spills from the seldom but occasional break in a hydraulic line continues as a high concern to the turf industry. The frequency of occurrence is low, but the memory of the problem is big. Electrical drives have been used many years in a variety of products but have never really reached the turf industry. Railroad locomotives are a very visible application. New developments in electric motors and electric controls suggest this could be a beneficial application for turf equipment. The efficiency of such power systems could be better, smoother, and deliver a more exacting end result in terms of close tolerances of cut, not to mention the reduction of the oil spill problem.

ELECTRONICS

No where has there been a more rapid advance in the past twenty years than in the field of electronics. Setting aside moon shots and the computer industry (and you can't), agriculture specifically, and all industry in general, are making higher use of electronic components. Electronic instruments will contribute to a better sensing of the operation of reels and rotaries, automatically signaling the need to adjust settings to changing conditions. A whole array of sensors that feed back to a central control will bring about machine monitoring that will improve the adaption to the environment or the terrain. An obvious application is automatic frequency of clip adjustment. The camera industry has shown us a lot about compact, minute circuitry with automatic feedback systems. The automotive industry is moving fast in several areas: Active suspension systems, computer controlled sensors in the suspension components that calibrate and improve response to road or ground conditions. Combustion sensors that monitor air to fuel mixture and many other engine performance factors, all leading to better performance, economy and longer life. This is all possible with electronic on board controls. The state of the art is here, it is only for the adaptation to our turf products, which can and will come in the near term.

As stated earlier in the article, many of

these ideas are often thought to be dreams. But most of the suggestions are already on the drawing boards or on prototypes in an array of industries and products.

Both manufacturers and distributor-suppliers must be thinking about these changes and be ready to fully support the technical aspects of training, service and parts. Likewise, golf course superintendents must plan for stepped up turf maintenance practices and shop repair requirements. New and different types of shop test equipment will undoubtedly be a part of this trend. Desk top computers within the larger and smaller golf course maintenance organizations will be an important tool to efficiently track manhours, maintenance procedures, turf maintenance cycles and chemical fertilizer applications. While computer software, specifically for the golf superintendent, is somewhat sparse at this time, easy to use, pre-arrange file schedules are available in the marketplace to speed up the efficiency and accuracy of good record keeping and planning.

The personal computer is already in use as a central control for the irrigation system and while still performing that function, can easily be used for other bookkeeping/record keeping/planning of maintenance programs.

You can expect a lot of newness in the near and long term. In a sense, it can add interest and excitement to one's work. It will ease the performing of difficult tasks with a better end result. The overall trend is to improved productivity and improved return on investment.

These trends can add substantially to career satisfaction of having the job done well.



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