

Scheduled long-term preventative maintenance-type activities are performed by the other assistant mechanic. Areas of responsibility include lapping and grinding of reels, fluid changes, tune-ups, lubrication and other aspects of equipment maintenance performed on a routine once a month or every 100-hour service program. All pieces of equipment are addressed on a rotating basis with frequency determined by use rate. A workweek of Wednesday through Sunday, 6:00 a.m. to approximately 3:00 p.m. for this mechanic rounds out the attendance program in the shop to provide continuous full-time mechanic expertise on site. With complete access to all equip-

ment for most of the day on Saturday and Sunday, the weekend is an extremely valuable period to concentrate on maintenance of high-use equipment.

An additional benefit that greatly improves the entire operation through effective equipment training and troubleshooting between operators and the mechanics is the bilingual capabilities of one of the assistant mechanics. Without question, effective communication on a daily basis is a truly valuable step toward the proper use and safe operation of all equipment.

On a final note, while it is clearly evident that routinely scheduled equipment maintenance is essential to maxi-

mize equipment life and minimize down time, it is imperative to also maintain an effective and timely equipment replacement program. Continually channeling valuable mechanic attention to "over worked" equipment is not only very expensive in the long run but also inevitably results in a reduction in quality, efficiency and morale in daily procedures throughout the entire operation. Not to mention the fact of the potential snowballing problems that no doubt will occur if critical preventative maintenance programs are consistently shoved to the back burner. Take care of your equipment, or it most definitely will take the care out of you.

Golf superintendent hits a grand slam Using high technology lubricants

BY KEITH VANMETER

Professional golfers have grand slam tournaments, anyone may have a grand slam breakfast, and professional baseball players hit grand slam home runs. Golf superintendents can also hit grand slams with operational and productivity enhancement programs using better performing lubrications. Like runs scored on bases achieved with ballplayers, the bases may be occupied by designated teammates below:

1st Base: Higher productivity

2nd Base: Lower maintenance costs

3rd Base: Oil resources extension by usage

At Bat: The environmental steward

Runs scored by not fouling the environment with hydrocarbons and improving operations.

Going to bat with these engineered organic high tech lubrications will dramatically lower the superintendents confrontation with that old victory grabbing nemesis....DOWNTIME. The four-base, grand slam homer can indeed be hit by the superintendent.

The big pitcher

First, let us take a look at the field of play — Lubrications.

The large oil company was "the engine that could" industrialize the world from an agrarian world culture. This was a great accomplishment for mankind. Large petroleum industries jump-started global industry, rule the world in some peoples minds, and still greatly affect what happens for many economies.

Without oil, we would be mowing with hand power and the sickle. We might be fertilizing with animal byproducts, not the sophisticated chemical compounds in use today. In fact, Golf as we know it today would not exist.

America's game

The USA is the world's largest exporter of grease and oil. It is so because the USA has the cleanest of the world's oil supply. The least contaminated drilled oil, produced by Mother Nature, lies under the mid-continent of America.

The most oil drilled and the dirtiest oil comes from that world hot spot, the Middle Eastern. Because this crude oil is high with sulfurs and tars, it is primarily manufactured to be fuel products for consumption.

In the good old U.S. of A, crankcase, gear box, hydraulic and transmission oils are "Made in America" with America's high-paraffinic based oil resources.

Synthetics are oils that are synthesized. These topnotch oils are great for some applications. — long-hauler trucking companies for one of many. Use in golf operations is overkill.

Mineral-based, high technology oil is best for the golf course unless otherwise indicated. As it is not as expensive as synthetic oil, it will offer unexpected high performance.

Why pay the extra costs of synthetics above the mineral-based products and spend more than you can justify? Today, synthetics are not cost effective.

The best ballplayers

Manmade machines emulate the human machine. As blood is to our human body, oil is to the mowing machine. Blood acts as oil in that it helps cool our body engine, taking away wastes and heat.

Without healthy blood, we trudge down and are inefficient as fully functioning, living machines. Ditto with a not-living machine, pump or other mechanism.

The key to an efficient mechanism is getting the heat and wastes down to within operational limits, even in the most extreme working environments.

Make no mistake about it: golf operations are Extreme Working Environments and courses aren't level playing fields.

Operations require the lowest levels of downtime possible to be efficient and

productive. All the signs exist for consideration and use of high technology lubrications.

Spending \$40,000.00 for a machine is not uncommon today. That machine and others in the assets mix must be productive. Having backups help, but this can be brutal on the budgets. Over the decades, superintendents have implemented many innovative programs to combat downtime; they can and do work.

Homer power

One of the most overlooked tools to lower downtime has been the improvement of machine operations with lubrications knowledge.

The job historically has been left to the technician, providing he stays within budget allowed. More often than not, the technician perceives the budget as a constraint. Consequently, he doesn't look for better results and continues the archaic ways of doing.

He may not understand what high-tech lubes can do for the operation or doesn't know the proper way to explain to the superintendent their cost effectiveness. Sometimes the superintendent may not understand the positives offered, as he may be screened away from the true high tech representative.

The company representing the technology may not understand the full user implications. This is a real problem existing today.

Team player

In a nutshell, the manufacturing of mineral-based, high-technology lubrications is taking the large oil company's refined oil and beefing it up for desired high performance.

The high tech oil company pays extra for the cleanest base stock. In fact, this cleanest base stock must be certified by the refiner. If the refiner fails to provide this quality, the base stock goes back.

These additional manufacturing steps are taken to lower the contaminants that naturally reside in all petroleum. Sulfur is the main contaminant to lower and also the main culprit to breaking the manufactured oil's effectiveness.

Let's go back to high school chemistry to illustrate what sulfur does. Recall your chemistry teacher's inquiry: What do you get when you mix sulfur, water and air? The answer is sulfuric acid, the number one cause for oil breakdown.

Lower the sulfur levels and you have a great oil to start with.

Residual tars and paraffins are next, with other steps following.

After all of these extra manufacturing steps, the high-tech company adds to the premier-based, refined mineral oil with all-encompassing, design-engineered chemical manipulations.

These additives offer stability, translated to longlasting, high-performance oil.

Additives used in high-tech oil manufacturing are meant to optimize the oil's performances under extreme conditions. They consist of seal swellers, corrosion inhibitors, oxidation inhibitors, anti-foaming agents, water/chemicals resistance ingredients, optimum heat transfer agents, viscosity improvers, anti-shear improvers and other additions.

Manufacturing high-technology lubes is an expensive process. There are many who say they produce high-tech lubes, but only a few who do.

Rattled at the plate

There has been much confusion and frustration over high-technology lubrications. A very important point to remember: the high-tech oil products have the same S.A.E. oil ratings as 10W40 multigrade or S.A.E. 30 weight, standard engine oils.

The gear box oils have the same gear lube rating as 90 weight, 140 weight or 85W140 multigrades, commonly used on courses.

The hydraulic oils/fluids have the same ISO/S.A.E. ratings as in I.S.O (International Standards Organization) 32, 46, 68 or 10W, 20W, 30W or 10W40 S.A.E. (Society of Automotive Engineers).

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The high-tech grease can be the same NLGI (National Lube and Gear Institute) extreme pressure rating of EP2.

No magic here; no smoke and mirrors.

All use the same test methods and standards as any oil company. You should make lubrication decisions on these classifications as recommended by the equipment manufacturer.

The high-tech oils do not cause warranty problems when used in compliance with manufacturer's guidelines.

The high-tech stuff just works better, making your machines more productive.

It is true that the user will get the best bang for the buck when the warranty period (usually one year) is over. That is because the user can make the best use of the technology as the operation adjusts the preventive maintenance program to take advantage of the longer life cycles of the high-tech oils, or as the equipment matures and gets more cantankerous.

Some technicians may be unaware of simple oil analysis guide of usage rates. An operation can measure the differences in performance of oils as comparing parts and labor costs with usage, downtime lowered, equipment life cycles extension, etc..

Too hot to play

After sulfur, the second-most naturally offensive assault on manufactured oil is poor heat transfer, which causes thermal decomposition, breaking the oil's effectiveness.

More prominent in the superintendent's mind may be hydraulic oil in the summer. Have you ever wondered why your technician complains so much about the hydraulic-driven machine trudging down in the late morning? The technician claims the blasted thing won't go over a berm in the afternoon or stops altogether.

Heat transfer is the problem.

Poor heat transfer will blow hoses and cause the ever-threatening oil spill with high costs.

John Gallagher, golf course superintendent, and Don Lanning Sr., equipment manager, of Boca Woods CC in Boca Raton offers interesting insight.

Boca Woods CC, a pristine 36-hole private community had this kind of dilemma. They were ready to scrap machines, thinking they would make good artificial reefs. They now use the high-tech hydraulic oil with the machines running full out all day, every day. Their fairway units climb whatever berm without work stoppage.

If you were a machine and you lowered your operating temperatures, your arms (hoses) wouldn't tire of work or pull a muscle (blow a hose). They would stay strong and flexible allowing for those joint angles (hose curves) that add pressure due to design restrictions.

Lower the pressures on the hoses, couplings, and connectors by using better

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oils and you lower blown hose frequencies. But if you have the inevitable hose break. I have seen a unique product offered by Aqua-Aid, Inc. of White Marsh, Md.. The system will bioremediate the hydrocarbon contaminants and immediately promote turf renewal without turf replacement, which creates uneven playing levels from the replacement of soil and turf. An added bonus is not paying the high cartage fees for hazardous materials. Aqua-Aid, Inc. is a longtime GCSSA member.

Hydraulic oil rated at least 4000 hours on the ASTM D-943 oxidation test is best to use. It must be blended with the stable and sophisticated additive packages to be most effective.

The biodegradable hydraulic oils should be carefully evaluated before use. The products' ability to stand up to the heat and pressures of Florida are under great suspicion. Be wary of the claims of "biodegradability."

Being a pioneer can get arrows in the back. Biodegradation of hydrocarbons test standards are based on water and its toxicity to fish and aquatic life, not the turf or soil.

The "environmentally friendly" higher technology oils are just that... friendly. They are not biodegradable, but they do eliminate the most frequent of spills: the hydraulic oil leak of less than five gallons on your valuable turf.

An overlooked benefit of high-tech oils is extension our oil resource through extended life of the product. If you do use the new stuff, expect the unexpected from your equipment, especially in the summertime.

The current practices in engine manufacturing reflect the need for high-tech crankcase oils and should be investigated as soon as possible. Several engine manufacturers are now recommending better oil because of the importance of improved heat transfer.

The ever-growing use of composites and the thinner engine cylinder walls demand improved heat transfer. With the additives used by high tech companies, I have witnessed engine oil being used on the course equipment and reaching 500 hours before it breaks.

Now can you see how this can translate to lower costs, even with the higher prices of the higher technology. Price to the end user can be three times the cost of the large oil company. As the lubricant performs three to six times better, you are way ahead with costs savings and highest productivity.

The manager's headache

High tech grease should be used throughout the assets mix, even at high cost. Greens committees don't like oil lube streaks on the turf. The superintendent and head technician who adopt a truly high-tech grease will be happy.

It really makes that turf-streak headache go away.

The grease must stand up to 500 degrees F., have a minimum Timken load rate of 60,000 p.s.i. and be rated excellent around water. This will prevent the grease from melting and running to the turf or being squeezed out due to topography undulations.

***Using high-tech lubes...
consumes less of our
precious resource and
generates less hazardous
waste... oil is a limited
resource and is classified
hazardous upon use.***

For golf, an important grease function is not turning to soap in contact with afternoon power washdowns. High-tech grease stays where you put it. This high-tech grease doesn't take the place of regular greasing but it does prolong the bearings' life and eliminate melting to the turf.

Don Lanning of Boca Woods will confirm that the use of higher tech greases and gear-box oils have eliminated 85 percent of bearing loss and associated downtime. The shade-tree mechanic will tell you what works on your car chassis will work for your equipment.

Emphatically, not so! Don't buy that; the loads put on your equipment far outweigh the worst car environments.

Unexpected runs batted in

Using high-tech lubes gives other unexpected benefits. The user consumes less of our precious resource and generates less hazardous waste. We now are fully aware that oil is a limited resource and is classified hazardous upon use.

The pressures we are all under from the environmentalists and regulators, coupled with government's ever-growing encroachment of our workplaces, demand closer scrutiny of the products used. Golf operations managers are fine environmental stewards. We have proven this over and over again. Alas, we will have to continue to demonstrate this to the public and the regulator. We continue to lead.

The umpire

The EPA has now been given a new budget for the rest of 1996 as part of an omnibus bill of \$6.5 billion, an increase of \$818 million. Enforcement also received \$40 million more than last year, pulling in \$490 million.

Federal EPA Administrator Carol Browner heralded the passage of the budget with phrasing amounting to a challenge to us all.

"As a result of this budget agreement, vital public health and environmental protections will remain in place and will be enforced. The budget provided needed funding for safe, clean air, the cleanup of toxic waste sites and the strong enforcement of our nation's environmental laws."

Just in case you missed it, the operative words were "strong enforcement."

A petroleum operations consultant, Keith VanMeter is president of The Protector Mfg. Company, Inc. based in Boca Raton, Florida, which specializes in lubrications analysis and applications problem solving. Copyright © 1996