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LifeSense intelligently monitors hydraulic hose conditions and detects failure-related events.

Insurance policy

Preventative measures taken by the team at The Greenbrier reduces the risk of hydraulic hose failure.

The Greenbrier staff uses mowers and rollers to maintain its immaculate greens early in the Sulphur Springs, W. Va., morning while it is still dark and the bentgrass turf is covered in dew.

However, the early hours and light conditions make it a challenge to notice a hydraulic hose failure, leaving the course open to potential damage.

Turf equipment is outfitted with many hydraulic hoses in hard-to-see places – all critical to smooth operation and operator ease. Yet if one of the hoses fails unexpectedly during a course's turf care routine and

goes unnoticed, it can disrupt the operation and create significant costs.

The resulting fluid spill can cause extensive turf damage, including the possibility of a course having to replace a green and close for repair – a costly consequence. To avoid unexpected hose failure, superintendents frequently change hydraulic hoses on equipment before it is necessary.

As part of The Greenbrier's preventive maintenance program, it conducted a comprehensive monthly review of its turf care equipment, including hydraulic hose inspection.

Staff visually checked indi-

vidual hoses for signs of failure. When a potential problem was identified, the hoses would be replaced. Even with this regimen, The Greenbrier was not 100 percent certain it was catching every problematic hose.

SOLUTION

To help The Greenbrier achieve its goal of more efficient course maintenance and ensure ideal playing conditions, Eaton recommended its LifeSense hydraulic hose condition monitoring system for the resort's greens rollers. LifeSense intelligently monitors hydraulic hose conditions and detects

failure-related events to provide advance notification that a hose is approaching the end of its useful life.

During the winter of 2013, each of The Greenbrier's three greens rollers had select hydraulic hoses replaced with LifeSense. Each hose is equipped with a sensor that monitors hose conditions via electrical signals. These signals then transmit to a diagnostic unit that interprets the data. If the system identifies a compromised hose, an alert is generated to warn greens keepers.

"This is one of those solutions you hope you never have to use, much like an insurance policy," says Kelly Shumate, director of golf course maintenance at The Greenbrier. "LifeSense provides a total sense of security that even with our strict and regular maintenance on the rollers, if we miss something, it will alert us before we have a big problem on our hands."

RESULTS

The Greenbrier's course managers have been satisfied with Eaton's LifeSense system, which reinforces its sound maintenance practices and gives them enhanced confidence that greens will remain pristine just as its players have come to expect.

"With LifeSense, course superintendents gain peace of mind knowing their hydraulic hoses are constantly monitored, providing assurance that they are taking steps to avoid turf damage and unexpected and expensive repairs," says Kelly Moore-Floyd, Eaton product manager. "We are pleased The Greenbrier is happy with LifeSense thus a win for them and for Eaton." **GCI**

Terry Buchen, CGCS, MG, is president of Golf Agronomy International. He's a 41-year, life member of the GCSAA. He can be reached at 757-561-7777 or terrybuchen@earthlink.net.



Travels With Terry

Globetrotting consulting agronomist Terry Buchen visits many golf courses annually with his digital camera in hand. He shares helpful ideas relating to maintenance equipment from the golf course superintendents he visits – as well as a few ideas of his own – with timely photos and captions that explore the changing world of golf course management.

HOMEMADE CHIPPER BOX

This 2008 Ford F350 dump truck was fitted with a homemade “chipper box” that is easily removed when switching from tree work to snow plowing. It measures 8½ feet in length by 82 feet by 6 feet and is built with pressure treated 2x4 secured together with 3-inch deck screws. Four-inch and 6½-inch carriage bolts with flat and lock washers are used at the four corners to attach the frame together and the box to the truck bed. Nineteen-gauge PVC coated hardware cloth was attached on the sides and top (with overlaps in the corners and on top secured with zip-ties) with ¾-inch-by-1-inch fence staples, to keep the wood chips from scattering outside the chipper box. Two additional 2x4 were installed perpendicular to the three top braces on top so the box can be removed with a fork lift or it is light enough that 2-3 employees can lift it on and off. A ¾-inch thick 29-inch-by-79-inch plywood sheet was fitted in the front inside of the box to keep the wood chips from damaging the truck cab. A red-colored Rust-Oleum oil-based paint was used to match the truck color. The tailgate can be fully closed with the box in place and the dump body can be fully extended when dumping the wood chips. The materials cost about \$220 and it took about 20 labor hours to build. Kyle DeNuys, assistant superintendent, at the North Jersey Country Club in Wayne, N.J., designed and built the box. Tyler Otero is the superintendent and Simon Quinoa is the equipment technician.



MODIFIED HITCH PIN

The hitches were modified on the mower trailers because the pins were being lost. A ¼-inch thick piece of 2-inch-by-8-inch steel, bent in two places, was welded to the existing trailer hitch frame. A 6-inch by ½-inch diameter lynch pin was installed with a spring and flat washer and is held in place with a cotter pin and the flat piece of steel. An employee simply lifts the pin and hooks the trailer to the tow vehicle and the pin falls securely in place with the spring. Materials cost about \$16 and it took about 30 minutes to build and paint. Bill Brousseau is the director of golf course maintenance, Steve Judd, superintendent of the Golf Village, and Blair Kirby, superintendent of the East Course, John Lombardi is the equipment manager and Clay Bormuth is the assistant technician of The Club at Admirals Cove in Jupiter, Fla., a 45-hole venue. **GCI**



On many days, staff outnumbers players. Like some U.S. clubs, they are run by smart business executives who meet budgets at work, but overspend on their club. Chinese are known to be practical, so how long will that trend continue? As you can tell, I wish they would learn some of lessons more quickly.

This is the first time a country is undertaking new golf development based on the U.S. golf model, which has evolved from its Scottish roots over the last 120 years. Some worry that there is too much disconnect from golf's origins and roots in the U.S. model. In my opinion, golf's adaptability to different climates and cultures proves that the essence of the game remains powerful enough to thrive and endure as strongly in the next 500 years, as it has in the last 500. Overall, golf will thrive in China, and they will be good stewards of the game's many traditions, even while adapting them to their unique conditions. **GCI**

three decades from a discipline where success was often dependent on art and experience to one where new, young superintendents are better trained in the sciences and quickly embrace technological advances. As such, the discipline has moved to a much more science-based effort. Of course, golf course supers are also required now to be much more well-rounded in communications, personnel management, and business skills to be successful."

From a soil physicist: "Science and technology will never replace the real masters and artisans. Rather, we're talking art, or a natural world that just to happens to be labeled 'golf course.' It's unfortunate more golf course superintendents don't understand their role or have the passion to understand the artisan's role in these natural settings. In my mind, it's a natural palette of bio-mass that has been refined and in many cases,

a lot like a work of art."

A turf grass specialist: "For most modern-day superintendents, it is mostly science. But, when you get to the best conditions and the best superintendents, it becomes more of an art."

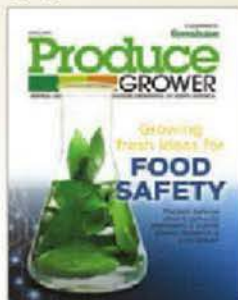
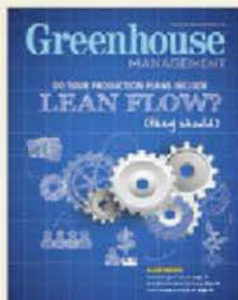
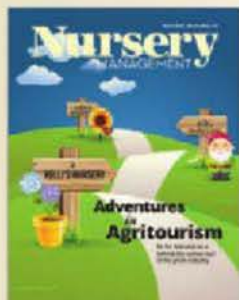
In all of those quotations, even the ones that give a nod to science, it is the ability to understand the artistic side that separates the best from the rest. Even if art is knowing how to evaluate the science and choose what's best for your course.

I've used this column for years to advocate more out-of-the-box thinking in agronomy. I fear that a science-only approach puts us back in the box, a box that is now a computer or a smartphone.

Learn the science, use the science. But never forget that at its best, agronomy is first and foremost an art because every golf course – like every other masterpiece – is unique. **GCI**

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Pat Jones is editorial director and publisher of Golf Course Industry. He can be reached at pjones@gie.net or 216-236-5854.

SEEDS OF TROUBLE

Let's take a little trip in Mr. Peabody's WABAC machine and go back a quarter-century to the halcyon days of 1989.

Mikhail Gorbachev took the reins of the Soviet Union and the Berlin Wall soon fell. A few brave Chinese students faced down tanks in Tiananmen Square. People had big hair.

In our happy little business, new facility construction was zipping right along despite little setbacks like the fact the "Savings & Loan Crisis" briefly made Uncle Sam the largest course owner in the world. (Every new housing development had to have a golf course to anchor it, right?) Even attacks by the legendary but slightly loony broadcaster Paul Harvey couldn't dim the prospects of development. New courses sprung up because, as one of the year's best movies, "Field of Dreams," told us, "if you build it, they will come."

Many aspects of the turf business were flying high, but none more so than seed production. New courses, expansions, remodeling and the growth of overseeding drove seed sales and fueled a boom in research and development.

At the time, I served on the USGA Research Committee and we saw endless proposals for breeding studies to develop drought-tolerant, salt-tolerant, cold-tolerant, endophytically-enhanced, glyphosate-resistant, low-grow, no-mow, glow-in-the-dark turf species. If you could dream it, some PhD up in Oregon was figuring out how to splice and dice genetic material together to create it. New species poured out of a dozen or more big, profitable seed companies in the Willamette Valley and universities around the nation. Times were good

and most folks were fat and happy.

Just 25 years later, the picture is very different. We overbuilt. We overdesigned. We overmaintained. Now we're in an era when new construction is rarer than a pink unicorn, minimalism and naturalism are crowding out the manicured look, pigments are the new overseeding and maintained acreage nationally goes down a little every day.

On top of that, as our cover story details, the seed business has its own set of issues created by other factors, notably the spectacularly successful corn/ethanol lobby. What, you ask, does ethanol have to do with why it's going to be tough and expensive to find seed this spring? Read the story, but the short answer is: Everything.

Other factors like consolidation, competition in the global market from overseas growers and slashed research budgets at universities are also cramping the style of the once-booming turf seed market. Times have most definitely changed.

Yet, despite those challenges, there is great opportunity within the seed market in the future. The single largest threat to the future of golf is the cost and availability of water. Without action on many fronts, it's entirely possible that many thirsty areas of the country will eventually decide that golf courses don't deserve to use fresh water.

Think I'm exaggerating? Think again. Yes, we can show that courses benefit the environment, create jobs and help communities and that's important to our future as regulated water users. Yes, golfer attitudes might gradually become more accepting of a different standard. Maybe the big show down in Pinehurst this

June will move the dial back toward a center-line maintenance philosophy utilizing fewer heads and irrigating less turf. And yes, the Coore/Crenshaw/Doak/Hanse/Kidd design trend of "less is more" will continue and that will help.

But none of that will matter if we don't have turf types that allow us to use less water or be able to grow more turf using non-potable water. Drought-resistant and salt-tolerant species must be developed to ensure that golf continues to be played on natural grass in the days ahead when courses everywhere – South and North – will be irrigated with wastewater or they won't be irrigated at all.

The Holy Grail for golf's future might be something akin to a cool-season *Paspalum*. Is it possible to develop bent or *Poa* that can withstand the salts and metals in wastewater? Can we somehow stimulate chlorophyll to maintain a green appearance without all the H₂O? Could hybrids that intersperse natural grass into a synthetic base be acceptable for fairways? Can roughs simply become, er, roughs, with little maintenance other than the occasional mow?

I honestly believe that turf science holds the answers to those questions. The problem is whether we can fund their development and figure how to make it profitable for farmers to once again grow turf instead of the corn or soybeans that have crowded it out up in the fertile fields of the Northwest.

I hope in 2039 we can look back and find that 2014 was the beginning of a new golden era of turf breeding when solutions were created to protect and preserve our game and our business. We need to start now... because the clock is ticking. **GCI**

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