

Lube System Cuts Down Time

Longer component life, increased productivity, lower grease consumption and safety provide favorable ROI.

By Curt Bennink

Even the best manual lubrication program doesn't offer the benefits of an automatic lubrication system when greasing pins and bushings in heavy construction equipment. These systems can cost from \$5,000 to \$10,000 installed, according to Drew Cherven, manager of national accounts, Lincoln Industrial. But the potential savings through increased component life, productivity gains and lower grease consumption can return this investment several times over.

Increased component life tops the list of benefits. "An automated lubrication system provides grease dynamically while the machine is in operation," explains Cherven. "Pins and bushings are literally moving while grease is being introduced. It allows grease to transfer and really coat all of the wear surfaces on the pin and bushing."

In contrast, manual lubrication is done usually once a day while the machine is sitting still, or static. When you grease a static machine, there is a load on one side of the pin and bushing. In this instance, the grease can just channel down one side of a pin and a bushing, with excess grease being pushed out of the joint.

Another advantage of the automatic lubrication system is that small amounts of grease are constantly provided to the components, usually on an hourly basis. This maintains a grease seal to block contaminants from potentially entering a pin and bushing. "You are purging any wear components (sand, grit) out," says Cherven. The result is increased component life. "Contractors find that they don't have components wearing out and failing. One of our customers has 9,000 hours on a machine.

He recently tore it down and inspected it. The pins and bushings looked like new."

Safety is also an important consideration. With an automatic lubrication system, nobody has to climb around the machine to manually lubricate the various grease zerks. "Just the simple act of climbing on anything, at any time, creates a risk of falling," says Cherven.

Component life increases

Anthony Avila, Anthony's Laser Leveling, has been using automatic lubrication systems for almost three years. Based in Fresno County, CA, Anthony's Laser Leveling is an earthwork and demolition contractor that has grown twenty-fold since it began in 1980. Part of the

Mike Morrison, equipment manager for U.S. Concrete's Beall Concrete operation in Euless, TX, stands by his company's John Deere 644 H wheel loader equipped with an automated lubrication system.



company's success may be attributed to a strict maintenance program.

When Avila first saw the automatic lubrication systems at a local farm show, he says, "It just clicked in my mind that this made absolute sense." He first installed the automatic lubrication system on 375-hp Case IH four-wheel-drive articulated tractors used to pull scrapers in the company's earthmoving operation.

When employees were manually greasing the tractors, there was a tendency to overgrease. With the automatic lubrication system, the joint stays wet all day and you actually use less grease throughout the season. "A little grease all day is better than a lot of grease once a day," Avila reports. The main objective — increased component life — has been achieved. "The pivot point on the tractors is lasting a lot longer."

Prior to the automated lube system, Avila had to rebush a steering assembly (the articulated bushing) on a Case tractor about every 6,000 hours. Since installation of the automatic lubrication system, the company has not had to rebush a steering assembly. "There's hardly any sign of wear," he says.

Avila purchased several automatic lubrication systems three years ago and put them into inventory. "As we get time, we are going to put them on everything," he states. Currently, service technicians are handling the installation. It takes one technician about a day and a half to install a system. "It's not difficult to install and figure out the distribution," Avila adds.

Time savings realized

Mike Morrison, equipment manager, U.S. Concrete, watches over a fleet of 21 wheel loaders. The company recently acquired a pair of John Deere loaders with automatic lubrication systems factory installed. "They have been saving us money since we put the machines in place," he says.

Operators are required to service the machines every day, which includes manual greasing. "That takes 15 to 30 minutes every time you get out of the cab," says Morrison. "You are looking at five hours a week to service that machine. Of that, probably two or two and a half hours a week is going to be physically greasing the machine."

With the automatic lubrication system, the operators don't have to spend time manually greasing the machine, so they get more done in the same time frame. "Plus the life expectancy of all the greased points is going to be at least tripled, because even the best trained loader operators aren't going to lube that machine as adequately or as often as they should," Morrison says. "The lack of lubrication is going to continually shorten the life of that machine. With this automatic lubrication system constantly putting in lube throughout the course of the day, it's never going to be to the point where your



This Caterpillar 980G wheel loader is equipped with a lubrication system powered by a Lincoln Quicklub 203 pump with 8-liter reservoir.



A perfect grease seal is visible on this wheel loader lift arm.

bushings are dry."

Morrison's service department replaces pins and bushings on a wheel loader bucket about once a year. "It's a minimum of \$3,500 and it can cost as much as \$7,000 depending upon the size and type of loader," he says.

The only time pins and bushings wear out is because they are not lubed properly and often enough. "When they gall and start twisting back and forth, they plug up the grease holes. You have to remove the grease zerks and drill the bushing back out to grease them," says Morrison. "You have already reduced the life of the pin and bushing."

With a large fleet, it is hard to monitor the daily greasing. "Some of (the loaders) can actually eat the bushing out of the pin and into the bucket itself," says Morrison. That's expensive since the joint has to be rebored.

There is additional expense due to the down time. If you don't have a spare wheel loader, you have to rent another machine. "So you have a rental of about \$2,000 a week on top of that repair cost. It adds up real quick," he says.

Morrison plans to extend pin and bushing replacements to three years or more by using



Lubrication lines serve the lift arm cylinder and the lift arm hinge pin of this Caterpillar 980G. The grease seal is visually apparent.



On this machine, the primary valve is mounted on the right-hand front frame. A 1/8-in. high-pressure hose is protected by spiral-wrapped guarding and spring coils.

automated lube systems. "We put about 3,000 hours a year on the machines. In about three years, we have 9,000 hours. I feel pretty certain that these will go three years without a problem as long as the unit is maintained," he adds.

Morrison has also seen a reduction in the amount of grease used on the units equipped with the automatic lubrication systems. "It's greasing just a little bit at a time so there's not a lot of excess grease dripping off the machine," he explains. "When you grease it by hand, the loader operator is going to grease it until it starts squeezing out everywhere. He's actually just wasting product."

The benefits have been pretty obvious. "I wish we had it on every one of the machines we have," says Morrison.

Sealed system limits contaminants

The automatic lubrication systems are sealed — grease points are all serviced by lube lines and hard piping. "Now the only risk of contaminants getting into the wear surfaces would be if they were introduced into the reservoir of the lube system," says Cherven.

With manual grease zerks, this is not the case. Any time you hook a grease gun to a zerk, you are going to get some contamination. "Even if you rub one clean and look at it real close, there's going to be dirt around that ball," says Avila.

To compound this situation, most guys keep grease guns in the back of their trucks. If they don't purge the tip, contamination will be injected into the joint. "Most of the time these guys don't even wipe off the grease zerk if you are not over their shoulder," Avila adds.

Grease Selection for Lube Systems

Temperature and grease compatibility are two variables to keep in mind when working with an automated lubrication system. Anthony Avila, Anthony's Laser Leveling, says you should watch the system and set the time frames for the greasing intervals accordingly. They will vary with the weather. "The colder it is, the more you want it to grease because the grease pumps slower," says Avila. "In the summertime, you want it to run less and probably more often because the grease is thinner and it will pump more grease in that amount of time."

"The things that impact pumpability are going to be the line size, the amount of force that you have behind it, how cold it is and, to some extent, the physical content of the soap," says Steve Tarbox, product manager, Kendall Lubricants. When the temperatures drop, Tarbox recommends looking toward synthetic or semi-synthetic base greases. The only drawback is it's a higher-priced product.

Tarbox cautions about mixing different greases in the system. "Just like any grease application, you don't want to introduce incompatible mixtures. Because there are different thickeners used in different greases, you generally want to stay away from mixing greases in an automatic lubrication system," he states. "There are some soap mixtures that are known to be very incompatible. You want to make sure that you are not introducing that mixture into an automatic lubrication system." If in doubt, consult your grease supplier.

Inspection vital to success

Avila cautions that you can't just install an automatic lubrication system and forget it. "If you don't watch the system, it will end up costing you more," he states.

He adds that the system allows more time for inspection. "When you get good inspection and preventive maintenance, then the whole company saves," he continues. Things to watch for include broken hoses, a loss of power or damaged reservoirs. "Instead of an employee dragging a grease hose around the whole piece of equipment, he will grease a center point through the

system and check for broken hoses and fittings."

Avila's crews carry extra hose around in their trucks. "If you lose a hose it's not a big deal because the equipment is well lubed. You can keep going and fix it at the end of the day," Avila notes. "We use quick coupler-type hose fittings. All we have to do is cut the hose to size."

Cherven adds that many of the new systems incorporate warning systems that notify the operator of any potential problems. "We are eliminating maintenance," he says. "We can't be adding additional maintenance as a result." ■

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