

Automated Lubrication Yields Concrete Results

Making and selling concrete is a gritty business. Heavy loads, caustic materials, constant exposure to dust and dirt during manufacturing and hauling and the subsequent acid-based washdowns used to remove the residue all contribute to frequent breakdowns. Vehicles such as front-end wheel loaders and trucks that are used during the process experience extreme wear on moving pins, bushings and chassis components. Manual grease lubrication of this equipment is often hit or miss due to critical production requirements, which also contributes to accelerated wear. Repeated downtime and repairs slow production, bloat maintenance costs and drain profits.



Terry Green, Director of Maintenance for Southdown's Concrete Products Group, the third largest producer of cement products in the United States.

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Repeated downtime and repairs slow production, bloat maintenance costs and drain profits.

No one knows this better than Terry Green, Director of Maintenance for Southdown's Concrete Products Group.

American owned, Houston-based

Southdown, Inc. is the third largest producer of cement products in the United States. Last year the Concrete Product's Group alone generated revenue of more than



\$240 million. The Group consists of three companies: Florida Mining and Materials, which operates in Florida and Georgia, Transit Mixed Concrete and City Concrete which operate in southern California. In addition to the manufacture and selling of concrete, the group also manufactures and sells concrete block to the construction industry.



THE CONCRETE PRODUCT GROUP HAS 52 BATCH PLANTS FOR PRODUCING CONCRETE, 12 BLOCK PRODUCING PLANTS, SIX DISTRICT MAINTENANCE SHOPS, AND 21 SATELLITE MAINTENANCE SHOPS. IT HAS A FLEET OF 600 READY-MIX TRUCKS, 75 RUBBER TIRED FRONT-END LOADERS AND 50 BLOCK TRUCKS. TO KEEP THINGS RUNNING THERE'S A DRIVER/OPERATOR FOR EVERY VEHICLE AND A MAINTENANCE TEAM OF 77.

Starting with automated lubrication

Since he joined Southdown in 1989, Terry has continuously looked for and found ways to lower maintenance costs and improve productivity. One of his first goals was to move from manual lubrication methods to automated lubrication. Terry states, "I've never met a mechanic who likes to grease anything."

"In 1991 we installed an automated lubrication system from another vendor on a few of our trucks and loaders. We saw the potential for cost savings from not having to manually grease components, except u-joints, anymore. Parts would last longer because they get ongoing, consistent



"I've never met a mechanic who likes to grease anything."

Bill McNeese, Lincoln Industrial Southeastern Regional Sales Manager, explains system operation to Florida Mining maintenance personnel.

lubrication resulting in a reduction of costly out-of-service time."

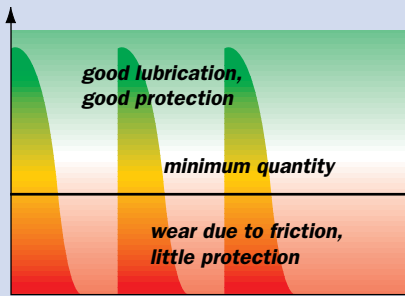
After experiencing maintenance problems and systems failures with the vendor and realizing a #2 grade grease system would provide better lubrication in the concrete environment, Terry investigated the automated lubrication

systems from Lincoln Industrial. "We were impressed with the design of the Lincoln systems, the way the systems were put together, the electric operation, and their ease of use." He says, "Lincoln personnel worked with us to develop systems to suit our applications and helped us retrofit the first few loaders and trucks."

COMPARISON AUTOMATIC/MANUAL LUBRICATION

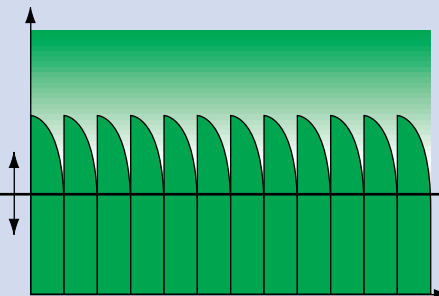
Manual Lubrication

Lubricant in bearings (quantity)



Lubrication intervals

Automatic Lubrication



Lubrication intervals

Seven features of evidence for ultimate profitability and reliability when using automatic centralized lubrication:

- Longer maintenance intervals
- profit increase
- less costs for repair / spare parts
- improved operating time / time of readiness
- decrease of lubricant consumption
- genuine contribution to environmental protection
- positive lubrication

“We were impressed with the design of the Lincoln system.”

The system we have chosen

Terry decided that Lincoln Industrial's Quickclub system would work best on the company's loaders and trucks. The system utilizes an electric pump (12VDC for trucks, 24VDC for most loaders and construction equipment) designed for reliable operation in extremely rugged environments. The pump has a minimal 2 amp draw, a clear reservoir for visual monitoring of the lubricant level and an integrated adjustable timer to control the on and off cycles of the system. The Quickclub system incorporates unique one-piece metering valves that provide positive, proportional, displacement of standard NLGI #2 grease. The valves contain close fit metal pistons to displace the grease instead of "soft" parts (springs, gaskets, or washers) that have the potential to wear prematurely. Included on the valves are indicator pins that provide visual feedback that the systems are working and that all components are accepting grease.

High-pressure hose and tubing is used to connect the metering valves to the lubrication points. In most cases Terry has specified Lincoln's unique Quicklinc press-to-lock tube fittings for secure connections and ease of serviceability.



The pump works with standard NLGI grease No 2.

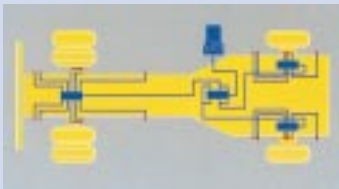


Quicklinc fittings are the only press-to-lock ones on the market with high pressure capability.



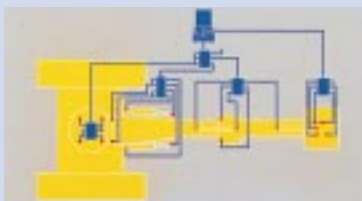
One-piece SSV divider valves have no weak points compared to other segmented metering valves.

QUICKCLUB SYSTEM DESIGNS



TRUCK

Commercial Vehicles:
Increase maintenance intervals by 15,000 miles.



EXCAVATOR



FRONT END LOADER

Construction Machines:
Optimum protection against moisture, grit and dirt.

Replacement parts purchases have been reduced by at least 25%

"Quicklub is standard on our loaders, ready mix and block trucks"

Terry has been specifying Quicklub on his vehicles since 1992 with currently over 40 loaders and 200 trucks protected by the system. "It's a standard specification on our loaders, and both ready mix and block trucks because I've tracked vehicle maintenance costs and seen them drop as a result of Quicklub." he states. "Replacement parts purchases of steering, braking and suspension components and drum rollers have been reduced by at least 25%."

The workhorse at each batch plant, the front-end loader, continually supplies raw materials such as rock and sand for processing. This is so the plant can continuously fill 20-25 trucks with concrete for delivery to waiting contractors. As such, preventative maintenance is often neglected or overlooked. Even with the best manual lubrication

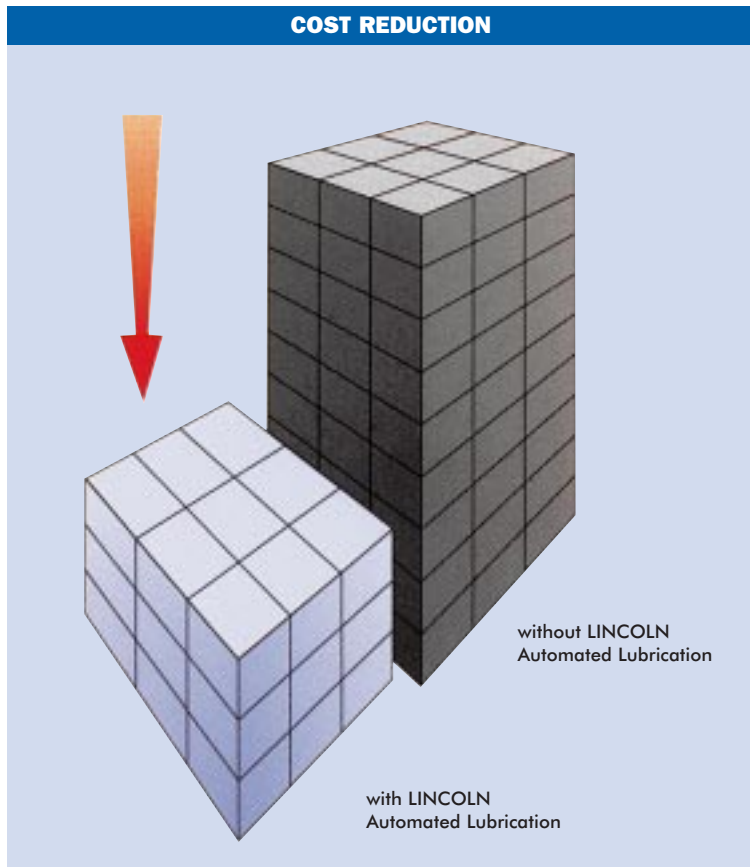
practices, once a day is not enough in this severe, caustic environment with critical points on a loader wearing out.

Bucket hinge and tilt pins and bushings, bucket lift arm pins and bushings and the center pivot points and trunions can all wear prematurely costing up to \$6,000 for repairs. Due to the required dismantling of the loader to replace failed components, repairs can take over a week to complete. Often this necessitates the rental of another loader to maintain production.

Repairs can take over a week.



Lift arm and steering cylinder



8,000 hours no downtime

A classic example of the payback Southdown has received on its investment in lubrication systems is the Caterpillar 936E front-end loader at their Melbourne, Florida location. It has been equipped with a Quicklub system since it was new in 1992, working continuously 8-10 hours, racking up over 8,000 service hours. It has experienced no downtime related to the lubrication system or connected components. "I recently checked it during operation and its pins and bushings are as tight as when it was new. If we had been manually

lubricating it we would have had to re-pin and bush at the five-year mark or after 4,000 hours," says Terry.

Similar savings have also been realized on Southdown's concrete trucks. A typical ready-mix truck can carry 40,000 pounds of concrete inside the drum that rides on two drum roller bearings. When a truck experiences drum roller bearing failure, the truck must be pulled out of service and the failed roller replaced. It can cost in excess of \$400 for parts, labor and downtime per failure.



Drum roller failures caused the highest maintenance costs before automated lubrication.

"Some trucks have required six rollers a year. A drum roller costs about \$250, takes half a day to replace and was one of our highest maintenance costs before using Quicklub. In 1992 our drum roller cost was 3% of our total maintenance costs. Today its 1% as our older trucks are not equipped with lubrication systems."



This CAT wheel loader has experienced no lubrication related downtime since 1992.

“With Lincoln we’ve reduced truck downtime to 2%”



Quicklub for lifetime

The Quicklub system installed on a mixer truck lubricates the steering, braking, suspension and mixer components— about 34 lubrication points. With the new "lubed for life" u-joints; maintenance personnel only need to lubricate two points on the whole vehicle.

"After we began installing Quicklub systems, our component failures have decreased significantly to the point that we track them with reduced emphasis. In the past, 15% of our trucks were always down. With Lincoln Industrial's automated lubrication systems as part of our maintenance initiatives we've reduced that to 2%."

In regard to both truck and



Serving steering and suspension

loader preventative maintenance, Southdown experiences less downtime. For example, it takes about 30 minutes to manually lubricate one complete vehicle (truck or loader) and 15 minutes for the two drum roller bearings on the concrete mixer. Loaders are lubricated every day, the drum roller bearings once a week and the truck chassis components eight

times a year.

By using Quicklub, Green gains an average of 159 hours of productivity per week, enabling maintenance personnel to work on other projects. Also the safety hazard of climbing over, under or around the sometimes slippery equipment for lubrication is eliminated.

Lift arm with grease seal



Labor Savings:

8,300 hours @ \$35 per hour = \$290,500.

+Increased productivity & reduced parts \$

Southdown's Concrete Products Group is the third largest producer of cement products in the United States.

A more efficient fleet

"We have Quickclub on over 240 vehicles," says Green. "The total savings amounts to 8,300 hours of mechanics time saved. Take that times \$35 per hour, and that comes to \$290,500 a year in labor savings alone."



We have Quickclub on over 240 Vehicles

Green reports that his replacement parts bills overall have been reduced by 25%. For the past five years he has kept the fleet the same size because "we don't have as much of it broken down and we have increased the payload per truck." Consequently, maintaining a

smaller, more efficient fleet saves money.

"We have always received and continue to enjoy excellent service from Lincoln Industrial," says Terry. "The sales and support has helped us on retrofits, maintenance, training-whatever we need." They work closely with our OEMs to ensure that systems are installed to meet or exceed both the OEM's and Southdown's expectations.

The Quickclub systems are specified on new truck purchases as factory installed options. Peterbilt Motors installs the chassis portion of the system on-line at their Denton, TX and Madison, TN plants. The trucks are then sent to one of two mixer OEMs (T.L.Smith or McNeilus) to have the mixer portion of the

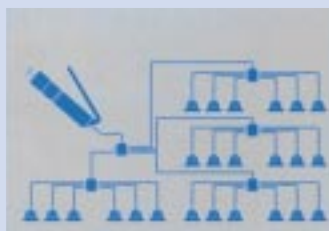
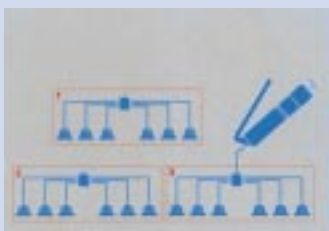
lubrication system connected to the chassis system.

Front-end loaders are retrofitted by the local Caterpillar dealers before delivery to a specific Southdown batch plant.

Terry is looking forward to a totally automated lubrication environment. Since he has been with Southdown, he continues to specify Quickclub whenever he retires an old vehicle and buys a new one. "We're 35 per cent of the way there, it won't be long before we're grease free."



A QUICKCLUB PROGRESSIVE SYSTEM CAN BE EXPANDED IN SEVERAL STEPS



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