

Eaton LifeSense®
Hydraulic Hose Condition Monitoring System



When hose failure is not an option,
LifeSense stands guard.





Keeping your critical equipment up and running

Unexpected hydraulic hose failure poses a significant challenge to hydraulic customers around the globe. Asset downtime and production loss, human safety, environmental spills, equipment damage, repair and replacement costs are some of the more serious consequences that can arise when hoses fail.

For years our customers have searched for a solution beyond inconsistent preventive maintenance. So we made it our goal to help customers avoid waste, inefficiency, safety issues and their associated costs. The result would also maximize profit, improve asset utilization and performance, and lower the overall cost of equipment ownership and operating expenses.

The result is Eaton's LifeSense technology: an intelligent hydraulic hose condition monitoring system that detects failure-related events within hoses and provides advance notification when they're approaching the end of their useful life.

How does it work?

The LifeSense system is based on the fact that certain properties of a hose change as the hose approaches failure. Periodically comparing samples of these properties to a baseline gives a highly reliable indicator of impending hose failure. With a LifeSense system, each hose fitting is equipped with a sensor that continuously monitors hose condition via electrical signals, which are submitted to a hose diagnostic unit (HDU) that interprets the data. An alert is then generated if the system senses that the hose has been compromised.

What the LifeSense system can do for you

- Promote safety with workers, equipment, and the environment
- Realize up to 50 percent more hose life
- Diminish wasteful preventive maintenance practices; save maintenance and repair expenses by changing only hose that is failing, when it's failing
- Protect the environment by minimizing any potential spills
- Optimize equipment uptime by detecting and warning of impending hose failure in time to take action
- Reduce asset downtime by keeping assets running and revenue losses at bay
- Improve maintenance operations efficiency by automating inspections with on-going, real-time monitoring

LifeSense technology: monitors in real time

Some hose predictive maintenance formulas have been developed to approximate expected hose life, but the LifeSense system measures and analyzes hose health in real time.



The costs of hose failure

There are five major costs historically associated with hydraulic hose failure:

1. System downtime

Businesses can suffer production losses of hundreds or even millions of dollars a day if equipment goes down unexpectedly.

2. Replacement costs

Unplanned hose maintenance or unanticipated hose assembly purchases can cost many times more than normal scheduled maintenance.

3. Environmental damage

In some cases, hose failure can mean spilling hundreds of gallons of hydraulic oil into the environment—causing a costly impact on the environment and the reputation of your company.

4. Public safety

The release of highly pressurized hydraulic fluid can cause serious personal injury.

5. Collateral damage

Hydraulic hose failure can also damage buildings, equipment and other nearby, high-value items.



Steel Mill
\$70,000
per hour*



Refuse Truck
\$3,000
per incident*



Hydro Power
\$78,000
per day*

*Cost estimate based on Eaton proprietary study.



"This is one of those solutions that you hope you never have to use, much like an insurance policy. LifeSense provides a total sense of security..."

Kelly Shumate
Director of Golf Course Maintenance at The Greenbrier

The Greenbrier

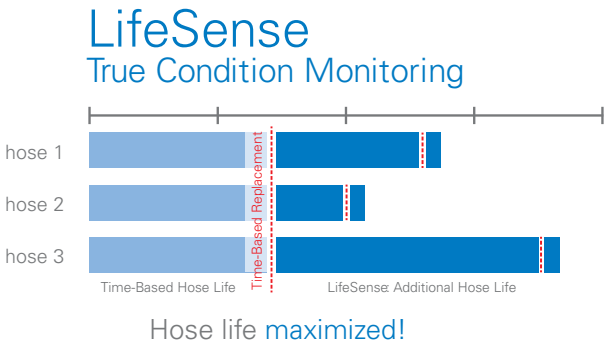
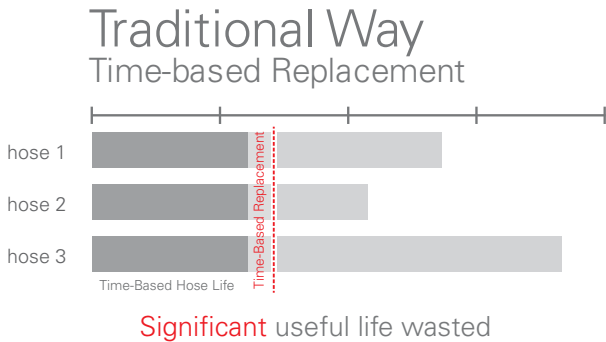
A National Historic Landmark and award-winning facility, The Greenbrier Resort spans 6,759 acres, much of which is dedicated to four golf courses. Keeping the putting greens pristine means meticulously caring for their turf equipment, including greens mowers and rollers.

With the challenge of using these machines early in the morning when it's still dark, operators were not always able to check the condition of the hydraulic hoses on their equipment. This meant possibly jeopardizing the integrity of the greens as well as The Greenbrier's reputation if an unexpected hose failure were to occur.

When The Greenbrier turned to Eaton for a solution, we responded with LifeSense. Outfitting their equipment with LifeSense gave them peace of mind and total confidence that their turf is safe from the risks of hose failure.



Traditional time-based replacement schedules waste significant amounts of useful hose life as most hoses can perform longer.



Two solutions for the way you work.

Whatever you prefer, the freedom of wireless or the simplicity of a wired device, Eaton's LifeSense system has a solution.

Wired LifeSense system

- 12- or 24-volt direct current
- Hose Diagnostic Unit (HDU) continuously monitors up to 11 hose assemblies
- Visual alert notifications via HDU
- 10, 25, 50 or 100 feet standard cable lengths

Wireless LifeSense system

- 12- or 24-volt direct current
- Wireless gateway/HDU monitors up to 100 hoses using a 433MHz frequency communications protocol
- Greater than six year sensor battery life
- Receive visual alert notifications on gateway, as well as email or SMS text messages via WiFi or Ethernet
- Transmits operating performance data every hour
- If an issue arises, gateway transmits the data immediately
- Sensors continually monitor the hose
- Access data through a web portal



Hose diagnostic unit (HDU)

Continuously monitors real-time data and interprets the on-going health of each hose assembly. An alert signals an impending hose failure.

Sensor

Hose fitting sensor monitors and detects potential issues and transmits data to HDU. IP67 and IP69K ingress protection rating.

Hose

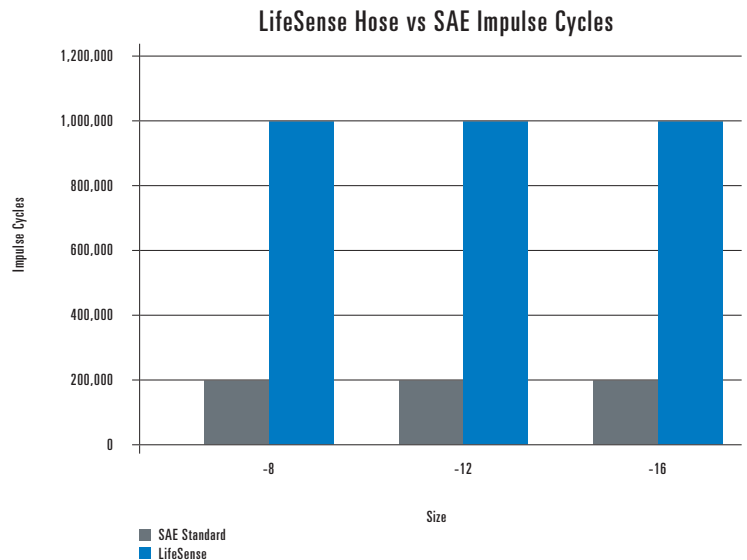
System electronically monitors the entire length of the hose assembly.

Web portal

Eaton's LifeSense system transmits operational data directly to a secure server where you can access system status, hose installation data and connection status anywhere, anytime.



LifeSense hose generates up to five times as many impulse cycles as SAE standards require.



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