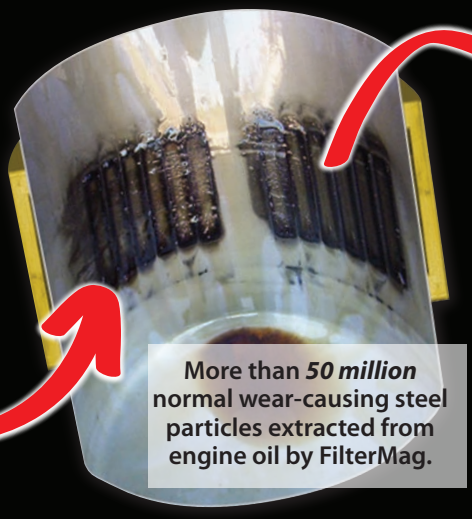
100115

FILTERMAG®
INDUSTRIAL PRODUCTS DIVISION

Hydraulic Systems

Proven in the Laboratory
Proven in the Field
Proven to Save Money

Reduce Wear • Mitigate Damage • Increase Reliability • Extend Equipment Life



More than ***50 million*** normal wear-causing steel particles extracted from engine oil by FilterMag.

Microscopic Equipment Killers

Magnified view of damaging steel particles small enough to pass through any standard filter. ***All captured by FilterMag.***

FILTERMAG® Outside— RESULTS Inside

Proven in the Laboratory

FilterMag was proven to quickly reduce particle counts when tested in the laboratory of a major hydraulic equipment manufacturer.

Equipment: Hydraulic Power Unit

Filtration: Two spin-on filters rated at 10µm

FilterMags: CT4.9s snapped onto the each filter

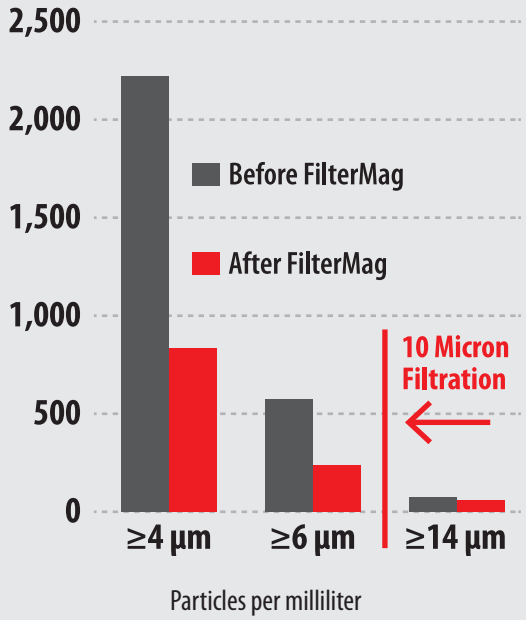
Run Time: Two hours after FilterMag installation

Results: 62% reduction in particles from baseline

FilterMag Results:

	≥4µm	≥6µm	≥14um	ISO Code
Before FilterMag	2255	520	35	18/16/12
After FilterMag	863	232	31	17/15/12
Reduction %	**62%**	**55%**	**11%**	

62% Particle Reduction in Just 2 hours!



Particles per milliliter

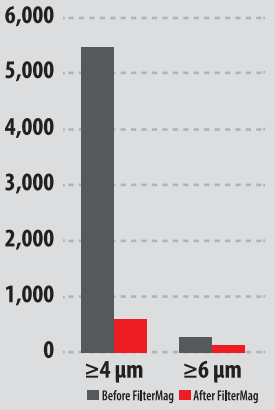
Proven in the Field

Inside, outside, fixed or mobile—FilterMag works where your hydraulics work. Here are a variety of real world results from our customers:

Fixed

Five Spin-on filters
Four CT4.9s on each filter

91% Reduction

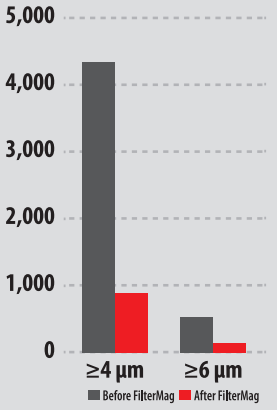


Conveyor

Mobile

Two Spin-on filters
Four CT3.8s on each filter

77% Reduction

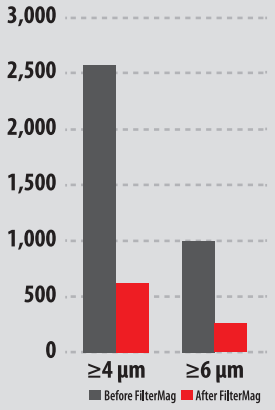


Haul Truck

Manufacturing

Two Spin-on filters
Four CT4.9s on each filter

76% Reduction

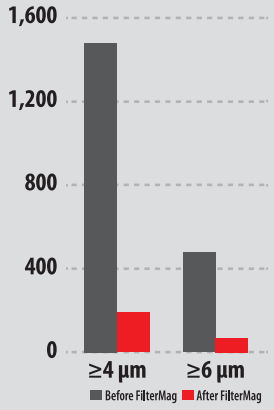


Press

Manufacturing

Two Spin-on filters
Four CT4.9s on each filter

84% Reduction

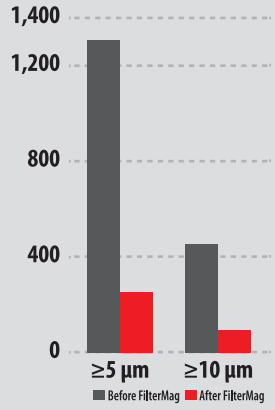


Press

Multi-Function

Four Cartridge filters
Four XT4s on each filter

80% Reduction



Drill

Proven to Save Money • $3.5 Million Saved with FILTERMAG®

Hydraulic Power Unit

Faster repairs mean less downtime.

When a hydraulic pump fails, the downstream debris can wreak havoc with your system. FilterMags installed on your high pressure filters can capture most of the damaging debris too small for your filters to stop. This can significantly reduce the amount of time and labor required to get up and running again.

Customers with large critical path hydraulics have reported savings in excess of $3 million as a result of FilterMag.

Proven Results

FILTERMAG® INDUSTRIAL PRODUCTS DIVISION

- **$3.5 Million Saved in Repair and Downtime**
- **90% Reduction in Particle Contamination**

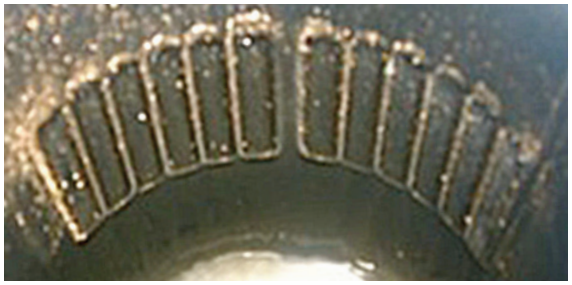
Case Study Details—Leach Pad Stacker

Four FilterMag CT4.9s were installed on each of the four high-pressure filters positioned immediately after the pump. The single return filter received four additional CT4.9s.

Three weeks after installation, a pump failure generated a storm of particles from the Nibral (nickel bronze aluminum alloy) impeller. Nickel is highly susceptible to magnetism, so **FilterMag caught 69 million particles** that would have passed through the 10 µm filters contaminating the hydraulic piping system and degrading the process equipment.

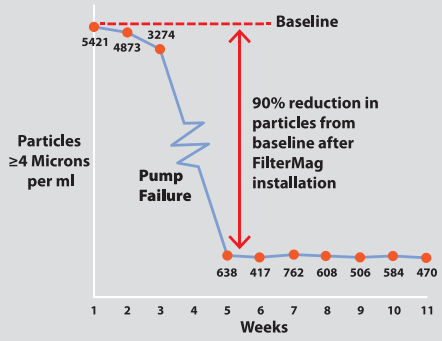
Historically, this type of failure would require 4–10 days of downtime to repair. Cleaning out the hydraulic piping (pigging the lines) was a substantial part of the repair process. Because FilterMag captured virtually all of the impeller debris, the lines only required a flush. The pump, filters, and fluid were replaced and the Leach Pad Stacker was back to work in less than two days.

The mining company estimated they saved a minimum of $3.5 million, thanks to FilterMag.



Cut open high pressure hydraulic filter showing tens of millions of particles captured during a hydraulic pump failure. Most particles are smaller than 10µm.

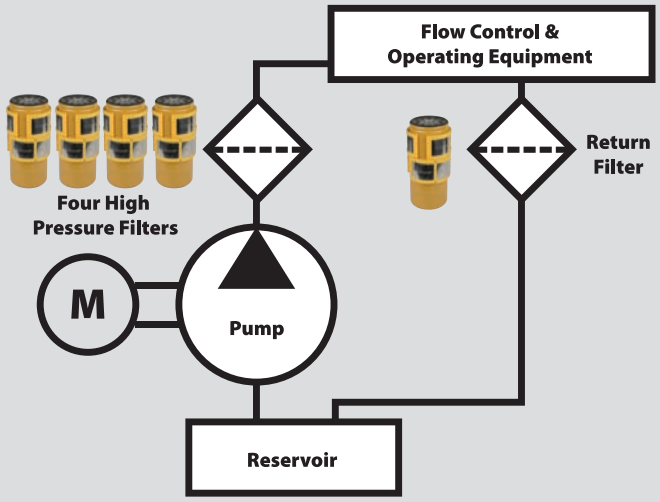
90% Reduction in Particle Contamination with FilterMag.



- $3.5 million savings from greatly reduced time to repair and elimination of 3 to 5 days of lost production.
- 70% projected increase in system longevity by the reduction in contamination.*

*Projection by NORIA Life Extension Chart for hydraulics.

FilterMag placement on high pressure and return filters



Proven to Save Money • $60,000 Saved with FILTERMAG®

Blast Hole Drill Case Study

$60,000 savings on each drill's hydraulic system.

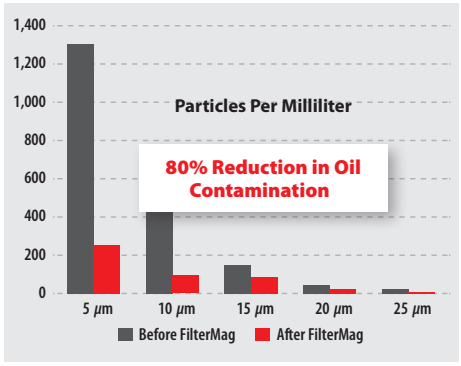
80% Particle Reduction with FilterMag

Extend the Life and Reliability of Hydraulic Systems.

An 80% particle reduction in hydraulic fluid equates to a 60% life extension.

Improving the cleanness of the fluid enables an additional 6,000 hours of operation before the system will require rebuilding. The additional hours reduced the hourly operating rate by 38%.

The Blast Hole Drill hydraulic system uses four FilterMag XT4s installed on each of the four canister filters.



Particles Per Milliliter from 5 to 100 Microns Before and After FilterMag

	≥5 µm	≥10 µm	≥15 µm	≥20 µm	≥25 µm	≥50 µm	≥100 µm
Before FilterMag	1301	455	144	49	28	2	0
After FilterMag	259	99	90	27	13	0	0
Reduction %	80%	78%	38%	45%	52%	100%	0%

If Lubrication Were Perfect, Nothing Would Ever Wear Out.

Normal wear generates tiny steel particles that remain suspended in oil. These particles are so small they pass through the most advanced oil filtration systems.

When the oil circulates back into the equipment, these same particles are carried into every lubricated space. This particle laden oil will continue to lubricate, but it will also cause an exponential increase in wear while it circulates. The longer oil remains in the system, the greater the wear.

FilterMag extracts normal, wear causing, steel particles from oil with its powerful, focused, magnetic field technology.

These particles are permanently trapped on the inside wall of the filter and are thrown away when you change the filter. Slide the FilterMag off the old filter; snap it onto a new one and it goes right back to work protecting your equipment.

FilterMag's multi-patented technologies have been shown to reduce wear, increase reliability, lower maintenance costs, and extend equipment life by 30%, 60% or more.

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INDUSTRIAL PRODUCTS DIVISION

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Reduce Wear • Mitigate Damage • Increase Relibility • Extend Equipment Life