


2019

OEI EQUIPMENT REPORT

DOZERS



OEI's Patented Radial Magnetic Field
Technology Defies the Force of Gravity



SOLVING TOMORROW'S CHALLENGES TODAY.

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ONE EYE INDUSTRIES

GLOBAL SUCCESS ACROSS DIVERSE INDUSTRIES

OEI magnetic filtration is employed internationally by leaders in the oil and gas, mining, commercial and residential building, manufacturing, transportation, food, pharmaceutical, defense, petrochemical, and marine industries. OEI magnetic filtration systems apply to engines, gearboxes, hydraulics and pneumatics, processed products, cooling systems, and water systems. Each filter employs a magnetic filter element with a patented radial field configuration for high holding strength. These systems operate with minimal flow restriction and are proven to capture both ferrous and non-ferrous contamination in rotating equipment applications. The first OEI filtration system was installed in 2001, and has been proven successful in over 40 countries.

DOZER APPLICATIONS

P&H has been installing OEI Magnetic Filters on their shovels for over 13 years. OEI supplies Magnetic Filter Scrubbers and ADD-Vantage 9000 Filters to replace the OEM filters through our Canadian distributor WJAX for Hitachi. OEI Kidney Loops can be designed in compact format. OEI Scrubbers and Magnetic Filter Elements are available for all gearbox applications.



ALL PRODUCTS: OVERVIEW

One Eye Industries offers a series of products designed to help organizations achieve rapid payback with the lowest risk by extending the life of rotating equipment:

- 1 ADD-VANTAGE 9000 SERIES**
The ADD-Vantage 9000 magnetic filtration system employs a magnetic element and a stainless steel cloth element in its design for high efficiency filtration and replaces conventional spin-on cartridge filters.
- 2 SCRUBBER SERIES**
OEI Magnetic Filter Scrubbers employ an OEI Magnetic Filter Element in a special housing that ensures maximum dwell time for high efficiency filtration. These systems install on both suction and return lines of low and high pressure applications.
- 3 Y-STRAINER SERIES**
OEI Magnetic Y-Strainers employ a magnetic filter element as a replacement of conventional Y-strainers. Designs with and without a screen are available.
- 4 FILTER PLUGS**
OEI Magnetic Filter Plugs employ rare-earth magnets and are the high quality replacement for OEM magnetic drain plugs. These filters are effective predictive maintenance tools when contamination is analyzed to determine component wear.
- 5 BEAR TRAP MAGNETIC FILTER PADS**
OEI Magnetic Filter Pads enhance all spin-on filters by capturing the wear contamination (sludge) < 10 microns that disposable filters fail to remove. These filters extend fluid life by 2 - 3.
- 6 EMERGENCY MAGNETIC PATCH**
The OEI Emergency Magnetic Patch provides an immediate, temporary solution to pipe wear or rupture by magnetically adhering to surfaces and preventing leakage. This patch helps to prevent unscheduled production.



- 7 SPECIALTY EQUIPMENT DESIGNS**
OEI offers custom filters for OEM equipment applications such as chain cases, sump filters, transmission plates, pump jacks, and mud tanks. Other OEI specialty designs replace or enhance OEM conventional filters such as CAT, Komatsu, Parker, Schroeder or PALL.
- 8 KIDNEY LOOP SYSTEMS**
OEI Kidney Loop Systems are self-contained filtration units for offline filtration, fluid transfer of mobile or stationary equipment, and flushing of storage reservoirs. These systems employ multiple magnetic filters for filtration of wear contamination down to 4 microns and below.



CORE TECHNOLOGY

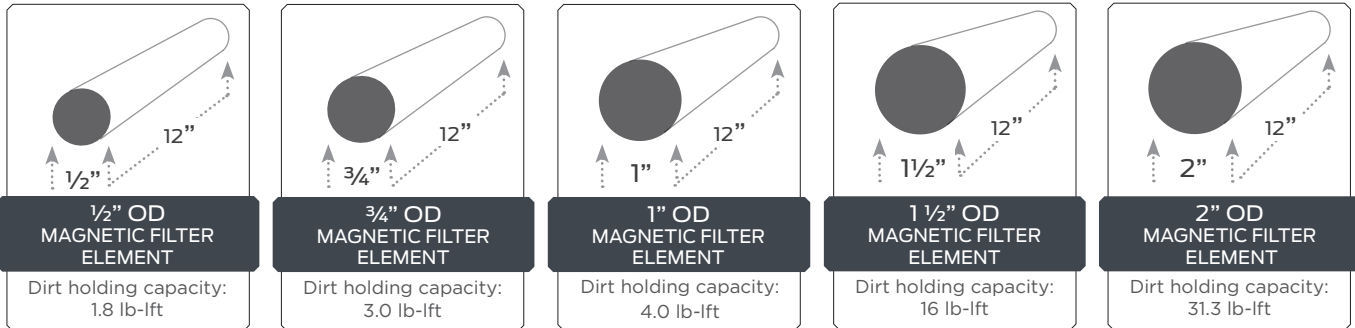
DESCRIPTION

The patented magnetic filter element attracts ferrous wear particles down to 4 microns and below with up to 95+% efficiency. The magnetic filter element attracts both ferrous and non-ferrous particles. The radial magnetic field design offers incredible holding strength and a high dirt holding capacity.

OEI magnetic filter elements are employed in various housings designed with calculated dwell times for optimal filtration. Magnetic filter elements come in five sizes from 1/2" to 2" outer diameter (OD) (shown below).



1" magnetic filter elements with varying loads of contamination. Dirt holding capacity*: 3.97 lb-ft.



*Dirt holding capacity is the quantity of contaminant mass a filter element can trap and hold before the maximum allowable back pressure, or delta P level, is reached.

CORE TECHNOLOGY BENEFITS

CLEAN AND REUSE

OEI products are reusable for 18+ years, and require minimal consumables. Conventional filters require frequent, costly changeouts, and disposal.

PREDICTIVE MAINTENANCE

OEI Magnetic Filter Elements are effective predictive maintenance tools when used for condition monitoring. When removed for inspection, magnetic filter elements will have varying quantities of contamination. Abnormally high quantities of contamination indicate component failure. The composition of contamination will identify which components are stressed, worn, or failing.

Visual analysis of the quantities of wear contamination collected on magnetic filter plugs can determine component failure. Analysis of wear particle compositions and sizes will determine early component wear.

GOES WHERE NO CONVENTIONAL FILTER HAS GONE BEFORE

OEI magnetic filters can be installed on suction lines to protect pumps without risk of cavitation. Unlike conventional filters, they accommodate space restrictions and unique applications such as splash oil gearboxes, reservoirs, and small coolant lines.

CAPTURES NON-FERROUS CONTAMINATION

Non-ferrous particles are magnetically captured because of cross-contamination. Particles become statically charged from flow velocity. This charge is a principal force of particle adhesion; iron particles contaminate non-ferrous particles by adhering to their statically charged surface. Another form of cross-contamination occurs when sub-micron iron particles embed in softer non-ferrous particles after abrasive impact.

PREVENT OXIDIZATION AND VARNISH

OEI effectively removes iron and steel particles under 10 microns that are known to promote oil oxidation because of their catalytic properties. Oxidation can deplete additives that protect against wear, corrosion, sludge, varnish, and viscosity changes that affect the thickness of films between bearing surfaces, friction, control of temperature, and energy consumption.

NO WORMHOLING OR CHANNELING

OEI filters eliminate the opportunity for wormholing and channeling that conventional paper, fiberglass, and polymer media filter elements are subject to.

Wormholing: when wear contamination punctures the filter media.

Channeling: when fluid flows through punctured holes because it takes the path of least resistance.



D10T, 3412E ENGINE (3SK)

KIT # 8KD10T-3412E-3SK

APPLICATION	PRODUCT	PRODUCT NUMBER	CROSS OVER
ADD-Vantage 9000	Lube Oil	9ADV9-4005	» CAT 2P4005 » 275-2604
Stainless Steel Cloth Element Replacement	Lube Oil	9EL5040001X40	
ADD-Vantage 9000	Fuel	9ADV9-1000	CAT 1R0749
Stainless Steel Cloth Element Replacement	Fuel	9EL3040201X25	
ADD-Vantage 9000	Hydraulic	9ADV9-8878	CAT » 102-2828 » 1G-8879 » 156-0214
Magnetic Filter Scrubber	Fuel	5SCF9RCLORB16	
Magnetic Filter Element	Final Drive	3RCAT-8334	CAT 6V-3298
Magnetic Filter Plug	GP Final Drain Plug	7PCAT-4185	CAT 9S-8004
Magnetic Filter Plug	Pivot Shaft Fill and Drain	7PCAT-2069	CAT 4T2069

KOMATSU D375A1, D375A-2, D375A-3 SA6D170 ENGINES

KIT# 8KD375-1-2-3-SA6D170E

APPLICATION	PRODUCT	PRODUCT NUMBER	CROSS OVER
Lube Oil	ADD-Vantage 9000	9ADV9-3612	» K2000 » Detroit 600-211-1231
Lube Oil	Stainless Steel Cloth Element Replacement	9EL5040002X40	
Fuel	ADD-Vantage 9000	9ADV9-1000	CAT 1R0749
Fuel	Stainless Steel Cloth Element Replacement	9EL3040201X25	
Fuel	Magnetic Filter Scrubber	5SCF9RCLORB16	
Steering Case Drain	Magnetic Filter Plug	7PM2415EH	Komatsu 07044-12412
Steering Case Fill	Magnetic Filter Plug	7PM2415EH	Komatsu 07044-12412
Final Drive Drain	Magnetic Filter Plug	7PM3615EH	Komatsu » 07044-31420 » 198-27-31420
Final Drive Fill	Magnetic Filter Plug	7PM3615EH	Komatsu » 07044-31420 » 198-27-31420

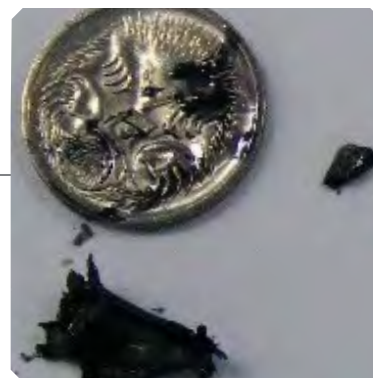


CASE STUDIES

CAT FINAL DRIVES

BOWEN BASIN OPEN CUT MINES AUSTRALIA

Application	CAT C10 AND C11 FINAL DRIVES
Fluid	Lube Oil
Problem	A leading coal producer in Australia's Bowen basin wanted to achieve an extension in service intervals of their dozer fleet from 250 hours to 330 hours without risking the availability of the fleet. If the service extension could be achieved the cost savings potential identified in terms of transport (float hire) costs and replacement hire fleet as well as reductions in maintenance costs would be significant
Solution	<p>The service interval extension to 330 hrs for all the components was achieved except for the final drives. The fleet was still experiencing unscheduled failures due to ferrous metal generation from the gears causing premature wear to the duo cone seals and gear components.</p> <p>Replace the OEM magnetic filter plug rods with OEI rare earth magnetic filter plug rods on 4 final drives to evaluate their performance in removing ferrous metal and improving oil condition. The weekly plug rod inspections were carried out and used to record the findings on the OEI magnetic plug rods.</p>
Results	<p>The OEI plug rods collected substantial more ferrous debris than the OEM plug rods. The debris was analyzed and potential failure areas were identified. This could not be done with the existing plugs as they did not capture debris in the similar volumes or in first wear condition. Oil condition was improved and in all cases was maintained at an "A" level. The performance of the plugs allowed the service interval to be extended to the target 330 hours.</p> <p>After 18 months, there had been no unscheduled failures of final drives resulting in increased dozer availability.</p>

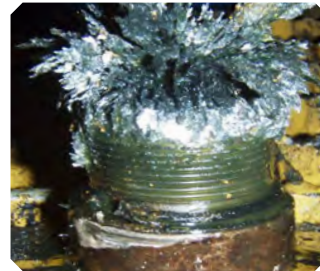
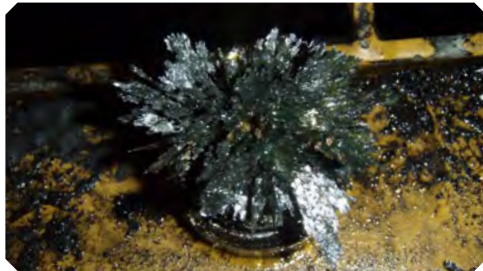


RECOMMENDED INSTALLATIONS

FINAL DRIVES

HAIL CREEK, QUEENSLAND AUSTRALIA

Application	Komatsu 475 Dozers
Fluid	Lube Oil
Problem	High metal counts, brought on with a change of lubricant that was not compatible with the final drives.
Solution	Replace OEM ceramic magnetic filter plugs with OEI Magnetic Filter plugs.
Results	The Final Drives were fitted with One Eye magnetic plugs as they did not have spares and they needed the Dozer to keep going until the spares arrived. This is the results after 11,420 hrs.





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