

2019

OEI EQUIPMENT REPORT

GRADERS



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.

GRADER APPLICATIONS

OEI filters are available for applications for fuel, coolant and engine lube, transmission, and chain drive. Note that many of the OEI filters are designed for locations that Cat has no filtration.



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

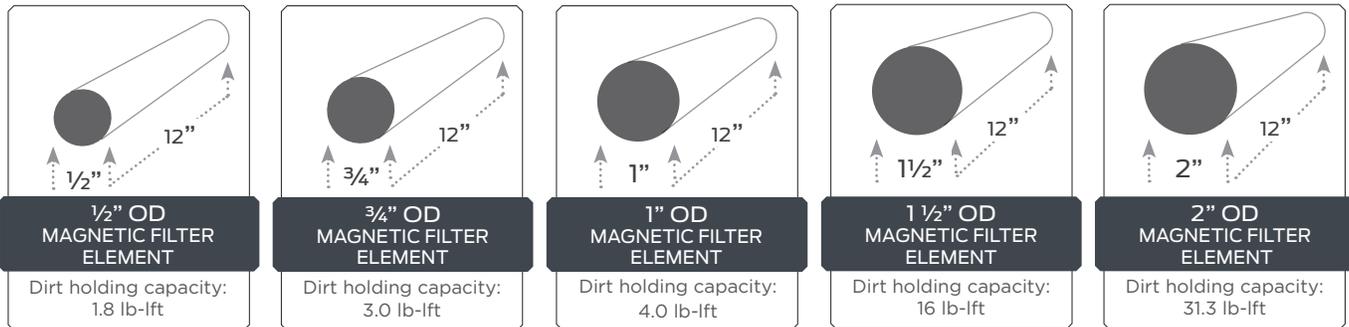
DESCRIPTION

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.



CAT 24M

APPLICATION	PRODUCT	PRODUCT NUMBER	CROSS OVER
Lube Oil	ADD-Vantage 9000	9ADV9-4005	» CAT 1R1808
Lube Oil	Stainless Steel Cloth Element Replacement	9EL5040001X40	
Fuel	ADD-Vantage 9000	9ADV9-0762	CAT 1R0762
Fuel	Stainless Steel Cloth Element Replacement	9EL5040001X40	
Hydraulic	ADD-Vantage 9000 Series.	9ADV9-8878	» CAT 1G-8878
Hydraulic	Stainless Steel Cloth Element Replacement	9EL3040201X40	
Gear GP Transfer Input	Magnetic Filter Element w/ Inspection Plate	25RCAT-3251	
Hydraulic	Stainless Steel Cloth Element w/ Magnetic Filter Element	9ELSS180925	CAT 1R1809, 338-3540
Chain Case	Magnetic Filter Element w/ Inspection Plate	3R24HD78PL	CAT 120-6156
Tandem Drain Plug	Magnetic Filter Plug	7PCAT-8804	Cat 9S-8004
GP Final Drain Plug	Magnetic Filter Plug	7PCAT-4185	Cat 9S-8004
Rear Axle Drain Plug	Magnetic Filter Plug	7PCAT-5576	Cat 9S-8004

CASE STUDY

CHAIN CASE

RIO TINTO, HOPE DOWNS AUSTRALIA

Application	CAT 16H Grader
Fluid	Chain Case Lube Oil
Challenge	Prevent high level of ferrous contamination and from no filtration which resulted in premature wear of the chain, sprockets, bearings and gears.
Solution	Install an OEI Magnetic Filter in the chain case inspection plate. The magnetic filter is located in the central splash area for maximum filtration and does not interfere with the operation.
Results	The first inspection showed significant wear debris resulting from operation of the chain, sprocket and gears. 60 days later, the second-inspection oil analysis identified a reduction of contamination on the left hand side and an increase in contamination on the right hand side tandem. The maintenance technician was barely able to remove the magnetic filter rod from it's 2.5" port. The right hand side tandem was stripped and the right break packs were overhauled therefore ineffective because the friction discs were cracked and warped.



1ST INSPECTION: LEFT



1ST INSPECTION: RIGHT



2ND INSPECTION: LEFT



2ND INSPECTION: RIGHT



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