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FILTERMAG[®]

INDUSTRIAL PRODUCTS DIVISION

Powerful • Focused • Magnetic Field Filtration

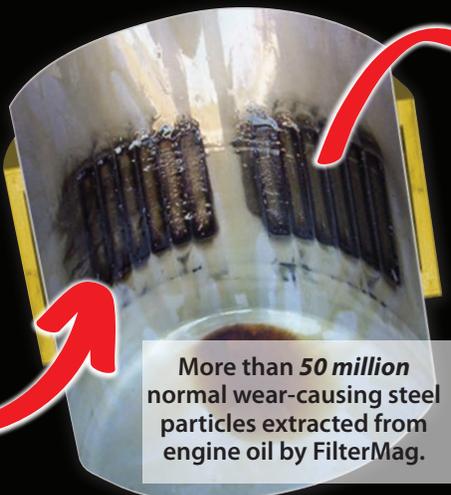
How It Works

**Hydraulics • Engines
Gear Boxes • Rotating Equipment**

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



FILTERMAG[®]
Outside—



**RESULTS
Inside**

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.

If lubrication were perfect, nothing would ever wear out.

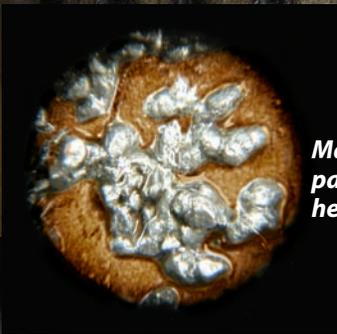
Within the tight tolerances of modern equipment, normal wear generates tiny steel particles that remain suspended in oil. These particles are so small they pass through the most advanced oil filters.

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 without restricting oil flow.

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

Millions of captured microscopic particles captured by FilterMag.



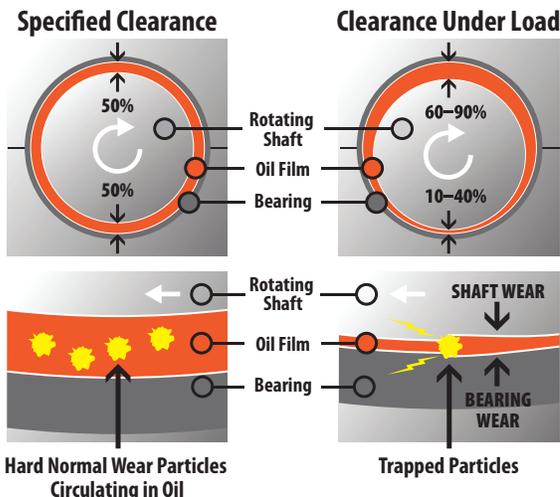
Magnified view of steel particles captured and held by FilterMag.



Millions of captured microscopic particles forming magnetic streamers, thus making them visible to the naked eye.

What Causes Engine Wear?

1. Particle-induced wear is greatest when the particle sizes are in the same range as the oil film thickness.
2. Clearances are constantly changing under load.
3. The smallest particles cause the most wear.



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Does Your Oil Filter Protect Critical Engine Components?

OIL FILTER PROTECTION ZONE

Filtration down to **ONLY 20 microns.**
NO PROTECTION AGAINST ENGINE WEAR.

20 Microns (.00079")

Rotating Shaft

Oil Film

Bearing

Clearances Under Load

- Crankshaft 0.8-50 Microns
- Connecting Rods 0.5-20 Microns
- Piston Pins 0.5-15 Microns
- Piston Rings 3.0-7.0 Microns
- Gears 0.0-1.5 Microns
- Valves 0.0-1.0 Microns

FILTERMAG

FILTERMAG PROTECTION ZONE

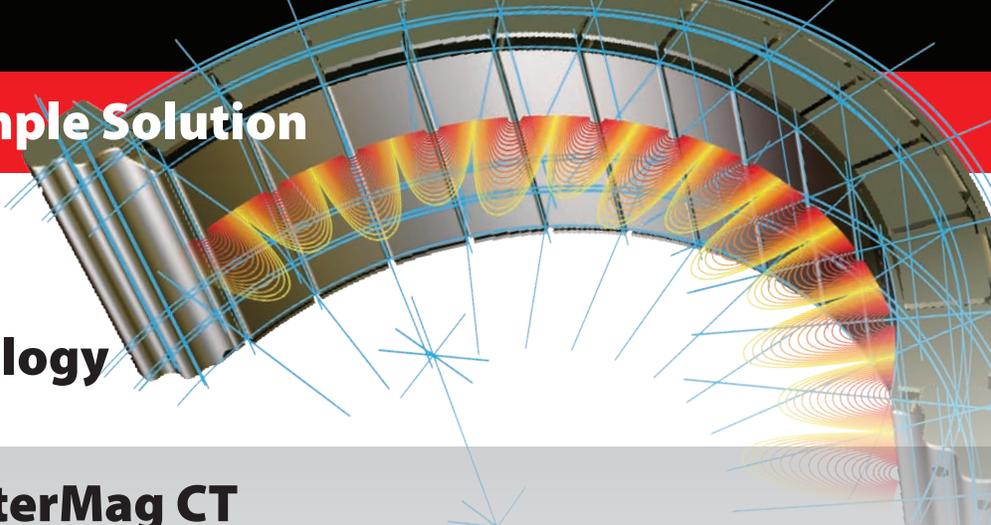
By removing particles down to 1 micron, FilterMag protects critical components that oil filters alone can't.

1 Micron

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Complex Science—Simple Solution

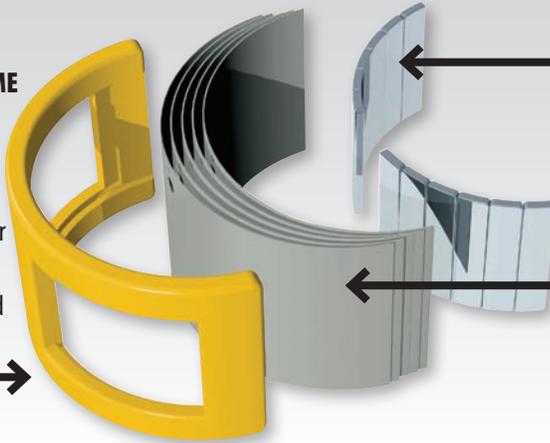
Powerful • Focused Magnetic Field Technology



Spin-On Filters use FilterMag CT

1. RUGGED FLEXIBLE FRAME

encases and protects the elements of a FilterMag while providing enough flexibility to fit a range of filter diameters. Our proprietary design and materials are rated for temperatures from -40°F to +300°F.

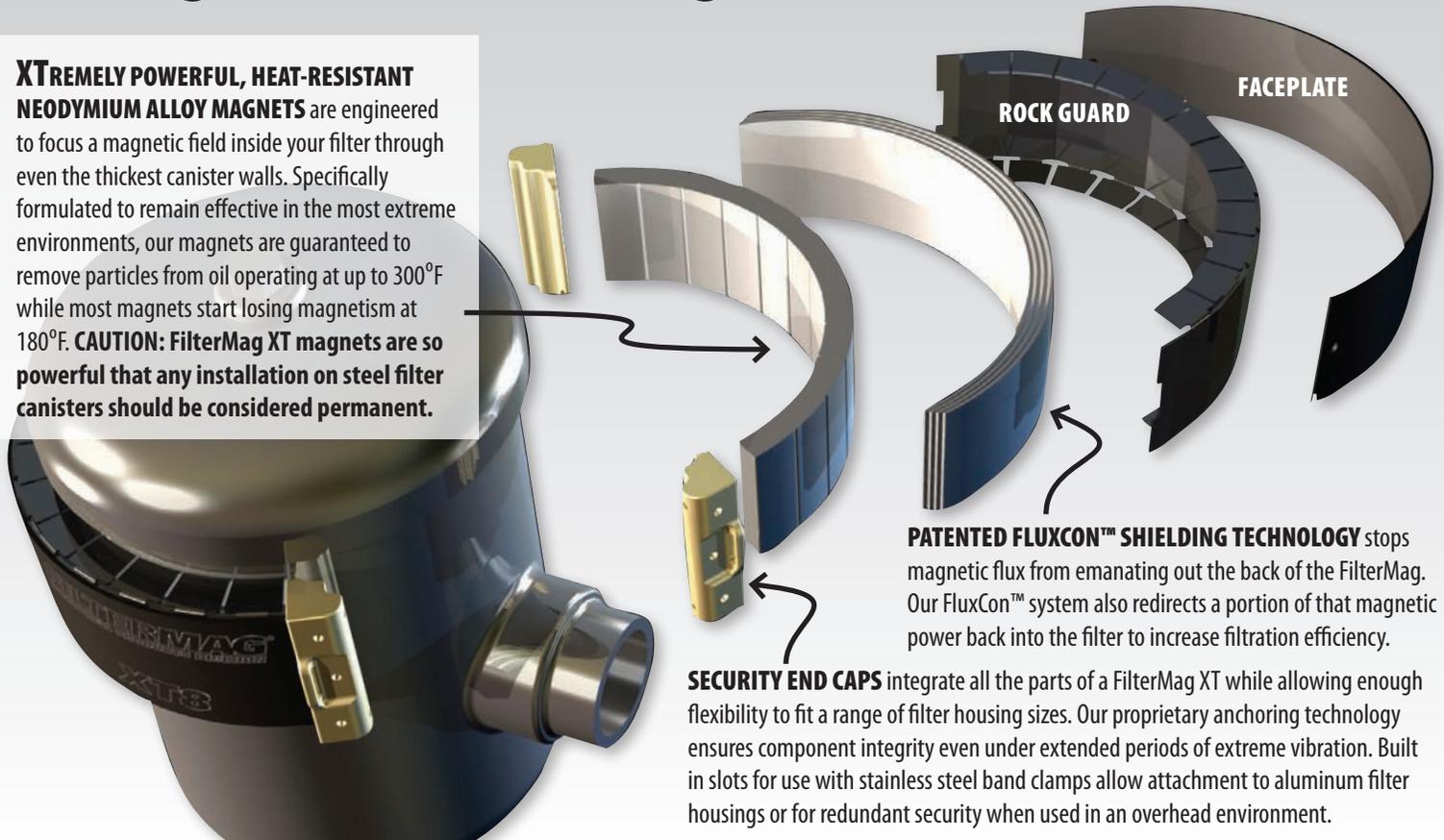


2. POWERFUL, HEAT-RESISTANT NEODYMIUM ALLOY MAGNETS are engineered to focus a magnetic field inside your filter. Specifically formulated to remain effective in the most extreme environments, our magnets are guaranteed to remove particles from oil operating at up to 300°F while most magnets start losing magnetism at 180°F.

3. PATENTED FLUXCON™ SHIELDING TECHNOLOGY stops magnetic flux which could damage electronic components. Not even a paper clip will stick to the outside of a FilterMag. Our FluxCon™ system also redirects a portion of that magnetic power back into the filter to increase filtration efficiency.

Cartridge Filters use FilterMag XT

XTREMELY POWERFUL, HEAT-RESISTANT NEODYMIUM ALLOY MAGNETS are engineered to focus a magnetic field inside your filter through even the thickest canister walls. Specifically formulated to remain effective in the most extreme environments, our magnets are guaranteed to remove particles from oil operating at up to 300°F while most magnets start losing magnetism at 180°F. **CAUTION: FilterMag XT magnets are so powerful that any installation on steel filter canisters should be considered permanent.**



PATENTED FLUXCON™ SHIELDING TECHNOLOGY stops magnetic flux from emanating out the back of the FilterMag. Our FluxCon™ system also redirects a portion of that magnetic power back into the filter to increase filtration efficiency.

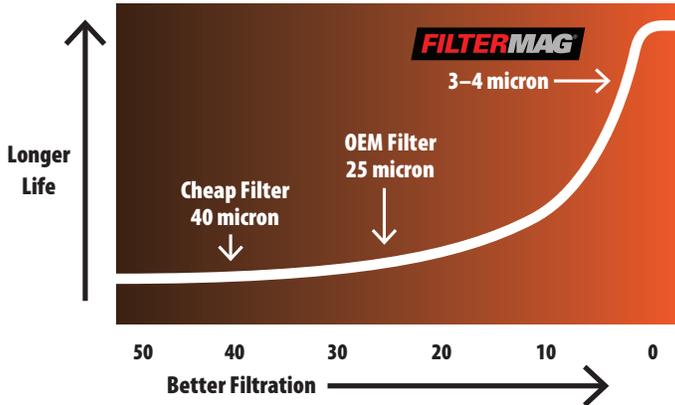
SECURITY END CAPS integrate all the parts of a FilterMag XT while allowing enough flexibility to fit a range of filter housing sizes. Our proprietary anchoring technology ensures component integrity even under extended periods of extreme vibration. Built in slots for use with stainless steel band clamps allow attachment to aluminum filter housings or for redundant security when used in an overhead environment.

The Smallest Particles Cause the Greatest Wear.

McPherson proved it.

MacPherson proved that removal of very small particles (<10 microns) from lubricating oil has a very useful effect on the life of bearings:

The finer the filtration, the longer the life.



The MacPherson Graph is based upon an accelerated test of ten rolling element bearings. The oil was contaminated with particles from gearboxes.

Removing the normal wear particles that pass through conventional oil filters will reduce wear and increase the life of your equipment.

Source: Sayles, R.S., and MacPherson, P.B., "Influence of Wear Debris on Rolling Contact Fatigue," *Rolling Contact Fatigue of Bearing Steels*, J.J.C. Hoo, Editor, ASTM STP 771, ASTM 1982, pp. 255–274.

Experts confirm it.

"Particles are the primary source of wear in diesel and spark ignition engines."

—*Correlating Lube Oil Filtration Efficiencies with Engine Wear*; David R. Staley, General Motors Corporation

"The significance of proliferating particles in the 10µm domain is phenomenal. Particles under 10µm cause 3.5 times more wear."

—*Review of Lubricant Contamination and Diesel Engine Wear*; William M. Needelman and Puliur V. Madhavan, Pall Corporation

"The smallest particles have the biggest effect on bearing wear. Bearing life was extended six fold by filtering to 3µm."

—*Rolling Contact Fatigue of Bearing Steels*; R.S. Sayles and P.B. Macpherson

"Control of particles in the 3–10 micron range had the greatest effect in reducing engine wear."

—*Diesel Component Wear Test DDA 6V-53T Engine*; AC Delco Division, General Motors Corporation

What does a day of downtime cost you?



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