

ADVANCED MAGNETIC OIL FILTRATION EXTENDS EQUIPMENT LIFE

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Your filter is doing what it's designed for: to reach a "satisfactory" level of cleanliness without restricting flow rates. The Halex Coil (US Patent #5,647,993), a reusable magnetic oil filter, works with your filter and takes it to a higher level than it's physically able to do on its own.

Made with rare-earth neodymium iron boron magnets, the coil is a strong solution for removing ferrous contaminants beyond what your existing oil, hydraulic or fuel filter can by creating a magnetic field within the core and walls of your spin-on canister. It is also reusable; just put it on as the last step of each fluid change.

The coil easily attaches to the outside of an existing oil filter, and with rising energy costs, it is becoming a preferred alternative for manufacturers looking to extend service

life. The coil enhances the performance of an existing oil filter due to a powerful rare-earth neodymium magnet of which it is constructed. The coil's magnetic field draws particles that are too small for the filter to catch to the sides of the filter. The result is cleaner oil, which reduces wear and extends equipment life.

BACKGROUND

The Halex coil utilizes the extremely high magnetic strength of rare-earth magnets. Rare-earth magnets are an advanced group of recently developed materials whose magnetic properties can exceed that of common magnets by as much as 100 times. They get their name from the rare-earth group of chemical elements, like neodymium, from which they are made.

Neodymium iron boron magnets are produced by compacting a finely milled powder in the presence of an electromagnetic alignment field. The powder is then sintered and heat treated in a controlled atmosphere of inert gas to achieve maximum density and magnetic strength. Diamond abrasives are used to shape the magnet.

The development of rare-earth magnets has opened up a new era of magnetic design. Components that were previously large and heavy can now be



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miniaturized to provide a maximum magnetic field with a minimum sacrifice of volume.

Many applications of rare-earth magnets are developed at a rapid pace. Some applications include magnetic separation, systems that require a high “holding” force, medical and geophysical imaging instrumentation, guidance systems, and now a device to reduce fluid contamination.

HOW IT WORKS

The coil cleans oil when it draws out contaminants with its strong magnetic field. Fast, dirty oil flows into the oil filter as normal. As the oil is being filtered through regular processes, particles that are too small pass through the filter (Figure 1). The coil draws these fine particles to the edge of the filter in three ways:

- Attraction of ferrous particles
- The sandwiching of nonferrous particles between ferrous particles
- Magnetization and attraction of nonferrous particles (paramagnetism)

The oil leaves the filter exceptionally clean.

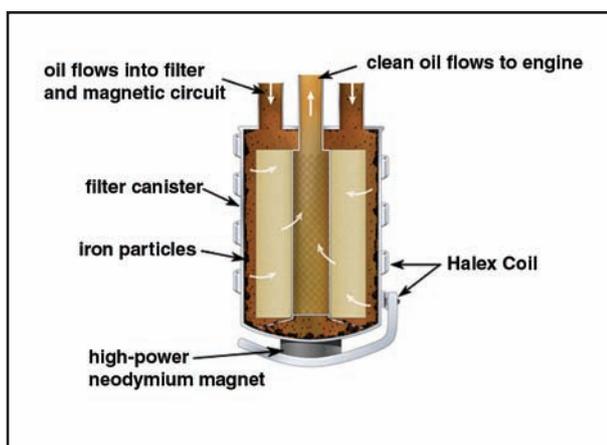


Figure: 1

FEATURES AND BENEFITS

Filters are engineered to maintain flow while lubrication is passed through small holes. Smaller holes mean finer contaminants are trapped. The coil is a filter that performs better than its micron rating without changing flow-rate and without intruding on internal systems. It's simply a different way to trap more, as it traps 40-90 percent of iron that would otherwise pass through the existing filter medium. And by bonding and “piggybacking,” it traps 20-60 percent of nonferrous contaminants.

Other benefits include:

- Extended Equipment Life and Service Intervals
- Improved Element Efficiency and Fuel Economy
- Reduced Downtime, Emissions, Soot, and Wear



The coil has been tested and analyzed for over ten years and is designed for heavy, long-term use in industries such as aerospace, heavy equipment, industry and mobile equipment.

SUCCESS IN INDUSTRY

Manufacturers are taking advantage of the benefits of this coil. Eastman Chemical Co., for example, achieved notable results when using the coil in its two isolation control valve systems. The valve systems, located in the company's high pressure polyethylene plants, are designed to quickly and reliably operate hydraulically actuated valves to isolate portions of the plant. Ethylene gas at pressures up to 22,000 psig is used in the process, so it's important that the company can reliably open and close the valves.

Eastman Chemical Co.'s goal was to remove as much contamination from the system as possible to get away from the silting problem on its four-way valves. Halex coils were used in conjunction with spin-on filters in the new kidney loop systems. By using the coil, the company's ISO cleanliness code for one system improved from a 21/18 to an 11/8 and from an 18/11 to a 12/8 on the other. The company also achieved zero failure rates on its 27 valves.

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