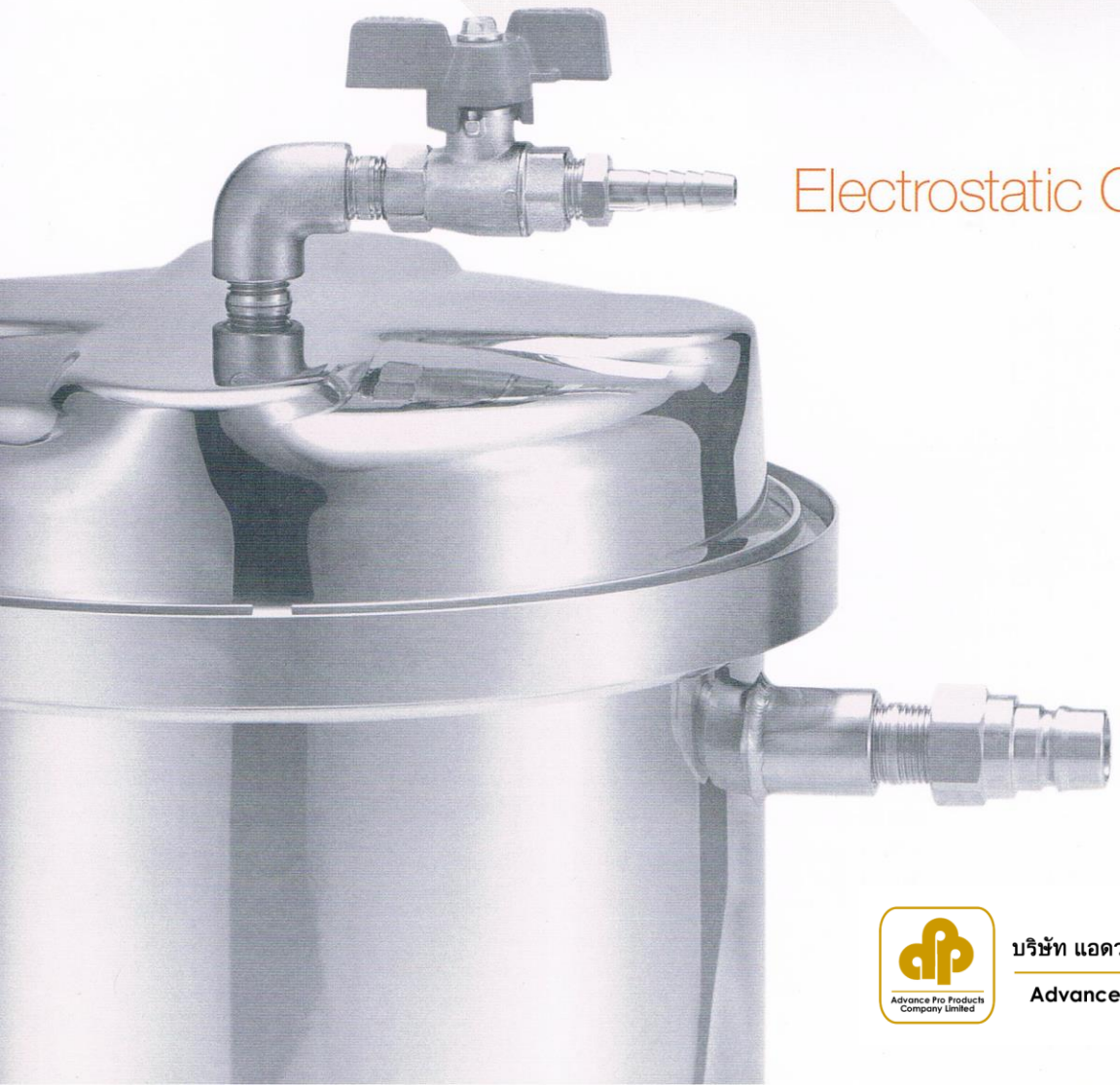
KLEENTEK

Electrostatic Oil Cleaner



บริษัท แอดวานซ์ โปร โปรดักส์ จำกัด

Advance Pro Products Co., Ltd.



KLEENTEK

EOC Series
Electrostatic Oil Cleaner

A complete recovery and maintenance solution for lubricants oil. EOC targets and removes the dissolved varnish pre-cursors which are the cause of varnish. By removing these waste oxidation by-products, you restore the oils original solvency properties which forces any solid varnish deposits to be dissolved back into the oil where they are remove permanently.





KLEENTEK | ELECTROSTATIC OIL CLEANER | ("EOC")

KLEENTEK | Electrostatic Oil Cleaner ("EOC") remove both soluble and insoluble oil oxidation products, varnished and solid particles.

KLEENTEK | Electrostatic Oil Cleaner ("EOC") is able to remove soluble and insoluble particles right to the sub-micron level and remove deposits from machinery internal system, such as oil reservoir and distribution channel.

KLEENTEK EOC + DH (Electrostatic + Dehydration)

It has a function of EOC Series for eliminating micro level sludge, as well as DH Series to remove water mixed in the oil.



KLEENTEK | Dehydration Unit ("DH")

KLEENTEK | Dehydration ("DH")

DH series removes water from the system via the absorption of water. The high absorbent fibre element absorb water from oil that has been contaminated with water effectively.

KLEENTEK | Dehydration ("DH-KS")

DH-KS series comprises of both a dehydration unit and a water agglomeration unit that enables emulsified water to combine to form a larger water droplets before being separated from the oil using a water separating elements.

KLEENTEK (Filter)

KF ("Kleentek Filter") is a filtration unit using the element named K-50 element. The KF is used in application where the EOC cannot be used due to the high level of water contamination and conductivity issues. The KF can be used for cleaning fluids such as mineral oil, water glycol, Water soluble fluid and wash oil.



Contamination/Varnish control | Electrostatic Oil Cleaner (“EOC”)

Is your hydraulic system okay?

- I want to eliminate variations in product quality
- I want to increase productivity
- I want to reduce the amount of waste oil.
- I want to reduce maintenance costs
- Do you want to eliminate delays in delivery?



Illustration 1: Oxidative alterations adhering to the wall surface and inside the piping in large quantities



Illustration 2: Oxidized alteration sludge of oil is very troublesome

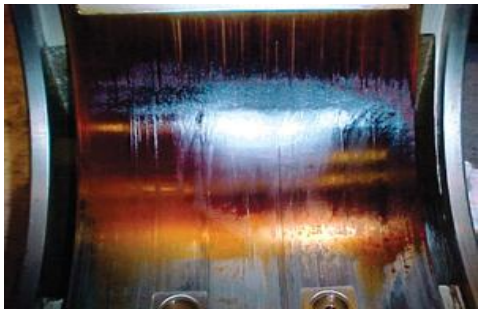


Illustration 3: With the spool of the valve that malfunctioned Oxidative alterations worn

What kind of contaminant that is present is harmful to your system

While using oil, it reacts with oxygen in the air to form sludge that is insoluble in oil. I will. Sludge easily adheres to the metal surface and is sticky like glue, so the control valve It may adhere to the inside and cause malfunction, or it may adhere to the cooler to worsen heat exchange. Raises oil temperature and clogs strainers and filters

EOC removes sludge that cannot be removed by the filter! The inside of the machine is sludge like this

Adverse effects of sludge

- Non-valve malfunction.
- The pump breaks down.
- Replacement due to clogging of the strainer.
- Large pump cavitation Noisy.
- The temperature of the oil is getting higher.
- Loss of warm-up operation

In this way, sludge, which is also called the pathogen of oil, It causes various troubles. Now, it's late when you notice that there are problems with the machinery. It's creeping up on your machine little by little. The electrostatic oil purifier is the kidney of the machine. If you manage the oil properly, you can use it in a clean state for a long time.

Stop varnish related fail-to-starts and unit trips.

EOC attacks the source of the problem on a molecular level, removing the oxidation by-products that form varnish deposits. EOC reverses the chemical process of varnish deposit formation by restoring oil health removing varnish throughout the system and in critical components so your servo valves operate more efficiently than ever.





Advanced Technology, unparalleled Performance.

Using the principles of electrostatics to collect fluid contaminants, Kleentek's patented design utilizes gradient force, allowing it to take advantage of the natural charge that each contaminants contains. Contaminants with a positive charge are drawn toward a negative electrode within the system, while those with an inherent negative charge are drawn toward a grounded surface

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Attack the problem, not the symptoms.

Lubricants oil is condemned when anti-oxidant (AO)additive levels deplete to 20% of new, A dedicated EOC performs in parallel with AO additives to slow depletion to drastically extend the life of your oil. On top of being the ultimate varnish deposit recovery system, EOC restores and protects oil health and actively prevents new varnish from forming. Once varnish is under control the benefit of longer oil can be fully realized.



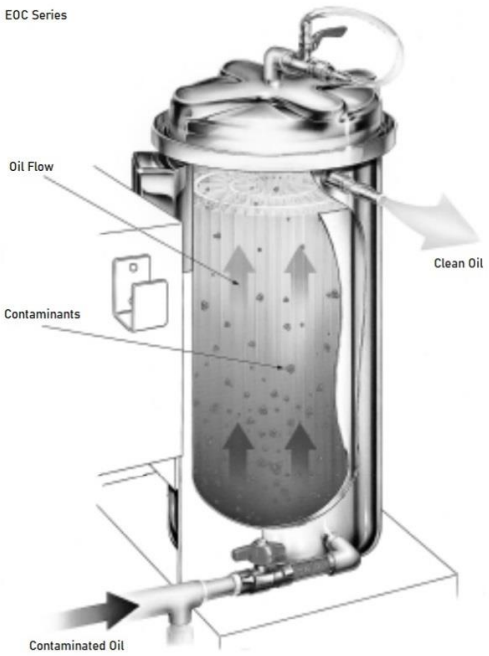


Work with the experts.

With EOC, you'll work alongside industry experts and receive comprehensive oil analysis and results interpretation to provide the best solution to extend your fluid life and make varnish vanish, for good.

Kleentek: Electrostatic Oil Cleaner ("EOC")

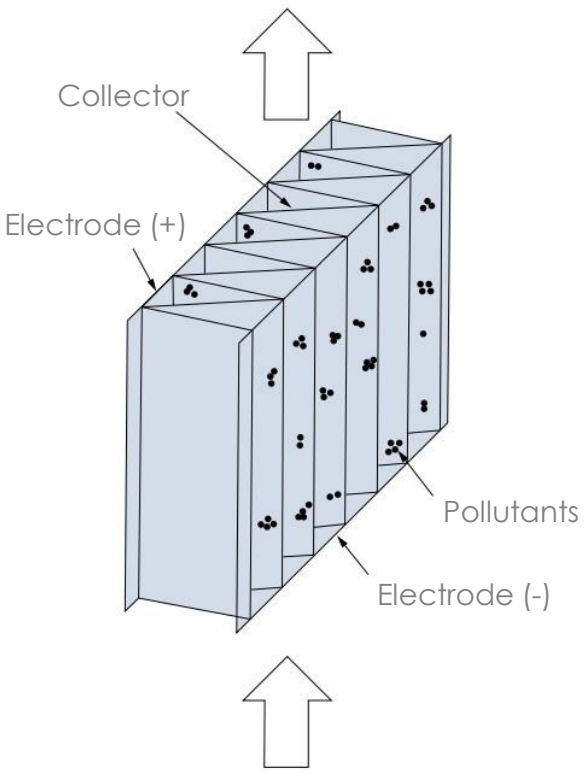
KLEENTEK Electrostatic Oil Cleaners (EOCs) employ a unique electrostatic cleaning system to collect all types and sizes of contaminants, providing unrivalled levels of fluid cleanliness and machine reliability. They are easily applied to the oil reservoir, circulating the oil through the cleaning chamber by its own pumping system.



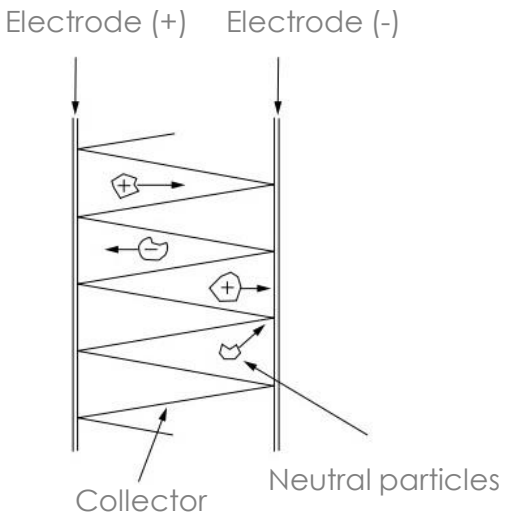
Benefits

- Removes varnish
- Removes oil contaminants to sub-micron levels
- Removes all oxidation products
- Extends oil life
- Extends component life
- Cleans internal surfaces (removes 'varnish' deposits)
- Reduces oil leaks

Electrode and Collector of Electrostatic Oil Cleaner ("EOC")



Inside each cleaning chamber is a consumable collector element. Polar contaminants are attracted out of the oil by positive (+) and Negative (-) electrodes and are then held in the collector



EOC Specifications

Max Reservoir Size	Model	32	46	68	100	Collectors
	EOC-R3SP	800	560	380	210	CC-R3SP x 1
	EOC-R6SP	1600	1120	760	420	CC-R3SP x 2
	EOC-R10SP	5000	3400	2200	1200	CC-R10SP x 1
	EOC-R25SP	12400	6800	5800	3200	CC-R25SP x 1
	EOC-R50SP	24000	16600	11200	6000	CC-R50SP x 1
	EOC-R100SP	48000	33200	22400	12000	CC-R50SP x 2

Dimensions	Model	Length	Width	Depth	Weight	Flow Rate
	EOC-R3SP	311	361	531	20	1.2
	EOC-R6SP	359	386	531	23	1.2
	EOC-R10SP	530	385	775	70	2.2
	EOC-R25SP	530	385	915	72	3.7
	EOC-R50SP	670	515	1015	108	9
	EOC-R100SP	1030	515	1050	161	12

Operating Temperature	Fluid Temperature
	Below <60°C

Application		
	Oil	Mineral base oils except engine oil
	Viscosity	Below <200mm2/s

Materials of Construction	Cleaning chamber	Housings
	Stainless steel	Carbon steel with industrial coating

Pump	Industrial induction motor with Nippon oil Pump
Electric switch	Fuji Electric
Fluid Compatibility	POA and polyol ester only (standard) However, the efficiency of EOC will be about 20% less for polyol ester than for mineral oil.

Power source	220 – 240V, 1P	120V, 1P	200V, 3P	380 – 440V, 3P

Note

1. In the case of proportional valves and servo valves, the maximum quantity of oil will be 20% less than normal selection criteria.
2. In the case of anti-wear type of oil with zinc base additives, the maximum quantity of oil will be 20% less than normal selection criteria.
3. In the case of gas turbine application, the oil temperature is higher than 60 degree C, oil flow rate is high and production of free radicals is fast. Therefore, please consult us selecting a suitable unit.
4. For customized application, please contact your sales representative for more information.

KLEENTEK | Dehydration Unit ("DH")

Oil Dehydration units ("DH") remove water from oil. The water in the oil would cause various hydraulic problems. When oil contains water, the Electrostatic Oil Cleaner ("EOC") determines it is no good, and so it stops working. Water contained in oil initiates rusting of metals by adhering itself to the metal surface. The rusts are released into oils and act as catalysts to accelerate oxidation reaction of oils, i.e., presence of water makes oxidation rate by a few tens to a few hundreds of times. To solve this problem, we developed the DH unit that separates out water content. We manufacture two types, water-absorption and water-separation type.



Water Separation Type [DH(DHS)-2KS/ 4KS/DH-KS]

The aggregating elements made of a specialty material convert emulsified water to larger droplets followed by formation of a water curtain by the separating elements, and the water thus isolated precipitate out to separate. This type of unit is used when water is contained over 2,000 ppm or constantly entering, and removes water down to 500 ppm.



Illustration 1: Water separation



Water droplets precipitation

Water-Absorption type [DH-1B/2B/3B]

Fiber element of high water absorbance in use absorbs water by several times as much as its own weight. This unit is utilized when the water content is less than 2,000 ppm and down to 500 ppm

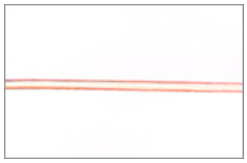


Illustration 4: Enlarged photo of fibers before water absorption



Enlarged photo of fibers after water absorption.

Kleentek DH Series

9 Models are available to meet the needs of virtually any hydraulic or lubricating oil application.

Model type	< 0.2%	<0.5%	L x W x H (mm)	Weight (kg)	Pump flow (lit/min)
DH-1B	<2,000L	-	670 X 480 X 920	63	2.2
DH-2B	<4,000L	-	855 X 480 X 965	93	4.5
DH-3B	<6,000L	-	630 X 900 X 1040	123	6.0
DH-4B	<8,000l	-	870 X 900 X 1040	153	9.0
DH-2SB	-	<2,000L	855 X 480 X 965	93	1.2
DH-3S2B	-	<3,000L	630 X 900 X 1040	123	1.2
DH-4SB	-	<4,000L	870 X 90 X 1040	153	1.2
DH-2KS	<1,000L with w/o emulsion (<10%)		770 X 465 X 965	95	2.2
DH-KS	<400L with w/o emulsion (<10%)		200 X 285 X 620	25	1.2

KLEENTEK (Filtration Unit)

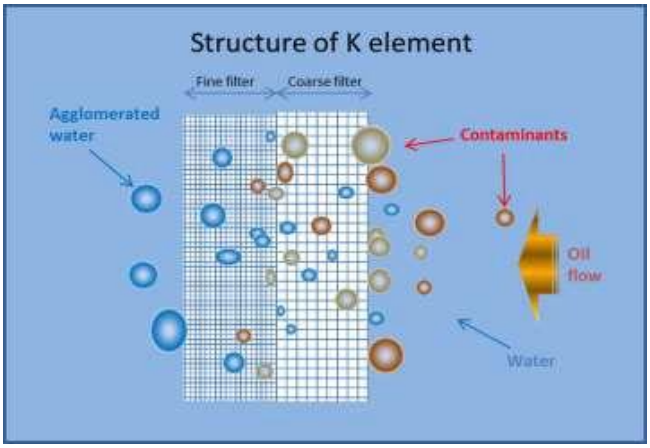
KF (Kleentek Filter) is a filtration unit using the element named K-50 element. There are 4 pieces of K-50 elements in one cleaning chamber. The unit with one cleaning chamber is KF-8 and the unit with two cleaning chambers is KF-16. The KF covers the area where the EOC cannot be applied due the water or conductivity issues.

For example, K element removes contaminants in fluids regardless of sizes. The KF can be used for cleaning fluids such as mineral oil, water glycol, wash oil, fatty acid ester and phosphate ester.



Features

- Remove foreign materials in liquid utilizing multi-layer fibers of different absorbance – main characteristics
- Long cycle of clogging due to large porosity. Different from filters depending on small porosities, making filtering resistance low. Thus making its saturation 10 times as much as that of a traditional filter.
- Remove even smaller dirt because of adsorption-driven filtering – not replying on porosities.
- Applicable to both water-soluble cutting fluid and cutting oil by changing types of fibers and pump specifications.



Kleentek KF Models

4 Models are available to meet the needs of virtually any hydraulic or lubricating oil application.

Model Types	Oil QTY (L)	L x W x H (mm)	Weight (kg)	Pump flow (lit/min)
KF-8	<2,000L	535 x 375 x 940	50	5
KF-16	<4,000L	810 x 375 x 980	90	10
KF-32	<6,000L	850 x 710 x 1,049	200	21
KF-72	<15,000L	1,200 x 1,000 x 1,800	300	48

APPLICABLE LUBRICANTS

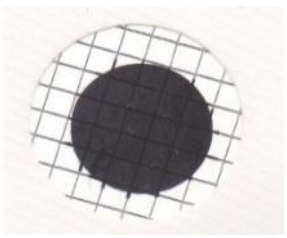
- Hydraulic Oil
- Turbine Oil
- Circulating/Lubrication Oil
- Gear Oil
- Vacuum Pump oil
- Phosphate Ester Fluids (Fire Resistant Hydraulic Fluids)
- Water glycol fluid

Sales / Rental / Leasing / Financing Service option are available.
For more information, contact your local sales representative for more assistance

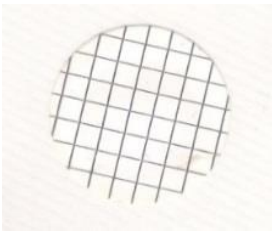




Membrane test 0.8 micron



BEFORE



AFTER





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