DES-CASE®

LUBRICANT FILTRATION SOLUTIONS

Quality Products for Contamination Control

WHY FILTRATION?

Contamination is widely recognized as the leading cause of failure in rotating and reciprocating equipment. In fact, as much as 60-80% of active machine wear can be tied to lubricant contamination. Contamination comes from two sources, ingested (from the outside) and internally generated from oil degradation and machine wear. But no matter the source, aggressive contamination control is the key to extending both equipment and component life.

Actively filtering lubricants to acceptable cleanliness levels can dramatically improve industrial equipment performance and lubricant life, preventing production downtime and high machinery repair costs.

MARKETS SERVED

OIL RECLAMATION • PLASTICS • FORESTRY MACHINERY • PULP & PAPER • PETROCHEMICAL

MOBILE EQUIPMENT • POWER GENERATION • FOOD & BEVERAGE • CEMENT • STEEL & ALUMINUM

WHAT IS CLEANLINESS?

When we speak in terms of cleanliness, we often refer to the ISO particle count of the oil. According to the ISO 4406 standard, the ISO particle count is a measure of the number of particles greater than 4, 6, and 14 microns in every milliliter of fluid. The number of particles is then converted to what is referred to as the ISO Code or Range Code. The range code represents the number of particles of a given size in one milliliter of sample. Results from an oil cleanliness testing are typically reported in a three number format such as 18/16/13, where 18 represents the range code corresponding to the number of particles that are 4 microns and larger, 16 the range of particles that are 6 microns and larger, and 13 represents particles 14 microns and larger.

HOW CAN WE MEASURE HOW MUCH PARTICLE CONTAMINATION IS IN AN OIL?

Particle contamination is measured using the ISO 4406 standard.

Particle Count Data	
Size in Microns	Number of Particles Larger Than Size per ml
4	1,654
6	495
10	122
14	52
20	21
50	1.3
75	0.22
100	0.05

Number of Particles / ml		Range Number
More Than	Less Than or Equal to	
80,000	160,000	24
40,000	80,000	23
20,000	40,000	22
10,000	20,000	21
5,000	10,000	20
2,500	5,000	19
1,300	2,500	18
640	1,300	17
320	640	16
160	320	15
80	160	14
40	80	13
20	40	12
10	20	11
5	10	10

R4/R6/R14
ISO 18/16/13

The ISO 4406 standard gives a range code corresponding to the number of particles per milliliter in three difference size ranges:

particles > 4 micron
particles > 6 micron
particles > 14 micron

The first step is to identify goals in the form of target lubricant cleanliness. Targets should be based on equipment type, sensitivity to contamination induced failure, criticality, and operating environment. The more sensitive a component is to contamination, the cleaner the system should be. Likewise, the more critical a system is from a production, safety or environmental standpoint, the cleaner it should be kept. The table below outlines some target cleanliness levels for common component types.

Cleanliness Targets:

Machine Type		Particle Target Level	Moisture Level
Hydraulics 1,500 - 2,500 psi	With servo valve	15/13/11	125 ppm
	With proportional valves	16/14/12	150 ppm
	Variable volume piston pumps	17/15/12	150 ppm
	With cartridge valves or fixed piston pump	17/16/13	150 ppm
	With vane pump	17/16/14	150 ppm
Gearbox		19/16/13	300 ppm
Paper Machine		18/14/11	200 ppm
Steam Turbine		18/14/11	100 ppm
Pumps		17/14/12	150 ppm

PORTABLE FILTRATION

With easy mobility around plant floors, Des-Case portable off-line filtration products are the ideal tools to remediate contaminated systems, flush new equipment during commissioning, or periodically decontaminate systems that have inadequate on-board filtration to meet target cleanliness levels. Staged filtration — two filters in series — allows for combined water removal and particulate filtration in one pass to get you on to the next job more quickly.

- **Drum Topper**

  Compact and customized for your application, handheld units are available to carry or affix securely atop an oil drum.

- **Filter Cart**

  Off-line filtration cart ideal for use on small to medium-sized reservoirs with low flow rates. Fully customizable with options for flow rate, connections, filters and more.

BY-PASS FILTRATION

By-pass filters are designed to remove “ultra-fine” contamination and water that is normally missed by existing filters, dramatically extending the life of oil and the component it lubricates. By-pass filters operate by filtering oil on a “partial-flow” basis and draw approximately 10 percent of the oil pump’s capacity, only filtering a small percentage of the system’s oil at any given time. This continual process eventually makes all the oil analytically clean by eliminating extremely small particles.

RMF™ SYSTEMS
A Des-Case Brand

- **By-Pass Unit**

  Specially designed for mobile hydraulic installations and available in single or double units equally suitable for OEM use and retrofitting.

DEDICATED FILTRATION

For critical applications that need regular filtration, or a maintenance location that is hard to access, permanently-mounted off-line filtration systems improve equipment reliability with continuous-duty, always-on filtration that cleans oil and keeps it clean. A properly sized off-line filtration system can turn over the entire volume of a reservoir several times a day (we recommend 2-7 turns), maintaining ISO fluid cleanliness codes well below the upper limit. Implementing dedicated off-line filtration will yield longer bearing and hydraulic component life and longer useful fluid life.

- **Off-Line Unit**

Off-Line, kidney-loop filtration system that attacks contamination at the source and provides best-in-class low flow filtration for a majority of industrial applications. Smart options are available.

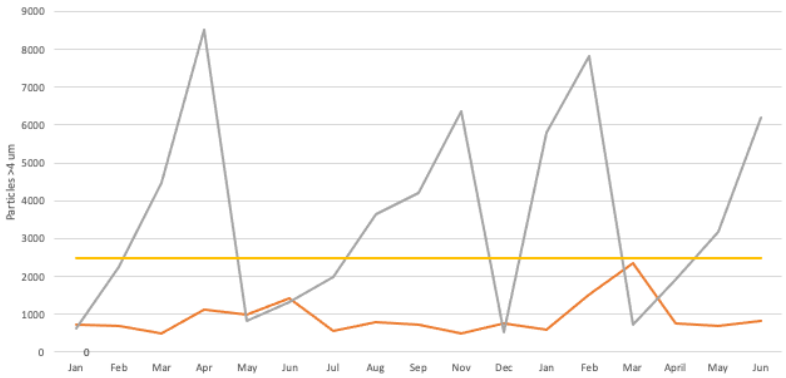
- **Giant Off-Line Unit**

Plug-and-play filter solution for use on hydraulic power units, lube and oil tanks, large gearboxes and storage tanks for biodegradable fluids.

- **Vacuum Dehydration**

Dehydrate and clean most types of oil such as lubricating, hydraulic, transformer and switch oils by removing particles, gasses and water. Additionally protecting the environment by reducing oil consumption and oil disposal.

Portable vs. Dedicated Filtration



Permanent Kidney Loop
Target
Periodic Filtration

FILTER ELEMENTS

Des-Case offers an array of filter elements to tackle water, particulate, varnish, sludge and acid removal in a wide variety of industrial applications. We employ a variety of advanced filtration media to meet your specific requirements, including synthetic, stainless steel wire mesh and combinations of media to exceed filter efficiency rating requirements.

- **Depth Cellulose Filter Elements**

An inexpensive method for obtaining high-efficiency filtration in light viscosity oils such as hydraulic, turbine or transformer oils.

- **Cartridge Elements**

High dirt-holding capacity elements for removal of water, acid and particle contaminants. Ideal for highly contaminated lubricants.

- **Spin-On Filters**

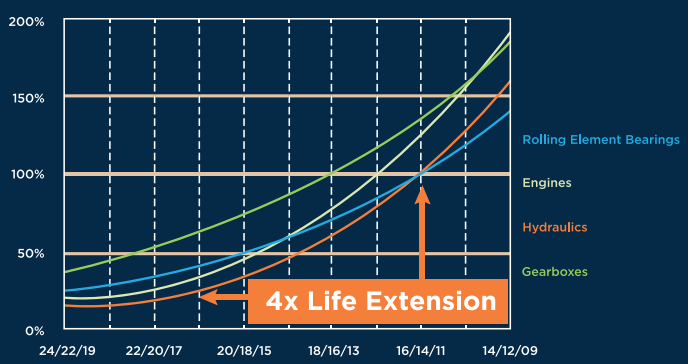
Low holding capacity elements for removal of water and particle contaminants.

DID YOU KNOW?

3 grams of contaminant in a **100 gallon** reservoir circulating at 50 gpm = running **1,500 lbs.** of contaminant through your system **annually.**

SUCCESS STORY: OFF-LINE FILTRATION UNIT

ENGEL Plastic Injection Molding Machine
Oil Volume: 800 gallons



ISO Cleanliness Code Level

Before:
21/19/12

After:
16/14/11

descase.com

TECHNICAL CENTERS ON 3 CONTINENTS
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