



**Clean Oil
Services Pty. Ltd.**
TRADING AS OIL SOLUTIONS N.Q.

YOUR PARTNER IN FLUID MANAGEMENT

OUR target is YOUR bottom line.

Used Oil Analysis takes the guesswork out of maintenance and allows you to communicate with your machinery. At Clean Oil Services, we keep you at the forefront of modern lubrication technology by using the most technically advanced practices available for your Oil Analysis Preventative Maintenance program. We work with you within our lubrication management and condition monitoring systems to improve your housekeeping and reduce your operating costs.

[oil analysis]

Our comprehensive preventative maintenance program offers a one report system for all your condition monitoring methods, lubrication and wear management.

1. The baseline for all condition monitoring:

- Identify and control all types of contamination
- Monitor machine condition and wear
- Monitor oil condition and performance
- Change oil on condition, the baseline for overall site improvement
- Identify contamination problems specific to your site
- Take the risk out of trials and innovations
- Allow more efficient maintenance planning

2. We lead the way by:

- Becoming part of your maintenance team
- Keeping you up to date with the latest technology
- Sharing successes for continued improvement
- Guaranteed 24 hour turn around of results
- Supplying photos so you too can see what's going on

3. Our state of the art equipment ensures that you get the maximum benefit possible for your investment. Get the full picture with microscopic analysis.

- Standard on all samples
- The type of wear particles will tell you what is happening and how your internals are performing
- Look at oil condition and monitor oil performance
- See what really is going on inside
- Trend wear with maximum precision
- Identify the contamination that's effecting your equipment
- Take the guess work out of oil analysis

4. Our typical analysis service includes:

- Microscopic wear debris analysis including particle count, particle size and wear modes
- ICP spectrographic analysis (PPM) of 14 elements including 6 wear metals, 2 contaminants and 6 oil additives
- Water, diesel dilution and viscosity measurement
- 24 hour turn around of results including electronic download and full reporting with emergency response
- TAN and TBN are available as an extra

5. Grease analysis

- Microscopic analysis on wear debris in grease
- Acid digestion for accurate spectrographic analysis
- Wear metals as a percentage of weight

6. Other analysis services available include:

- Transformer analysis including dissolved gas analysis and oil condition testing
- Diesel condition testing includes calorific value, density, wax point and contamination levels
- Bunker fuel oil testing including pH, contamination, flash point and heavy metals



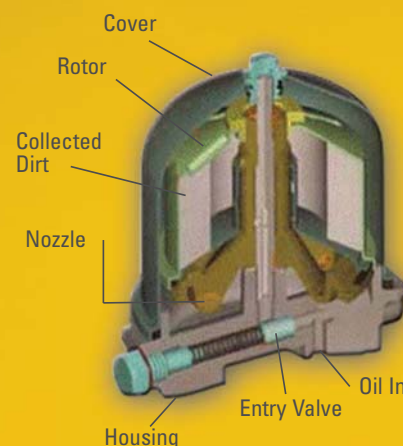
[centrifuges]



How does a Centrifuge work?

Normal oil filters have given sized holes in their mesh and will only remove particles from the oil stream which will not fit through the hole and then, under heavily contaminated flows, the particles can build up and block the filter, reducing flow until the filter goes into by-pass and becomes ineffective.

Originally designed for use on diesel engines, centrifuge oil cleaning is a well proven option. Clean Oil Services have custom designed centrifugal oil filter systems to adapt to a wide range of applications outside engines including gear and hydraulic oil cleaning. The idea is to remove contamination from used oils to restore them to cleaner than new condition thus reducing lubricant purchases and waste disposal costs.



When changing oil in a hydraulic system, normally only about 60% of the oil is drained, the rest is held up in rams, plumbing etc, which is holding back contamination. So by cleaning the oil with a Lubemaster oil cleaning centrifuge, and activating the system periodically whilst dilating, the system is cleaned to a level cleaner than can be achieved with draining the oil. Due to the centrifugal motion of the centrifuge, particles can be removed to sub micron levels hence very fine dust and soot particles are constantly removed to sub micron levels.

Being fully portable the Lubemaster system allows live filtering and is available in 240 and 415 volt models fitted with a Gyrotary pump to handle high viscosity and heavy contamination. Centrifuges have been adopted to, and work equally as well, on all oils from light transformer to hydraulic to heavy gear oils.

For mobile plant, just plug in the two breakaways and switch

the unit on to dilate whilst the unit is being serviced, or for fixed plant, plug it in and dilate whilst the equipment operates.

For applications on diesel engines, Clean Oil Services can design and select from a wide range of centrifuge capacities to fit almost any application for permanent installation.

You will at least double and in most cases more than triple your oil life.

As a maintenance manager you should seriously consider the use of the oil cleaning centrifuge to not only save big bucks but add longevity to your machinery maintaining cleaner operating integrity of the oil in your compartments – it really does make economic sense.

Centrifuge Models >>>



MODEL NUMBER	APPROXIMATE RECOMMENDED OIL SUMP CAPACITY		DIRT HOLDING CAPACITY [GRAMS]
	AU [LITRES]	US [GALLONS]	
020	From 5 to 12	1 to 2.5	200
030	From 12 to 25	2.5 to 5	300
060	From 25 to 50	5 to 10	600
100	From 50 to 80	10 to 20	1000
200	From 80 to 150	20 to 35	2000
400	From 150 to 250	35 to 60	4000
600	From 250 plus	60 plus	6000



[lubemaster]

The revolution in oil management...

The **Lubemaster Portable Centrifugal / Vacuum Dehydration Oil Cleaning System**, is a world class Australian innovation that is environmentally friendly and guaranteed to cut your lubrication costs.

Lubemaster Centrifugal / Vacuum Dehydration Oil Cleaning Units are able to clean used oil to a higher level than is possible with other fluid filtration systems.

- Removes particles to sub micron size
- Removes all types of water (free, emulsified & homogenized)
- Cleans system to cleaner levels than oil change
- No elements to replace - just wash, re-assemble and switch on
- Fully portable with robust lifting lugs
- 200L (50 gal) holding tank option for total filtration, decanting and clean oil storage
- Cleans high viscosity gear oils at full flow rate
- Units available from 12-70 LPM (4 gal to 30 gal per minute) capacities
- Positive oil return system to prevent rotor bogging
- Designed for on-line full flow static filtration
- No oil degradation or additive depletion

Lubemaster will put you in control of contamination allowing you to remove the water and contaminants, to sub micron levels, whilst machinery continues to operate and no need to replace costly elements.

Don't change oil again... Sounds too good to be true?

Proper maintenance of your oil with the Lubemaster Oil Cleaning Centrifuge will eliminate the need for changing oil in most lubricated systems except engines. Engines generate their own unique contaminants which need to

be removed constantly, so we fit the centrifuge directly to the engine, oil life is doubled and in some cases extended indefinitely. Performance is monitored and confirmed only by laboratory results.

Fullers Earth elements

An optional attachment is the Fullers Earth elements which will remove the acids and oxidized particles which have built up in the oil over prolonged periods of time (usually years of use) by absorbing them and completely removing them from the oil.



Turbine oil, before and after filtration

Fullers Earth elements are replaceable and can scrub the oil back to new specs, if additives are spent we will spike them back to new by adding a new package and revamping the oil all under controlled laboratory conditions.

This unit is designed to accommodate the full flow of the Lubemaster at 70 lpm (15 gals) throughout the full range of oils. 205 litres (50 gals) of turbine oil (see samples before and after treatment) was run for 7 hours through Lubemaster's centrifuge/vacuum dehydrator with the

optional Fullers Earth attachment.*

Water was reduced to 25ppm, particulates to below NAS 4 and TAN reduced from 1.6mgKOH/gm to 0.06mgKOH/gm. Colour, air release and the oxidation stability (RBOT) all returned within specifications.

*NB: The optional Fullers Earth attachment does require replacement elements.

Model Option Availability and Specifications >>>

MODEL	FLOW		VOLTS		HEATER	TANK		FRAME	FIXED	PARTICLE COUNTER	WHEELS	HOSE & FITTINGS CABLE LENGTH
	LPM	GAL/ MIN	AU	US		LTR	GAL					
OS600	70	19	415	220	Yes	300	80	Trolley Barrow	Yes	Yes	Pneumatic or Rubber Filled	Optional
OS400	50	13	415	220	Yes	300	80	Trolley Barrow	Yes	Yes	Pneumatic or Rubber Filled	Optional
OS200	20	5	415	220 110	Yes	300	80	Trolley Barrow	Yes	Yes	Pneumatic or Rubber Filled	Optional
OS100	15	4	415 240	220 110	Yes	300	80	Trolley Barrow	Yes	Yes	Solid Rubber	Optional
OS060	10	2.5	415 240	220 110	Yes	300	80	Trolley Barrow	Yes	Yes	Solid Rubber	Optional

[other fluid management services]

■ Breathers

Our focus is on contamination control. One very common cause of failure in almost all types of machinery is dust. Dust particles are extremely abrasive and if left unchecked, will build up in the oil and form a grinding paste. The result is well polished, very shiny gear teeth caused by excessive wear leading to premature failure. The most common entry point for dust and water is through the breather.



We have selected a range of off-the-shelf products which are cost effective and which work to filter the dust and stop it entering the system at very affordable prices. A breather costs from less than \$20 to \$100.... A gearbox costs from thousands to hundreds of thousands - protect your equipment.

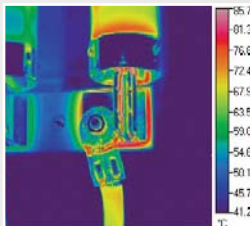
Let us advise you for the most effective breathers to suit your application. Our range starts from 3µm and less than \$20.00 each.

■ Infra-Red Thermography

Real time thermal surveying and trending for:

Electrical installations

- High tension lines and insulator leak detection
- Switch boxes and hot connections
- Electric motor winding and bearing hotspots
- Circuit boards for loose or restricted connections
- Transformers for hotspots and faulty connections
- Circuit breakers



Mechanical surveying

- Drive line monitoring on mobile and fixed plant
- Mill gears - hotspots and excessive load zones across gears
- Gearboxes - hot bearings and high load zones
- Bearings - excessive heating
- Steam piping - restrictions, steam traps and leakages
- Hydraulic systems - fluid restrictions and flow resistance
- Pipelines - restrictions and blockages
- Conveyors - roller hot bearing and head pulley monitoring
- Heat exchangers - function and efficiency



Thermal evaluations

- Cold storage cooling loss detection
- Condenser efficiency evaluation
- Compressor hot spots and load zones
- Energy loss in plumbing
- Insulation leakage
- Door seal leakage

■ Lubrication Consultancy and Management Services

Clean Oil Services offer and conduct on site surveys for lubricant and fuel storage, handling and dispensing methods. New oil is one of the most common sources of contamination – Let us advise you on:

- The most effective methods of handling oil to avoid contamination
- Oil stock holding consolidation without compromising performance
- Correct storage practices
- Correct dispensing practices
- Contamination control methods

■ Custom Designed Specialised Filtration

We offer a wide range of filters for installation to suit any application. We can source and supply most brands of replacement elements at competitive prices. We design and install filtration systems for workshop dispensing applications. Fuel and Oil storage filtration and breathers for bulk installations.

■ Specialised Lubricants

■ Hydraulic Hose, Fittings, Pumps and Motor Supplies

Clean Oil Services are authorised stockists and supply Gates hydraulic hose and Southcott fittings. We can source most brands of pumps and motors. We import and service the Haight range of gear pumps.



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YOUR LOCAL DEALER >>>