IN USE WORLDWIDE

37 YEARS

KLEENOIL FILTRATION INDIA PVT. LTD.

KLEENOIL®

www.kleenoilindia.com

LOW VACUUM DEHYDRATION MACHINE

Before
KLEENOIL Filtration

After
KLEENOIL Filtration

ISO 9001:2015

GeM Government e Marketplace

LOW VACUUM DEHYDRATION (LVDH) MACHINE

Principles of operation:

Contaminated oil is drawn into the Kleenoil Low Vacuum Dehydration machine by a vacuum of 600 millibars. The oil passes through the in-line low watt density heater where the oil is heated to an optimum temperature of 66°C - 70°C (depending on oil flash point capacity).

The water-free oil falls to the bottom of the column and is removed by a heavy-duty lube oil pump. This pump forces the dry oil though a final particulate removal filter. Clean oil passes out of the unit, back to the reservoir - and into the system.

Effects of Water Contamination:

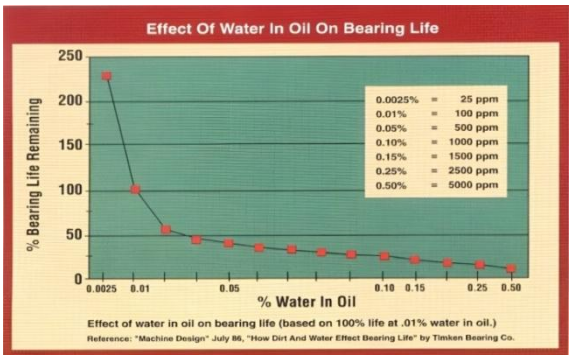
- ✓ Corrosion by etching metal
- ✓ Abrasive wear in hydraulic components
- ✓ Fluid breakdown, reduction of lubricating properties, additive precipitation, and oil oxidation

Free water occurs when oil becomes saturated and cannot hold any more water. This water is usually seen as cloudy oil or puddles of water at the bottom of an oil reservoir. At higher temperatures, oil can hold more water in the dissolved stage due to the expansion of oil molecules. As the oil cools, this ability reverses and free water will appear where not visible before. In addition to temperature, fluid type also determines the saturation point for your system (see chart above).

TYPICAL SATURATION POINTS		
Fluid Type	**PPM**	**%**
Hydraulic Fluid	300	.03
Lubrication Fluid	400	.04
Turbine Fluid	50	.005

Effect of Water in Oil on Bearing Life:

- Corrosion of Metal Surfaces
- Accelerated Abrasive Water
- Accelerated Fatigue
- Additive Precipitation
- Fluid Oxidation
- Viscosity Variation
- Reduced Lubricity



- ✓ The LVDH is the only system, which can remove water dissolved oil, thus restoring oil to its original properties.
- ✓ It removes water/moisture to below 50% of the saturation point in oil at low temperature (44°-60° C).
- ✓ Removes free, emulsified, and dissolved water by vacuum distillation & mass transfer – achieve overall content as low as 300 PPM.
- ✓ Removes entrained air and dissolved gases by vacuum distillation.
- ✓ Plug and Play
- ✓ Runs both offline and online

The Kleenoil Vacuum Dehydration Oil Purification Systems (LVDH - 1200) is recommended for use on the following applications:

- Turbine Lube Oils
- Quenching Oils
- Gearbox Oils (ISO 150 to 680)
- Transformer Oils (Mineral Based)
- Synthetic Oils
- Refrigerant Oils
- Compressor Oils
- EHC Fluids (Fyrquel)

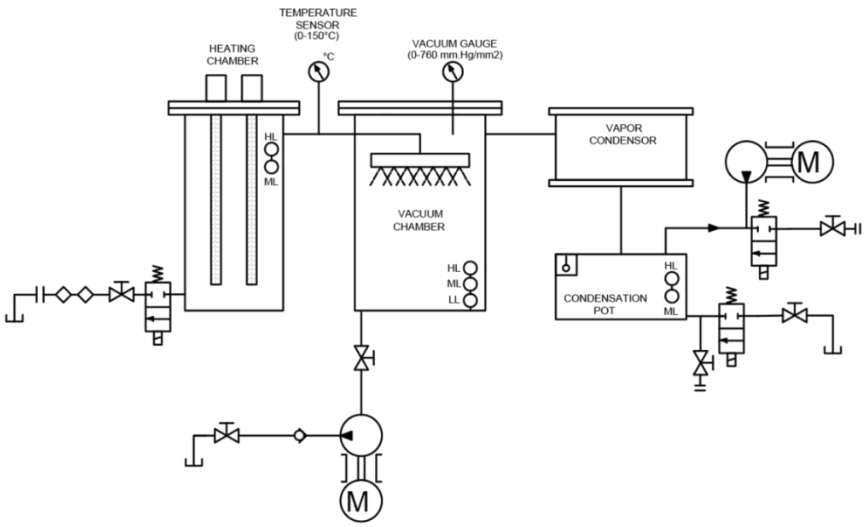
Table 1. Oxidation Life of Mineral Oils Under Ideal Conditions

Oil Type	k_I	Max Temperature for 1,000-hour Life
Uninhibited (used in once-through systems)	-10.64	75º C
Extreme-pressure gear lubricant	-10.31	84º C
Hydraulic	-8.76	99º C
Turbine	-8.45	106º C
Heavily refined, hydrocracked	-8.05	121º C

Features:

- Dehydration Process flow rates from 20LPM
- No consumable costs other than electricity are required (no costly water consumption)
- Easily portable and requires very little user intervention
- Requires virtually no maintenance – no vanes to wear out and no lubricating oil to become contaminated by a wet air stream

SCHEMATIC MECHANICAL CIRCUIT DIAGRAM



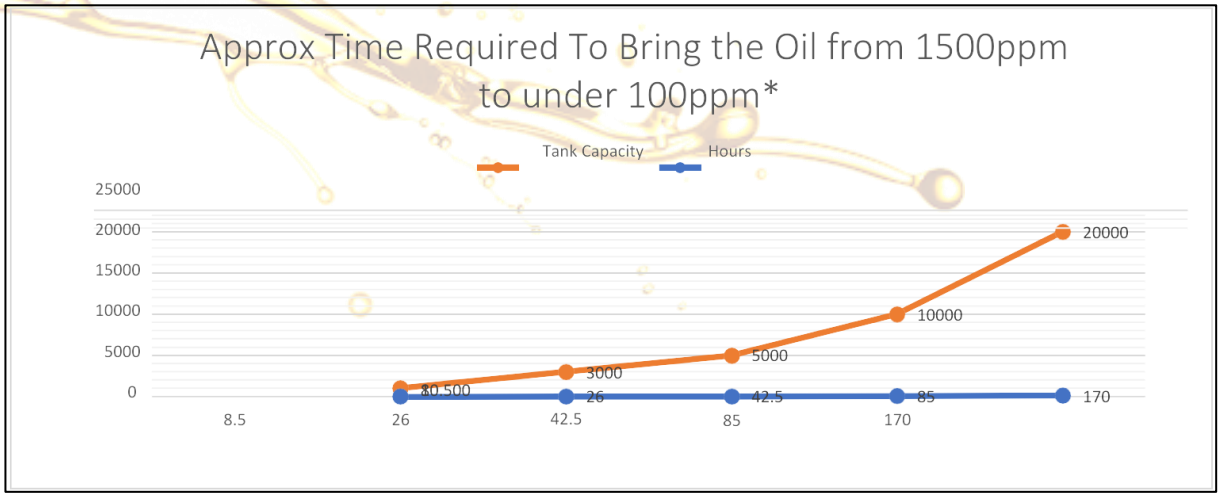
Oil is passed through a strainer in the heating chamber where it is indirectly heated to about 50°-55º C. The oil so heated is dispersed in a thin film in the vacuum chamber. Dispersing the oil into a thin film increases the surface area exposed to vacuum. As water will boil at low temperatures in vacuum, it evaporates and is excavated through the condenser where it is condensed into water and drained out. Dehydrated oil is then pumped back into the oil reservoir. Vacuum, temperature gauges and moisture sensors are installed on the equipment.

Construction:

The LVDH machine consists of four parts:

A) Heating chamber
B) Vacuum Chamber
C) Refrigerated Type Condensing Apparatus
D) Control Panel (RLC OR PLC BASED)

Before **After**



*** Values are made depending on parameters such as viscosity, machine handling rate of ingression of water**

Technical Specifications	
Electrical Supply	415v Ac, 3 Phase, 50hz
Control Panel	RLC/PLC
Oil Inlet/Outlet	SAE R1AT 3/4″ BSP hose pipes with end fittings
Discharge Pump Details	
Type Nominal Flow Rates Operating Pressure Motor Power	DRTP 20 Trochoidal Monoblock 20 Lpm 0-6 Bar (Kg/Sq.Cm.) 1.0 Hp
Vacuum Chamber Capacity	60 Liters
Operating Vacuum	Upto 750mm Of Hg @ Msl
Heater Type	Low Watt Density Heaters
Heater Load	6 KW 440v Ac
Vacuum Pump Details	
Capacity Drive Motor Power	150 Lpm Direct Driven 0.5 Hp, 1440 Rpm, 3 Phase
Overall Dimensions	
Length Width Height	1360mm 1000mm 1240mm
Weight Of the Unit	
Empty Full	425 Kgs Approx. 530 Kgs Approx.
Provided With	Fixed castor wheel, two swivel with lock
Duty Conditions	Continuous
Color Shade	Anthracite Grey (Ral 7016)
Water Discharge	Auto-drain
Condenser	Air cooled oil cooler

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