Vacuum Dehydration Oil Purification System (VDOPS)

When You Need Your Oil to Be Absolutely Clean and Dry

Recirculating your hydraulic and/or lube oil with a Vacuum Dehydration Oil Purification System (VDOPS) will help you maintain optimal fluid cleanliness in your system, extending the life of your rotating equipment and critical component parts, minimizing downtime and saving you money.

Water Removal

Contaminated ISO 32 Turbine Oil - emulsified water with free water at bottom

Filtered Oil - sample water less than 20 PPM
The harmful effects of water, entrained gases particulate, and varnish contamination in lubrication and hydraulic oils have been well documented. By removing all water contamination and entrained gases, VDOPS from Oil Filtration Systems helps maintain the oil's original viscosity, ensuring its optimal performance and extending its life as a lubricant. A VDOPS will:

1. **Remove water**: through the process of vacuum distillation, our Vacuum Dehydration Oil Purification System (VDOPS) is capable of removing all water contamination from oil (free, emulsified, and dissolved), achieving very low overall water content (as low as 20 PPM)

2. **Remove gases**: the same process of vacuum distillation effectively removes entrained air and gases from the oil (benzene, propane, methane, etc)

3. **Remove particulate**: using high efficiency pleated microglass filter elements rated Beta(c) >1000 per ISO 16889, our VDOPS is capable of achieving very low particle counts in oil to meet or exceed an ISO 14/13/11

4. **Remove varnish**: when equipped with granular adsorbent media (offered as an optional accessory), our VDOPS is capable of removing soluble varnish from turbine and hydraulic oil, achieving an MPC value of 15 or lower

VDOPS units are available in a wide range of configurations and flow rates to adequately handle virtually any application.
Water Extraction Rates in the Industry

OFS has been a preferred supplier of filtration equipment and vacuum dehydrators for the Chevron ISOCLEAN® Program now for five years, and not only does their equipment give unmatched performance in terms of water and particulate removal, their company gives us the kind of customer support, customized quick response, and service that we need in today’s fast-paced and competitive business environment.

Paul Sly, ISOCLEAN® Program Coordinator, Chevron Lubricants

Effective for Use On:

- ISO 32 Turbine Lube Oil
- Hydraulic Oil
- Paper Machine Oil
- Gear Oil (ISO VG 150 – ISO VG 680)
- Compressor Oil
- EHC Fluid (Fyrquel® and other phosphate esters)
- Bio-Diesel
- Waste Oil (used engine oil)
- Heavy Fuel Oil and Bunker Fuel
Because of its unique vacuum tower design and high CFM vacuum pump, our Vacuum Dehydration Oil Purification System (VDOPS) gives the highest water extraction rates available in the industry today. We build Vacuum Dehydration Oil Purification Systems (VDOPS) in a wide range of process flow rates for optimal performance on almost any application. A general rule of thumb to use is 1 GPM flow rate for every 100 gallons of reservoir capacity, so we build VDOPS units in the following process flow rates:

1 GPM, 3 GPM, 5 GPM, 10 GPM, 15 GPM, 20 GPM, 30 GPM, 50 GPM, 100 GPM

Our experienced sales and technical support personnel will help you select the correct system for your specific application depending on all of the unique conditions at your plant.

In addition, because we use only the highest quality components in the overall design (Gardner Denver vacuum pumps, Siemens PLCs, Gems low flow switches, Watlow heaters, Viking gear pumps, and Baldor motors), our VDOPS is the most reliable, durable, and user-friendly system available in the industry today.

- Low watt density heater – with outer insulation and 2 thermocouples for added safety (process and high limit)
- Inlet basket strainer – for pump protection
- All hard piping – no hoses
- Elevated vacuum tower – provides gravity flow to oil discharge pump for reliable performance on high viscosity oils
- Filter housing – holds high efficiency pleated microglass filter element rated Beta(c) > 1000 per ISO 16889
- Positive displacement gear pump – with Viton® mechanical seal
- Heavy duty skid base with spill containment lip, forklift slits (and casters)

Typical Water Extraction Rates
(Data Taken Using 20 GPM VDOPS on 3000-Gallon Turbine Lube Oil Reservoir / ISO 32 Turbine Oil)

- Very high water extraction rates
- Very low maintenance required
- Easy to use (turn on, adjust vacuum, walk away)
- Suitable for use with turbine and hydraulic oils, as well as high viscosity gear oils (ISO VG 150 – 680)
Oil Filtration Systems, LLC keeps a large rental fleet of VDOPS units of all sizes ready for emergency mobilization anywhere in the world. We have the largest and best maintained fleet of vacuum dehydrators in the industry today, and experienced field service technicians can either walk you through easy start-up procedures over the phone or accompany the system to your jobsite to help with start-up, commissioning, and training.

- We also offer 1-month rental cost towards the purchase price of a new system.
Varnish Removal Options

Varnish contamination in the turbine lube oil systems of gas turbines has recently become a major concern for maintenance personnel. For this reason, Oil Filtration Systems, LLC now offers a “varnish removal” option on all of our Vacuum Dehydration Oil Purification Systems (VDOPS). By diverting the flow of turbine oil through specially formulated granular adsorbent media, soluble varnish can be effectively removed from the oil, eventually resulting in the removal of varnish that has plated out on critical components, including servo valves in the speed control system.

Employs Most Efficient Filter Elements

Oil Filtration Systems, LLC manufacturers its own high-efficiency filter elements for particulate removal from all mineral-based and synthetic hydraulic, lubrication, dielectric, and fuel oils. OFS elements are constructed of the highest quality micro-fibrous glass filtration medias utilizing serial filtration technology, and the medias are layered to achieve optimal performance characteristics. OFS elements are suitable for use in the most demanding applications, and they are designed and tested to provide the highest level of efficiency with the maximum dirt holding capacity. All OFS filter elements have particulate removal efficiencies of Beta(c)>1000 (99.9% for the stated micron size), which is based on ISO 16889-1999 testing standards. They are available in a wide range of micron sizes to suit virtually any application (2.5, 5, 7.12, and 22-Micron).

Standard Features

1. **Claw-style vacuum pump** – very durable design for applications with high moisture content (removed water can not cause premature failure of vanes), and high CFM rating optimizes “mass transfer” effect for high water extraction rates

2. **Permanent dispersion media inside vacuum chamber** – maximizes the spread of oil over a large surface area, optimizing water extraction rates and eliminating the need for frequent and costly coalescer element change-out. Also enables system to work effectively on high viscosity oils.

3. **Variable frequency drive** – greatly enhances the system’s ease of use during cold start-ups, and enables it to be used effectively across a wide range of applications and oil viscosities.

4. **Inlet solenoid valve** – safety feature for automatic isolation of inlet

5. **Two heater thermocouples** (process and high limit) – safety feature prevents over-heating of oil

Optional Features

1. **Explosion proof components** (Class 1, Division 1 or Class 1, Division 2)
2. **Inline digital particle monitor**
3. **Inline digital moisture indicator**
4. **Welded steel cage structure around system with 4-point lifting eyes for offshore use**
5. **All stainless steel wetted parts (vacuum chamber, piping, etc)**
6. **Special 3-part epoxy exterior coating for extra corrosion resistance in salt environments**