

MICROCARE Vacuum Dehydration & Purification system (VDPS)

VACUUM DEHYDRATION OIL PURIFICATION SYSTEM

The harmful effect of water and particulate contamination in hydraulic, lubrication & dielectric oils have been well documented. By maintaining absolutely clean and dry oil, the life of critical wears components in rotation and hydraulic equipment can be significantly extended, minimizing equipment downtime optimizing it's efficiency and maximizing profitability.

We design and build the most effective reliable and user-friendly vacuum dehydrators on the market today. Several design features enable our system to consistently outperform all others and our water-extraction rates are the best in the industry.

- Remove free, emulsified and dissolved water by vacuum distillation & mass transfer – achieve overall water content as low as 50 PPM.
- Remove entrained air and dissolved gases by vacuum distillation
- Achieve particle counts as low as ISO 14/13/10 or NAS class 5 Cleanliness level
- Process flow rates from 10 to 100 LPM
- No other utilities other than electricity are required (no costly water consumption)

Our vacuum Dehydration Oil purification Systems (VDOPS) are recommended for use on the following application.

Turbine Lube oils

Paper Machine Lube Oils

Gearbox Oil (ISO 150 to ISO 680)

Transformer Oils (Mineral Based)

Silicon Oils

Refrigerant Oil

Compressor Oils

EHC Fluids (Fyrquel)

PAO Fluids

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VDPS – An ideal solution for Water & solid particle removal

The vacuum Dehydration & purification system (VDPS) is designed to effectively remove free, emulsified and dissolved water, particulate and gaseous contamination from petroleum and synthetic based fluids. The water removal principle used is simple, reliable and will dependably remove water well below the oil saturation points, even when tightly bound in an emulsion. The high performance VDPS removes 100 % of free water, air & gases, 90% of dissolved water, air & gases is capable of reducing water content to as low as 50 % of saturation value and can reduce particle counts to ISO 14/13/10 or NAS 6 cleanliness levels.

Common sources of water contamination are heat exchanger and seal leaks, condensation, inadequate reservoir covers and temperature drops that lead to dissolved water becoming free. Entrained and dissolved gases can cause foaming and lead to cavitations of pumps, produce higher fluid temperatures and reduce system response time. Particulate contamination can cause premature components failure and lower the system sufficiency by increasing internal leakage in pumps, cylinders and other components.

Working Principles

The attached Figure 1 shows schematically the VDPS operation. A vacuum pump creates a vacuum that draws fluid into the unit through a circulation heater, where the fluid temperature is raised to roughly 55° to 60°. Oil then flows over dispersion media or diffuser located inside the vacuum tower. Oil flows over this media where it is exposed to vacuum, normally 22-24" Hg (635m Hg). The boiling point of water is below the 60° C fluid temperature at that vacuum, so water and dissolved gases are "boiled off" and the fluid is effectively dehydrated. An oil discharge pump removes the dehydrated oil from the bottom of the vacuum chamber and pumps it through a high efficiency absolute rated particulate-removal filter element and back into the reservoir.

Effects of water & solid particle contamination

- Corrosion of metal Surfaces
- Accelerated Abrasive Wear
- Accelerated Fatigue
- Additive Precipitation
- Fluid Oxidation
- Viscosity Variation
- Reduced Lubricity
- Increased wear & tear of components
- Reduction in life of critical components in system
- Sludge formation
- Operational problems in systems due to sluggish valve operation

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Value Packed Standard Features

FEATURES	ADVANTAGES	BENEFITS
Compact Size and Weight	<ul style="list-style-type: none"> • Smallest Envelope in the industry • Ease of Portability 	<ul style="list-style-type: none"> • Fits Through Doorways and Narrow Aisles • Increased Usage
Caster Wheels and Fork Lift Guides	<ul style="list-style-type: none"> • Provides Safe, Secure method for Transporting Unit 	<ul style="list-style-type: none"> • Easily Transported • Increased Usage
Automatic Operation	<ul style="list-style-type: none"> • Promotes Unattended Use 	<ul style="list-style-type: none"> • Increase Run Time
Programmable Thermostat	<ul style="list-style-type: none"> • Maintains Fluid Temperature to within 1 degree C 	<ul style="list-style-type: none"> • Prevents Fluid Breakdown • Increased Fluid Life
Self-Diagnostic Controls	<ul style="list-style-type: none"> • Indicates Problem Areas and Services to be Performed 	<ul style="list-style-type: none"> • Reduced Downtime for maintenance
Condensate Holding Tank with High Level Switch for Automatic Water Drain	<ul style="list-style-type: none"> • Captures condensed water and removes automatically 	<ul style="list-style-type: none"> • Eliminates Potential of Hazardous Discharge • No attendant required for water removal
Close Coupled Heavy Duty Lube Pump	<ul style="list-style-type: none"> • Eliminates Belt Driven Pump Maintenance • More Robust than Typical Gear Pumps • True Rated flow performance even under vacuum 	<ul style="list-style-type: none"> • Ease of Maintenance • Faster Purification
Condenser with two options Air Cooled Condenser With chiller	<ul style="list-style-type: none"> • Fast & easy condensation of vapor • Extends dry seal Vacuum pump life 	<ul style="list-style-type: none"> • Longer equipment life
Phased fail circuit	<ul style="list-style-type: none"> • Enable Immediate Unit start without the need of an electrician 	<ul style="list-style-type: none"> • Reduced Downtime
Corrosion proof Vacuum Tower with Large Observation window	<ul style="list-style-type: none"> • Elimination Corrosion • Monitor the Vacuum Dehydration Process 	<ul style="list-style-type: none"> • Longer Equipment life • Visual Verification of Equipment

MICROCARE - MECHANICAL VACCUM DEHYDRATION UNIT (VDU)

DATA SHEET OF DIFFERENT MODELS

Sr	Particulars	MDH 50 (2013 Version)	MDH 50 New (Version 2014)	MDH 100
01	Model	MDH 50	MDH 50-R	MDH 100
02	Discharge Pump	10 LPM	20 LPM	40 LPM
02.1	Motor HP	0.5 HP 415 V	1 HP 415 V	1 HP 415 V
03	Vacuum Pump	100 LPM	200 LPM	400 LPM
03.1	Motor HP	0.5 HP 415 V	0.5 HP 415 V	0.75 HP 415 V
04	Suction Pump	Not Applicable	20 LPM	40 LPM
05	Heater capacity	6 Kw	6 Kw	6 Kw
06.	Dispersion media in Vacuum Chamber	Baffle Plates	Random packing media	Random Packing Media
07	Cooling Unit	Water cooled Chiller	Water cooled Chiller	Water cooled Chiller
08	Instrumentation	NA	Pressure Transducer for Vacuum	Pressure Transducer for Vacuum.
08.1		Temperature controller and indication provided	Temperature controller and indication provided	Temperature controller and indication provided
08.2		Oil Level sensor in Vacuum Chamber	Oil Level sensor in Vacuum Chamber	Oil Level sensor in Vacuum Chamber
09	Water Drain	Manual discharge. Optional for Auto.	Manual discharge. Optional for Auto.	Manual discharge. Optional for Auto.
10	Overall Dimensions	L 900 x W - 900, H - 1550	L – 1050 x W – 850 x H – 1620 mm	L – 1200 x W – 900 x H – 1700 mm
11	Weight	Approx 250 Kg.	Approx 300 Kg.	Approx 350 Kg.