

HYDROVAC™

OIL PURIFIER

HIGHLY EFFICIENT OIL PURIFIER
FOR MINERAL, SYNTHETIC
AND BIODEGRADABLE OILS



KEEP THE HYDRAULIC SYSTEM RUNNING

In hydraulic systems, more than 80 % of unplanned down time and failures are a direct result of contamination. Production loss caused by unplanned down time can be costly and time consuming.

PREDICTIVE HYDRAULIC FLUID MANAGEMENT PREVENTS UNPLANNED DOWNTIME

By our proven and patented technology, we remove 100 % of free water and entrained gases and more than 90 % of dissolved water and gases.

The Hydrovac™ oil purifier uses two technologies to remove water from oil; vacuum and air stripping.

By minimizing water and gas contamination, a series of problems in hydraulic systems can be reduced or completely eliminated

- Fluid oxidation
- Corrosion
- Bacterial growth
- Maintaining lubricity properties
- Cavitation
- Forming ice crystals if system below 0°C (32°F)
- Foaming
- Uneven motion of actuator/pistons or other components

These are all known problems where the origin can be traced back to water and gas in the hydraulic system.

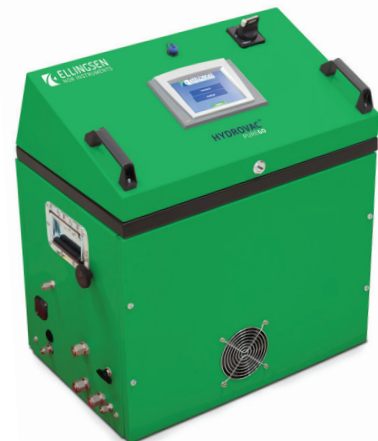
HYDROVAC™ OIL PURIFIER, PATENTED PRODUCT COMBINING AIR STRIPPING AND VACUUM TECHNOLOGY

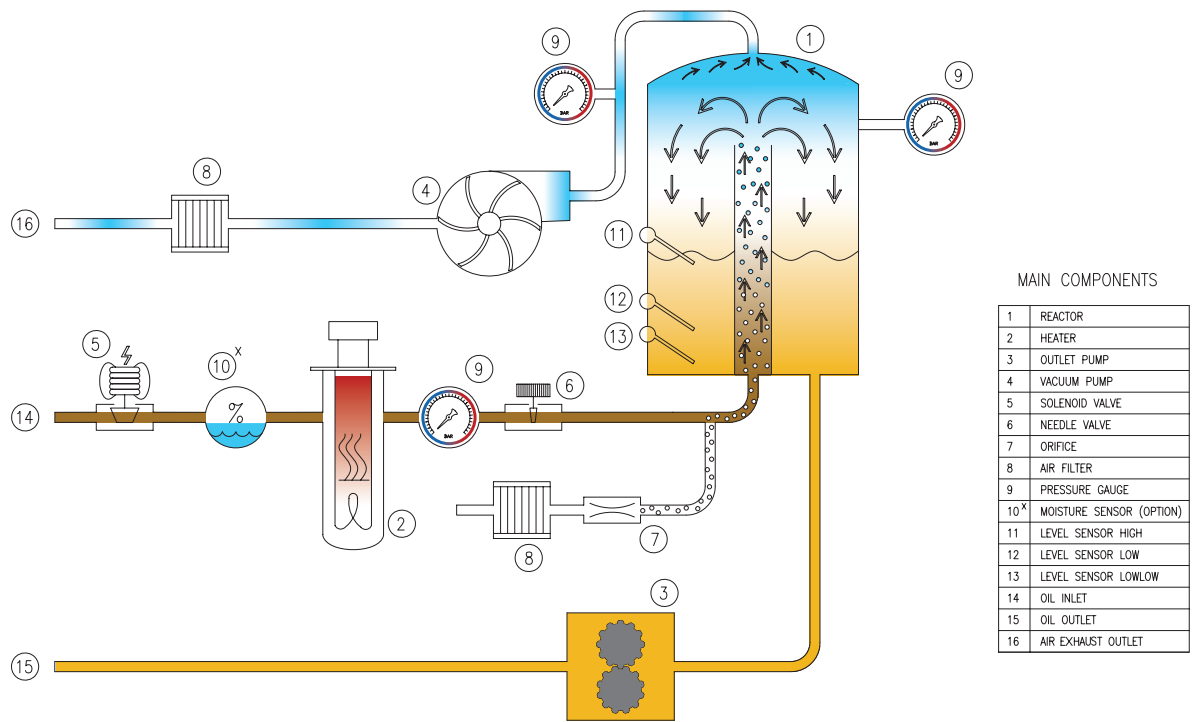
Contaminated oil is drawn into the purifier by the use of vacuum. Before entering the reactor chamber the oil will be heated up to approximately 50°C (122°F). Extensive testing has shown this to be an ideal temperature for most hydraulic fluids, and allows maximum water extraction without destroying the physical properties of the fluid.

The temperature is adjustable both higher and lower to accommodate a wide variety of fluid properties. In addition, air is mixed into the hot oil, attracting the moisture entrapped in the oil when entering the reactor chamber.

By exposing the water-contaminated oil to vacuum, the water and gas converts into saturated vapor, leaving the reactor column in the top area. The purified oil is then collected in the bottom and pumped back to the reservoir.

EASY INSTALLATION – PLUG AND PLAY





MAIN COMPONENTS

| | |
|-----------------|--------------------------|
| 1 | REACTOR |
| 2 | HEATER |
| 3 | OUTLET PUMP |
| 4 | VACUUM PUMP |
| 5 | SOLENOID VALVE |
| 6 | NEEDLE VALVE |
| 7 | ORIFICE |
| 8 | AIR FILTER |
| 9 | PRESSURE GAUGE |
| 10 ^x | MOISTURE SENSOR (OPTION) |
| 11 | LEVEL SENSOR HIGH |
| 12 | LEVEL SENSOR LOW |
| 13 | LEVEL SENSOR LOWLOW |
| 14 | OIL INLET |
| 15 | OIL OUTLET |
| 16 | AIR EXHAUST OUTLET |

WE ARE SOLUTION-ORIENTED,
SERVICE-MINDED AND HAVE A HIGH
LEVEL OF COMPETENCE

HYDROVAC™ BENEFITS:

- Two purifier technologies in one
 - higher water removal effectiveness
- Removes 100 % free water and entrapped gases
- Removes 90-99 % of dissolved emulsions
- Addresses the root cause of particle formation
- Less additives needed (anti corrosion, anti-foaming etc.)
- Reduces down time
- Prolonged life time of oil
- Low maintenance cost
- Easy installation – plug and play
- Light-weight design
- Portable and compact unit
 - Low space and footprint needed
- Extremely efficient in comparison to similar products
- Flexible – custom-made if desirable
- Short delivery time



Photo: Harald Pettersen - Statoil

MEETING THE HIGHEST PERFORMANCE STANDARDS

OFFSHORE OIL AND GAS

When performance, reliability and Life Cycle Cost counts, the Hydrovac™ oil purifier is recognized by the ever so demanding offshore industry as the technology leader. No other industry sets targets and documents the cleanness of oil for their applications on-board better than the Offshore Oil and Gas sector.

- Main Hydraulic Power Unit (HPU)
- Anchor winches
- Pulling winches
- Cranes
- Lubrication systems for generators
- Compressors
- Gas turbines
- Gear systems
- Propeller, Thruster systems
- Well Head Control Panels
- Remote Operated Vehicle (ROV)

MARITIME

Ship operators rely on effective separation systems to remove harmful contaminants and maximize operational availability, safety and reliability. Water ingress through damaged and worn seals is a major problem. Common areas affected are propeller systems, thrusters and gear shafts. Minimizing water content in hydraulic oils prevents unplanned machinery breakdown and costly off-schedule docking and repair.

- Propeller systems
- Winches and cranes
- Thrusters and gear shafts
- Water jet – hydraulic
- Reduction gear
- Hatch Cover systems

THE RESULT IS CONTINUOUS OPERATION AND EARNINGS



INDUSTRY

Land based industry has a strong focus on cost efficient operations and predictive maintenance. Reliable equipment performance depends on clean hydraulic oil. Preventing water build-up in the hydraulic oil will result in reduced unplanned maintenance cost.

- Pulp and Paper Mills
- Primary Metal Plants
- Automotive Manufacturers
- Mining
- Power Generator Plants
- Original Equipment Manufacturers

COST EFFICIENT MAINTENANCE



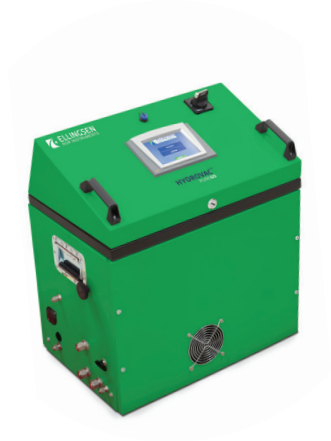
MODELS

HYDROVAC™ PUREGO

– OUR NEW PORTABLE LIGHT WEIGHTED UNIT

Hydrovac™ PureGo suites the need for a compact purifier capable of cleaning small and medium sized hydraulic systems. Ideal for use on reservoirs from 1000 l (264 US gal) up to 3000 l (792 US gal).

As the unit is small and light-weight, it can easily be moved from one installation to another. The unit has the newest PLC, opening up possibilities for historic data logging and online feedback to control room.



HYDROVAC™ PURECLEAN

– OUR STANDARD MARINE AND ONSHORE MODEL

Hydrovac™ PureClean is designed for the use in oil systems where water ingress is a constant or regular problem. It is a compact standalone unit, and is capable of handling a wide range of oil viscosities; from 3 to 700 cSt.

Outfitted with casters, the unit can also be moved around in order to suite several applications if needed, or left as a permanent installation. The model comes with a wide range of options and suites most of the marked needs for water and gas removal from different oil types.



TECHNICAL DATA

| | PureGo | PureClean / PureEx / PureFlex |
|-----------------------------------|--|--|
| Oil viscosity: | 32 - 68 cSt @ 40°C | 10 - 700 cSt @ 40°C |
| Type of hydraulic oils: | Mineral, Synthetic and Biodegradable | Mineral, Synthetic and Biodegradable |
| Max size of reservoir: | 1-3 m3 | 15 m3 |
| Circulation capacity: | 50 - 250 l/hour | 100 - 600 l/hour |
| Normal operating vacuum: | -0,9 barg | -0,9 barg |
| Temperature range: | 15-80°C (Normal process temperature 50-60°C) | 15-80°C (Normal process temperature 50-60°C) |
| Heater element: | 2 Kw | 6 Kw |
| Water removal efficiency: | 100% free water and gases, 90% or better dissolved water and gases | 100% free water and gases, 90% or better dissolved water and gases |
| Voltage: | 230V 1 phase | 380/400V 3-phase, 230V 3-phase |
| Frequency: | 50/60 Hz | 50/60 Hz |
| Max electrical power Consumption: | 2,7 kW | 7,4 kW |
| Weight (dry): | 55 Kg/ | 115 Kg/ 350 Kg /Custome made |
| Dimensions: | 600 x 400 x 670 mm | 600 x 400 x 1040 mm / Custom made / Custom made |
| Inlet connection: | 12mm tube connection | 3/4" BSP / Custom made / Custom made |
| Outlet connection: | 12mm tube connection | 1" BSP / Custom made / Custom made |
| Hook up: | External circuit (kidney) to oil reservoir | External circuit (kidney) to oil reservoir |

HYDROVAC™ PUREEX

– ATEX APPROVED PURIFIER FOR INSTALLATION IN HAZARDOUS AREAS

The Hydrovac™ PureEx has the same capacity as the Hydrovac™ PureClean. However, due to the nature of its typical installation, it holds a stronger safety standard. The unit is PLC controlled which allows for better supervision and predictive maintenance.

The material used is mainly 316 SS and other materials are painted according to offshore specifications. All components are certified according to ATEX, for installation in zone 1 areas. The unit is self-controlled and may be installed exposed to the weather if necessary.



HYDROVAC™ PUREFLEX

– ATEX APPROVED PURIFIER FOR CUSTOM MADE HYDRAULIC SYSTEMS

The Hydrovac™ PureFlex is in principal and function equal to the Hydrovac™ PureEx, but is engineered and prepared to be integrated inside hydraulic systems..

It can be delivered with its own control system or to be fully integrated to the main HPU's control system.



OPTIONS

For the different models, we can offer a wide range of accessories and options on customer demands like;

- Hydraulic houses for connection to the purifier
- Couplings, quick connect
- Sight glasses for in- and outlet
- Filter for particles removal
- Humidity sensors
- PLC



ELLINGSEN GROUP

Ellingsen Group consists of the following companies; Haakon Ellingsen AS, Ellingsen Systems AS and Ellingsen Indutech AS.

Ellingsen Group supply products for valves, actuation, instrumentation, pumps and engineered system solutions, to oil & gas, marine and land based industrial market. We combine quality products with decades of experience to design, engineer and provide the most beneficial solutions.

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OUR OVERALL VISION:
TO BE OUR CUSTOMERS
BEST CHOICE