Oil/ Water Separator

Prepared by: Gilles Brûlé, P.Eng.
General Description

- Separates free oil in water stream with a continuous liquid flow and a retention time from 10 minutes to 1 hour.

- Polishing equipment for emulsified oil, soap and solid can be incorporation easily to the oil water separator.
Advantage of the Oil/Water Separator based Unit

- All of the components in contact with the water are in non-corrosive material;

- There are no movable part inside the separator;

- Easy cleaning of the separator due to it large access ports;
Advantage of the Oil/Water separator system with options

- Filtration system (which includes a pump) can be install in order to stop sediment from entering the separator;
- Discharge pump can be install to pump waste water to drain or to a waste water recovery system;
- Can easily incorporate water treatment system or water polishing system, all assemble in a single complete unit;
- The oil/water separator with or without option can easily be install as one piece with only the services requiring connection.
Oil/Water Separator Construction

- Polypropylene, Polyethylene, Aluminum or Stainless Steel;
- All parts in contact with water are non-corrosive;
- Oil reserve inside the separator is greater than 5% of the volume;
- Site Glass allows for visual verification of oil level inside separator.
Oil/Water Separator Construction

- Access sealed covers allow for visual verification and cleaning when required;

- A manual valve allow for the transfer of oil to a waste oil drum;

- Manual valve allow for emptying the separator of all residual water when cleaning;
Oil/water Separator Performance

- For free oil separation, the waste water quality is less than 15mg/L or 15 ppm.

- Please note that emulsified oil with water or soap is not free oil.
Oil/water Separator Verification

Performance and acceptance tests

➤ Flow rate;

➤ Add 5 liters of oil in 10 minutes with the specified maximum flow rate;

➤ Samples taken every 5 minutes for the test period;

➤ Three samples are selected for laboratory testing.
Separator Documentations

- Technical specification and installation instruction;

- O & M manual.

- Two years warranty on the Oil/Water Separator and one year warranty on all mechanical moving parts in options.
Oil/Water Separator performance analysis with products other than motor oil.

The separator can be used to separate any fluid with different specific gravity which are not soluble.
Oil/water Separator Option – B

Filtration

- Up to four stages of filtration;

- Require a pump for the pressure drop across the filter;

- Filter media type:
  - Stainless Steel basket from 3/16” perforation to 60 mesh
  - Bag filters from 1 to 150 microns;
  - Continuous, self cleaning strap filter from 20 mesh to 10 microns
  - Low concentration of Emulsified Oil, absorption filter
Oil/water Separator Option – C

Waste water pump:

- Material is bronze, cast iron or Stainless Steel;
- Variable speed;
- Discharge pressure up to 50 psig.
Oil/water Separator Option – D

Automatic oil transfer:

- This system will automatically transfer the oil accumulated inside the separator into an oil transfer tank without any water.
Oil/water Separator Option – E

Water treatment system:
For emulsified oil or for water recuperation

Evaporation System:

- Low pressure system;
- Heat exchanger which reduce the energy by up to 75%;
- Heat exchanger with up to 100% heat reclaim in winter season;
- Automatic sediment removal;
- Automatic oil removal.
Oil/water Separator Option – F

Water treatment system:
For emulsified oil or for water recuperation

Absorption System

→ For small flow rate of less than 2 us-gpm;

→ Designed for 24 hours cycle, usually equipped with a temporary reserve tank.
Oil/water Separator Option – G

Water treatment system:
For emulsified oil or for water recuperation

Ozonation System:

➤ For continuous operation

➤ Optimization of the ozone generating equipment is achieved by stabilizing the flow rate.
Oil/water Separator Option – H

Water treatment system:
For emulsified oil or for water recuperation

Flocculation System:

► For continuous operation

► Optimization of the flocculation of the oil by stabilizing the flow rate.
Oil/water Separator Option – I

Water recuperation System:

- Waste water can be re-used. This allows for smaller systems when designed for 24-hour cycles.
Oil/water Separator Option – J

Control Panel:

- For alarm and/or monitoring
- All oil/water separator with option are equipped with a control panel;
- From the site specification the controls can be a combination of the following:
  - Electric controls;
  - Electronic controls;
  - Pneumatic controls;
  - PLC controls.
Oil/Water Separator base unit - HOS

Oil/Water Separator

Schematic Representation only

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Oil/Water Separator System

Automatic oil transfer system

Filter Section

- Water inlet
- Oil outlet to used oil tank
- Control Panel
  - Power on
  - Water pump on
  - Oil transfer pump on
  - Filter pressure
  - Filter alarm
  - Oil level alarm
  - Water level alarm
  - Oil tank alarm
  - Water recycling tank alarm

Pump system

- Water outlet to recycling tank

Oil outlet to used oil tank

Schematic representation only

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## Oil/Water Separator Dimension

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<th>B Height in inches</th>
<th>B Length in inches</th>
<th>Volume cubic feet</th>
<th>Volume imp. Gal.</th>
<th>Volume us-gals</th>
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**HOS**

Horizontal flow oil water separator

**VOS**

Vertical flow oil water separator

**HOS-XX**

Custom fabrication for standard flow (from 5 to 100 usgpm) and for larger unit, 100+ usgpm

**VOS-XX**

Custom fabrication for standard flow (from 5 to 100 usgpm) and for larger unit, 100+ usgpm

Note 1 - All dimensions can be modified to meet installation requirements.

Note 2 - System performances for separation below 15 ppm (mg/L) is applicable to non-emulsified or soluble oil in water.

Note 3 - The retention time is based on the fluid characteristics.

Note 4 - Each separator is tested using 10W30 motor oil

Note 5 - Every Oil/Water Separator can be equipped with the options of filtration system, automatic oil transfer system, pumping system, water treatment systems, control panel, alarm system, water recycling system.