Wärtsilä
Ship Power Environmental solution
Oily Water Systems
Wärtsilä Oily Water Systems aims to support our customers in minimizing the environmental footprint while optimizing performance and cost efficiency, in their daily operations as well as from a strategic perspective.

In addition to our market-leading products for treatment and handling of different types of water effluents, we offer expertise and qualified support in:

- cost efficiency analyses focused on product lifecycle costs
- safety evaluations and risk assessments within the environmental area
- environmental guidance and advisory services

Our present product portfolio encompasses solutions for oily water treatment in marine as well as land-based applications, scrubber water systems and slop water treatment for the offshore industry.
Our areas

Oily water treatment for Power Plants

Spares

Oily water separators for marine

Slop water treatment for Offshore

Scrubber water treatment for marine
Oily water Treatment for Power Plants

More than 100 units delivered to power plants all over the world

Wärtsilä OWT
Powering the world
OWS solutions can be divided on basis performance characteristics, i.e. high performance and or low performance. Wärtsilä OWS are categorized as high performance equipment. High performance equipment gives the benefit of high availability and performance over the products entire lifecycle guaranteeing low operating costs and high a safety standard.
Slop water treatment for Offshore

The Wärtsilä slop water treatment system is designed to treat drill slop water and make it dischargeable to the sea without further treatment. The unit will significantly reduce drill slop sent onshore for treatment, depending on the rig, by as much as 80-90%.
70 countries, 160 locations, 11,000 service professionals

Installed base
181,000 MW

Wärtsilä Services’ global network
Widest range of offering and expertise
Wärtsilä’s production and R&D

- Fully owned sites
- Sites with R&D
- Joint Venture sites
- 18 licensee sites
Drilling slop waste water composition drilling unit

- Heli deck
- Tank area
- Cellar deck
- Other deck wells
- Shaker room
- Loading area
- Riser storage area
- Drain sump tanks
- Cranes
- Incidents spills

Overflow

Drain Tank
- 70 - 90% Water Emulsion
- 10 - 30% Mud
- 0.5 - 3% Oil

Mud cuttings
- 1% Solids
- 5 - 10% Oil

Mud disposed ashore

Holding Tank
- 90-95% Water emulsion
- 0.5-3% Oil

Treated in MWD/SWC

Clear water pumped over board after treatment
## Drains Water Types

<table>
<thead>
<tr>
<th></th>
<th>Drill floor drains</th>
<th>Tank wash slop</th>
<th>Deck drains</th>
<th>Bilge water</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constituents</strong></td>
<td>Drilling fluids, etc.</td>
<td>Drilling fluids, etc.</td>
<td>Rainfall, wash water, etc.</td>
<td>Contaminated water collected in engine rooms and machinery spaces</td>
</tr>
<tr>
<td><strong>Characteristics depend on…</strong></td>
<td>Type of drilling fluid used</td>
<td>Type of drilling fluids, dirtyness of the tank</td>
<td>Layout of drilling rig or platform, annual rainfall, type of oil produced</td>
<td>Fuel type, engine room layout, cleaning, leaks etc.</td>
</tr>
</tbody>
</table>
Analysis of particles in process water

Mud sample - emulsion phase, FNU 216

Source: Swedish Environmental Institution, www.ivl.se, Dr Fredrik Norén
Method: Particle counter, Elzone 5380
Analysis of particles in process water

Mud sample - emulsion phase, FNU 216

Source: Swedish Environmental Institute, www.ivl.se, Dr Fredrik Norén
Method: Leica Laborlux LM @100x, n.a.=1,3 optical resolution 0,23 µm
Analysis of particles in process water

Volym solids in feed

Particle range
Operation

- Bilge water
- Tank wash slop
- Deck drains
- Drill floor drains

**Stage 1 Stage 2 Stage 3**

Discharge holding tank

**MWD**

- Oil
- Solids

**Suction**

**SWC**

- Discharge holding tank
- DAF
- Chemicals

- Solids
- Dry solids

- Sludge
- ppm monitor
## Typical costs for a rig

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity m3/h</th>
<th>Capacity gal/day</th>
<th>Size mm</th>
<th>Size inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>MWD</td>
<td>5,0</td>
<td>31700</td>
<td>1600</td>
<td>63</td>
</tr>
<tr>
<td>SWC</td>
<td>5,0</td>
<td>31700</td>
<td>2760</td>
<td>108,7</td>
</tr>
</tbody>
</table>

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**MWD**

![MWD diagram](image)

**SWC**

![SWC diagram](image)