

## What are the common issues you experience (or have heard of) when operating an OWS?

Number	Response Text
1	System reliability, not allowed to use OWS in many areas, maintenance is difficult and dirty to carry out
2	need make proper preparation for using ows. very good when bilge tank can be heated
3	if the bilge collecting tank for overboard is contaminated in any way, then you cannot process the water overboard
4	Nil
5	when the holding tank is to half tank of level
6	Sensor failures
7	suction system and cleaning of bilge tank
8	Status of filters and cost to change frequently, general maintenance
9	LOT OF PROBLEMS
10	LOW CAPACITY
11	Protect to environment
12	engine room detergents not allowing clean phase separation.
13	IF THE WATER IS DISCOLORED DUE TO RUSTING OF THE HEATING COILS & THE INTERIOR OF THE TANK ITSELF.
14	unsuitable pre treatment
15	very dirty bilge water
16	quick accumulation of oil in coalescer filter, hence ineffective separation
17	Contamination of the filtering elements We are enforced to operate on 5ppm, which is ridiculous! It's difficult to have the OWS running below 15ppm without having the bilge water to settle in tanks before passing the OWS
18	Cell cleaning
19	15 ppm
20	15 ppm alarm, bilge holding tank general cleanliness issues, Magic pipe
21	issues etc
22	measuring cell unit sensing problem due to dirt or rust
23	slow
24	High PPM value issues
25	Don't work great and need significant maintenance
26	UTC time not match to ows
27	mud water
28	Filter element should be good condition
29	air leakage problems
30	No
31	None
32	as a ship operator
33	dirty of filter equipment
34	lack of knowledge
35	N/A
36	oil emission in water
37	na
38	Maintenance

- liquid soap water sometimes mixed With bilge water. This is problem for  
 39 15 ppm equipment  
 40 common issue prevention sea pollution  
 41 15ppm equipment defects  
 Currently there's no clear, practical and efficient method of determining  
 whether regulations have been violated or not. At the most basic level, it  
 is noted that the absolute absence of any type of standardization of OWS  
 systems makes the initial investigation confusing, dirty, time consuming  
 and sometimes plain incorrect.  
 42  
 43 do not know  
 44 USE OF CHEMICALS IN BILGES  
 45 No issue  
 46 Cannot handle emulsiions. too smal a capacity, operational not simple  
 47 Flow Rate Issues  
 48 Not effective in removing mud / dust / rust  
 On yachts the system is cramped into a corner. To much oil in the bilge  
 water tank, plugs the system or coalesce filter.  
 49  
 50 I operated Motor yachts less than 50m so lack of use.  
 51 Trying to separate sludge from water vice oil from water  
 52 faulty 3 way valve  
 53 sensor failure, filter issues  
 54 does not process grey water  
 55 Solinoid change-over valves & 15ppm probes being dirty  
 In cold climate or rough weather, bilge holding tank gets completely  
 mixed up effecting OWS operation.  
 56  
 57 False alarms  
 dark & muddy water not able to pumped out which water not contain any  
 oil  
 58  
 1. Pertaining to 4250 TEUs, the effectiveness is negligible. 2. It cannot  
 filter fine mud and oil.  
 59  
 60 clogging of 1 st stage filters  
 61 faulty alarma  
 62 No issues as long as the equipment is operational  
 sooty or dirty water does not process effectively; bilge water can also be  
 contaminated by other things -- dirt, solvents, etc.  
 63  
 64 emulsions and solids create problems  
 65 No common issues.  
 66 discharge valve closing even with clean water, regular cleaning of fitters  
 Emulsified bilge water due to misuse/lack of knowledge on what  
 chemicals can / should be used onbaord  
 67  
 68 SENSOR FAILURE  
 69 turbidity, wrong temperature, high maintenance, ageing of floc chemicals  
 70 start up adjustment of equipment  
 71 Slow and time consuming.  
 72 In adequate heating and no presettlement facilities  
 73 Equipment doesn't know what is coffee or oily water.  
 74 Problematic OCM or lost OCM data.  
 75 INEFFECTIVE FILTER CANDLES  
 76 alarm failure  
 77 Never enough capacity  
 78 Bilge Holding tank to be in good order (not contained oil and dirts)  
 79 Less than clear warter does not necessarily contail oil.

- 80 Dirty bilge
- 81 Poor detection of oil
- 82 hard to get it overboard due to excessive backflushing
- 83 Lack of understanding
- 84 Inability to deal with contaminants, detergents, etc.
- 85 failure of operating valves
- 86 emulsions, turbidity of effluent
- 87 Poor training and equipment that is not adequate for the waste stream generated
- 88 A general understanding of bilge water management, rather than simple operation
- 89 Coalescing filter chokes up due to fine chippings or sand...
- 90 sensor issues
- 91 Treated bilge water that standing long time in Treated Bilge Holding Tank when filter beds (coaliscer) becomes dirty and the soots getting trouble to
- 92 15ppm OCM.
- 93 Filter cleaning is unpractical, and is never done properly.
- 94 Takes a fair amount of maintenance and cleaning.
- 95 Many alarms, easy to be dirty,
- 96 necessity of frequent cleaning and replacing filter elements
- 97 Lack of crew familiarization with equipment
- 98 clogged filters
- 99 Unit clogging
- 100 probe sensitivity to degreaser
- 101 remarks from the engineer
- 102 Plastic parts breaking.
- 103 Emulsions & dirty water
- 104 Going into bypass
- 105 clogging of the intake
- 106 Flush operation not conducted after use
- 107 constantly clogging filters
- 108 does not work
- 109 dont know
- 110 people are scared of them due to a lack of fully understanding how they actually work and experience.
- 111 The equipment is sometimes inadequate.  
can't handle soaps. more system issues than good output. low output seems too common in several systems. they are not overly user friendly.
- 112 many are intimidated by them
- 113 N/A
- 114 Older equipment mis-used or behind in maintance.
- 115 Inoperable from lack of use
- 116 Contamination with material not meant for the OWS
- 117 Dirty strainer.
- 118 its tempermental
- 119 Cost of chemicals/filters.
- 120 Human error is prevalent
- 121 process filter clogging up, due to debris left inside oily bilge water tank.
- 122 Ocm issues caused by something other than oil, i.e. Bacteria, air  
some models use more moving parts and require more hands on time than others. multiple process filter changes during a run or constant
- 123 flushing.

- 124 the filter screen clogs up a lot sometimes and having to change the filter often between operations.
- 125 Clogged strainers, low product flow output.
- 126 regulatory
- 127 doesn't separate water from oil
- 128 OCM not operating properly
- 129 N/A
- 130 sediment
- 131 trash in unit makes OWS ineffective
- 132 Smart cell issues
- 133 When testing there is no way to dump residue into oily water tank  
Losing suction. Introducing too much oil resulting in shutdown and cleaning.
- 134
- 135 Testing of the system while inport
- 136 certain soaps & detergents affecting the operation
- 137 Improper maintenance of the system.
- 138 2000 or 1000 sieves are always trouble shoot 50 percent of the time
- 139 It breaks  
They rarely work. Emulsifications aren't separated and it only leads to nonstop cleaning and 0% production from this plant. I believe they are a waste of time, money and space. Vessels should be required to retain waste onboard and pump it to a shoreside facility. Simply having a non-working OWS aboard is a reason many people that have been busted pumping overboard with magic pipes have stated as their reason. Take the OWS off the boat, change the regulations, and you may eliminate peoples urges to pump it overboard.
- 140
- 141 liquid mud
- 142 Muddy water / Rust in pipelines
- 143 contamination of oily water with chemicals, soot etc  
Filters get dirty very often. OCM get frequently broken or out of calibration.
- 144
- 145 At times malfunctioning of the PPM meter
- 146 Filters, Oil Content Meter.
- 147 Lack of training
- 148 Component failure.
- 149 Filter and capacity
- 150 They require constant baby sitting
- 151 They only work until they get dirty
- 152 Oil destroying the impellers and relay valves
- 153 excessive ppm faulty alarm  
Any contamination in tanks will foul OWS / corrosion in piping will trigger alarm
- 154
- 155 emulsified oil, dirt and debris, soaps
- 156 Equipment failure (PC card, control unit, display, sensor)
- 157 Dirt causing improper operation
- 158 There are not reliable equipments
- 159 N/A.  
Bacteria within the bilge tank and the clearness of water. If the color of the water is black OCM has problems even if there is no oil in the water.
- 160
- 161 False positive of OCM forces crew to perform maintenance on OWS and does not result in proper operation
- 162 Difficult to troubleshoot problems with OWS equip

## What suggestions do you have to improve OWS operations?

Number	Response Text
1	A system that can be used in port, confined & restricted waters.
2	Need to have better method/procedure - and, perhaps, hardware - to test OWS or run it within vessel (without discharging anything overboard or potential thereof).
3	proper segregation and preparation of BW
4	Create more weir piping systems, tall thin tanks for emulsions to settle and be drained off
5	Adjusting more filters
6	NIL
7	IMPROVED OWS UNITS MAY EFFECT POSITIVELY OWS OPERATIONS
8	clean bilge wells, reduce leaks
9	Ease of operation with foolproof devices to prevent dilution
10	INCREASE SPARE PARTS, FILTERS
11	ENGINEER TO BE TRAINED PROPERLY AND PROPER SPARE SHOULD BE KEPT ONBOARD AND EVEN FOLLOWED BY MAKER
12	More training by factory techs who know what they are talking about.
13	CREATE ANOTHER TANK FOR SETTLING/HEATING/EVAPORATION OF BILGE WATER PRIOR DELIVERY TO BHT.
14	pre treatment
15	Clean Bilge tank for condensations
16	Installation of bilge primary separation tank,
17	No point to buy an expensive OWS if you incorporate it into a shitty system without good abilities to settle the bilge water
18	Self cleaning of OCM and section of OWS
19	Keeping clean the Bilge tank
20	Better informed
21	same above
22	no
23	Filter changing interval must be increased
24	additional primary tank between BHT and OWS will be useful
25	Make IMO setup mandatory, IBTS
26	no
27	Before discharging oil must be heated
28	training
29	HIGH CAPACITY
30	Same above

- 31 auto start
- 32 no
- 33 inside cleaning operations and human interface must be simple and minimum part should contain
- 34 I haven't
- 35 quality of equipment
- 36 keep bilge clean
- 37 it might be effective as chemical prepreparation before OWS
- 38 bilge primary tank is very useful for keep clean bilge holding tank
- 39 Standardized and agreed procedures in regulation and violation determination.
- 40 Make the OWS equipment more user friendly. There should be no need to thoroughly read the Operating Manual just to be able to operate the system.
- 41 do not know
- 42 PRIMARY TANKS
- 43 Not to wait till the tank is about to full.
- 44 IBTS SYSTEM IS GOOD
- 45 bring a mixture of technology together.
- 46 Better opertaion with emulsified water
- 47 Better Training
- 48 The equipment should be easy to operate by vrew members
- 49 The oily bilge water tank should have a variable pick up pipe, that can be used to skim the oil off the top of the tank. Which can then be manually poured into the waste sludge oil tank.
- 50 Decant the tanks, manage the bilge
- 51 Bilge water tank constraction to be improved to make a water cleaner
- 52 training
- 53 user instructions in pictures and corresponding numbers on the equipment
- 54 better shore side facilites to reduce onboard treatment
- 55 Good maintenance, proper housekeeping
- 56 NO SUGGESTION
- 57 Should not complicate with fixing numerous pipes & valves
- 58 The OWS separators are barely able to run with even constant manning.
- 59 all crew should familiar
- 60 a printer to be insatalled along with ppm indicator in situ.
- 61 None
- 62 None
- 63 compulsory operational cerificate
- 64 Enhanced crew training
- 65 TRAINING AND AWARENESS
- 66 More training
- 67 The capacity
- 68 Stop the paperwork and rely on the discharge monitor
- 69 Better separation of oil from water
- 70 Betterhating input of incoming water

- 71 All discharging water treated such as BW Treatment & Sewage Treatment should be together. Standard Qualification for Water which can be discharge should be designated.
- 72 MAINTENANCE FREE UNTIL EACH IOPP RENEWAL SURVEY
- 73 To improve (make it simple) recording abilities (date, time, range of p.p.m.)
- 74 Use a centrifuge to separate oil from water as a pre-treatment.
- 75 Training and better technology.
- 76 less automation
- 77 None at this time.
- 78 fitting loggers which monitors operation of OWS
- 79 required technical training from each manufacturer to be on board each vessel and updated every 5 years
- 80 All operators to be training on good bilge water practices rather than just equipment operation.
- 81 Read the manual. Many don't
- 82 it should be simple and easy to operate
- 83 Good housekeeping and highly proper maintenance on the system.
- 84 Housekeeping of the system and doing a proper maintenance at all times.
- 85 less maintenance and cleaning jobs
- 86 IBTS system implemented on each single vessel
- 87 More fool proof systems. Less attempting ways to trick if needed.
- 88 Provide more hands-on training.
- 89 Bigger settling bilge holding tanks
- 90 secure technologies already implemented;
- 91 remember that it is not magic and can not process severely contaminated water.
- 92 Training
- 93 Same
- 94 more simple use and calibrations
- 95 N/A
- 96 Require a weir tank or other separator
- 97 Na
- 98 decant and boil off as much as possible
- 99 clean and maintain it properly
- 100 System developed to process oily bilge water to hold on board a vessel.
- 101 Get more involved training
- 102 careful segregation of bilge water.
- 103 Better piping arrangement
- 104 Make machines easier to operate and maintain.
- 105 more training
- 106 None
- 107 No, works good for me.
- 108 reduce if possible the oily water generation in the first place
- 109 Make on/off functional.

- 110 hot water cleaning cycles. Better ocm's
- 111 a better filtration system that would cut down on the continuous changing out of the filter.
- 112 keep the operation as simple and hands off for the operator as possible
- 113 More pre-filters for the oily water inlet side of the system to catch more debris.
- 114 less government intrusion, we care about the environment too, but we also care about the well being of our shipmates
- 115 get rid of them and use a filter system instead
- 116 Clean and properly train personnel on how to use the ows
- 117 N/A
- 118 have appropriate settling tanks
- 119 more formal training
- 120 none
- 121 Allow for a less than 15ppm holding tank for while a ship is in port for an extended period of time.
- 122 none at this time
- 123 More certified education regarding the units.
- 124 keep up with newer system updated
- 125 N/A
- 126 Get them off of the boats!
- 127 none
- 128 Flow rate thru the 15 ppm should be fixed flow
- 129 Simple testing so that crew members test often
- 130 Use a priming tank before bilge tank. Improve filtering efficiency.
- 131 Assume it is slower than the manual says
- 132 sustainable means to evaporate bilge water to be incorporated
  
- 133 continuous training
- 134 Simple and reliable.
- 135 large capacity
- 136 Make management liable for failures
- 137 All separators work better when clean and properly maintained.
- 138 SIMPLIFICATION OF TESTING AND DISCHARGE SYSTEMS. MORE FOOL PROOF. BETTER HMI.
- 139 multiple collecting tanks need to be tall and skinny / multiple weir stages
- 140 Improve crew training, i.e. onboard instruction, all aspects including data retrieval
- 141 N/A.
- 142 Lots and lots of public feedback in a central location to the shipping community
- 143 Make less labor intensive (especially re: paperwork, seals, etc.)
- 144 Better training in the operation and maintenance of the equipment; in the regulatory requirements associated with the recording of the operations

## What suggestions do you have to improve OWS technology?

Number	Response Text
1	Fully automated computerized system, with internal recording of bilge & waste water volumes (including black & gray water), daily reporting of same on board and to shore management. These reports also include an alarm log for the entire system, shore side technical assistance via internet, actually shows a payback in savings by minimizing shore side disposal.
2	ows should clean BW with desire effect from rust and mud
3	log current positions and start / stop times
4	All time with JOWA manufacture
5	no to much complicate to operate
6	Quality of sensors must be improve
7	NIL
8	Better oil detection methodology
9	EACH PASSAGE OF FILTERED WATER MAY BE CONTROLLED BY INDIVIDUAL OIL SENSOR
10	More interaction between factory techs and the real world operators.
11	ALWAYS HAVE 2 OCM IN PARALLEL.
12	equipping the vessel with higher capacity.
13	higher capacity.
14	Pre-filter (prior entering OWS)
15	Better informed
16	bilge holding tk must be separated from every other solid or liquid wastes
17	filtering equipments should have long lasting.
18	jowa
19	Made material with 316L not sus304
20	not my level
21	Change the test procedures
22	no
23	Not sure
24	it can easly deal with emulsions
25	searching

- 26 OIL CONTENT METER SENSING
- 27 If you are manage bilge effectively onboard these equipments are enough
- 28 easy maintenance and print out with ships positions, knots e.g
- 29 no
- 30 I haven't
- 31 quality of equipment
- 32 no any idea
- 33 sufficient technology
- 34 N/A
- 35 More robust and versatile OCMs
- 36 do not know
- 37 CYCLON TYPE
- 38 Second independent 15 ppm equipment would be very useful not to be obliged to a detector that has potential to fail due to sensitive equipment. A selector switch or similiar function could send the data recorder and during the port start controls we would have second optional equipment to show. The system includes one pump only, a second pump could be very useful.
- 39 Bilge eveaporations are good
- 40 FAr better test specification that are real to the condition sin bilges.
- 41 Nil
- 42 Additional Centrifigual Purfier
- 43 Use centrifuge technology
- 44 More sight gases, with LED lights behind. Touch screen controls, which animate the flow of water around the system.
- 45 Automatic sludge/rag layer removal from the OWHT along with particle removal prior to entry into the OWS. Incorporate VFD's with OWS controlled by first stage output.
- 46 The filters to be improved and life to be longer
- 47 easy design and operation
- 48 send it all ashore
- 49 Should be able to handle suspended fine particles (mud, soot)
- 50 Make it more efficient
- 51 NO SUGGESTION

- 52 Filtering materials not to be an expensive which should available freely. Volume to be increased to reduce operating time. back flushing procedures to be improved with applying / increasing amount of fresh water.
- 53 Fine filtrations to be made more effective
- 54 can improve pre treatment process
- 55 Position of ship should be talleyed automatically
- 56 None
- 57 better solids and emulsion handling
- 58 None
- 59 compulsory centrifugal OWS, better and compulsory arrangement for boil off water,
- 60 BETTER FILTERATION TECHNOLOGY AND TAMPERPROOF DESIGN ( SEALED UNIT IN ENCLOSURE )
- 61 Integrated discharge technology solutions including oil, grey, black, ballast
- 62 Insist on bilge holding tanks before the OWS. Stop making the units as small as possible and provide 'volume' for operations
- 63 No one should be able to trick the equipment
- 64 pumping methods
- 65 BETTER MAINTENANCE INTERVALS/COSTS
- 66 Design of filters to be improved to facilitate maintenance
- 67 Better settling tanks for seperation. Many vesels have only a double bottom bilge tank in which bilge water is agitated by vessel movement.
- 68 more effective on bilge treatment
- 69 Make them fail proof
- 70 mandfatory 5 ppm
- 71 None at this time.
- 72 inclusion of primary and secondary bilge water tanks
- 73 rated capacity must be greater by 50% than vessels projected waste stream
- 74 Have them focus on the core of the issues, rather than just filtering

- 75 Use a sentrafuge
- 76 prefilter emulsions with centrifuge
- 77 improve sensor reading data
- 78 Pipeworks and related system should be in Stainless Steel materials.
- 79 Pipeworks are stainless steel pipe.
- 80 Improve the Filter extraction for cleaning process. Especially for big size OWS.
- 81 to be simple to clean
- 82 Shall be user friendly
- 83 To be better at separating out the oil, and better OCM to differentiate dirty water (contamination of less than 15ppm) from oily water.
  
- 84 Improve filter cleaning systems
- 85 centrifugal techniques
- 86 Training training
- 87 Less required maintenance and crew intervention
  
- 88 less sensitive probes so people will operate them instead of bypassing them
  
- 89 N/A
- 90 Distinguish dirt from oil
- 91 Na
- 92 run on regular asis
- 93 See through fittings incorporated on the unit to see flow of oily water
- 94 none
- 95 none
- 96 2-stage processing.
- 97 simplify system.
- 98 More complex does not make it better. Possibly a 2 step process where the primary unit akes suction on the oily water tank and discharges to a holding tank. Secondary processer takes suction on that tank and processes it overboard.
  
- 99 Split filter system required for all vessels
  
- 100 less maintenance and a more simple layout
  
- 101 None
- 102 No, works good for me.
- 103 I think some type of clarifier would be more effective
  
- 104 Mandate membrane filtration as a component of an OWS process
- 105 Reduce cost of chemicals/filters.

- 106 An ocm that can differentiate between oil, air, soot, and bacteria
- 107 make the ows a little more user friendly
- 108 the coalescer method followed by clay/sand seems to be as effective as the spirolator method, but far simpler and less costly.
  
- 109 More pre-filters for the oily water inlet side of the system to catch more debris.
- 110 more study and technology
- 111 get rid of them and use a filter system instead
  
- 112 Heating the oily water before discharge. Using ones and the use of skimmer on primary tank this will lessen maintenance on ows and prolonged spare parts
  
- 113 Clean and properly train personnel on how to use the ows
  
- 114 N/A
- 115 Perform more studies that show effectiveness, require phosphorescence OCM
  
- 116 online training
- 117 none
- 118 None.
- 119 none at this time
- 120 None
- 121 more formal training.
- 122 N/A
- 123 They need to process emulsifications
- 124 none
- 125 Should be able to deal with muddy / discoloured water
  
- 126 simplify technology
- 127 Use centrifugal separators.
- 128 Increased prefiltration and sloshing reduction
  
- 129 make centrifugal OWS or some other latest technology mandatory
- 130 unsure
- 131 Simple and reliable.
- 132 less moving part/robust filtration system
  
- 133 Use actual bilge water in design and testing, not just pour some oil into some water
  
- 134 Continue developing centrifugal technology and work on it becoming affordable to more operators

- 135 BETTER FILTERATION / SEPERATION PROCESS.
- 136 Alfa Laval type purifiers should be used
- 137 Keep equipment & components robust & reliable
- 138 Other types of equip (centrifuge)
- 139 to separate water from sludge and oil from bilge water I reccomend Faro Maritime Technic's SDS Light and as bilge PreConditioner I reccomend CJC Blue Baleen 0A38/50
- 140 N/A.
- 141 Lots and lots of public feedback to manufacturers
- 142 Provide equipment manufacturers with the real time and real life environmental situation factors and range of conditions likely to be encountered