



Oily Bilge Water

Gernot Seebacher

Hermont Marine Inc



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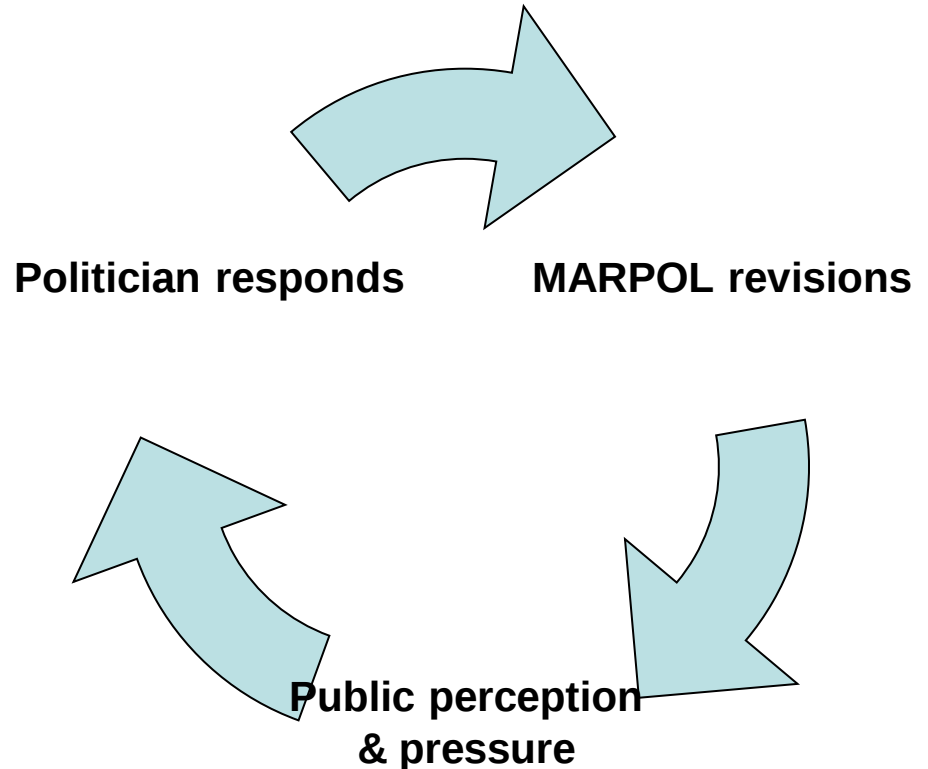
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- Enabling our client to meet his operational goals within tightening environment
 - Be an extension to the owner's engineering department
 - Provide environmental expertise
 - Provide sound technical solutions
 - Know regulations

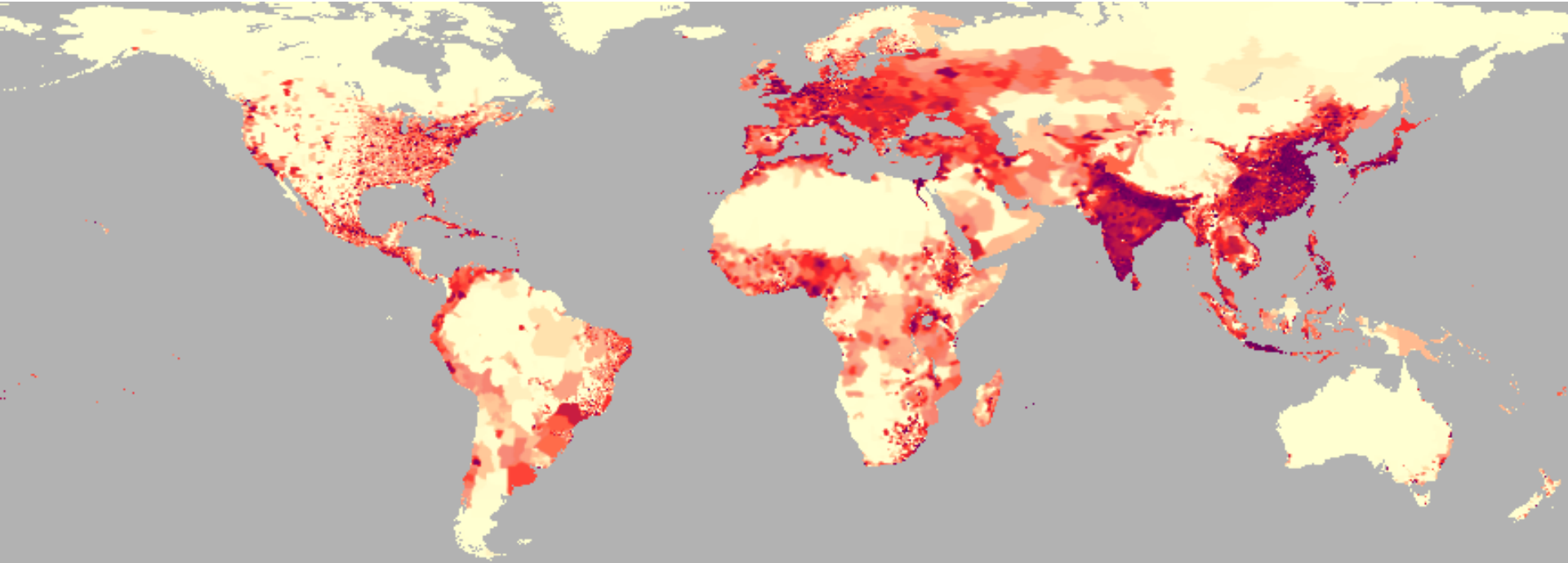


Sustainability

- Business license
 - Profitability
 - Shareholders
- Legal license
 - Regulations
 - Laws
- Social license
 - What public
 - Expects
 - Permits



Why the Pressure?



1900: 1.6 Billion

2004: 6.4 Billion

2030: 8 Billion

Earth's Atmosphere: 5.1×10^{18} kg (5.1 Mill. Bill. Tons) NASA

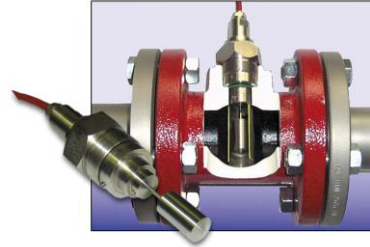


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Engine Efficiency

- Engine condition
 - ICON Research
 - Portable engine analyzer
 - Sophisticated software
 - Engineered for engineers
- Viscosity Control
 - VAF ViscoSense
- NOx monitoring
 - EZNOX-II
 - Annex VI compliant
 - Semi-portable
 - No moving parts
 - Simple installation



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Bilge Water

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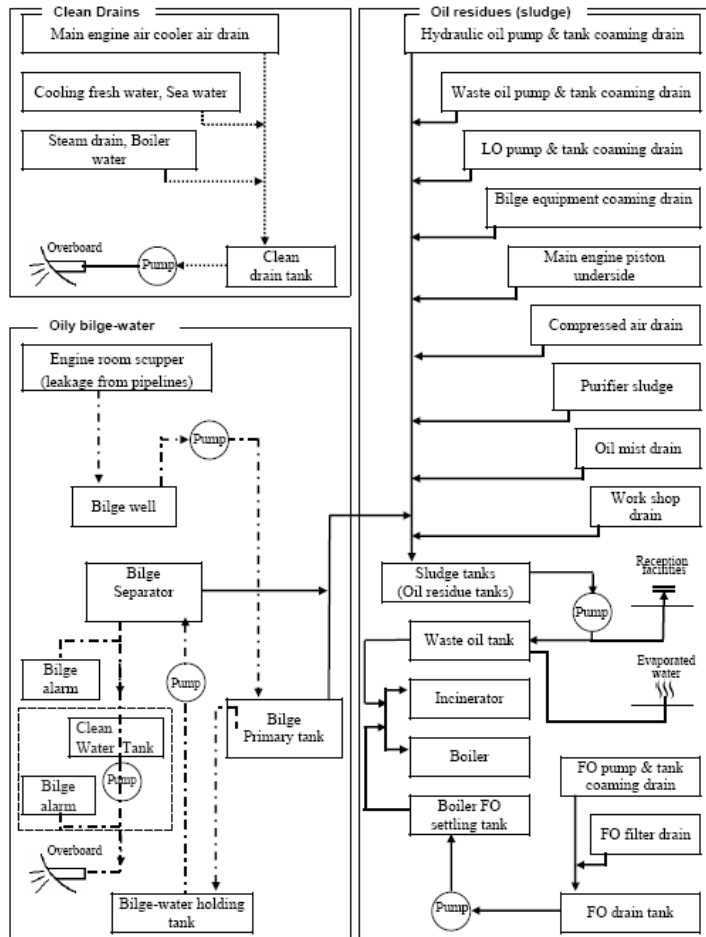


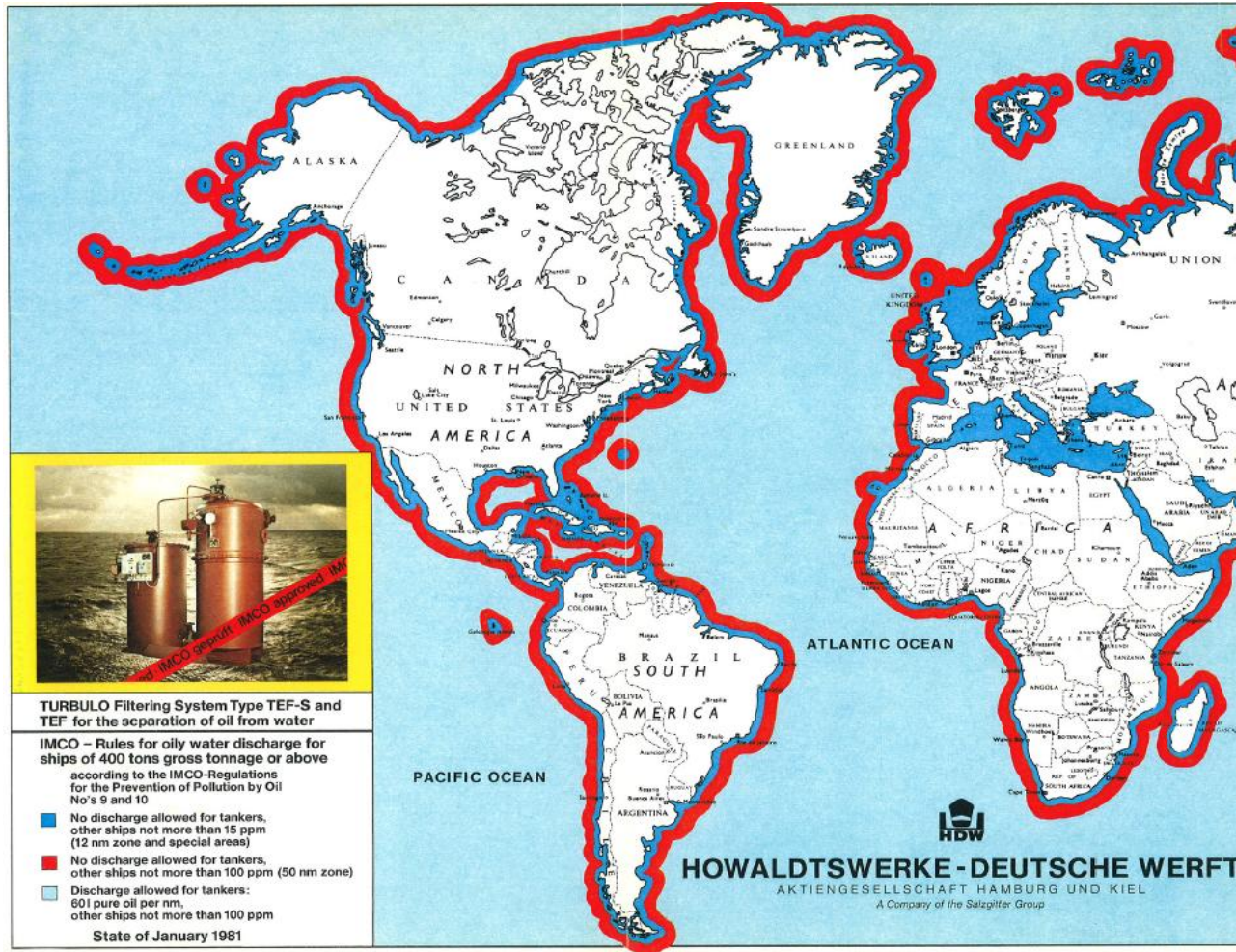
Figure 2 – Flow Diagram of Integrated Bilge Water Treatment System (IBTS)

- We supply
 - Bilge Separators
 - Bilge alarms
 - Skimmers
 - Effluent polishing
 - Solids filter
- We provide
 - Calibration services
 - Shipboard evaluation
 - Expert advice
 - Training
 - Info on regulations

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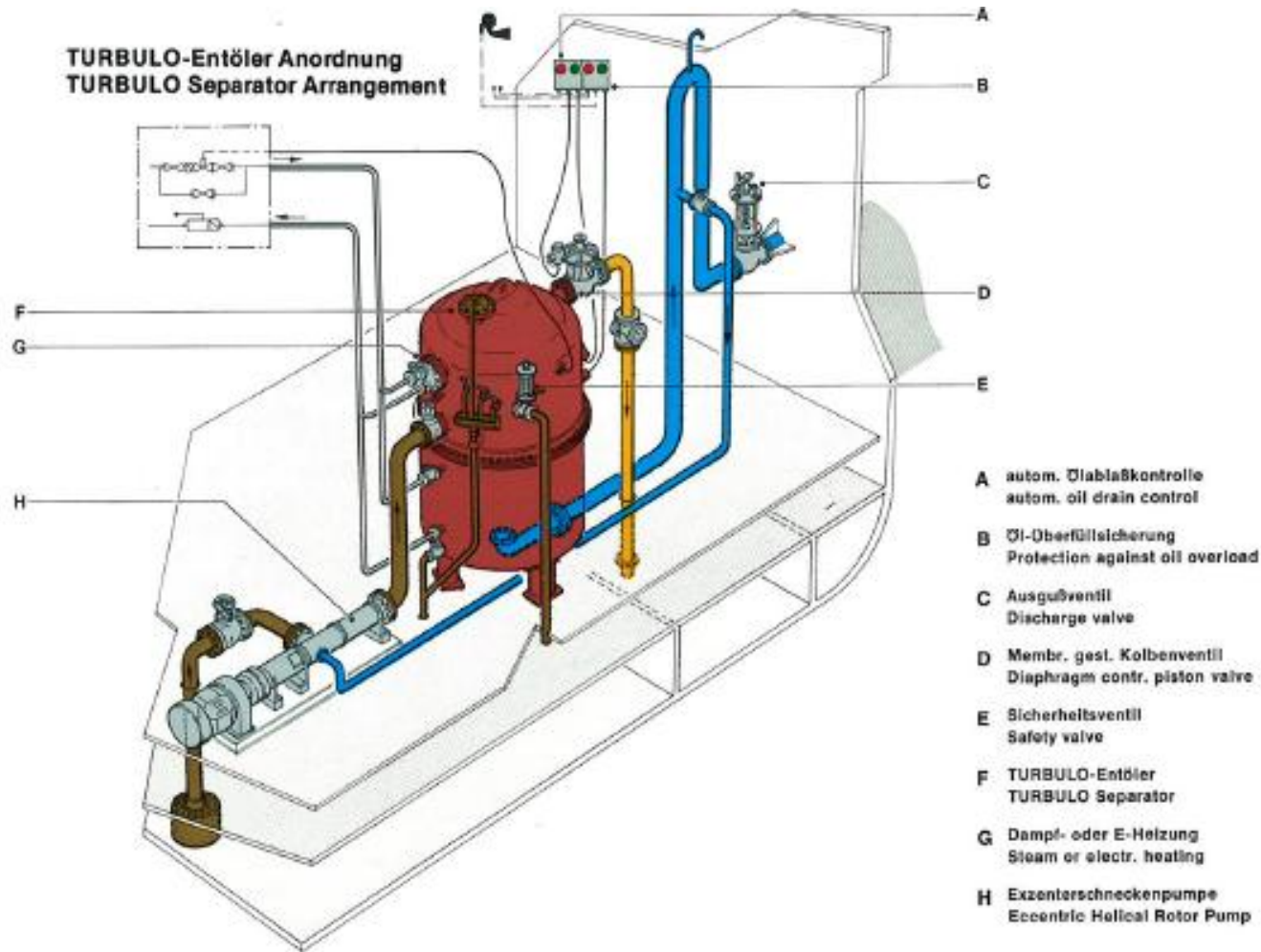
History



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Why the bilge water problem?



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2nd Problem

- **Fear of committing an illegal act**
 - Fear of causing a pollution incident
 - Lack of understanding
 - Lack of confidence in installation
- Veer Sharma's definition of FEAR:
 - F – FALSE
 - E – EVIDENCE
 - A – APPEARING
 - R - REAL



Making it Work

- Requires a paradigm shift in Co
 - Crew needs assurance that
 - Separation is possible
 - Equipment can do the job
 - They have tools to do the job
 - Office needs to cooperate
 - Providing cleaners that work
 - Providing parts
 - Providing training
 - Have consistent environmental policy



Hermont's Expertise

- We work with oil and bilge water since 1980
- We service shipboard installations
- We service domestic and international owners
- We calibrate oil content meters
- We assisted international owners with implementation of their ECP
- We work to 5ppm on the Great Lakes



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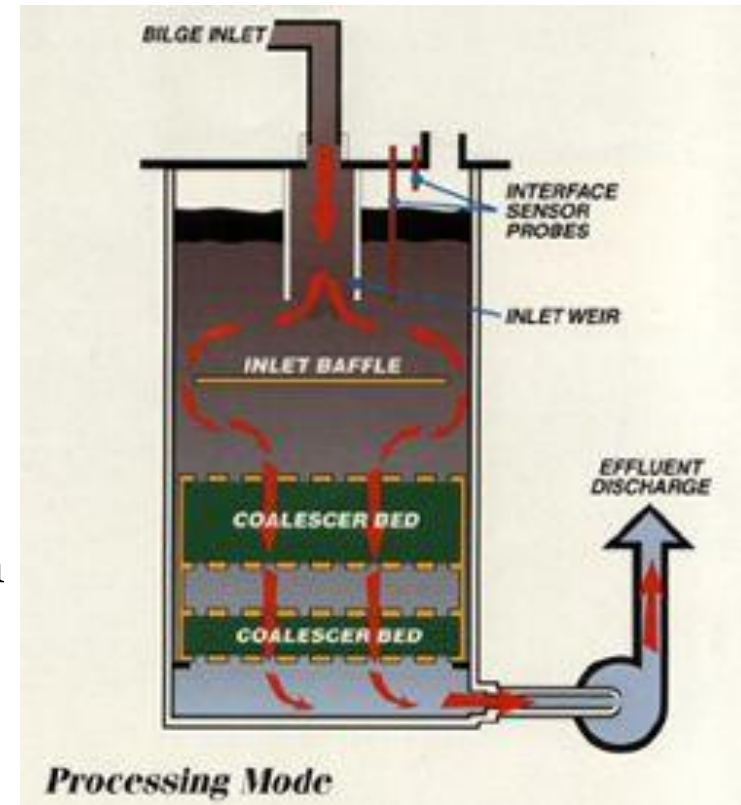
Shipboard Visits

- Discussion
 - With crew = Training
- Assessment
 - Documentation
 - Equipment
 - Process flow
 - Comfort level of crew
- Evaluation
- Recommendation



Getting over FEAR

- Increase knowledge
 - Training of crew
 - Office awareness
- Understand built-in safeguards
 - A functioning OWS will not cause an oil spill
 - A functioning OMD will stop the system in case of high ppm
- Know regulations
 - How they apply to effluent quality



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Oil Content Problem

STOKES LAW CALCULATIONS			
Oil Droplet Rise Time In water with spec. gravity of 1.0			
Droplet Diameter (microns)	Time for Oil to Rise 1 Foot in Water (hr:min:sec)		
	Sp. Gr. 0.8	Sp. Gr. 0.9	Sp. Gr. 0.95
150	0:02:04	0:04:08	0:08:17
90	0:05:45	0:11:30	0:23:01
60	0:12:57	0:25:53	0:51:47
20	1:56:31	3:53:02	7:46:07
10	7:46:04	15:32:07	31:04:13
1	776:45:30	1553:31:00	3107:00:00

- Droplet size and dispersion of influent
 - Separation
 - linear with gravity differential
 - Squared with droplet size
- Droplet size in outflow
 - Oil content cubed with droplet size



Doing it right

MEPC.1/Circ.511
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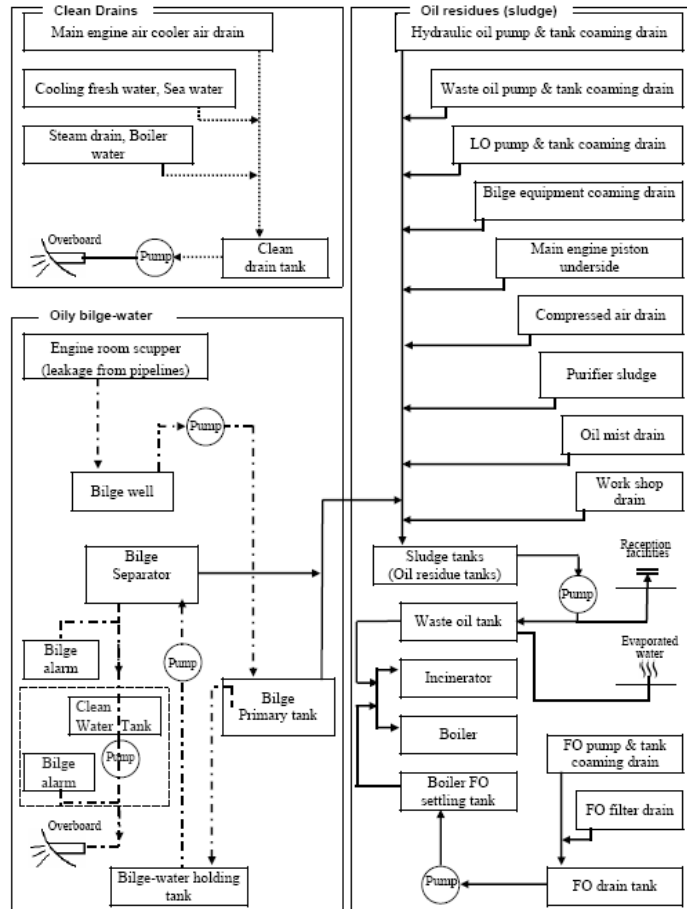
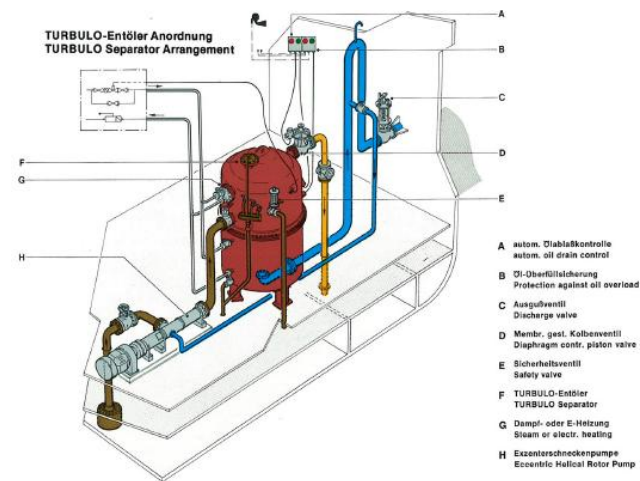


Figure 2 – Flow Diagram of Integrated Bilge Water Treatment System (IBTS)

- Bilge water management Plan
 - Cleaners
 - Best practices
 - Crew knowledge
 - Benchmarking
- IBTS
 - Reduces inflows
 - Avoid problem inflows
 - Segregate clean drains
 - Cascading process flow



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Managing Bilge Water

- Bilge Water Management Plan
 - Co's commitment
 - Means to measure performance
- Process with IBTS
 - Facilitate oily water separation
- Ideally a part of an Environmental Compliance Plan
 - Holistic approach



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Engine Room Bilge System with Cascade Tank
(A Conceptual Diagram)

Bilge Operation Guide Line

Drains

- All M.E. and Auxiliaries Fuel Oil Drains to be collected and pumped back to F.O. Sert Tank
- M.E. Saverge Drain to Waste Oil Tank
- M.E. Air Cooler Drain to Clean Bilge Tank
- Water drain from HFO/Oil tank to be directed to FO Sludge tank or Cascade tank or dirty / waste oil tank
- FO/Oil sludge tank to Waste oil tank no 1&2
- Air Compressor / Air Bottle drain to be directed to Waste Oil Tank
- Waste Oil Tank drain to be directed to Cascade Tank or Waste Oil Tank
- Incinerator drain to Waste Oil Tank
- Cascade Tank drain to Waste Oil Tank

Bilge Evaporation

- Only water to be transferred to WOT and heated 100 in 115 dg C and vapourised to atmosphere. Clean condensate in air vent be collected and returned to Clean Bilge Tank
- WOT Evaporation air pipe drains to Clean Bilge Tank

Cascade Tank

- Water from Cascade Tank to be directed to Clean Bilge Tank
- Water from Clean Bilge Tank or Bilge Wells can be recycled to Cascade Tank for further oil/water separation process
- Cascade temperature to be maintained at 60 °C

OWS

- OWS OCM/3 ways vlv to be confirmed in good order prior to operation
- Coalescer Filter and O/B discharge vlv to be checked to verified condition of OWS
- No cheat water to be used for OCM during OWS operation
- OWS operation must be done/supervised by C/E between 0800 / 2000 hours
- OWS water inlet less than 1,000 ppm
- OWS drain to Waste Oil Tank

Bilge Pump and Pms / GS Pumps

- Use of direct bilge suction is prohibited except in emergency situation
- Only E/R Bilge Pump to be used for discharging Bilges thru OWS/OCM under normal circumstance
- All direction bilge suction vlv are locked and sealed

Incinerator

- Incinerator to be fully utilized for sludge / water incineration
- Diethyl to be used in case of sludge contains subammable substances or high water content

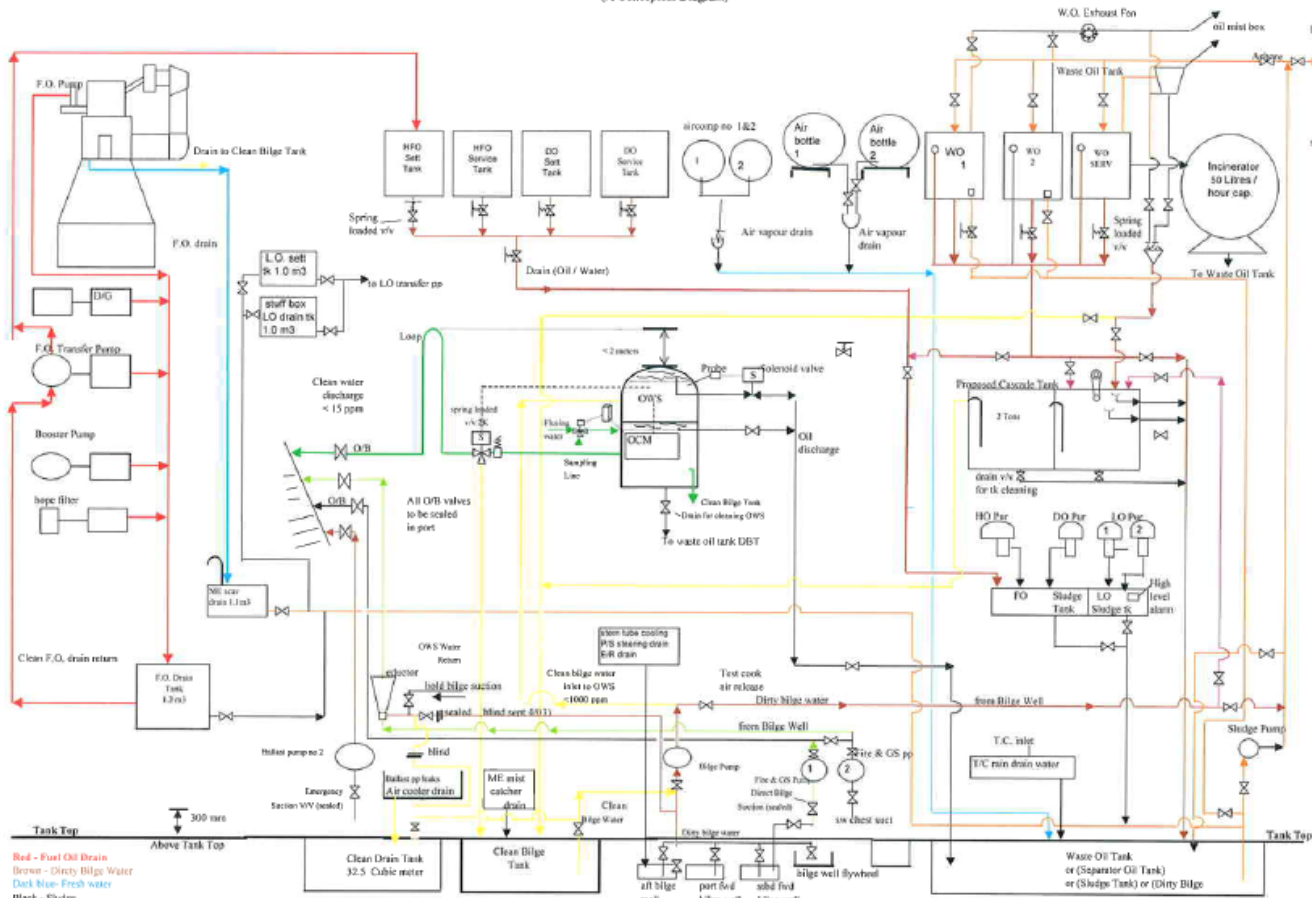
Chemical / Cleaning Detergents

- Avoid dumping large amount of chemical and emulsify cleaning detergent to E/R Bilges

ORB

- ORB must be recorded all actual figures of oil transfer with date / duration
- ORB must be recorded all actual figures on bilge / sludge discharges O/B or ashore
- ORB figures must be matched with Log Sounding and E.R. Log Books

Please Refer to Ship's Drawing and Manual for Operation Details



Bilge System Equipment Particulars

OWS	
Maker	Heishin Pump Works
Type	HMS-200
Capacity	2 tons / hour
OCM	
Maker	Fellow Kogyo Co., Ltd.
Model	Focas-1500C
Zero Meter	Not Fitted
Bilge Pump	
Maker	Ishii Machinery Works Co., Ltd
Capacity	2 tons / hour
Primary Tank	
Fitted	No
Maker	
Type	
Capacity	tons / hour
Cascade Tank	
Fitted	Yes
Capacity	3 tons
Incinerator	
Maker	Synforce Co., Ltd.
Model	OSV-606DA1
Capacity	0.05 tons / hour
Portable Drum	
Capacity	100 Liters x 5 pcs.
Sludge Pump	
Maker	Taiiko Kikai Industries Co., Ltd.
Capacity	3 tons/hour capacity
Exhaust Fan	
	Fitted 1 unit W.O. sett. tank ex

Legends

- D= Screen Down Valve
- Spring Load Valve
- Drain Trap
- Exhaust Fan
- 3-way Solenoid Valve
- Oil Skimmer

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Thank You!



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