

# Operational and Functional Experience with BWMS

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**When a ship owner purchases a treatment system what do they expect?**

- **Consistently perform and able to meet the discharge standard;**
- **Operate reliably;**
- **Easy supply of parts and technical support;**
- **Uninhibited operation of ships ballast operations.**

## What is the experience ?

Ship owners and operators don't necessarily share operational experience unless it is severe. IACS is aware of a few key operational challenges.

- Restrictions to “Normal” vessel operation;
- Maintenance challenges;
- Delays in obtaining parts, services;
- Installation, commissioning and training issues;

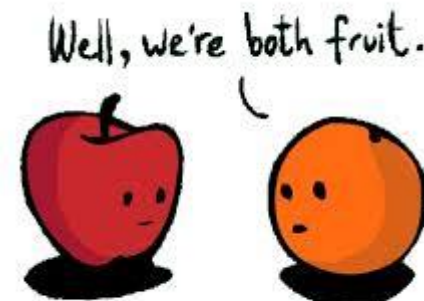


# Restrictions to “Normal” Vessel operations.

Ships crews/owners expect the installed BWMS to not change how ballasting occurs. This isn't always the case.

- Flow rate restrictions
  - Filters , maintain Differential Pressure
  - Ultraviolet transmittance (UVT)
  - System design limitations
- Gravity ballasting/ eductor
- Power consumption
- Salinity restrictions
  - Physical / Biological conditions

Selecting a BWMS matches the ship's need



This relatively new equipment install and ships crews are expected to maintain it.

- **Valves – automation, response time**
- **Control and purge air supply – air quality and consistency**
- **Hazardous Area – gas freeing**
- **Complex “unusual equipment”**
  - **Lamps – replacement, disposal**
  - **Total Residual Oxidants (TRO) monitor – reagent change, shelf life**
  - **UVT, ultraviolet intensity (UVI) sensors – cleaning, zeroing**
  - **Other components – gas generators, conditioning units**

# Delays in obtaining spare parts/services

Replacement parts are fundamental to good operation of the BWMS. However, it can be challenging to get them to the ship.

- **Hazardous parts & consumables – logistical challenges**
  - **TRO reagent**
  - **UV lamps**
- **Spare part availability – production on demand, customised parts**
- **System upgrades – New components, recommissioning?**
- **System Service - Availability of service engineers**

# Installation, commissioning and training

Often installation, commissioning and training is all conducted at the yard for newbuild and split up for retrofits

- **Quality of installation**
  - **Modular installation**
  - **Head space for servicing**
- **Software**
  - **Integration with ship control system**
  - **Software upgrades/ bugs**
- **Training**
  - **Rushed at installation**
  - **Perception 'systems use similar technology are identical in operation'**

# THANKS