SPECIAL CONSIDERATIONS FOR THE INSTALLATION OF BWTS IN HAZARDOUS AREAS

By:

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NETSCo is a full service Naval Architecture and Marine Engineering firm that provides complete ship, tug, and barge designs of all types; from concept through actual construction.

NETSCo is a leader in marine environmental solutions; such as ballast water treatment systems, exhaust gas scrubbers, and the use of alternative fuels, (LNG, CNG) among others.

NETSCo serves the marine industry with its distinctive competence in self-unloading bulk carriers – for both solid and liquid materials. If you need to upgrade or extend vessel life, comply with new regulations, convert from one bulk material to another, or repower to achieve greater efficiency, you will get a superior solution from our talented technical team.
A Proven Track Record

2001 – Netsco Commissioned by BP
  - To Design, Develop and Certify an Ozone BWTS
  - Patents Obtained
  - Tested to G8 & G9 requirements
  - Certified to IMO D2 Requirements
  - Installed on Prince William Sound

2008 – Technology licensed / sold – now Blue Ballast

2010 – Commissioned by Chevron
  - Feasibility Study
  - Integration Engineering
  - 3D Scanning, Drawing preparation and submittals
  - Installation on
    - Mississippi Voyager
    - Florida Voyager

2013 – Choice was Founded to focus on BWTS
  - Independent Analysis & Planning
  - Integration Engineering
  - Retrofit Installations from Survey to Signoff
Planning and Evaluation
Choice has Fleet Contract with RCCL – 43 Ships
- Planning for Compliance
- BWTS Technology selection
- Integration Engineering
- Compliance Assessment Program
Integration Engineering

- BALPURE® Ballast Water Treatment System
  - 14 AFRAMAX Tankers at STX Shipyard
  - 12 Product Tankers at HMD
- Hazardous Area Installation
- Arrangement Drawings
- Flow Analysis
- Risk Assessment
Agenda

1. Definition of Hazardous Area.

2. Challenges in managing installations of BWTS in hazardous areas.

3. Various Installation Configurations
   - Crude Tanker (pump room) Chlorine Based BWTS in Hazardous Deck.
   - Crude Tanker (pump room) Chlorine Based BWTS in non-haz area
   - Product Tanker (non-pump room) UV BWTS in Hazardous Deck.
   - Product Tanker (non-pump room) Chlorine Based BWTS in Hazardous Deck.
Hazardous areas are defined as areas in which a flammable or explosive gas and air mixtures is, or may normally be expected to be, present in quantities such as to require special precautions for the construction and use of electrical equipment and machinery.

**IEC 60092-502**
“Tanks and spaces separated from cargo tanks by a single deck or bulkhead may be contaminated by cargo oil or vapor due to possible impairment of the common boundary. These tanks and spaces are therefore, in principle, to be regarded as hazardous spaces. Piping serving or having an opening into these tanks or spaces is likewise to be regarded as contaminated”

ABS SVR 5C.1.7 -1.7.2 Spaces Adjacent to Cargo Tanks (2012)
CRUDE OIL TANKER WITH PUMP ROOM
BWTS ON HAZARDOUS DECK
TYPICAL DOSING SYSTEM
LOOP SEAL INSTALLATION
AS PER ABS BALLAST WATER TREATMENT GUIDE, 2014
REQUIREMENTS FOR DESIGNATING A BWTS SPACE INSTALLED WITHIN A ZONE 1 SPACE AS NON-HAZARDOUS

• No portions of the BWTS’s ballast water piping to be installed within the compartment.

• No sources of release (i.e., cargo piping with flanged connections, valves etc.) within the compartment.

• The compartment arrangements shall be provided with separation from the hazardous space by two gastight self-closing doors without hold back arrangements forming an air-lock capable of maintaining an overpressure.

• All ventilation inlets and outlets are routed such that they are located outside of the hazardous area.

• The relative overpressure or air flow is to be continuously monitored and so arranged that in the event of a ventilation failure (loss of relative overpressure or loss of air flow) an audible and visual alarm is given at a manned control station and the electrical supply of all equipment (not necessarily of the certified safe type) is to be automatically disconnected.

• The mechanical ventilation system is to have at least twenty (20) air changes an hour or as required by the BWMS manufacturer, whichever is greater, that will maintain the separate compartment under a positive pressure relative to the external hazardous area.
PRODUCT TANKER
U/V BWTS ON HAZARDOUS DECK