

JAN 2021

ISSUE
2

MBM CONSULTANCY

BWTS INSTALLATION SERVICE

COVERED TOPICS

- COMPLIANCE
- SOLUTION METHODOLOGY
- FEASIBILITY STUDIES



NAVAL ARCHITECTURE SERVICES

VESSEL CONVERSIONS & NAVAL ARCHITECTURE

MBM MOTO - FAIL TO PLAN, PLAN TO FAIL

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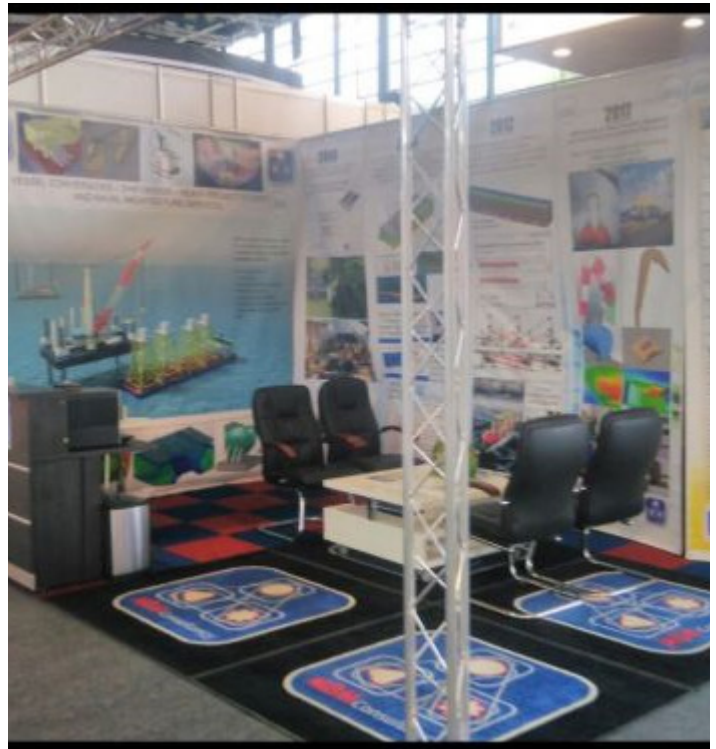
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RECENT SECTORS & ORDERS FULFILLED -

- HEAVY PROJECT SECTOR
- OFFSHORE SUBSTATIONS
- OFFSHORE JACKETS
- VESSEL CONVERSIONS
- ACCIDENT INVESTIGATIONS
- FEASIBILITY STUDIES
- RAMS APPROVALS
- MS CREATION
- LIFTING FRAMES
- GRILLAGES
- TUG CONVERSION / UPGRADES
- TECHNICAL TEAM CREATION



MBM CONSULTANCY REVIEW

MBM Consultancy was founded in 2010 in Germany to provide services with Naval Architects, Graphic Designers, Surveyors, Port Captains and Technical Authors. The skills from these professionals are there to assist the Heavy Cargo market, Offshore, Shipowners, Freight-forwarders, EPC, Lawyers, and other Maritime sectors. The projects undertaken from MBM Consultancy over the years have been varied and continue to be both challenging and rewarding for ourself and our client. MBM always plans its projects in advance to provide optimum solutions in designs to make each project a success.

BWTS INTRODUCTION

Ballast water is essential to control trim, list, draught, stability, or structural stress of the vessel. However, the physical ballast water may contain aquatic organisms or pathogens which, if introduced into the sea, estuaries, or into fresh water locations, may create bio-hazards to the environment, human health, property or resources. This introduction of “alien” species impair biological diversity or interfere with other legitimate uses of these areas.

OVERVIEW OF BWM CONVENTION REQUIREMENTS

The BWM convention. This was first adopted on 13 February 2004, and will enter into force on 08 September 2017. These new Rules nad Regulations for vessel operations shall apply to all existing & new ships of all types with the following characteristics:

“ The Official Ballast Water Management Convention upon entering into force, shall apply to ALL ships of 400 GRT and above. Each vessel will be required to have on board:

- *Ships specific approved Ballast Water Management Plan approved by the administration.*
- *Ballast water record book.*
- *Approved Ballast Water Treatment System. “*



IMPACT OF THE IMO BALLAST WATER MANAGEMENT CONVENTION

It is a known fact there will be a huge retrofit demand on tens of thousands of ships when the IMO Ballast Water Convention will come into effect. Around 40,000 to 50,000 ships will need to be retro-fitted to an approved Ballast Water Treatment System. The implementation of the BWM Convention will be a major challenge to the shipping world, including shipyards, equipment manufacturers and ship owners. To make this transition as effective as possible, it is recommended by Shipowner Associations to thier members not to delay in ensuring they comply with the new strict ballast water management controls coming into force.

This regulation has shown that trends in the shipping market will sustain this development and improve environmental friendly operations. Another example of regulations supporting sustainability is the Vessel General Permit.

GOING INTO DRY DOCK? CONSIDER THESE GREEN / BEST /COST EFFICTIVE SOLUTIONS.



Complying with the Ballast Water Management Convention

Stopping the spread of invasive aquatic species

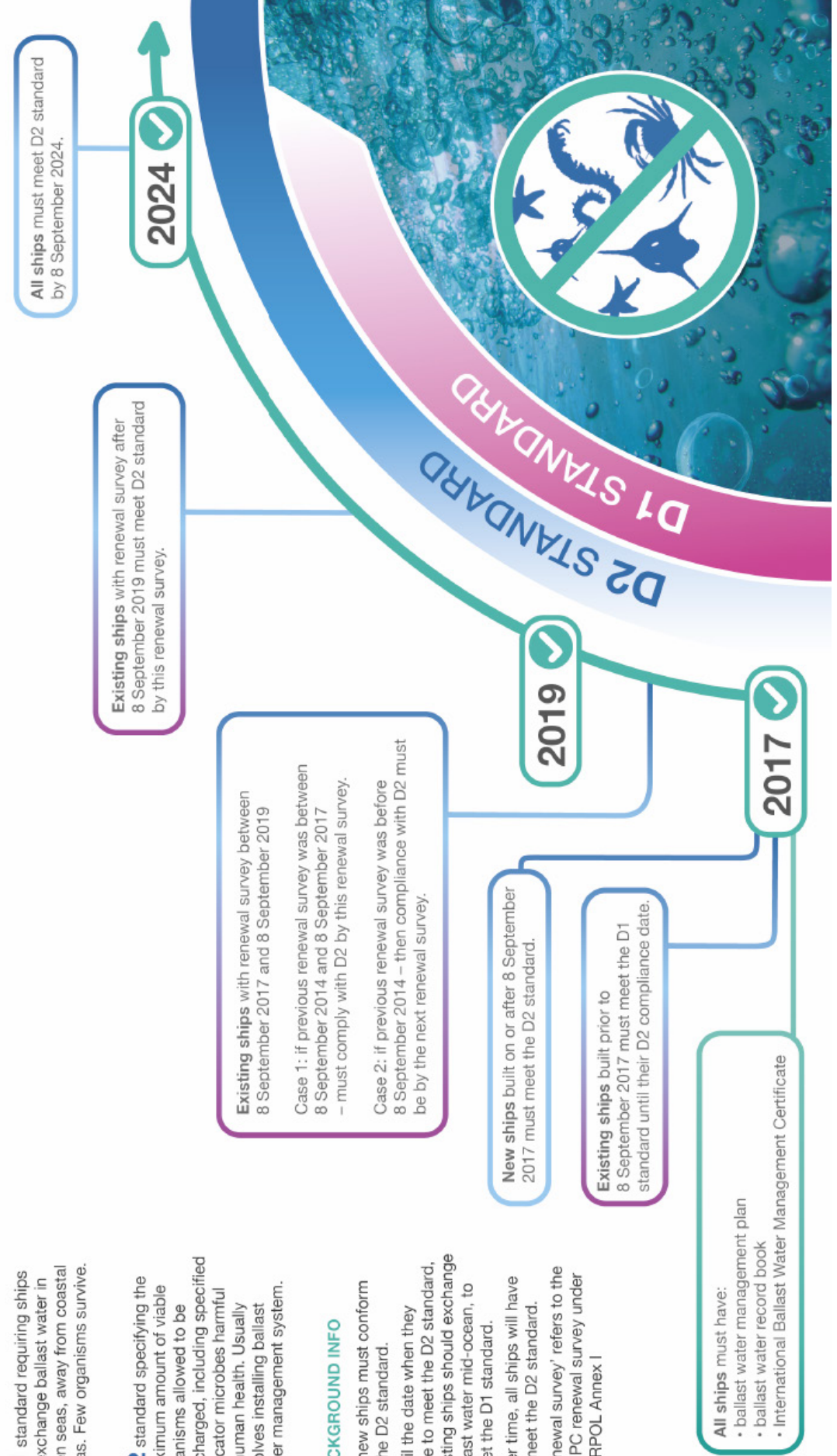


D1 standard requiring ships to exchange ballast water in open seas, away from coastal areas. Few organisms survive.

D2 standard specifying the maximum amount of viable organisms allowed to be discharged, including specified indicator microbes harmful to human health. Usually involves installing ballast water management system.

BACKGROUND INFO

- All new ships must conform to the D2 standard.
- Until the date when they have to meet the D2 standard, existing ships should exchange ballast water mid-ocean, to meet the D1 standard.
- Over time, all ships will have to meet the D2 standard.
- 'Renewal survey' refers to the IOPPC renewal survey under MARPOL Annex I



INSTALLING A BALLAST WATER TREATMENT SYSTEM

“Properly planning the installation of a ballast water treatment system is as important to ensuring compliance and a low total cost of ownership as the choice of the system itself. Choosing MBM who has extensive experience with retrofit projects can pave the way for a smooth and successful installation”

Installing a ballast water treatment system on an existing vessel is typically more complicated than on a newbuild. Ballast water treatment was not considered during the original construction of most vessels, and as a result, there is no dedicated space for the new system. This means that the installation needs to be adapted to existing circumstances on board.

High flexibility - thorough preparation and strong cooperation from owners are all necessary for a successful retrofit installation. Installing a ballast water treatment system affects many onboard systems, each of which has its own specific considerations. The typical dockyard timeframe for a retrofit is two weeks, and any delay means lost income for the vessel owner.

A retrofit is not simply the installation of new equipment, but the addition of a complete system that will demand a new way of managing ballast water. It therefore requires updates to the Ballast Water Record Book, as well as the Ballast Water Management Plan. Moreover, the implementation of new procedures will likely entail training for the crew.

INITIAL PHASE

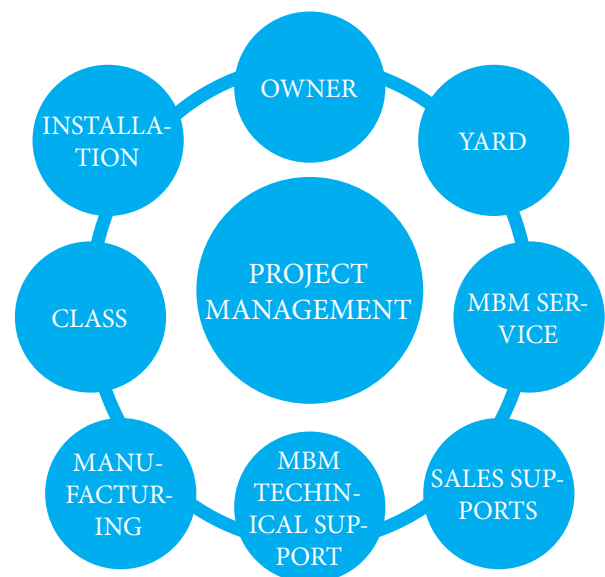
During the initial phase, MBM and Shipowner need to agree about the Scope of Work and the manner in which the project will be executed. MBM focusses on high level specification at this early point. Reducing the risk of rework later on in the project.

PRE-SURVEY AND VESSEL DOCUMENTATION REVIEW

MBM determine how and where to install a ballast water treatment system on the vessel. As well as the required characteristics of the system. This is performed in a feasibility study, conducted by MBM. This involves the collection and review of vessel documentation. As no single system offers a perfect fit for all vessel types, this review assists to establish the vessel's specific requirements. The documentation for this review includes:

- Information on ballasting operations, i.e. the number of pumps used and the frequency of ballasting and deballasting.
- Ballast pump specifications.
- General arrangement drawings.
- Piping and instrumentation diagram.
- Power consumption.

PROJECT MANAGEMENT



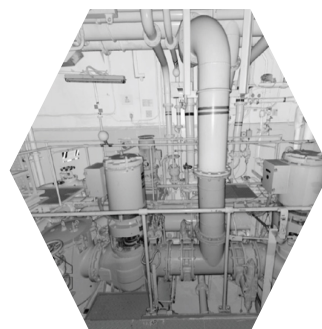
MBM SERVICES SURVEY

To prepare for installation, the supplier or the supplier's engineering partner conducts an onboard survey to identify the best possible location for the equipment and to gather information on ballasting operations. During the survey, it is important to determine if hatches are available for bringing system components on board. A report documenting the survey will provide a guide for the continued work. Typically, survey can be performed in the course of two working day without interrupting the vessel's normal course of operations.

ENGINE ROOM SURVEY



ENGINE ROOM SCAN



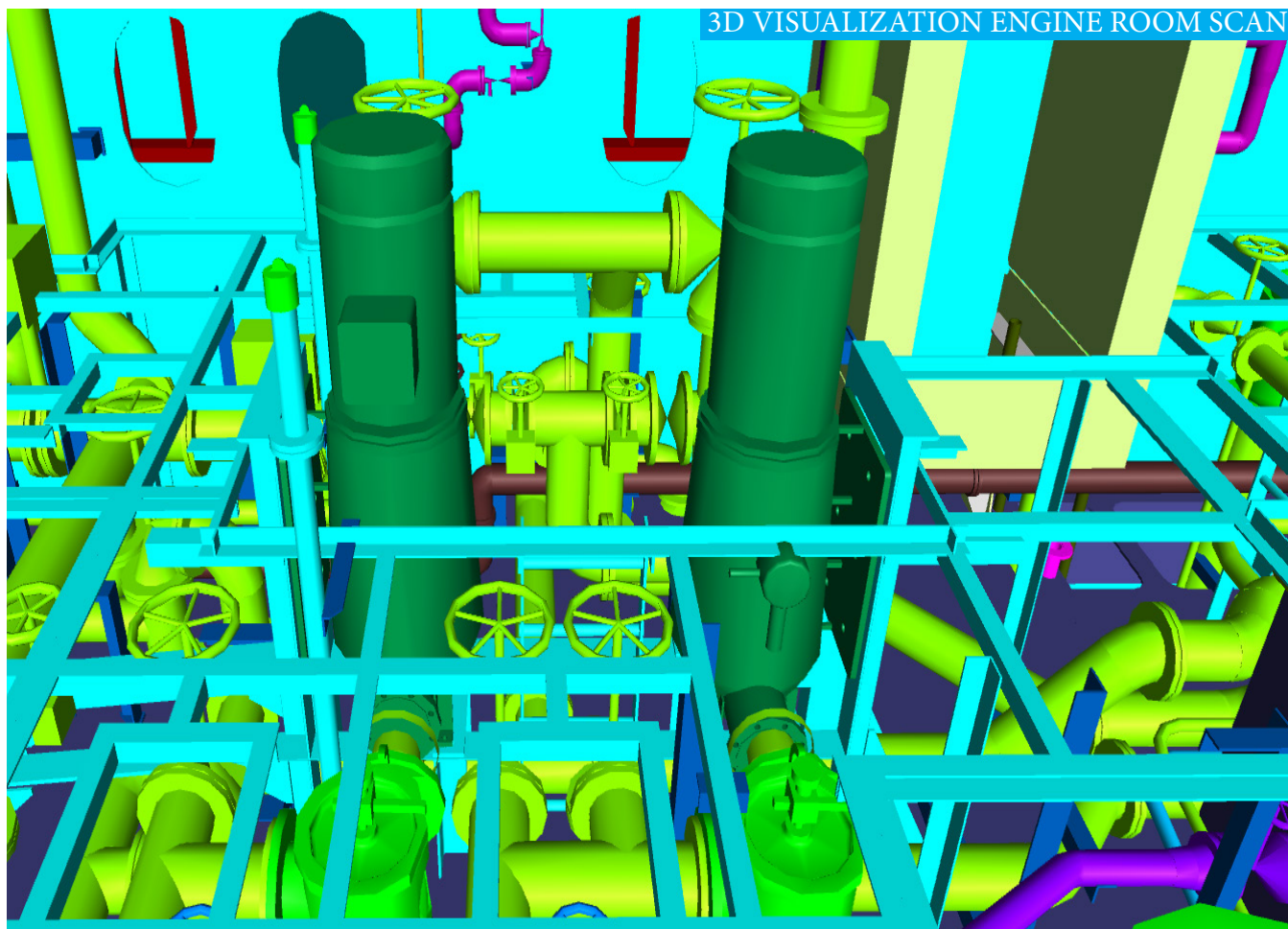
3D SCANNER



3D LASER SCANNING

In some instances, the supplier or engineering partner will combine the onboard survey with 3D scanning, which offers several benefits over measurements alone. The scanner will make a 3D picture of the environment that will serve as the location for the treatment system, offering a clearer idea of the end result. Typically, scanning can be performed in the course of three working day without interrupting the vessel's normal course of operations. If performed in one of the vessel's ports of call, the disturbance to operations will be minimal.

3D VISUALIZATION ENGINE ROOM SCAN



FEASIBILITY STUDY AND DETAIL DESIGN ENGINEERING

- After processing the information gathered in the 3D scan, it is possible to insert an image of the actual BWT system into the picture to gain an initial impression of a installed BWT system.
- This visualization offers an opportunity to evaluate the suggested installation and determine how the pipe routing, as well as the need for support structures of the components.
- This visualization prevents collisions between the proposed placement of the treatment system and existing equipment. This optimises installation to prevent complicated corrections later.
- In these ways, 3D visualization provides an excellent basis for discussion and planning. Additionally, the 3D visualization enables future works to be undertaken without conducting a new onboard survey.
- In the detailed engineering phase, MBM uses the information from the 3D scan to make the manufacturing drawings of all piping, supports and foundations necessary for a successful installation. MBM also selects suitable material for the piping and produces a complete bill of material. During this phase, it is necessary to update the specific vessel documentation that will be submitted and approved by the classification society.

“Feasibility studies are a large part of MBM’s workload in the industry to assist clients remain competitive and effective in current economic climate”

The deliverable engineering study file shall include:

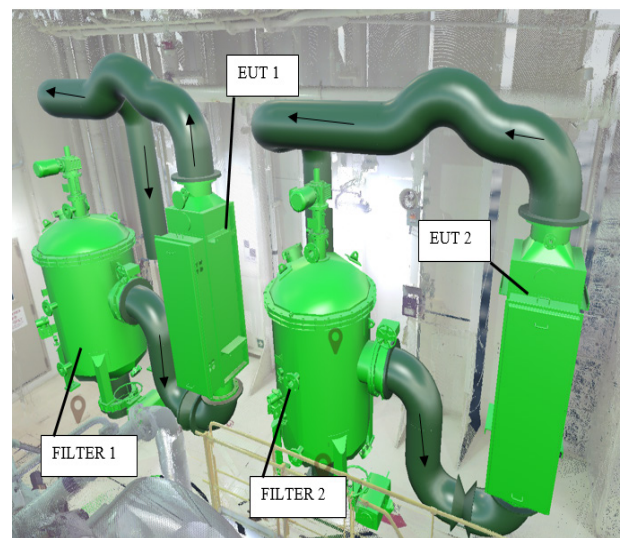
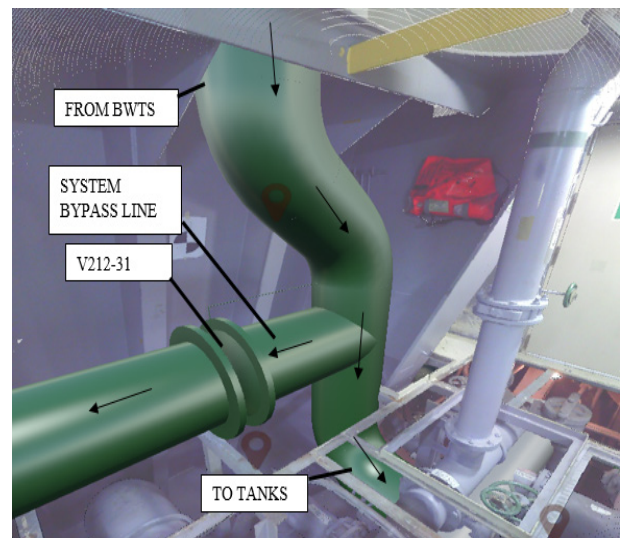
- Project Management.
- Pre-Survey report.
- Feasibility Study report.
- 3D model.
- Isometric piping drawings. (materials and parts list)
- Detailed piping sections/ spools.
- Review and Modifications of the affected as built structural, outfitting, diagrammatic piping
- Review and Modifications of the affected single line electrical drawings.
- New Trim and Stability booklet.(If installation of a BWTs will exceed 2% lightweight change)
- Class approved drawings.
- Technical specification of installation and related modification works.
- BWTs Operational Manual.of the installation process.

NOTE : Approval from the classification society requires the submission of all requested documentation prior to the start.

INSTALLATION SUPPORT

One experienced MBM Engineer will attend the modification works in order to survey them and to ensure that installation and various drawings are being followed by the shipyard and repair facility.

MBM is committed to work closely with the Classification Society, with absolute confidentiality and continuous communication of information.





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ALL PROJECTS IN THIS BROCHURE ARE AVAILABLE ON THE MBM WEBSITE, LINKEDIN, AND TWITTER.