



# PSA MARINE BUREAU

*Naval Architects*

*TECHNICAL CONSULTING SERVICES*

**Naval Architects, Marine & Mechanical Engineers, Ship Surveyors,  
Consulting Engineers, Repairs /New Building Specifications,  
Supervision & Management,  
NDT Surveys**



**SAFETY IS  
OUR MAIN  
PRIORITY**

# NON-DESTRUCTIVE TESTING

## 1. GENERAL INFORMATION

Ultrasonic welding inspection is based on the fact that high frequency sound waves out of the range of human hearing can propagate in different materials, and be reflected by internal interfaces and opposite wall surfaces. These waves are generated by piezoelectric transducers of different sizes and frequencies which transform electrical vibrations into mechanical vibrations and vice-versa. These transducers are selected to match the thickness, type, temperature, and configuration of the material to be tested. Signal reflections are evaluated on a computer screen, and by making reference to standard reflectors (normally flat bottom holes carefully machined on specimens of the same material) of given shape and size, the qualified inspector can conclude that if an echo is present where it should not be and if its reflection is larger than that of comparison, then there is an indication that must be evaluated.



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# NON-DESTRUCTIVE TESTING

## 2. ADVANTAGES OF THE METHOD

- No interruption of the operation of the inspected object needed.
- Permanent record of the inspection data.
- Suitable method for monitoring the propagation of discontinuities.
- The length, the depth and the height of the discontinuity are recorded in only one scan.
- Ideal for the detection of cracks on the interface between wall and internal cladding.
- No protection against radiation required, neither interruption of other peoples work.
- Continuous control of probe-surface contact through the back wall echo signals and the surface wave.

## 3. QUALIFICATION & OFFERS

- P.S.A. MARINE BUREAU is certified company by TUV NORD (the leader certification institute in the world) with the EN473 European Standards.
- Our staff is well trained in order to provide high standard services during ship's building and repairing.
- Our mission is to provide the owners all the appropriate information-defections (cracks, inclusions, incomplete fusion or penetration, lamination etc.) of the welding seams (plates, pipes or castings of all materials) using the latest technology equipment provided by GE Krautkramer.
- We provide our services worldwide.

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# ULTRASONIC THICKNESS MEASUREMENT & ROPE ACCESS METHOD

## Where is it used?

Rope Access techniques are generally used for visual examination and U.T.M. gauging of Cargo Holds, Ballast tanks etc. carried out during ballast voyage and/or drydocking.

## Is it Class- accepted?

IACS Class Societies do accept rope-access techniques on a case by case basis.

Method statements and Job risk analyses are made by a safety officer previous to the work being carried out.

- The rope access method is a very cost efficient way of accessing any type of remote areas, such as high rise structures, as well as other awkward spaces onboard.
- Proper training and safety guidelines are essential to successfully carry out a Rope Access job.
- Our expert team of qualified Rope Access Technicians can provide specialized services worldwide to the marine industry where limited access may present a serious problem.
- This effectively offers the owner a safe, cost-effective option as a convenient proven alternative to erecting staging or using cumbersome skyjacks/cherry – pickers, etc.

**NO CHERRY-PICKERS / NO STAGING REQUIRED! - SAVE  
TIME! SAVE MONEY!**



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### Our Services

Ultrasonic Hull Thickness  
Measurements (U.T.M.)

Owner's Condition Survey  
(Close-up Examination prior to  
Class Special Survey and Dry-  
docking)

Preliminary Steel Renewal  
Assessment & Gauging Survey  
Special Survey for Classification  
Society (U.T.M.)

Photographic and CCTV  
Surveys

Non-Destructive Testing.

# ULTRASONIC THICKNESS MEASUREMENT & ROPE ACCESS METHOD

## MAIN ADVANTAGES OF THE METHOD/TECHNIQUE

- Substantial proportions of project costs often relate to access, and this technique can often offer savings when compared to alternative forms of access.
- Access systems can be set up and dismantled quickly, maximizing production within project constraints
- Speed and flexibility of the system reduces high mobilization costs prior to the start of an inspection
- Rope access systems maintain the visual integrity of the structure during field operations, and most equipment can be removed at the end of each working period, reducing the security risk



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# ULTRASONIC THICKNESS MEASSUREMENT & ROPE ACCESS METHOD

## Quality Assurance & Safety

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Our Rope Access Technicians operate & conform to a clearly defined quality system. All safety & climbing equipment is approved in line with IRATA guidelines and EU legislation; inspected daily before use; and complies with international safety standards.

Furthermore, our Rope Access personnel is trained & certified not only as climbers but also as Level II UTM- operators.



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# Technical Consulting Services

## New Buildings

- Preliminary Appraisal of Specification Work
- Plan Approval on Behalf of Owners
- Initial design for passenger vessels & mega yachts

## Vessel Conversions

- Takers Conversion form MARPOL ANNEX I to MARPOL ANNEX II
- Conversion from Tanker To Bulk Carrier or Bulk Carrier to Tanker
- Conversion and remodeling of passenger vessels & mega yachts





1. Operational Manuals
2. Intact Stability Booklets & Loading Manuals
3. Damage Stability Booklets
4. Development of Loading Instrument Software
5. Cargo Securing Manual
6. PCSOPEP
7. SOPEP
8. SMPEP
9. SEEMP (Ship Energy Efficiency Management Plan)
10. STS MANUAL (Ship To Ship Transfer Manual)
11. P&A Manual (Procedures And Arrangements)
11. ROB Manual (Retain Of Oil On Board Manual)
12. ODME Manual (Oil Discharge Monitoring Equipment)
13. COW Manual (Crude Oil Washing)
14. VECS Manual (Vapour Emission Control System)
15. VOC Manual (Volatile Organic Compounds Management Plan)
16. ETB (Emergency Towing Booklet)
17. Ballast Water Management Plan
18. Garbage Management Manual
19. Bilge Water Management Plan
20. Sewage Management Plan
21. Refrigerating Management Plan
22. Fuel Oil Management Plan
23. Ship Security Assessment
24. SOLAS Training Manuals (Fire & Life Saving)
25. Company and Vessel ISM Manuals
26. Follow-up of ISM implementation for and on behalf of the Ship owners
27. Biofouling Management Plans (BFMP)
28. Loading/Unloading Sequence Manuals (LUS)

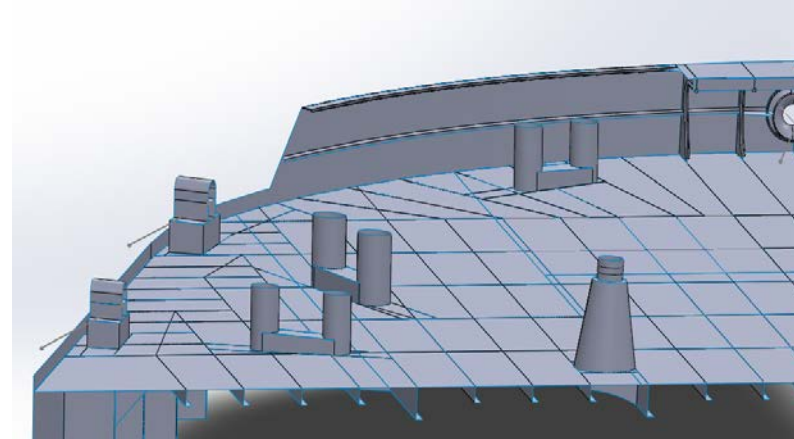


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**Drawings Reproduction**

**Panama canal new locks  
mooring arrangements**

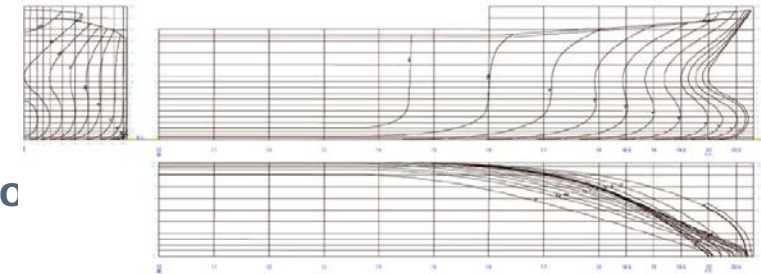


**Draught Surveys /  
Inclining tests**

**Mooring system  
management plans  
(MSMP)**

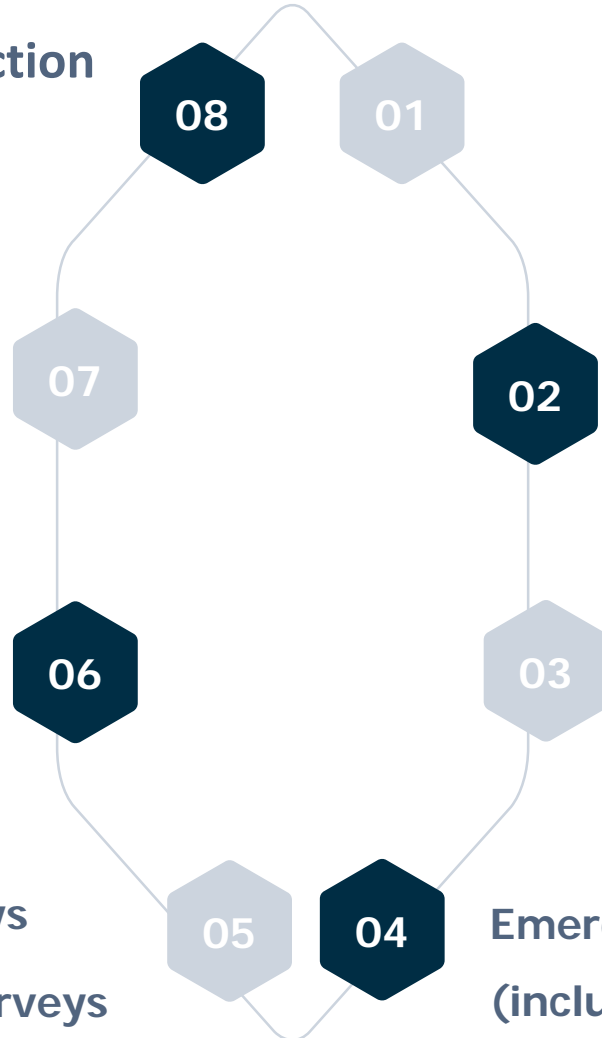
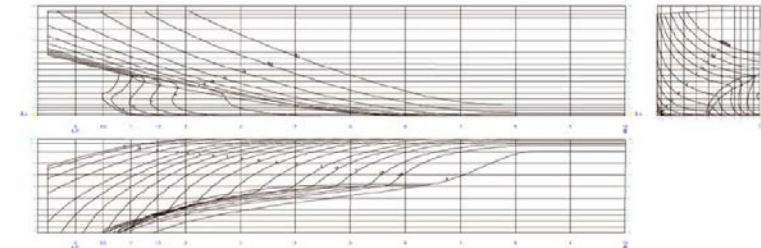
**Bunker and Cargo  
Surveys**

**Greek tonnage  
measurement for taxatic  
purposes**



**Condition Surveys  
Pre-purchase Surveys  
Damage Surveys**

**Emergency response services  
(including potential salvage  
operations)**





# BWTS & EGCS RETROFIT STUDIES

**>600**

Engineering  
Studies

**>500**

Onboard  
Installations

**>700**

3D Scannings

## Methodology of a New BWTS Retrofit installation Project

- A BWTS retrofit includes various phases i.e. evaluating solutions and the selection of suitable system, design, installation, including prefabrication and commissioning.
- Design includes system integration design and installation or detailed design.
- The result of the feasibility study, the first phase of a BWTS retrofit, provides a shortlist for the best alternatives for each vessel
- The selection for the shortlist is based on several technical and economic criteria. Different systems, methods and vendors are compared
- the footprint of the required equipment and operational aspects such as water quality, total ballast volume and ballasting cycles per year are also considered
- 3D scanning is performed using state-of-the-art scanners and 3D models of different systems are modelled into a point cloud



System's verification and  
commissioning

3D Laser Scanning/Vessel  
survey

Installation period

Feasibility study  
report

Pre-fabrication

Detail Engineering  
design

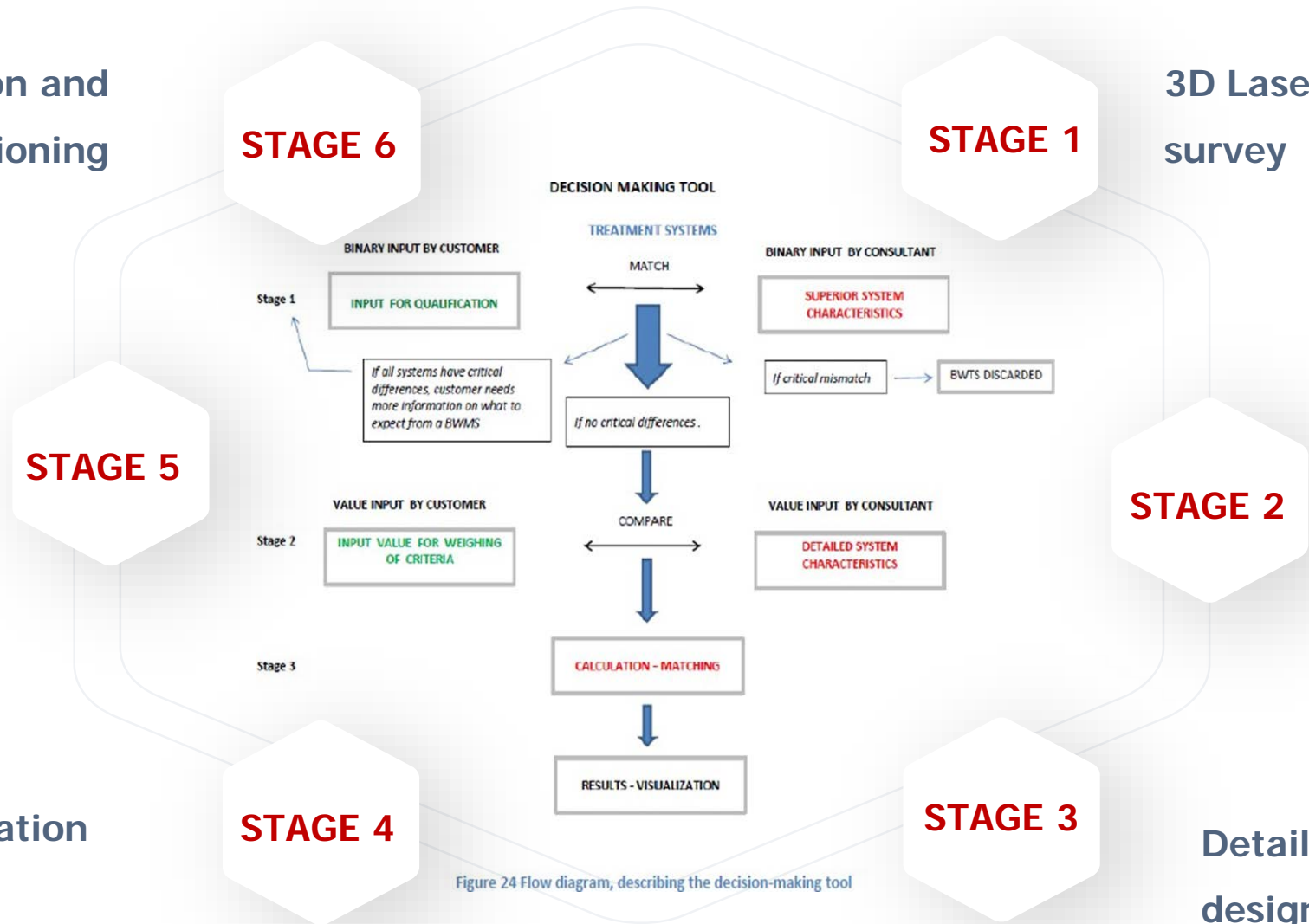


Figure 24 Flow diagram, describing the decision-making tool



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## **STAGE 1: 3D Laser Scanning/Vessel survey**

One team of our experienced technicians have to attend the vessel in the first convenient port in order to perform a vessel's survey.

During this survey, they will make a 3d scan of the most important compartments of the vessel that will be used for the design.

Using this technology, our company will be able to design in 3d and arrange the components in the 3d point cloud.



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DECISION MAKING TOOL

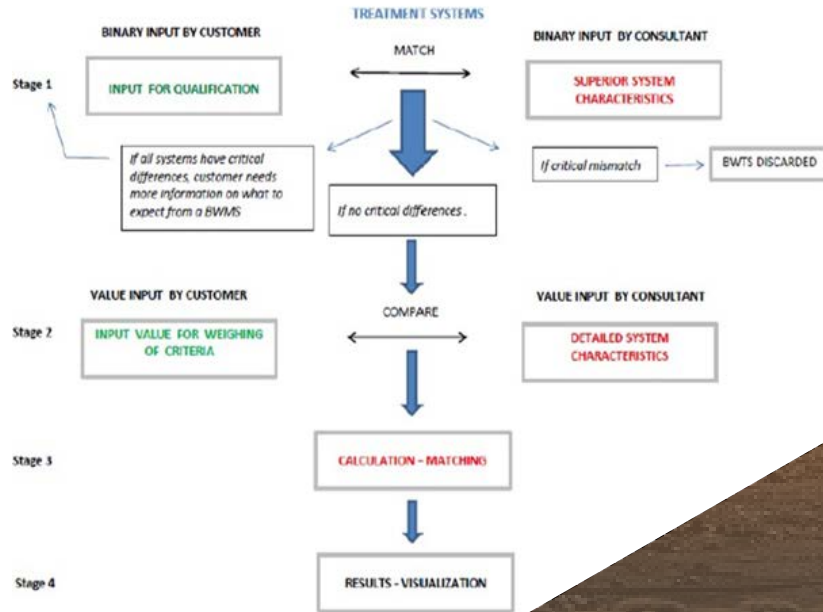


Figure 24 Flowchart

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## Stage 2: Feasibility study report



Main considerations / criteria for conducting the feasibility study are as follows:

If the available space is sufficient for the installation of the components

Different installation scenarios per maker

If the total dynamic head of the pump is enough to carry out the system

Electric load analysis for each system and comparison table

CAPEX analysis and comparison performance

OPEX analysis and comparison performance

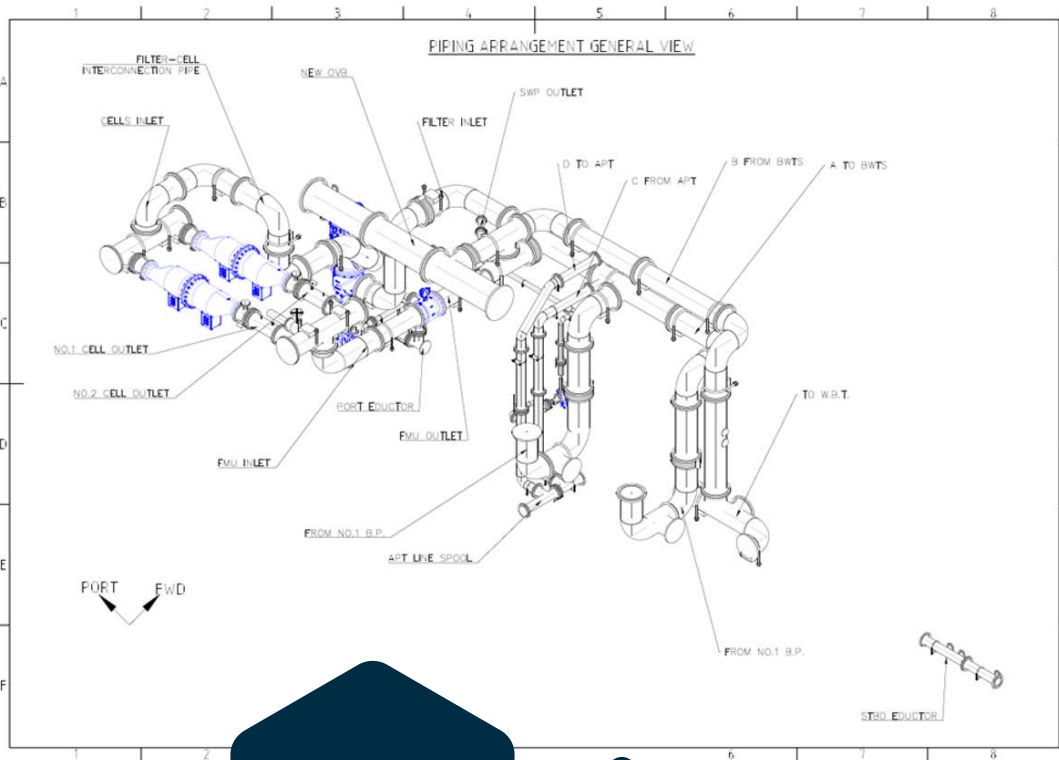


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## STAGE 3: Detail Engineering design



After the final decision of the owner regarding the treatment technology and the system that will be installed on his vessel, P. S.A. MARINE BUREAU has to finalize the study.

A variety of drawings have to be designed and submitted to the classification society of the vessel for approval

Upon class approval reception, owner may send the drawings to various shipyards in order to receive the most competitive offers.

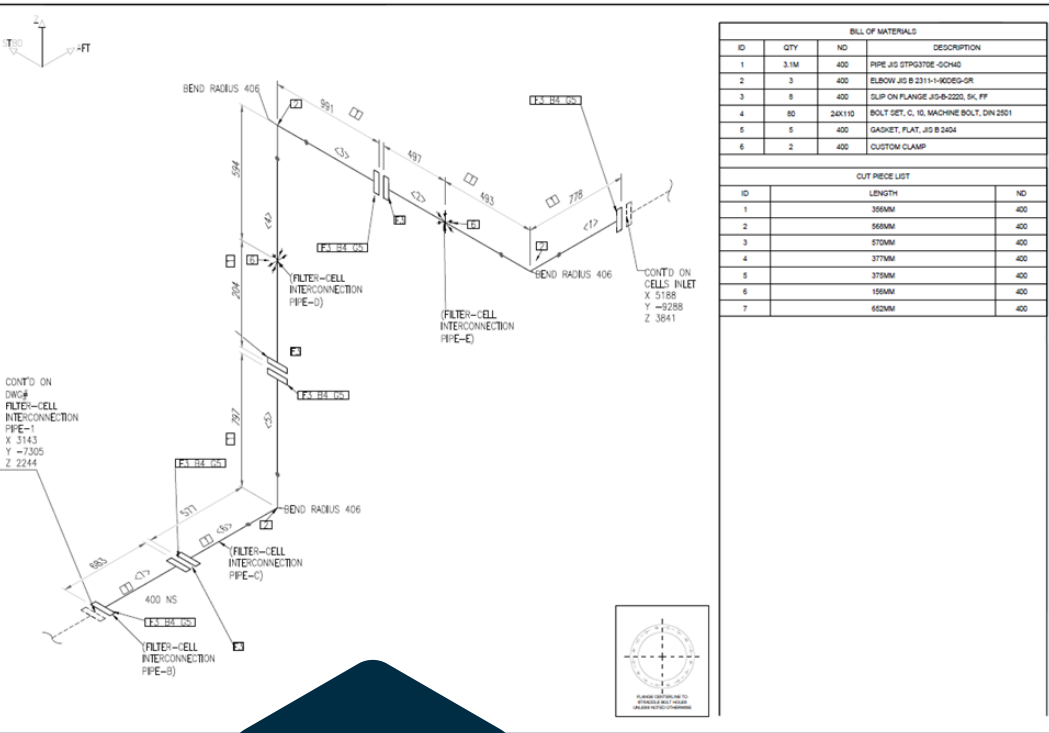
One of the most important aspects in an engineering study, is the isometric drawings of the pipelines together with the Bill of Material that the shipyard will need for the installation.

Part of the engineering study is also the electrical design aspects of the installation such as the power consumption, required cables and breakers for the installation, short circuit calculations...

Finally, a technical specification report has to be created which need to describe all the jobs that have to be made on board for a smooth installation.



## STAGE 4: Pre-fabrication



After the engineering design finalization and since all the piping materials have been determined, the shipyard has to pre-fabricate all the system-related components, before the vessel goes to dry dock in order to save time. All the structural components, piping work and electrical parts have to be constructed and transferred into vessel together with the BWTS components in order for the assembly to take place. At this stage of the project, it is very important for the drawings to have a great accuracy and the pre-fabricated part to be constructed according to the drawing. The accuracy has to be at 1-3 millimeters.



## Stage 5: Installation period

## Stage 6: System's verification and commissioning

There are two options and places where a BWTS may be installed. The first one is when the installation takes place in a shipyard (dry dock); the second one is during sailing.

During sailing installation presupposes a perfect organization of the materials; however, during sailing installation may demand up to 6 weeks of working time.

On the other side, installation on shipyard may demand from one up to three weeks depending on the familiarization of the shipyard.



# INVENTORY OF HAZARDOUS MATERIALS

Creating an Inventory of Hazardous Material (IHM) is one of the crucial practices that gives to the maritime industry a safe and sustainable key for an environmental management of hazardous materials (HazMats).

Every ship above 500 GT, except from navy & domestic ships, should comply with the following regulations:

Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC), 2009

EU Ship Recycling regulations (SRR), 2013

## What is an IHM?

Inventory of Hazardous Material (IHM) is a **mandatory document** for EU Ship Recycling Regulation. The IHM identifies all potentially hazardous materials onboard. These Hazardous Materials are distinguished, located and quantified, following IMO guidelines.

The EU Ship Recycling Regulation enters into force to reinforce Hong Kong Convention, which was adopted in 2009, so that Inventory of Hazardous Material (IHM) substitute the Green Passport.

## Why do you need an IHM?

- EU/EEA flagged new\* ships shall have a verified IHM with a statement of compliance (SoC) since 31 December 2018.
- EU/EEA flagged ships going for recycling shall have a verified IHM with a statement of compliance (SoC) since 31 December 2018 and shall be sent to one of the Ship Recycling Facilities (SRFs) in the EU List
- All EU/EEA flagged ships and third part ships visiting EU/EEA ports and anchorages should have a verified IHM with a statement of compliance (SoC) from 31 December 2020.

\* new ship" means ships; building contract is signed on or after 2018-12-31, or in the absence of building contract, if keel is laid on or after 2019-06-01, or delivery date is after 2021-06-01



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## What do we offer?

PSA Marine Bureau consists of well-educated, well-trained Naval Architects & Mechanical Engineers, certified as Approved Hazmat Experts by RINA, ready 24/7 to supply IHM services, concerning proper submission of IHM Part I & assistance in a consulting way.

Our company is a service supplier, approved by BV & KR and authorized by the Administrations of LIBERIA for IHM preparation, in accordance with the guidelines of MEPC.269(68), the EU SRR regulation 1257/2013 on ship recycling and EMSA Guidelines.

IHM, Part I consist of:

- Collecting the necessary information and documentation
- Analyzing and defining the assessment scope
- Preparing Visual Sampling Check Plans
- Conducting on-board sampling
- Preparing & Submission of IHM part I
- 

However, as IHM is “dynamic” document, any change on board must be identified and assessed. That’s why maintaining and updating of IHM requires constant monitoring and active supervision.

### CONTACT DETAILS

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*THANK YOU FOR YOUR PATIENCE*

THE BEST PROJECT IS THE NEXT PROJECT