

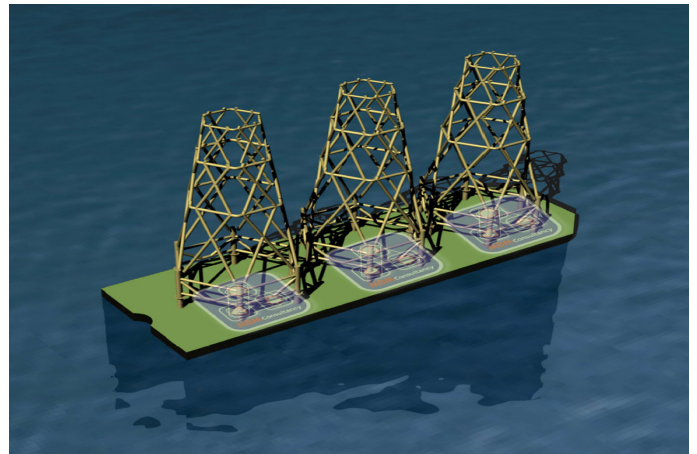
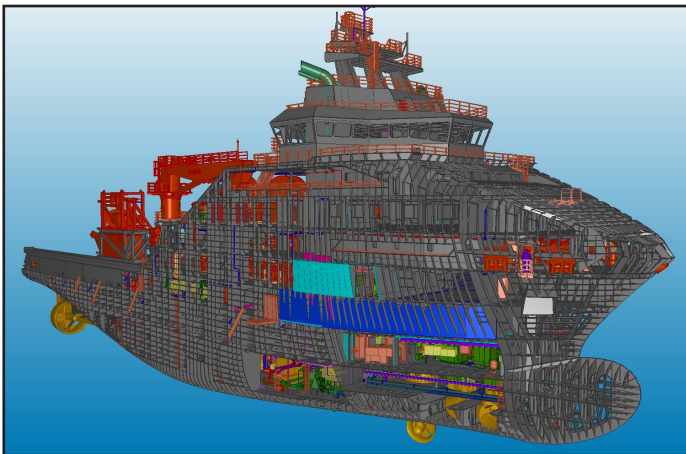
ISSUE  
2

# MBM CONSULTANCY

NAVAL  
ARCHITECTURE



HEAVY CARGO  
TRANSPORT  
ENGINEERING



## COVERED SECTORS

- HEAVY PROJECT ENGINEERING
- VESSEL CONVERSIONS
- OFFSHORE ENGINEERING



NAVAL ARCHITECTURE SERVICES

# PROJECT CARGO, VESSEL CONVERSIONS & NAVAL ARCHITECTURE

MBM MOTO - FAIL TO PLAN, PLAN TO FAIL

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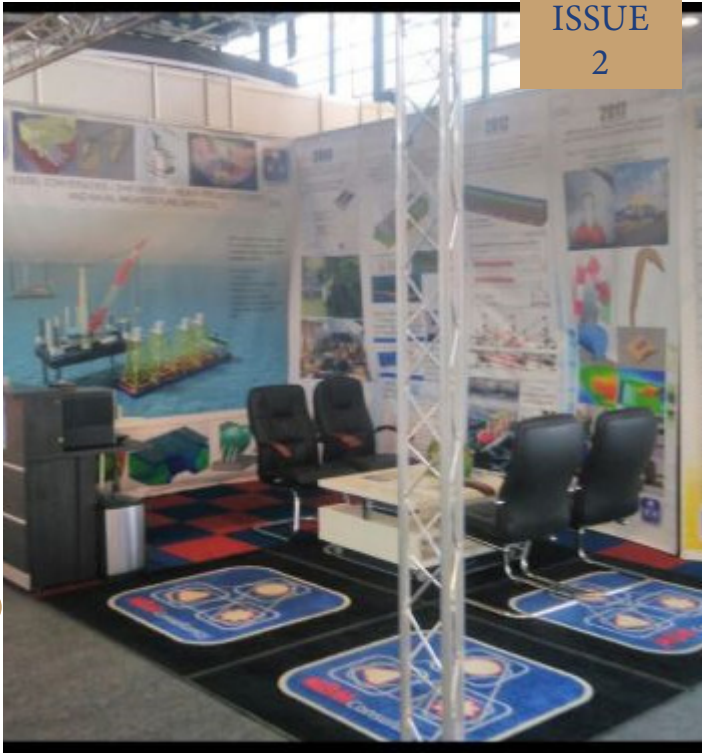
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RECENT SECTORS & ORDERS FULFILLED -

- 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



LEARN MORE - MEET **MBM** AT A CONFERENCE.

## 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, Freightforwarders, 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.

# IN THIS ISSUE

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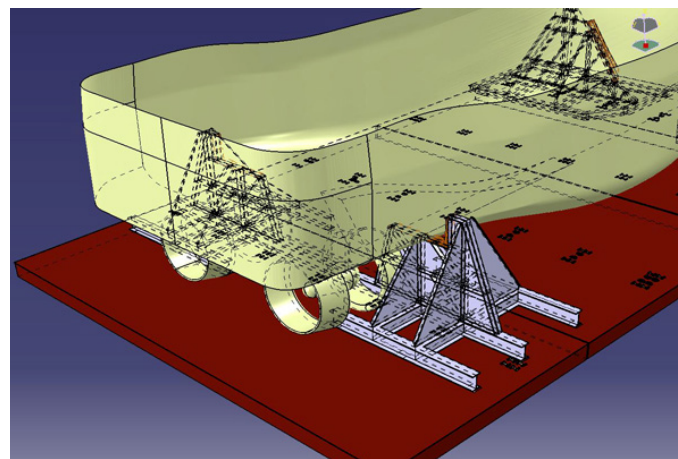




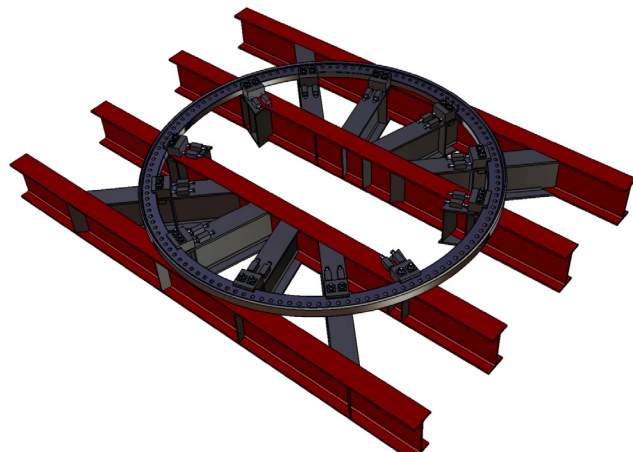
MACCHI BOILER TRANSPORT FRAME

## DESIGN AND CONSTRUCTION OF LIFTING FRAMES, GRILLAGES & FOUNDATIONS.

An optimal solution for the cargo being transported on the selected vessel, which minimizes risk and cost. MBM provide practical advice on the motions criteria that are most appropriate to the cargo and transport route, and develop sea-fastening designs with practical, cost-effective fabrication and installation in mind. MBM design the sea-fastenings, grillages and load-spreading necessary to distribute the stresses, protecting both cargo and vessel. MBM ensure that our efficient grillage and designs will meet the environmental conditions, rules and



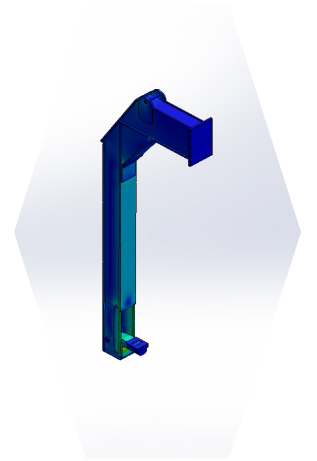
regulations, resulting in a safe transport of the cargo. MBM use a range of software, including Finite Element Analysis (FEA) and combine this with first-principles hand calculations to find a solution. This method is used to ensure environmental conditions, rules and regulations are met, resulting in a safe transport of the cargo. MBM provide Cargo Surveys, vessel surveys, Method Statements, RAMS documents, and also approve third parties documents for the industry.



The design of lifting frames for specific cargo has been ongoing from MBM since the first projects. The lifting frame requires a Classification approval and at MBM we have a direct contact to the approval division with each Classification society. This assists in a quick approval method and acquiring the Classification surveyor to be present for the test loading. We also have access to all necessary test load equipment to include test weights, water bags, and cranes. Along with reputable manufacturers at various locations that have experience in building a lifting frame at short notice

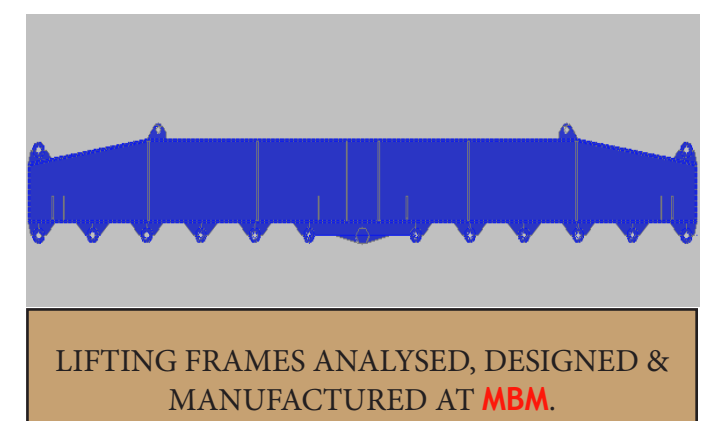
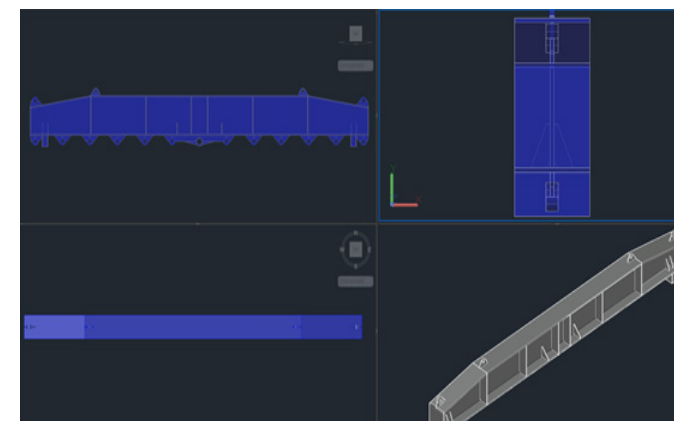
and to a one-off design.

The service for specific equipment at MBM for transporting Heavy project cargo has always been an asset and delivery on-time has always been a strength to add value for our client. Each project can be delivered with a full set of class approved and manufacture drawings. Also, each lifting frame comes with a lifting manual with its SWL limits and operations. This enables full working use of the lifting frame and safe use once it leaves our hands and arrives with its new owners.



**\$7 MILLION USD**

FEA in Heavy project cargo was presented in 2008 by MBM to reduce Steel costs drastically and improve net profit on a project. FACT - \$7 mill saved per 10 years on a HLV.



LIFTING FRAMES ANALYSED, DESIGNED & MANUFACTURED AT **MBM**.



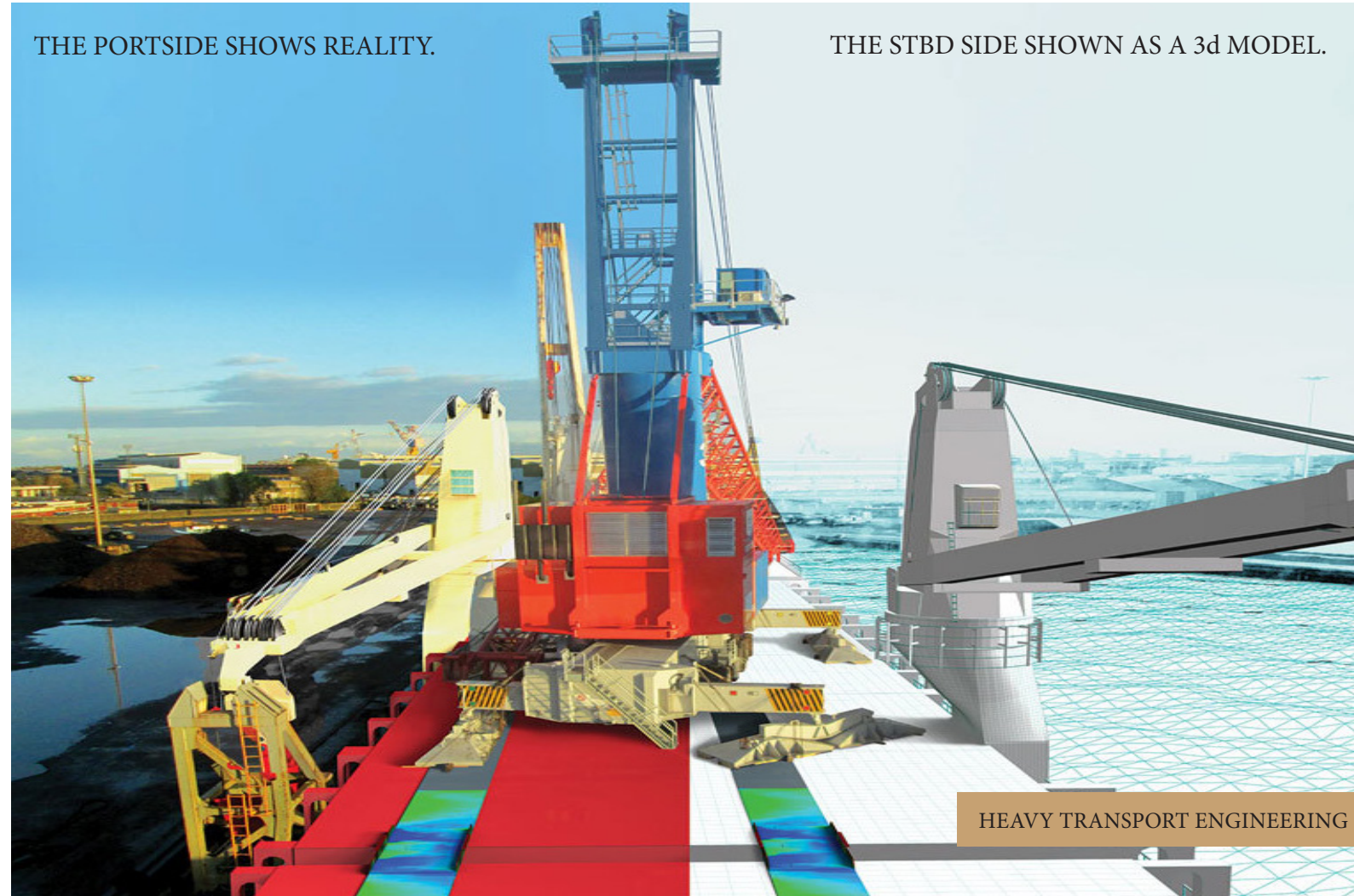
Capturing Change to RAMS on-site with change management documents is a must to keeping today's Heavy lift World Safe.

The Engineering for the Heavy Transport sector has developed over the last 10 years. First it was for the Chartering companies to develop teams and utilize AutoCad in their offices and start to use motions analysis with FEA to save on costs and improve operations. Then came approvals of the Method statements from Freightforwarders to confirm this new level of advanced analysis. Now the new modern requirement is to capture load out changes on site for insurance purposes and remain within compliance.

## MODERN HEAVY TRANSPORT ENGINEERING

### ENGINEERING

THE PORTSIDE SHOWS REALITY.



THE STBD SIDE SHOWN AS A 3d MODEL.

HEAVY TRANSPORT ENGINEERING

Heavy Transport Engineering is not always easy to be defined. It is not always defined by weight alone, but also by its actual volume, or complexity as a cargo to transport.

Only a few years ago, project cargo was loaded with simple procedures and documentation and the responsibility to load the cargo safely rested on the professional experience and knowledge of either a ex-Captain or a Port Captain.

The services of these professional individuals is still used to today and is still a required profession.

Their knowledge and experience is invaluable and is highly regarded. However, due to advancement in rules and regulations, terms and conditions in charter agreements, and with the advancement of Computer software, the actual overall process to transport a project or Heavy Cargo has changed somewhat in the recent decade.

In the past, a cargo would have a basic amount of information, and a Port Captain would rely heavily on his experience to define the number of lashing chains required, HEB steel weightspreading materials for the upcoming operation.

The Port Captain would go on-site and survey the cargo prior to loading, and undertake a preliminary lashing calculation and lashing plan, and lifting plan based on the cargo survey and known information of the vessel and potential operations of a shore crane.

This method is still used for some cases today and has some degree of success in the industry.

The alternative approach for this method is to utilize an office based principal in the first instance. This is to gain upfront knowledge of the procedure in the form of a pdf or CAD drawing. Typically from the cargo manufacture or supplier. The vessel drawing is also acquired and a office based calculation of the lashing and weightspreading is undertaken.

This usually requires a qualified Engineer to undertake the motions of the vessel to gain the forces at the cargo footprint and von mises stress values in the securing locations of the cargo.

The amount of HEB steel structures utilized in this approach of weight spreading operation is proven to be less than any other method. The Engineer will then provide a full Method statement or Rams document. On site the Engineer will work with a Port Captain or Surveyor to load

the cargo.

All discussions to move or change the loading operation can easily be rectified with a proven calculation. This is recorded in a "Change of Method" document.

This type of document does not exist in the first approach. In the first approach, decisions or changes in the loading is normally recorded in a final Surveyor report, and confirmed with pictures. This method is not an acceptable approach for many Heavy Cargo as it is not an acceptable approved Engineered method for an Insurance company and is not covered as performing the "Due Diligence" of a Heavy cargo project.

Also many freightforwarders and charterers are becoming aware of such a requirement

and are now seeking to close this stage of the process.

The only way to close this process is to start at the beginning of the Engineering process with the correct Heavy Transport Engineering performed by an in house Engineering team creating the Method Statement and RAMS documentation.

This is the modern method to safely perform a Heavy cargo transport and provides a full safe working process and also provides the reduction in operational costs.

This method is the only method implemented at MBM Consultancy since the company began and MBM has trained other companies to implement this method over the years.





PRIOR PROJECTS BY  
MBM

# Project cargo

WITH A NAVAL ARCHITECTURE APPROACH

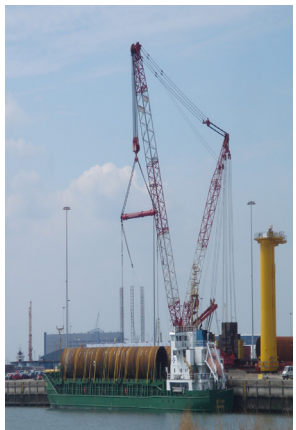
# examples

► Raised tweendeck - data gained, reviewed, designed, analysed, sent to class, approved, manufactured and sent to location all in 1 week.

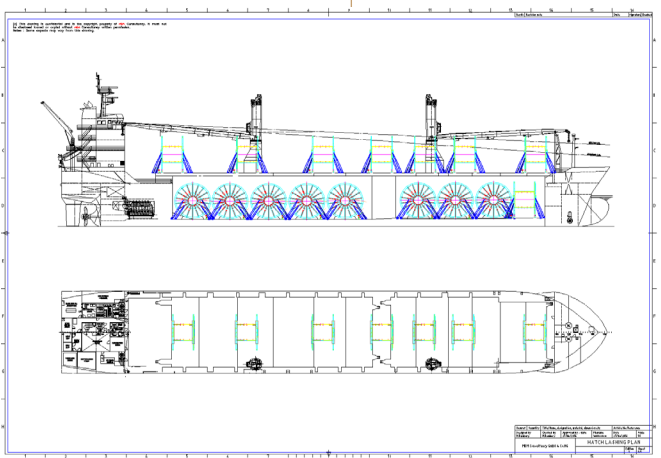
Now that's service!



► 600 ton Monopiles transported on wood and a 1.75ton / m² hatch strength. FEA analysis, pre-proven, approved, and shipped.



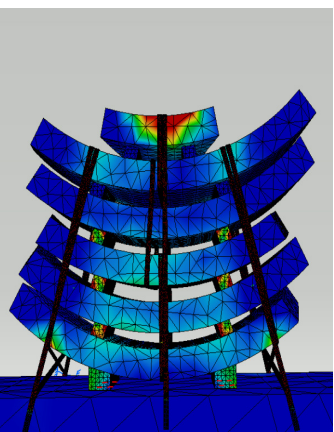
◀ Driving cranes on hatch covers, since 2007. No "knockdown" of cranes required here. Bridge designs, steel analysis and all securing provided.



► Reels - Lashing and securing is never a large debate. With no weightspreading on the hatchcovers, meant no costs and also no debate or problem at MBM.

► Competitor solution for TP's dismissed as too expensive and MBM employed. The comparison in costs and steel applied says volumes!! ...and dollars!

Securing & weightspreading cargo on barges & vessels has always been a major part of MBM work load. We continue to be proud to provide to this sector from our team.



► Cement stacks - Complex analysis due to no fixed surface interactions. Cement against wood coefficient frictions, wet, dry, smooth, rough surface, none fixed! MBM solved it!

► Barge loadout - MBM industry leading Barge load manual provides everything in a one complete package.

► Offshore structures loaded in the hold and on deck. Centimeter precision engineering design was required to load in the hold, and provide grillage supports.



MBM has provided Heavy Transport Engineering to Charterers, EPC, Freightforwarders, Agents, Port Authorities and other key players in the market for module cargo up to 2000 tons.



## LOADOUTS AND PORT LAYOUTS

# 1025 TONS

Transport from manufacture facility, to storage and final detail storage, to offshore transport and installation. All covered from MBM Consultancy.

MODERN PORT LAYOUT PLANS,  
MANUFACTURE AND OPERATIONAL  
SURVEYS.

Port development and large projects require the combination of many 3rd party suppliers to provide equipment at different stages for the project.

Organizing the project and schedule layout of the project requires not only a Project Management schedule, but the use of modern 3D modelling of the project layout before and during the project enables onsite and office based engineering and project manager to operate a successful project.

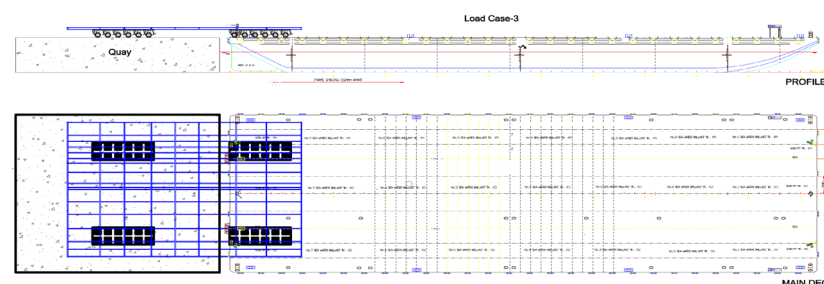
All main equipment locations, and operations can easily be viewed, updated and operated.

At MBM Consultancy we manage larger projects with the full use of our Project Management and 3D modelling softwares. All this is combined with the Engineering software to confirm all operations are

Many projects have been processed through MBM Consultancy for port development and for the loadouts of the high end of heavy cargo transportation.

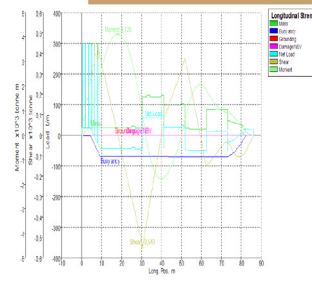
The larger heavy projects require more detailed analysis to include :

- Impact analysis
- Transport frame design and approved
- Barge/Flat deck transport regulations
- Ground bearing pressures
- 3D modelling
- Port layouts
- Lifting analysis
- Stability onland transport
- Inlife structural analysis
- SPMT transport
- Sea load analysis to the structure



### LONGITUDINAL STRENGTH

To determine the Longitudinal strength when each SPMT'S axle are loaded onto the barge and to find the strength of each frame when the footprint moves along the barge.



performed and undertaken safely. This is why MBM Consultancy is now seen as an asset to larger projects and used as a 3rd party consultant for onsite and port development projects.

ALL PHYSICAL MOVEMENT,  
SPMT TRANSPORT, LIFTING,  
AND 3D OPERATIONS  
ARE CONSIDERED AT MBM.

A port development project can normally require a feasibility study on the upcoming potential of the local area.

This feasibility study looks into the potential of road or rail services that is currently available and could be developed to reach the port. It also examines the water way to the port. The water depth, bridges on the river, and other issues that would hinder the various types of vessels that would be required to import or export the heavy cargo.

Also required to study is the local available equipment suppliers. The shore and floating cranes, and tugs are also to be considered.

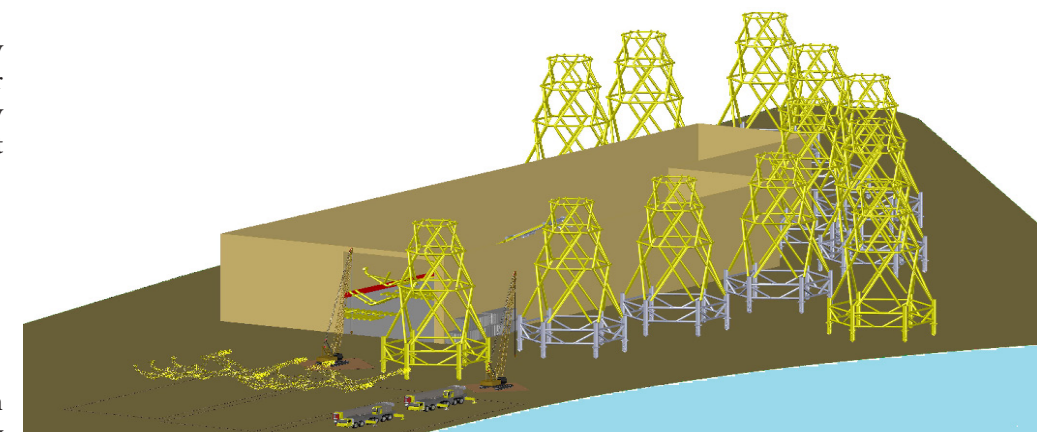
The future market of the Heavy sector is obviously to be considered, but this is the smallest concern.

The Competitive market, and which other ports will be competing for the same projects, and what will make this new port more desirable for a client and who these are is a priority.

These are some of the areas that MBM Consultancy has provided in its most recent Port development feasibility studies.

The results and knowledge gained from these studies is invaluable to our clients and this knowledge is currently available to be used as historical data for upcoming feasibility studies.

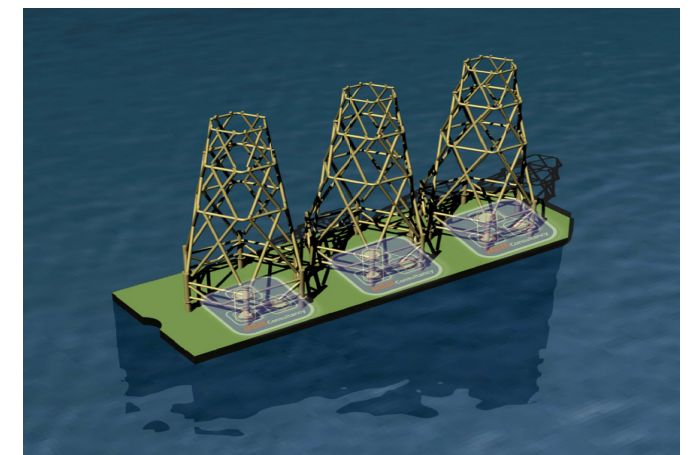
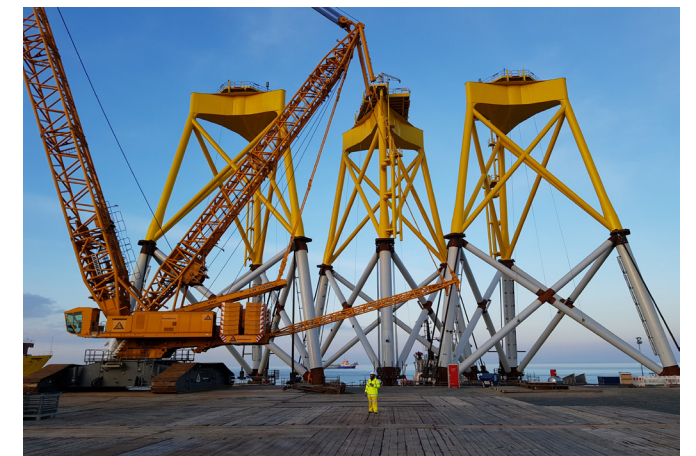
For the port developments, surveys and layouts of the upcoming development, MBM have been quoted as "an inspirational team with unique ideas , a leader in forecasting the future market."



THE LAYOUT OF A NEW PORT OR A "ONE" OFF PROJECT REQUIRES FULL KNOWLEDGE OF THE OPERATIONS REQUIRED TO BE PERFORMED.

IT ALSO REQUIRES THE ABILITY TO UNDERTAKE GROUND BEARING PRESSURE, WORKING WITH PORT AUTHORITIES AND A FULL APPRECIATION OF SERVICE SUPPLIERS AND THEIR NEEDS.

PLANNING FOR THE FUTURE MARKET OR FOR A "ONE OFF" PROJECT REQUIRED 2 DIFFERENT SETS OF SKILLS AND KNOWLEDGE, AND MBM. CONSULTANCY TEAM DELIVERED BOTH.



*"When looking for modern loadout ideas and inspirational solutions it was easy to see **MBM** is a leader in this market"*





HYPERMODERNITY

# STABILITY, MOTIONS, & MOORING

JUST LIKE ACTION AND REACTION GO HAND IN HAND, SO DO STABILITY, MOTIONS AND MOORINGS. TO FULLY UNDERSTAND ONE TOPIC, THE APPRECIATION OF THE OTHER IS A REQUIREMENT.

STABILITY

At MBM we generate the vessel hull form with tanks and compartments to enable both intact and damaged analysis. The environment is predefined to gain results in many formats.

- Integrated compartment definition.
- Complex tanks in the analysis.
- Linked tanks & compartment analysis.
- Integrated load cases.
- Environment options including: grounding, waveform.
- Standard / customizable stability criteria.

The Stability analysis is undertaken with a full set of comprehensive methods.

- Probabilistic damage stability.
- Batch analysis for multiple load and damage cases.
- Upright hydrostatics.
- Large angle stability (GZ / righting lever).
- Equilibrium calculations.
- KN cross curves.
- Limiting KG analysis (maximum VCG).
- Floodable length.
- Longitudinal strength.
  - Tank calibration.
  - Trim & stability booklet.

MOTIONS

The motion analysis is developed from a direct integration from a surface model.

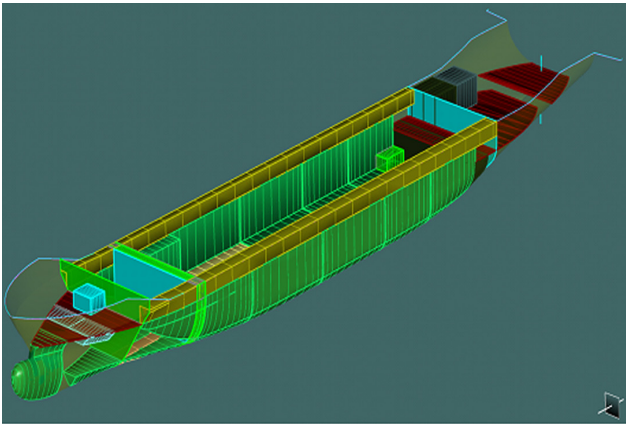
- Calculation of vessel response amplitude operators.
- Calculation of added resistance response and integration of added resistance for specified sea spectrum.
- Calculation of motion, velocity and acceleration spectra at centre of gravity and specified positions on vessel (absolute and relative motions).
- Integration of significant vessel motions for specified sea spectrum.
- Large number of standard spectra: ITTC/ Bretschneider 2 parameter; Bretschneider 1 parameter; JONSWAP; DNV and Peirson Moskowitz.
- Graphical and tabular presentation of all data generated by the analysis.
- Interactive results graphs.
- Hull-form design & optimization.
- Propeller & rudder selection.
- Resistance & propulsion calculation.
- Seakeeping & maneuverability studies.
- Tank test coordination & supervision.

MOORINGS

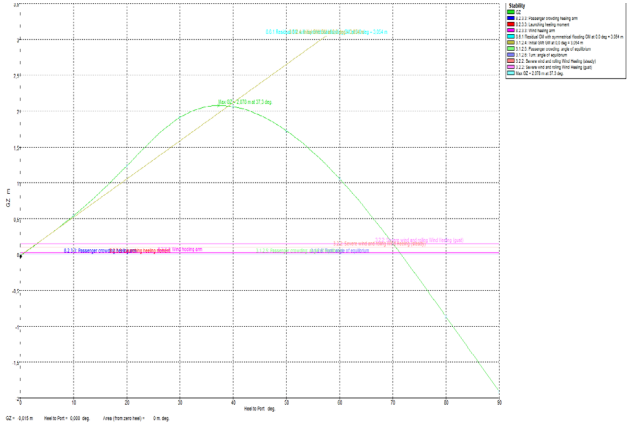
Calculating how a moored vessel responds to its environment has become an essential part of effective harbor management. Mitigating the effects of passing ships, high wind, wave and current conditions on moored vessels can make the difference between a profitable port and a costly one. So when it comes to deciding how to moor deep-draft vessels, a little help from the experts may make all the difference.

Static mooring analysis generally applies to most cases of wind and current loading in which vessel motions are not important. Static analysis may be employed to optimize mooring line arrangements and the size and locations of mooring hardware and to determine individual mooring line loads. Static mooring analysis is usually adequate to verify that a vessel can safely moor at a particular terminal or can remain moored in a predicted environment. Dynamic analysis, however, is required in cases where vessel motions may significantly contribute to mooring line loads, such as motions arising from wave action. Numerical models are necessary to simulate and assess dynamic mooring loads and motions.

STABILITY

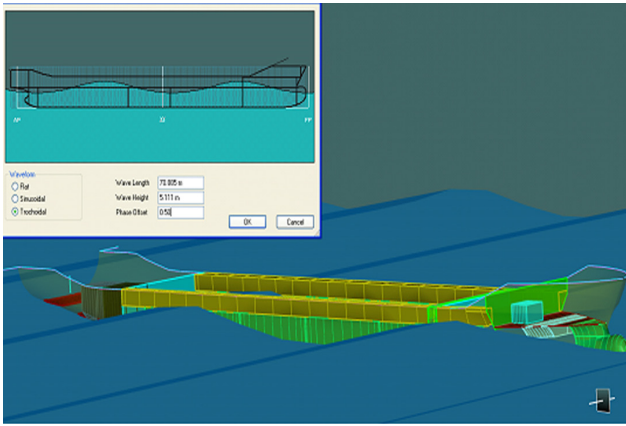


- VESSEL HULL FORM
- TANKS AND COMPARTMENT
- INTACT AND DAMAGE STABILITY
- LONGITUDINAL STRENGTH
- TRIM AND STABILITY BOOKLET

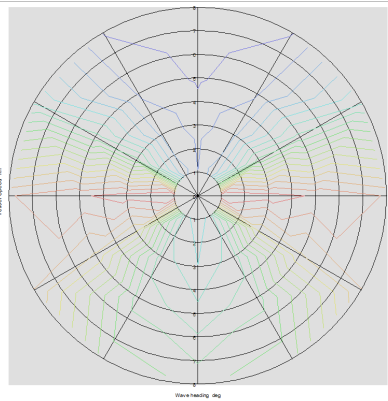


- INCLINED TEST
- LOADING MANUAL
- FLOOD ABLE LENGTH
- TRIM AND STABILITY BOOKLET
- LINES PLAN

MOTIONS

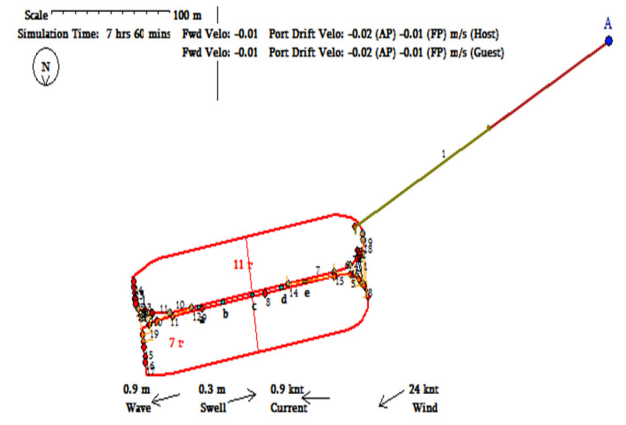


- CALCULATION OF VESSEL RESPONSE AMPLITUDE OPERATORS
- CALCULATION OF ADDED RESISTANCE RESPONSE AND INTEGRATION OF ADDED RESISTANCE FOR SPECIFIED SEA SPECTRUM

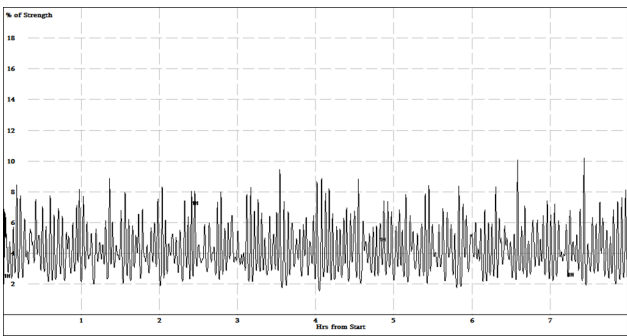


- CALCULATION OF MOTION, VELOCITY AND ACCELERATION SPECTRA AT CENTER OF GRAVITY AND SPECIFIED POSITIONS ON VESSEL (ABSOLUTE AND RELATIVE MOTIONS)
- SEAKEEPING & MANEUVERABILITY STUDIES

MOORINGS



- MOORING DESIGN
- PRE-LAY MOORING
- RIG MOVES
- PERMANENT MOORINGS
- CHAIN INSPECTION

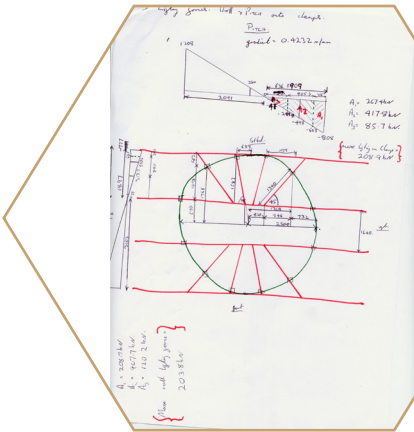


- DESIGN & VALIDATION ANALYSES
- INSTALLATION & RECOVERY ANALYSES
- RISK ASSESSMENTS FOR REGULATORY APPROVAL
- MOORING REPORTS

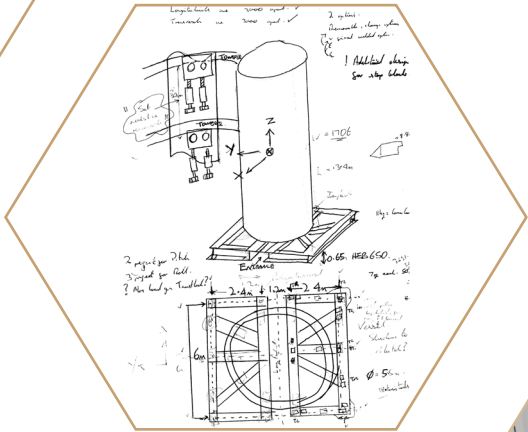


Criticisms of postmodernism are intellectually diverse, including the assertions that postmodernism is meaningless and promotes obscurantism. For example, Noam Chomsky has argued that postmodernism is meaningless because it adds nothing to analytical or empirical knowledge. He asks why postmodernist intellectuals do not respond like people in other fields when asked, “what are the principles of their theories, on what evidence are they based, what do they explain that wasn’t already obvious, etc.?...If [these requests] can’t be met, then I’d suggest recourse to Hume’s advice in similar circumstances: ‘to the flames!’”

Christian apologist and philosopher William Lane Craig has noted “The idea that we live in a postmodern culture is a myth. In fact, a postmodern culture is an impossibility; it would be utterly unlivable. People are not relativistic when it comes to matters of science, engineering, and technology; rather, they are relativistic and pluralistic in matters of religion and ethics. But, of course, that’s not postmodernism; that’s modernism!”

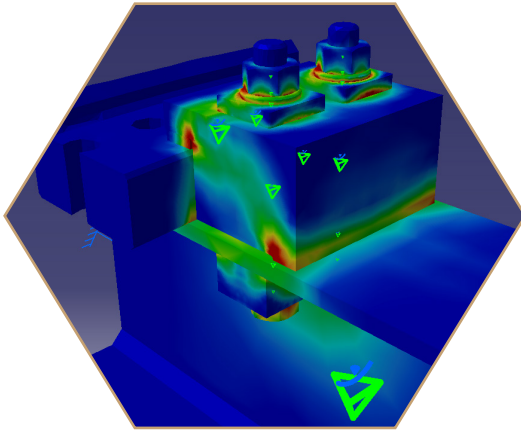
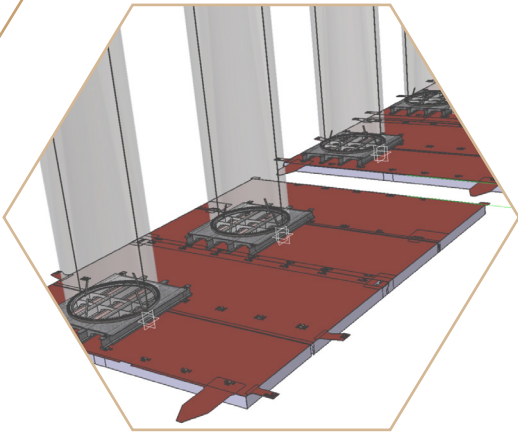


1



2

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5



6



MBM MOTTO “TOWERS” THE TRUE STORY.

1. FAIL TO PLAN - PLAN TO FAIL

The very hand layout drawing idea for upright tower transportation was created. With the basic dimensions, and forces calculated to define if it is worth considering as a future transport method.

2. FIRST PRINCIPALS ALWAYS FIRST

The forces are seen to show potential. So a structure to support the tower is drawn, and how to secure the tower is generated. Multiple securing options occurred in this process.

3. CONCEPT TO ANALYSIS

Models of the Hatchcovers for the Upright towers and grillages are created to define logistic suitability, location, to assess next stage of local and global deck strength and operations.

4. EVIDENCE IS IN THE DETAIL

Small items were noted to improve the force applied by the clamp during design. These little modifications improved the clamp force by 25%. Other additions included a safety access and escape system whilst loading/discharge is undertaken.

5. BUILD WHAT YOU SEE

As the manufacture is underway, all dimensions are scrutinized to be within a fine tolerance. Good craftsmanship was generated on this project.

6. EXECUTE AND FOLLOW THROUGH

The first ever upright tower for sea going transportation on a Hatchcover goes into place. Controlled carefully and successfully by many eager and keen engineers and surveyors.

# POSTMODERNISM! 2009

ALL PLANNED, NO FAILURES, THAT IS SUCCESS!



BOWTHRUSTER

A RETRACTABLE THRUSTER WAS REQUIRED.

THE POWER FROM THE GENERATORS WAS CALCULATED,

THE DRIVE SYSTEM AND STEEL STRUCTURES DESIGNED.

ACCOMODATION UNIT

THE LOCATION FOR THE UNIT IS SURVEYED AND STRUCTURALLY ANALYSED.

THE UPDATED GA, PIPING SCHEMATICS, ELECTRICS, AND DRAWINGS WERE PROVIDED.

CRANE PEDESTALS

THE SLEW BEARING IS SURVEYED ON A QUAYSIDE.

A NEW FOUNDATION IS DESIGNED WITH MANUFACTURE DRAWINGS.

THE FOUNDATION IS MANUFACTURED AND DELIVERED.

THE SECOND HAND JIB CRANE IS INSTALLED ON THE VESSEL.



PLATFORMS

THE VESSEL WAS SURVEYED TO DETERMINE ALL STRUCTURES.

A 3D MODEL WAS THEN CREATED, IN ADVANCED SOFTWARE.

DIVE SUPPORT STRENGTH ANALYSIS AND STRUCTURAL ANALYSIS FOR CLASS APPROVAL.

FINAL MANUFACTURE DRAWINGS WERE PROVIDED.

BULKHEADS

TO MEET NEW REGULATIONS FOR DAMAGE CONDITION AND SAFETY AT SEA, THE OPEN SPACES IN THE VESSEL REQUIRED SMALL COMPARTMENTATION.

NEW BULKHEADS ARE DESIGNED AND MANUFACTURE DRAWINGS ARE PROVIDED.

THE BULKHEADS ARE INSTALLED ONSITE, WITH THE VESSEL ALONGSIDE THE QUAYSIDE.

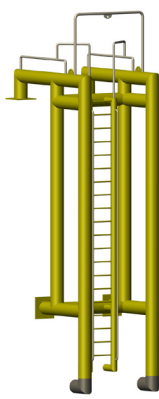
BOATLANDING

A STERN BOATLANDING IS DESIGNED TO MEET THE FORCES EXERTED FROM A CTV.

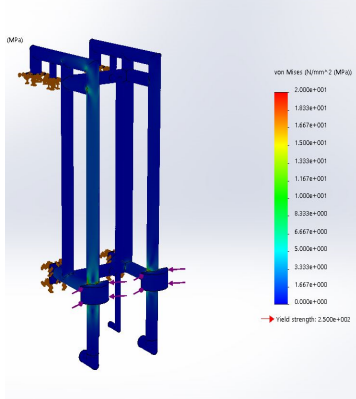
A 3D MODEL IS GENERATED TO CONFIRM STRUCTURAL ANALYSIS IN FEA. THE ANALYSIS AND DESIGN IS CLASS APPROVED.

THE MANUFACTURE DRAWINGS ARE PROVIDED AND THE BOATLANDING IS INSTALLED WITH THE VESSEL AT THE QUAYSIDE.

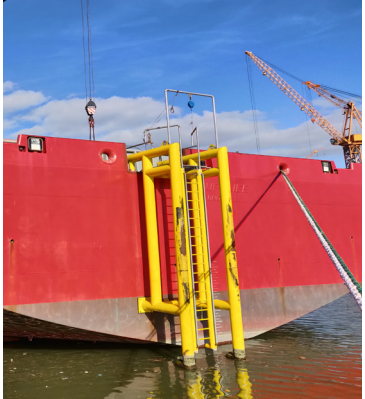
# VESSEL CONVERSIONS MODERN TECHNIQUES ARE APPLIED



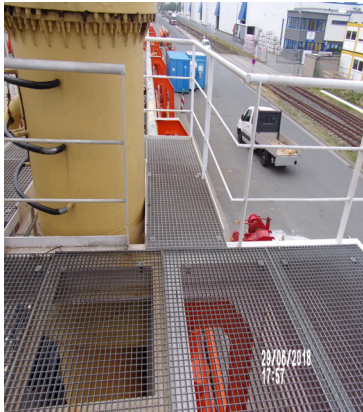
Boatlanding 3D Design - MBM Designed the new boatlanding and confirmed the design for Class approval with FEA. All manufacture drawings were provided.



Boatlanding Design - MBM Designed the new boatlanding to support the offshore supply vessel to withstand the pushing force by doing FEA.



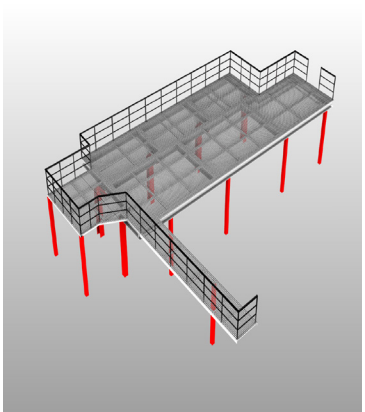
Boatlanding at work - The new boatlanding is to support the offshore supply vessel to withstand the pushing force by a CTV. (crew transfer vessel).



Platform on the OSV - The steel structure was manufactured into place. A survey was conducted to generate a 3D model using advanced techniques.



The drawings of the platform were created and model used to update the vessel GA. Also a deck strength of the platform was performed.



The platform was analysed to create a deck strength to allow ROV and dive operations to be approved from Classification.

## POSTMODERN ARCHITECTURE

MBM specializes in conversion and modification design. These are normally Quick track design projects that need to be executed quickly and with careful consideration to individual vessel peculiarities. Each conversion project has its specific needs as well as some common ones.

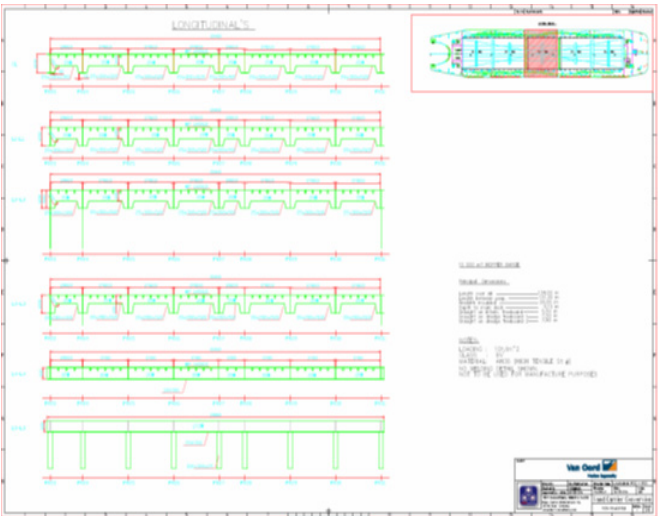
MBM is fully prepared for the rigors that such projects throw up from initial feasibility studies right up to design and actual shipyard work, trials and commissioning.

Our design are always geared up for these fast-track projects, and churning out the required repair design to the satisfaction of our client.

We specialize in optimization operational solutions, whilst minimizing maintenance costs.

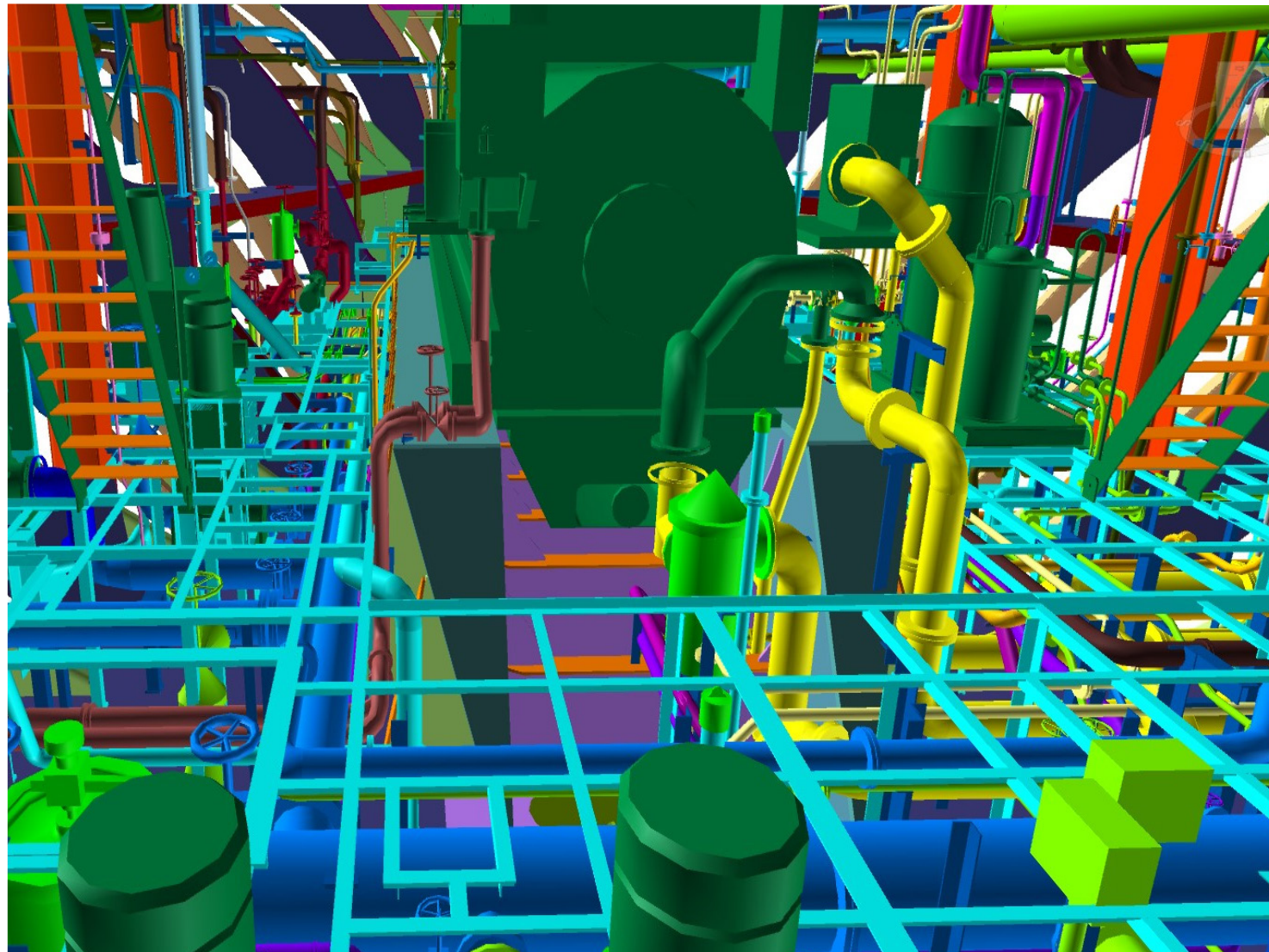
These are just examples of our abilities for ship conversions.

- Void Space Conversion
- Bulbous Bow Conversion
- SandCarrier Conversion - Full 600t Hatchcover closure
- Engine Vibration Room Structural Analysis
- Crane Pedestal Support
- Platform Design for Accommodation Unit





## DETAIL DESIGN



PIPING IS MORE DEFINED AND PROJECT MANAGED

# MODERN EQUIPMENTS & ADVANCED SERVICES OF MBM IN NAVAL ARCHITECTURE

Pipe routing, schematics and force flow are part of the requirements in the sophisticated and complexity of outfit for any modern vessel. 3D models and 3D surveys assist the process in today's maritime world.

## DRONE SURVEY -

MBM USES DRONE FOR TANK INSPECTIONS, OFFSHORE PLATFORM 3D DESIGN AND SURVEY AND VARIOUS PROJECTS FOR LAND TRANSPORTATION AND PROJECT CARGO WORK-SITE DEVELOPMENT.

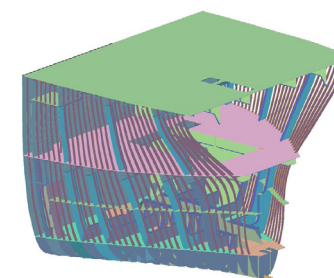


## ENGINE ROOM ANALYSIS

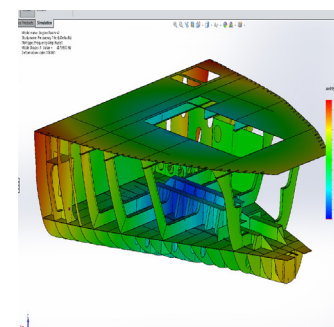
MBM carried out engine room survey before creating a full vibration analysis to simulate how structural fractures happen under the engine foundation.



Engine Room Survey



Engine Room 3D structural model



Engine Room Analysis for vibrations and hull form bending.

## MODERN AND ADVANCED SERVICES

### Static Modelling

This service is the visualisation of the surrounding graphics of the actual animation, or the FEA Structure. This adds to the realisation of the effect for the end user. Many companies do not provide this additional service, but at MBM it is offered with every package to our clients. This comprehensive range of Static Modelling includes:

- Crane base
- Hull Form
- Superstructure
- Forecastle
- Lifeboats
- Wires
- Stability pontoons

### Modelling for distance video presentations

With a full graphical software suite in-house, that is second only to the film industry, our team supports our Engineers with video presentations of moving structures in real time, defined periods, and with locked degrees of freedom.

This service is especially suited for video conferencing on large projects related to:

- Cargo loadouts
- Crane movements
- Additional structure fabrication
- Prediving visualisation of underhull
- Accident investigation pre and post visit

### Full FEA Modelling

MBM are able to provide FULL FEA Modeling and analysis. The Procedure and flexibility of the full model provides all of the above solutions and with the additional of the following:

- Cost reduction in material
- Proof of safety for cargo, vessel and people
- Lower insurance costs
- Improved turn around time (loading and discharge)

## BALLAST WATER SYSTEM

BWM convention, first adopted on 13 February 2004, will enter into force on 08 September 2017 and shall apply to all existing & new ships of all types with following characteristics:

### OVERVIEW OF BWM CONVENTION REQUIREMENTS

Once the Ballast Water Management Convention officially will enter into force, all ships of 400 GRT and above 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.
- International Ballast Water Management certificate.

### IMPACT OF THE IMO BALLAST WATER MANAGEMENT CONVENTION

It is expected that there will be 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 probably 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. Many already warned its members not to delay in ensuring they comply with the new strict ballast water management controls coming into force.

This regulation shows that the trends in the shipping market are sustainable development and environmental friendly operations. Another example of regulations supporting sustainability is the Vessel General Permit.

GOING INTO DRY DOCK? CONSIDER THE GREEN/BEST/ COST EFFECTIVE SOLUTIONS AND CONTACT MBM CONSULTANCY.

USING MODERN EQUIPMENT IN THE REAL ENVIRONMENT BRINGS ENJOYMENT TO WORKING ON BOARD THE VESSEL

## 3D SCANNING EQUIPMENT

MBM uses 3D scanning technology to achieve significant cost saving, optimize maintenance schedules, increase quality, improve safety and reduce rework. With our equipment the results are very detailed and accurate. We can provide support while the vessel is in operation.



## LASER EQUIPMENT

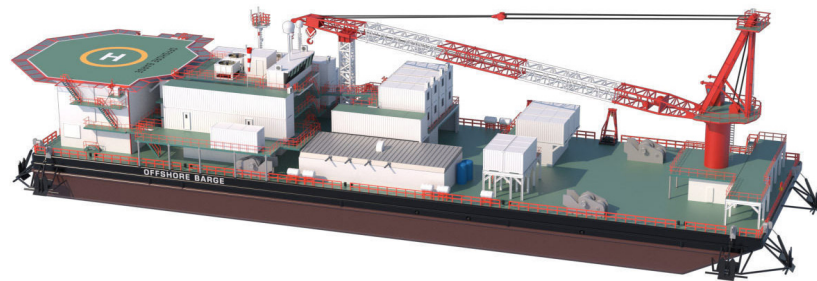
MBM uses Laser equipment for new build, Conversion, refit, survey and tests which includes inclining test with lasers which gives more accurate result while conducting the inclining test.





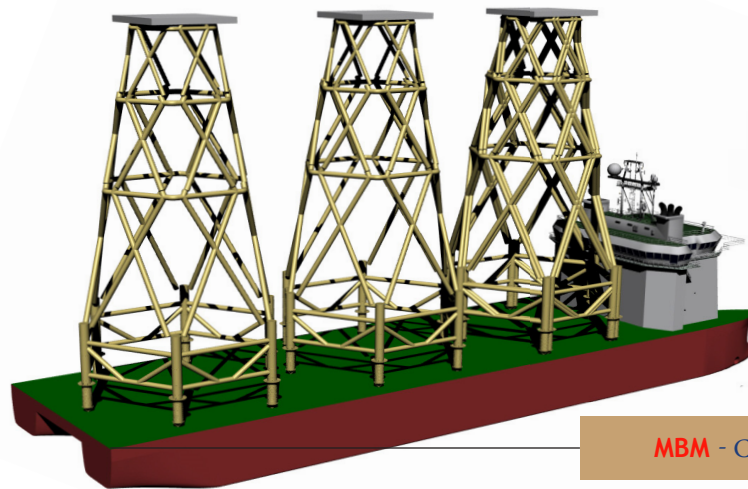
## MODERNISM

KNOWLEDGE AT MBM FROM PROJECTS.

WORDS: Melisa Giesenberg  
DESIGN: Gowtham Selvan

BARGE

- BARGE FEASIBILITY STUDY
- BOLLARD PULL CALCULATION
- CONVERSION AND REFIT
- RO-RO OPERATIONS
- BALLASTING CALCULATION
- DECK STRENGTH ANALYSIS
- GLOBAL HULL STRENGTH ANALYSIS
- MOTIONS ANALYSIS
- STOWAGE PLANS



MBM - CAT FEEDER VESSEL

- SEA FASTENING
- GRILLAGE AND LOAD SPREADING DESIGN
- BALLASTING CALCULATION
- DECK STRENGTH ANALYSIS
- GLOBAL HULL STRENGTH ANALYSIS
- MOTIONS ANALYSIS
- STOWAGE PLANS
- FEASIBILITY STUDIES
- PROJECT MANAGEMENT

MOBILE OFFSHORE DRILL RIG UNIT

- DECOMMISSION, DISPOSAL, REMEDIATION AND ENVIRONMENTAL STUDY
- MODELLING AND SAMPLING
- WEIGHT ESTIMATION
- SITE INSPECTION
- STRESS ANALYSIS, LIFTING EYE CHECK AND LIFTING AND RIGGING PLANS
- TRANSPORTATION AND SEA FASTENING



JACK UP VESSEL

- LEG IMPACT ANALYSIS
- LEG IMPACT ANALYSIS WHEN INITIAL SEABED CONTACT
- MOTIONS ANALYSIS LEGS UP AND LEGS DOWN
- COMPLIANCE WITH OFFSHORE RULES AND REGULATION
- DECK STRUCTURAL DEGRADATION ANALYSIS
- MOB-DEMOB SURVEYS AND OUTFIT



CREW TRANSFER &amp; OFFSHORE SUPPLY VESSEL

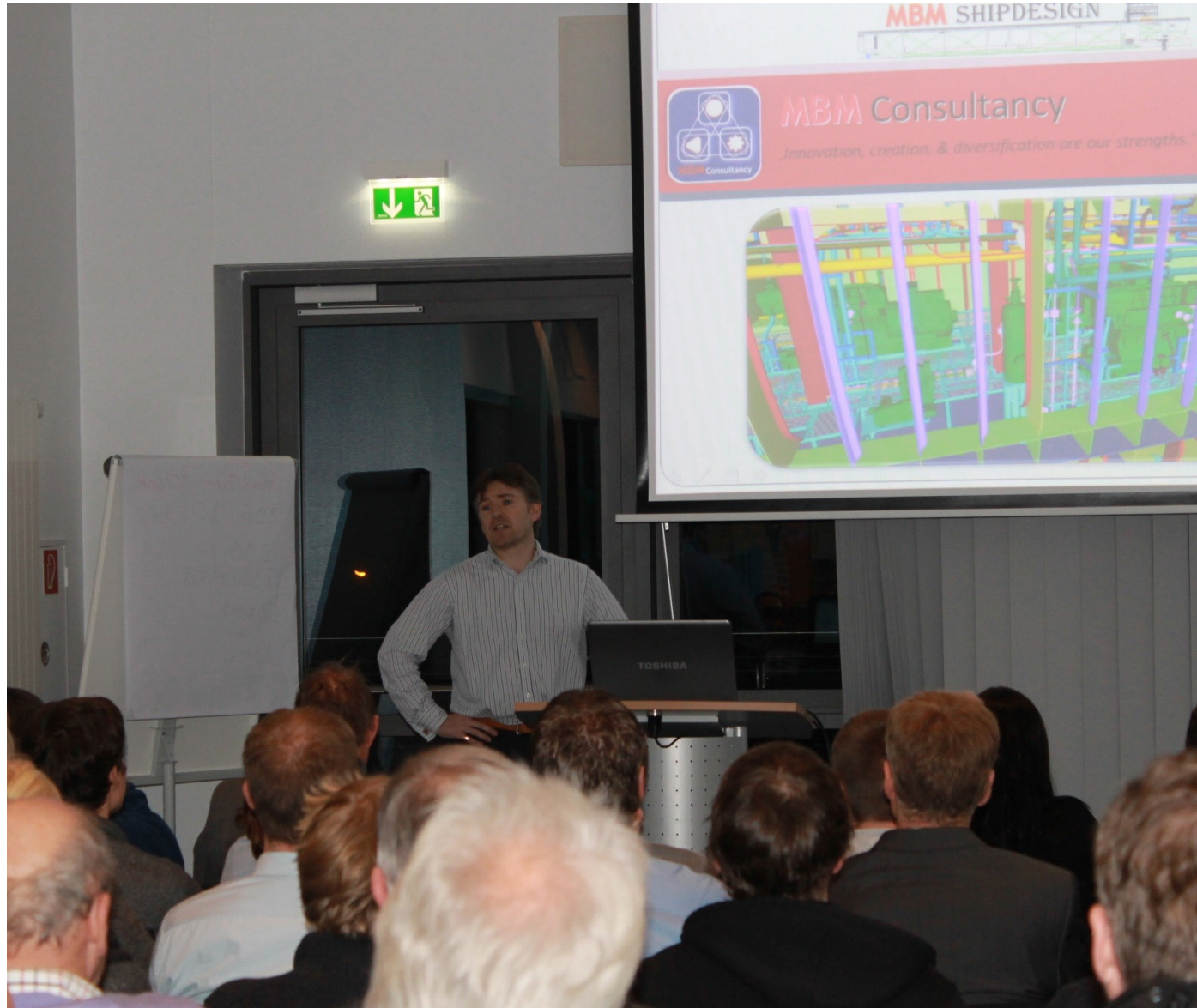
- VESSEL CONVERSION
- NEW DECK LAYOUT
- REFITS AND OUTFIT
- INCLINED TEST
- DECK STRUCTURAL ANALYSIS

ALL THESE OFFSHORE SERVICES HAVE BEEN UNDERTAKEN AT MBM CONSULTANCY. YOUR PROJECT REQUIRES ACQUIRED KNOWLEDGE FROM ENGINEERS AND CONSULTANTS. BENEFIT FROM THIS KNOWLEDGE ON YOUR PROJECT.

- info@mbm-consultancy.com tel: 0049 (0) 491 960 464 05 -



## MODERNISM



MBM TRAINING OF NAVAL ARCHITECTS FOR THE HEAVY CARGO MARKET SINCE 2010

# TRAINING, FEASIBILITY & DEVELOPMENT

Since the very first day of conception of MBM Consultancy, training of Heavy Cargo Transport Engineers and Naval Architects has been a service from the office in Leer Germany. The first full training session began in 2010, with the training of recent graduate Naval Architects to become Heavy Lift Engineers for a very successful Chartering company in the very near vicinity of the MBM offices.

Today 2 of these Naval architects are still very much apart of the industry and that company, and still providing Naval architecture services.

Thus from the first successful selection, and training process till the end of 2016, 5 other companies have had either teams created or further developed through MBM Consultancy training.

In 2017 there were 3 companies to be enrolled for training and for department generation.

In 2018 a large international feasibility study was performed for a leading Global Freightforwarding company to generate and install their very own fully operational Heavy transport engineering team. This discussion is still ongoing and it is believed other Freightforwarders will be required to develop their teams in the coming years to keep in touch with these key players in this modern moving market.

Other feasibility studies that MBM performed over the previous years includes one for a EPC manufacturer in Spain. With the aim to reduce the transport costs of Heavy Project cargo with the utilization of a barge or flat deck carriers instead of the traditional Heavy Lift Vessel (HLV).

This study involved a review of the local port facilities, and available equipment. This included SPMT, floating cranes, operating costs, and modification to the local quays to accommodate such an operation.

It also included the weather conditions at the loading harbor, and the transit sea conditions through the bay of bisquay. Notorious for high seas and the issues this may incur to the cargo transportation and again the costs involved with securing the cargo and if securing would be possible, and would it get classification approval.

“ Successful implementation of technical departments, teams and Naval architects ..... “

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

Other studies have followed the fuel costs for vessels to define modification scenarios to the Heavy Lift fleet. As MBM Consultancy has a large 3D model database of the worlds Heavy Lift fleet, and manufacture drawing, the analysis focused on the Bulbous bow of these vessels. Also, MBM has good connections to the shipowners, and operators of this specialized world fleet, so the data was gained to define fuel consumptions, and draft for each voyage. Utilizing the data, and applying this with an analysis it was found that modification to the bulbous bow would save the vessel enough fuel to change the bulbous bow and this would be returned within 3 years of operation. Obviously initial investment is a key factor, and so is the future bunker rates.

A final study reviewed a large Heavy cargo Port in Europe. To define the upcoming market for project cargo. The quantity of project cargo, size, weight, and to define the need for more resources, and or floating cranes. If so, what size of floating crane would be most suitable for the coming years based on investment for the crane.





## MBM Consultancy

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[www.mbm-consultancy.com](http://www.mbm-consultancy.com)



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