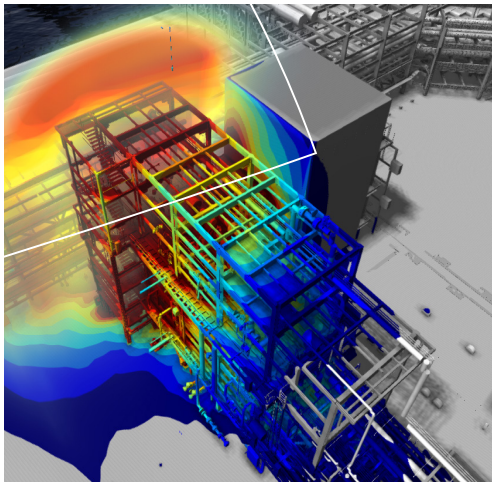

Offshore oil and gas

Services and solutions

Clarity from complexity

BMT is a leading international multi-disciplinary maritime engineering, science and technology consultancy providing a broad range of products and services across the energy and environment, defence and transport sectors.

Building on more than thirty years' experience, BMT supports the oil and gas industry in safe, reliable, cost effective and environmentally sound activities through all phases of offshore exploration and production. With offices strategically located to support each major offshore region, BMT provides offshore oil and gas companies and their major contractors with insight and solutions to the engineering and environmental challenges of operating within, upon and around the world's oceans and seas.

BMT invests in its people and the development of the company to provide solutions to customer requirements in a technology driven environment. As a company founded on the core principle of innovation; pioneering research and development is key to BMT's success. Operating as an Employee Benefit Trust affords us the opportunity for equitable distribution of rewards, ensuring staff engagement and our independence.

Striving for service excellence, all BMT companies implement and maintain management systems compliant with internationally recognised standards covering health and safety, quality and environmental management, in line with the BMT Group Ltd accreditation to ISO9001, ISO14001 and OHSAS18001.

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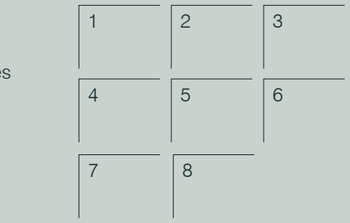
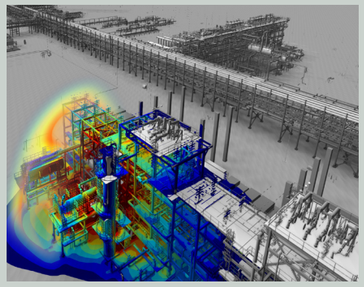
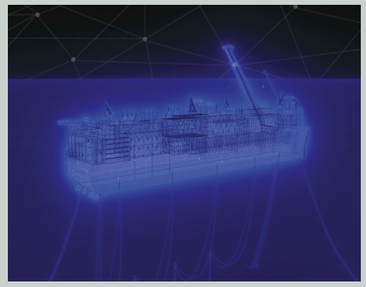
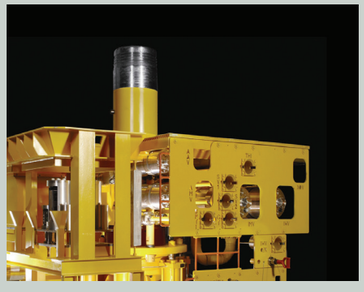








Environmental Assessment and Consenting

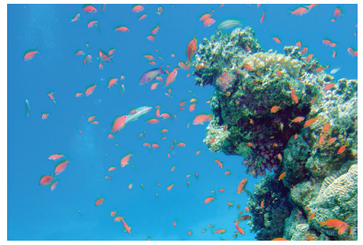
The offshore oil and gas industry faces ever increasing regulatory scrutiny with environmental issues at the top of the agenda. BMT provides a comprehensive range of services in support of mapping, monitoring and managing the marine environment and satisfying regulatory obligations.

1 2 3

1: BMT prepared an Environmental Statement for the Rochelle Development. This presented the findings of an environmental assessment of the effects of developing the Rochelle field in Block 15/27, as a subsea tie-back to the Scott platform in North Sea Blocks 15/21 and 15/22.

2: As part of its Environmental Impact Assessment approval, Chevron is required to conduct long-term monitoring of the environment associated with developments offshore East Kalimantan. BMT is providing detailed monitoring of water quality, air quality and ecosystems over a three year period.

3: BMT is providing ongoing environmental support to Shell for the Brent decommissioning project including the secondment of a senior environmental advisor into Shell's project team.



Environmental Impact Assessment

BMT has many years of experience in preparing high quality Environmental Impact Assessments, Environmental Statements, Oil pollution & Emergency Plans and Oil Spill Monitoring Plans. Our experience includes assessments related to seismic surveys, drilling programs, new platforms, new pipelines, platform upgrades and modifications, subsea tie-backs, shore approaches, shoreline crossings, operations, terminals and terminal modifications.

Environmental Monitoring

Our scientists are experienced in conducting marine environmental surveys including studies of water quality, wastewater plumes (produced formation water, desalination brine and treated wastewater), drill cuttings, atmospheric emissions and noise as well as the provision of habitat assessments in tropical and temperate waters.

Decommissioning Studies

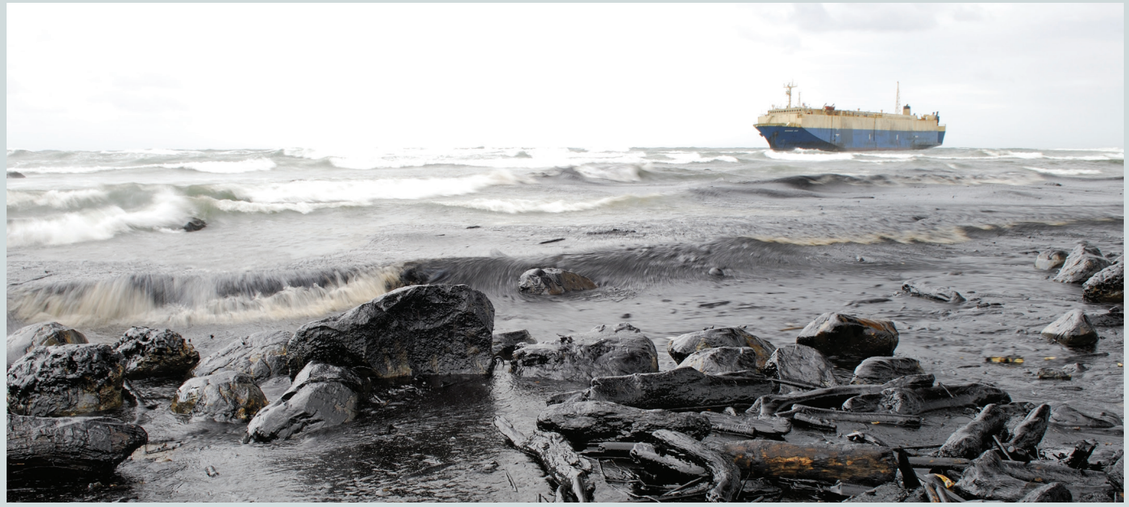
BMT has particular expertise in supporting the environmental needs of decommissioning. We have undertaken environmental studies covering all aspects of the decommissioning of a variety of oil and gas structures.

Statutory Compliance

Delivering documentation in support of statutory environmental compliance can be complex and requires specialist knowledge. We have completed many hundreds of statutory risk assessments and applications as well as providing comprehensive consultancy advice on environmental, legislative and compliance issues.

Environmental Information Services

BMT provides specialist consultancy services related to oil and offshore discharges. Our services help gain insight into risks and guide actions needed in the event of an unplanned spill event.



Oil Spill Related Consultancy

Knowledge of the movement, behaviour and shoreline impact of an oil spill is fundamental to the planning of a successful response. BMT provides oil spill modelling consultancy services, and a range of related environmental consultancy associated with identifying volumes and locations of beaching events, concentrations at sea, slick trajectory and thickness, and oil sheening.

Rapid Response Surveys

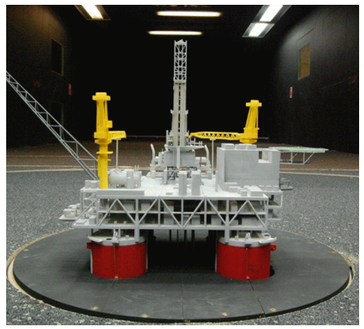
Our ability to respond rapidly to unplanned spill events and carry out successful surveys is underpinned by our skills in water and sediment quality, marine ecology (including for coral, temperate reef, seagrass and mangrove habitat types), marine fauna, experimental design, and spatial analysis and mapping. Our skills in this area are backed by our specialist experience in environmental project management, survey design, field personnel and logistics, data analysis, quality assurance and quality control (QA/QC) and reporting.

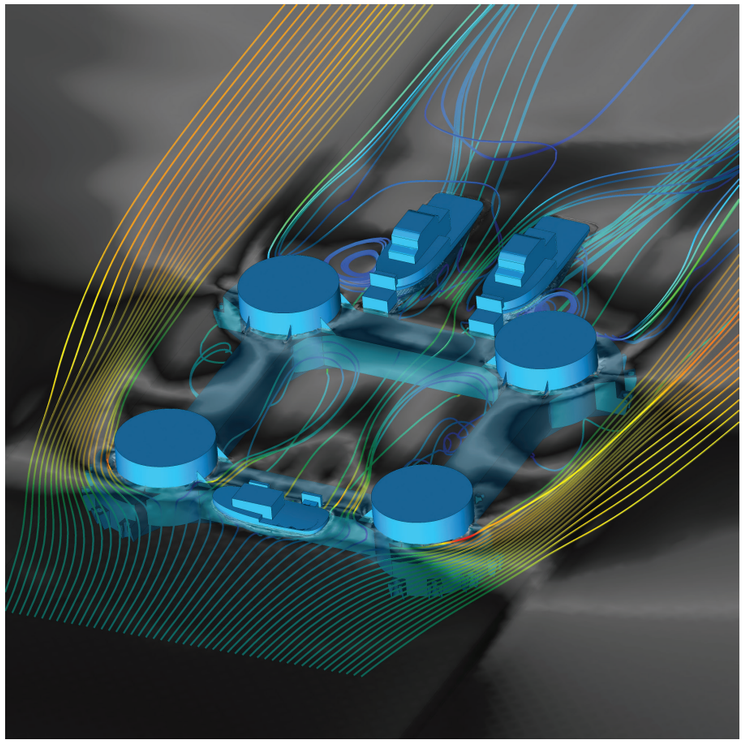
Oil Spill Information Systems

Building on 30 years of research into oil spill behaviour in the lab and at sea, and coupled with over 15 years of modelling experience, BMT supports sophisticated tools for predicting oil spill transport and fate.

Offshore Design Support

BMT's wealth of experience and knowledge of naval architecture, marine engineering, hydrodynamics and aerodynamics gives us a unique capacity to contribute to improved safety, reliability, performance and economics of all types of offshore oil and gas assets.





1 2 3 4

1. Wind tunnel testing for offshore platforms.
2. Wind load assessment for the CSO Deep Blue.
3. Ice engineering for customers including Enbridge, Exxon, Conoco, Chevron, AGIP, BP and Shell.
4. CFD Hydrodynamic analysis of an in-shore tow arrangement.

Wind Tunnel Testing of Offshore Structures

Aerodynamics is an important aspect of the safe and reliable design of an offshore installation. BMT uses wind tunnel facilities to help designers assess wind loads and helideck wind environment. Wind tunnel testing can also be used to quickly investigate remedial and mitigating measures should problems be identified.

BMT was commissioned to undertake a wind tunnel study for the installation of a new pipelay system for the CSO Deep Blue; the world's largest, purpose-built, ultra deepwater pipelay and subsea construction vessel (see image 2). Conducted in BMT's wind tunnel test facilities, using a model built to scale, conclusions from the study were used to identify the most effective ways of changing draft and reducing drag.

Consequence Modelling

BMT's experienced Computational Fluid Dynamics (CFD) teams undertake consequence modelling to provide quantitative information on structural & thermal loading and personal safety resulting from accidental loss of containment such as dispersion, fire and blasts.

Flow Assurance

BMT has extensive expertise in multiphase flow assurance analysis using CFD. The results of simulations are used to provide an evaluation of flow assurance issues such as flow uniformity, erosion, slugging and hydrate formation.

BMT has completed studies for a leading oil and gas operator seeking to evaluate different perforation scenarios for sand erosion on completion risers, using CFD. These studies have provided a comprehensive insight into the behaviour of oil-sand down-hole flows. Results have enabled completion engineers to make informed decisions about perforation and operation strategies aimed at preventing excessive sand erosion and costly well damage.

Ice Engineering

BMT has specialist expertise in ice engineering. We provide consultancy in understanding the interaction between ice and structures such as ice loading on floating and fixed structures. We design infrastructure for safe operations in sea ice and iceberg environments and have particular knowledge of ice impact on pipelines both offshore and onshore.

BMT supports a range of customers including Enbridge, Exxon, Conoco, Chevron, AGIP, BP, Shell and others (see image 3). Projects undertaken include the design of an offshore jacket structure; analysis of pipeline integrity; and providing design support for LNG/CNG structures and platforms.

Hydrodynamic Analysis

The prediction of current and wave loading is a key component of offshore engineering design for station keeping, mooring design, vessel stability, structural integrity and safety. BMT's specialist knowledge and experience in numerical modelling of vessel response and physical model testing provides an unrivalled analysis and consultancy capability.

BMT was called on by BP America to supply a full simulator package, including hydrodynamic analysis, for the tow out of the Thunder Horse semi-sub through the Corpus Christi channel (see image 4). Narrow shore and draft clearances meant that accurate hydrodynamic resistance values for the towing simulator were vital.

Operational Simulation

BMT's Simulation of Longterm Offshore Oil Production (SLOOP) software is used to investigate the operational risk and economic performance of entire offshore developments. At a facility level BMT's Single Point Monitoring (SPM) software is used to simulate the motion response of turret moored FPSOs in six degrees of freedom. In combination with our Metocean information services we determine the equilibrium orientation and workability of FPSO's. Manoeuvring simulations, made with our REMBRANDT system, are carried out to determine limiting wind, wave and current conditions for safe arrival and departure of LNG carriers. We also make recommendations for tug support and procedures to be followed, including navigational aids.

BMT completed a major SLOOP study of a number of development concepts for potential Arctic sites in areas significantly constrained by pack ice. The study looked at site development, platform installation, drilling and production operations. The operations were simulated taking into account a full range of metocean conditions.

Engineering Design for Marine Facilities

BMT has assisted clients in designing successful proposals for developing marine facilities. Our holistic approach to engineering solutions involves specialists around the world, supported by sophisticated design and optimisation tools.

Metocean Information Services

Drawing on state of the art capabilities in data collection, data management, data analysis and numerical modelling. BMT is able to provide comprehensive Metocean information for all offshore oil and gas basins. Our Metocean Information Services support safe and cost effective design and operations at all stages in the field development life cycle.

Design Criteria

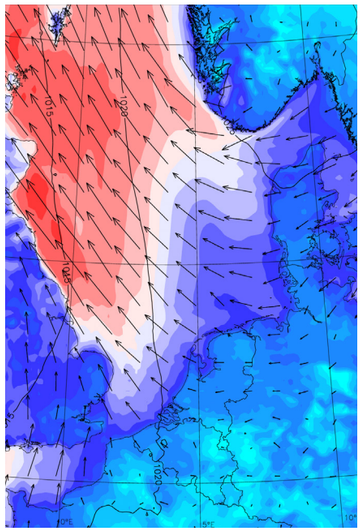
Metocean information is essential for the safe and economical design of a marine facility, from the initial concept feasibility assessment through to the final detailed design. Using in-house historical metocean databases, tailored numerical modelling and data analysis expertise. BMT metocean advisors are able to assist in enabling the optimal design of vessels, sub-sea infrastructure, offshore structures and coastal facilities all over the world.

Metocean Statistics

BMT provides high quality satellite and model derived metocean information using advanced global, regional and local numerical simulations. Our experienced consultants use these data to deliver operational criteria and workability statistics.

Metocean Measurement

Where insufficient existing data is available to meet a design or operational need we can provide a full range of capabilities and resources for the measurement of winds, waves, tides and currents.



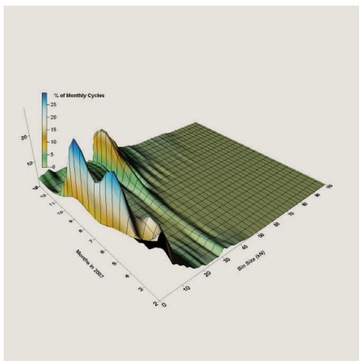
1 2

1: **Metocean Measurement.** Pearl Oil's development of a new oil and gas field in the Makassar Straits requires the design of a 350 km pipeline to deliver product to land facilities safely and with minimum risk. BMT completed a metocean study to gather the data needed to develop pipeline and jacket design criteria.

2: Weather and sea state information from existing data sets provides valuable support for safe and cost effective operations of oil and gas facilities.

Marine Integrity Monitoring

Monitoring and understanding structural integrity is vital to offshore safety. BMT provides complete systems, integrates new sensors to existing recording and display equipment and provides data acquisition and display systems for all types of integrity monitoring.



System Maintenance and Upgrade

BMT's experienced engineers and technicians provide service and training for operating systems and instrumentation. Our services include on-site maintenance, expedited trips to troubleshoot, repair and bring systems back to full health, and training to ensure operators are knowledgeable about our systems. We also upgrade systems as platforms age, as the regulatory environment changes and as technology improves. Upgrades have ranged from the addition of new sensors or channels of data to full replacement of old or outdated sensors, computers and software.

Instrumentation Systems

Our instrumentation systems are provided on a custom or semi-custom basis tailored to the specific needs of a project. We provide a turnkey service, with our personnel completing system design, assembly and programming, obtaining approvals from government regulatory agencies and classification societies, performing installation, calibration and operator training.

Data Analytics and Consultancy

BMT provides data management and technical analysis of data acquired by our advanced interactive asset data platform, BMT Deep. An advanced interactive asset data platform, BMT Deep stores, manages, integrates, post-processes and visualises vast data sets from offshore platforms, delivering deeper insights for enhanced asset performance management.

1 2 3

1: BMT has placed remote marine monitoring systems on 14 Gulf of Mexico floating production facilities, in support of marine integrity management for major oil companies. In addition to the permanent systems that support ongoing operations, separate standalone systems are installed and maintained to permit limited monitoring during evacuations for hurricanes.

2: BP tasked BMT with the implementation of a comprehensive Hybrid Riser Tower Monitoring System for the Greater Plutonio Block 18 Hybrid Riser Tower offshore Angola.

3: BMT provided an Integrated Marine Monitoring System for the Murphy Malaysia Kikeh Dry Tree Unit. BMT was commissioned by Murphy to assess the endurance level of a critical lashing line which showed more wear than anticipated. Using BMT's data, two factors were identified that had increased dynamic tension in the lines and a re-design was undertaken to reduce this impact. This subsequent re-design reduced wear by a factor of four.

Managing Technical Risk

BMT provides an extensive range of engineering consultancy services targeted at minimising risk and optimising system design and through-life performance and cost.

Reliability Assessment

We work with suppliers to the offshore oil and gas industry in provision of reliability assessments, design consultancy and design audits for subsea and topside components and systems. We support our customers using a comprehensive range of techniques including reliability, availability and maintainability predictions, failure mode and effects analysis and fault tree analysis.

BMT provided a detailed reliability assurance assessment to Cameron as part of a longevity evaluation on the development of a deepwater electronic control system. BMT also provided reliability audit support to assist Cameron in its implementation of BP's KP-13 subsea reliability strategy.

Risk and Safety Engineering

BMT is able to identify hazards and evaluate associated risks by conducting studies such as Quantitative Risk Assessments (QRA), Hazard and Operability (HAZOP), Hazard Identification (HAZID) and fire and gas mapping studies. BMT can advise on mitigation measures to help customers control and manage risks to an acceptable level.

BMT provides a wide variety of safety engineering services from Safety Integrity Level assessments on small systems and components, through to health, safety and environmental technical activities and auditing support at a field level.

BMT supported Agip KCO with its onshore development of the Kashagan oil and gas field. BMT has undertaken Health, Safety and Environmental (HSE) technical activities and auditing/ verification required to confirm the conclusions of selected FEED

Contractor activities. Safety, reliability and risk analysis related studies were performed to respond to partners and governmental authority specific requests without having to deviate from the main objectives of the FEED Contractor activities.

Technology Qualification

Technology qualification is the process of providing the evidence that a technology will function within specific limits, with an acceptable level of confidence. BMT supports the achievement of world-class standards in technology qualification and deployment. We can integrate technology qualification into your business, delivering tools and processes to enable your project managers to manage the risks associated with introducing, enabling or enhancing technologies.

Maintenance and Integrity Management

BMT undertakes a wide range of maintenance and integrity management activities, aimed at maximising system availability, optimising maintenance and ensuring quality standards are achieved. These services include reliability centred maintenance, spares and logistics modelling, and use of our proprietary RAMtr@ck software to deliver accurate feedback on the performance of complex assets.

Specialist Vessel Design

BMT offers a portfolio of specialised vessel designs and associated consultancy services. We also provide bespoke vessel designs optimised to provide high performance solutions for challenging requirements.

1

2

1: BMT has designed a broad range of crew transfer vessel designs for the offshore energy industry.

2: **Support Vessels.** MV TULPAR, the Shallow Water Ice Management Standby and Supply vessel (SWIMSS) was designed by BMT and built at Ulstein Verft AS. The vessel supports exploration and exploitation work in the north Caspian Sea, operating in the harshest of environments with temperatures ranging from plus 40°C to minus 30°C, combined with sea temperatures ranging from minus 1°C to plus 32°C.

Crew Transfer Vessels

BMT has designed a broad range of crew transfer vessel designs for the offshore energy industry. The designs range in length from 16-70m and cover a range of transfer speeds up to 40 knots. The company has particular expertise in the design of hull forms to provide excellent seakeeping characteristics, and has provided a number of designs based on the highly successful ModCAT hull form, developed for the US Navy Sea Fighter project.

Security Vessels

BMT has extensive experience in the design of high speed patrol craft with speeds of up to 57 knots. These designs are being utilised by the oil and gas industry to provide surveillance and protection of offshore installations.

Platform Access

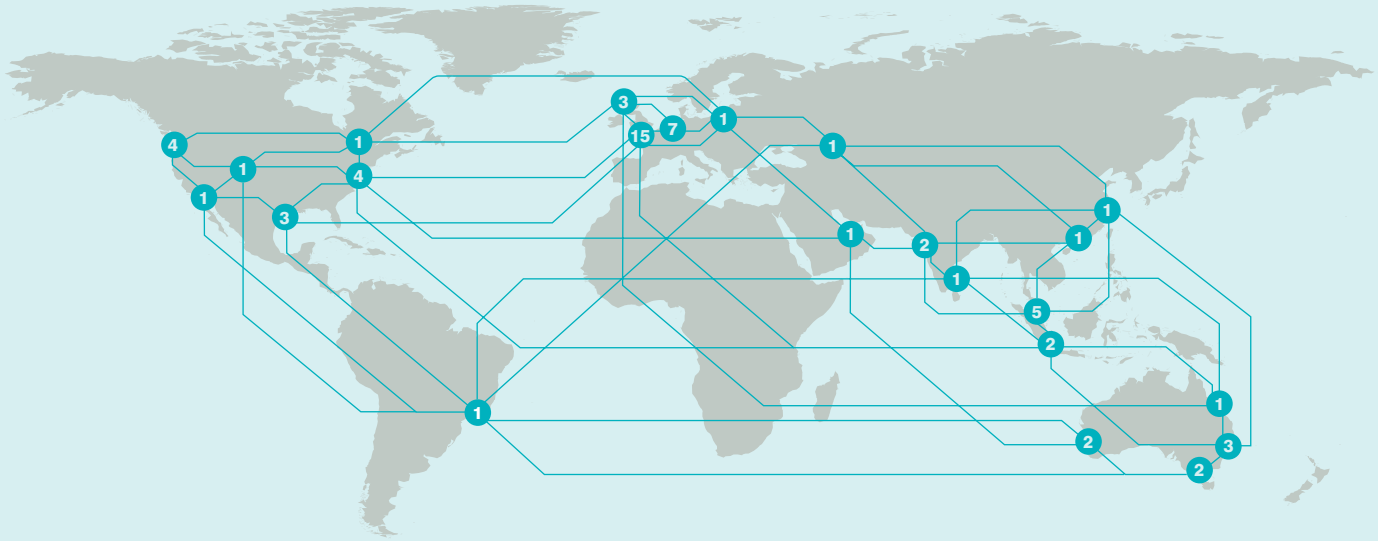
Safety aspects of transfer of personnel and cargo are critical. BMT integrates personnel access systems with its specialist vessel designs to ensure safe and efficient personnel transfer operations.

Vessel Selection and Operation

BMT uses its broad experience and state of the art computational tools to provide advice for the selection and specification of vessel types. This includes route analysis to determine optimal vessel configuration and design, as well as technical and economic assessment of different candidate vessels with respect to passenger numbers, transit speed, powering, seakeeping performance, cost and availability.

BMT is an international design, engineering and risk management consultancy, working principally in the energy and environment, transport and defence sectors.

With locations in all of the major markets we serve, ours is an active network that sees us sharing skills and knowledge, combining disciplines and building international teams to create integrated answers to the questions of our customers.



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