

# Smarter operations

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Discover how intelligent data can help you implement and reap the rewards of smarter, streamlined operations.



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**With more than 20 years of experience and knowledge, and 1,400 consultants and maritime surveyors, BMT Group continues to be at the forefront of this sector.”**

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# The need for intelligent data

Identifying optimal vessel performance requires know-how *and* the use of smart data.

Demand for Fleet and Vessel Performance Management (FVPM) is increasing as growing numbers of ship owners and contractors realise the benefits.

Multiple pressures on the global marine industry mean that stakeholders can no longer afford to ignore the performance of their fleet. The significant growth in demand for FVPM is driven by many different factors:

## Need to reduce fuel costs

Bunker fuel costs have increased by over 200% in recent years – and are likely to continue to rise. To be able to reduce this very significant operational cost, you need to measure exactly how much fuel each vessel is consuming and then use that data to devise a way to achieve optimal fuel savings.

## Increased competition within the market

The steady delivery of new build vessels into an already oversupplied market, coupled with a weak global economy, has put downward pressure on freight and charter rates. To retain an optimal level of profitability, you need to be able to reduce operating costs.

## Need to meet stricter emissions regulations

Since October 2013, every ship visiting French shores must report its CO<sub>2</sub> emissions for the voyage.

Worldwide, you'll soon experience increased regulatory requirements to monitor, report and reduce CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>, other effluents and the general environmental impact of your ships and operations.

## Need to deliver stakeholder transparency

Owners, charterers, investors, insurance companies and technology providers are increasingly demanding evidence of environmental and operational efficiency commitments when making contract decisions. You need to be able to provide validated performance results.

## How we can help you meet these challenges

A ship's energy consumption depends on a number of different parameters. These include prevailing weather and sea conditions, its state of maintenance, and operational factors such as loading and trim conditions.

Our system automatically collects the vessel data and uniquely combines this with independently sourced and validated Metocean data. This allows you to consider the weather and sea parameters independently.

Once each of these elements is monitored, you need to transform this data into actionable information – and understand the impact of any action on the complete economic model.



217% increase in fuel costs

Source: comparison Rotterdam centistokes 2005 to 2012



International shipping is estimated to contribute to 3% of global emissions of CO<sub>2</sub>

Source: IMO 2009



70% of ships use noon reporting

Source: Fathom 2014

# From data to insight

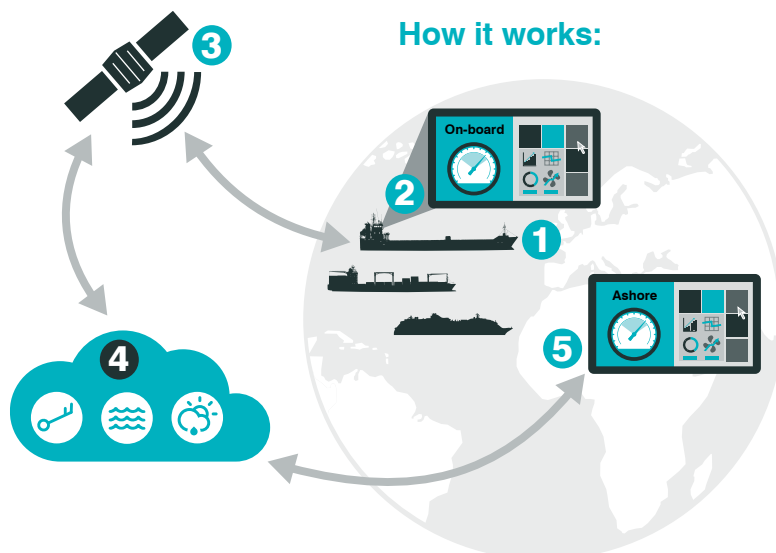
Our pioneering performance monitoring products and expert, 'anytime' support solutions give you the necessary insight to implement optimal efficiency savings.

To make the most of the cost and efficiency savings that FVPM undeniably offers, you need a partner who understands all the complexities and challenges. A trusted team of experts that's always on hand to support you. A partner like BMT SMART.

We are part of BMT Group, a leading international design, maritime engineering, science and risk management consultancy with a reputation for engineering excellence. We're driven by a belief that things can always be better, safer, faster and more efficient.

BMT has over 20 years' expertise and experience in the specialist area of fleet and vessel performance management. In fact, it was BMT that pioneered the intelligence behind successful voyage optimisation systems currently on the market.

We work with you to interpret the data collected on-board using our high value Metocean data to determine true underlying performance. Either by analysing real-time data or assessing historical data, we help you transform complex information into actionable insights, so you can enhance efficiency – and profitability.



- 1 Vessel performance data is automatically collected on-board as your advanced BMT SMART solution interfaces with systems and sensors.
- 2 Panel displays and on-board computers can be used to present key trending information and live feedback continually to the crew.
- 3 Satellite communications are used to automatically relay the vessel's performance data ashore while also updating the on-board system.
- 4 All of this information is stored securely on our servers, where it is modelled with our high-quality Metocean data.
- 5 Our web-based platform provides easy and intuitive access to manage and analyse vessel and fleet performance.

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**As your trusted partner, BMT SMART can help you identify the optimal balance of all factors affecting your operations.”**

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Our pioneering fleet and vessel performance optimisation, management, analysis and consultancy solutions can help you benefit from increased efficiency and profitability in your shipping operations. They can also be used to provide independent verification of your performance results.

**Specifically, we can help you achieve:**

### **Greater insight**

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Tap into the expertise of our team of industry and technical specialists and you'll have access to a rich base of knowledge to help you get the most out of your fleet. Working in partnership with you, we'll help you to enhance operational efficiency, as well as meet legislative requirements.

### **Optimal decision-making**

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Our comprehensive tools give you a consolidated view of your fleet or individual vessels. We'll equip you with everything you need to make informed decisions and fully understand the impact of your decisions, while retaining complete control over your operations.

### **Smoother transition**

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You'll have all the help you need in analysing and managing your vessel performance, and implementing your chosen solutions. Working as your trusted partner, you can rely on our vessel performance experts to build long-term relationships with you and your team, delivering tailor-made services that focus on supporting you every step of the way.

### **Future way of working**

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Our visionary approach will help you move towards achieving fully integrated digital fleet operations. Through automation, access to the best data – integrated and presented in the best way for you – and the nurturing of solid, supportive partnerships, we're able to deliver optimal solutions for your vessels, all aimed at future-proofing your operations.



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**Our team of industry and technical specialists will give you access to a rich base of knowledge to help you to get the most out of your fleet and improve performance.”**

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# Intelligent solutions

At BMT SMART, we're dedicated to delivering solutions for better, safer, faster and more efficient fleet performance management.

We offer a comprehensive suite of products and associated support modules to help you optimise and manage vessel performance, as well as validate and benchmark results.

## Here to help you

We know that not everyone is as comfortable dealing with data as our experts are. That's why we're always on hand to help you work with, interpret and analyse the smart data that our advanced FVPM system collects – in the best way for you.

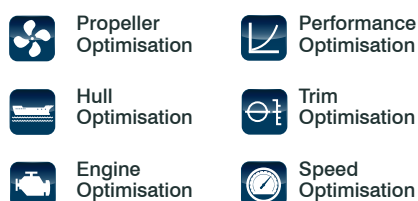
We can help you access the information in a number of ways, both on-board and on-shore, and create views based on your requirements – by vessel or fleet; for charterers, owners or manufacturers. We'll enable you to understand how the information that's at your fingertips can help you optimise your operations, anytime, anywhere.

## Our portfolio provides a complete range of:

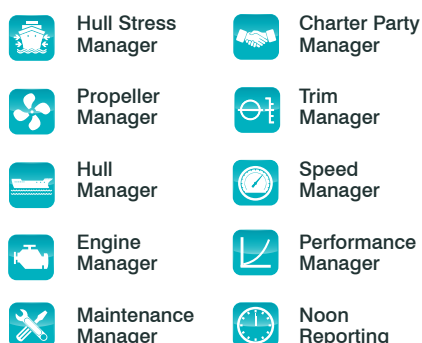
- Optimisation solutions
- Management and Analysis solutions
- Consultancy and Benchmarking solutions

## BMT SMART

### Optimisation solutions



### Management & Analysis solutions



### Consultancy & Benchmarking solutions

Benefit Analysis  
Trending Comparisons  
Vessel Design & Performance  
Human Factors  
Concept Design  
Industry Insights  
Surveys  
Training  
Benchmarking

### Future releases – Optimisation

- Voyage Optimisation
- Fuel Optimisation
- Fleet Optimisation
- Environmental Optimisation
- Energy Mapping Optimisation
- Economic Modelling
- Crew Optimisation

### Future releases – Management & Analysis

- Voyage Manager
- Fuel Manager
- Fleet Manager
- Environmental Manager
- Legislation Manager
- Energy Mapping Manager
- Logistics Manager
- Economic Modelling
- Crew Manager

# Optimisation solutions

Real-time monitoring and dynamic dashboards help you make informed decisions and see the impact of any changes made.

Our comprehensive suite of optimisation solutions provides tools to help you monitor key performance information and make changes dynamically, giving you feedback on your actions.

In today's dynamic world, you need real-time information to make real-time decisions.

But when it comes to optimising vessel performance, things are not always clear-cut; each action has a knock-on effect on other aspects of your operations. If you slow down to increase fuel efficiency, will you still avoid late arrival penalties? How can you tell if maintenance carried out on the engine has positively affected performance?

These are all types of decision crews make on a day-to-day basis. Our optimisation suite of solutions helps you make the best decisions for your business.

Our comprehensive data optimisation solutions use a highly visual system of traffic light and dial displays to provide you with a consolidated view of your vessel. This presents the data in a way that best suits you and can be tailored to specified access levels of users.

Feedback on daily/hourly actions or adjustments and short-term trending information is at your fingertips. This will give you all the insight you need to make independent, informed decisions; the tools to implement sensible, aligned actions to achieve efficiencies – and the knowledge to understand the impact of those decisions.



## Propeller Optimisation

Uses shaft RPM and power measurements to monitor propeller efficiency.



## Hull Optimisation

Uses measurements from the shaft RPM and the vessel speed to indicate hull efficiency.



## Performance Optimisation

Tracks fuel consumption and power against vessel speed to highlight overall vessel efficiency.



## Engine Optimisation

Measures vessel's Specific Fuel Oil Consumption (SFOC) and uses SFOC coefficient to determine the efficiency of each engine.



## Trim Optimisation

Uses a tailored hydrodynamic model, with speed profiles for voyages, to determine the recommended trim for optimal efficiency.



## Speed Optimisation

Compares vessel speed with the voyage speed profile to highlight deviations showing effect of speed changes on fuel efficiency.



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**In 2007, Maersk adopted  
‘slow steaming’. What  
impact would this have  
on your business?”**

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# Management and analysis solutions

Dashboard-style management displays deliver a high-level overview of fleet or vessel performance, plus the ability to drill down into in-depth analysis features.

Our expert management and analysis solutions give you an at-a-glance summary of what's happening on-board, as well as the opportunity to identify key indicators and trends that could lead to a positive change for future operation.

In addition to helping you to optimise fleet and vessel performance, our range of smart data modules also helps you to better manage and control your vessels on a day-to-day basis and run detailed analytics of historical data to spot critical trends that could affect future operations.

Working closely with you, our expert teams help you tap into these management and analysis solutions to provide all the information and insights you need to make better-informed and balanced decisions about your operations – now and in the future.

You'll have all the help you need in managing and analysing your fleet or vessel performance over any period of time, and retain complete control over your operations throughout. The ability to process historical vessel and Metocean data, complete with in-depth analysis, helps you report on previous performance, identify key trends and create data forecasts so you can plan ahead.

Whether you're looking for daily or weekly insights into what's happening on-board and why it's happening, you can set different profiles to define user access to your choice of modules. We can help you to better understand the impact of various changes on overall vessel performance and any potential efficiency gains that could still be made.



## Noon Reporting

Provides visibility of vessel data modelled with Metocean data for management and review.



## Hull Stress Manager

Constantly monitors stresses and bending moments to report on the condition of the vessel's hull.



## Speed Manager

Gives an overview of the planned vessel speed compared with its actual speed and enables in-depth analysis.



## Hull Manager

Helps to identify the need for, or the potential performance and economic benefits of, hull maintenance.



## Propeller Manager

Analytics and long-term trending combine to pinpoint the need for, or measure the impact of, propeller maintenance.



## Engine Manager

Monitors and reports on efficiency trends of individual components to establish the optimal maintenance programme.



## Trim Manager

Presents a summary of the recommended trim compared with actual trim over the course of a voyage and enables in-depth analysis.



## Charter Party Manager

A dashboard overview of charter party performance according to speed and fuel consumption with ability to compare data and generate reports.



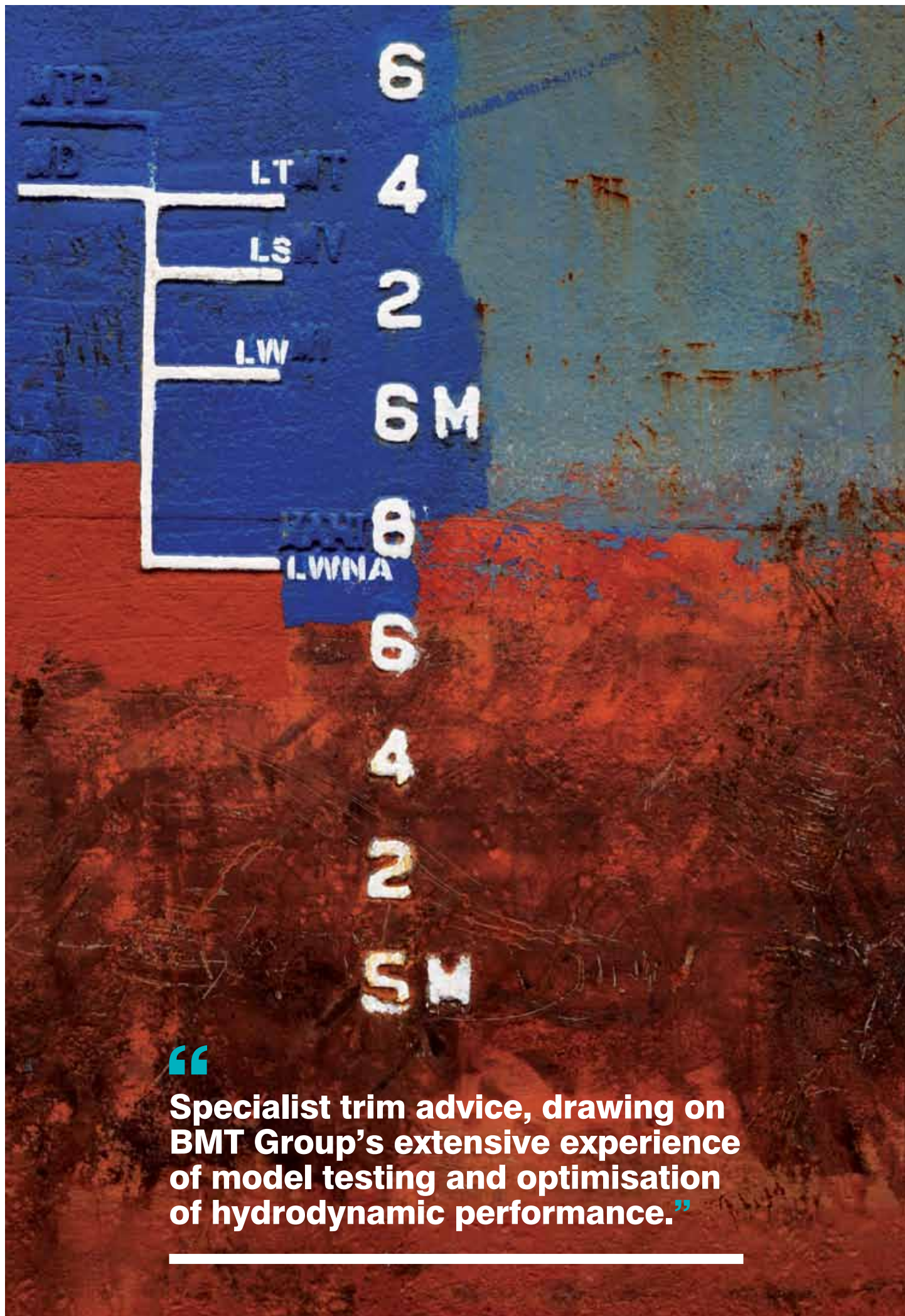
## Maintenance Manager

Uses trends to predict when preventative maintenance is required, if there are any changes to performance that demand corrective action, or to compare maintenance strategies.



## Performance Manager

Enables on-shore monitoring, management and analysis of fuel consumption and power tracked against vessel speed to determine overall vessel efficiency.



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**Specialist trim advice, drawing on BMT Group's extensive experience of model testing and optimisation of hydrodynamic performance.”**

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# Consultancy & benchmarking

A range of consultancy solutions to enhance all aspects of your business, plus benchmarking for independent verification of vessel performance.

All of our products and modules are supported by industry-leading consultancy to help you at every stage of the product lifecycle – from vessel design right through to operational management.

With the proud heritage and backing of the BMT Group, plus 20 years of marine industry insight and knowledge, we're able to offer a range of consultancy solutions to help you with every aspect of fleet and vessel performance management.

Our specialist teams are able to advise and help all stakeholders who are keen to find ways to improve vessel performance, as well as provide validated results to those requiring independent verification of vessel or equipment performance.

We use our expertise in maritime engineering to deliver independent, innovative thinking and technical excellence that's designed to give you the edge you're looking for.

Whether working with you on benefit analysis, vessel design or human factors, for example, all of our 1,400 consultants and marine surveyors aim to help you operate your business in the most cost-effective, safe, reliable and environmentally responsible way.

## Consultancy & Benchmarking services:

- **Benefit Analysis**
- **Trending Comparisons**
- **Vessel Design & Performance**
- **Human Factors**
- **Concept Design**
- **Industry Insights**
- **Surveys**
- **Training**
- **Benchmarking**

# Ongoing excellence

Take advantage of strong, long-term relationships and tailor-made consultancy solutions designed to help you improve the efficiency and profitability of your business.

We pride ourselves on collaboration and the global delivery of great quality service. What's more, we're always innovating, so our range of smart data modules and expert consultancy solutions is always evolving...

– an unbeatable package of optimisation, management, analysis and consultancy that provides all the insight and support that ship owners and charterers need.

As your trusted partner, BMT SMART can help you to identify the optimal balance of all the factors affecting each voyage and the overall performance of the vessels you're responsible for.

What's more, we can do this in real time for instant results; with the benefit of hindsight and historical data analysis to reveal insightful data trends; or even with an eye on the future, to help you build the best possible business model for the months and years ahead.

**“We can help you experience a smoother transition to using intelligent data to achieve efficiencies – and provide all the support you need along the way.”**

Choose to work with BMT SMART and you can reap the rewards of innovation that continually sets the standards for others to follow. The strength of our service capabilities is second to none.

































We've combined our technical excellence and innate understanding of what it takes to achieve optimal vessel performance to launch our own innovative FVPM system



## Now



## Future complete portfolio:

 Propeller Optimisation	 Hull Stress Manager	 Environmental Manager
 Hull Optimisation	 Propeller Manager	 Legislation Manager
 Engine Optimisation	 Engine Manager	 Energy Mapping Manager
 Performance Optimisation	 Hull Manager	 Logistics Manager
 Trim Optimisation	 Maintenance Manager	 Economic Modelling
 Speed Optimisation	 Charter Party Manager	 Crew Manager
 Voyage Optimisation	 Trim Manager	
 Fuel Optimisation	 Speed Manager	
 Fleet Optimisation	 Performance Manager	
 Environmental Optimisation	 Voyage Manager	
 Energy Mapping Optimisation	 Fuel Manager	
 Crew Optimisation	 Fleet Manager	
 Economic Modelling	 Noon Reporting	



Future portfolio

**Our strong service capabilities – now and in the future**

- Part of the BMT Group
- 1,400 consultants
- 24 countries
- 54 offices



BMT SMART is the specialist vessel performance division of the BMT Group, the leading name in global marine consultancy.

A pioneering provider of fleet and vessel performance management systems, we offer a comprehensive suite of products, consultancy and support solutions to help you optimise and manage vessel performance, and validate and benchmark results.

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