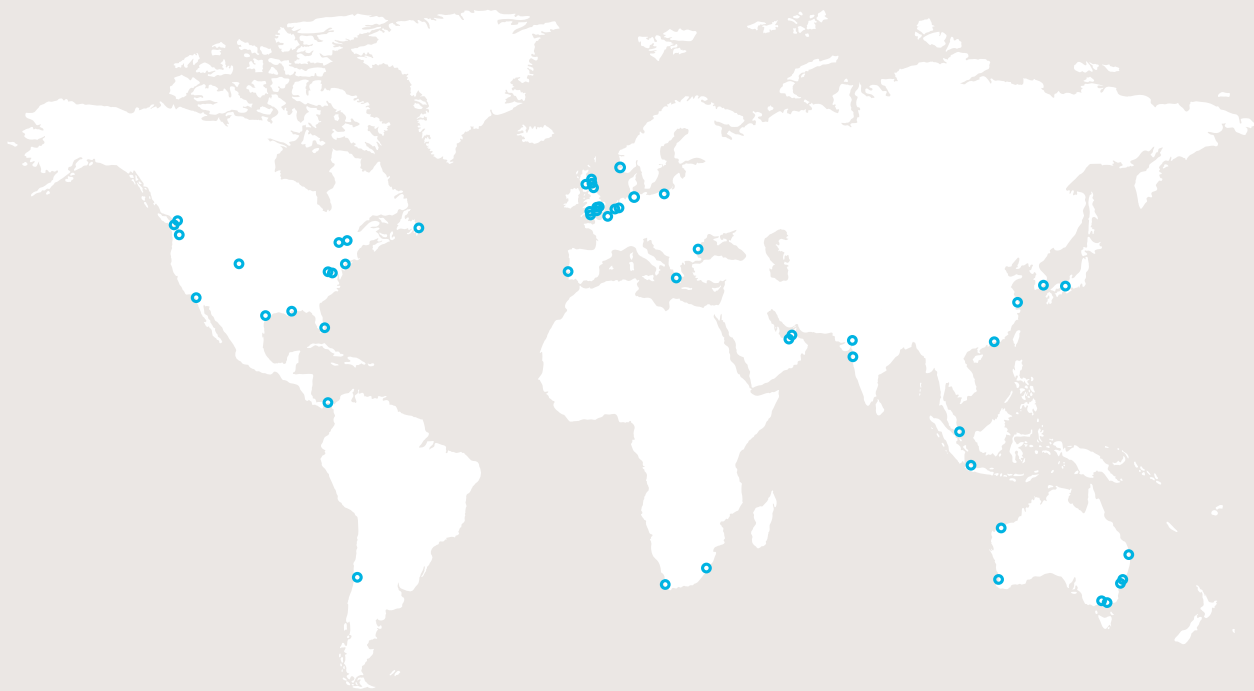


BMT Fleet Technology is an innovative leader in providing through-life engineering support from concept development through design, construction, operations, life extension/upgrade and disposal. The company employs its technological expertise and practical experience to provide services to clients in the Marine, Defence, Energy & Environment, Civil & Industrial Infrastructure, and Transport industry sectors. We are committed to retaining and applying practical knowledge of sector-specific factors in developing responsive solutions to customer's needs. The company's hallmark of engineering excellence involves the provision of leading edge structural and mechanical system damage assessment, materials and welding engineering, inspection and maintenance management, naval architecture and marine engineering, environmental and cold regions engineering services.



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Certified to ISO 9001:2000, we are dedicated to ongoing quality and management systems.



# Coping With Cold

## Services for Ice and Extreme Conditions



# Planning and Development

BMT Fleet Technology can help you plan for a wide range of projects for cold temperature environments. These conditions can pose special challenges for operational efficiency, health, safety and environmental protection. We can provide a full spectrum of services in these aspects of your business.



## Data Collection

The length and intensity of winter, ice thickness and mobility, precipitation and wind chill and other factors may all be important to planning cost-effective projects. BMT has large databases of environmental information, and can utilize the latest in sensing technology, remotely or on site to capture current data. Our data collection and analysis will establish concrete baselines to define the operating environment.

## Requirements Definition

We have over 30 years of corporate experience in cold regions technology, and a group of senior staff with wide ranging expertise who will listen to your vision and develop approaches suited to your needs. BMT will undertake technical and economic feasibility studies, risk assessments, and other preparatory work to help ensure that project requirements are well and cost-effectively defined.

## Design Development

BMT can take your project from concept formulation through to production engineering. Our engineers, technologists and designers are supported by other specialists with expertise in areas ranging from materials science to software development. Frequently, cold regions projects will require special approval processes. BMT can help to develop the frameworks for these, and to develop any level of detail that may be required.

## Typical Projects

- Transportation/operability simulation for ice infested waters
- Design of icebreakers and offshore structures
- Pipeline route analysis
- Escape system concepts for operations in ice
- Design of ice control structures
- Winter maintenance of roads and runways

# Operations and Maintenance

Once your project has moved ahead, keeping it operating safely and efficiently are other areas in which BMT can provide support. Where operations run into problems, we can diagnose causes and help you to implement solutions. When the project has run its course, our expertise runs to decommissioning and remediation.



## Performance Validation and Monitoring

BMT will use a range of techniques to predict or verify performance at every stage in a project. We have developed powerful numerical simulation techniques, and have pioneered many aspects of modeling for ice-structure interactions. We plan, engineer and manage full scale trials throughout the world. We install long-term monitoring systems on ships and installations, ranging from structural load sensors to video monitors of ice build-up on rivers or around offshore structures. Our own team's experience in field projects helps ensure all our work is based on realism and practicality.

## Operational Guidance

Even the most experienced staff, or the crews of ships and offshore platforms, may need additional guidance on how to get the best performance out of their systems. BMT can provide training and on-site guidance, including the development of procedures, documentation and software. We will even provide contingency plans for emergency evacuation scenarios and oil spill disaster planning.

## Troubleshooting

Many cold regions projects are operating at the frontiers of knowledge, and the unexpected can easily arise. BMT will work with your team to resolve problems and prevent their recurrence. When faced with knowledge gaps, BMT will partner with our clients to undertake research and the development of new and better solutions.

## Team Skills

- Prediction of ice loads on marine and shore-based systems
- Design of ice-capable structures
- Active and passive ice management
- Topside icing prediction/prevention
- Risk assessment and analysis
- Emergency response planning
- Trials planning and management