



COAST AND MARINE

Effective solutions for complex environments

Coastal environments are transient, continuously reshaped by waves, tides, surges, erosion and deposition. The competing needs of commercial, recreational and residential interests put increasing pressure on coasts around the world. In addition, the combined effect of globalisation, growing energy demand and increasing wealth requires the transportation of goods over longer distance – often by sea. To accommodate more and larger vessels, new ports and terminals are being built, and existing facilities and navigation channels are being expanded. Uncertainty about the impacts of climate change and the occurrence of extreme events means that solutions to these issues have to be flexible and adapted to work in harmony with nature – not against it.

THE CHALLENGES

- Accessing cooling water and process water for infrastructure projects along coasts and estuaries such as land reclamation, construction of harbours and navigation channels, and industrial developments
- Carefully planning and designing man-made changes to dynamic environments to avoid land loss due to erosion, flooding, sedimentation, and other undesirable environmental impacts
- Accessing clean and cool seawater for energy production and to operate desalination plants
- Predicting hydrodynamic regimes, sediment transport patterns, and resulting morphological changes early on to successfully develop shoreline infrastructure projects

OUR APPROACH

At DHI, we have been solving complex challenges in coast and marine environments worldwide since 1964. Our comprehensive knowledge and experience, combined with advanced tools that we develop and use, gives us a unique insight. We can therefore help you work with nature and adapt human activities to achieve truly sustainable and efficient engineering work.

OUR SOLUTIONS

Our solutions combine the knowledge of natural processes with in-depth understanding of our numerical models and the data needed to set them up, calibrate and verify them. We can efficiently transform model results into sustainable engineering solutions designed to cope with the future climate. We rely on our in-house physical model testing, survey and monitoring capabilities as well as MIKE Powered by DHI software.

THE ULTIMATE GOAL

SUSTAINABLE, COST-EFFECTIVE AND FUTURE-PROOF ENGINEERING WORK

OUR EXPERTISE

COASTAL ENGINEERING

We help you work in harmony with nature to accomplish cost-effective and future-proof engineering work for:

- coastal structures
- waterfront development
- coastal flooding and erosion
- sediment transport and morphology

ESTUARINE AND SEDIMENT ENGINEERING

We provide you with solutions to sustainably achieve:

- shoreline and estuary management
- dredging and spill management
- cooling water recirculation

PORTS AND TERMINALS

To design, develop and manage efficient and sustainable port and terminal structures, we provide services in:

- coastal structures
- hydraulic structures and Computational Fluid Dynamics (CFD)
- hydraulic scale model tests
- model testing technology

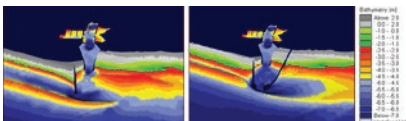
SURVEY AND MONITORING

To support your coastal and marine projects, we offer tools and services for:

- survey and monitoring
- Metocean data

“ More than half of the world's population now lives within 60 km of shorelines — areas greatly threatened by climate change impacts

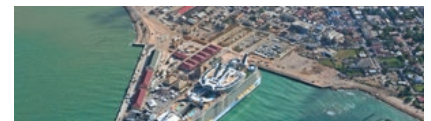
CASE STORIES



In Hvide Sande on Denmark's western coast, the local fishermen were facing a problem: their harbour entrance was not only too shallow for modern fishing vessels, but also regularly obstructed by sediments — some times for weeks at a time. In an innovative approach built on our advanced morphological modelling tools and a large set of field data, we managed to solve these varied problems at one go.



The Nord Stream Pipeline crosses the Baltic Sea, connecting the vast natural gas reserves in Russia and energy markets in the European Union. One important aspect during the pipe laying process was the protection of the affected environment and the mitigation of potential impacts. To monitor and record sediment spill, we deployed customised environmental monitoring buoys carrying sophisticated instruments and a satellite communication unit.



Falmouth cruise terminal on Jamaica's north coast is a welcome point for shiploads of tourists each year – literally. To make sure the terminal is properly prepared for the extreme hurricane events occurring in the region, we took a close look at the expected waves and evaluated the best protection measures. Our solution included an innovative combination of three different numerical wave models, physical model tests and literature findings.

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For more information, visit: www.dhigroup.com