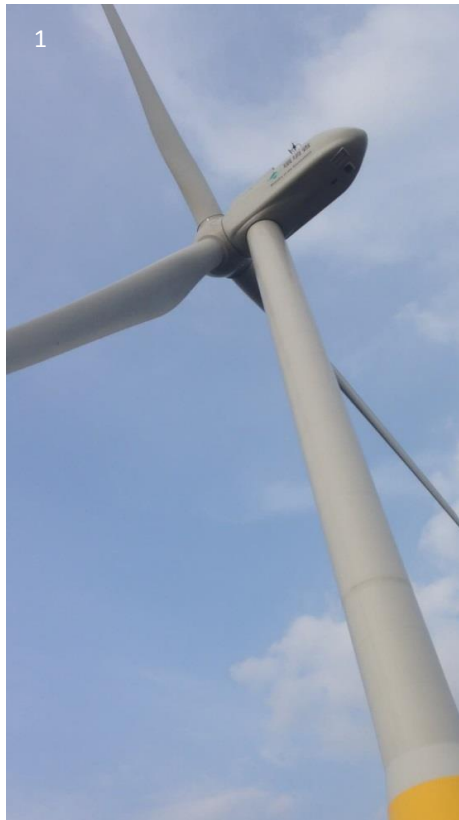




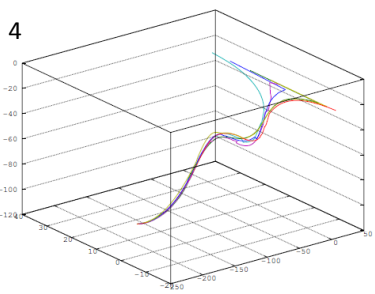
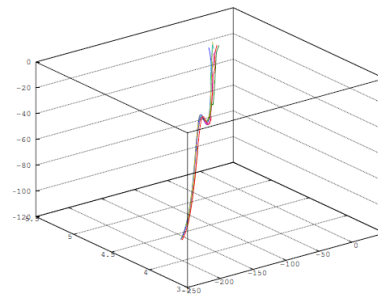
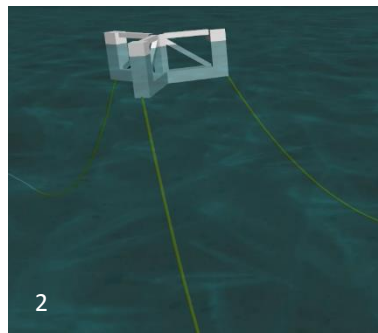
OFFSHORE WIND



Maine Marine Composites



Engineering...
for the Marine Environment



The ocean environment is challenging in every way. MMC can reduce your risks by analyzing your boat, ship, mooring system, energy converter... whatever system you need to deploy in the water.

Photo Credits: (1) Photograph of Kabashima Island Spar (2) MMC computer simulation of floating wind turbine foundation using OrcaFlex (3) VolturnUS 1:8 scale (BSEE TAP-758AA) (4) MMC design of a umbilical system for a floating wind turbine

MMC specializes in motion prediction for ships and platforms, advanced hydrodynamic analyses, and mooring system design and simulation. Our engineering staff has decades of experience with design and analysis of ships and offshore energy systems, and has successfully completed diverse and challenging projects for many of the most highly regarded offshore and ocean energy companies.

Sample Projects:

- Maine – Mooring and seakeeping response – tidal and river current energy converters.
- BSEE/BOEM – Fatigue analysis of offshore floating wind mooring systems
- Scotland – Simulation and mooring system analysis for barge-transported road segments for Firth of Forth replacement crossing bridge

Specialized Services:

- Advanced Hydrodynamics Analysis using CFD, ANSYS Aqwa
- Finite Element Analyses of complex structures and materials
- Mooring System Design and Analysis using OrcaFlex, Aqwa with Cable Dynamics
- Ship and Barge Seakeeping and Stability Analysis using Aqwa
- Analysis and Simulation of Complex Marine Systems using multi-body simulation in OrcaFlex

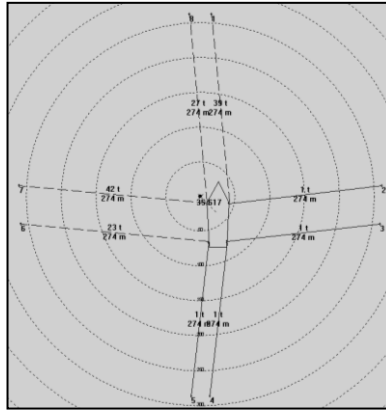
Meeting Customer Needs, Exceeding Customer Expectations

We offer each customer the right mix of expertise, performance and price. Our staff has expertise in marine, civil, electrical, software and aerospace engineering.

Our software analysis capabilities include:

- ANSYS Design Modeler, Rhino3D, MultiSurf, SpaceClaim

- CAD/CAE models of ocean platforms, hulls, wave and tidal energy converters
- ANSYS-Aqwa with Cable Dynamics
 - Potential flow (Radiation/Diffraction) analyses
 - Determine wave loads, Response Amplitude Operators (RAOs)



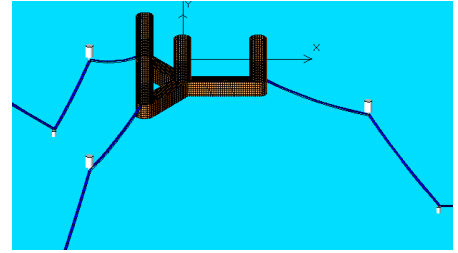
- Orcina OrcaFlex
 - Nonlinear finite element mooring model in time domain
 - Coupled with FAST to Analyze Floating Offshore Wind Turbines (FOWT) hydrodynamics including platform, turbine, moorings
- ANSYS Structural Professional
 - FEA of complex structural systems
- NREL FAST and WECsim
 - Simulation of Wave Energy Converters and controllers

Mooring Systems for Demanding Environments

The correct mooring system can make the difference between the success of your project, severe system failure, or the burden of excessive costs.

MMC is experienced in the design and analysis of deep water ocean moorings, shallow water wave / wind energy moorings, and river moorings. Our software analysis tools are “best in class,” selected to give you the accurate answers you need on a timely, cost-effective basis.

We can help you select the best anchor, embedment, piling or gravity, and the best mooring components, chain, steel, synthetic rope or pipe.



Computer design of floating offshore wind turbine mooring system.

Based on our ongoing research, we can predict the life expectancy of your mooring system and we can help you to develop a maintenance schedule to minimize your operating risks.

Offshore Wind Energy Projects

MMC has been involved in research and industry-funded offshore wind projects including:

- Research for the U.S. Bureau of Safety and Environmental Enforcement
- Deepwater Wind’s Block Island Wind Farm
- University of Maine’s VoltornUS floating offshore wind project

Our engineering staff has designed mooring systems, analyzed electrical cable laying and umbilical performance, and conducted fundamental research into long term reliability of floating wind turbines expected to survive for decades at sea in dangerous, corrosive, and hostile environments.



Adding MMC to your project team will ensure that your mooring system is developed, analyzed and deployed successfully.

