

MMI Engineering applies advanced analytical methods in combination with practical design experience to create efficient solutions for the development of ocean energy resources.

The professionals at MMI have been developing new technologies for the development of frontier ocean projects for the oil and gas industry for 30 years. This technology and understanding has been applied to introduce a new set of solutions to develop renewable ocean energy resources.

Offshore Wind, Wave & Tidal Systems Energy

MMI provides consulting services to power utilities, developers, operators, contractors, financial institutions, insurance companies and regulatory agencies. Our services include:

- Project feasibility studies
- Concept development & evaluation
- Site data acquisition & assessment
- ROI analysis
- Structural risk assessment
- Coupled load analysis
- Preliminary and detailed design
- Design certification & verification
- Owner's engineer representation
- Construction oversight



MMI specialises in the thorough and rigorous analysis of foundations (fixed and floating support structures) used for offshore wind, wave and tidal energy systems. Our team has demonstrated the ability to develop robust structural solutions based on a complete understanding of the effects of the marine environment and the ability to apply sound engineering principals to each unique project. MMI also has experience in assisting clients to configure power take-off cables and the associated buoyancy and end terminations.

Oil & Gas Platform Studies

MMI has developed concepts, performed front end engineering design studies as well as preliminary and detailed designs of drilling and production platforms in extreme environments. This includes developments in deepwater sites, areas subject to extreme hurricanes, extra-tropical storms and earthquakes, areas subject to annual and multiyear ice flows, and sites with subsea blowout potential caused by solid methane formations. MMI also has substantial experience with concept optimisation, performed to develop cost effective options for the development of marginal fields. The range of system designs include: monopiles and caissons, braced caissons, three, four and eight leg jackets, jackets with main and/or skirt piles, compliant towers, concrete gravity base structures, tension leg platforms, moored semi-submersibles and spar buoys.



Offshore EPIC (Engineering, Procurement, Installation & Construction)

MMI's concept development experience is complemented with "real world" experience in the design and construction of offshore structures. This experience includes regions with widely varying site and environmental conditions, including the North East and West coasts of the US; the Gulf of Mexico; the Cook Inlet of Alaska; the Bearing Sea; the Beaufort Sea; the North Sea; the Caspian Sea; Offshore West Africa; South China Sea; Gulf of

Thailand, offshore New Zealand; and West Shelf of Australia. This experience provides the background required to understand the practical aspects of design, fabrication and installation planning that have major impacts on substructure and foundation cost. The firm's offshore EPIC experience includes both large production platforms and minimal structures.

Development of Design Standards

MMI has participated in the development of design standards for both oil and gas and renewable energy. We completed the evaluation of the IEC standards to assess their applicability to US wind farm projects that are potentially subject to hurricane conditions. Other experience surrounding offshore codes and standards includes the development of earthquake criteria and design procedures, and the development of risk assessment methods for the assessment of existing structures. MMI has also acted as a design certification agent under both state and federal design verification programmes for offshore platforms.



Advanced Analysis of Offshore Structures

A core capability of MMI is the analysis of offshore structures that are subject to extreme loads, complex dynamic loading, nonlinear material behavior and large deformation response. This experience includes coupled wind and wave load analysis, explicit soil-pile interaction, including cyclic degradation and rate of loading effects, load definition for breeding wave conditions and wave slam, frequency and explicit time domain dynamic analysis, spectral fatigue analysis, fragility analysis for systems subject to overload conditions, analysis of structures subject to degradation due to fatigue, corrosion, accidental damage and environmental overload.