Mermaid

Reducing risk and cost by taking marine industry project planning processes onto the next level

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Head of Subsidiary
Mojo Maritime France SAS

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Overview of the company

History, Location and Structure
Reducing Risk – Reducing Cost

WIND

WAVE

TIDE

MARINE OPERATIONS

ENGINEERING

CONSULTANCY

A part of James Fisher and Sons plc
Marine Services Worldwide
History

- **2004**
  - Creation of Mojo Maritime Ltd
  - Telecom subsea cable installation, MRE

- **2010**
  - Consultancy services
  - Inception of Mermaid

- **2012**
  - Inward investment to accelerate product development

- **2014**
  - Creation of the French subsidiary Mojo Maritime France SAS

- **2015**
  - Company acquired by James Fisher Marine Services (100%)
Capabilities

Marine Operations, Engineering and Consultancy Services to the MRE Sector
# MARINE OPERATIONS

- Marine Operations Planning
- Marine Project Management
- Subsea Operations
- HSEQ Management

<table>
<thead>
<tr>
<th>Client</th>
<th>Description of Services</th>
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<tbody>
<tr>
<td>James Fisher</td>
<td>Installation of four power cables for a tidal array in the Pentland Firth.</td>
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<td>Marine Services</td>
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<td>Polygen</td>
<td>Installation of a prototype wave energy device at the Falmouth Bay Test Site (FABTEST)</td>
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<td>VOITH Hydro</td>
<td>Complete installation operations of a monopile foundation (Bauer Renewables subsea drill), cable management system &amp; array cable, turbine and ADCP devices for the Voith Hydro tidal turbine.</td>
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<tr>
<td>RWE Npower</td>
<td>Client representative services for Rhyl Flats Turbine Operations and Maintenance for Jack Ups</td>
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ENGINEERING & CONSULTANCY

- Installation and O&M Strategies
- Mooring Designs
- Cable Route & Stability Analysis
- Hydrodynamic & Structural Modelling

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<td>Meygen</td>
<td>Front End Engineering of a large commercial tidal array in the Pentland Firth.</td>
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<td>Renewable UK</td>
<td>Creation of the Offshore Renewables Aviation Guidelines – due for publication January 2016</td>
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<td>Fortum</td>
<td>Cable connection and Mooring design for a three wave energy converter array at the Wave Hub.</td>
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<td>DONG Energy</td>
<td>Cable fatigue analysis to assess potential damage and overall predicted service life. The cable was located in shallow water and a strong tidal regime.</td>
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<tr>
<td>Bauer Renewables</td>
<td>Collaboration development of innovative large diameter seabed drill called BSD-3000 for installation of monopile for the Voith Hytide project.</td>
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Products: Mermaid

Cost & Risk reduction through better project planning
Case Study

- **Floating Wind**
  - New technology
  - Little industry experience
  - BUT significant ambition to build the first commercial arrays by 2020
- **Installation methodology – Towing to site**
  - Lighter vessel assets (tow-boats)
  - BUT very sensitive to weather conditions
- **Questions:**
  - How many vessels do we commit, and of what capability?
  - At what point does the tow become reliable?
  - How much do we want to parallelise the installation?
  - Should we be doing O&M at site, or tow back to port?
  - Can we even do O&M at certain times of year?
Solution

- To develop better strategies we need a tool that can help to answer the problem.
- This tool needs to handle the following complexities:
  - Multiple vessels are involved in different parts of a complex operation (laying moorings, tow to site, laying cables etc). From a marine operations perspective, it’s more novel and complex than a solid foundation.
  - The whole operation needs to be repeated many times.
  - Port draught restrictions have a significant impact on site accessibility.
Managing the weather risk on sophisticated marine operations
Understanding Risk

The devil is in the detail…….

- Rolling effect on schedule.
- What constitutes a weather window.
- Marine warranty surveyor requirements.
- Different conditions at different sites.
- Vessel limits differ from task limits.
- Other limits need to be taken into account.
- Simultaneous operations.
Analysing Risk

With 20 years of hindcast data, you can determine;

- The difference between a “good” year and a “bad” year.

- Where the project bottlenecks occur.
Any Questions?

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