

The complexity of the technical challenges within technology design and project development requires continual attention to detail to achieve on time delivery and through life reliability performance. Astrimar's engineered solutions services are underpinned by design for reliability and technical risk management practice.

Astrimar provides specialised engineering, design and analysis services through the entire project life cycle from concept development and detailed design through to project engineering, supporting installation and ongoing inspection, repair and maintenance activities and decommissioning works. For more complete and integrated solutions, Astrimar collaborate closely with other local companies specialised in digital survey, manufacture and testing.

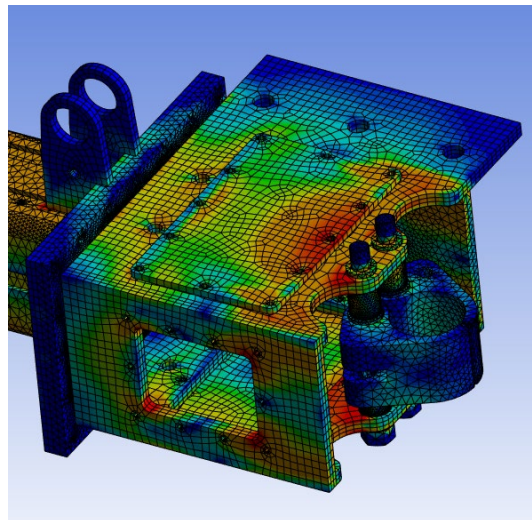
Reliability by design

Astrimar's engineers are well established in the subsea energy industry having built, in previous roles, a strong track record of successful project delivery. From developing a concept, we also then perform the engineering and detailed analysis, deliver project engineering and support manufacturing, testing and commissioning.

Astrimar's multi-skilled engineers, are each able to undertake the conceptual modelling, detailed engineering, basic and advanced analysis, project management and offshore support. Astrimar's extensive track record in industry leading best practice in Reliability, Integrity and Technology Qualification (including API RP 17Q and API RP 17N) ensure these are integral to our approach.

Astrimar's experienced engineers provide a range of engineering, design, and advanced analysis services addressing:

- ④ Functional, Design, Performance and Reliability Specification
- ④ Concept development, evaluation and selection
- ④ Front End Engineering Design (FEED)
- ④ Detailed design and design for manufacture
- ④ Finite Element (FE), Computational Fluid Dynamics (CFD), Hydrodynamic and Fatigue analysis, numerical analysis
- ④ Project management from kick-off through to commissioning and in-service support.
- ④ Reliability analysis including FMECA, RAM, FTA and ETA to inform system, assembly and component design
- ④ Compliance with industry standards and recommended practices
- ④ Assessment of Qualification Status and Technology Readiness, Development of Technology Qualification Plans
- ④ Technology assurance, independent verification and technical risk assurance processes
- ④ Rig and equipment survey (in partner collaboration)
- ④ Manufacture, assembly and testing (in partner collaboration)



The tools we use

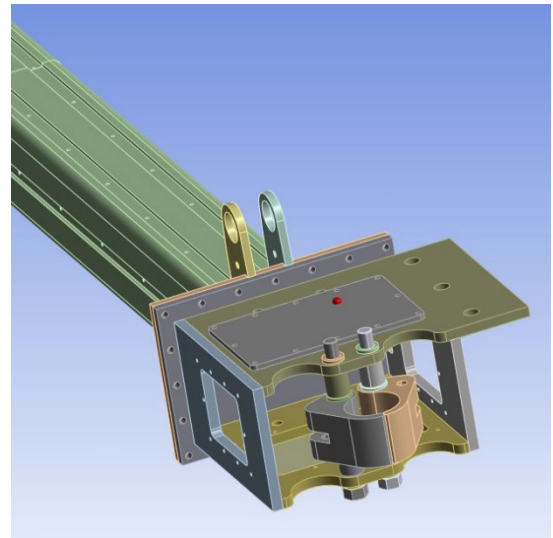
State-of-the-art engineered solutions require state-of-the-art engineering tools. Astrimar's suite of engineering software includes: Autodesk Inventor (3D CAD), ANSYS Suite (linear/non-linear FEA and CFD) and Mathcad.



Areas of experience

Astrimar's engineers are experienced in providing engineering, design, advanced analysis and assurance applied to a range of systems and equipment including:

- ④ Subsea and top side life of field extension equipment solutions
- ④ Wellhead integrity systems for new and existing wells
- ④ Rig and drillship based handling and deployment equipment
- ④ Sealing and repair technologies for oil & gas containment
- ④ Subsea riser integrity and well intervention solutions
- ④ BOPs, Subsea Well Capping and Containment Systems
- ④ Subsea ROV and diver controlled lifting, handling and tooling equipment, including specialist decommissioning tooling
- ④ Increasingly building experience in marine renewables systems including:
 - Offshore wind – with focus on subsea cables
 - Wave – wave energy converter design and reliability
 - Tidal – turbine design and qualification



Why choose Astrimar?

Astrimar engineers' breadth and depth of expertise and experience make them uniquely positioned to offer leading-edge design, analysis and delivery of engineered solutions with:

- ④ High flexibility and an ability to respond quickly to changing client requirements.
- ④ Proven track record of effective and innovative specialised engineered solutions, including safety critical applications.
- ④ Very high client confidence, developed as a result of a continually growing track record.
- ④ Inherent operational practices including rigorous design and attention to detail, state of the art analysis skills, best practice qualification, robust project management.
- ④ Concept to completion service.
- ④ Trustworthy innovation realisation – taking client ideas and turning them into a working reality
- ④ Industry best practices (including API RP 17Q and API RP 17N) integral to our business.
- ④ Extensive analysis expertise in FEA (linear and non-linear), CFD, coupled field FEA-CFD, fatigue and hydrodynamic analysis.
- ④ A focus on providing cost effective and timely solutions that are right first time, with reliability and integrity at the core and from the outset.

Find out more

For more information related to any of our Engineered Solutions or wider services, please contact us via our website or info@astrimar.com email address. For specific enquiries related to our Engineered Solutions offering, please direct your enquiries to Lev Roberts Haritonov or Steve Walls.