



ALBION MARINE SOLUTIONS

TRUSTED ENGINEERING PARTNER

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Our Mission

Albion Marine Solutions Ltd., Canada is dedicated to providing the shipping industry with reliable, professional and cost effective consultancy, engineering, site supervision, retrofit and project management services worldwide in the fields of all marine, offshore and oil and gas activities.

Our personnel have extensive experience in operations, maintenance, repairs and retrofits of tankers, FSO, FSRU, bulkers, LNG, general cargo, containers, tugs, shuttles and offshore vessels.

Albion Marine Solutions will deliver reliable and quality project management and engineering solutions at optimal Total Cost of Ownership.

Our unique combination of operational experience, broad engineering expertise and professional project management skills are at your service.



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Partners

- Green Ocean, Singapore
- Jobson Dan Marine, Shanghai China
- Tenerife Shipyards, Tenerife Spain
- As Tech, Gdynia Poland
- IShip Design, Ahmedabad India
- Marine Trade, Split Croatia
- AllFlo Technologies, Surrey Canada

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Global Service Network:



Project Management

Albion Marine Solutions Ltd. specializes in project management services to marine, offshore, oil and gas industries. Our specialists assist clients by taking on entire EPCM projects from inception to completion phase or by executing on specific tasks such as: Business Case Development, Tendering, Project Planning, Interface Management, Engineering, Procurement, Logistic, Construction Management and Commissioning.



Our expertise includes:

- Vessel conversions and installations: FSO, FPSO, FSRU and shuttle tankers.
- New equipment retrofits.
- Fleet upgrade programs.
- Legislation compliance refits.
- Ship propulsion re-powering.

Engineering Services

Albion Marine Solutions Ltd. Brings extensive operational expertise and collaborates with design outfits to provide clients with full range of design and engineering services. Our professionals specialize in design, operation and maintenance of the propulsion plant and other machinery systems found in all oceangoing ships. We are capable to provide reliable and cost effective “turn key” solutions, that would include:

- Concept Design
- 3D Scan
- Feasibility Studies
- Basic Design
- Detailed Design
- Completion and Commissioning Plans
- Operation Procedures

Our specialists have background in concept design, feasibility studies, pre-FEED, FEED and detailed design of offshore installations and terminals.



LNG, CNG and LPG Solutions

Albion Marine Solutions team has an extensive new build, conversion and operational experience in use of natural gas as a fuel and carriage as cargo.

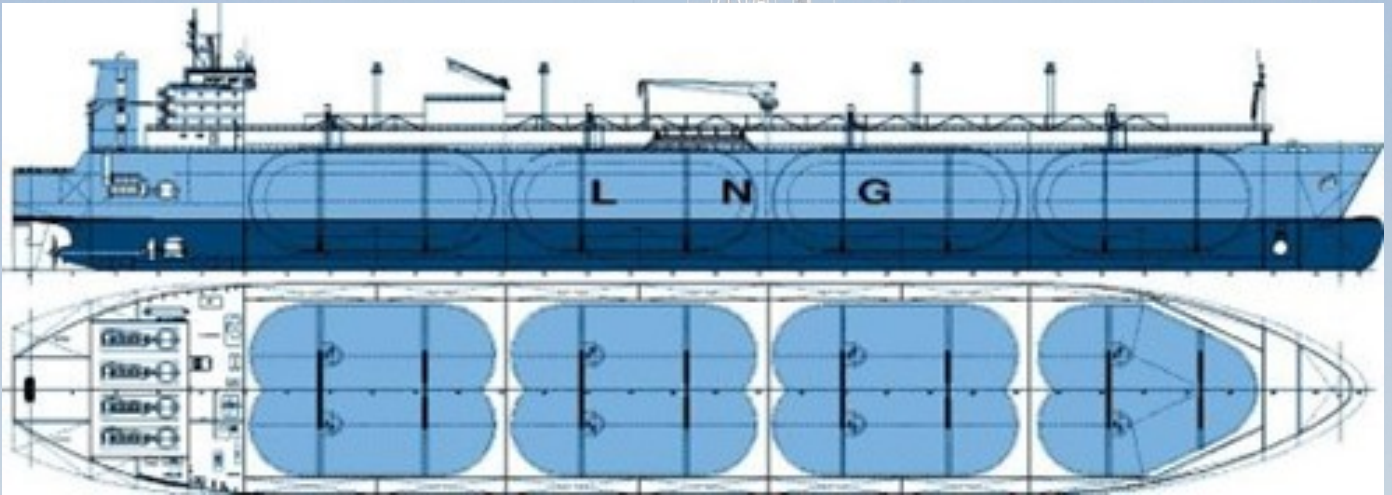
We have required expertise to develop the solutions in a variety of natural gas fields, including:

- LNG/CNG/LPG as cargo
- LNG and CNG as a fuel
- MEGI conversion
- LNG bunkering & ship to ship operations.
- LNG Terminals
- Offshore storage
- Onshore and small engine application

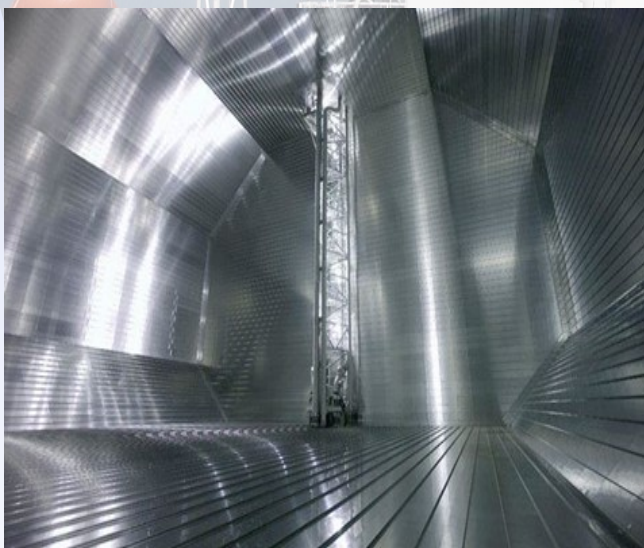
The interest to the conversions to an LNG as a marine fuel is driven by stringent air emission reduction legislation and shipowners' focus on reduction of the bunker OPEX.



We provide consulting as well as “end to end” engineering and project management services for conversion of power, propulsion and steam plants to LNG. Our technical and cryogenic experts work closely with customers to select the most viable lay out option.



When developing the project specific LNG/CNG solution there are number of considerations to keep in mind such as boiler engine technology, auxiliary equipment, naval architecture, marine engineering, yard management, training and bunkering logistics.



Being ship management professionals ourselves, we know how to work with multiple stake holders in order to deliver the project on time and in a budget.

Air Emission Reduction Solutions

Our professional team is well prepared to plan, execute and support the retrofit of scrubbers, selective catalytic reduction and exhaust gas recirculation systems on clients vessels while managing the operational and technology risks, and sourcing the most cost-effective and reliable solutions from Capex and future Opex perspective.

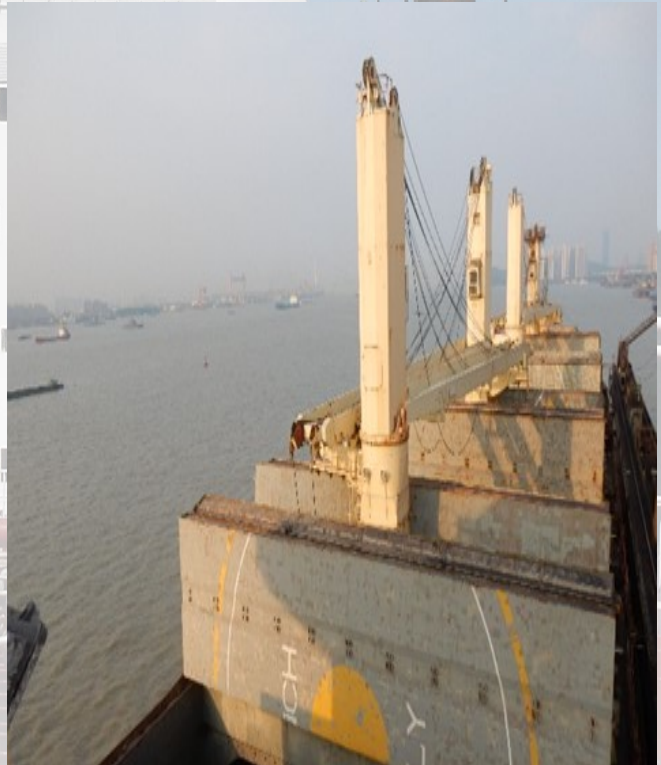


Our experts can carry out a Feasibility Study and calculate pay back period based on vessel's operational profile. We are available to assist Owners in selection of most suitable equipment and provide engineering, fabrication, retrofit and project management service.

Ballast Water Management

We offer end to end solutions , managing all aspects of the project from selection and procurement of the suitable system, to detailed engineering design, completion of modifications, installation, training and support.

Our team of professionals dedicated to your vessels will consist of operational experts, design engineers and specialists in ballast water treatment systems, system deployment and piping, and specialists in engineering work and installation.



We provide a wide range of independent services in the field of Ballast Water Management: project management, engineering, consultancy, fabrication, installation and site supervision. Our expert portfolio combines an operational experience, technical expertise and a legislative knowledge.

We maintain an extensive technical and commercial database of BWTS currently available on market. Albion Marine Solutions is affiliated and/or closely collaborate with number of BWTS suppliers. Our personnel are trained by equipment manufacturers, have marine background and hands on experience in project management of fleet upgrade programs



Shipowners benefit from our unique “turn key” BWTS retrofit package or part of it, which includes, but not limited:

- Project planning
- BWTS selection
- Crew training
- Operation support
- Ballast Water sampling services



Legislative Compliance Solutions

Albion Marine Solutions Ltd. Assists ship owners and operators in complying with looming marine environmental legislation. Insufficiently robust solutions could have detrimental commercial and compliance impact on vessel operation.

Our professionals assist owners in selection and implementation of the reliable legislation compliance at optimum total cost of ownership.



We provide consultancy, market research, feasibility studies, equipment selection, engineering package, project management and yard supervision/riding crew retrofit services.

Our independent expertise extends to:

- Machinery and ship systems conversion for operation on low sulfur distillate fuels.
- Bilge water and sludge handling optimization.

Offshore Oil and Gas Services

Albion Marine Solutions support our customer through the entire FSO/FPSO/FSU conversion project life cycle: business case development, tendering, planning, procurement, engineering, construction, commissioning and installation.

Our team has a proven track record of the successful completion of offshore projects. This is achieved through the robust EPCM life-cycle framework:

- Diligent portfolio selection at the beginning
- Investment commitment in design and planning stages
- Setting adequate PMO, organization of project teams and partners
- Interface management between engineering and construction.
- Contractual risk sharing between client, owner/operators, EPCM and vendors
- Effective tools for performance management project control





Albion Marine Solutions Oil and Gas services include:

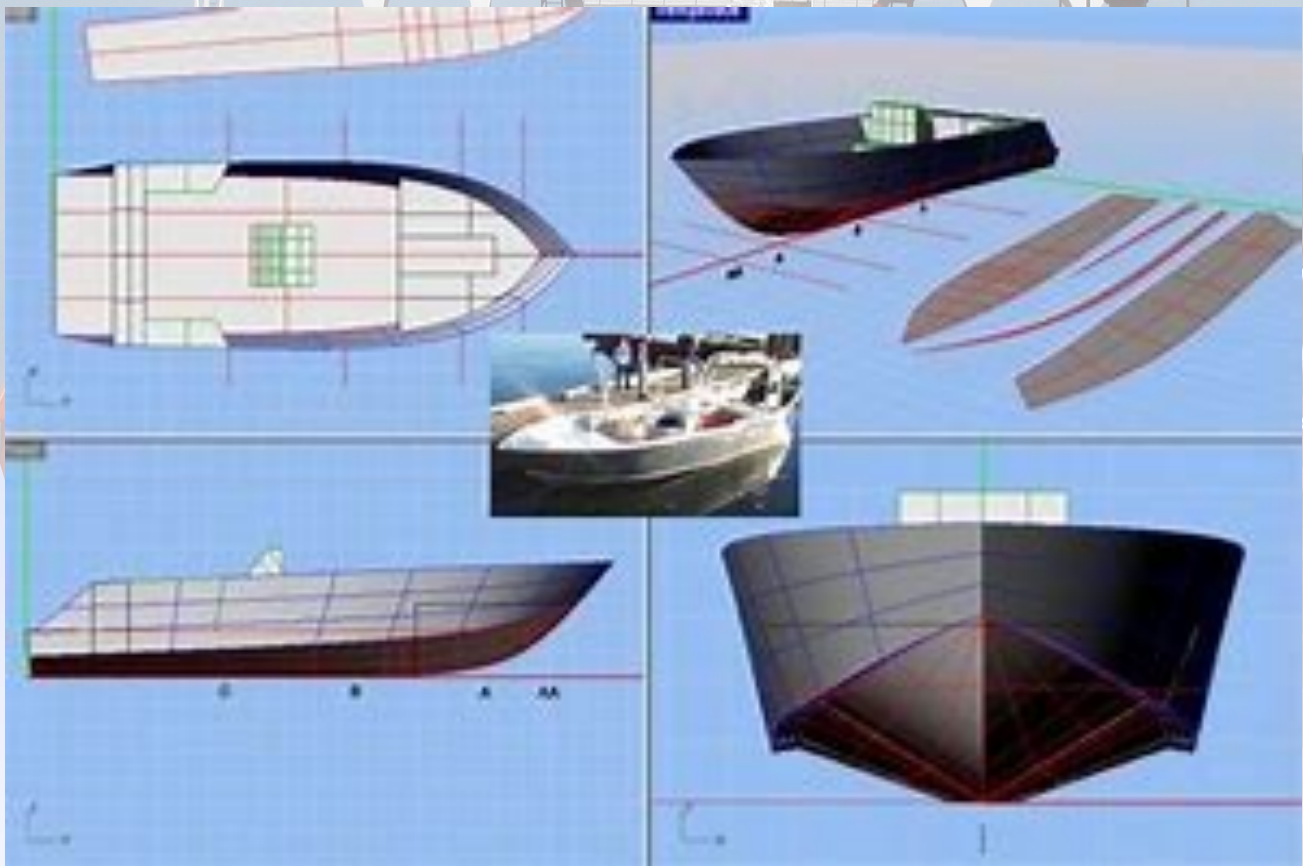
- Asset integrity assessments
- Static and dynamic structural strength and fatigue analysis
- Life extensions and analysis
- Heavy lift analysis
- Transportation and installation engineering
- Concept jacket and topside engineering



Naval Architecture Service

Albion Marine offers vessel design services from initial concept through contractual design documentation to a final production working drawings and procurement support.

Our team has experience in design, optimization, conversion, repowering and various retrofit of passenger's vessels, ferries, tugs, tankers, FSO, FPSO, FSRU, barges, tankers, bulk carriers, LNG and specialized vessels. We provide a unique combination of seagoing and shipbuilding practical experience in the commercial marine industry with innovative design capabilities to produce highly efficient solutions for our clients.



We support clients through shipyard qualification and selection, bid review and contract negotiations and new build construction management.

Our services include:

- Vessel Condition Surveys
- Structural Integrity Assessment
- New Build and Conversion Yard Site Supervision
- Yard Selection
- Factory Acceptance Test Attendance
- Marine Accident Investigation
- Concept Design
- Contractual Design
- Production Design
- Design Optimization
- Vessel Specification Development, Review and Validation
- Structural, Propulsion and Machinery Arrangements Development
- Tonnage Calculation
- Stability Assessment and Analysis
- Structural Analysis



Asset Management

Albion Marine Solutions Ltd. Is committed to providing robust and cost effective technical services to a variety of industry clients— ship operators, owners, underwriters, P & I clubs, law firms and flag states.

Our surveyors safeguard clients interests by being on site and carrying purchase and sale vessel inspections. Our superintendents prepare dry docking specifications and lead dry dock repairs.



Albion Marine Solutions Ltd. provides professional teams to support owners new building program from tendering through specification review, drawing approvals and FAT to site supervision and commissioning. We provide trained and certified electricians, mechanics, pipe fitters and technicians to ensure safe and efficient repairs and retrofits on board of the ships at sea or in ports.

3D Laser Scanning and Modeling

Albion Marine Solutions provides 3D laser scanning, 3D modeling, design and drafting services to maritime, offshore, construction and oil and gas industries.



We specialize in 3D laser scanning for maritime and industrial engineering and design applications. Every scan measures millions of discrete points and each point is allocated its precise position in space. The 3D Point Cloud that is created can be navigated, drafted, and modeled in popular CAD and other applications. The possibilities are endless; from site surveys, damage investigation to conversion plans, reverse engineering, conceptual designs and detailed engineering

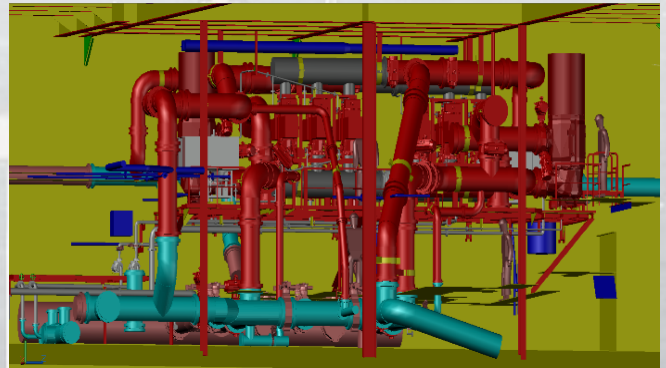
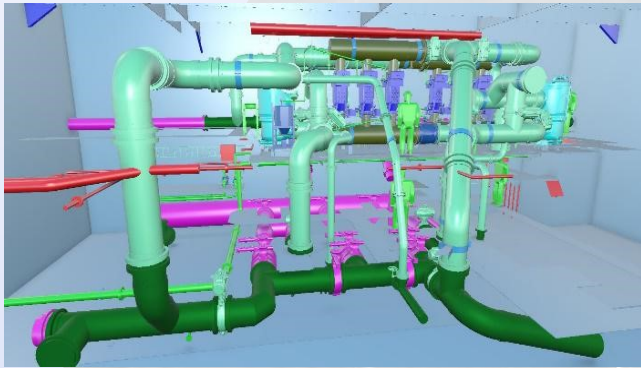
Our team are factory trained and experienced professionals specializing in 3D scanning. We utilize top of the line scanners with sub-millimeter accuracy. A number of 3D scans are combined in a point cloud and represent exact geometrical detail of surrounding objects. From a point cloud the designers develop a model of the machinery, plant, piping, structure, equipment for the concept design, basic, detailed and as-built engineering.



3D scanning and modelling is a valuable tool in complex, multidisciplinary projects where precise cut out and fitment of new offshore equipment is a common Scope of Work.

Our personnel have extensive experience in offshore conversions and new builds: FSO, FPSO, FSRU, shuttles, oil rigs and platforms.

Our designers use the latest 3D CAD modelling software to prepare 3D concepts models and detailed fabrication drawings for ship conversions, and plant upgrades including custom part and assembly modelling, prototype design, complex construction design, structural layouts, and machinery.



The laser scans of the plant, machinery, electrical cabling, piping systems and structure are extracted from the point cloud to create isometric drawing. Our designers use AutoCAD software to create these plan drawings.



We use 3D modelling to develop an engineering design package and conversion specifications. Engineers prepared detailed machinery, steel work, pipe piece design and layout.

Tank Cleaning

As the 2020 Global Sulphur Cap approaches fast, shipowners and operators are urged to consider the side effects of switching from heavy fuel oil (HFO) to low sulphur fuel as evidence of tank contamination and inadvertent non-compliance is brought to light. Our clients, being from pro-active companies consider tank cleaning for their vessels in order to prepare for a conversion to operation on low sulphur fuels and to avoid a non-compliance issues.



Albion Marine Solutions, with its proactive approach in line with the turnkey solution for air emission legislative compliance, is providing the shipowners globally with options to ensure a stress free transfer to low Sulphur fuel oil. At Albion Marine Solutions, safety isn't a policy, it is a way of life, we will provide riding crew fully familiar with the work scope as well as safe working practices on board of the vessel.

Fuel mixing/blending to generate a fuel with the desired Sulphur content can lead to further fuel stability issues. A distillate fuel is likely to be paraffinic in nature, meaning it has nearly zero Sulphur content and is compatible with the 2020 requirements.



There is one option to avoid stability issues, which is to completely chemical high-pressure wash and fully flush the tank system, clearing out all last remnants of HFO before filling it with a lower Sulphur fuel. Albion Marine Solutions utilizes its expertise in riding squad repairs to provide a comprehensive tank cleaning solution. Our team has over a dozen years of experience in tank cleaning and follows the vessel safety standards at all times. Albion Marine recommends a complete tank cleaning before switching onto Low Sulphur Fuels, we also offer de-mucking and man-reach cleaning services.

Fleet Operation Support

Crew Training and Planned Maintenance Systems

The crew training in operation and maintenance of the shipboard equipment and systems are essential requirements under STCW 2010 and other International conventions and National standards.

Albion Marine Solutions team develop the vessel and equipment specific crew training manuals and Computer Based Training programs. The training program tailored to customer's specific needs.

Albion Marine Solutions team develop a maintenance program for the newly installed equipment. The maintenance program could include a maintenance schedule, OPEX cost projections, a detailed list of spare parts and installed components, critical spares list. The maintenance program will satisfy Class requirements and will be customized by Customer maintenance standards and policies. Our team has extensive experience in various models of Planned Maintenance Systems (PMS), including DNV GL, NS5, AMOS, RAST, Neptune, InfoShip, TM Master, GL Shipmanager, Maximo, Bassnet, Star IPS, TeoMaki and many others. We have spare capacities available to develop and manage complete PMS and Dry Dock Management system.

