



CAPABILITY STATEMENT

2021



Training and Consultancy Division of the
Australian Maritime College

AMC Search Capability Statement

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Introduction

WORLD LEADING MARITIME BUSINESS

AMC Search Ltd. is the training and consultancy division of the Australian Maritime College (AMC) based in Launceston, Tasmania.

It is a multi-disciplinary training, maritime simulations, engineering, science and technology business offering a broad range of services in the shipping, ports, defence, logistics, environment and energy sectors.

With approximately 35 full-time staff, an extensive expert supplier list of sub-consultants and access to the wider AMC (100+ staff) and UTAS academic community, AMC Search is the only organisation of its type in Australia that can provide depth and breadth of expertise across such an extensive range of commercial maritime market sectors.

AMC Search's corporate culture is underpinned by its not-for-profit status where all monies raised above operating costs are reinvested back into the AMC for the sole purpose of enhancing and developing the specialist R&D facilities and educational services for the benefit of maritime related industries.

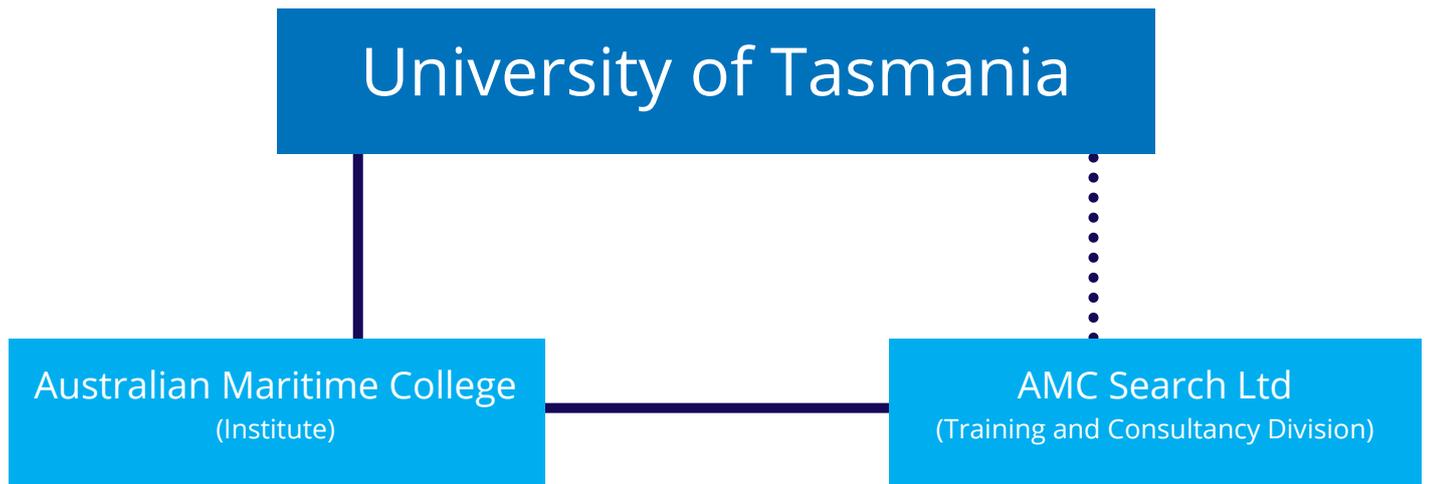


Future thinking
TODAY

AMC Search Ltd. (ABN 29 009 548 618) is a Public Company limited by guarantee. Established in 1984, AMC Search is a wholly owned subsidiary of UTAS.

Its raison d'etre is to provide commercial access to the advanced maritime R&D and training facilities and expert specialist human resources of AMC and the wider UTAS academic community (e.g., Institute for Marine and Antarctic Studies).

The AMC is Australia's national maritime engineering and training institution and is ranked number one in the world by the International Association of Maritime Universities. Therefore, AMC Search clients receive the highest available standard of services delivered by world-class maritime industry specialists.



OUR PEOPLE AND EXPERTISE

AMC Search knows that its main asset are the people that deliver the services required by the maritime industry.

That is why AMC Search is considered by the industry as a leader in the field and an employer of choice within the sector.

This is evident from our continued ability to attract and retain quality people to Tasmania to work in the business.

By providing in-house and external training and development opportunities, our employees are continually up skilled in their respective fields of expertise.

Further, AMC Search is the only maritime training and consultancy business in Australia that can also provide commercial access on an as-needs-basis to highly specialised experts from multi-disciplinary academic institutions, including

- Master Mariners
- Maritime Engineers
- Autonomous Systems Engineers
- Port and Logistics Experts
- Veteran Defence Personnel
- Naval Architects
- Big Data and Sensor Innovators
- Curriculum and Training Development Experts
- Digital Training Specialists

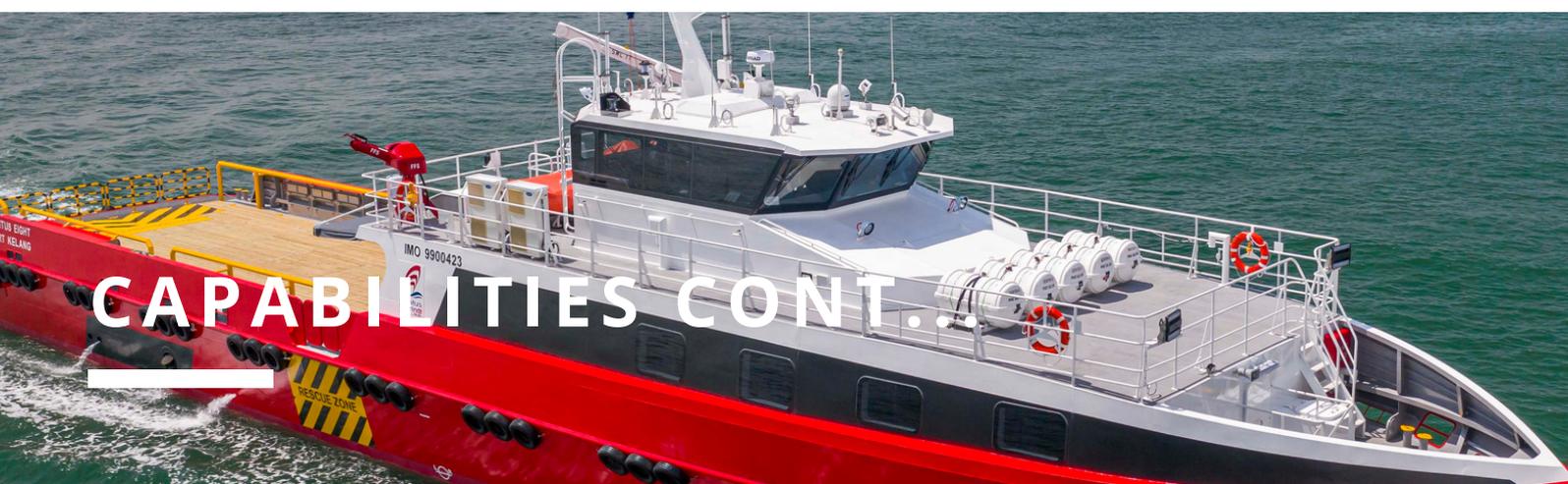


The Most Valued
ASSET

CAPABILITIES

| | |
|------------------------------------|--|
| <p>Maritime Training</p> | <p>AMC Search delivers the most extensive suite of maritime short courses in the Southern Hemisphere for the following areas:</p> <ul style="list-style-type: none"> • Seafaring • Shipping • STCW Refresher • Online Digital Training Solutions • Defence • Autonomous Underwater Vehicles • Autonomous Maritime Systems • Oil and Gas • Port and Terminal Operations • Vessel Traffic Services • Polar Code |
| <p>Maritime Simulations</p> | <ul style="list-style-type: none"> • Vessel and area model creation • Port Operations • Port Development Studies • Port Infrastructure Design Studies • Ship emergency procedure development • Bridge team familiarisation and refresher training • Pilot Training • Bridge and Engine Room Resource Management Training |
| <p>Naval Architecture</p> | <ul style="list-style-type: none"> • Tank testing for ship motions, powering and manoeuvring • Wave wake studies • High performance yacht design assessments • Hull design and strength and fatigue testing for ship structures • Floating platform analysis • Anchoring and mooring analysis • Vessel conversion studies • Vessel assessments in extreme sea states • Scale model making • Scale model testing • Cargo and transfer management analysis • Propulsion system testing |
| <p>Autonomous Maritime Systems</p> | <ul style="list-style-type: none"> • AUV & USV Operator & Technical Training • AUV & USV Operator Support Services • Autonomous Maritime Systems Fundamentals Course and Training • Sensor and Software Development Solutions • Hydrographic survey • Vessel Charter • Underwater inspection |

| | |
|---|--|
| <p>Logistics and Supply Chains</p> | <ul style="list-style-type: none"> • Port and terminal operation and management • Ship operation management • Logistics management (transport logistics, procurement, and warehousing) • Supply chain management • Maritime economics • Freight management • Transport logistics modelling • Resilience management |
| <p>Big Data and Internet of Things</p> | <ul style="list-style-type: none"> • Design, build, test and deploy systems sensors for commercial applications • Design, select and deploy telemetry solutions to transfer sensing data to applications • Software engineering to create prototype systems ready for production deployment • Data analysis and visualisation experience to transform data into knowledge • Full end-to-end data value chain including business development and project management and delivery |
| <p>Blue Economy</p> | <ul style="list-style-type: none"> • Asset Management • Renewable Energy |
| <p>Defence</p> | <ul style="list-style-type: none"> • Design and Support • Validation and Testing • Bespoke Training Solutions |
| <p>Marine and Offshore Engineering</p> | <p>Numerical and physical scale modelling for:</p> <ul style="list-style-type: none"> • Port development • Channel design • Berth design • Installation analysis |
| <p>Environmental and Social Systems</p> | <ul style="list-style-type: none"> • Environmental and Social Impact Assessment • Fisheries • Pollution and Emission Control |

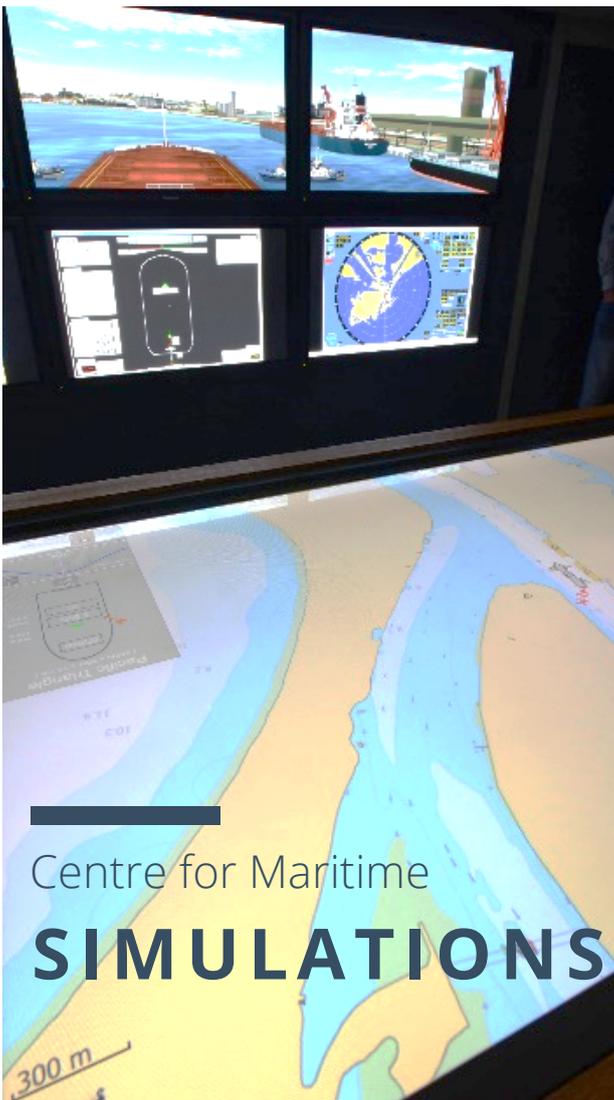


FACILITIES



Powered by Kongsberg Maritime software, the Centre for Maritime Simulations (CMS) includes a DNV Class A Full Mission Bridge simulator featuring a full-scale mock-up of a ship's bridge and an ultra-high resolution 4K Panasonic Projection System.

The simulations present a full-scale display of the ship and surrounding area as seen through the windows of the wheelhouse. Controller hardware such as telegraph, thrusters, independent helm, and Azi Pods are integrated into the simulator as well as all the instruments required for navigation and manoeuvring.



Used in practical exercises during training courses, the CMS includes a Ship Operation Simulator suite which is comprised of six smaller bridges, and an 18-seat desk-top electronic chart display lab, all powered by the same trusted Kongsberg software.

An extensive ship model library contains over 130 vessels which provides a broad representation of the range of vessel types and sizes visiting ports around the world.

AMC Search also has an in-house team of hydrodynamic simulation model makers. This team of experts have the capability to create hydrodynamically accurate vessel models, and to make accurate port or sea area models. The port area models can include proposed new berths and new dredged areas, allowing for the testing of new ships in regular ports with new berths. In this manner proof of concept can be achieved before work on new berths is started. This new ship model, and the area model with the new berths can then be used for crew familiarisation training before the new berths are completed, allowing for a seamless transition to the new berths and ships.

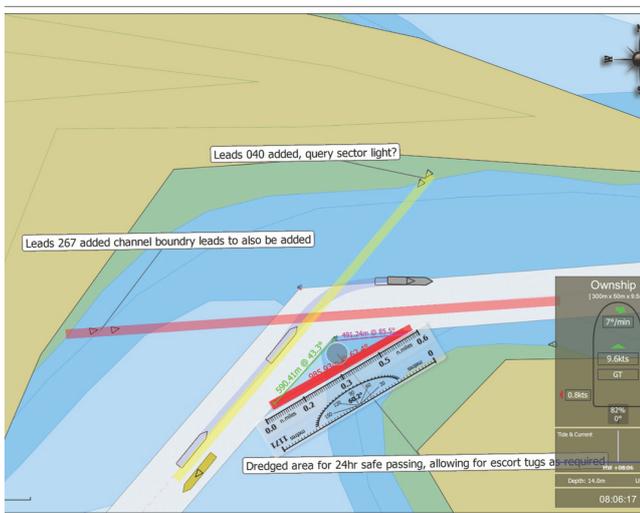
Centre for Maritime
SIMULATIONS

This capability provides AMC Search clients with a cost-effective solution to the development of simulation models as there is no requirement for outsourcing to third parties outside of Tasmania or overseas.

Complementing the Full Mission Bridge simulator for port operational training and development projects are two-purpose built multi-type Tug Simulators comprising 360° visuals.

Finally, a fully interactive touchscreen chart table supports debriefing for port development/feasibility projects is also installed so information and findings from simulations can be delivered to clients in real time.

Our Simulator can also benefit greatly from the provision of data acquired from physical scale model experiments performed within the maritime hydrodynamic test basins (refer below on Model Test Basin and Towing Tank). For example, we can directly measure the manoeuvring coefficients for a ship operating in the site-specific bathymetry of a selected shipping port.



Maritime

ENGINEERING FACILITIES

TOWING TANK

The Towing Tank is used to measure the resistance of objects in moving water, such as ship hulls.

Tests are made by towing models along the 100-meter-long tank at speeds up to 5m per seconds in different environmental conditions, such as heavy waves. The results enable recommendations to be made about how to reduce fuel costs, to limit environmental damage or how to design vessels for optimum efficiency.

The tank has a very flat concrete floor depth that can be varied providing the ability to conduct experiments in very shallow water depths by lowering the water depth. The powered carriage runs on rails that are very accurately aligned to the still water surface. The carriage can accommodate up to six passengers for viewing purposes.

A software-controlled wave-maker generates a wide variety of wave forms. Once a test is completed, wave dampening devices rapidly return the body of water to a calm state, removing the need for long wait times between experiments.

An in-house model making team compliment the facility. This team are specialists in the production of scale models that are used during experiments conducted in the Towing Tank.

AMC is also a member of the International Towing Tank Conference (ITTC) Association, the peak body representing organisations responsible for predicting the hydrodynamic performance of ships and marine installations based on the results of physical and numerical modelling.



MODEL TEST BASIN

The Model Test Basin, which at 35-metres long and 12-metres wide, is used to conduct a wide variety of experiments and experimental modelling, with a particular focus on maritime operations in shallow water environments such as ports, harbours and coastal regions.

The Model Test Basin has a wave-maker with 16 computer-controlled paddles that can produce a wide variety of different types of wave at almost any finite water depth. A wind generator with twenty individually controllable fans can be strategically positioned to obtain the desired wind direction and velocity.

It also has a digital motion capture system consisting of eight digital infrared cameras, providing the ability to track the model's motion of multiple floating models under different wave conditions.

The Towing Tank in-house model making team compliment the facility who are used as specialists in the production of scale models that are used during experiments conducted in the Model Test Basin.

Both the Towing Tank and Model Test Basin are unique facilities in Australia that are available for the test and evaluation of vessel dynamics, seakeeping, propulsion systems, wave wake and stability engineering projects.

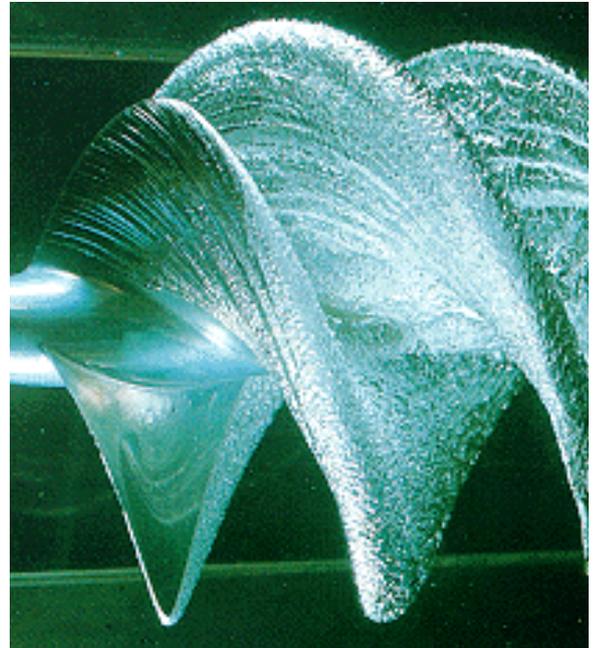


CAVITATION RESEARCH LABORATORY

The Cavitation Research Laboratory is used to test the hydrodynamic behaviour of submerged structures such as ship hulls.

The facility is for engineering projects that investigate marine propulsors and control surfaces, as well as mechanisms for air entertainment about ship hulls, the effects of propellers and control surfaces in mixing and bubble breakup, and subsequent dispersion and dissipation of bubbles in the ship wake.

The cavitation tunnel is used in testing and evaluation of any cavitation induced vibration and any adverse effects on propulsion and auxiliary ship systems, and passenger comfort.



TRAINING AND CHARTER VESSELS



TV Bluefin is a 34.5m purpose-built training vessel that is utilised during seafaring, engineering and fisheries training courses.

Bluefin is also available for charter and has been used by a diverse range of maritime companies and organisations including sea rescue operations.

FTV Reviresco is a 14m steel hull, ex-Queensland prawn trawler used for training students.

TV Stephen Brown is a former collier moored permanently at Beauty Point, where she has been renovated for use as a stationary training ship. Holds 1 and 2 have been installed with a variety of fully operational machinery for engineering and other training purposes.

BESPOKE MARITIME TRAINING FACILITIES

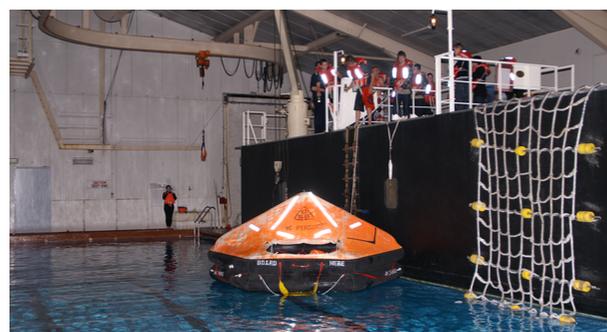
AMC Search provides commercial access to Australia's premier maritime training facilities.

SURVIVAL CENTRE

A large indoor pool is adjacent to a mock-up of a ship's superstructure, which is complete with life raft launching facilities and other life-saving appliances.

The centre can be blacked out for simulated night exercises and can also create water turbulence, rain, wind noise and simulated storm effects.

The centre also contains a classroom for theory sessions and where safety equipment is demonstrated before practical exercises are conducted.



FIREFIGHTING CENTRE

The Australian Maritime College Fire Fighting Centre is an AMSA accredited facility located at Bell Bay.

It is equipped with a wide range of modern firefighting equipment used to provide students with hands-on training in modern marine firefighting techniques.

Specialised areas provide for fighting liquid and gas fires, fires in helicopters, as well as fires within ships' superstructures using self-contained breathing apparatus.



DAMAGE CONTROL CENTRE

The Damage Control (Flood) Training Centre is located in the AMC's training vessel Stephen Brown, which is permanently moored at the Beauty Point campus.

It has three floodable compartments which are used to train trainees how to manage an onboard flood event.



FAST RESCUE CRAFT

AMC Search operate two Fast Rescue Craft (FRC). The R7 is a Jet Boat and the R5 is propelled by twin Outboard Motors. A NOREQ davit installed at the Beauty Point training facility completes the FRC system and provides realistic training for the launch and recovery of Fast Rescue Craft. Both the R7 and R5 are used in the delivery of Fast Rescue Craft Courses.



HIGH PERFORMANCE COMPUTING CLUSTER

The computer cluster can be utilised to support scale model experiments/testing of the new vessels in the Towing Tank or Model Test Basin. The support would be delivered using the Computational Fluid Dynamics (CFD) simulation tool. CFD provides a detailed insight into flow properties to a high degree of accuracy, either as a standalone tool or complimentary to physical model testing.

CFD can provide detailed information on:

- Accurate simulation of flow around maritime structures, such as boats and offshore structures
- Performance evaluation from small appliances to full-scale system including scaling effects
- Hydrodynamic studies in collaboration with experimental facilities (Towing Tank, Model Test Basin)
- Forces and moments of ship-ship interaction
- High-fidelity analysis using Large Eddy Simulation (LES) for small-scale flows such as spray patterns around periscopes
- State-of-the-art numerical tools: ANSYS CFX and FLUENT, OpenFOAM, and STAR-CCM+

EMISSION AND ASSET MANAGEMENT FACILITIES

Several facilities are coalesced around an emission measurement and asset management theme. Facilities are in place that evaluates emissions, asset degradation (e.g., hull corrosion/erosion), condition monitoring, and optimization of maintenance activity.

AUTONOMOUS MARITIME SYSTEMS

AMC Search is at the forefront of Autonomous Maritime Systems (AMS) and has specialist capabilities in training, consultancy services and AUV/USV charter.

These services are delivered by providing commercial access to the AMS expertise based at the AMC which includes the Autonomous Maritime Systems Laboratory (a R&D unit focused on AMS) and a fleet of surface and subsurface autonomous maritime systems. These systems include a Hydroid REMUS 100 AUV, ISE Explorer AUV, Iver4-580 AUV, WAM-V 16 USV and number of BlueROV and bespoke scale USV systems.

Since 2017 AMC Search has been providing training to the Royal Australian Navy on the operation and technical support towards AMS. In July 2020, AMC Search was awarded a 3 year, \$4.7m contract by Navy as its preferred AMS training provider. AMCS continues to receive outstanding reports from Defence on the quality, effectiveness, and management of this service. AMC Search has also established an AMS training and technical engineering support service for Defence Science and Technology Group (DSTG). Specifically, we are designing and manufacturing a bespoke integrated AUV sensor module for use on our ISE Explorer AUV for DSTG. This technology will be used by DSTG with AMC's support to trial and test a number of AUV sensors.

To deliver these and other services the Autonomous Maritime Systems Laboratory employees highly specialised staff. These staff members and their specialist AMS skills and experience can be accessed to support project work. To date AMSL staff have been contracted to support numerous projects including commercial AUV surveys, deep ocean exploration, hydrographic surveys, underwater unexploded ordnance search, AMS system reviews, regulatory support and technical sensor integration.

AMS is a rapidly emerging technology that could be of immense value to the maritime industry moving forward, for example in the areas of automation and inspections/maintenance programs.

A very brief snapshot of our

CLIENTS

- AMOG
- AURECON
- AUSTAL
- Bluescope
- BMAFlinders Ports
- Defence Science Technology Group
- Department of Defence
- GHD
- Global Marine Design
- INCAT
- Incat Crowther
- KBR
- LOMOcean
- Norman R Wright & Sons
- Oceanic Design and Survey
- One 2 Three Naval Architects
- Port Authority of New South Wales
- Rio Tinto
- Riviera
- Southerly Designs
- Spirit of Tasmania
- Strategic Marine
- Stronach Associates
- Thales
- Toll

MANAGEMENT SYSTEMS

LLOYD'S REGISTER CERTIFIED QMS

All services delivered by AMC Search are managed through a mature Quality Management System that is certified by Lloyd's Register to ISO 9001:2015. AMC Search has continuously maintained certification for 27 years which demonstrates that AMC Search provides a trusted and reliable service that meets customer and applicable statutory and regulatory requirements.

Further, AMC Search utilises the risk management policy, procedures and associated forms as specified by University of Tasmania to manage and mitigate its risks. These risk management tools are based on AS ISO 31000:2018 Risk Management Guidelines.

SUSTAINABILITY

AMC Search applies the UTAS Strategic Framework for Sustainability that provides a collective focus on activities in and for sustainability across the University. The framework has four goals:

Goal 1: Be a leader in sustainability governance and implementation.

Goal 2: Be a leader in sustainability education and research.

Goal 3: Engage in partnerships and engagement activities deliver sustainability outcomes.

Goal 4: Be a university committed to sustainability in its facilities and operations management.

INSURANCES

AMC Search holds:

- General & Product Liability Protection Insurance (\$20,000,000)
- Professional Liability Protection Insurance (\$30,000,000)



RECONCILIATION ACTION PLAN

As a national institute, AMCs vision is to shape and inspire the next generation of the maritime profession and we are committed to a values-based organisation that achieves excellence through diversity and collaboration.

AMC has implemented a Reconciliation Action Plan (RAP) which provides a framework on working with and for Indigenous and Torres Strait Islander peoples and through the RAP will:

- Continue to provide training to, as well as to learn from Aboriginal and Torres Strait Islander peoples
- Identify ways in which we can ensure the strong maritime links and cultures of Aboriginal and Torres Strait Islander peoples inform and are part of the curriculum and learning we provide to all students
- We will foster an environment that recognises and respects all aspects of Aboriginal and Torres Strait Islander cultures, with a particular focus on maritime culture

PROFESSIONAL ASSOCIATIONS & INDUSTRY PARTNERS

- Australian Association for Unmanned Systems (AAUS)
- Australian Maritime Safety Authority (AMSA)
- Maritime Industry Australia Ltd (MIAL)
- Australian Ship Repairers Group (ASRG)
- Baltic and International Maritime Council (BIMCO)
- Engineers Australia (EA)
- International Association of Drilling Contractors (IADC)
- International Association Lighthouse Authorities (IALA)
- International Association of Maritime Universities (IAMU)
- International Dynamic Positioning Operators Association (IDPOA)
- International Marine Contractors Association (IMCA)
- International Maritime Organisation (IMO)
- Nautical Institute (NI)
- PIANC/World Association for Waterborne Transport Infrastructure
- Royal Institution of Naval Architects (RINA)
- Society of Naval Architects and Marine Engineers (SNAME)
- Society of Underwater Technology (SUT)
- Subsea Energy Australia (SEA)
- Tasmanian Maritime Network (TMN)
- The Australian Petroleum Production and Exploration Association (APPEA)
- The Institute of Marine Engineering, Science & Technology (IMAREST)

CAMPUS ACCOMMODATION

AMC Search manages Norfolk Hall, motel style accommodation situated on the main campus of the AMC in Launceston, Tasmania. Utilised by commercial clients, Norfolk Hall is affordable and very comfortable, providing the following facilities:

- Queen size beds
- En-suite facilities
- Television
- Fridge
- Rooms serviced daily (excluding weekends)
- Affordable meals are available at the on-site AMC Cafeteria

CONTACT INFORMATION



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