

UK Maritime Industry

Introduction – Making waves



Although very few people are aware of it, over **90% of the UK's visible trade moves by sea**. Worldwide, the shipping industry continues to expand to meet the demands of globalisation – in the last 40 years the world's population has doubled yet maritime trade has quadrupled. Ships carry 77% of world trade and seaborne trade is forecast to almost double over the next 15 years. **With increasing world trade and growing maritime leisure interests, the range of supporting maritime activities is always growing.**

Most people are surprised about the scale and diversity of the UK Maritime Industry. In fact the **maritime sector covers everything from shipping to sub-sea technology, ports to aquaculture, maritime legal and financial services to leisure, and from the Royal Navy to commercial fishing.**

The UK has a great maritime history and today boasts **the largest maritime sector in Europe**. With a turnover of over £56 billion – bigger than automotive and more than double the size of aerospace and agriculture combined – and directly employing approximately 410,000 people, the sector makes a massive contribution to our economy. We are technological leaders in offshore oil and gas extraction, and strong in marine manufacturing; we are world-beaters in yacht design, building and racing; we have some of the most prestigious cruise companies in the world; and London is the world centre for maritime financial and legal services.

The maritime industry is one that **combines travel, technology, good pay, safe working conditions, and real opportunities to reach full potential.**

Without shipping, half the world would starve and the other half would freeze!

What does the maritime industry consist of? – Broadening your horizons

Science, Engineering and Technology

Marine science, engineering and technology are about future sustainable use of the seas. Design of ships, boats and other offshore structures is one key area of activity. Every use of the sea needs the range of skills available in marine technology. Qualified *marine engineers* create propulsion and control systems for ships, oil platforms, underwater and offshore vehicles.

The latest computer methods for monitoring and control are used to ensure efficiency and to minimise environmental impacts. *Marine* and *electronic engineers* design sensitive instruments for measuring ocean currents and incorporate them into marine structures that can withstand ocean currents, waves, tides and severe storms. **Underwater remotely operated vehicles (ROVs) offer exciting opportunities** in which electronic, hydraulic and mechanical technology come together to create complex robot vehicles capable of many sub-sea tasks. An example is where dynamic positioning (DP) is used to accurately place and track seabed tractors used during the laying and burying of cables and pipelines.

An example of using STEM skills within a maritime industry environment would be to work on a research ship. **These ships have onboard facilities to access information supplied by remote sensing equipment, including underwater vehicles and satellites.**

Advances in *hydrographic surveying* techniques have enabled highly accurate 3D mapping of the seabed – essential to support projects valued at many millions of pounds. *Oceanographers* also work on research ships helping to improve our knowledge of how oceans work, and predicting trends to help us to use and conserve the resources of the oceans.

Other professions include *naval architects* who specialise in the design, construction, conversion, repair, surveying and decommissioning of ships, boats and offshore structures. *Offshore engineers* design and produce fixed and floating offshore oil production installations. The oil and gas extraction industry employs around 40,000 people on about 200 UK offshore installations, and a further 300,000 people onshore. The number of oil and gas industry technicians has increased in recent years and there is a strong demand for their skills. Opportunities in this industry in the UK are mainly in the north-east of Scotland, north-east England, East Anglia, Humberside and the Liverpool Bay area.

Opportunities at craft, technician and professional level in engineering-related fields also occur in shipbuilding and boatbuilding. Shipbuilding is the business of building large ocean-going vessels usually of steel. The shipbuilding and repair industry employs 25,000 people, and large shipyards in the UK are located in Barrow-in-Furness, Cumbria, on the Clyde, on Tyneside, at Devonport in Plymouth, at Portsmouth, and at Rosyth, Fife. Boatbuilding refers to the construction of smaller vessels from materials such as wood, steel, aluminium, glass fibre or new composite materials. Boat building and repair companies are largely located in the east of England, the south-west and on the south coast. Design of ships, boats and other offshore structures are key areas of activity in the marine industry.

Career opportunities are also available for *marine scientists and engineers* within port and harbour authorities, marine civil engineering companies, and ocean equipment manufacturers. Opportunities also arise within universities, research councils, international organisations and environmental pressure groups.



Case study



Barbara McIntyre

Mechanical Engineer, BVT

*"I joined BVT in September 2005 as a graduate mechanical engineer. My first placement was as a fluid systems engineer, which lasted 6 months. Since then I have spent 10 months working in the design team, 2 months in test and commissioning and the remainder of my time in business development. **The placements I have chosen have allowed me to experience the different stages in the design of a new ship and the impact that early decisions can have.***

*One of the most enjoyable parts of working in engineering is visiting ships that are in use and talking to the people who live and work on them. There are plenty of opportunities for graduates to spend time on the ships during sea trials and to visit ships which are in use. **Throughout my time I have been supported in my development as an engineer.** I'm working towards gaining Chartered status with the IMechE and have been able to choose placements and development opportunities which will contribute to this."*

Marine Environment and Conservation

We are reliant on our oceans and seas for many things, although most importantly for food, exploitable energy sources (such as wind power, oil and gas) and tourism revenue. It is easy to see, therefore, how our health and the health of our planet depends in no small part on the condition of our oceans and seas. The UK has one of the world's richest marine environments.

The marine environment is a delicate balance and marine scientists specialise in the study of the creatures and plant life in the sea. Marine biology is a subject that has interactions with many other scientific disciplines. **Biologists and engineers study the seas so that they can use this international resource in a responsible and environmentally sustainable way.** Plants and animals act as indicators of the effect of human activities on the planet, including pollution and climate change. *Marine biologists* play a vital role in studying these effects and are closely involved in developing designated marine reserves – something which will increase as a result of the November, 2009 Marine and Coastal Access Act.

Traditional sources of energy such as oil, gas and coal are running out, and also cause pollution by releasing huge quantities of carbon dioxide and other pollutants into the atmosphere. The wind and waves are renewable sources of energy and don't cause pollution. **The energy from waves alone could supply all of mankind's electricity needs many times over.** The government aims to have 20% of all our energy coming from renewable sources by 2020 and as a nation we are ideally placed to take advantage of the sea as a resource.

There are many careers working in the marine energy, environment and conservation sector. Examples include *renewable energy developer, marine scientist conservation, and fisheries conservation officer.*

Case study



Ben Jones

Aquarist, The Deep Aquarium, Hull

*“I was first inspired to become an aquarist whilst away in Australia in 2003. I luckily landed a volunteer position in Sydney aquarium where **I quickly discovered that this industry had the correct mix of science, practical skill application and fun for me!** Prior to this discovery,*

I gained a BSc in Marine Biology at The University of Wales, Bangor, and some years ago had learned to dive, which together gave me a good background knowledge and skill base with which to enter the industry.

I came in as a trainee aquarist and five years in I now work as a senior aquarist in a 13 strong team within The Deep’s husbandry department, a team dedicated to ensuring the well-being of over 3,500 animals. The job is incredibly varied with duties ranging from academic research to daily diving and hand feeding our larger sharks and rays. The job demands a highly practical approach and a love of problem solving is a must! The aim of my role is to further the understanding and enjoyment of the world’s oceans through providing the public with a window into the marine world.”

Maritime Business

The ownership and operation of ships is the primary focus of the maritime business, and much of London’s growth over the centuries was due to its role as a major financial centre – particularly in the maritime sector. **London remains the global capital for maritime business today.**

Maritime business employment areas include *marine insurers, shipbrokers, accountants, bankers, vessel financiers and charterers, ship managers and port managers.*

Shipbrokers manage the sale and purchase of new and second-hand ships. They act for both the buyer and the seller and negotiate price, assess value, check on the ownership of the vessel, and frequently organise finance and insurance. They are adept at import and export, and arrange practical things like access for viewing at ports or berths. Brokers need a detailed knowledge of a wide range of ships, so that they can assess their condition and value. They rely heavily on experience in the shipping industry and will build up a pool of clients with ships for sale and also of clients looking for vessels. Brokers need marketing skills and to be able to negotiate in a friendly and effective manner.



Case study



Toby Royal

Marine Finance Lawyer, Watson, Farley & Williams

“My day starts by seeing what I have to chase by 11am before the other side of the world goes to sleep! Did the Korean bank issue the refund guarantee? Did the Chinese shipyard’s lawyers agree the form of parent guarantee? Did my Russian clients email me back about those two new ships being delivered next week? The key to all this is being intrinsically organised – keeping your deal lists up to date and utilising technology such as e-filing to your advantage.

The great thing about ship finance work is that, although you work with different time zones from London, internationalism and diversity is second to none – you deal with people from everywhere. Shipping is a 24 hour business; overnight there are cargoes being delivered, containers being offloaded, maybe even a ship making her maiden voyage...it all helps the world go around.”

Maritime Leisure

Marine leisure is a broad term covering the thriving global leisure boating/watersports industry. Marine tourism has become one of the fastest growing areas within the tourism industry. With the increased use of marine environments for leisure and tourism comes the need for people working in management, planning, and sustainable development.

The leisure marine industry is very diverse and covers a wide variety of products and services including: superyachts, sailing dinghies, large luxury powerboats, marinas, engines, electronics, boat building. Yacht building is a thriving high-export sector, and some UK powerboat builders export more than 90% of production.

Winning a gold-medal in an Olympic rowing-race is more than just fitness and strength – marine engineering science can provide that winning edge by quantifying the ways in which different equipment, techniques, and environmental factors affect a race performance.

Whilst most of the industry is located in coastal areas, **there’s also a thriving waterways industry based around the country’s extensive network of canals, rivers and lakes.**

Case study



Clive Johnson

Managing Director, Tacktick Ltd.

*"I co-founded and run a business manufacturing wireless electronics for the leisure marine market. There was a gap in the market for solar powered electronics on dinghies – my brother and I couldn't understand why dinghies still used very old-fashioned glass ball compasses – **so we designed a solar powered***

***digital compass ourselves** and started Tacktick Ltd., which is now a world-leader in the design and manufacture of solar powered wireless electronics for boats.*

*I trained to be an Aeronautical Engineer at Farnborough Aerospace College, and my brother who co-owns the company is also an engineer. The most rewarding part of the job is winning awards, such as the Queens Award for Innovation in 2007 and being presented with the award by the Princess Royal at the Southampton Boat Show. **Also knowing that all the Olympic winners sail with our instruments and think they are great.**"*

Sea Going and Ports

The ports sector provides the vital transport networks which support domestic and international trade. **Freight movements through UK ports have increased by 33% over the last twenty years** and several UK ports rank amongst the top in European ports by freight volume.

The UK ports sector comprises ports, harbours, private terminals, stevedoring companies and specialist labour supply organisations, in total around 500 companies employing approximately 25,500 people. Harbour masters, marine pilots, and operators of vessel traffic services are employed to ensure the safe navigation of ships in harbour waters. Port operators are engaged to ensure that freight is moved efficiently from a ship moored at the quayside directly to a road vehicle or train or warehoused in temporary storage. Engineers are employed to ensure that plant, vehicles, boats and infrastructure are well maintained and repaired. There are *mechanical, electrical, and civil engineers* working in ports on a wide range of specialist equipment and structures.

In terms of sea going careers many varied opportunities are available in the Merchant Navy and Royal Navy, offering excellent chances to develop skills with the added bonus of travelling the world.

The Merchant Navy is the collective term for the commercial shipping industry in the UK and includes passenger ships such as ferries and cruise liners, container ships, and tankers. **British shipping is an industry of the future – well managed, technologically advanced and committed to respecting the environment.** Beth Richmond, Careers Co-ordinator at the Merchant Navy Training Board, counters the misconception that the UK no longer has a shipping industry by stating that: *"since 2000 shipping has seen a remarkable growth and the UK-owned fleet has increased by 150%"*

Opportunities exist for young people to train to manage and operate modern and technically sophisticated ships. Ships officers have awesome responsibilities for the safety of fellow crew members, passengers and millions of pounds worth of ship, cargo and equipment. Sponsored training is carried out at UK nautical colleges or university, combined with practical experience aboard ships at sea, for work including deck (*navigation*), *engineering or electro-technical roles*. Beth Richmond states that: *“This year, 845 new officer trainees have been recruited – the highest since 1981 and an 80% increase on numbers in 2000”*.

Specialists in the Royal Navy and Royal Marines work together to carry out vital work in ships, submarines, aircraft, naval air stations and shore-based establishments, using state-of-the-art equipment. Supporting the RN and RM to ensure they are supplied with everything they need is the Royal Fleet Auxiliary (RFA), which employs 2,000 civilian officers and ratings, and is one of the biggest employers in British Shipping.

Case study



Lieutenant Commander Ahmed Rufai Ajal

Weapons Engineer Officer, Royal Navy

“I grew up with a military background as my father served in the Nigerian Army. The Navy appealed more because you get to travel as well as fly from ships. I joined after my A levels as a Midshipman, following initial training ashore and at sea. I was promoted to Sub Lieutenant after two years. Three years later and having gained an in-service degree in Electronic Engineering, I was promoted to Lieutenant, and then nine years later I was promoted to Lieutenant Commander.

*I have been to some of the most fantastic places in the world, every continent except Australia. I have worked with some of the most professional people I could ever hope to meet, and I have made some brilliant lifelong friends. **I would like to go as high as I can in the Navy because I would like to see a greater number of people from the ethnic minorities joining and making great progress.** Therefore by doing well, I hope to be part of the effort to change perceptions, so that if the young kids wish to serve in the Navy today, they can see that they won't be the first nor the last, and that it is achievable.”*

The importance of STEM subjects

The maritime industry particularly looks for applicants with STEM-related qualifications to enable recruits to keep up with the ever increasing technological advances, or to have a sound understanding of mathematics for the marine financial area. Representative examples are:-

a) Deck Officer

Responsible for controlling navigation and communications using the latest technological systems, including satellite communication with ships, ports and offices worldwide. *Technical and mathematical ability is important, together with good team working, communication skills and self-reliance.*

b) Engineer Officer

Operating and maintaining all the mechanical and electrical equipment throughout the ship – at sea, if equipment goes wrong you can't just pull in to the nearest garage! *A real interest in mechanical, electrical and electronic systems is important, together with a willingness to learn about new technology and adapt skills to its use.*

c) Marine Contracting

Skills in engineering, science, IT or mathematics could provide the passport to opportunities such as constructing the next generation of offshore installations for the international oil and gas industry; working in a team operating technically advanced offshore construction, installation and support vessels or remotely operated vehicles; charting the sea and oceans; laying telecommunications cables; or playing a vital role as a life support technician to an offshore diving team.

Find out more

Apprenticeships in the maritime industries (e.g. boat building) can be found via – www.apprenticeships.org.uk

Entry into Higher Education

Specific higher education courses relating to the maritime sector include:-

- naval architecture
- maritime law
- oceanography
- environment and coastal management
- marine leisure management

More general degree courses include:-

- nautical science
- maritime studies
- marine engineering
- marine technology and marine science

Foundation degrees are available through the Royal Navy and the Merchant Navy, and there are other maritime-related foundation degrees.

For details of marine related degrees access:- www.ucas.co.uk

Websites and links to Classroom Resources

Sea Vision UK – www.seavisionuk.org – Website which highlights what the wider maritime sector offers in terms of work, leisure and lifestyle opportunities

Sea Vision UK – www.seavisionuk.org/education/education_resources.cfm

Access to an exciting range of maritime-themed classroom materials

Sea Vision UK – http://www.seavisionuk.org/_db/_documents/Maritime_08_20081106053755.pdf

The direct link to Maritime, the Sea Vision guide to careers in the maritime sector

Careers at Sea – www.careersatsea.org –

A website providing information about career opportunities in the Merchant Navy. Includes everything from different types of ships, training involved, sponsoring companies and colleges offering appropriate courses. Also includes details of the Careers at Sea Ambassadors, who are volunteers from the shipping industry who visit schools/groups and give a lively, informative presentation about the Merchant Navy

Institute of Marine Engineering, Science and Technology –

www.imarest.org/Membership/Careers.aspx –

Includes a downloadable booklet Sea Your Future – A Guide to Marine Careers

SEMTA – www.semta.org.uk – Sector Skills Council for Science, Engineering and Manufacturing Technologies including the Marine sector

The International Marine Contractors Association (IMCA) –

www.imca-int.com – Roles and entry requirements within the maritime sector, including case studies

The Maritime Industry Foundation Knowledge Centre –

www.maritimeindustryfoundation.com/index.htm – Includes a video Careers in international shipping and an interactive Kidzone

The Maritime Skills Alliance – www.maritimeskills.org – An alliance of maritime industries which focuses on the skills needs of the sector. Includes a Career Pathways link

The Marine Society & Sea Cadets – www.ms-sc.org – Help to promote maritime careers, with the Sea Cadets having 400 units in the UK with 15,000 young people learning nautical and life skills

British Marine Federation – www.britishmarine.co.uk – The trade association for the leisure marine industry containing a careers section with a wealth of information

British Ports Association – www.britishports.org.uk/public/uk_ports_industry –

Includes overview of the UK Ports, covering industry trends

Port Skills and Safety – www.portskillsandsafety.co.uk/skills/careers

Includes a Career Map showing job roles, and current vacancies within the ports sector

Society for Underwater Technology – www.sut.org.uk/htmlfoldr/sut_entindex.htm –

Includes detailed education and careers section

The Royal Navy – www.royalnavy.mod.uk/careers/ –

Direct site for information on all opportunities within the Royal Navy

Institute of Chartered Shipbrokers – www.ics.org.uk/ – Official website of the ICS

Clarksons – www.clarksons.com/careers/overview/ – Leading shipbrokers. Site contains Careers section

Lloyds Register – www.lr.org/Careers – Includes details of their graduate training scheme

Superyachts – www.superyachtuk.com/careers – Covers 150 companies representing British excellence in this niche market

Cruise ships – www.workoncruiseships.com/ – Includes job descriptions for opportunities on cruise liners

Oil and Gas – www.oilcareers.com/worldwide/ – Includes oil and gas industry careers advice section

Seafood industry – www.seafish.org/sea/training.asp?p=ef247 – Authority on seafood, working across all sectors of the seafood industry

The Chamber of Shipping – www.british-shipping.org – The trade association for the UK Shipping Industry

Acknowledgement – Information and contacts for this industry focus have been provided by Claire Sneddon, Communications Manager, the Chamber of Shipping