

Maritime Engineer

Introduction

Maritime engineers design, develop, operate and maintain the equipment and systems used on ships, offshore oil and gas installations and underwater vessels. They specialise in offshore engineering, marine engineering or shore-based industries.

Also known as

- Engineer, Maritime
- Ship Engineer

Work Activities

Maritime Engineers play an important role in shipbuilding and ship repair. You design, construct, operate and maintain ships, and all the systems and machinery used on maritime vessels.

You also use your skills in the exploration and production of natural resources such as oil, gas and minerals found under the seabed. You develop the latest technology to explore previously inaccessible areas of the sea.

Increasingly, you find ways to use the sea's resources while preventing or minimising environmental damage.

There are three main areas of maritime engineering: offshore engineering, marine engineering and shore-based industries.

Offshore engineering involves the exploration and production of oil, gas and minerals. Offshore Engineers are involved in all aspects of this work.

You work closely with other specialists, such as Geologists, to decide the best place to site offshore oil or gas installations, making sure that the exploration work will be cost-effective and yield the maximum amount of the natural resource.

Offshore Engineers use deep-water technology, like remotely operated vehicles, to carry out exploration and operations on the seabed.

You design, construct and operate fixed and mobile oil platforms and their systems. You may work in a design office, using computer-aided design technology to create the safest and most efficient oil rigs.

You think about the most appropriate type of material to use to build the installation. You find ways to overcome the problems presented by wind, waves, currents and the nature of the seabed.

Offshore Engineers also protect the environment, for example, by developing renewable energy sources such as wind and wave power. You find environmental and cost-effective solutions to problems such as the disposal of disused oil platforms.

Marine Engineers design and construct a vessel's propulsion machinery and linked equipment and systems. Sea-going Marine Engineers work on a wide variety of vessels, including container ships, passenger liners, pipelaying vessels, warships and submarines.

In the Merchant Navy, Engineer Officers typically spend about four months away at sea, followed by two months' leave. Your main task is to operate and maintain the ship's propulsion machinery. You also manage the ship's electrical systems and electronic equipment.

Marine Engineers maintain and repair services such as air conditioning and passenger lifts. On refrigerated cargo ships, Maritime Engineers may be responsible for the systems used to store goods like fruit and meat.

In the Royal Navy, Marine Engineers work on aircraft carriers, destroyers, frigates (warships), assault ships, mine-counter vessels and submarines anywhere in the world.



In shore-based industries, Maritime Engineers design and oversee the construction of new ships. These days, in the UK, the emphasis is on building specialist vessels, especially for the offshore industry and the Royal Navy. Maritime Engineers will also be closely involved in the technology used on board modern vessels.

Maritime Engineers who work for shipping companies may be responsible for operating and maintaining a fleet of ships. You design and build machinery and systems for new or existing vessels.

Being able to read, write and speak Welsh may be an advantage when you're looking for work in Wales.

Personal Qualities and Skills

To become a Maritime Engineer, you need:

- an inquisitive, analytical mind and a strong interest in how things work
- the ability to solve problems using a logical approach with creativity, imagination and an open mind
- to be willing to learn and develop new knowledge, and keep up to date with advances in technology
- strong communication and interpersonal skills to work well in a team, especially if you serve at sea
- an awareness of health and safety procedures
- a willingness to travel and work at sea for periods of time
- strong organisational, written and numerical skills - you may be responsible for planning timetables and budgets
- good computer skills to use, and perhaps develop, a wide range of sophisticated information technology

You may lead or train other Engineers or Engineering Technicians, so you should be able to encourage and motivate others.

Royal Navy Engineers must be prepared to work in combat conditions.

You may need diving skills if your job involves underwater work.

Pay and Opportunities

Pay

The pay rates given below are approximate.

- Starting: £33,000 - £37,500
- With experience: £40,000 - £47,000
- Senior Maritime Engineers earn £52,500 - £60,000

Hours of work

Most Maritime Engineers work around 35-40 hours a week, Monday to Friday. However, early starts, late finishes and some weekend work may be required.

Where could I work?

Employment is usually with:

- companies concerned with the design, construction and maintenance of ships and their equipment
- the Merchant Navy and Royal Navy
- shipping companies
- offshore industries

Where are vacancies advertised?

Vacancies are advertised in local/national newspapers, trade industry publications, at Jobcentre Plus and on the Find a Job website.

Vacancies can also be found through specialist engineering recruitment agencies, internet job boards and the websites of professional engineering bodies.

GreenJobs is a job board aimed at people interested in green careers:

www.greenjobs.co.uk/browse-jobs/maritime-jobs/

Entry Routes and Training

Entry routes

An Intermediate or Advanced Level Apprenticeship is a great place to start. Take a look at our information article 'Apprenticeships – How do I apply', for more details about applying for apprenticeship positions.

However, most Maritime Engineers usually go on to complete a relevant engineering degree, foundation degree or HND, such as:

- marine engineering
- naval architecture
- ship science
- offshore engineering

For Merchant Navy Engineer officer vacancies, the Merchant Navy Training Board co-ordinates training and sponsorship schemes.

There are several routes of entry to the Royal Navy. Contact the Royal Navy to find out which is the most appropriate route for you.

A great way to get into this career is through an internship. Take a look at our information article 'Internships', for more details.

Training

Depending on your level of entry, Engineers can gain Chartered Engineer (CEng) or Incorporated Engineer (IEng) professional status. Both are highly regarded by employers throughout industry.

To register as a CEng or an IEng, you must join a relevant, professional engineering institution licensed by the Engineering Council, such as the Institute of Marine Engineering, Science and Technology (IMarEST).

To become a CEng or an IEng, you need to demonstrate the appropriate competence and commitment. The standards for this are set out in the Engineering Council's UK-SPEC document, which can be downloaded from their website.

UK-SPEC and the engineering institution you've joined can tell you which qualifications are accredited or approved towards CEng or IEng status. Your engineering institution will also advise you on, and process, your application.

Routes to CEng status include completing:

- an accredited honours degree in engineering or technology, plus either an appropriate Masters degree accredited by a professional engineering institution, or appropriate further learning to Masters level
- or, an accredited integrated MEng degree

Routes to CEng status include completing:

- an accredited honours degree in engineering or technology, plus either an appropriate Masters degree or Engineering Doctorate (EngD) accredited by a professional engineering institution, or appropriate further learning

- to Masters level
- or, an accredited integrated MEng degree

However, you can still become a CEng or an IEng if you don't have these academic qualifications. Further information about the assessment process can be found in UK-SPEC.

Merchant Navy Engineer Officer trainees spend time at sea and at college, gaining recognised qualifications.

Work Experience

Previous experience working in a nautical environment would be really useful for this career.

Progression

Depending on their qualification, Maritime Engineers can progress by taking on more responsibility for the management of engineering projects and teams of Engineers.

Qualifications

To get onto an Intermediate or Advanced Level Apprenticeship, you'll usually need five GCSEs at grade C/4 or above, possibly including English and maths.

The usual academic entry requirements for a relevant degree are:

- 2/3 A levels, usually in maths and physics
- GCSEs in your A level subjects at grade C/4 or above
- a further 2/3 GCSEs at grade C/4 or above
- English, maths and a science subject are usually required at GCSE at grade C/4 or above

Other qualifications, such as a relevant BTEC level 3 qualification, or the International Baccalaureate Diploma are often accepted. Check college/university websites very carefully.

A BTEC level 2 qualification in marine engineering, or City & Guilds level 2 or 3 qualification in marine construction, systems engineering and maintenance, could help you to stand out from the crowd.

Some universities accept the Welsh Baccalaureate as equivalent to 1 A level.

Adult Opportunities

Age limits

It is illegal for any organisation to set age limits for entry to employment, education or training, unless they can show there is a real need to have these limits.

Courses

If you don't have the qualifications needed to enter your chosen degree or HND course, a college or university Access course (eg, Access to Engineering) could be the way in.

These courses are designed for people who have not followed the usual routes into higher education. No formal qualifications are usually needed, but you should check this with individual colleges.

Distance learning

The University of Aberdeen offers a postgraduate degree in Subsea Engineering, by distance learning. The course is accredited by the Institute of Marine Engineering, Science and Technology.

Training

Information on pathways to registration as a Chartered (CEng) or Incorporated (IEng) Engineer can be found on the Engineering Council's website.

Increasingly, seagoing marine engineers who are qualified to HND or HNC level are continuing their education during, and after completing, service at sea.

Some entrants with relevant qualifications take a degree in marine engineering and then go to sea to earn their Maritime and Coastguard Agency Certificates of Competency.

Statistics

- 12% of people in occupations such as maritime engineer are self-employed.
- 6% work part-time.
- 30% have flexible hours.
- 3% of employees work on a temporary basis.

Further Information

Professional institutions Professional institutions have the following roles:

- To support their members.
- To protect the public by keeping standards high in their professions.

For more information on the institution(s) relevant to this career, check out the contacts below.

Contacts

- **Semta**
Skills for science, engineering and manufacturing technologies
Address: 14 Upton Road, Watford, Hertfordshire WD18 0JT
Tel: 0845 6439001
Email: customerservices@semta.org.uk
Website: www.semta.org.uk
- **The Engineer**
Engineering technology news
Email: customerservices@theengineer.co.uk
Website: www.theengineer.co.uk
- **Tomorrow's Engineers**
Publisher: EngineeringUK and Royal Academy of Engineering
Email: contactus@tomorrowsengineers.org.uk
Website: www.tomorrowsengineers.org.uk
- **GreenJobs**
Email: info@greenjobs.co.uk
Website: www.greenjobs.co.uk
- **Earthworks-jobs.com**
Website: www.earthworks-jobs.com
- **Engineer Jobs**
Publisher: Venture Marketing Group
Email: ner@vmgl.com
Website: www.engineerjobs.co.uk
- **Getting into Engineering Courses**
Author: James Burnett Publisher: Trotman
Website: www.mpw.ac.uk/university-guides/getting-into/engineering-courses/
- **Scottish Engineering**
Scottish enquiries

Address: 105 West George Street, Glasgow G2 1QL
Tel: 0141 2213181
Email: consult@scottishengineering.org.uk
Website: www.scottishengineering.org.uk

- **Engineering Council**

Address: 246 High Holborn, London WC1V 7EX
Tel: 020 3206 0500
Website: www.engc.org.uk

- **Engineering Training Council Northern Ireland (ETC NI)**

Northern Ireland Enquiries
Address: Sketrick House, Ards Business Park, Jubilee Road, Newtownards BT23 4YH
Tel: 028 9182 2377
Email: info@etcni.org.uk
Website: www.etcni.org.uk

- **Maritime and Coastguard Agency (MCA)**

Address: Spring Place, 105 Commercial Road, Southampton, Hampshire SO15 1EG
Tel: 02380 329100
Email: infoline@mca.gov.uk
Website: www.dft.gov.uk/mca/

- **Merchant Navy Training Board (MNTB)**

Address: 30 Park Street, London SE1 9EQ
Email: enquiry@mntb.org.uk
Website: www.mntb.org.uk

- **Maritime UK Careers**

Tel: 020 7417 2837
Email: enquiries@seavision.org.uk
Website: www.seavision.org.uk

- **myOilandGasCareer.com**

Publisher: OPITO
Email: myoilandgascareer@opito.com
Website: www.myoilandgascareer.com

- **Rigzone**

Oil jobs
Tel: 0207 997 7624
Website: www.oilcareers.com

- **Oilandgaspeople.com**

Website: www.oilandgaspeople.com

- **Royal Navy**

Tel: 0845 6075555
Website: www.royalnavy.mod.uk/careers/royal-navy

- **British Marine Federation (BMF)**

Address: Marine House, Thorpe Lea Road, Egham, Surrey TW20 8BF
Tel: 01784 473377
Email: info@britishmarine.co.uk
Website: www.britishmarine.co.uk

- **Institute of Marine Engineering, Science and Technology (IMarEST)**

Address: Aldgate House, 33 Aldgate High Street, London EC3N 1EN
Tel: 020 7382 2600
Email: info@imarest.org
Website: www.imarest.org

- **Marine Scientist**
 Publisher: Institute of Marine Engineering, Science and Technology (IMarEST)
 Website: www.imarest.org/Publications/MarineScientist.aspx
- **Your Future in the Boating Industry**
 Publisher: British Marine Federation (BMF)
 Website: www.britishmarine.co.uk/upload_public/pub/27441_bmf_your_future41.pdf
- **International Marine Contractors Association (IMCA)**
 Address: 52 Grosvenor Gardens, London SW1W 0AU
 Tel: 020 7824 5520
 Email: imca@imca-int.com
 Website: www.imca-int.com/careers/
- **Society for Underwater Technology (SUT)**
 Address: 1 Fetter Lane, London EC4A 1BR
 Tel: 020 3440 5535
 Email: info@sut.org
 Website: www.sut.org.uk
- **OPITO**
 Tel: 01224 787830
 Email: reception@opito.com
 Website: www.uk.opito.com/
- **Society for Underwater Technology (SUT) Aberdeen Branch**
 Scottish enquiries
 Address: Enterprise Centre, Exploration Drive, Bridge of Don, Aberdeen AB23 8GX
 Tel: 01224 823637
 Email: info@sut.org
 Website: www.aberdeen.sut.org.uk
- **Careers Wales - Welsh Apprenticeships**
 Tel: 0800 028 4844
 Website: ams.careerswales.com/

Related Careers

- Naval Architect
- Maritime Engineering Technician