Photo: Rauma Marine Constructions

MARITIME

IS THE FUTURE

Aalto University
School of Engineering

FMC
Finnish Maritime Cluster

Photo: VG Shipping

Photo: Port of Turku/Jouni Saaristo


Photo: Rauma Marine Constructions


Photo: Port of Helsinki/Kuvio Oy

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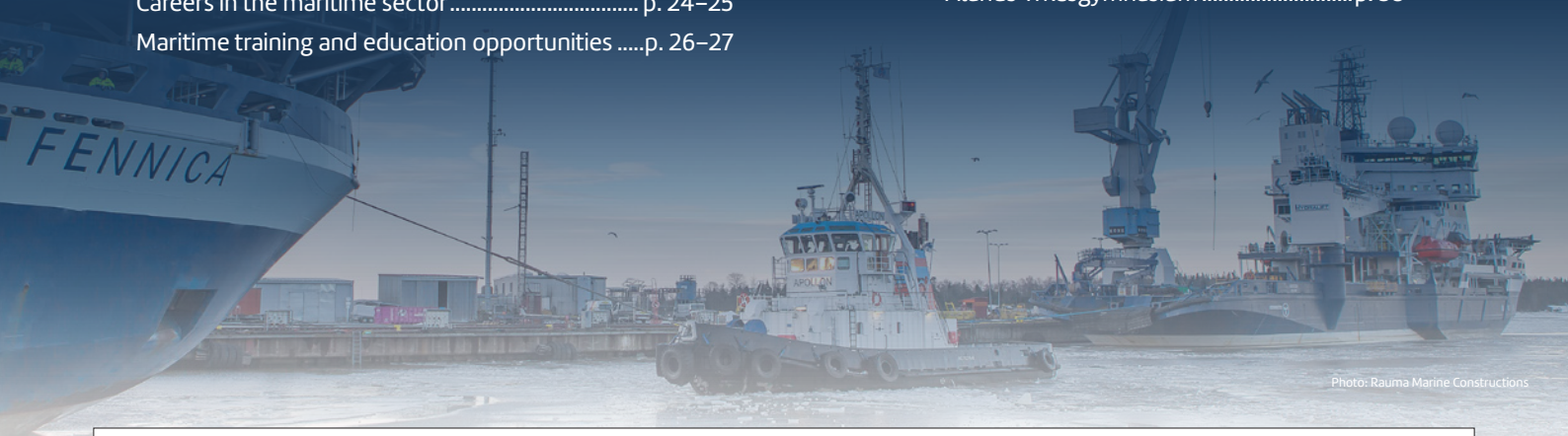

Photo: Rauma Marine Constructions

Maritime industries matter!

Of all goods transported in the world, 90 percent travel by sea. Maritime transport could thus be said to form the backbone of world trade. Goods need to reach their destination safely, respecting the needs of human beings and the environment. This takes the special expertise of naval architects, shipbuilders, ship crew and all other stakeholders.

Cruising holidays form an important niche in the travel industry. With the global expansion of the middle classes, the popularity of cruising holidays is seeing robust growth that is likely only to continue in the coming years.

However, climate change affects every industry, and maritime industries are no exception. The International Maritime Organisation (IMO) has set as its target of halving the emissions of seafaring by 2050. Achieving this target requires the adoption of innovative technologies and new ways of working. New ideas and new skills will be in great demand in the near future.

Photo: Port of Helsinki/Mikael Kaplar

Photo: Port of Helsinki/Jarno Vehkakoski

FINLAND LIVES FROM THE SEA

The Finnish economy depends heavily on exports, which makes the maritime industries vital for Finland's success. From the Continental European perspective, Finland is virtually an island. Indeed, 90 percent of Finland's exports are transported by sea – Finland lives from the sea. Due to its geographic location and climate, Finland has produced a great number of innovations for shipping and maritime industries. For example, Finland is a world-leading pioneer in winter navigation. Eighty percent of the world's ice breakers are designed in and sixty percent are built in Finland.

Besides winter navigation, Finland has made significant advances in passenger ship architecture and building. The largest and most modern cruise ships in the world are built in Finland. Environmental regulations are stricter on the Baltic Sea than anywhere else in the world, which has driven the development and roll out of Finnish-made environmental technologies.

The valuable, vulnerable Baltic Sea

The Baltic Sea is the largest brackish water basin in the world. Brackish water is a mixture of the saline water from the ocean and the freshwater from rivers and rain. The surface area of the Baltic Sea is 392,000 km² and average depth 54 metres. The Baltic Sea is connected to the Atlantic Ocean through the narrow and shallow straits around Denmark.

Large quantities of effluents create problems

As all Baltic coastal states are industrialised countries, the sensitive nature of the Baltic Sea has been subjected to heavy pollution. Shipping adds to the environmental burden and threats through pollution as well as the risk of oil and chemical spills.

Sadly, the Baltic Sea is known as the world's most polluted sea. The central problem is eutrophication, which is evident in the mass populations of blue-green algae, turbidity, slimy beaches and deoxidation of bottom layers.

Measures to protect the Baltic Sea are badly needed

The problem of pollution and the need to preserve the Baltic Sea was recognised in the 1970s, and today, several organisations, projects and conventions have been established to protect and revitalise the sea. The Convention on the Protection of the Marine Environment of the Baltic Sea Area was signed in 1974 by all Baltic Sea countries. The Convention has since been updated on several occasions. Compliance with the Convention is monitored by the Baltic Marine Environment Protection Commission (HELCOM).

The International Maritime Organization (IMO), which operates under the UN, has designated the Baltic Sea almost in its entirety as a Particularly Sensitive Sea Area (PSSA), which places strict emission limitations on shipping. The non-profit John Nurminen Foundation has launched over 30 Baltic Sea conservation projects. Greenpeace and WWF also run their own programmes to save the Baltic Sea.

Photo: ESL Shipping/Olli Tuominen

Guarding maritime borders

One third of the Finnish border is sea border. Guarding the sea borders and the maintenance of the fleet of the Finnish Navy are key elements of Finnish shipping.

The main responsibilities of the **Finnish Navy** are maritime surveillance and the protection of territorial waters, securing seaways and security of supply and maritime defence. The Navy monitors the maritime boundaries of Finland around the clock, every day of the year.

The main task of the **Finnish Border Guard** is to guard Finland's borders on land and at sea, including the related protection of territorial integrity at the border area and on Finnish sea areas and carrying out border checks on persons at land border crossing points, ports and airports. The Finnish Border Guard is also the maritime rescue authority and in charge of any operations where lives or the environment are at risk.

Photo: Port of Helsinki/Veikko Somerpuro

Photo: Port of Turku/Jouni Saaristo

Security of supply depends on sea routes

Logistically speaking, Finland is virtually an island and relies heavily on seaways for security. In a crisis situation, our international sea routes depend on ice-strengthened vessels flying the flag of Finland and crew that are experienced experts of our unique conditions.

Prompt and efficient maritime transportation is crucial to the security of supply of Finland. Security of supply means safeguarding functions that are vital for the continuity of critical operations amid disruptions and emergencies. Ice-breakers and ice-strengthened cargo ships as well as the routes of passenger ships all support Finland's crisis readiness and security of supply.

Photo: ESL Shipping

Enhanced environmental protection

Like in any other sector, the environmental regulations are becoming increasingly strict in shipping. As the Finnish shipping industry has adapted to the changes, it has been among the first pioneering countries to adopt completely new environmentally sustainable solutions.

In the past few years, the SO2 emissions of Finnish vessels have been reduced by nearly 90 percent. Finland was the first country in 2013 to launch an LNG natural gas passenger ship and in 2017 an LNG ice breaker. Since then, the entire shipping industry has started investing in LNG.

Measured by tonne-kilometre, shipping is the most ecological mode of transport. Currently the industry is looking for ways to reduce fuel consumption and CO2 emissions. This has become all the more important as sea transportation is expected only to increase globally in the future. The range of methods to reduce emissions includes digitalisation and automation as well as alternative propulsion systems such as rotor sails, battery technology and biofuels.

Photo: ESL Shipping/Olli Tuominen

Photo: Port of Helsinki/Tomi Salakari

Photo: Port of Turku/Jarmo Piironen

Photo: Deltamarin Oy

Digitalisation supporting development

Technology and increasing automation are reshaping shipping and logistics. Advanced data collection and transfer system produce more accurate and comprehensive data in real time. This will bring in automation and autonomous control onto vessels, which will help improve the safety and sustainability of shipping.

Digitalisation is changing maritime industries in Finland and globally. Engineers and scientists are developing solutions that will enable better services that offer improved environmental sustainability, safety and efficiency.

Maritime industry innovations often benefit other industries, too, and present new opportunities through new business models and operations – and new jobs.

WORKING TOWARDS AUTONOMOUS VESSELS

The One Sea project works towards develop the autonomous controls of ships so that remote control commercial shipping would be possible on the Baltic Sea as soon as by 2025. The testing ground for the technologies is Jaakonmeri, a sea area in front of Rauma, which was one of the first testing sea areas established for smart and autonomous shipping.

The One Sea ecosystem is led by DIMECC, a company involving ABB, Cargotec, Ericsson, Meyer Turku, Kongsberg Maritime, Tieto and Wärtsilä together with the Finnish Shipowners' Association, the Finnish Marine Industries and Finnpilot. The ecosystem is supported by the RAAS research alliance involving VTT Technical Research Centre of Finland and all universities of technology in Finland (www.autonomous.fi).

Photo: Elomatic Oy

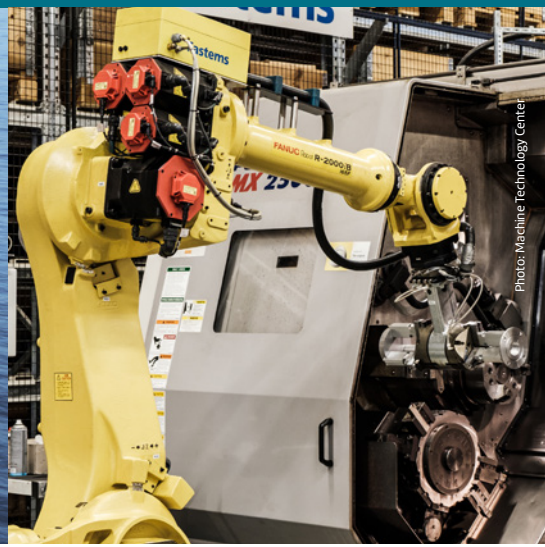
Photo: Machine Technology Center

Photo: Port of Helsinki/Mikael Kaplar

Blue Growth creates new opportunities

Blue Growth was originally a long-term strategy for the European Union to support the growth of maritime industries as a whole. Blue Growth is based on the idea that the seas are important engines for the European economy with significant innovation and growth potential.

Besides maritime industries, the key Blue Growth sectors are transport and logistics, fishing and fish farming, renewable energy, biotechnology, tourism and aquafarming. Blue Growth emphasises the principles of sustainable economic growth, and maritime industries have special potential for development in this field.

Photo: Port of Helsinki/Kuvio Oy

A strong cluster of maritime industries

The maritime cluster in Finland forms a tight-knit network of various operators representing shipping expertise, industry, shipbuilders, port authorities, universities and government agencies. The cluster also involves companies, researchers, authorities and organisations whose remit only partially includes the seas.

The maritime cluster is highly significant for the Finnish economy. The maritime industry alone gives jobs to 28,300 people and generates a total annual turnover of 8 billion euros. Together with shipping and port operations, the entire maritime cluster gives jobs to 48,800 people, producing a total annual turnover of 13.1 billion euros. The operations of maritime industries are continually expanding.

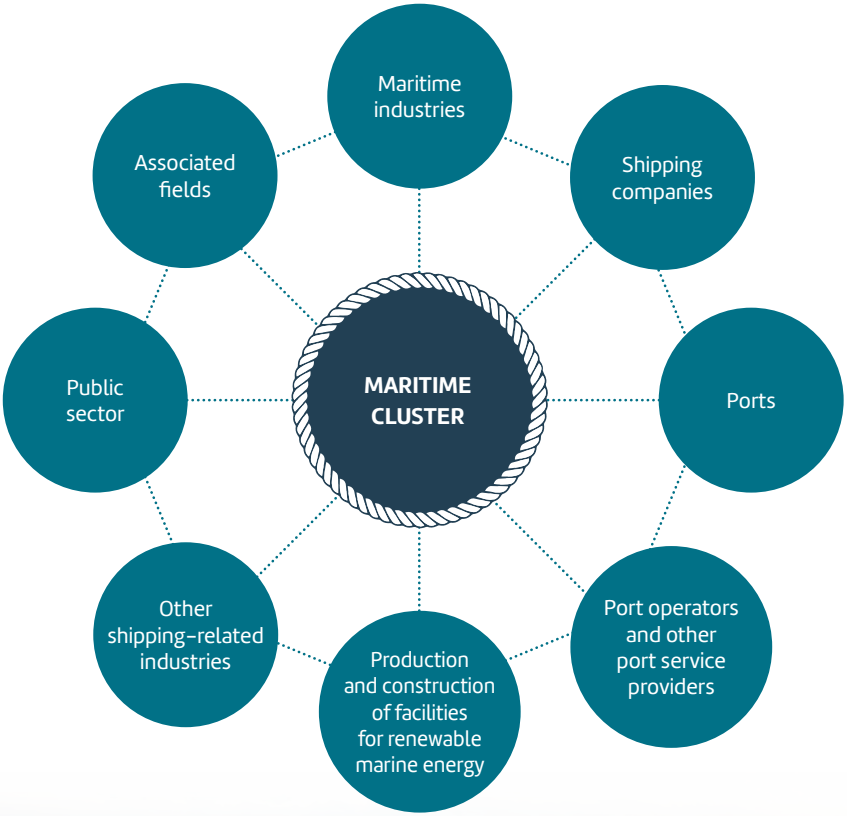

Photo: ESL Shipping/Olli Tuominen

THE THREE MAIN SECTORS OF THE FINNISH MARITIME CLUSTER

The businesses in the **maritime industries** sector include equipment manufacturers, turnkey suppliers, design agencies as well as software, materials and system engineering suppliers, shipyards, repair dockyards and offshore shipyards.

Key actors in **shipping industries** are shipping companies transporting goods and people by sea. There are 25 shipping companies involved in international trade in Finland with ships flying the flag of Finland. There are approximately 9,000 people working on ships in Finland.

Port operators are at the heart of **port activities**. Finland has 24 full-time working ports in addition to industrial ports. Port operators are businesses offering stevedoring and port terminal, material handling and logistics services.

Photo: Rauma Marine Constructions

COOPERATION TOWARDS INNOVATIONS

The operators within the Finnish maritime cluster are currently running a collaboration aiming at taking the cluster to the forefront of global research and development in environmental technologies and digitalisation. The main drivers of the collaborative project are the Finnish Shipowners' Association, the Finnish Marine Industries, the Finnish Port Association and the Finnish Port Operators' Association. Read more on the project website: www.finnishmaritimecluster.fi.

LARADI – the Finnish Society of Naval Architects

The Finnish Society of Naval Architects LARADI is an organisation representing engineering professions within maritime industries and shipping. The membership is nearly 300 and the support members (businesses) are over 30, in addition to which the society has student members from the Aalto University and Turku University of Applied Sciences. LARADI was established in 1971 and its main task is to promote the professional expertise of its members for benefit of both its members and the industry at large. One of the main tasks of LARADI is to maintain good relations with the industry.

LARADI organises networking events for its members bringing together member organisations, businesses and research institutes. The most traditional and high-profile events is the autumn conference and the annual international excursion.

LARADI is managed by a board including ten ordinary members and two student members, one from Aalto University and one from Turku University of Applied Sciences.

LARADI joined the Confederation of European Maritime Technical Societies (CEMT), a European umbrella organisation for similar societies, in 2019. CEMT is an NGO member in IMO, so Finland has increased its presence in IMO through LARADI and CEMT.

SUOMEN LAIVAINSINÖÖRIEN YHDISTYS -
FINLANDS SKEPPSINGENJÖRFÖRENING
LARADI RY
THE FINNISH SOCIETY OF NAVAL ARCHITECTS

Photo: Eckerö Line

Collaboration taking maritime industries forward

The Finnish Maritime Association was established in 1926 to work as a national cooperation forum for the benefit of the Finnish maritime culture. The non-profit organisation is run by volunteer personnel.

The members of the Finnish Maritime Association consist of representatives of shipping, ports, shipping services, shipbuilding and sea defence and amateurs in the related fields. The membership is over 280, including 40 member organisations.

The Finnish Maritime Association organises seminars on topical themes and excursions, among other events. Since 1986, the Finnish Maritime Association has granted a Maritime Achievement Honorary Award. The society has a strong international dimension.

Photo: Helsinki Shipyard/Indav Oy

The goal of the Association is to increase public awareness and appreciation of the maritime field.

The Finnish Maritime Association

www.meriliitto.fi
Tel: +358 44 023 2723

The Finnish Maritime Association (Meriliitto-Sjöfartsförbundet ry) is a cooperation forum for the maritime stakeholders as well as an ideological and functional link between its members.

The Association is an important link and an influential channel to the Finnish and European maritime clusters, to politicians, media and general public.

Become a young member 5 eur fee (under 35), please sign up at meriliitto@gmail.com

Marine research

Marine research is carried out in Finland by a number of universities and research institutes. We have provided a brief introduction below of the most significant institutions.

Among **universities**, Aalto University offers a master's degree programme in marine technology. Aalto University also works in close research collaboration with other actors in the field with Finnish and EU funding on topics that are of specific relevance to the Finnish maritime cluster. These topics include the safety of shipping, Arctic technologies, hydrodynamics, advanced structural engineering, energy efficiency, new fuels and autonomous systems. Other universities offer a wide range of courses related to the maritime industries on such as logistics and environmental science.

VTT has its own maritime technology unit that focuses on research into hydrodynamics, wave and ice loads of ships and the structural behaviour of ships. VTT also has its own ship simulator that can be used for simulating the new autonomous systems.

Finland's environmental administration's marine research provides information on the state of the Baltic sea and its changes, preservation and utilisation of natural resources, and actions that aim to maintain or improve the state of the sea. High-quality, reliable and up-to date research data helps to understand the function of the ecosystem of the Baltic sea and the climatic effect of the sea. Research supports estimates and predictions that are needed for introduction of maritime policy and in the planning and implementation of actions.

The Marine Research Centre of the **Finnish Environment Institute (SYKE)** produces new knowledge and solutions particularly for the conservation and sustainable use of the Baltic Sea in support of policymaking work. SYKE brings together extensive marine research and river basin, climate change and socio-economic research expertise. A multidisciplinary research approach incorporates marine observations, scientific trials, the development and application of numeric models, foresight and social and economic considerations.

One of the key operators in Finland's marine research is the **FINMARI consortium** coordinated by SYKE. The consortium develops cooperation between different marine operators in the use of research equipment, support services, and models and information reserves, both in Finland and internationally. The consortium includes the universities of Helsinki and Turku, Åbo Akademi, the Finnish Environment Institute (SYKE), the Finnish Meteorological Institute, the Geological Survey of Finland (GTK) and Arctia Shipping Oy.

The Finnish Meteorological Institute is responsible for researching the physical state of the seas, observational activities and sea forecasts in Finland. Research is carried out in close cooperation with international research networks. The research areas of the Finnish Meteorological Institute include observing and forecasting the state of the seas, safe shipping and coastal building, changes in the seas and ice conditions, and ocean-atmosphere interactions.

Kotka Maritime Research Centre (Merikotka) carries out multidisciplinary and interdisciplinary, applied research in order to improve maritime safety, prevent accidents and protect the marine environment. Its researcher network consists of over 30 experts from the University of Helsinki, Aalto University, University of Turku and the South-Eastern Finland University of Applied Sciences.

The Archipelago Research Institute is part of the Biodiversity Unit of the University of Turku. It contributes to the multidisciplinary research of the Archipelago Sea and the Baltic Sea, with a special focus in the long-term monitoring of the state of the marine environment. The Institute has a research station on the island of Seili in the middle of Turku Archipelago.

Photo: Rauma Marine Constructions

Photo: Helsinki Shipyard/Inday Oy

Careers in the maritime sector

The maritime sector is an extensive sector offering career opportunities in Finland and globally. Experts are in demand in a wide range of different fields, which makes it an option of great potential for students of varied educational backgrounds.

Trained and professional personnel is needed in shipping and in other maritime sectors, such as icebreaking, port and stevedoring activities, pilotage and several other tasks related to shipping management and safety.

Major maritime industries employers include equipment manufacturers, turnkey suppliers, design agencies as well as software, materials and system engineering suppliers, shipyards, repair dockyards and offshore shipyards.

Further maritime sector activities, professions and careers are offered by the fisheries industry and fish farming, passenger transport and wind and wave energy production.

Photo: Port of Turku

The Finnish maritime cluster offers jobs directly to nearly 50,000 and indirectly up to 500,000 people.

Maritime training and education opportunities

Maritime professionals forge their careers on land as well as on the sea. Study programmes are offered on the secondary and tertiary levels all the way up to doctorates. Besides professionals with specific maritime expertise, career paths are also open in the sector for generic electrical engineering and ICT professionals. One great option is to complement studies in these fields with courses and modules in maritime studies.

Master's degree holders have excellent career opportunities both in Finland and abroad. Jobs are available at shipyards, design agencies, system and equipment manufacturers, classification societies, research institutes and shipping companies. The employment opportunities in the sector are currently very positive, and new talents are in constant demand.

Finland has ten institutions offering maritime training and education, located throughout the country mainly in the coastal regions. Most study programmes can be applied for after completing secondary level education. The curricular content and application periods vary depending on the school and study programme. Updated programme details are available from the websites of the educational institutions.

We hope that you find a study programme in the maritime field that matches your personal goals and interests. Welcome to join us!

Aalto University

Aalto University offers higher education in technology, arts and economics. It consist of six schools: Engineering; Chemical Engineering; Science; Electrical Engineering; Art, Design and Architecture; and Business. The purpose of the university is to provide world-class research and education for new innovative talent. Aalto University is located in Espoo.

Read more at www.aalto.fi www

MARITIME TRAINING AND EDUCATION

Mechanical and Civil Engineering

- 3+2 years, 180+120 credits.
- Bachelor's and master's degree programmes
- The language of instruction in the bachelor's degree programme is mainly Finnish and in the master's degree programme English.

Maritime Engineering

- 2 years, 120 credits.
- Master's degree
- Previous higher education degree is a requirement.
- The language of instruction is English.
- A joint programme of five Nordic universities.

MASTER'S DEGREE PROGRAMME IN MARINE TECHNOLOGY

The master's degree programme in marine technology covers all the basics of naval architecture, theory and ship operations. The students will complete a ship concept as part of the course content and professional training. The study programme has specific paths for naval architects, Arctic marine technology experts, structural analysts, hydrodynamics experts and smart maritime experts. Students may also combine different study paths and compile personalised study paths. Further information: into.aalto.fi/display/enmec/Mechanical+Engineering.

Photo: Polaris

FITech

FITech, or Finnish Institute of Technology, is a Finnish network university through which Finnish higher education institutions offer training opportunities in engineering and technology. Face-to-face learning takes place on campuses in Southwest Finland, but most courses are taken online, allowing students to participate regardless of geographic location.

Students can also expand their core expertise by combining FITech studies with their other master's degree studies. FITech courses are offered by Aalto University, University of Turku, University of Tampere, LUT University, University of Vaasa, Åbo Akademi University and the University of Oulu.

Read more at www.fitech.io

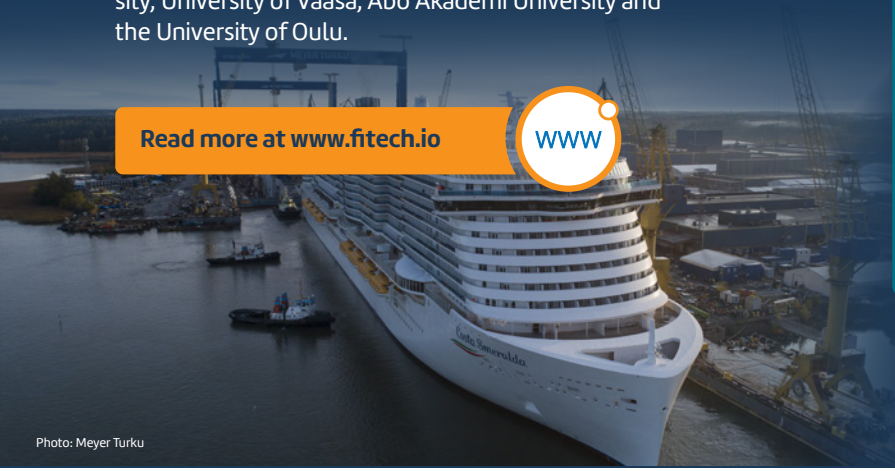

Photo: Meyer Turku

MARITIME TRAINING AND EDUCATION

Minor in Marine Technology

- 25–40 credits, the studies are spread over one academic year.
- The language of instruction is English.
- Previous higher education degree is a requirement.
- Host university: Aalto University.

Module in Smart and Sustainable Maritime Business

- 5–41 credits, the studies are spread over two academic years.
- The language of instruction is English.
- Previous higher education degree is a requirement.
- Host universities: University of Turku, Åbo Akademi University and Aalto University.

Minor in Energy Technology

- 5–20 credits, the studies are spread over one academic year.
- The language of instruction is English.
- Previous higher education degree is a requirement.
- Host university: University of Vaasa.

Ekami

Ekami, the Joint Authority of Education of Kotka–Hamina Region Group, has three campuses in Kotka (Katariina, Koteko and Malminki) and one in Hamina. Ekami offers education leading to vocational qualifications, vocational further qualifications and vocational specialist qualifications, as well as vocational supplementary education, courses for certificates of competency, and other short-term training.

Read more at www.ekami.fi

MARITIME TRAINING AND EDUCATION

Watchkeeping mate
- 2.5–3 years, including 1 year of practical training. 180 credits.

Watchkeeping engineer
- 2.5–3 years, including 1 year of practical training. 180 credits.

Ship electrician
- Approx. 1 year. 180 credits.
- Prior qualification in electrical engineering is a requirement.

Deck and engine repairer
- 2.5–3 years, including 6 months of practical training. 180 credits.

Ship cook
- 2.5–3 years, including 6 months of practical training. 180 credits.

Photo: Meyer Turku

Aboa Mare

Aboa Mare in Turku is a maritime academy and training centre educating maritime professionals in Swedish and English. It also provides continuing education and further training courses both for professional and amateur seafarers. Besides training activities, the school's simulators are used for various research and product development projects.

Read more at www.aboamare.fi

MARITIME TRAINING AND EDUCATION

Watchkeeping mate
- 3 years, including 1 year of practical training. 180 credits.
- The language of instruction is Swedish.
- Organised by Axxell.

Watchkeeping engineer
- 3 years, including 1 year of practical training. 180 credits.
- The language of instruction is Swedish.
- Organised by Axxell.

Bachelor of Maritime Management, Captain
- 4.5 years, 270 credits.
- The languages of instruction are Swedish and English.
- Organised by Novia.

Bachelor of Engineering, Maritime Technology
- 4.5 years, 270 credits.
- The language of instruction is English.
- Organised by Novia.

Master of Engineering / Master of Maritime Management
- 2 years, 60 credits.
- A bachelor's degree in the maritime sector is a requirement.
- The language of instruction is English.
- Organised by Novia.

Master of Engineering (YAMK)
- 2 years, 60 credits.
- A bachelor's degree in the maritime sector is a requirement.
- The language of instruction is English.
- Organised by Novia.

Åland University of Applied Sciences

Shipping is a major industry and source of livelihood in Åland, and training and education in the maritime sector has been available on the islands since the mid-1800s. Åland University of Applied Sciences is a higher education institution based in Mariehamn. The language of instruction is Swedish.

Read more at www.ha.ax

www

MARITIME TRAINING AND EDUCATION

Bachelor of Maritime Management, Captain
» 4.5 years, 270 credits.

Bachelor of Mechanical Engineering
» 4 years, 240 credits.

Bachelor of Electrical Engineering
» 4 years, 240 credits.

Photo: Meyer Turku

SAMK

SAMK, or Satakunta University of Applied Sciences, has campuses in Pori, Rauma, Huittinen and Kankaanpää. SAMK offers over 20 different bachelor's degree programmes and more than 10 master's degree programmes.

Read more at www.samk.fi

MARITIME TRAINING AND EDUCATION

Bachelor of Maritime Management
- 4.5 years, 270 credits.

Bachelor of Maritime Management, Captain
- 4.5 years, 270 credits.
- The language of instruction is English.

Master of Maritime Management
- 1.5–2 years, 60 credits.
- The language of instruction is English.
- Previous higher education degree and a minimum of three years of work experience is a requirement.

Photo: Port of Helsinki/Mikael Kaplar

Turku University of Applied Sciences

MARITIME TRAINING AND EDUCATION

Bachelor of Mechanical Engineering
» 4 years, 240 credits.

Turku University of Applied Sciences TUAS is one of the largest universities of applied sciences in Finland offering education and training in several fields and disciplines. The goal of the TUAS is to produce leading practical experts. TUAS works in close collaboration with business and industry in Southwest Finland.

Read more at www.turkuamk.fi www

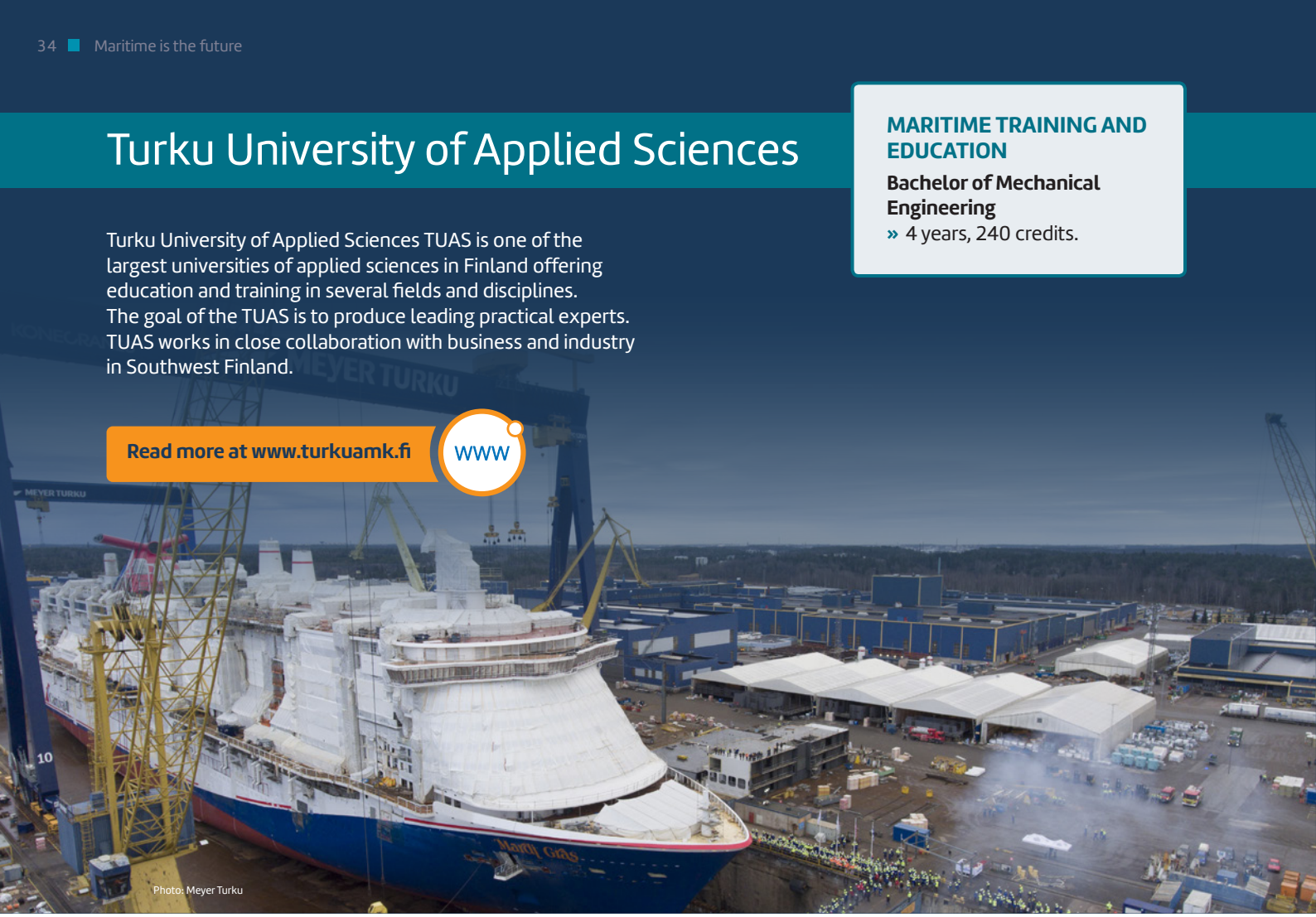

Photo: Meyer Turku

WinNova

Länsirannikon Koulutus Oy WinNova is a provider of educational services, vocational and professional qualifications and short-term courses for different types of customers. In addition to vocational education and training, WinNova also focuses on working life development. WinNova has training facilities in Rauma, Pori, Laitila and Ulvila.

Read more at www.winnova.fi WWW

MARITIME TRAINING AND EDUCATION

Watchkeeping engineer
» 2.5–3 years, 180 credits (incl. learning on the job).

Ship electrician
» 2.5–3 years, 180 credits (incl. learning on the job).

Deck and engine repairer
» 2.5–3 years, 180 credits (incl. learning on the job).

Watchkeeping mate
» 2.5–3 years, 180 credits (incl. learning on the job).

Photo: ESL Shipping/Jussi Vaahtikari

Xamk

South-Eastern Finland University of Applied Sciences, XAMK, is an institute of higher education focusing on wellbeing, technology and creative industries. XAMK provides education, research and development and provide services to the businesses and residents of its region. It has campuses in four cities: Kotka, Kouvola, Mikkeli and Savonlinna. XAMK has 9,300 students and 750 employees.

Read more at www.xamk.fi WWW

MARITIME TRAINING AND EDUCATION

Bachelor of Marine Engineering
» 4.5 years, 270 credits.

Bachelor of Electrical Engineering
» 4.5 years, 270 credits.

Bachelor of Maritime Management, Captain
» 4.5 years, 270 credits.

Master of Maritime Management
» 1.5 years, 60 credits.
» The education is meant for bachelors of Maritime Management (Captain) or Marine Engineering with minimum of two years of work experience after graduating.
» The application takes place every other year, the next round is in spring 2021.

Photo: Port of Helsinki/Veikko Somerpuro

Ålands yrkesgymnasium

Ålands yrkesgymnasium is an Åland-based secondary vocational institution offering vocational education and training in several fields. The school also offers secondary education in the maritime field.
The language of instruction is Swedish.

Read more at www.gymnasium.ax/alands-yrkesgymnasium

www

MARITIME TRAINING AND EDUCATION

Deck and engine repairer
- 3 years, 180 credits.
- The studies include a maximum of one year of training, which mainly takes place on ships.

Watchkeeping mate
- 3 years, 180 credits.
- The studies include a maximum of one year of training, which mainly takes place on ships.

Watchkeeping engineer
- 3 years, 180 credits.
- The studies include a maximum of one year of training, which mainly takes place on ships.

Ship electrician
- 3 years, 180 credits.
- The studies include a maximum of one year of training, which mainly takes place on ships.

Photo: Rauma Marine Constructions

Aalto University

ABOA MARE 18 13 MARITIME EDUCATION

EKAMI Etelä-Kymenlaakson AMMATTIOPISTO

FITech NETWORK UNIVERSITY

HÖGSKOLAN PÅ ÅLAND ÅLAND UNIVERSITY OF APPLIED SCIENCES

samk Satakunta University of Applied Sciences

TURKU AMK TURKU UNIVERSITY OF APPLIED SCIENCES

WINNOVA LÄNSIRANNIKON KOULUTUS OY

XAMK South-Eastern Finland University of Applied Sciences

ÅLANDS YRKES GYMNASIUM

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