

# Careers for Engineers in the European Maritime Industry

**Naval Architects and Marine Engineers** are professional engineers who are responsible for the design, construction, maintenance and operation of ships, boats, offshore structures and equipments, both civil and military, including:

- Merchant ships - Oil/Gas Tankers, Cargo Ships, Cruise Liners, etc
- Passenger/Vehicle Ferries
- Warships - Frigates, Destroyers, Aircraft Carriers, Amphibious Ships,
- Submarines, Semi Submersibles and underwater vehicles
- Offshore Drilling Platforms.
- High Speed Craft - Hovercraft, Multi-Hull Ships, Hydrofoil Craft, etc
- Workboats - Fishing Vessels, Tugs, Pilot Vessels, Rescue Craft etc
- Yachts, Power Boats and other recreational craft

Some of these are among the largest, most complex and highly valued moveable structures produced by mankind, using the latest technology in their design, construction and operation. Without them to provide for the safe and efficient transport and recovery of the world's raw materials and products, modern society as we know it could not exist.

**Naval Architects and Marine Engineers** have a wide range of employment opportunities, both in their own country, in other countries of Europe and beyond. These include:

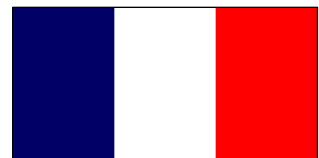
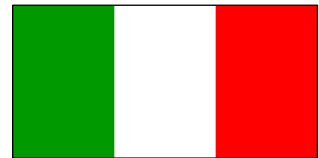
- Design
- Construction
- Repair and Maintenance
- Consultancy
- Marketing and Sales
- Operations
- Regulation, Surveying and Overseeing
- Research and Development
- Education and Training

Each type of work has its own distinctive character and offers opportunities for initiative and imagination in a wide variety of technical and managerial posts as well as opportunities for foreign travel. The work place may be a large company, a small group, a consultancy or a government department.



Societies

The wide range of career opportunities available to naval architects and marine engineers working in the European Maritime industry is shown in the career profiles of young engineers who are members of the professional societies which form the European Confederation of European Maritime Technology





**Jacqui Buchan MEng CEng MRINA**



At the age of 15, I wasn't keen to go to University; instead wanting to follow in my father's footsteps with an entrepreneurial venture. However, changing school for A-levels widened my understanding of the doors a University degree would potentially open. Studying A-level Maths, Physics, and Design Technology, typically laid a strong foundation for an Engineering degree choice.

As a keen young (albeit not particularly skilled!) windsurfer and novice sailor, I was thrilled to discover that Naval Architecture was offered as an Engineering degree at top Universities.

I spent four very happy years at Southampton (where the Engineering degree course is known as "Ship Science") on its Master of Engineering Course. During this time I was accepted onto a sponsorship scheme by Lloyd's Register of Shipping (LR), working during my summer vacations. Excited by the massive choice of travel-through-work offered in LR, I snapped up its offer of a place on its awesome Grad scheme in 1996.

On joining LR, I was posted to Barrow-in-Furness, to learn about construction of small Product tankers, while also gaining a solid grounding in welding and NDT techniques. Next, I was assigned Tanker and Bulk Carrier Plan approval work, before heading out to postings in Rotterdam and Singapore. There I learnt mainly "existing ship" surveys, although also became involved in newbuilding projects.

Two years on, the enterprising and business nature in me was bubbling away, so I decided to focus on commercial aspects of shipping. I found, with a little determination, that non-traditional career options would be possible within LR. I embarked on a series of steps that have led me to my current commercial position of UK & Ireland Sales Manager.

In getting here, I have grasped various opportunities within LR. These include positions in Brussels, then as Business Development Manager with primary responsibility for the Marine Media relations, and Product Manager for Ship Information Systems (the Marine IT software systems).

Three years ago I made the step to my current role as UK & Ireland Sales Manager; a role which really fits well with my natural business mind/innovative nature as every day brings new challenges in ways to help our clients.

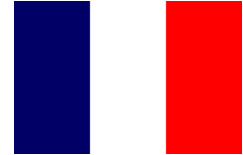
I manage a team of highly talented Account Managers based across the UK from Glasgow to Southampton. As a team, we are responsible for business in the UK & Ireland, which is a massive chunk of LR's global business. I am currently returning to work after a year's maternity leave, into my Sales Manager role.

I have had an immensely varied and satisfying career, born out of Naval Architecture as its platform. I am thankful to have been so well supported by its Professional Body, The Royal Institution of Naval Architects (RINA) along the way.

The Marine Industry is completely fascinating, and is topped off with fantastic people at its heart. I am truly glad to have stumbled upon the world of Shipping, and have never looked back.



## Paul BIENVENÜE



I graduated from ENSIETA (Ecole Nationale Supérieure d'Ingénieurs d'Etudes et de Techniques d'Armement) in Brest in 1987, with a Master of Naval Engineering.

I joined the DCNS Company in Lorient, and worked in the design office, where I led the study of the mechanical systems of some new warships (anti mine vessels, Laperouse class hydrographic vessels, Floreal and La Fayette class frigates).

I had opportunities to work with many subcontractors and also with other shipyards, such as CMN (Constructions Mécaniques de Normandie) in Cherbourg and Chantiers de l'Atlantique in Saint Nazaire.

In 1995, I joined the State organisation DGA (Délégation Générale pour l'Armement) in Brest, where I was appointed program manager of the maintenance of several operational warships.

This job allowed me to gain a better knowledge in all kinds of ships: anti submarine escort vessels, tugs, service ships, and also the famous sailing ships of the Ecole Navale: Etoile, Belle Poule et Mutin.

In this organisation, my colleagues were engineers or naval officers and I found this melting pot very fruitful. I was responsible for preparing the specifications and negotiated the maintenance contracts with shipyards.

In 1998, I returned to DCNS in Brest to work in the Engineering division. As a naval architect, I supervised the design, building and tests of the force projection and command vessels "Mistral". These vessels are impressive: 200 m long, they combine a six spots helicopter deck, a hospital, a well dock allowing LCAC amphibious capacity, large troop accommodation, and a big joint command post.

I worked very often with Aker Yards (previously Chantiers de l'Atlantique), which was in charge of all the fore part of the ship and also with the classification society Bureau Veritas, The joining of the fore part with the aft part in DCNS dockyard was a great moment!

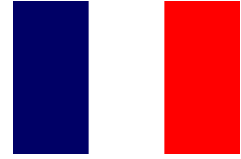
Later, I was involved in the cooperative project of the new French Aircraft Carriers with UK. Although France has decided to postpone the decision to build a new aircraft carrier, the work undertaken together will be fruitful in the future.

In 2008, DCNS gave me the status of "expert" in naval architecture, which is an insurance that my knowledge in this field is recognized and will be highlighted.

Fanatic of naval history and of sailing races, I found in my career the ability to combine work and passion, and fruitful exchanges with other professionals of all countries.



## Cedric Cheylan



I was graduated in 1995 from the *Ecole Centrale de Nantes* with an engineering degree, specialized in shipbuilding engineering.

I first worked for a short time in the design office of a French sailship yard based in the north of France. There I was involved in the final development of a new model.

After this short experience, I joined DECATHLON Production, the design and production subsidiary of the sports specialized department store. My position there was Product Process Manager. I was responsible for all windsurfing sails and harnesses and kites products lines, representing a yearly turnover of 5.5 M€. This position was not exactly corresponding to my naval engineering skills but was highly formative in product design and in project management.

My first main task on each product was, according to the commercial department target, to design the product - or to manage the designer for some specific products.

Then I was responsible, in relationship with the different production subsidiaries in each country, to choose the suppliers and subcontractors. This gave me the opportunity to travel in many countries – some in Europe and mainly in China, Hong-Kong, Taiwan and Korea to audit the different suppliers and then make the decision to choose the best one. At the end of the process, I was responsible for industrialization and follow-up of production and delivery planning.

I worked then for an engineering company as project manager for various topics, for example a radio controlled ship of around 40 meters long dedicated to carry targets for missiles trials or an expertise to bring back into service a 60m long high speed passenger vessel.

I am working today and since 2001 for DCNS, the European leading player on the world market for naval defence systems. I assumed there several positions in the engineering division. I was at first responsible for the detail design of hull structure of frigates and parts of submarines. This position consists in managing a technical team and subcontractors in charge of designing and drawing up the 3D CAD model of the ships structure in relationship with the yard that have to build the hull. This position gave me a good skill in designing structure and gave me a good vision of the production side. In addition I became in charge of defining and updating methods and process for the department.

I moved then to the preliminary design team. I am there in charge of preliminary design of hull structure and some outfitting of surface ships. Today I am responsible of the team in charge of these studies for all surface ships. This position in which we handle bids and many R&D projects let me to be really creative and to convert a technical specification into a real ship. In the coming days I will enlarge my responsibility by managing as well the team in charge of preliminary general arrangement of the surface ships. Handling at the same time the general arrangement and the hull structure of ships will give me a global view on the ship designing process.

The various positions I practised up to today, gave me the opportunity to see different countries and different people. This allowed me to learn things and practise my skills in various technical and management domains. Each week I still learn new things and continue to develop myself.



**Anna Evangelidis BEng MRINA CEng**



After graduating in 1977 from the University of Southampton with a degree in Ship Science, I went to work for the classification society Lloyd's Register, based in their head office in London.

I joined the SERS department which provides a valuable ship emergency response service to vessels around the world that have incidents. Whilst there, I was involved in over 15 real life emergencies and countless exercises, using my naval architectural skills to provide technical advice to all types of vessels (tankers, bulk carriers, container ships, passenger ships and even a sheep carrier!) that had suffered from a range of incidents – including major groundings, collisions and explosions. I was also given the opportunity to carry out surveying work on vessels around the world and worked abroad in Denmark and Greece gaining practical experience of ships and the shipping industry.

My next position was as vessel superintendent for a pipelaying company which gave me exposure to a whole new type of vessel and the offshore side of the Shipping industry. In this role I worked for several months in Holland (in Rotterdam port) supervising the winter maintenance of vessels and from there it was natural to progress into pipelaying project role. This gave me the opportunity to see the vessel in action as I spent time learning about how pipelines are laid on the seabed and spent time offshore seeing the theoretical office work turn to reality (and also got to go on helicopters flying out to oil rigs!). After a time doing this, I was fortunate enough to be able to move to a commercial role, preparing bids and tenders for a wide variety of projects which again provided a new insight into how we turn ideas at the contract stage into reality.

I now work for BP Shipping where I joined as a Naval Architect in a marine assurance role, ensuring the vessels BP uses are safe and structurally sound. My next role was as chief of staff to the CEO which provided great insight into the workings of the company and provides a real birds eye view of the workings of the whole company as well as our interfaces into the rest of the BP group as we are part of an oil major rather than a traditional standalone shipping company.

I am presently working in a commercial role based in Canary Wharf which is providing me with more commercial skills and exposure to yet another side of the shipping business – chartering and ship broking!

I have had a varied career so far which has provided me with many opportunities to learn new things and continuously develop myself. I have also had some fantastic experiences and a great balance of roles where I'm not 100% based in an office but have had the opportunity to see the world. It is a career where in every role I keep striving to learn new things and provides a wealth of opportunities.



**Gesa Feddersen Dipl.-Ing.**



I grew up in Hamburg where the harbour plays an important role for the city. During the last years at school I went to an open day at the university in Hamburg to get to know more about the study possibilities in mathematics and shipbuilding. Where mathematics was described as a crowded study with little chances of a job, the students and professors from the shipbuilding institute were describing a wonderful environment: little numbers of students, professors with time and interest in teaching the students and chances for a job all over the world. From 1998 on I started studying in a small group with 25 students. Later during the last half of the study everybody got more and more specialised in one direction. I found my interest in structural design and analysis of ships. For my diploma thesis I got support from the German classification society Germanischer Lloyd (GL).

During my studies I had realised how important the English language is. Shortly before finishing my studies I helped at an international conference (PRADS 2004) where I came in contact with engineers from QinetiQ, a British company. I asked the engineers from QinetiQ if it would be possible to work in their office near Edinburgh for a period of 6 month. At that time I had already a promise for a position in a PhD project at TU Hamburg-Harburg (TUHH) and I didn't want to leave Hamburg for longer than 6 month, so that was the right chance for me to improve my English, to learn the life abroad and gaining my first work experiences all in once. From February to August 2005 I worked for QinetiQ in Rosyth and lived in Edinburgh. It was an exciting time where I worked mainly with Finite Element Analysis's for the British navy. Scotland is a wonderful place and I still have good friends there.

In September 2005 I came back to Hamburg to start with a PHD project for three years in a research group of 7 PhD-students. My PhD-topic was "Grounding of ships on soft sea beds". During the three years at the TUHH I came in contact with many international specialists doing research in collision and groundings of ships. Although the work was interesting I didn't see the possibility to finalize it in the 3 year period. Moreover, for private reasons, a strong interest had grown to move to the Netherlands and I applied for some jobs there.

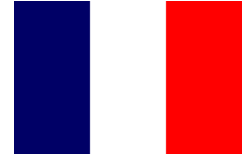
Having several options I did choose for a job as a plan approval surveyor for the Inland Waterways department in the Rotterdam Design Support office from Lloyd's Register. I started this new job in September 2008 and still enjoy the work in this big classification society a lot. I check the design drawings of Inland Waterways Ships against the rules and regulations of Lloyd's Register. I do come in contact with the clients as well as with other colleagues from different places in the company.

I must say that the shipbuilding engineer is a very special job with many possibilities also outside the shipbuilding world.





## Philippe GOUBAULT



I graduated from ENSTA (Ecole Nationale Supérieure des Techniques Avancées) in Paris in 1983, with a Master of Mechanical Engineering, specializing in Naval Architecture (Génie Maritime).

My first appointment after graduation was as surface ship Naval Architect at DCN, where I had also completed my final year project on the design of surface effect ship car ferry. At DCN, I was involved with the French Navy Surface Effect Ship program (AGNES 200). The appointment involved new concepts development and analysis which allow me to put in practice my university knowledge.

Later, I was appointed as the Program Manager for the "La Pérouse" Class Hydrographic Research Vessels where I was responsible for the technical and financial aspects the program, and for managing the interface with DCN Lorient shipyard during the construction phase.

In 1988 I decided gain experience in working overseas, and joined Band Lavis & Associates Inc., Severna Park, Maryland (USA) as Senior Naval Architect and Research Director. As the Senior Naval Architect I was responsible for commercial and naval ship design, new concept design (air cushion vehicles, surface effect ships, multihulls designs, etc...), impact of new technologies (fuel cells, composite structures, advanced propulsors, etc...) on naval ships. As Research Director I managed ship design software development relating to: whole ship design synthesis models (COMPASS), structural design optimization, cost estimating tools, etc...

In 1998 I returned to France and joined the design office of CNM (Construction Mécaniques de Normandie) in Cherbourg where I was responsible of the naval architecture department, managing the development of new products (corvette size combatants, mega-yacht).

In 2000, I jointed Principia Marine (ex- IRCN), in Nantes as Chief Naval Architect and Research Director for European projects where I was responsible for ship design activities, including the Ship Design Software development programme (AVPRO).

I gained experience of the European research organization whilst being responsible of the preparation and execution of European projects as part of 5<sup>th</sup> and 6<sup>th</sup> Framework Programs (MOBISHIP, VRSHIP, FASTPOD). Then I had the leading role in the preparation of European project VIRTUE (Virtual Model Basin) as part of the 7<sup>th</sup> Framework Programs

In 2004, I returned to my first appointment by entering at the DCNS INGENIERIE in Lorient as Senior Naval Architect, responsible for managing surface ship design R&D activities, including new, innovative concepts such as: NScube, SWORDSHIP, ECOSHIP (presented in international exhibits) as well as many internal R&D projects (Mine Warfare, Logistic support vessels, Offshore Patrol Vessels, Combatants). The latest design developed was that of the FM400 modular frigate intended for export markets.

In 2008, DCNS gave me the status of "expert" in naval architecture, which recognized my knowledge in this field.

My professional experience developed among the commercial and naval shipbuilding sector contributed to build the skills in ship design, both commercial and naval, with a particular strength in early design, with Special capabilities relating to innovating concepts and advanced naval technologies

I add to my professional experience the practice of sailing in competitions.



**Neil Hodges BEng(Hons) CEng MIMarEST**



Neil Hodges is the weight engineering manager for the Aircraft Carrier Alliance (ACA). Neil has been employed by BMT Defence Services for almost eight years, and has been seconded to his current position. Neil is based in Bristol, UK, although he also visits shipyards further afield.

I grew up in Cornwall and always enjoyed sailing and being near the water. At school I enjoyed engineering, maths and physics, so an engineering degree seemed like the obvious choice for me. I took A levels in maths, physics and design and technology, and then began an IMarEST-accredited marine systems technology degree at Plymouth University.

After graduation, I joined BMT Defence Services in 1999, where I worked at the head office in Bath before being seconded to the Submarine Support Management Group (SSMG) in Bristol as a senior platform design engineer. The SSMG is an alliance group made up of three companies, including BMT Defence Services which helps support the submarine fleet for the MoD. I spent three years at the SSMG before moving to the ACA in 2005. Whilst working for BMT Defence Services, I have taken an ILM level 4 Introductory Diploma in Management. I've also attended many different courses to build on the work skills I use on a day-to-day basis, including report writing, negotiating and presentation skills.

I am responsible for a team of six engineers who calculate the weight and centre of gravity of the two new aircraft carriers being designed for the UK's Royal Navy. It's essential that the weight of the aircraft carrier does not exceed design requirements otherwise it could have operational consequences to the platform, like reduced speed or stability issues. The team undertakes the calculations and I analyse and report on the data. My responsibilities also include creating and fulfilling management processes that are necessary to ensure the efficient control of the weights and centres. I am mainly office based at the moment, but there will be opportunities to be more hands on at a later stage.

In my job, good teamworking and communication skills are important. Strong organisational skills and project management abilities are also useful, I enjoy my work because it's challenging. Different problems crop up daily and I enjoy the variety this creates. It's great working for a company with so many opportunities. BMT Defence Services has sister companies all over the world, so I may have the chance to relocate to another country.

For anyone considering a career in engineering in the maritime industry, I think it's important to take an accredited course. When I was looking into my next step after A levels, I didn't realise how much an accredited degree would help me develop my career later on. Now I'm working towards 'Chartered status', if I had not chosen an accredited degree, I would have had to have done further study and examinations. It's definitely worth doing some research into the degree courses you're interested in, and getting advice from the relevant professional body. I also think it's important to work for a company who will support and encourage you to continue learning, so you can reach our full potential.



**Michael Holtmann Dipl.-Ing.**



Already during high school I decided to study naval architecture. I liked the idea of a multi-disciplined education and the diversity of job descriptions. So I started my studies in 1996 at the Technical University of Hamburg and focused soon on the strength and construction of ships. Consequently my diploma thesis was a strength analysis of an unconventional containership without a hatch coaming.

After graduation in 2001 I started my career as an engineer at the shipyard Howaldtswerke-Deutsche Werft (HDW) located in Kiel at the Baltic Sea. I was employed in the basic design department for commercial and navy surface vessels. The department was responsible for the steel design from the early design stage to the point of the class approval. Soon I specialized in dynamic investigations as vibration and shock analysis. I liked the mixture of theoretical and practical work at a shipyard as e.g. to conduct vibration analysis and to perform afterwards vibration measurements during sea trials as well as the possibility to see the results of my engineering work in the workshops.

Nevertheless in 2004 I changed my position and started to work for the classification society Germanischer Lloyd (GL) at the head office in Hamburg. I began in one of the core businesses of a classification society, in the plan approval where I was responsible for the approval of the steel structures of seagoing ships. The experiences I gathered at the shipyard were very helpful for my everyday's work. In this period I also completed my postgraduate studies as an industrial engineer, which I already started at the shipyard. My diploma thesis was about the "Computer Aided Plan Approval". What I liked most at the plan approval was the chance to learn a lot about different designs due to the great number of ships and ship types one has to handle with.

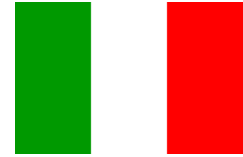
After joining GL for two years I got the opportunity to change the job within the company back to my roots of vibration and shock analysis. My new department belongs to the engineering consultancy services of GL. Today I am the head of the shock and vibration group. My work is much diversified. I have to deal with consultancy services and R&D projects, with internal and external customers as well as with organizational and technical problems.

Already during my studies e.g. at the international water bike regattas of shipbuilding students and nowadays at international conferences I have learned how pleasant and important networking in the rather small world of the maritime industry is. This was also one of the main reasons for me to join the German Society for Maritime Technology (STG).

Even my career as a naval architect lasts for less than ten years, I can already state by now, that it was the right choice for me and it gave me many opportunities to meet interesting people, see different countries and to develop my self.



**Stefano Milanesi PhD CEng MSNAME**



Whilst still young I became interested in naval architecture since I experienced some cavitation problems on my small boat. I began reading technical articles much sooner than beginning study career. My first passion was hydrodynamics of fast boats and the study of planing surfaces, that I saw at the beginning as a game more than a serious discipline.

After graduating in 1997 in Italy at the University of Naples “Federico II” with a degree in Naval Architecture and Marine Engineering, I began working for a shipyard that was part of the Rodriguez Group, builders of hydrofoils, but involved in pleasure boats construction. I was engaged in the development of a new model from the early stage up to the sea trials feeling a great satisfaction at the moment of the launch.

During the first year I began working as consultant also for other shipyards building small crafts; I took part in sea trials to optimize propellers choice, in systems’ plants and structural designs and new born CE certification procedures. I could learn very well different production techniques and the management of small boats shipyards.

At the end of the first year I won a doctorate scholarship that I could get after 4 years. The argument of my thesis was “Instabilities of high speed crafts” with particular attention to transversal instabilities under way. I could made many series of model tests on the response of prismatic hulls to sinusoidal excitation with constant amplitude and phase. During the research period I had the possibility of publish some technical articles that were presented in international conferences (Fast2001 and HSMV2002). The experience in the tank with model tests has been fundamental to acquire a sensibility in hydrodynamic matters for the hull design.

In the following years I carried on working as consultant for many Italian shipyards and groups mostly as designers and sometimes as surveyor increasing my experience with different boat types, dimensions and constructions materials. During these years number of customers and requests of consultancies grew and I founded an engineering company named “Navaldesign&Consulting” that now involves 6 naval architects plus 2 designers and 2 CAD operators. Our field of activity comprehends motor and sailing pleasure boats and ships, High Speed Passenger Crafts, refits and surveying. Presently we work for Azimut-Benetti group and for many shipyard in China, Dubai and Turkey trying to diffuse and merge Italian style and technology with local production techniques. Some of our designs received awards for their innovative style and good performances.

In conclusion the naval architect career allowed me a personal growth travelling abroad and touching many aspects of boats and ships design, production, surveying and management with both in office and on board jobs. I had the possibility to learn many interesting technical, commercial and management matters and to found a firm of my own reaching what was my aim from the beginning.



## Magdalena Rudnicka MSc Eng



I graduated in 1998 from the Gdańsk University of Technology, Faculty of Management and Economy, where I gained an engineering diploma in the Organisation of Production Systems. Since then, I have developed my knowledge in this area by taking part in a number of training and seminars orientated on corporate organisation methods and human resources management. In 2005, I completed post graduate studies in human resources management

After finishing my studies I started working at the Northern Shipyard in Gdańsk, initially as a specialist for organisation matters. Later on, I was promoted to my current position as a manager of the office assisting the Management Board. My major responsibilities include the arrangement of meetings of corporate authorities such as the Board and Supervisory Board and the General Assembly; updating all formal corporate documents including shareholders book; supervising of informative and promoting papers issued by the yard and many others directly connected with the company organisation structure; and general organisation issues. The Northern Shipyard is the only new-building yard in Poland with positive figures, and an essential part of this success is its efficient organisation to which I have contributed, not only in my routine tasks but also in ensuring that changes of shipyard presidents and Board members are carried out effectively.

My present position has presented the biggest challenge of my career. I think my engineering background and understanding of production processes much helped me in organising of my office work, in always being orientated to what is most important, in recognising that production must go on, and in ensuring that all procedures are effectively.

The thing I feel most proud happened on 2 April 2009. I was offered the honour to be a Godmother of an AHTS vessel, being built in Northern Shipyard for Tidewater Marine – an American owner.

Being a member of The Society of Polish Naval Architects and Marine Engineers "KORAB" (as a board member), has given me a good opportunity to exchange view with my more experience fellows.



**Karl-Johan Westoff BSc MSc**



I gained a BSc (Naval Architecture) and a MSc (Mechanical Engineering) from the Technical University of Denmark. My career as a working engineer started at university, where an internship led to a job as student assistant in the Royal Danish Navy. I was involved at the early design phase of a number of new vessels where I assisted with various drawings and calculations in the early design phases. I had the opportunity to work with highly experienced people and get a flavour of the complex process of designing ships.

I highly recommend seeking a position as student assistant while studying, it gives a new perspective on the studies and you have the possibility to try out in practise what you have learned in theory.

I currently work as a consultant at Lloyds Register ODS. We provide technical investigation and analysis primarily in the marine and energy sectors. We assist in the design of new vessels and with trouble shooting in case of failures, primarily within noise and vibration, fluid dynamics and structural analysis.

My day to day job involves a blend of theoretical work and field work. For example; a client has a problem with excessive vibration causing damage to machinery, we then carry out measurements to identify possible sources. In order to further understand the problem or evaluate if a proposed solution will work, we will carry out calculations often using computational fluid dynamics and finite element modelling. In close cooperation with the client we will then find the best possible solution to the problem.

Being able to combine measurements from sea-trials and trouble shooting with advanced theoretical calculations makes my job interesting as well as giving a second to none insight in the technical problems we are dealing with.

Working as a consultant in the marine sector requires you to be able to act in a global environment as ship operators, designers and builders carry out projects across the globe. You have to work with people of different backgrounds and nationalities I find this a challenging and attractive part of being an engineer in the marine sector.



**Francis Udom BEng(Hons) MSc(Hons)**



**Francis Udom** is a project engineer and works for the floating production, storage and offloading systems (FPSO) Group, Integrity Services Department of Lloyds Register EMEA (Europe, Middle East and Africa). Originally from Nigeria, he is now based in Aberdeen, occasionally spending time away on oil platforms.

Growing up in Nigeria, I used to be amazed by the huge ships I could see from Calabar where I lived. This sparked an interest in the marine environment from an early age. I decided to go to college in Nigeria to take a national diploma in marine engineering. I then worked for a ship repair and building yard. After this I found work in the shipping department of the Nigeria Liquefied Natural Gas Company (NLNG) which was under the management of Anglo-Eastern Shipping Management in Glasgow. NLNG sent me to Glasgow to study for a Higher National Diploma (HND) and Scottish Vocational Qualification (SVQ) in marine and mechanical engineering.

Having finished the HND/SVQ course, I worked as a marine engineer on board liquefied natural gas tankers/carriers, transporting natural gas from one country to another. I had to spend six months or so away at a time, so decided to go back to study for a degree in mechanical and offshore engineering (oil and gas) at The Robert Gordon University in Aberdeen. I worked for Lloyds Register on a part-time basis during this time.

My overall role at Lloyds Register EMEA is to look after the marine systems and structures of ships which have been converted for oil and gas exploration. I make sure that everything works properly, and to prevent problems occurring, I conduct risk inspections. FPSOs are moored facilities which extract oil from subsea wells and can store and offload the oil into tankers. My role involves developing FPSO structural integrity schemes and scheduling inspection frequencies. Prior to issuing an integrity statement (that's a document stating that everything is safe and seaworthy), I conduct structural assessments, review project modifications, collate information and review and analyse the data. In order to carry out integrity work on marine systems and structures, I have to visit operational FPSOs at regular intervals.

To do my sort of work, you obviously need sound technical and engineering skills. In addition, because of the nature of the industry, it's really important to be comfortable working with teams of people from all over the world. You also need excellent problem-solving skills, leadership ability and ability to motivate yourself and other people.

I wouldn't hesitate to recommend engineering as a career. It exposes you to so many opportunities in life. It's also relatively easy to move from one type of engineering to another – I was originally in marine engineering, but now I specialise in the related oil and gas industry.