



CAREERS IN THE BOATBUILDING INDUSTRY

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INTRODUCTION

This booklet is compiled by the Marine Industry Association of South Africa. It gives you an overview of possible career paths in Boat Building. There are detailed job descriptions and alternate job titles. If you are looking to enter the industry either as a school-leaver or a graduate, this booklet will guide you.



OVERVIEW

The boat building industry in South Africa is a dynamic and exciting sector with a wide range of occupations and careers on offer. With ongoing technological development and innovation in boat design and maritime services, it is a progressive industry where you can combine your love of boats with a rewarding career.

Leisure boating is growing and South Africa needs skilled and dedicated staff to meet the rigorous demand of construction in international standards.

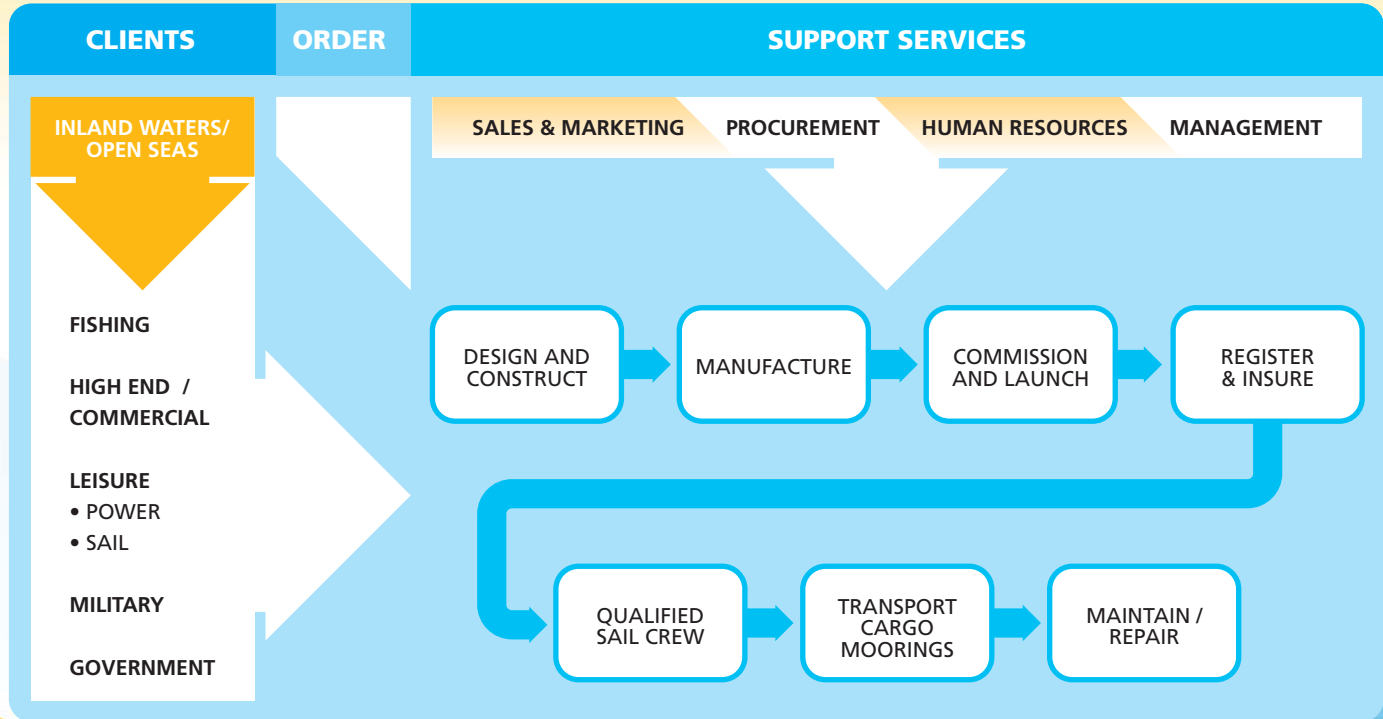
CAREERS IN THE BOAT BUILDING INDUSTRY

There are various ways to enter the boat building industry and pursue your career. You can either enter a formal boat building training programme, or you can train in a related career and apply for a position in a boat building yard where you can adapt your skills to the requirements of the marine sector. For example, if you are a cabinet maker, you would apply for a position working on the interiors of a boat.

However, if you want to be a boat builder and one day be able to own your own factory and produce boats, you will need to have all-round experience of every aspect of boat building. You can gain this through a qualification and then years of experience and working your way up from junior boat builder to production manager and owner.

A passion for boats; their design, construction and performance is the first and most important entry requirement. After that, the sky's the limit.

THE STRUCTURE OF THE SOUTH AFRICAN BOATING INDUSTRY



BOATBUILDING CAREER PATH

NQF	CAREER SPECIALISATION	CREDIT POINTS	PAGE	QUALIFICATIONS	MANAGEMENT CAREER PATH	YEARS EXP
10	Research Professional Director			Doctorate Degree	Strategic Management	<15
9	Professional Naval Architect			Masters Degree	Senior Management	15
8	Para Professional Master Builder	8		Post Grad Diploma		10
7	Support Professional Composites Engineer Operations Manager Mechanical Engineer			Bachelors Degree, Engineering	Middle Management	5
6	Technician + Master Artisan			Diploma		2
5	Marine Carpenter Marine Plumber Marine Electrician			Higher Certificate	Supervisory	1
4	Trades + Technical			Certificate Yacht & Boatbuilding		
3	Composites Worker, Stock Clerk, Welder, Boatbuilder				Work Group - Productivity - Machinery - Tools	>1
2	Elementary					
1	Laminator, Grinder, Polisher			ABET Numeracy & Literacy		

CONSTRUCTION

BOAT CONSTRUCTION

As a boat builder you are responsible for all aspects of design and construction. Use a range of materials including metal, timber, aluminium, composite materials to construct, fit out, commission and repair boats from small wooden dinghies to large fiberglass superyachts. You need to be passionate about boats and you can build a career path to Master Builder or Naval Architect. Job opportunities are diverse and the challenges of new technologies and design keep you at the cutting edge.

JUNIOR BOAT BUILDER (NQF 2 – 4)

PROCUREMENTS MANAGER (NQF 4 – 5)

PRODUCTION MANAGER (NQF 6 – 7)

TECHNICAL DIRECTOR (NQF 7 – 9)

MANAGING DIRECTOR (NQF 7 – 9)

ALUMINIUM CONSTRUCTION

Aluminium is used in many boat construction applications from patrol boats to ferries to superyachts.

Use innovative construction techniques and advanced technical processes such as plasma cutters to ensure materials meet the required fabrication tolerances. Construction involves marking-out, plate cutting, fabrication, welding and engineering.

With basic sheet metal skills at the entry level, you can advance to the top of the industry with the right skills and technological expertise.

WELDER (NQF 3 – 5)

SUPERVISOR WELDING ASSEMBLER (NQF 4 – 5)



FIBREGLASS CONSTRUCTION

In South Africa we produce a lot of boats with fiberglass, as it is light and strong. Work with your hands and use advanced techniques to build solid and laminated fiberglass hulls and components for boats, using hand lay-up, vacuum bagging, vacuum infusion and pre-preg. Build a plug and mould and lay-up a hull using systems of transverse and longitudinal bearers and work with resins and fiberglass cloth.

GRINDER AND SANDER (NQF 1 – 2)

BALSA CUTTER (NQF 1 – 2)

LAMINATOR (NQF 2 – 4)

GEL COAT FINISHER (NQF 2 – 3)

GEL COAT SPRAY GUN OPERATOR (NQF 2 – 3)

INFUSION OPERATOR (NQF 4 – 6)

COMPOSITE TECHNICIAN (NQF 6 – 8)

COMPOSITE ENGINEER (NQF 7 – 10)

With leading technology in boat construction favouring lighter and stronger boats, as a Composites technician or engineer you will work with innovative new technologies for the construction and repair of vessels.



WOOD CONSTRUCTION

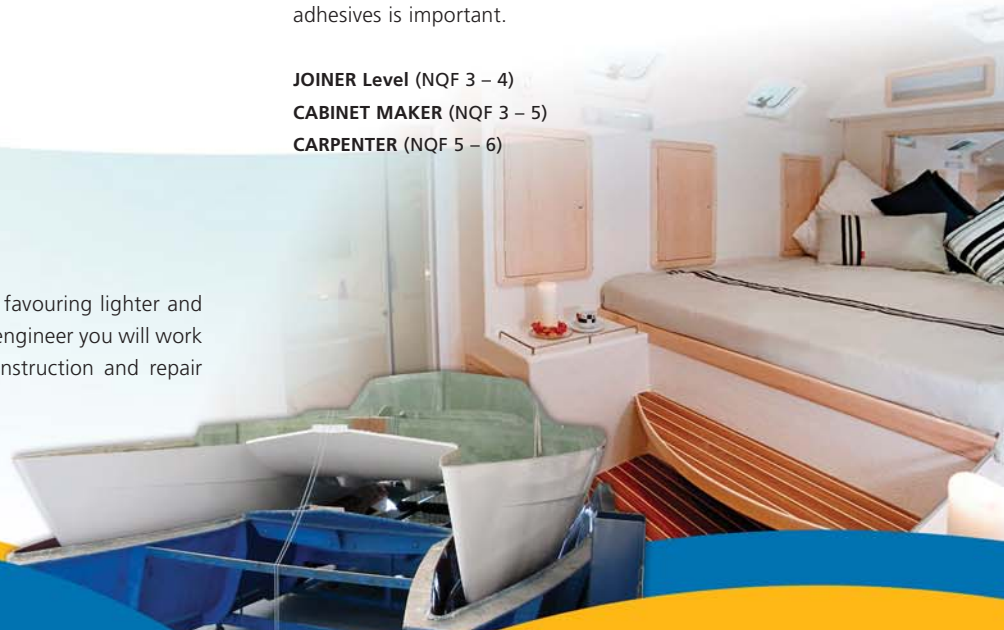
Do you love working with wood? Have you got good carpentry skills? Are you adept at working with your hands?

Wooden boat construction and repair requires knowledge of different timbers and their application in a marine environment. There are many different jobs in boat building that require precise woodworking skills. A knowledge of various finishes, sealers and adhesives is important.

JOINER Level (NQF 3 – 4)

CABINET MAKER (NQF 3 – 5)

CARPENTER (NQF 5 – 6)



BOAT FITTING

If you are a hands on person who enjoys problem solving, fitting and re-fitting boats might be for you. Install interior components and additional structures to a boat once the hull construction is complete. Read plans and specifications to fit key components such as bulkheads, decks, cabins, electrics and interiors. Working with a diverse range of materials and tools to produce a boat with the highest quality finish.

METALS

Metal working skills are sought after in the boat building world. Making marine hardware and fittings such as anchors, hatches, winches, stanchions, masts, spars, cleats and fitting them to the boat correctly is a skill in demand in South Africa. The skills you need vary from engineering drawing, fabrication, pattern making, metal casting and fitting.

WELDER (NQF 3 – 5)

SHEET METAL WORKER (NQF 3 – 4)

PATTERNMAKER (NQF 3 – 4)

METAL CASTER (NQF 3 – 4)

DECK FITTER (NQF 4 – 5)

SPAR BUILDER (NQF 6 – 8)

MAST BUILDER (NQF 7 – 8)

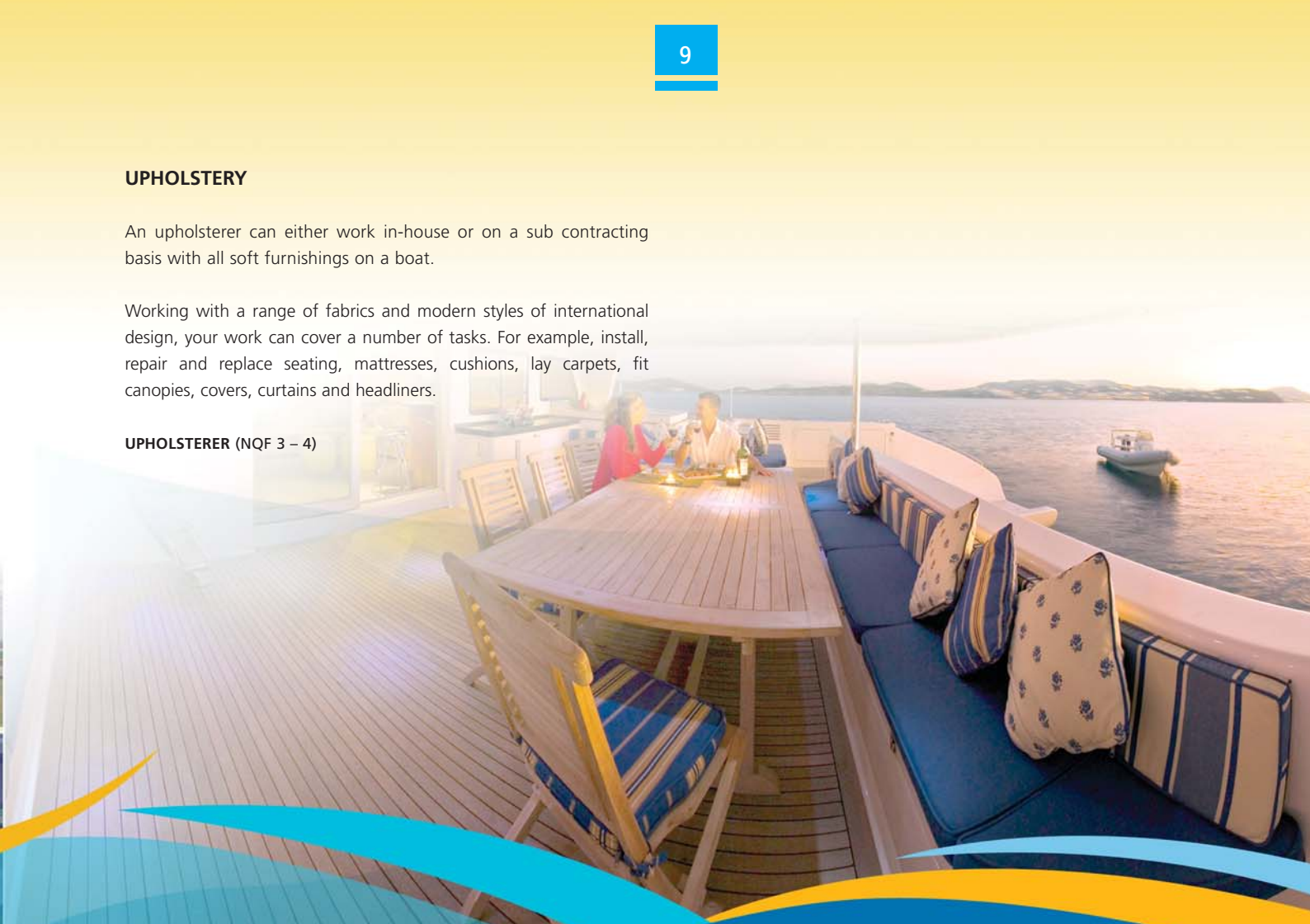


UPHOLSTERY

An upholsterer can either work in-house or on a sub contracting basis with all soft furnishings on a boat.

Working with a range of fabrics and modern styles of international design, your work can cover a number of tasks. For example, install, repair and replace seating, mattresses, cushions, lay carpets, fit canopies, covers, curtains and headliners.

UPHOLSTERER (NQF 3 – 4)



BOAT FINISHING

FINISHING

Would you like to be responsible for giving a luxury vessel a spectacular finish and improve its overall appeal?

In detailing a boat, you will be thoroughly cleaning and polishing it once the repair and maintenance work has been done. You will remove hull coat blemishes, jet wash the hull and follow quality control procedures to present the boat to the customer in the best possible condition.

The rewards of detailing a boat suit a person with a high attention to detail.

POLISHER (NQF 1 – 2)

PRE-FINISHER (NQF 2 – 3)

FINISHER (NQF 3 – 4)

QUALITY INSPECTOR (NQF 4 – 6)



PAINTING and FAIRING

Painting a boat protects it from the elements and adds to its character. A perfect gloss painted finish is as important to the look of boats as it is to cars. To become a first class spray painter, you will gain experience in all modern coatings and finishes. You will work as part of a team, or as a team leader and your work could cover surface preparation, abrasive blasting, coating applications and varnishing.

As a fairer, you will also work in a team fairing the hull of a boat where you use compound and sanding techniques to achieve the smooth faultless design profile of the boat.

SANDER (NQF 1 – 2)

FAIRER (NQF 3 – 5)

SPRAY PAINTER (NQF 3 – 5)



BOAT DESIGN AND ENGINEERING

DESIGNER

All boats begin with a design idea and a good boat design is based on innovative ideas, manufacturing standards and the use of appropriate technologies.

Use CAD and other specialized design software to produce drawings of the hull, deck and interior to be followed by the construction team. You must consider all factors critical to the boat's ultimate performance as well as safety compliance and ensuring all the owner's requirements are met

This is a highly specialized and competitive career with great reward for excellent designers.

You can start in a technical drawing capacity and build a career to Naval Architect.

CAD OPERATOR (NQF 4 – 6)

TECHNICAL DRAUGHTSMAN (NQF 4 – 6)

YACHT DESIGNER (NQF 7 – 9)

NAVAL ARCHITECT (NQF 8 – 10)

ENGINEERING

Every motorboat and many sailing yachts require engineering teams to install drive and steering systems.

Work includes mounting engines and matching to running gear. Attaching propellers, rudders, steering and exhaust pipes to the boat. Installing fuel tanks, fuel lines and generators.

Apply your knowledge of different drive systems in the marine environment: inboard engines, outboard engines, propeller drive systems, jet drive systems, cooling systems and clutch assembly.

MECHANICAL FITTER (NQF 4 – 5)

OUTBOARD ENGINE MECHANIC (NQF 4)

DIESEL MECHANIC (NQF 4 – 5)

POWER RIGGER (NQF 4 – 5)

ENGINE ASSEMBLER (NQF 4 – 5)

STEERING ASSEMBLER (NQF 4 – 5)

MECHANICAL ENGINEER (NQF 7 – 9)



SYSTEMS AND COMPONENTS

A vital part of the Boating Industry is the manufacture of the many different components that are used on and around boats including anchors, propellers, winches, and electronics.

The good news is that the diverse skill sets you develop in marine component manufacturing are transferable into many other industries, like automotive, aerospace or general manufacturing and engineering.

PRODUCTION MANAGEMENT

Oversee the installation of marine electrical and electronic systems, the addition of cabin equipment and fittings. You will need to lead and co-ordinate a team of trades people, assign tools and equipment, ensure safety compliance and establish relations with customers.

Once you are competent at leading a team, you can expand your skills to manage and build teams, liaise with clients, suppliers and contractors and eventually become the owner of your own company.

MANUFACTURING FOREMAN (NQF 3 – 5)

WORKSHOP MANAGER (NQF 5 – 6)

MANAGER (NQF 6 – 7)

PRODUCTION MANAGER (NQF 7 – 9)

BOATYARD OWNER (NQF 8 – 10)



HYDRAULICS

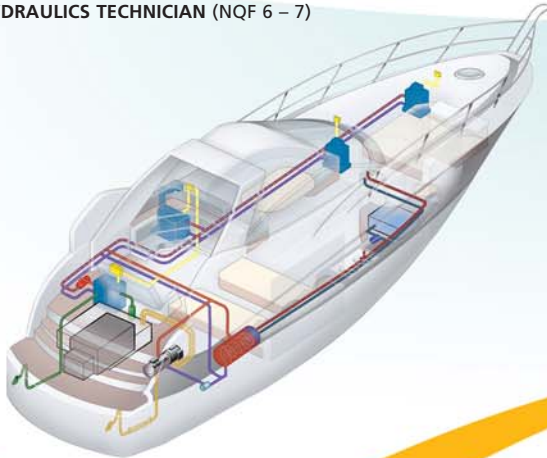
If you are fascinated by engines, hydraulic systems and machinery you could consider a career in designing and building hydraulic components for boats.

You could build the hydraulic arms needed to lift heavy outboard engines or fishing gear out of the water or systems that cant the keel or alter the rigging tension in maxi yachts.

This is a specialized area of boat building that is growing.

HYDRAULICS ENGINEER (NQF 4 – 5)

HYDRAULICS TECHNICIAN (NQF 6 – 7)



PLUMBING

Water management systems on boats are vital, especially on high end luxury vessels. Use plumbing technologies to fit fresh and salt water systems, hot and cold water, heads, engine cooking systems and fresh water tanks. Working as one of a boat building team, you could work installing top quality showers, hand basins, kitchens and even laundries.

PLUMBER'S ASSISTANT (NQF 2 – 3)

PLUMBER (NQF 4 – 5)

MARINE SYSTEMS ENGINEER (NQF 7 – 9)



ELECTRONICS and ELECTRICIANS

The safe installation, maintenance and repair of electrical systems on a boat is vital.

Working to international standards with AC and DC you will install entire wiring systems, lights, speakers, generators, winches and much more. You need to work to exacting standards and be prepared to work in tight spaces on a boat.

As an electronics technician you will install, calibrate, maintain and repair all electronic equipment on a boat eg autopilot, radar, GPS, computers, VHF and HF radios, EPIRB, home entertainment systems, solar panels etc. Being up to date with the latest equipment and technologies is important.

MARINE ELECTRICIAN (NQF 5 – 6)

MARINE ELECTRONICS TECHNICIAN (NQF 5 – 6)

SAIL MAKING AND RIGGING

RIGGING

The precise science of rigging and sailmaking has become something of an art form, particularly on maxi yachts and ocean racers.

As a rigger, you will install and tune the rigging of racing yachts, custom make spars and trailers, and modify or custom make fittings. Your accuracy and attention to detail of your work will be critical to the performance and safety of any sailboat you work on.

YACHT RIGGER SPECIALIST (NQF 5 – 7)



SAIL MAKING

The technology and science of sail design has been transformed and the latest fibres and lamination used in sail fabrication today, mean yachts are sailing with better speed and control than ever before.

If you love sailing and are interested in applying the latest technology to make sails that really catch the wind and survive the toughest conditions, then you might consider a career in Sailmaking.

You will learn about 3D computer modelling and the structural properties of sailcloth materials. You will work with optimal dimensions and shapes of sails for different boats under different conditions. You will understand and use different production processes for making sails. You will work with teams of like-minded enthusiastic and dedicated people, searching for stronger, lighter and better performing sails.

SAIL DESIGN

The design of a sail is the first step in a complex and technologically challenging process.

You will use CAD design software to generate moulds to suit your designs. From these moulds, you can generate panel patterns for the construction team to cut out and stitch, or you may end up working on designs for 3D laminated sails.

As a Sail Designer, you will be continually working on the development of sails for numerous classes and be committed to utilizing the latest design techniques and product technology to produce racing sails that win and cruising sails that last.

CAD TECHNICIAN (NQF 5 – 6)

SAIL DESIGNER (NQF 7 – 9)



SAIL CONSTRUCTION

If you love sailing you might like to work in Sail Construction where you work hands-on machining sails, from entry level to supervisory level.

You will work closely with sailcloth suppliers to implement their latest technological advances in sailcloth and design. You will experiment with the latest fibres and lamination systems to produce a first class finished sail.

SAIL MAKER (NQF 4 – 6)

SAIL MACHINING

Can you work with a high degree of precision? Can you work with complex patterns and templates to produce a repeatable sail shape?

Working with a team at a Sailmaking facility, you will be responsible for correctly stitching accurate sails from many panels. The quality of your stitching and knowledge of materials and yarns will be essential. You would need to work to very fine tolerances, so that the sails that you machine would offer minimum wind resistance or drag at the seams.

SAIL MACHINIST (NQF 3 – 4)



GENERAL LABOUR

There are many support services needed by boat builders, mast builders, sail makers and component manufacturers. Any of the following positions could offer you an entry into the industry from where you can grow your skills and knowledge.

UNSKILLED WORKER/ASSISTANT (NQF 1)

CLEANER/SWEEPER (NQF 1)

STORE RUNNER (NQF 1 – 2)

STORE PACKER (NQF 1 – 2)

FORKLIFT OPERATOR (NQF 2 –3)

DRIVER (NQF 2 – 3)

STOREMAN (NQF 3 – 4)



SUPPORT SERVICES

The support services provided by administrative, financial and independent consultants are invaluable to the functioning of the industry. Some of the following positions and services may be required.

ADMINISTRATION CLERK (NQF 2 – 3)

BOOKKEEPER (NQF 5 – 6)

SECRETARY (NQF 4 – 6)

OFFICE MANAGER (NQF 4 – 6)

PUBLIC RELATIONS (NQF 5 – 7)

SALES (NQF 4 – 7)

MARKETING (NQF 4 – 7)

HUMAN RESOURCES MANAGER (NQF 6 – 7)

ACCOUNTANT (NQF 7 – 8)

FINANCIAL MANAGER (NQF 7 – 9)

SKILLS DEVELOPMENT (NQF 6 – 8)

SURVEYORS (NQF 6 – 8)

ENGINEERING (NQF 6 – 8)

LAWYERS (NQF 7 – 10)

NAVAL ARCHITECTS (NQF 8 – 10)

TIPS AND SUGGESTIONS

WHAT ADVICE CAN YOU GIVE ME IF I WANT TO ENTER THE INDUSTRY?

If you are at school, make contact with key people in the industry and work in a boat yard during your school holidays. Be familiar with working with hand and power tools and equipment. Research the different areas in boat building and decide what you want to specialise in. Find out about study options and bursaries.

WHAT KIND OF PERSON SUCCEEDS IN BOAT BUILDING?

You need to be technically minded and enjoy working with your hands. You will be someone who enjoys maths and technology and has a passion for boats. An all-rounder able to multi-task, with a high attention to detail.

WHAT QUALIFICATIONS DO I NEED?

You need a minimum of a Grade 9 to register for the Yacht and Boat Building qualification. It is better if you have Grade 12 with maths at HG.

WHERE CAN I FIND MORE INFORMATION?

Contact the Marine Industry Association of South Africa www.miasa.org.za

Get a copy of the South African Boatbuilding Industry Guide from MIASA -
Phone 021 447 6541 or e mail info@miasa.org.za
Contact your Regional Boat Building Association

IF I AM WORKING, WHAT JOBS WILL GIVE ME ACCESS TO A CAREER IN BOAT BUILDING?

Air con technician
Boilermaker
Cabinet Maker
CAD technician
Carpenter
Diesel Mechanic
Driver
Electrician

Engineer
Fitter and Turner
Forklift operator
Industrial engineer
Joiner
Laminator
Machinist
Motor Mechanic

Plumber
Refrigeration technician
Rigger
Spray Painter
Storeman
Upholsterer
Welder

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