

THE FORESTRY, PULP AND PAPER INDUSTRY

WHERE DO YOU FIT IN?



PAPER TOUCHES PEOPLE EVERY MOMENT OF EVERY DAY

It's difficult to imagine a world without pulp, paper and tissue products. Think about the cereal box on your breakfast table, the tissue products throughout your home, the posters you pass in the streets, the tickets issued when you go to the movies. Then there are the newspapers, books and magazines that are so much a part of our daily lives. While these are the obvious ones, there are also other products that we don't always associate with the industry. These include well-known fabrics like viscose, as well as cigarette filters, disposable nappies and detergents.

Our competitive edge depends on the very best, on people – like you

The supply of these items is dependent on South Africa's world-class forestry, pulp and paper industries. Sustaining our globally competitive edge depends not just on the very best technology and infrastructure, but also on the best possible people. The major players in the South African pulp and paper industry are global companies which own mills in several continents including Europe, Asia and North America. Which is why we aim to unlock the potential of each person in the industry by equipping them with the skills and confidence they need to attain their personal and career goals in a rapidly changing world.

Do you love the outdoors? Get a buzz out of working with machines? Enjoy people? Are you at your happiest with figures? Perhaps you enjoy

technology and all its avenues?

Whatever your inclination, whatever your level of capability, there's a role and a career path in one of our industries for you.

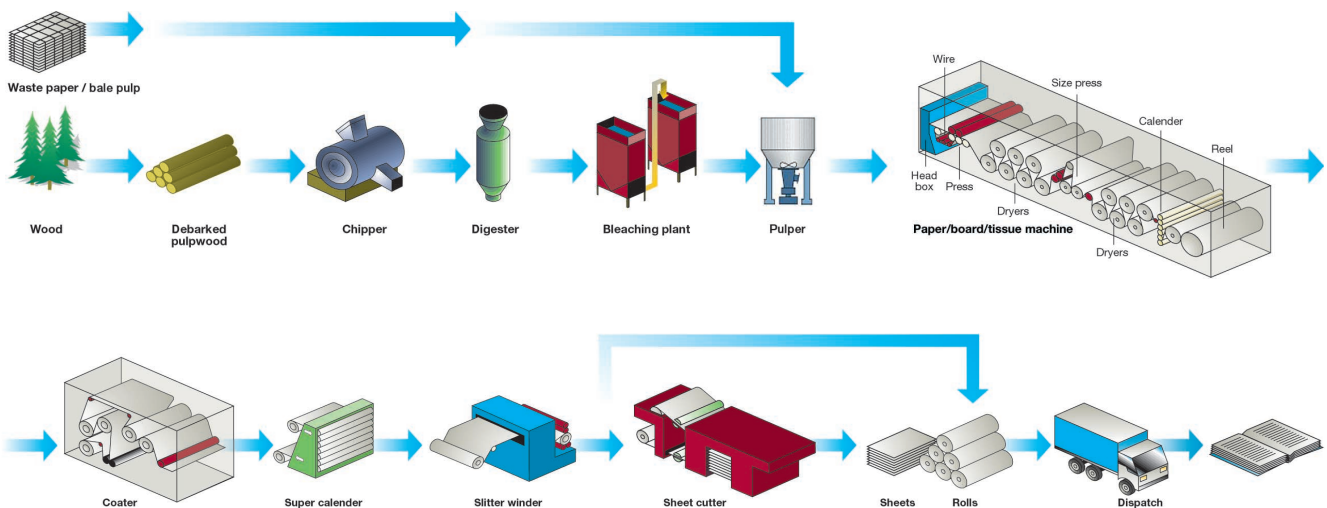
What actually happens in our industries? How do they all fit together? The charts on the centre spread set it out graphically, while the back cover contains more specific detail. This is not in any way comprehensive, but it is intended to give you an overview of the industries. More specific details are available from:

www.dit.ac.co.za

www.pamsa.co.za

www.fieta.org.za

www.ukzn.ac.za



AT THE PAPER/BOARD/TISSUE MACHINE

The primary function of the paper/board/tissue machine is to create a continuous uniform sheet (web) of paper/board/tissue. The paper/board/tissue machine has three major components – the base sheet forming section, the press section and the drying section.

The headbox continually agitates the pulp mixture (furnish) to prevent the fibres from 'clumping' together. The paper/board/tissue machine has a continuous forming screen mesh (wire) moving at high speed. When it leaves the headbox, the furnish is only about 1% fibre and is 99% water. The furnish is now rapidly dewatered along the length of the moving wire.

The fibres begin to bond and a mat is formed. The mat remains on the surface of the wire, while water continues to be removed.

From the wire, where the sheet is now about 80% water, the web passes into the 'press' section. Here it is squeezed between a series of pressure rollers which reduce the water content to about 65%. The web

then goes into the 'dryer' section of the paper/board/tissue machine where each side is passed in turn over a series of steam heated drying cylinders.

Depending on its intended end-use, the paper/board/tissue may need further embellishment such as a surface coating with starch in a size press.

Finally, at the end of the machine, the paper/board/tissue is now wound into a large reel. A base sheet of paper/board/tissue has now been manufactured.

Tissue converting

Tissue converting comprises household, infant and feminine protection products which include facial and toilet tissue, kitchen towels and serviettes manufactured from recycled paper and virgin pulp. In the fluff category, products include disposable diapers and feminine sanitary products.

FORESTRY

AREA	DESCRIPTION	STUDIES AND EXPERIENCE REQUIRED
Research laboratory	Scientists and laboratory assistants from several disciplines work together on various aspects of the industry such as improving fibre yield and biological pest control.	<i>biology, botany, chemistry, ecology, environmental science, forestry, genetics, geography, microbiology, wood science or zoology.</i>
Nursery	Propagation of plants, horticulture.	<i>as for the research laboratory, depending on the position.</i>
Forestry management	Foresters and wood scientists are responsible for the ongoing management of the plantation forests.	<i>biology, botany, forestry, geography or wood science.</i>
Environment issues	Environmental planning, management and monitoring continues all the way through the forestry process.	<i>biology, botany, chemistry, ecology, environmental science, forestry, genetics, geography, microbiology, wood science or zoology.</i>
Forestry machines and equipment	Operation and maintenance of the machines used in the nursery stage and also during the silviculture process.	<i>mechanical or maintenance technical background.</i>
Transport	The transport infrastructure servicing the pulp and paper industry is essential and extensive.	<i>The use of machinery within the industry's forestry operations, together with an extensive transportation infrastructure, offers opportunities for mechanics, drivers, engineers and various support staff.</i>
Support schemes	These incorporate the issues detailed in the 'Support services' panel as well as rural development issues.	

FORESTRY – A GROWING INDUSTRY

The forestry industry, which plays a major role in the South African economy, has a significant advantage over others in that it relies on a renewable, biodegradable resource – trees. In South Africa, the industry does not make use of natural or indigenous forests, but is based exclusively on plantation forests – eucalyptus and pine.

However, it's not just about planting and harvesting trees. These forests are intensively managed. And that makes forestry a growing, dynamic industry offering you many different career paths.

The laboratory – where it all begins

South Africa is a world leader in tree breeding which aims to ensure a steady supply of high quality raw material. Research is focused in two main areas: firstly, on obtaining more fibre from less wood – important in a country like ours where the land available for tree plantations is limited by climatic conditions. Secondly, on breeding trees for specific pulp and paper characteristics.

Improved nursery techniques, pest control, bioclimatic modelling and soil analysis are just some of the other areas that are researched in the laboratory.

Managing the forest resource

Forestry is both a science and a business. That means that nursery managers, foresters and wood scientists, need to have a business focus. Nursery managers, for example, need to have the right plants ready to supply at the right time. And of course, they need to be flexible enough to adapt techniques to suit unpredictable climatic conditions.

Issues that should be taken into account in the management of the forest resource include pruning, planting distances between trees, planning of roads, periods between harvesting, management of water and soil and the maintenance of biodiversity.

Planting and harvesting activities are generally outsourced by the industry and several successful businesses have been built to supply these services.

Getting the show on the road

The forestry industry depends on an efficient transportation system to get wood from plantations in rural areas to our mills for processing. Once the wood is processed, it then has to be transported to customers both locally and offshore.

PULPING

A small proportion of the wood produced by the forestry industry is used for sawmilling and other products such as mining supports and poles, while over two thirds goes to pulp production and is used for two main purposes:

- Chemical cellulose, which is used in the production of viscose and Lyocell® fibres for the textile industry, as well as acetate and specialty chemicals.
- Pulp is used in paper mills for the manufacture of a diverse range of papers, including cardboard and corrugating medium, business and fine papers, tissue and label papers, even for artificial leather and textured polyurethane applications.

PULP AND PAPER MANUFACTURING

AREA	DESCRIPTION	STUDIES AND EXPERIENCE REQUIRED
General	People trained in the engineering disciplines, or in mathematics or the classical sciences are needed to keep mills running smoothly. Machine operators and various technical staff all play a major role in this process.	<i>formal technical background.</i>
Process and design engineering	Engineers in the industry are responsible for: creating the industrial policies and practices that maximise productivity • co-ordinating the design and construction of new manufacturing facilities • the modification and improvement of existing facilities • supervision of all processes.	<i>civil, mechanical, chemical or electrical engineering.</i>
Systems engineering	Systems engineers are responsible for the control system expertise that is needed to design and operate the process controls and computers that drive the industry's sophisticated paper machines.	<i>electronic engineering or computer science.</i>
Environmental engineering	Environmental engineers play a key role in protecting public health and safety by: creating effective pollution controls • reducing the environmental impact of mill operations • ensuring compliance with environmental regulations • making sure that mills are safe, efficient and compatible with their local communities.	<i>chemical, environmental and civil engineering, biology, biochemistry, ecology or chemistry.</i>
Quality control	Quality control experts are responsible for the stringent testing and evaluation of all pulp, paper, board and tissue products.	<i>industrial engineering, chemistry or statistics.</i>
Research and development	R & D professionals are responsible for finding the new ideas and improved applications that keep the paper industry on the cutting edge of technology. Their talent is needed to develop new paper products, find solutions to environmental issues and create more efficient production systems.	<i>physics, organic and polymer chemistry, chemical engineering, biochemistry, biology, mathematics, paper science, engineering or ecology.</i>

RECYCLED PAPER – AN ALTERNATIVE FIBRE SOURCE

Approximately 65% of the available paper in South Africa is recovered for use in paper mills. Approximately 10 000 people in the informal sector earn a living by collecting waste paper and selling it to recycling centres. More than half the country's paper mills depend on recycled fibre and many of them use it as their only fibre source.

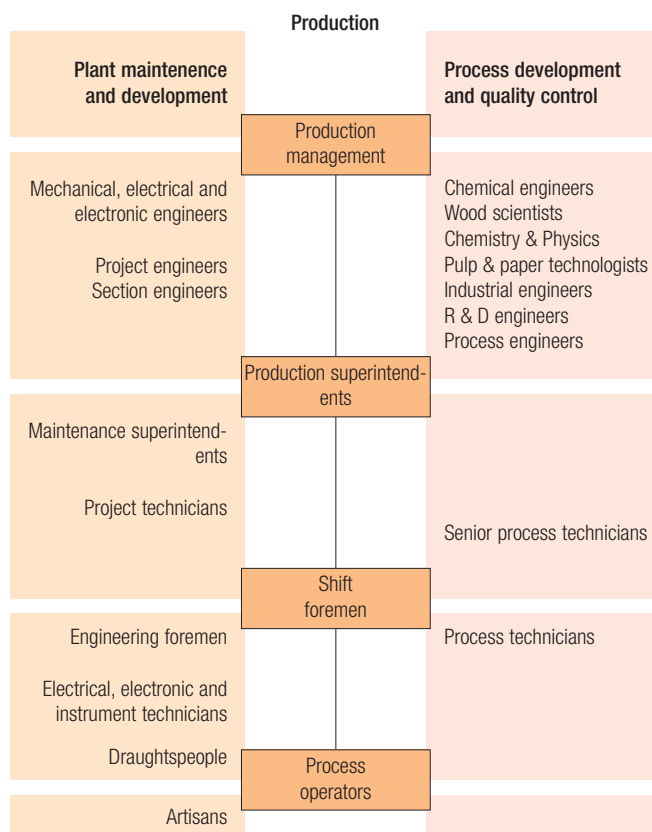
CAREER PROSPECTS

Pulp and paper mills are like self contained worlds, offering you unlimited horizons when it comes to career opportunities.

Pulp and paper mills make use of sophisticated instrumentation, automation and process control systems. The sophisticated nature of the machinery and systems used in the industry, together with a focus on product and systems development, open up opportunities for maintenance staff, technicians, engineers, IT specialists, environmentalists and a wide variety of support staff. It takes skilled people to plan the production process, supervise production in order to keep operations running smoothly and to provide the preventative maintenance needed to avoid breakdowns or interruptions.

Pulp and paper manufacturing processes are resource intensive activities and can have major environmental impacts if not properly managed. The industry is focused on aggressively managing raw materials, energy and water usage and on reducing effluent to make processes more environmentally friendly. This means there are many opportunities for people in the environmental field.

PAPER, PULP, BOARD AND TISSUE – KEY TECHNICAL DISCIPLINES



SUPPORT SERVICES

AREA	DESCRIPTION	STUDIES AND EXPERIENCE REQUIRED
Corporate affairs	Relates to internal and external communication with a wide variety of stakeholders.	<i>marketing, communication or technical.</i>
Finance	Financial management includes responsibility for fixed assets, current assets, insurances and cash flows. Accounting tasks range from raw materials costing, product and process financial controlling to the co-ordination of budgets and sophisticated financial planning analysis and forecasting techniques.	<i>accountancy, finance, business science.</i>
Human resources	Activities include: industrial relations, development and training, health and safety, personnel administration, recruitment and staff selection, rural development.	<i>behavioural sciences, health safety, administration and commerce.</i>
Information technology	Extensive scope as the industry relies heavily on information and communication systems, both within the mills and at head office level.	<i>IT and technical.</i>
Legal	Offers interesting areas of opportunity due to increasing globalisation by the country's pulp and paper mills and evolving legal areas such as the environment.	<i>legal and environmental.</i>
Logistics, supply chain and procurement	Planning and purchasing of goods and services.	<i>industrial engineering or procurement.</i>
Management	Overall responsibility for leading diverse teams and for determining the strategic direction of the business and/or divisions.	<i>management, behavioural sciences or business science.</i>
Research and development	In addition to technical, biological and environmental research and development, the industry's marketing and technical teams work closely together to develop solutions for a rapidly changing world.	<i>chemistry, biology, engineering or technical.</i>
Sales and marketing	Activities include building relationships with clients, coming up with innovative ways of promoting new products and creating new markets. Individuals who can combine a flair for marketing with an engineering or technical background are well-suited to promote and sell the right products for each customer's needs.	<i>marketing, engineering or technical.</i>

SUPPORT SERVICES – ADDING VALUE

If you enjoy being part of a diverse team, operating in an environment where no two days are ever the same and want to know that your contribution makes a difference, then working in one of the various support services which add value to the forestry and pulp and paper industries is right for you.

There are too many career paths and options in the support services to mention here, but the broad areas of opportunity have been listed above.



WHERE TO FROM HERE?

Forget about the sky. In these industries there is no limit. So where do you begin?

Through FIETA (the Forest Industries Education and Training Authority), the pulp and paper industry has developed qualifications and learnerships for industry apprentices.

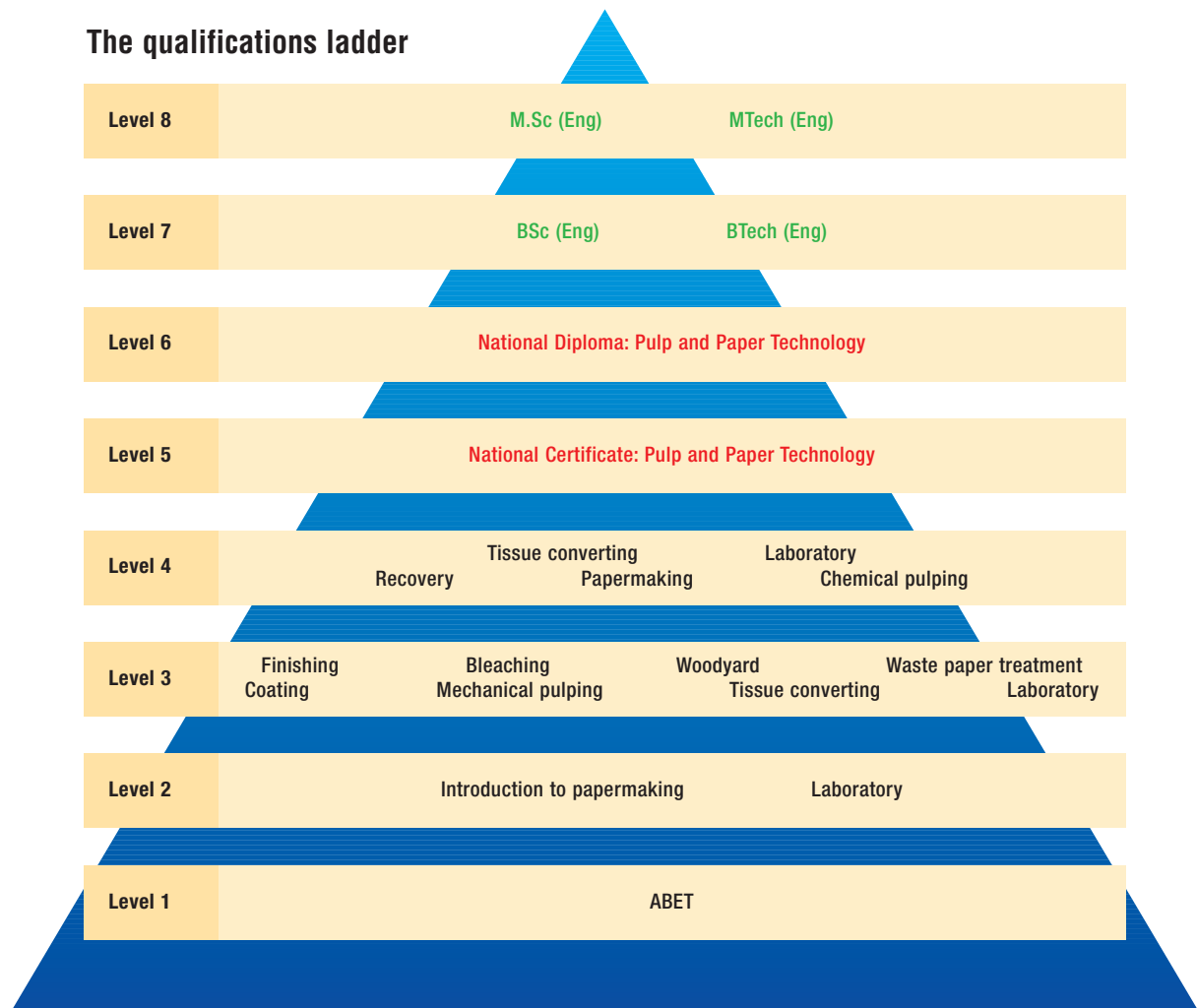
At national level, degrees in forestry are offered by several universities and diplomas in pulp and paper technology are also offered. The industry supports two lecturers at the Durban Institute of Technology who deliver a Bachelor of Technology Programme in Pulp and Paper Technology to employees in the industry and in companies which service the industry. The programme is unique in that the lecturers travel to the students and deliver lectures at the students' place of work. This enables students to learn and improve their skills while working at mills where access to educational institutions is often difficult.

In order to ensure the long-term technical capacity of the industry and develop high level skills, the industry has sponsored a Senior Research Fellow post at the University of KwaZulu Natal. Engineers and scientists being educated at the University can now learn about pulp and paper technology. This focus on pulp and paper technology has also been the catalyst for the development of several research projects at the University.

WHAT QUALIFICATIONS DO I NEED?

The 'ladder' below sets out the pulp and paper qualifications available in South Africa. Qualification requirements for a career in forestry can be obtained from the Forest Industries Educational and Training Authority (FIETA) web site (www.fieta.org.za).

The qualifications ladder



www.fieta.org.za



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