AUSTRALIAN STEEL INSTITUTE

STEEL CAREERS

WHY NOT ?

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The Steel Game

Talk to people in the steel industry and they'll tell you that there is always something happening. It's a global industry and in Australia we are world class. The great thing is that steel is so prominent . Just about everything made in Australia is either made of steel or made with steel equipment. There's a sense of satisfaction in seeing a part manufactured to your steel specifications or a building made to your design.

Most importantly this industry has places to go. It's evolving with technology and becoming more complex, therefore there is always a career path available. This may take you overseas or interstate – the opportunities are numerous. Because of this there is always the chance to learn new skills and provide new career options – and be rewarded personally and financially!

A former Australian Steel Institute (ASI) Engineering Manager for instance was a vehicle builder and welder and his career has taken him into distribution and now management. He shares his fascination for sports cars with another ASI Manager, both sharing the spirit of adventure and excitement from their chosen careers in their recreational pursuits. Many ASI members share this passion for cars, boats, aeroplanes and even helicopters!

The steel industry encourages and promotes interesting people who enjoy their work and have the energy to be creative outside their work lives.

STEEL CAREERS

Where are you headed?

You're nearing the end of your high school years. What's the next step? Maybe it's a big question mark or perhaps you already have it all mapped out. Maybe we can help.

What about the steel industry?

The Australian steel industry is one of the most dynamic and innovative in the world with new research and development happening all the time. It needs people with a wide range of talents, skills and educational backgrounds and it offers opportunities for excellent career growth and satisfaction.

Why steel?

Steel is vital in our daily lives – virtually every manufactured product we use either contains or has been made using steel. As a construction material, steel offers great strength and versatility and as a 100% recyclable product, it is the building material of choice for the future. Careers in the steel industry can range from participation in the production and processing of steel through to the creation of the newest eye-catching steel structure, product or machinery.

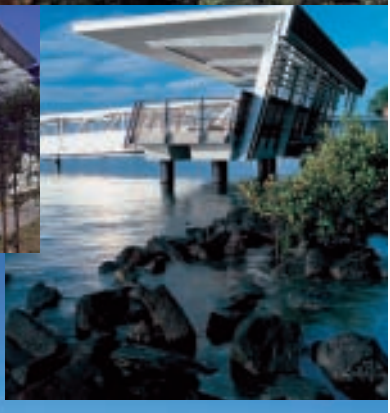
What profile fits you?

You could be part of the dynamic team that designs and builds the next cutting edge steel-framed building, have a hand in manufacturing top quality steel products or even developing a major resource project. Do you like to work with your hands or are you good with figures? Do you have a good head for business or would you rather be immersed in the technical side? The careers summarised in this booklet will give you an idea of what our industry sectors can offer you. We want you - are you ready for the challenge?








STRUCTURAL STEEL FABRICATOR

Structural steel fabricators manufacture, assemble, modify and repair steel structures of all types such as steel-framed buildings and bridges. They cut, shape, join and finish steel using detailed specifications to fabricate the members, parts and sub-assemblies of the structure.

Steel fabricators often work with builders to develop a steel solution bringing the efficiencies of their trade to the project. The steel fabricator develops the project, material and equipment requirements and orders steel from a distributor. Once delivered, the steel is precision cut and drilled often using highly automated machinery. It is then moved to a fabrication bay where it is assembled by welding and bolting, then finished by various means such as blasting and coating.

Steel fabricators need to be highly skilled in the use of machine and hand-tools, very methodical and capable of a high degree of concentration and precision. They enjoy practical work, usually spending most of their time in workshops or production areas. It is necessary for them to have a constant awareness of safety.

Do you enjoy hands-on technical activities, have an ability to read drawings and good hand-eye co-ordination with a practical approach to creating things? Would you like to operate computer-controlled equipment and use hand tools, power tools and welding processes to work with heavy gauge steel? You could learn a highly skilled trade and become a valued member of the fabrication team which has the know-how to create top quality structural frameworks.

Qualifications

There are no specified educational entry requirements although Year 10 or equivalent is preferable. Training can be started while still at school. After school, the training involves an apprenticeship which can be combined with study.

Some examples of TAFE courses:

- Certificate II in Engineering
- Certificate III in Engineering - Fabrication Trade (Heavy Fabrication, Light Fabrication, etc.)
- Certificate IV in Engineering (Fabrication)
- Diploma in Engineering – Advanced Trade

Contacts

Australian Industry Group: www.zoom.aigroup.asn.au
Australian Apprenticeships: www.australianapprenticeships.gov.au/
List of TAFE colleges: www.australian-universities.com/colleges/list.php

The Structural Steel Fabricator

Ken Wilson has not only fabricated the steel for dozens of buildings, he has erected them as well.

“The greatest challenge was probably the Sydney Olympic Stadium with its huge arch and intricate pipe work canopy. Whenever I drive past the stadium I get flashbacks to this exciting period just before the Olympics when everything was happening.

To be a good fabricator, you need to be a project manager, a good communicator and have spatial thinking. You need to become excited about big projects and achieving something tangible, not just reviewing numbers in a book.

If you are looking for a trade that allows you to create and build things, I suggest that you look at steel fabrication. It’s in a growth phase worldwide in an industry where Australia is world class.”

Ken Wilson
Company Director

STRUCTURAL STEEL ERECTOR

When the off-site steel fabrication has been completed and the construction site is ready for the erection of the steel skeleton structure, the steel erector's job begins. Steel fabricating companies usually have their own dedicated team of erectors or riggers who take delivery of the steel on site and are responsible for erecting it. Scaffolding may be required and the steel assembly is hoisted into position using powerful cranes and winches. It is then secured in place by bolting.

The steel erector must carefully plan the sequence of the rigging so everything occurs safely and seamlessly, ensuring that the integrity of the structural design is maintained. When tower or mobile cranes are used, the erector must be able to communicate with the crane operator using the correct hand or whistle signals.

You may have noticed a high-rise steel building going up with speed and apparent ease and you may have admired the people skilfully directing the positioning of huge steel beams or balanced high up securing the structure. These people play an indispensable role in the safe construction of steel structures.

The steel erector needs to have a good head for heights, a high level of physical fitness and the ability to work well as part of a team. The job requires the ability to interpret construction drawings and specifications in planning the erection process and a thorough understanding of workplace safety practice.

Training commences in construction, usually starting as a builder's labourer and working up from there. Opportunities for employment are enhanced by gaining certificates of specialisation.

Would you like to work outdoors on large projects that require physical strength and stamina? Would you get satisfaction from seeing the results of your labour growing each day to become a successful structure? Then check out the employment prospects and get yourself a traineeship!

Qualifications

Some examples of TAFE courses:

- Basic, Intermediate and Advanced Rigging Certificates
- Certificate III in Rigging
- Certificate III in General Construction (Dogging)
- Certificate III in General Construction (Rigging)
- Certificate III in General Construction (Scaffolding)

An apprenticeship is necessary for entry to these courses.

Contacts

Construction Industry Training Board: www.citb.org.au/doc/Operations.pdf
Australian Apprenticeships: www.australianapprenticeships.gov.au/
List of TAFE colleges: www.australian-universities.com/colleges/list.php

The Structural Steel Erector

Mark Sgaravizzi recollects his experiences:

“When my father ran Sebastian Engineering the rigger on a job walked beams at height and travelled up the building on the crane hoist. These days this is a thing of the past – these days safety is paramount.

We now have cherry picker lifts, safety screens and all the access gear we need that ensure a person is protected from danger whilst they are erecting anything from a high-rise building to a shopping centre or a factory warehouse.

The erector today needs to understand how to put buildings together by reading shop drawings and planning the erection process.

The erectors or riggers take delivery of the fabricated components and using powerful tower or mobile cranes they hoist them into position and line them up for bolting assembly.

These days some erectors work for fabricators and some are independent companies, either way it’s great to be able to walk past a massively tall building knowing you were involved in putting it up.”

Mark Sgaravizzi
Managing Director, Major Fabricator

STRUCTURAL STEEL DESIGN ENGINEER

Structural design engineers occupy a central and highly specialised role in the steel construction industry. They can be engaged by anyone who requires professional advice regarding the design, rehabilitation, repair and adequacy of structures. They use their technical expertise to translate their clients' structural concepts into reality, combining safety with economy and elegance.

Structural engineers are some of the first people involved in tackling a new steel project. The specific requirements of the project are evaluated with regard to the structure's framework including appropriate materials to use, cost-effectiveness, satisfactory timelines, environmental and safety issues. The result must be a strong, functional and reliable structure. To do this, the engineer needs to understand the materials used in construction and analyse the structure for the design forces.

Some structural engineers work in the design field for consulting engineering companies, others work for building contractors to be directly involved in construction engineering and management. A typical day in the life of a consulting structural engineer might involve design work in the office, a site inspection and meetings with the client and/or other members of the project team such as the architect to ensure that the design is built as intended. Alternatively a site engineer might be supervising erection, planning construction and monitoring costs.

Are you keen to identify, analyse and solve problems, able to communicate well both orally and in writing, to work independently and to accept responsibility? Are you practical as well as creative? Perhaps structural engineering is for you.

Subjects that are highly recommended as preparation for a degree in structural engineering are physics, chemistry and an advanced level of maths.

Qualifications

A four-year Bachelor of Engineering degree in Civil Engineering. Membership and registration as a Chartered Professional Engineer (CPEng) of the Institution of Engineers Australia.

Contacts

Professional body: Engineers Australia www.engineersaustralia.org.au
University course information:

NSW & ACT: www.uac.edu.au/
QLD: www.qtac.edu.au/
SA & NT: www.satac.edu.au/
TAS: www.prospective.utas.edu.au
VIC: www.vtac.edu.au/
WA: www.tisc.edu.au/

The Structural Steel Design Engineer

"I have always been interested in the way things work – as a kid I was always building things. I did well in maths and science at school and these subjects formed a good background for my civil engineering degree.

I enjoy the challenge of solving diverse problems to achieve a functional, safe and economical result. I often need to be creative and innovative in the quest for the right solution, something I love about the job. There is lots of variety in my work – it's a great balance between inside technical work and external site visits. My work often brings me in contact with the client, the architect and the fabricator and detailer.

Structural steel is my favourite structural material offering fantastic design opportunities and aesthetically pleasing results. It is essential to keep abreast of new developments especially in areas such as 3D modelling.

Basically I love a challenge and I am prepared to accept responsibility, getting involved in major projects at a high level. Part of the fun is the variety of projects which are often located in far-flung corners of the country. There is plenty of opportunity for Australian engineers to spend time working overseas. The current shortage of qualified engineers guarantees fantastic job opportunities – this is truly a career with huge possibilities!"

Peter MacDonald
Principal Consulting Engineer

STRUCTURAL ENGINEERING DRAFTSPERSON

Structural engineering draftspeople provide technical support to structural engineers. They assist in the design of structural projects such as buildings, bridges and towers by preparing the detailed plans and drawings to the engineer's design and specifications.

Structural draftspeople need to have an understanding of engineering and design practices. This enables them to create electronic structural design plans and detail using 2D and 3D computer-aided drafting. Draftspeople frequently have a hand in preparing tenders and design documentation for the project.

Often structural draftspeople play an integral part in the design and construction team by carrying out site inspections of completed works for the design engineers. Being the first people involved in the documentation stage they play a pivotal role in maintaining standardisation of steelwork framing and connections.

If you have an interest in computer-aided drafting and structural detail this may be the career for you. As part of the engineering team, you will visualise ideas in three-dimensional form utilising computers, produce accurate and precise work and have good oral and written skills.

Qualifications

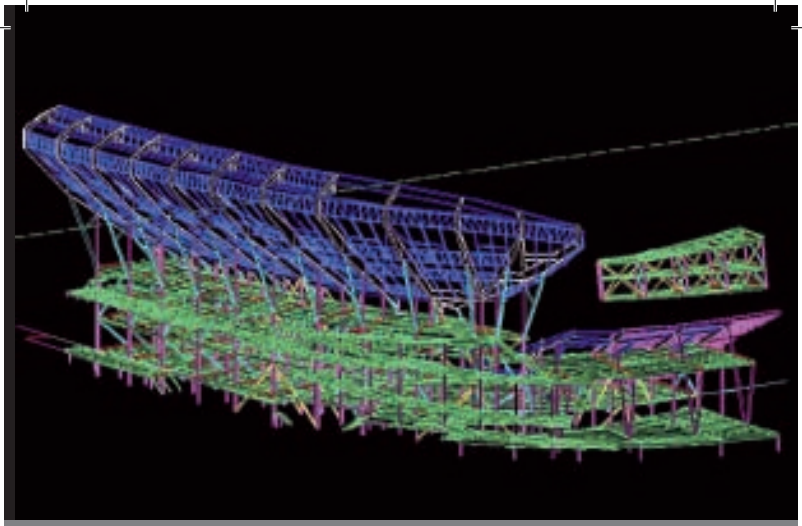
Some examples of TAFE courses:

- Certificate III in Computer Aided Drafting / Certificate III in Drafting - Civil & Structural Engineering. Entry requirements vary by state ranging from Year 10 to 12
- Certificate IV in Building Drafting / Certificate IV – Drafting Trade (Structural Design). Entry requirements are Year 12 or Year 10 plus work experience
- Diploma of Civil Engineering (Drafting) / Advanced Diploma of Civil Engineering (Structural Design). Entry requirements for Diploma courses are usually completion of Year 12 or equivalent preferably with maths.

It is highly recommended that you combine coursework with a cadetship in the industry, enabling you to earn while you learn.

Contacts

List of TAFE colleges: www.australian-universities.com/colleges/list.php
Australian Apprenticeships: www.australianapprenticeships.gov.au/



The Structural Steel Draftsperson

“Academically I achieved well at high school, but I did not have a specific career in mind when I completed my final year. I was fortunate to be offered a drafting apprenticeship which set me on the path to a long and very rewarding career. I began as a junior drafter in a small office, assisting various disciplines. As staff numbers increased and I gained experience, I found most satisfaction in the Structures section.

I have worked on a great variety of projects, including several unique structures and high profile buildings and I love being part of the team that can create such stand-out structures! I not only use my drafting skills to put together detailed CAD drawings for the design team, but I also liaise with the engineer, architect and other departments, and solve problems on a daily basis. I occasionally visit job sites to collect data and take measurements, bringing welcome variety to my normal routine.

I have had the opportunity to become increasingly involved in project management as I support the structural design engineer in his job. That said, I still get immense satisfaction from completing a full set of structural drawings ready for the construction of a brand new building! I love being able to convert a design concept into a graphical representation that will be used to create a new structure.”

Cheryl Petersen
Senior Structural Draftsperson

STRUCTURAL STEEL ESTIMATOR

Structural steel estimators are the quantity surveyors for fabrication shops who specialise in producing reliable estimates of the amounts and types of steel to be used on a project and what they will cost. They need to be able to prepare schedules of quantities from measurements taken from the drawings, plans and specifications produced by the structural design team. They must also check the availability of the steel to be used.

Once a contract has been awarded, the estimator often orders to the specifications all the steel components needed for the project. The estimator must keep tabs on the financial status of the job, compiling information on which progress payments are based. When there is a change of design, variations in payment claims must be calculated.

Structural steel estimators usually work for steel construction companies, costing out new jobs in hand and assisting the bid team in submitting tenders to win new work for the business. They are sometimes required to attend site meetings and be involved in project management. For this, a thorough understanding of commercial construction is essential. They may have several projects underway at the same time so they need to be accurate and organised in controlling the costs of each.

An estimator needs to be analytical and logical, to have an aptitude for working on computers with great attention to detail, to enjoy working with figures and to have strong communication skills.

Qualifications

Some examples of courses:

- Diploma in Quantity Surveying
- Diploma of Building
- Bachelor of Construction Management
- Bachelor of Urban Development (Quantity Surveying)

Entry requirements for all are Year 12, preferably with maths.

Contacts

Australian Institute of Quantity Surveyors; www.aiqs.com.au/
List of TAFE colleges: www.australian-universities.com/colleges/list.php
University course information:

NSW & ACT: www.uac.edu.au/
QLD: www.qtac.edu.au/
SA & NT: www.satac.edu.au/
TAS: www.prospective.utas.edu.au
VIC: www.vtac.edu.au
WA: www.tisc.edu.au/

The Structural Steel Estimator

“What do you need to make a good estimator?

Firstly you need to be a good communicator, be methodical and understand engineering drawings and construction methods. A trade background is a perfect lead in to this career.

The steel estimator evaluates from the ‘request for quotation’ documents provided what it will cost the fabricator to make. Estimators therefore need knowledge of spreadsheets and maths as well as the ability to read understand and respond to contracts.

You interface with clients and so will need negotiating skills when there is a change in the contract and you need to be able to agree on a variation in the contract.

The estimator is link pin for the fabricator to ensure that business quoted is profitable and that any variations are picked up and effectively priced and quoted. For a person with an appreciation of building construction, a bent for analysis and attention to detail, steel estimating could be a fulfilling career path for you.”

Rex Munnerley
Estimator

STRUCTURAL STEEL DETAILER

Structural steelwork detailers specialise in preparing detailed shop drawings for the manufacture and erection of the steel framework used in the construction of buildings, bridges and other steel structures. For this they use 2D and 3D computer-aided drafting (CAD) software.

It is necessary for the steel detailer to extract the information needed by the steel fabricator from the structural engineer's drawings. Complete shop drawings show material sizes and dimensions of the steel members to be used (such as beams, columns and trusses) as well as welding, bolting and surface treatment requirements and all other information needed by the fabricator to complete the job.

To ensure accuracy and completeness, the steel detailer's drawings are submitted to an important review process. They are generally checked by the structural engineer and architect for accuracy and compliance with the design and dimensional layout, as well as by another steel detailer, before they are delivered to the fabricator.

Detailing requires drafting skills including a knowledge of geometry and trigonometry as well as problem solving, good spatial visualisation and logic. If you have an interest in structures, enjoy computers and design, can produce accurate and detailed work and have good communication skills, then you might gain great satisfaction from this career.

Qualifications

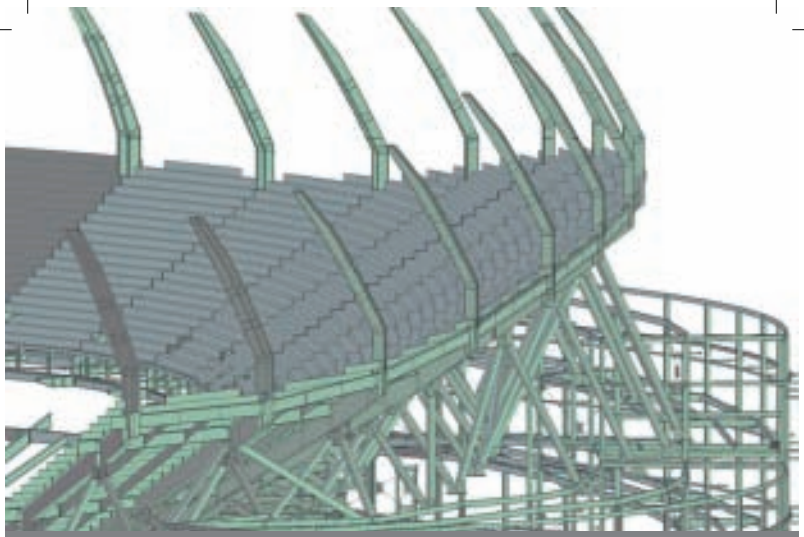
Some examples of TAFE courses:

- Certificate III in Computer Aided Drafting/ Certificate III in Drafting Trades
- Certificate IV in Drafting Trade (Structural Design)
- Diploma in Engineering – Computer Aided Drafting/ Diploma of Engineering Technology – Detail Drafting

Entry requirement for a Certificate III or IV or Diploma is usually completion of Year 12 or equivalent preferably with maths.
It is highly recommended to combine coursework with a cadetship within the industry, enabling you to earn while you learn.

Contacts

List of TAFE colleges: www.australian-universities.com/colleges/list.php
Australian Apprenticeships: www.australianapprenticeships.gov.au/



The Structural Steel Detailer

"To be a steel detailer you need to understand how things go together and put them down on paper. Without this the fabricator cannot load his machines to make the steel components of a building.

I visualise the building before I even start the detailing process. This puts things into perspective and then the rest is solving problems like clash detection where components don't fit.

Most important is to be able to communicate. As the interface between the engineer and the fabricator I need to resolve problems and explain to others the solution.

3D modelling is the new boy on the block with implications which are far reaching. Imagine a model which has all the small components making up a large structure that will drive computer controlled machines, load trucks in the right sequence and possibly also control costs.

This is a new area for the steel industry and one in which the new guys will excel due to their computer skills.Training is at TAFE and in-house and at the end of the day you have a well-paid in-demand job."

Chris Velovski
Managing Director, Detailing Company

STRUCTURAL STEEL DISTRIBUTOR

Structural steel distributors act as the link between the producer and the fabricator. Obtaining steel from steel mills around Australia, the distributors supply steel to fabricators for major construction projects such as high-rise buildings, sports stadia, warehouses, bridges and shopping centres.

A company dealing in the distribution of structural steel needs to have extensive warehousing facilities to carry a large stock to service the needs of its clients. Often the steel distributor holds stock that the fabricator wants supplied on a just-in-time basis. A good geographical location means the various needs of the industry can be met without delays.

There are two distinct categories of steel products: long and flat. Long products include structural beams, columns and angles, tube and pipe. Flat products include plate (more than 3mm thick) and coil (less than 3mm thick). Plate is usually ordered by size due to cost considerations so plasma and oxy cutting machines are needed by distributors for this purpose.

In addition to warehousing, distribution and administration, steel merchants also need a sales team. Good logistics and materials handling knowledge are essential as well as an astute understanding of business and strong customer service skills.

The steel distribution industry seeks highly efficient people who are interested in serving their customers quickly and accurately by sourcing the right steel product at the right time and price. An ability to thrive in the trading environment is important as well as an attention to detail especially in areas such as stock control, order fulfilment and customer satisfaction.

Qualifications

Some examples of TAFE courses:

- Certificate II in Transport and Distribution (Warehousing and Storage)
- Certificate III in Transport and Distribution (Warehousing and Storage)
- Certificate IV in Transport and Distribution (Warehousing and Storage)
- Diploma of Logistics Management

No specific entry requirements needed.
Apprenticeships are recommended.

Contacts

List of TAFE colleges: www.australian-universities.com/colleges/list.php
Australian Apprenticeships: www.australianapprenticeships.gov.au/
Logistics Association Australia: www.laa.asn.au/home

The Structural Steel Distributor

“The steel distribution process is about teamwork and people. Good facilities and plenty of stock help but basically people like buying from someone they know will look after them. So essentially we look after customers’ needs.

We have to buy the right product at the right price and so we need to know the market. The team must select the right product and deliver it on time. Automatic bar coding , e-trading and huge magnetic cranes are often involved.

On-time deliveries are how we measure ourselves and so we’ve got to be able to deliver – the next day or earlier most of the time.

The company looks after our training and safety and allows us to be shareholders in a share plan arrangement so I feel like I’m working for myself as well as the other shareholders.”

Russell Chataway
State Manager, Distribution

STRUCTURAL STEEL PRODUCER

The Australian steel industry produces over seven million tonnes of steel a year, manufacturing a broad range of steel and steel products. In the structural steel market this includes products such as steel beams, plate, tubes and pipes and wire products.

Steel-making begins when iron ore is smelted to produce metallic iron which is then converted to steel by removing excess carbon and adding various alloys. It is then continuously cast and rolled into a variety of shapes and sizes. Hot rolled steel is produced for various uses eg. welded beams, reinforcing bar and floor plate.

Hot rolled steel can further be subjected to a cold rolling process which is used to make products such as piping, roofing, guttering, purlins and formwork. Zinc is used to produce galvanised steel which protects the steel against corrosion.

Steel producers provide a range of employment prospects in the fields of materials, mechanical, chemical, electrical and mechatronic engineering, metallurgy, IT, human resources, accounting and sales. Apprenticeships are offered in trades such as fitting and turning, boiler-making, moulding and painting.

New ideas and technologies are changing the face of the modern steel industry – do you have a contribution to make? Tomorrow's success depends on today's research and development. If you are interested in technical and engineering activities and would like to be part of this vital and innovative industry, then maybe we have just the right place for you!

Qualifications

Some examples in the production and trades areas:

- Certificate II in Engineering – Production Technology (no entry requirement)
- Certificate III in Engineering – Production Systems
- Certificate III in Engineering – Mechanical Trade
- Certificate III in Engineering – Fabrication Trade
- Certificate III in Engineering – Electrical/Electronic Trade

Entry requirement for a Certificate III is usually completion of Year 11 or equivalent.

For the trades, it is highly recommended to combine coursework with an apprenticeship within the industry, enabling you to earn while you learn.

Contacts

List of TAFE colleges: www.australian-universities.com/colleges/list.php
Australian Apprenticeships: www.australianapprenticeships.gov.au/
University information: See state contact details page 10
Australian steel producers: BlueScope Steel www.bluescope.com.au
OneSteel www.onesteel.com

The Steel Producer

“A career in the steel industry would be boring and lack variety”. Not a chance - wow, what a ride!

“Starting as a trainee metallurgist for John Lysaght Australia Ltd in 1977, I had no idea where my career would take me. I could have chosen to branch into pure metallurgy, production supervision or indeed customer liaison. Instead, I took a position in Technical Sales, exposing me to the markets we served but most important to me, I got to meet decision makers both in my own company and many large corporates in the industry.

My career took me overseas to run my first business at age 25, and from there I held middle and senior management positions in sales, marketing, distribution and general management. I got the chance to form a joint venture with a large European business and see it to fruition as an inaugural director. At 42, I was President of a $300m turnover business with multiple sites and a great workforce of 250 people! Could I have gained such a diversity of experience and training outside of the steel industry? For me, I doubt it.

All this and I am a boring old baby boomer! Just think what you Generation Y’ers could do in an industry like ours! Give it close consideration and take time to talk to people like me who have been there. It’ll cost you nothing and who knows where it might lead you! Good luck!”

Ian Hush

Executive Manager – Sales & Distribution










Getting more careers information:

As part of the Career Advice Australia (CAA) initiative, the Australian Government has established a network of Regional Industry Career Advisers to assist you in finding the career in industry that suits you best.

These advisers ensure that all young people aged 13-19 years have access to expert industry career advice. They work together with businesses, employers and industry bodies on a regional basis to provide current information so young people can make informed choices about career opportunities in industry in their region.

Career Advice Australia offers a range of plans aimed at fostering cooperation between workplace and learning, beginning at school, whether be it for Structured Workplace Learning, Career and Transition Support or via the Adopt-a-School project. They will be able to help you map out a career for yourself that can guide you on your path upwards and remain flexible enough to offer you choices as you go.

Contact:
https://transit.dest.gov.au

For information on a Regional Industry Career Adviser for your area contact:

https://transit.dest.gov.au

AUSTRALIAN STEEL INSTITUTE
(ABN)/ACN (94) 000 973 839

Mission:

To deliver increased use of Australian steel & improved industry competitiveness through:

- Representation
- Technical and marketing leadership
- Industry development
- Providing an independent forum

Australian Steel Institute

Level 13, 99 Mount Street
North Sydney NSW 2060
Australia

Tel: (02) 9931 6666
Fax: (02) 9931 6633

Web: www.steel.org.au