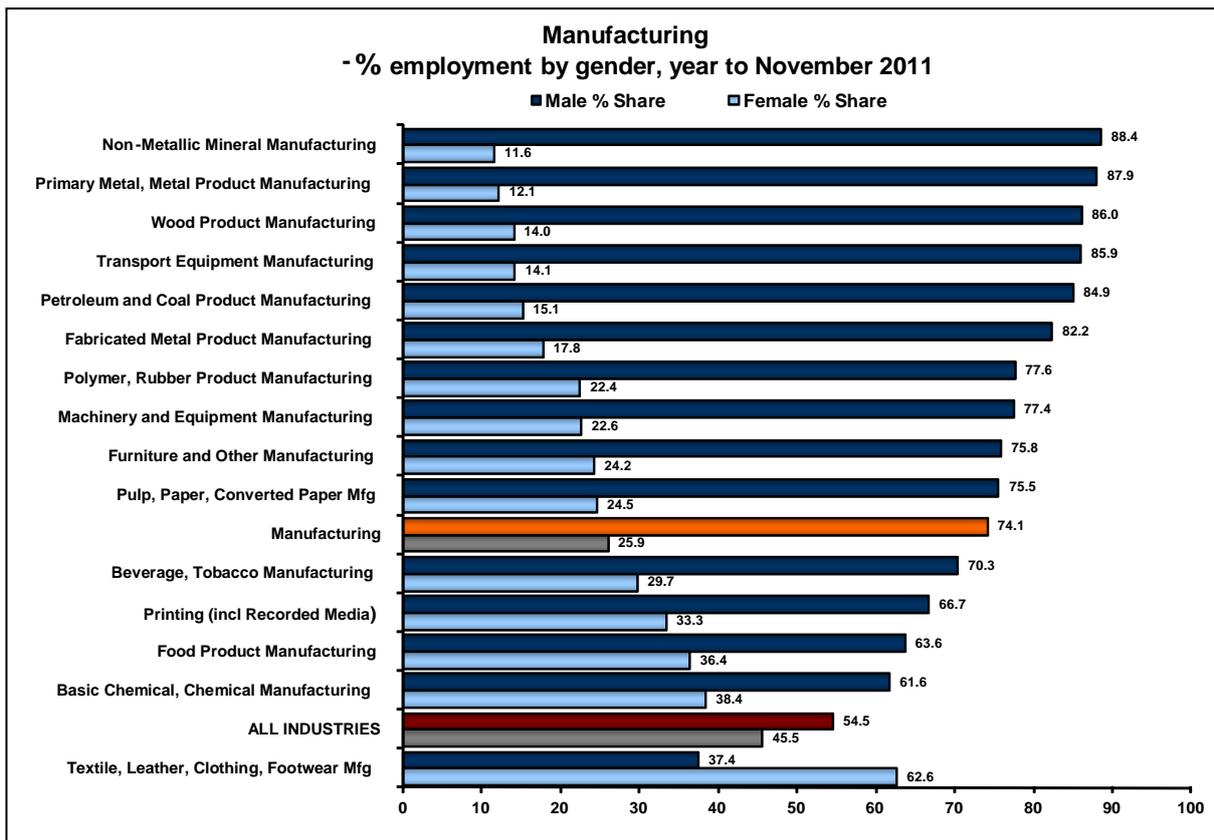


Women in the Manufacturing Industry

Women are underrepresented in the manufacturing industry in Australia. In some sectors of manufacturing, women make up less than 20% of employees. In most manufacturing enterprises, women are employed in administration, staff canteens or as cleaners rather than in the core area of business.

Employment November 2011

The Manufacturing industry is a male dominated industry. In Manufacturing, males form 74.1% of the total number of employees. This is significantly different from the employment picture for all industries where the distribution of employment between the genders was closer to 50:50¹. The non-metallic mineral manufacturing and primary metal, metal product manufacturing sectors are the most heavily gender biased of all the sectors covered by MSA. The only sector where women outnumber men is in the textiles, clothing and footwear sector.



Source: <http://www.skillsinfo.gov.au/skills/IndustryReportsCharts/GenderandFT-PT/>

¹<http://www.skillsinfo.gov.au/skills/IndustryProfiles/GenderandFT-PT/>

Labour force data released by the Australian Bureau of Statistics (ABS) in November 2011 showed that some of MSA's sectors were even more strongly male dominated. For example, women made up only 10% of the workforce in the 'Primary Metal and Metal Product Manufacturing' sector. The 'Basic Chemical and Chemical Product manufacturing' sector had the highest percentage (42%) of female employees of all the other sectors aside from the 'Textile, Leather, Clothing and Footwear Manufacturing' sector (60%).

ANZSIC Sector	Full Time	Part Time	% of workforce
Primary Metal and Metal Product Manufacturing	93,000	6,000	10%
Transport Equipment Manufacturing	74,000	8,000	11%
Non-Metallic Mineral Product Manufacturing	33,000	4,000	15%
Wood Product Manufacturing	33,000	6,000	16%
Fabricated Metal Product Manufacturing	50,000	6,000	16%
Petroleum and Coal Product Manufacturing	10,000	1,000	19%
Polymer Product and Rubber Product Manufacturing	33,000	2,000	19%
Machinery and Equipment Manufacturing	96,000	12,000	23%
Furniture and Other Manufacturing	53,000	9,000	27%
Basic Chemical and Chemical Product Manufacturing	37,000	5,000	42%
Textile, Leather, Clothing and Footwear Manufacturing	27,000	12,000	60%

Source: ABS *Labour Force* November 2011

Within the states, Victoria had the highest percentage (24.87%) of women employed in the sectors covered by MSA followed by New South Wales (23.30%). In Victoria the two sectors employing a large number of women were 'Textile, Leather, Clothing and Footwear manufacturing' (12,000) and 'Basic Chemical and Chemical Product manufacturing' (6,000)². These two sectors combined accounted for 39% of women employed in the manufacturing industry in Victoria. In New South Wales, 'Basic Chemical and Chemical Product Manufacturing' was the sector employing the most number of women (8,000 or 19.5% of women)³.

State	Males Full time	Males Part time	Females Full time	Females Part time	% of employees
New South Wales	131,000	4,000	30,000	11,000	23.30%
Victoria	131,000	11,000	34,000	13,000	24.87%
Queensland	86,000	3,000	16,000	4,000	18.35%
South Australia	34,000	1,000	6,000	2,000	18.60%
Western Australia	51,000	3,000	7,000	3,000	15.63%
Tasmania	8,000	0	0	0	0
Northern Territory	0	0	0	0	0
Australian Capital Territory	0	0	0	0	0

Source: ABS *Labour Force* May 2011

² Australian Bureau of Statistics *Labour Force* May 2011

³ Ibid

Industry research

In 2009 the Manufacturing and Engineering Skills Advisory Board (MESAB) was funded to undertake the development of a national strategy to assist in the improvement of the standards for language, literacy and numeracy in the metal, engineering, chemicals and plastics industries⁴. MESAB commissioned a report which was undertaken by Tilburg Consulting Pty Ltd. The following table is from that report and highlights the gender imbalance that exists in occupations within manufacturing.

Gender by occupation

	% Male	% Female	Employees	Total
Tradespersons and Related Workers	96%	4%	14,971	100%
Mechanical and Fabrication Engineering Tradespersons	99%	1%	179,886	100%
Electrical and Electronics Tradespersons	97%	3%	48,942	100%
Miscellaneous Tradespersons and Related Workers	94%	6%	28,308	100%
Other Miscellaneous Tradespersons and Related Workers	65%	35%	8,161	100%
Intermediate Production and Transport Workers	85%	15%	10,041	100%
Intermediate Plant Operators	97%	3%	119,492	100%
Intermediate Machine Operators	87%	13%	51,670	100%
Other Intermediate Production and Transport Workers	82%	18%	37,781	100%
Labourers and Related Workers	88%	12%	21,313	100%
Factory Labourers	76%	24%	71,021	100%

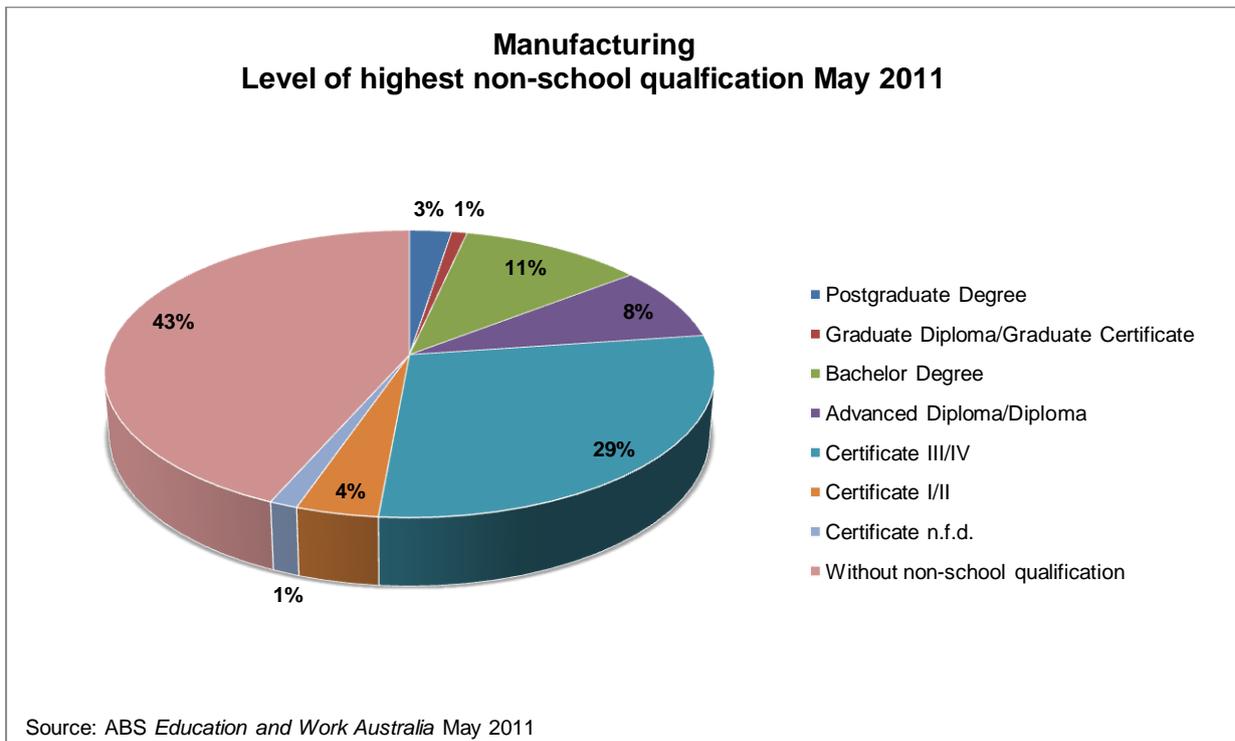
Source: MESAB 2009 *Improving Communications in the Workplace*

The occupational classification that had the highest percentage of female participation was 'Other miscellaneous tradespersons and related workers'⁵. This classification includes the occupation of 'optical mechanic'. Traditional trade occupations such as 'Tradespersons and related workers', 'Mechanical and fabrication engineering tradespersons' and 'Electrical and electronic tradespersons', had extremely low levels of participation by women (4% or less).

⁴ Manufacturing and Engineering Skills Advisory Board 2009 *Improving Communication in the Workplace* pg 23

⁵ Australian Bureau of Statistics *Australian Standard Classification of Occupations 1997*

In Education and Work Australia May 2011, 43% of employees in Manufacturing did not have a non-school qualification while a further 4% had a Certificate I or II qualification⁶. To extrapolate this data to gender data within Education and Work is impossible because the gender data includes the female dominated industries of health and community services, retail services and hospitality.



Barriers to employment for women

It may be that the perception of manufacturing as being “dirty, manual work” discourages women from entering the manufacturing industry⁷.

In the MESAB report, it was noted that employers valued the skills that made people ‘useful and valuable employees such as communication and team work’. If Australia is to remain competitive, skills and knowledge in materials and lean manufacturing processes are also essential⁸.

The predicted skills shortages that are expected to be felt in manufacturing as the Australian economy recovers and the resources sector returns to full production opens the way to new initiatives to recruit, train and retain women to overcome such shortages⁹. Promoting careers within the manufacturing industry as “Careers of Choice” is one such workforce development initiative.

⁶ Australian Bureau of Statistics *Education and Work Australia* May 2011

⁷ Manufacturing Skills Australia 2010 *Environmental Scan* pg 8

⁸ Manufacturing and Engineering Skills Advisory Board 2009 *Improving Communication in the Workplace* pg 25

⁹ Manufacturing Skills Australia 2010 *Environmental Scan*

Women in non-traditional trades

The manual trades within manufacturing are an area where women are substantially under-represented. There is little hard data available regarding the percentage of tradeswomen in the manufacturing trades, however it is estimated that it is probably less than 2%.

A 'non-traditional' trade can be defined as a trade where representation of women is less than 10% of the workers. In the manufacturing industry, the trades referred to include:

- Fitting and machining
- Boiler making
- Blacksmithing
- Engineering
- Mechanical trades
- Electrical/electronic trades
- Fabrication trades
- Aeroskills trades (including avionics and mechanical trade)
- Wood turning
- Cabinet making

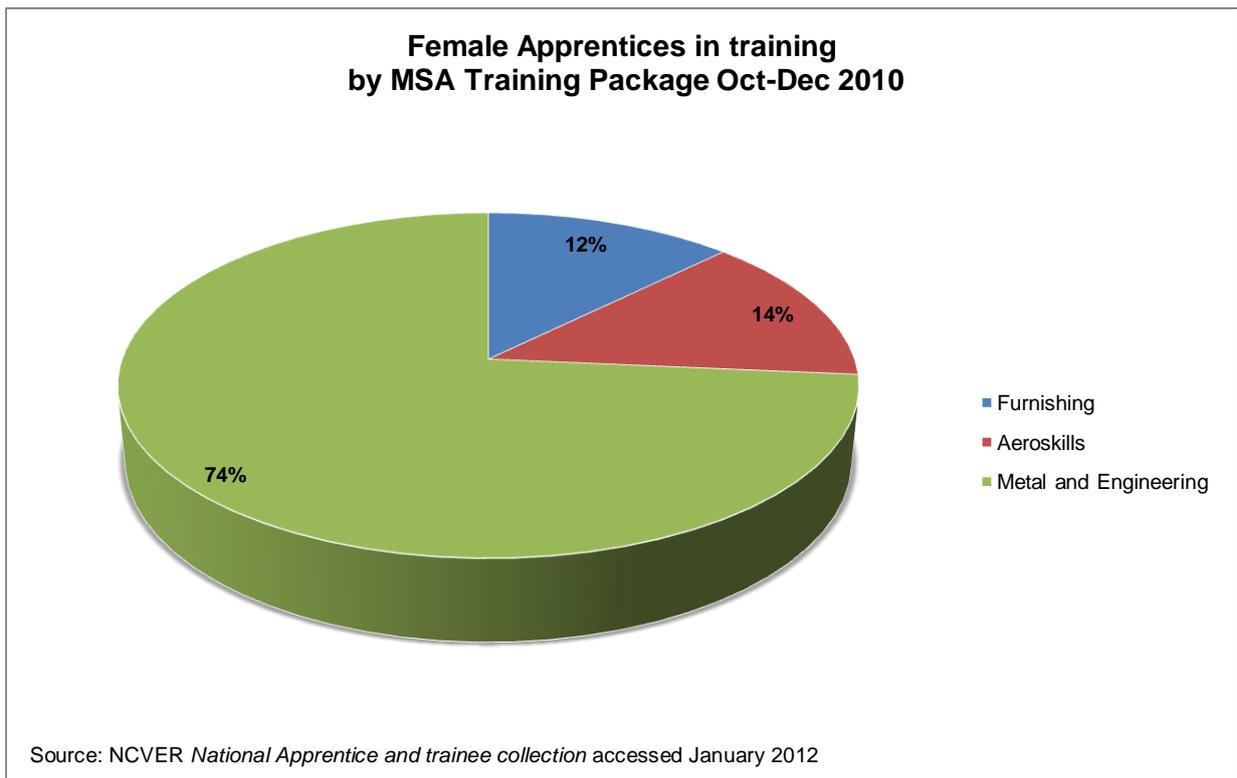
Australian Statistics

As at the end of December 2010, there were 654 women undertaking apprenticeships in the non-traditional trades covered by MSA Training Packages. Nearly 27% of those women (179) were undertaking an apprenticeship in Engineering- Mechanical Trade (MEM30205)¹⁰.

The Metal and Engineering Training Package accounted for 74% (481) of all formal apprenticeship contracts for women with Aeroskills accounting for another 14% and Furnishing accounting for a further 12%.

MSA training package	Female apprentices in training Oct – Dec 2010
Furnishing	82
Aeroskills	91
Metal and Engineering	481
Total no of female apprentices in training 2010	654

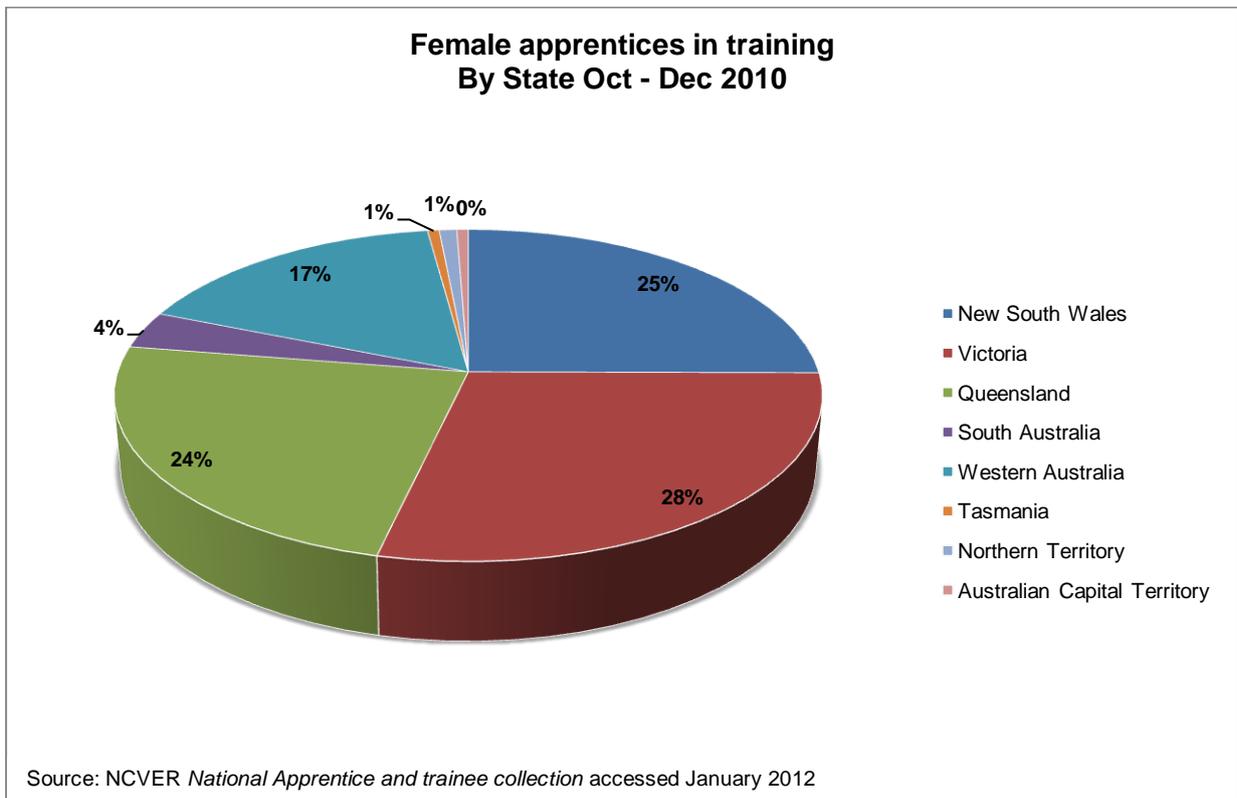
Source: NCVER National Apprentice and trainee collection January 2012



¹⁰ National Centre for Vocational Education Research *National Apprentice and trainee collection* January 2012

State	Female apprentices in training Oct – Dec 2010
New South Wales	164
Victoria	187
Queensland	156
South Australia	24
Western Australia	110
Tasmania	4
Northern Territory	6
Australian Capital Territory	4
Total no of female apprentices in Australia 2010	654

Source: NCVET National Apprentice and trainee collection accessed January 2012



United States statistics

The United States Department of Labor issued a fact sheet titled *Quick Facts on Nontraditional Occupations for Women* (no date). It defined non-traditional occupations as an occupation in which “women comprise 25 % or less of total employment”¹¹. The table below summarises the percentage of women in the USA employed in non-traditional trades covered by MSA Training Packages.

Occupation (USA classifications)	Percentage
Aircraft mechanics and service technicians	5.3%
Cabinetmakers and bench carpenters	4.4%
Industrial and refractory machinery mechanics	3.8%
Small engine mechanics	3.4%
Sheet metal workers	3.1%
Electricians	1.9%
Automotive service technicians and mechanics	1.6%
Home appliance repairers	1.5%
Heavy vehicle and mobile equipment service technicians and mechanics	1.4%
Bus and truck mechanics and diesel engine specialists	0.9%
Automotive body and related repairers	0.6%

Source: USA Department of Labor, *Quick Facts on Nontraditional Occupations for Women* (n.d.)

¹¹ United States of America Department of Labor, Women’s Bureau *Nontraditional Occupations for Women in 2006*

Research

A search of the VOCED Database for the last five years revealed 21 research articles around women in non-traditional trades.

Australia

There is very little research available around women participating in non-traditional trades such as motor mechanics, avionics, cabinet making, etc.

- The leading researcher in Australia is Fiona Shewring from Illawarra Institute of TAFE - NSW. Fiona has published a research paper – *The Female 'tradie': Challenging employment perceptions in non-traditional trades for women (2009)* and a book – *Supporting women in a non-traditional trade (2008)*. There are four references to Fiona's research on the VOCED database.

Fiona Shewring's paper focuses on women undertaking apprenticeships and is based around enrolments at Illawarra Institute which are mainly in the construction trades.

- Fiona's 2010 paper, *The future's Rosie: initiatives and pathways for tradeswomen in the United States of America: an Australian perspective*, explored US initiatives in providing avenues for women to enter non-traditional trades and support mechanisms which facilitated this.
- Another researcher in Australia is Annette Bennet from Granville Institute of TAFE – NSW. In 2005, Annette undertook a pilot study involving women who work and study in "non-traditional" manual trades.
- The only other research item was a report authored by Jenny Gardner on the *Eastern Girls in Trades Project (2007)*. This project was established in response to research findings that girls, particularly in the Eastern Region of Melbourne, had a limited view of what was available to them when considering an apprenticeship or traineeships, or any job in non-traditional industries.

International

A sample of international research is listed below:

- Catalyst 2012 (United States and Canada) *Women in male-dominated industries and occupations in US and Canada* – this report presents data on industries where women make up less than 25% of the workforce and highlights the impacts of gender segregation by suggesting that women may struggle to excel in some occupations due to masculine stereotyping.
- Shuto, Wakana 2009 (Japan) *Occupational sex segregation and the Japanese employment model: case studies of the railway and auto industries* – presents six case studies and analysis of the phenomenon of women entering occupations previously exclusive to men in the railway and automotive industries.

- Trades Union Congress 2008 (UK) *Still more (better paid) jobs for the boys: apprenticeships and gender segregation* – this report highlights the gendered nature of apprenticeships and gendered patterns in apprenticeship pay and conditions.
- Potter, Michael and Hill, Myrtle 2009 (Northern Ireland) *Women in non-traditional sectors: addressing gender segregation in the Northern Ireland workplace* – examines models that encourage women to enter non-traditional occupations, focusing on the Women into Non-Traditional Sectors (WINS) project in Belfast
- Vojakovic, Dragana 2008 (Canada) *Women in trades: discussion paper*- this paper examines approaches to encourage women to participate in skilled trades. The paper presents the province of British Columbia as a case study.

Funding programs in Australia

Queensland

In 2008, the Queensland government through the Office for Women funded ten 'Women in trades' projects that were aimed at increasing the participation of women in non-traditional trades. Ten grants of up to \$10,000 each were awarded to support projects that work towards:

- addressing barriers to women taking up traineeships/apprenticeships in non-traditional occupations
- increasing the retention of female apprentices/tradespersons in non-traditional industries
- providing opportunities for female apprentices/tradespersons to develop skills to become leaders in non-traditional trades

Projects that were funded included:

- **Apprenticeships Queensland** - a six week introductory program to assist 15 Queensland women to secure a trade apprenticeship as a result of receiving funding. Successful participants received 12 months of mentoring to support them into their new trade. Further information regarding this project is not available at this time.
- **Dysart State High School** – a program run in conjunction with two mine organisations (BMA's Norwich Park Mine and Saraji Open Cut Coal Mines) and the Queensland Mines and Energy Academy to increase the number of women considering options in the mining industry.
- **Cairns Aviation Skills Centre** – a marketing campaign aimed to encourage young women, women seeking a career change and Indigenous women in Queensland to consider training and employment in the aviation industry, by raising awareness of the career choices and opportunities available. A series of brochures were produced outlining the benefits of being part of maintenance and avionics within the aviation engineering industry.
- **Queensland Council of Unions - Union Women in Trades Forum** - this Forum aimed to address barriers to women's participation and leadership in trades by enabling women working in trades to network and to establish mentoring relationships. Report

findings and recommendations arising from the Forum were presented to Queensland Council of Union members, industry, Government and media, serving to inform workforce planning to attract and retain women, and to educate the larger community.

- **Composites Australia - Women in the Fibre Composite Industry** – a program aimed at increasing awareness of the opportunities available to women in the composites industry, and to increase the employment of women in the industry in Queensland. The project included a media campaign, industry briefings, a women-only try-a-trade event, a mentoring program and links with industry employers.

Other Australian industry based programs

National Association for Women in Construction (NAWIC)

- not-for-profit organisation formed in 1995 whose mission is to promote and improve the construction industry by the advancement of women within it; and
- provides a forum for its members to meet and exchange information, ideas and solutions to problems; and
- offers individual members an opportunity to expand personal and business networks, maintain awareness of industry developments, improve skills and knowledge, and make a contribution to other women in the construction industry

NAWIC provides an extensive range of activities to assist and promote women in the construction industry, through:

- awards programme
- education seminars
- community involvement
- newsletters
- marketing and sponsorship activities
- liaison with major construction related associations
- scholarships
- regular events
- fostering international links

Queensland Resources Council (QRC) – Resourceful Women

- an initiative of the QRC to encourage and support women to attract more women to the resources sector
- runs a series of events such as breakfasts and networking meetings for women working in the resources sector
- has an awards program for women in the resources sector including recognition of women in trades within the resources sector

Women in Mining and Resources Queensland (WIMARQ)

- a not-for-profit group that organises talks and networking events primarily aimed at bringing together women in many and varied job roles from all areas of the primary resources industry

Women in Resources South Australia (WinRSA)

- WinRSA was founded in 2010 and is comprised of representatives from Beach Energy, BHP Billiton, Finlaysons, Origin, PwC, Santos and SACOME.
- The group aims to provide an opportunity for women in leadership roles in the industry to network, discuss common issues and promote the participation of women in the South Australian resources sector.

Other initiatives from around Australia

Department of Families, Housing, Community Services and Indigenous Affairs

(FaHCSIA) and Minerals Council of Australia - *Unearthing New Resources attracting and retaining women in the Australian minerals industry* examines the attitudes and experiences of women towards working in the minerals industry, along with strategies to improve women's employment in the industry.

Group Training Australia (GTA) (National) – has produced a leading practice guide to equal opportunity in the workplace for group training organisations. The guide showcases work by group training organisations across Australia to attract and retain female apprentices and trainees.

Rio Tinto Coal Australia – Hail Creek Mine (Central Queensland) took out the "*Outstanding Equal Employment Opportunity Practice for the Advancement of Women in a Non-Traditional Area/Role*" category for its recruitment strategy to attract more women into the mining industry. Currently has a 15% female workforce in the mine.

In 2011, the mine's learning and development officer, Sharon Ward, won the female 'operator' of the year award. Sharon has been involved in mentoring female students at the mine.

Challenger TAFE WA – has produced a series of snapshots portraying life as a female apprentice in non-traditional trades.

Chamber of Minerals and Energy of Western Australia (WA) – Inaugural *Women in Resources Awards 2010*

The Women in Resources Awards recognise individuals and organisations working in Western Australia to build a world class industry which provides attractive career opportunities and develops people's capacity, including enhancing recognition and participation of women in the sector.

Queensland Government – *Women in Hard Hats* program. This initiative was begun in 2006 to promote careers, and encourage greater participation by women, in non-traditional employment in the mining and construction industries, as well as in emerging science, engineering and technology fields.

In partnership with industry as well as with the education and training sector, the program aims to attract and retain more women to these jobs through:

- an introductory fact sheet and
- providing information to students at schools and careers expos throughout the state
- a dedicated webpage on the Office of Women's website
(<http://www.women.qld.gov.au/work-and-life/women-in-hard-hats/>)

Canberra Institute of TAFE (CIT) (ACT) – holds an annual “*Try-a-Trade*” day for girls in schools from the ACT and surrounding regions. Some of the trades that are exhibited at this event include glass and glazing, metal fabrication and electrical trades.

Government of South Australia – Workforce Information Service – *Realising the workforce potential of women A guide for industry*

This is a resource toolkit that provides pointers for organisations that wish to improve the participation and representation of women in their workforces. In order to attract and retain women, organisations must be competitive in providing leading edge conditions, flexibilities and career development opportunities.

G21 (Geelong Regional Alliance) and Women in Trades Geelong (WiTGeelong) (VIC) – Inaugural *Women in Trades Awards* was held in October 2009.

Categories:

- ASbA/VET
- Full Time Apprentice
- Qualified Tradeswoman
- Semi Skilled Worker

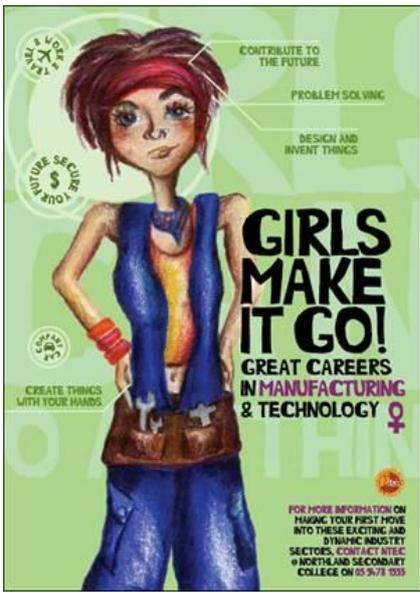
Note: Air Radiators had five nominees in the Semi Skilled Worker category and the winner was Glenice Drought.

Northland Secondary College (VIC) – see below

From - Manufacturing and Engineering Skills Advisory Board Website

Postcard was designed by students from Northland Secondary College as part of a project to encourage more girls to consider a career in non-traditional trades. Further information can be obtained from Jo McKeown at Manufacturing and Engineering Skills Advisory Board on (03) 9889 0966 or via the 'MESAB – Careers in Manufacturing' website -

<http://www.mesab.com.au/projects/casestudies/CareersinManufacturingCiM/tabid/99/Default.aspx>. For more information regarding Ntec, visit http://www.northland.vic.edu.au/vet/07Ntec_web/index.htm



Girls make it Go!

The manufacturing industry in Australia employs about a 1 million people. It offers well paid and exciting jobs and a diverse range of career options for young people.

For too long manufacturing and other areas of technology have not been seen as places for women to work in. Well...it's time to change that. In the world of work, women can do anything that men can!!!!

Women of all ages can and are fulfilling their true potential by developing exciting careers in manufacturing. The truth is that manufacturing and technology needs more Girl Power!

For copies of the brochure, poster or postcard contact Ntec on 03 9478 1333.

Manufacturing and Engineering Skills Advisory Board ©
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From Preston Girls Secondary College Parents Newsletter July 2009

MAKE SOMETHING FOR YOURSELF- Girls Make iT Go!

Want to do something exciting and challenging? Want a fun career that will offer you heaps of variety? Well – think about a career in manufacturing or technology! That’s what nearly 60 Year 10 Girls from Preston Girls, Reservoir District, Bundoora and Macleod Secondary Colleges did on Friday 17th July. They “rolled up their sleeves” and experienced some of their options first hand at the “Girls Make iT Go” Open Day at Ntec at Northland Secondary College. Not only did it attract 60 girls, and their Career Teachers (some of whom also “rolled up their sleeves”!), there were also approximately 20 women who currently work in manufacturing and technology – all there to share their stories and experiences.

Each girl had the opportunity to take part in two Workshops during the day – and make something to take home with them. It was fun and provided a sense of achieving something – part of the satisfaction of being involved in manufacturing! They also had an opportunity to speak with other women about their experiences. One of the important messages of the day is that you can be whatever you want to be, when you are considering your career options!

The Girls Make iT Go program has several objectives. The primary one is to encourage and educate young women to explore their options in what have historically been considered “non-traditional” jobs for women – you know, the things you might think of as being “boy’s or men’s jobs”! It is very important that girls, parents and teachers know that these very rewarding careers can be accessed through apprenticeships or university, or a combination of both.

In reality, there are no reasons why women can’t do these jobs – especially as manufacturing continues to embrace new technologies that make many of these jobs cleaner and less physically demanding. Not that there is actually anything wrong with getting your hands dirty. Some of the girls thought that this was the best part of the day!

The Girls Make iT Go! project continues with a series of industry visits, for the girls who wish to explore manufacturing and technology further. They will interview women in manufacturing on these visits, and then use this information to create promotional materials. Assisted by the Graphic Design Department at Northland Secondary College, the girls will produce a Poster, Brochure and Post Cards. These will then be presented at a public launch attended by parents, students and a range of industry guests. The materials will then be distributed to schools to assist in future promotion of Women in Manufacturing and Technology.

Ntec is the manufacturing and technology program and facility of Northland Secondary College.

Students from about 30 different colleges study VET and VCAL in Building and Construction, Engineering, Electrotechnology, Automotive and Landscaping at Ntec. Ntec will also offer Cert II in Manufacturing Technology next year. Students will learn how things are made and start developing a range of skills to make them more employable in whatever industry area they decide to focus on.

These skills include:

- Designing, cutting and machining metal
- Working with timber and making a piece of furniture
- Using computer aided design and machinery
- Learning the principles of sustainable technology and energy
- Using a range of power tools

It is hoped that a significant number of girls will enrol in the Certificate II in Manufacturing Technology in 2010.

If you would like further information on Girls Make iT Go please contact Jo McKeown on 03 9889 0966. For more information on Ntec contact Daniel Knott on 03 9478 1333

Robogals International

Robogals International is an international student-run organisation that introduces young women to engineering and technology subjects. Robogals is concerned about the low percentage of women who pursue a career in engineering and the skills shortages in this field. Robogals targets girls in Years 5-7 with fun, educational robotics workshops that aim to introduce 'engineering' into the girls' vocabulary, and show that it can be fun and exciting. Robogals is targeting girls in high school in Year 9 to talk to them about careers in engineering and present stories from women who have had successful careers in engineering¹². Robogals has delivered robotics workshops to over 3,000 students across Australia since 2008¹³.

The founder of Robogals, Marita Cheng, was named Young Australian of the Year for 2012. Marita intends to leverage her award to promote women in engineering, as well as the need to address the engineer shortage in Australia across both genders, and to encourage Australian innovation and entrepreneurship¹⁴.

Supporting And Linking Tradeswomen (SALT)

SALT is a non-profit organisation with groups meeting in Wollongong and Sydney once a month. SALT is run by tradeswomen for tradeswomen but anyone can join to show their support. SALT advocates for acceptance and diversity in the trades. One recent initiative was a call put out asking Dads to teach their 5-12 year old daughters to use hand tools in exactly the same way that they teach boys. The group felt that this would benefit any woman who learnt these skills, making her more independent and increasing her self esteem. SALT's main aim is to extend the base of women who will consider the trades as a career choice.

Further information about SALT can be found at the following link:

<http://www.facebook.com/groups/309350226334/>.

¹² Robogals 'The case for Robogals' <http://www.robogals.org/about/the-case-for-robogals> accessed February 15 2012

¹³ Robogals 'Robogals founder Marita Cheng named Young Australian of the Year' <http://www.robogals.org/latest-news/latest/182> accessed February 15 2012.

¹⁴ ibid

Initiatives from the United States of America (USA)

The majority of states within the United States have a support program of some sort for women in non-traditional trades. Some examples of these programs are below.

The Association for Union Democracy (USA) – has a webpage dedicated to supporting the legal rights of women in ‘non-traditional’ trades.

It offers advice on:

- working with your sister unionists
- forming a women’s committee or caucus
- dealing with issues that divide
- strategic planning.

It also has published “*The Manual for Survival for Women in Nontraditional Employment*”.

Non-traditional Employment for Women (NEW) (USA)

- a sector-based workforce development program that prepares women for careers in the construction, transportation, energy and facilities maintenance industries
- primarily serves low-income minority women from all five boroughs in New York City.

Tradeswomen, Inc (USA) – support organisation for women in trades based in California.

The organisation has three goals:

- recruit more women into building and construction trades
- promote retention of women in the trades
- develop tradeswomen’s capacity for leadership and career growth, on the job and in their unions.

National Institute for Women in Trades, Technology and Science (IWITTS) (USA) –

provides the tools to successfully integrate women into male-dominated careers via:

- training
- publications
- products
- e-strategies, and
- research projects.

Some of IWITTS’s major projects include:

- CalWomen Tech Project – a five year funded project to provide expert support and technical assistance to eight Californian community colleges to help recruit and retain women into technology programs
- WomenTech Project – a three year funded project working collaboratively with three community colleges from across the United States to increase the number of women in technical programs

- WomenTechWork.Org - an online community for women technicians
- School-To-Work: Women in Science, Engineering and Maths (SEM) Teacher Training video.

EngineerGirl

EngineerGirl is a website set up as a service by the National Academy of Engineering (NAE). The website is part of an NAE project that aims to bring attention to the opportunity that engineering represents to all people at any age, but particularly to women and girls.

The website provides information on becoming an engineer, career opportunities and case studies of women who have had successful careers in engineering.

Initiatives from other countries

The Helios Project (Northern Ireland) – established in 2005 to examine and address the barriers that lead to the under-representation of women within the construction industry in Northern Ireland.

- 24 women were provided with vocational training and placement opportunities in joinery, engineering, plumbing, painting, brickwork and tiling
- tutors also took part in an Equal Opportunity Awareness Program
- a partnership between Helios and their French counterpart, Bâtifemmes, resulted in a set of recommendations to aid the recruitment of women into construction skills training and trades
- Helios website to promote the achievements of the project and to disseminate learning at a local, national and transnational level.

Ministry of Women’s Affairs (NZ) - produced a report in 2008 “*Trading Choices – Young people’s career decisions and gender segregation in the trades*”. The report was produced as part of the New Zealand Government’s plan to improve the economic independence of New Zealand women and to decrease gender segregation in the workforce, particularly in trades-related occupations.

Okanagan College (Canada) – Women’s Trades Training Initiative

- a 15 week program for women that provides both practical and theoretical experience in a wide variety of building trade sectors.

Ontario Women’s Directorate (Canada) – Women in Skilled Trades Program - a pre-apprenticeship training program designed exclusively for women.

- targets low-income women who are unemployed or underemployed
- offers gender sensitive in-class and on-the-job training
- provides qualifications that enable women to work in skilled trades and to enter apprenticeships.

Women and Manual Trades (WAMT) (UK) - a national organisation for tradeswomen and women training in the trades.

- aims to represent and support women working and training in skilled manual and craft occupations in industries where women are under-represented
- focus is on construction and building industries.

Conclusion

There is a real lack of research around women in working in the manufacturing industry and in the non-traditional trades within the manufacturing industry in particular in Australia. The majority of initiatives in Australia focus on the construction and resources industries. This focus is reflected in overseas initiatives.

Further research is needed into:

- understanding what attracts women to the manufacturing industry and to the non-traditional trades within this industry
- work/employment conditions/learning conditions support that the successful attraction and retention of women in the manufacturing industry
- work/employment conditions/learning conditions support that the successful attraction and completion of a trade qualification by women in the manufacturing industry
- leading practice by organisations that successfully retain female workers including tradespersons within the manufacturing industry.

Such research could be used to underpin workforce development initiatives aimed at attracting and retaining women in the manufacturing industry.

-END-