

Women Engineers and Technologists: Making Engineering More Attractive to Women

Breakout sessions II (16:15 – 17:30)

Slide 1

As you can see, Women in Engineering in Australia is on our National Agenda with 2007 declared the Year of WiE by Engineers Australia who is the peak professional body for engineers in Australia.

The National WiE Committee of Engineers Australia and its designated taskforce of which I am a member of both has been given the responsibility within the organization for the development and delivery of initiatives which I am going to present to you today. But before I go on I would like to Acknowledgement Rebecca Gravina – the Chair of the National WiE Committee this year who couldn't be here today as she is 6 months pregnant with her first child. She has been involved with the submission and development of this talk. I would also like to acknowledge Julie Hammer who has been elected as our incoming National President – the first female National President for the organisation in almost 100yrs and she will be giving a keynote tomorrow.

As I mentioned the focus of this talk is to present several of the important initiatives that have recently been developed and launched in Australia for this Year of In that context I wanted to emphasis that I believe this single overarching initiative of a themed year of WiE – creative / diverse / inspiring is probably the most significant move forward that this issue has experiences in Australia in the last decade.

The concept of having a themed year for Engineers Australia began in 2005 and has proved very successful for raising the profile of the issue concerned both within the organisation and within the profession and gave them a standing within the professional community that wasn't there before. Having recognised the success of this, and the wish by women to achieve something similar in raising the profile of WiE issues – our journey began.

Before I focus on the initiatives I thought a little background information might be of interest to some of you and provide a guide to the social and political environment that has surrounded the issue of WiE in Australia.

Slide 2

So to start with some facts and figures ...

I present two graphs here – the student numbers since early 1980's and the membership number in 1999 and 2005.

I am presenting these membership numbers to give some indication as to the % of women working in the profession. The LHS sets of columns showing the % of total membership by the major grade categories of membership and the very RH column showing the totals – as of 2005 there were still only 5.6% women in the workforce.

The top graph shows student numbers as I said, with the blue line– showing commencing students: 3% - 1980 to peak at 15.8% in 2001. The other two lines show completing students – pink being total and green being the domestic. Approx. 850 females students grad each year, 5000 total.

The WiE movement began in Australia in the late 1970's in a time of a skills shortage. And I will define its history in terms of a few National reports (in fact 5) which have been significant to its progress.

1982 the Australian Bureau of Labour Market Research produced a report on the engineering profession in Australia, which highlighted that there were very few women engineers and only 3% at undergraduate level.

The next two reports were the first National reports focused on Women in Engineering with ..

1985 Byrne's report, *Women and Engineering: A Comparative Overview of New Initiatives*, looked at programs and initiatives in Australia and overseas,

1988 Williams which focused on educational issues

Both studies reflected the research of the time, which took a prefeminist analysis approach and concentrated on trying to change women to fit into the prevailing environment

The both clearly stated the need for a comprehensive and systematic approach if it was to be serious about increasing the number of women in engineering.

At this time Australia saw its first phase for major social change for women with

- the Federal Sex Discrimination Act 1984 and
- the Affirmative Action (Equal Employment Opportunity for Women) Act 1986

Move now into a time when Research was at a peak during the early to mid 1990's and most Faculties of Engineering had some form of a WiE program.

1993 Federal Minister for Science and Small Business established the **Women in Science, Engineering and Technology Advisory Group (WASET)**. They produced a paper in 1995. It was in this report that you could see a clear statement that there was a need for a:

- The need for a paradigm shift away from asking what is wrong with women, to questioning what it is about the environment of SET (and society's perception of it) that fails to attract and retain the interest of girls and women.
- The need to adopt a holistic policy approach

1996 Review of Engineering Education: The National WiE Committee independently produce the National Position paper for Women in Engineering as they felt that WiE issues were not being focused on in the main review. But the resulted was that the Review was called: Changing the Culture: Engineering Education into the Future, 1996.

But in 1996 we had a change of Federal Government. A new age of economic rationalism swept the country and equity programs and initiatives were often the first to go. Since then we have seen a gradual decline in the focus and interest in WiE. But we have gained something positive out of that now ..

With Engineers Australia had been supporting women in engineering committees both Nationally and within their divisions over this time but even these struggled in the late 1990's. It was not until 2004 that the National WiE committee was reformed and a new push was again on the way which lead to The Year of . The timing seemed right with several issues coinciding ...

- The fact that we have a current critical skills shortage in the technical areas in Australia – profession is on edge
- the alarm bells going off when you can see the hard earned gains in commencing student numbers declining – having peaked at only 15.8% in 2001 and the Deans of engineering were recognizing this decline
- we were putting forward arguments on the positives of gender diversity for business bottom lines as well as showing the
- poor performance in workplaces from research that had not long been completed – CREW report which I will speak of shortly ..
- there was the success and idea of the themed Year of Young Engineers,
- and the progress we were making on gaining male champions of change who were supporting the cause which was critical. We were fortunate to have several very senior male engineers from industry behind the initiative and of particular note, was Rolfe Hartley who is now our current National President.

Thus the Year was announced and it has stunned many people to the interest it has created already. I simple like the fact that the profession has asked itself “Can we talk about it?” and now the question is “what can we do about it? But the

quite time has allowed a single group to be leading the initiatives and coordination thus take a holistic approach that is need to create true change.

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So three objectives were adopted to recognized the need to take a holistic and systematic approach to the issue and these objectives attempt to encompass this.

- Awareness – raising awareness both within and outside engineering profession
- To present the Contribution – recognise the work women are already doing as engineers, show the difficulties and support women who are there doing it.
- Promotion engineering to girls– showing it to be a profession from women.

I will be presenting a snapshot of the National Level organized events and initiatives, which we are working on in each of the objective areas and will only focus on one or two in each.

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For Awareness raising – both external and internal to the profession

Externally

- we started the year with a set of: Launches – around the country and using media releases we gain significant exposure. It was our first opportunity to encourage men to attend and the response was not bad.
- Purple Boot Campaign to raise the profile of wie by supporting breast cancer and wearing purple boots – getting the men involved
- Coming up soon is .. APESMA - Association of Professional Engineers, Scientists and Managers, Australia – “Promoting Professional Women in Engineering Technology and Management” conference

Internally ...

- We are organising eminent speaker programs with each of our colleges (technical societies) doing the same.
- Regular Articles and letters to the editor have been great
- The two **bolded initiatives** I have an additional slide and will speak of in a little more detail.

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First to the publication ENGINEERING A BETTER WORKPLACE which we are very proud of. It came out of the work done in the 1990's, and the first edition was published in 2000 – has been a best seller and partly why we believe diversity is the key ..

The National Committee has commissioned an updated for this year and the second edition is now published (as of last month).

Not meant to be a sales pitch but can order it through our web site ...

Aimed at

- for people already committed to diversifying the engineering profession and
- for people who want to develop and enhance their understanding of managing diversity and improving work productivity.

It is Australian orientated in terms of facts and figures and case studies, but its definitions and approaches are universal. We use this text as a handout in both the workshops that we run – which I will be discussing now.

This book is a manual – a practical guide of strategies to support diversity in the workforce and management structures. It uses quizzes, reflections, case studies, data, models, activities and gives advice on further reading materials.

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The **Managing Diversity Workshop : How to attract and retain a diverse workforce** has been designed as the training for the issues set out in the publication which is used as a resource however it has been a very important initiative to support the argument that diversity is good for business.

–is targeted at Directors, Executives and Senior Operational Managers of organisations that employ engineers to provide mechanisms for developing an inclusive and diverse workforce.

There has been many recent studies looking at diversity in business and more recently a study by a US organization called CATALYST who did a study on the benefits of gender diversity called “The Bottom Line: Connecting Corporate Performance and Gender Diversity” which said **that gender diversity can increase an organisation’s performance**, In fact by both measures studied: that is Return on Equity and Total return to Shareholders there was approx 35% better returns with the group of companies that had the highest representation of women on their top management team.

So with this idea and the knowledge of a workshop developed in Canadian we have hired a facilitator who has added his own material and will be presenting these workshops around the country.

The workshop takes participants through

- **examples of leading organisations** in Australia and overseas for attracting and retaining a diverse workforce – **must see if HP is on that list**
- identifying an organisation’s **gender diversity climate, then**
- **it explore how gender affects communication** and organisational effectiveness, before ..
- **developing a foundation from which to address specific gender and other diversity issues in their organisation**

- **by increase their ability to integrate diversity thinking into business planning processes**

The first workshop was run in Perth in March and it attracted 13 thirteen participants at the end of March this year. The gender mix was 5 men and 8 women. The response to the workshop was positive now being rolled out to other capitol and regional centers.

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The second objective was to highlight the contribution women have made and are making. And illustrate the difficulties and support structures need to improve the workplace environment

We have been focusing on

- Profiling women engineers in Engineers Australia Magazine
 - and will be developing a list of 25 to 30 to publish later in the year
- we are supporting a scholarship for a female student in her final year to the International Institute of Women in Engineering (IIWE) workshop in Paris in July.
- and we have been revisiting the set of awards being offered for women to celebrate both individuals and companies who are making a positive contribution to supporting and encouraging women engineers.
- 'Leading the Change' Workshops to be delivered around Australia. A one day skills development workshop for Women professionals. It is only one of two initiatives aimed at women only. IT is about giving women who work within a male dominated area the tools for success.
- Update of the 2000 **Careers Review of Engineering Women (CREW)** Report

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As engineers we like facts and figures and the National WiE committee realized that we need more clear evidence of '**what the climate was like in engineering organizations for women**' – to translate that anecdotal evidence into facts.

As such a survey was commissioned in 1999 followed by interviews and focus groups over the following couple of years. Information was collected and published as .. ***The CREW Report – Counting the losses ... Careers Review of Engineering Women***

The aim was to investigate the issues surrounding women's retention, satisfaction and progression in the professional engineering workforce. It shows that women engineers in comparison with other professional women in business are facing additional barriers in their workplaces that relate to the culture of the engineering environment.

The CREW Report flagged a number of issues of concern to women. Basically it showed that many engineering workplaces were female and family 'unfriendly'.

The major findings include that

- **female engineers over 30 were leaving the profession and that women in general report lower levels of satisfaction with the workplace conditions than men.**
- **The reports of discrimination and harassment in their workplace are chilling with 50% of women experiencing this unlawful and degrading behaviour.**
- **More than half the women in the engineering workforce are less than 30 years of age, and only 15% of women over 40 are still in the profession.**

CREW identified the need to **promote** both cultural change in engineering organisations and behavioural change in individuals at the level of engineering managers. We are trying to focus on both these areas in the initiatives that we are organizing.

Unfortunately, the reports findings feel on deaf ears until more recently when it was included in the documents and arguments to support this Year of ...

This year the same survey has been undertaken again to gather updated information and I have managed to obtain from the researchers some very preliminary results.

The 2007 study indicates that there has been

- some improvement in the percentage of women still working as engineers and
- overall workplace satisfaction has improved for both men and women. (women from 60 to 74% and men 70 to 78%)
- While reported sexual harassment has declined marginally, it is still unacceptably high at 22% (men 2.8%)
- Disappointingly, the incidence of workplace discrimination has actually increased since 1999, with gender discrimination being the overwhelming reason given in all age groups of women. 42.3% (men 15.8%) (1999 – 36%)
- Bullying, surveyed for the first time in 2007, showed that both men and women experienced this in engineering workplaces. 28.2% (men 18.6%)

Achieving an inclusive and supportive workplace culture in engineering organizations remains a significant challenge.

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The third objective was to Promote opportunities ... and showing it to be a profession for women.

1. Engineers Australia has several major programs already running to promote engineering ... Eng Quest and Science and Engineering Challenge
This year ...
2. our Federal Education Minister hosted a symposium at Parliament house to hear from 50 senior women engineers and science and 50 yr 10 (age 16yrs) female students from around Australia. It was a good opportunity to raise issues at a Federal level again and for the students to gain mentors
3. The main initiative focused on girls is **Girl Talk**.

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The Girl Talk program is aimed at young women in their senior years of school to highlight the contribution that women can make to society and the engineering profession and identify the rewarding career opportunities for women in engineering.

It is designed so that female engineers talk to girls about their experiences. The first component of Girl Talk is a presentation and the second component will be one day engineering workshops for girls.

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By Engineers Australia Council declaring 2007 as the Year of Women in Engineering it has acknowledge the issue that there needs to be more work done to encourage and support women in the engineering profession. Engineers Australia has taken on the responsibility of the issue of diversity in the workplace and is asking the profession to face the challenge, not just the women within it.

The National WiE committee and the taskforce have been setting up various events and initiatives in an attempt to tackle each of the objectives that we have set for the year. Take a holistic approach and target both companies and individuals. These initiatives that I have presented are only a snap shot of those we are focusing on at a National Level. There are many groups and committees supporting these events in there local area and adding to them in their own way.

But it is clear that we are only at the beginning. A great foundation to work from. As with the Year of the Young Engineer we hope that these initiatives will continue to grow and develop. We are feeling very positive about this.

There are several things that we have learnt from our past research and experiences that we have endeavored to implement during this year.

1. the need to have male champions, and
2. to acknowledge that not all women support speaking out on these affirmative action initiatives. But to bring them back into the issues with the focus on professional diversity we hope to gain their support also ..

3.but mainly the need to get **all** engineers interested and involved with the idea. That is to stop the theme being about womens for women but focus it on the professional issues and here we focus on the diversity argument. I think I have surprised many men by arguing that women (as a group) are different to men – that we act and think differently – but we are of course arguing that this is a good thing and that companies bottom lines are showing a positive difference if there is a diversity (in particular gender diversity) in their management team.

This leads to many interesting and future challenges that we are looking.

We have now got these very sensitive issues on the agenda and Engineering Australia has stood up and said lets ask the questions that need to be asked and discuss the issues. I think our future looks brighter than it has for a long time.