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2 Ambassadors in the classroom

The female factor

3 Some overseas initiatives



4 Industry sponsorship

The benefits of scholarships



5 Visiting Industry Professionals

Futureintech VIPs announced



6 Futureintech news

New technology education brochure;

Upcoming lectures, conference and festival

7 About Futureintech

The female factor

With all the rewarding career paths available in technology, engineering and science, why aren't women signing on and staying in greater numbers?



IN 2007, ENGINEERS AUSTRALIA followed up on their 1999 study for their Careers Review of Engineering Women (CREW) project. The following year, IPENZ undertook a 'Women in Engineering' (WIE) survey to assess IPENZ members' perception of their work environment.

Both surveys highlight a problem that continues to exist worldwide: Despite gradual improvements, employers in technology, engineering and science related industries are still having trouble attracting and retaining female professionals.

A quick look at tertiary enrolments shows that fewer females than males study maths, science and technology at that level. But studies also show that those who do are also much less likely to go into a career related to their field of study – in 2008 the UK focus group Opportunity Now reported that only 30% of women with degrees in science or technology subjects go on to careers that use those skills, compared with 91% of similarly qualified men.

The CREW report warns that the numbers of women in engineering “still fall well short of the critical mass required for them to be able to influence culture and communication within, and attract other women to, the profession or workplace.”

With over 50% of our working population potentially not identifying technology, engineering and science related careers as an option, New Zealand's industries are missing out on the benefits of hiring a substantial proportion of our 'best and brightest'.



Futureintech Michelle Hutton, Food Technologist from Heinz Wattie's, speaking to students at Hastings Girls' High School.

Most importantly, young women need awareness of and access to good role models in technology, engineering and science. Promoting women in technology, engineering and science is one of Futureintech's key goals. We're always looking for ways to challenge the stereotype that these industries “aren't for girls” and very keen to make the role models who are out there as visible as possible.

Over 40% of Futureintech Ambassadors – that's around 200 – are women. Their presence in the classroom ensures that females working professionally in technology, engineering and science are made more visible to students at the time when they are formulating their ideas about possible career paths.



Getting instruction on construction: Futureintech Ambassadors took Year 10 Hamilton Girls High School students to visit the Westfield Shopping Centre building site in 2006.

To keep trends moving in the right direction, the CREW report recommends that engineering organisations and educators provide training and ongoing discussion of equity and diversity in the workplace, and regularly provide statistics on the status and success of women in engineering.

Promotional campaigns like Engineering Australia's "Year of Women in Engineering" are a good way to highlight the important contributions of women in these industries and inspire modern women to make their mark.

IPENZ established the Women in Engineering Task Force to consider the issues facing women in progressing their careers and figure out best practice for attracting more women to the engineering industry.

Some overseas initiatives

From the beginning, Futureintech's approach to careers promotion has been about linking with the school curriculum at primary, intermediate and secondary levels. Our goal is to show the relevance of school subjects like maths and science to a wide range of careers in technology, engineering and science.

As we continue to search for ways to improve our services, we're encouraged to see careers initiatives around the world promoting a curriculum-based approach as well.

One example is EngineeringUK (www.EngineeringUK.com), which targets young people and their parents,

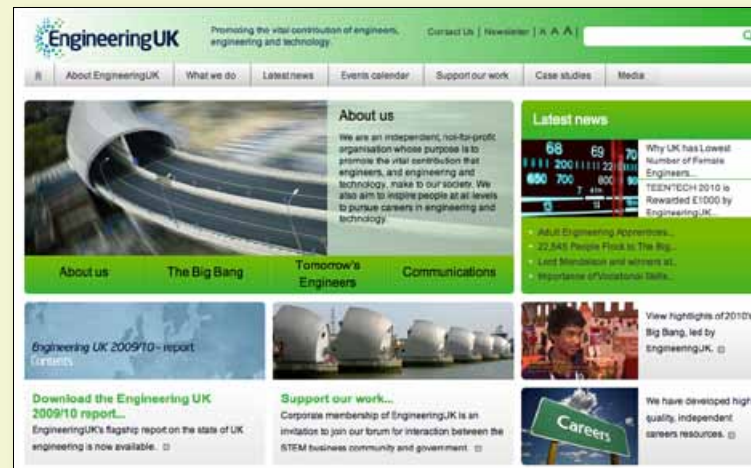
the media, education professionals and policy makers across the UK to inform and inspire them about career opportunities.

They aim to improve the perception of engineers and engineering as a career choice, particularly among 7-19 year olds and the people who influence them. Their Education & Skills Panel will work with like-minded organisations, working groups, policy bodies and advisory boards to promote education pathways.

In North America, the Water Environment Federation (WEF) and the American Water Works Association (AWWA) have joined forces in the "Work for Water"

campaign. The effort is designed to address the expected retirement of 30% of the water workforce by recruiting new talent into the field. The campaign's official website is scheduled to launch sometime this month.

"Work for Water" will promote water careers as both professionally fulfilling and vital to public health and environmental safety. It will include resources for promoting careers to high school and college students and define specific knowledge, skills and abilities used by water professionals.



The benefits of scholarships

Futureintech is on the lookout for industries who support excellence in tertiary education with scholarships and other financial aid.

HELP FUTUREINTECH BY COMPLETING THIS 20-SECOND SURVEY
(CLICK ON IMAGE BELOW – TWO QUESTIONS ONLY)

The screenshot shows a survey form on the futureintech website. It includes a search bar, navigation links (Home, Publications, People Profiles, Employers, Study Options, VIP Scheme, In Schools), and the heading 'e-news for industry survey'. The first question asks for a rating of content relevance and usefulness on a scale of 1 (Poor) to 5 (Excellent). The second question asks for a rating of the layout and design on the same scale. The third question is a text box for suggestions or comments, with a 'Submit' button below it.

IN TODAY'S ECONOMY, scholarship programmes may seem like a questionable expense for businesses. But many industry leaders are recognising that money-for-study programmes are an important way to shore up the workforce, and Futureintech is keen to feature these industries on the “Money for Study” page of our website (www.futureintech.org.nz/mon-ind.cfm).

Earlier this month, Beca, an international engineering consultancy group, announced that they are awarding scholarships of \$2,500 each to three third-year engineering students at the University of Waikato. The scholarships are designed to address the growing need for skilled professionals in the industry.

“As one of the largest engineering companies in the country, encouraging the best and brightest engineering students is part of our business,” says John Revington, Beca’s regional manager. (Read more at www.scoop.co.nz/stories/ED1005/S00033.htm.)

Hubbards Foods offers a Food Technology scholarship each year to students enrolling at Massey University. The scholarships contribute \$1,000 per year for each of the four years of study. So far 13 scholarships have been awarded.

Here are some of the benefits for businesses that support tertiary education:

- Scholarships and awards encourage excellence in our future workforce. They give students a goal to reach for and reward them for innovative, practical ideas.
- Supporting education attracts the most talented students to your industry. Top graduates will be more



likely to consider a career with your company if they've received support from you during their studies.

- Working with universities and polytechnics generates publicity and builds the name recognition of your company in the local community, giving people a better understanding of the opportunities you have to offer.
- Scholarships encourage students to see technology, engineering or science-based careers as more financially viable. They will be more likely to choose these fields over fields traditionally perceived as more lucrative, such as law and commerce.
- Scholarships encourage skilled graduates to continue their career paths in technology, engineering and science here in New Zealand instead of moving overseas.

If you have a scholarship aimed at technology, engineering or science students that you'd like to promote, email us at enquiries@futureintech.org.nz.

Futureintech VIPs announced

Futureintech is pleased to announce the latest recipients of the Visiting Industry Professionals (VIP) Scheme.

Successful VIPs in the first funding round of 2010 are as follows:

- **Rob Park** and **Peter C Mulqueen**, Senior Engineers at **Novare Design**, will contribute to a new one-semester course for the **University of Canterbury's** Department of Civil and Natural Resources Engineering postgraduate students entitled Structural Bridge Engineering. Rob and Peter will provide insight from their experience in design and construction of bridge structures.
- **Jim Graham**, Principal Environmental Scientist from **Opus International Consultants**, will review the course direction, content and delivery of university papers on Water & Wastewater Treatment and Environmental Monitoring and Investigation Methods at **Massey University's** Institute of Food Nutrition and Human Health. He will also provide lectures and advise on the research activities of the Roof Water Research Centre.
- **Allan Weeks**, founder and CEO of **iMonitor Ltd**, will assist the staff at **Victoria University of Wellington's**

School of Engineering and Computer Science with talks on the various aspects of wireless mobile monitoring and control applications. He will provide an industry perspective on the requirements for growing applications in the field of Global Monitoring and Control Solutions.

- **Dr Shane Kelly**, director of **Coast and Catchment Ltd**, will assist the **University of Auckland's** Department of Marine Science in revising and testing the curriculum for a postgraduate course in aquaculture. His focus will be to address the environmental impact of aquaculture in New Zealand and the regulatory system for managing those impacts.

The VIP Scheme has been running since 2004 and has established a reputation as a valuable resource for tertiary institutions. One notable success story, featured as VIP Case Studies on the Futureintech website (www.futureintech.org.nz/vip-scheme.cfm), is **Dr Robert Dempster** from **Intervet/Schering-Plough**.

Dr Gabriel Visnovsky from the University of Canterbury's Department of Chemical and Process Engineering first invited Dr Dempster to provide his professional insight in 2008, and was so pleased with the results that he applied for another visit the following year.

"Bioengineering and bioprocessing areas have been growing at a very high rate in the last decade," Dr Visnovsky commented after the second visit. "From an educational and strategic point of view, it is therefore vital to provide today's students and tomorrow's professionals with the best possible tools and knowledge."



Dr Gabriel Visnovsky from the University of Canterbury's Department of Chemical and Process Engineering

"My role was to try and give the students some insight into the things that can go wrong (and right) when developing biotechnological products," Dr Dempster said. "Adding a human dimension to biotechnology probably presented a side that they might not have considered in their studies."

Feedback from staff and students alike indicate that the visits were very well received. "I believe that the VIP experience once again was very positive and highly rewarding, and I totally support the programme," Dr Visnovsky said.

Applications are now open for the second funding round for 2010. The closing date is 29 October.



New technology education brochure

Techlink, an IPENZ initiative that provides professional support material for Technology teachers, has published a new brochure that profiles eight former Technology students who went on to find rewarding careers in a variety of related fields, from information systems through to fashion design.

Three Futureintech Ambassadors are featured in the brochure: **Ben Harris**, an engineering technician with **Opus International Consultants**; **Anita Jackson**, a Computer Aided Design technician with **RedCo NZ Ltd**; and **Justin Magon**, a design draftsman with **RCR Energy Systems**.

Order copies of the brochure from the Techlink website at www.techlink.org.nz/ordering.htm, or email Vanessa Lai at comms@techlink.org.nz.

Pickering Lectures coming up

This September, IPENZ will be hosting Jetpack designer Glenn Martin for the 2010 Pickering Lecture Series.

Glenn developed the technology for the Jetpack and founded the Martin Aircraft Company to turn the idea into a marketable product. The resulting prototype was featured on *Campbell Live* last year. Find out more about the concept and company at www.martinjetpack.com.



The lectures will take place in Invercargill, Timaru, Christchurch, Wellington, Napier, New Plymouth, Tauranga and Auckland. Dates and venues will be confirmed in about a month, so keep an eye on the IPENZ website – www.ipenz.org – for more information.

Weta Digital lecture

The Wellington and Auckland Branches of IPENZ are presenting “Reverse Engineering the Face”, a lecture by Academy Award winner **Mark Sagar** of **Weta Digital**.

Mark specialises in facial motion capture, animation and rendering technologies for digital filmmaking. This includes developing the Performance Driven Facial Animation System for *King Kong*. He will be presenting in



Wellington at 6pm Thursday 10 June at Te Papa and in Auckland at 6:30pm Thursday 1 July at the University of Auckland. The lectures are free and open to the public. Find out more at www.ipenz.org.nz/weta.

NZIFST Conference

The New Zealand Institute of Food Science and Technology is hosting its Annual Conference in Auckland on 23-25 June. With “Inspiration to Prosperity” as its theme, the conference will focus on trends in the international food market and new opportunities for growth here in New Zealand. Bridget Liddell has been confirmed as the opening keynote speaker.

Visit the NZIFST website to register for the event: www.nzifst.org.nz/events/annual-conf.asp.

NZ International Science Festival

This year’s New Zealand International Science Festival will be held in Dunedin on 6-11 July. The theme is the intersection between food and science, including food production, nutrition and consumption. Among the experts attending the event are British environmental scientist Tim Jarvis and plastic/reconstructive surgery expert and University of Otago graduate Andrew Greensmith. To find out more, see www.scifest.org.nz.

About Futureintech

Funded by NZ Trade and Enterprise, Futureintech is an initiative of the Institution of Professional Engineers New Zealand (IPENZ). Established in 2003, Futureintech is a practical attempt to increase the number of young New Zealanders choosing careers in technology, engineering and science – crucial sectors for the infrastructure and social and economic growth of the country.

Futureintech Ambassadors

Futureintech Facilitators around New Zealand work to develop links between schools and local industries. Central to this work is the recruitment of Ambassadors – young people working in technology, engineering and science who are trained by Facilitators to volunteer in schools. Their contribution includes giving presentations, explaining their work, supporting projects, providing a real-world perspective and demonstrating the practical applications of the curriculum. There are currently over 540 trained Ambassadors working with Futureintech, representing a wide variety of industries. Their support and that of their employers is greatly appreciated.

Futureintech partnerships

Futureintech maintains partnerships with around 300 companies, representing a diverse cross-section of New Zealand industry. Partners work with Futureintech in a variety of ways, from encouraging staff members to become Ambassadors to providing expert information for publications or promoting Futureintech to a wider audience. Futureintech's work would not be possible without their generosity and commitment.

Futureintech publications

Futureintech produces an ever-increasing range of print resources for teachers, students, careers advisors, caregivers and industry, all of which are available free of charge by request from head office.

www.futureintech.org.nz, a regularly updated website offering profiles of Ambassadors and their employers, a database of relevant tertiary courses and monthly regional news, is another key component of the initiative.

Futureintech's monthly newsletter **enews** is distributed in alternate months to schools and industries, and aims to ensure that all stakeholders are kept fully informed of Futureintech's activities and of the resources we provide.

Futureintech Facilitators

Futureintech's regional Facilitators promote and maintain relationships with schools and industry employers. This involves recruiting and training Ambassadors, advising teachers on how Futureintech can best support their programmes, arranging, planning and supervising Ambassador visits and distributing resource materials.

Facilitators are supported by Host Partners, who provide the office space which enables them to work remotely from the Wellington head office. Host partnerships ensure that Facilitators not only benefit from a collegial atmosphere but also have daily exposure to an industry-related workplace.

If your staff might be interested in volunteering as Ambassadors, or your business benefit from being involved in any way with Futureintech, please contact your local Facilitator to discuss how we can work together.



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