

engineers

canberra

ENGINEERS
AUSTRALIA
Canberra Division

From the President



Our bi-annual Engineering Excellence Awards will be culminating with a gala dinner and awards night at the Hyatt Hotel on the 28th September.

With 17 entries this year, we will be showcasing the innovation and ingenuity that underpins our projects and celebrating our engineering excellence here in Canberra. Please come and join us on the night.

With Australian Engineering Week (AEW) firmly under Canberra's belt, I'd like to thank the efforts of all our volunteers who supported the activities over those seven days, the AEW committee chaired by Andrew Montgomery and our Canberra Division staff – Vesna, Colleen and Susan who were all instrumental in putting the program together. It is very much a team effort and totally reliant on volunteers and staff alike to suggest, arrange and organise that week of activities and on you, your family,

friends and the wider community to participate in them.

It was also a collaborative effort and we thank the following organisations: Australian Traffic Safety Bureau for opening its doors and providing insight into their world. ACTEW Corporation Ltd. fully supported the engineer guided tours of the Enlarged Cotter Dam Site; our tour guides work on the Enlarged Cotter Dam project and provided an insider's view of the work at the site. The Electric Vehicle Society teamed with us to demonstrate some quite unique converted cars, brand new production cars, electric bikes and much more at EPIC. The ACT Fire Brigade and the ACT Rural Fire Services provided insights into fire safety and fire engineering issues during a technical presentation. The Engineers Without Borders Challenge showcased 1st year engineering students at the ANU and their design challenges and solutions in dealing with real world problems and community needs in Devikulam, India. Colonel Ian Cumming provided a Year of Humanitarian Engineering themed presentation on

the *Boxing Day Tsunami* and Australia's response to that event. Dr Kylie Catchpole discussed 'Solar Sustainable Energy' as part of a themed presentation on engineering technology.

Budding engineers of the future were certainly demonstrating their ingenuity and enthusiasm at Questacon on the Friday night. Proud parents and grandparents cheered the contestants and a great science show provided by Questacon capped off the evening. Our Engineering Games were revamped this year and our 'Games Team' led by Mike Flood and some past games participants, along with many volunteers on the night, made it a very memorable experience for everyone.

We held a significant event at the Arboretum with the Engineers Australia Forest 'Pin Oak' forest sign unveiled by Minister Barr and Rolfe Hartley, past National President and Chair of the Engineers Australia Canberra 100 Sub-committee. Our Pin Oak forest is certainly growing well after only two years and occupies a prime site

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TO CANBERRA 2011 Engineering Excellence AWARDS

Awards Presentation Dinner

Wednesday 28 September 2011 7.00 for 7.30pm Hyatt Hotel Canberra

Dress: Black Tie or Lounge Suit RSVP: 19 September 2011 Cost (inc GST): \$120.00

Register online: www.engineersaustralia.org.au/canberra or phone the Division Office on 6270 6519

For further information regarding the Awards Presentation Dinner contact Vesna Strika vstrika@engineersaustralia.org.au

Engineers Australia (Canberra Division) gratefully acknowledges the support of our sponsors:



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[From the President: continued from page 1]

at the Arboretum. Opportunity still exists to sponsor one of the trees; if you're interested please contact canberradivision@engineersaustralia.org.au. By the way, we are already planning activities in support of Canberra's Centenary in 2013 in this location and look forward to your involvement.

Our AEW activities form just a small part of the breadth and depth of the technical program that has been delivered by our Branches, Groups and Societies for our members throughout this year. Planning will soon be underway for the 2012 program and your input and suggestions are certainly welcomed; the canberradivision@engineersaustralia.org.au.

engineersaustralia.org.au address will direct your input to the right area.

Canberra will be hosting one of workshops in the 'Engineers Supporting Humanitarian Outcomes in the Acute Phase of Disasters, Conflict and Complex Emergencies' themed workshop series. This series supports our Year of Humanitarian Engineering theme with the Canberra workshop being 'Stabilisation and Disaster Management' on the 27th October. Look out for the flyers and please bring your perspectives and experiences to the workshop. These workshops provide linkage to the Year of Humanitarian Engineering Conference in Melbourne in December.

Jennifer Murray
President

ITEE Student Presentation & Award Night

Tuesday 18 October 2011
5.00 for 5.30pm
Engineering House
11 National Circuit, Barton

This evening comprises of a competition between 4 final year undergraduate engineering students, two each from the ANU and UNSW@ADFA. The competition is based on a 15 minute presentation (plus 5 mins of questions) on each of their respective projects.

Before the results are announced, there will be an Occasional Address.

Chemical Engineers

In reviewing the statistics of membership, it appears that there are about 30 chemical engineers in the Engineers Australia (Canberra Division). However, most of the chemical engineers have found a 'home' in other Branches.

Are these numbers sufficient to establish a Chemical Engineering Branch with your own CPD program?

An expression of interest to see how many of the 30 engineers would

prefer to establish a chemical engineer Branch. If there is sufficient interest then we would need to elect a chair and work out a technical program.

For those that are interested in establishing a branch can you respond emailing canberradivision@engineersaustralia.org.au.

If you seek any further information please contact Doug Mitchell, Deputy President Canberra Division on 0400 370 786.

UPDATE YOUR EMAIL ADDRESS

Full details of each Technical Presentation are sent out by email approximately one week before the presentation. If you are not receiving these emails perhaps your email address is not on our database or we may have the incorrect address.

Please email canberradivision@engineersaustralia.org.au or phone (02) 6270 6519 to update your details.



Humanitarian Engineering Supporting the Response AND Stabilisation Actions

The engineering profession supports the response and recovery of communities from natural disasters and conflicts.

As part of the Year of Humanitarian Engineering Technical Workshop Series, this workshop will examine the provision of engineering efforts in the stabilisation of conflict torn countries and in the response to disasters and conflict.

The workshop will explore three aspects of humanitarian engineering:

- Integrating engineering into stabilisation operations. What role do engineers play in the strategic reconstruction of the country?
- Understanding the role engineers play in disasters and rebuilding during and after conflict. How does the Federal government achieve

this? What is the US experience?

- Where do the engineers come from to support these activities?

Date: 27 October 2011

Time: 8.00am – 5.30pm

Location: Alastair Swayn Theatre, Brindabella Park, Canberra

REGISTER NOW at

<http://makeitso.org.au/year-of-humanitarian-engineering/conference>

ENGINEERS AUSTRALIA CANBERRA DIVISION

TECHNICAL PROGRAM

CPD events for the Engineering Team

All presentations will be held at 'Engineering House', 11 National Circuit, Barton unless otherwise specified. Full details of each meeting can be found at www.engineersaustralia.org.au/canberra under Technical Program.

Date/time	Branch/Group	Topic	Speaker/notes
SEPTEMBER 2011			
Thu 8 5.30 for 6.00pm	Civil/Structural	Formwork Collapses on Concrete Pours	Michael Rae, Mal Wilson, Mike Baldwin
Mon 12 5.30 for 6.00pm	Engineers without Borders	Volunteer Intake Round 9 information Session	
Tue 13 5.30 for 6.00pm	RISK	My Small Arms Factory Story	Graham Conran
Wed 14 5.30 for 6.00pm	ASDE	Navy Engineering post the RIZZO Review	Radm Uzzell
Thu 15 5.30 for 6.00pm	ITE&E	Digital Signal Processing: Road to the Future	Professor Sanjit Mitra
Tue 20 5.30 for 6.00pm	ITE&E	The Looming Energy Revolution	Robin Eckermann
Wed 21 5.30 for 6.00pm	SSEE	Engineering a better Murray-Darling Basin	Ian Burns, Murray-Darling Basin Authority
Fri 23 6.00 for 6:30pm	Young Engineers vs Young Lawyers	Engineers would make better politicians than Lawyers	Social Debate – Water Security Major Projects Office, Mt Stromlo Rd (off Cotter Rd)
Tue 27 5.30 for 6.00pm	Civil/Structural	Expedient structural damage assessment and the synergies between safety of structures damaged by explosives and natural disasters	Mr Owen Hammond
Wed 28 Evening	Canberra Division	Engineering Excellence Awards	Hyatt Hotel
OCTOBER 2011			
Tue 4 5.30 for 6.00pm	Young Engineers	Being Chartered Information Session	Doug Tompsitt
Wed 5 5.30 for 6.00pm	WIE	Language that Influences and Persuades	Louise Carter Small Business Owner
Tue 18 5.00 for 5.30pm		ITEE Student Presentation Award Night	
Tue 25 5.30 for 6.00pm	Civil/Structural	Risk Management – How to Improve Your Business	Andrew Montgomery & Gavin Halling
Wed 26 5.30 for 6.00pm	SSEE	Engineering Students Making a Difference Around the World	EWB Student Projects
Thu 27 – All day	YOHE	Canberra Workshop: Humanitarian Engineering Supporting the Response AND Stabilisation Actions	Brindabella Park, Pialligo ACT
NOVEMBER 2011			
Tue 8 5.30 for 6.00pm	SSEE	Canberra's Sustainable House – Tips and ideas to make your house sustainable	Nick Mayo
DECEMBER 2011			
Thu 8 5.30pm		Canberra Division Annual Meeting (formerly known as the AGM)	

Disclaimer: Those without email addresses should contact Colleen Mays (02) 6270 6519 to check if a Technical Presentation has not been cancelled.

Recruiting volunteer Humanitarian Engineers

12 September 2011 5.30pm Engineers Australia

Engineers Without Borders Australia (EWB) is recruiting during September for the next wave of volunteer Humanitarian Engineers to work with community partners in South and South East Asia. Hear about how you can make a difference and use your skills by volunteering overseas.

Volunteers are required in

traditional engineering areas and beyond including ICT, Water and Sanitation, Project Management, Energy Generation, Civil Engineering, Environmental Engineering, Disability Inclusiveness, Water Resources, Field Support and Curriculum Development in Vietnam, Timor Leste (East Timor), Sri Lanka, India, Nepal, and Cambodia.

At this information session you will

hear about EWB's work and approach, partners and projects, and talk to EWB members and volunteers on how you can make a difference by volunteering overseas.

Volunteer placements are for 6–18 months with applications opening on 29 August and closing 29 September for placements commencing in the first half of 2012.

Canberra Division Australia

Engineering Week in retrospect

This year's Engineering Week was a fantastic success. It featured many new activities as well as our traditional and well-loved events.

The unveiling of the plaque at the **Arboretum** by Minister Barr, our National President and our Canberra Division President was well attended on a beautiful Canberra day.

The **bus tour** 'Natural Energy Sources' was a fabulous success, visiting the ANU, Woodland Mine and the Bungendore wind farm. On board entertainment provided by Adrian Piani and Colin Kish was an added feature.

Australian Transport Safety Bureau opened its doors and gave an insight

into how investigations into some of Australia's most prominent air, rail and sea disasters are conducted and solved.

A **Fire Safety Workshop** was presented by the ACT Fire Safety Section and the ACT Rural Fire Brigade. Those attending were shown how Canberra is served by a dedicated, well-trained and equipped team.

The **Engineering Games Competition** was attended by over 400 students who showed their engineering expertise by building straw towers, bridges from spaghetti and mousetrap racers.

The Discovery Trail tour of the **Enlarged Cotter Dam** was braved by many despite rain and wind.

An **Electric Vehicle Display** attracted many Canberrans, and featured new and old electric vehicles. The Voltron electric racing bike, which can reach 180 km/h, was a popular attraction.

I wish thank the many organisations and their staff that assisted in making this year's Engineering Week a success.

A thank you is also extended to Helen Leayr for arranging media releases with the *Canberra Times* and the radio interview with station Mix 106.3.

A special thank you to the Engineering Week team, volunteers and the Canberra Division Staff.

*Andrew Montgomery
Chair Engineering Week*

SSEE Bus Trip: Natural Energy Sources

ANU paraboloidal dish solar concentrator

As part of Engineering Week celebrations, the ACT Chapter of the SSEE ran a bus tour to visit sustainable natural energy sources around Canberra.

A packed bus of 50 people started their day at the Australian National University (ANU) to see their 400 m² paraboloidal dish solar concentrator. It is the largest in the world and was custom built by the ANU. This dish is a prototype of a design that is ultimately intended for use in large scale solar thermal power generation systems, where large arrays of dishes are joined to feed energy to a central power generation plant. At the moment it generates energy through steam where it heats water up to 500 °C at 4.5 MPa. ANU will also be trialling a gas turbine as an alternative way to make energy. The group also saw other trials including chemical and biomass energy producers based on the heat from the solar concentrators.



Woodlawn Bioreactor

After a great morning tea put on by the Canberra Division (thanks Colleen and Sue!), the group headed out to the Woodlawn Bioreactor where an abandoned mine is now being used to generate energy from waste. Taking 450,000 tonnes of waste per year, which is 25% of Sydney's waste, the old mine has been filled in 70 metres already with another 200 metres to go!

Run by Veolia this old copper, lead and zinc open-cut mine is being turned from an environmental hazard into a 6000 ha eco-precinct. As well as the energy from waste initiative,

the precinct makes compost for site rehabilitation, has aquaculture and horticulture trials, and a wind farm. It was also interesting to hear about the engineering challenges faced at the site, including the 30km of pipe needed to capture the methane!



Capital Wind Farm

Our last stop was the Capital Wind Farm owned by infigen just outside of Bungendore. This has been operational since 2008. The wind farm generates around 450,000 MWh of renewable energy each year, which is enough energy to power 60,000 homes. It

an Engineering Week 2011



consists of 67 Suzlon 2.1 MW wind turbines with a total installed capacity of 141 MW. Each turbine weights 250 tonnes with the generator and gearbox coming in at a massive 85 tonnes!

Unfortunately it was not a windy day so we couldn't see the turbine running at peak capacity. However, even at low speeds, the size and power of the blades was pretty exciting!

A few keen (or mad?) people were itching to climb up the 80 odd metres to get to the rotor. But wisely our tour guide from infigen declined the offers. Maybe next time!

After a quick (and much needed) lunch break, the bus headed home. Who would have thought that Canberra was such a renewable energy hub!



Engineers Australia Forest in the National Arboretum Canberra

On 2 August 2011, the Deputy Chief Minister, Mr Andrew Barr MLA, together with Ms Jennifer Murray (President, Canberra Division) and Mr Rolfe Harley (Past National President) unveiled the 'Pin Oak' forest sign at the National Arboretum Canberra (what we fondly refer to as the Engineers Australia Forest).



Engineers Australia was the first non-profit organisation to sponsor a forest of trees in the Arboretum, which were ceremonially planted on 19 May 2009 in celebration of the 90th anniversary of our national organisation. The project was unanimously supported by our national governing body, Engineers Australia National Council, who were also in Canberra at that time and actively participated in the event. Both the National President and the Canberra Division President also officiated at the ceremony.

Engineers Australia has a long history with tree planting in the national capital, dating back to 1926, when The Institution of Engineers, Australia was one of a dozen organisations (mainly national in coverage) that sponsored the planting of trees in Canberra Avenue, Griffith, ACT (around what is now known as Manuka Circle). The Institution sponsored some 96 trees, and on a visit to Canberra in August that year about a dozen members, and some wives, planted a token 36 trees in the names of past and present Councillors, of benefactors of the Institution, and of its several Divisions.

The record of this planting is recorded in the Institution's Annual Report for the year 1926 and is also contained in a framed document which recorded the names of all those involved in the planting as well as those in whose name trees were planted and now holds pride of

place in the Canberra Division offices, eliciting many a discussion from both members and visitors.

The date of the unveiling was significant as it happened to be the 85th anniversary of that original tree planting in Manuka Circle.

Members still have an opportunity to sponsor a tree in the Engineers Australia forest. Just contact the Division Office on 02 6270 6519 for further details.



Canberra Division Australia

Engineers Without Borders Challenge

A solar still to purify water. A hybrid solar and wind system to generate renewable energy. Plant-based composite roof tiles for shelter and rainwater collection. A smokeless ceramic stove to reduce fuel and health issues. These were the ideas developed and presented for the 2011 Engineers Without Borders Australia (EWB) Challenge by four teams of first year students from the College of Engineering and Computer Science (CECS) and the Australian National University (ANU) during Australian Engineering Week. Each year the EWB Design Challenge focuses on one of EWB's community partners and gives

first year university students the opportunity to develop concepts and solutions to numerous challenges identified by the community. The focus in 2011 was the small rural community of Devikulam in the state of Tamil Nadu, near the south-east coast of India.

The students had been working on the EWB Challenge as part of the university studies, and these teams represented the top four concepts identified by CECS from 43 teams and were presenting with the opportunity to be selected as the top ANU team. A panel of three judges from the ACT Chapter of EWB had a very difficult decision, but selected Team PhD



(People helping Devikulam, pictured above) for their idea to develop a roof-top rainwater catchment system using tiles manufactured locally from available plant materials. The team will next be examined against the top team from UNSW@ADFA in October with one team selected to present at a national event at the AaeE Conference in Perth in December.

Engineering Games

Another successful Engineering Games was held on 5 August 2011. Registrations were up from last year (over 200 teams) and the number of participants was also considerably higher as evidenced by the overflow from the Science Show put on by Questacon in conjunction. The Games consisted of six competitions including a new one (Geodesic Dome) introduced following calls for suggestions from the 2010 participants. The new competition was attended with enthusiasm if not in number of entries.

Some improvements were made from last year including better crowd management and test throughput. Feedback addressed in this year's washup meeting will help further improve operations next year. We will be looking at laptop entry of results to speed up final presentation, some improvements will be made to the results forms and database, the notices will be sent out to schools earlier next year and the deadline chosen to avoid school holidays, a launch system will be built for the hovercraft, the spaghetti bridge support structure will

be repaired, and a new electronic game will be explored.

The Engineering Games Committee appreciate the tremendous effort put in by Colleen Mays, assisted by Sue Harrison and Vesna Strika. The volunteers on the evening did a great job and it is good to see some returnees. The support from Questacon is also greatly appreciated, as is the support from teachers and parents. We believe the participants had a lot of fun taking part, and in the process got some appreciation of what engineering is about.



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Transport Safety

As part of Australian Engineering Week 2011, the Australian Transport Safety Bureau (ATSB) opened the doors of its Canberra headquarters to guests interested in the role that engineering plays in the ATSB's work. The ATSB is Australia's national transport safety investigator. Entirely separate from transport safety regulators and service providers, the ATSB investigates accidents and incidents for the purpose of preventing similar events in the future, rather than looking to assign blame or apportion liability.

Many of the ATSB's investigators are engineers. Their work takes them from the office to accident sites and to world-leading laboratory facilities. The ATSB investigates around 100 accidents and incidents each year. The circumstances surrounding these accidents vary tremendously, with investigators working in every environment; from city streets to the remote reaches of the outback.

Visitors that took part in Australian Engineering week were given the opportunity to examine first-hand, the ATSB's Audio Analysis and Engineering laboratories. These facilities are where pieces of wreckage are examined, and where data from flight recorders (the famous 'black boxes') is extracted and



analysed. The guests were allowed to handle the recorders and saw computer animations of accident events recreated from the retrieved data.



Electric Vehicle Display



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CANBERRA INTERNATIONAL ELECTRIC VEHICLE FESTIVAL

Production electric vehicles – cars, motor bikes, bicycles, utility vehicles, boats, personal mobility vehicles – Converted electric vehicles – Concept & prototype electric vehicles – Electric motor sport vehicles – EV research & development – EV-related sustainable development – Education activities – Children's activities – Electric vehicle rides – Food & refreshments

Sunday 25 September

West Lawns, Old Parliament House

10am-4pm, free entry

electricvehiclefestival.com.au



15th International Conference for Women Engineers and Scientists

The ICWES 15 Conference was held in Adelaide from 20-22 July 2011. The conference was a great success with over 250 international delegates.

To view the Conference Program and Powerpoint Presentations from each day of the Conference please go to www.engineersaustralia.org.au/wie/icwes15



YOUNG ENGINEERS VS YOUNG LAWYERS

actlawsociety

SOCIAL DEBATE

“Engineers would make better politicians than Lawyers”

For the first time in memorable history, Young Engineers Canberra and ACT Young Lawyers will be battling it out in a friendly debate! You are invited to drinks and canapés from the breathe-taking views of Mt Stromlo Café Balcony as the sun sets in the nation's capital. Then join us for a social evening of humour, politics and hard hats as we hammer out whether or not engineers would make better politicians than lawyers. Guest judges will be announced on the night.



Date: Friday, 23 September 2011

Time: 6.00 for 6:30pm

Location: Water Security Major Projects Office
Mt Stromlo Road
(off Cotter Rd)
Mt Stromlo Base Café

FREE EVENT

Register online by 16 September

www.engineersaustralia.org.au/divisions/canberra-division/events/events_home.cfm

This event is made possible thanks to the kind sponsorship of ACTEW Corporation.

