From the Chairman

Dear Colleagues,

On behalf of the IEEE South Australia Section Executive Committee, I wish you a happy and prosperous 2012.

It’s hard to believe that 2011 is over and we’re well into 2012. Well, the South Australia Section of IEEE is ready for the New Year with a fresh new slate of volunteers, along with a good mix of seasoned veterans. I’m already looking forward to having an active year with new and interesting programs.

We ended the 2011 Section year with another enjoyable and memorable distinguished lecture and dinner, which this time was held at Ayers House. Over one hundred members and guests enjoyed great company, a wonderful meal, and the great talk by Dr Lan Lam Research Leader of CSIRO Energy Technology Flagship on “CSIRO UltraBattery for Hybrid-electric vehicles and wind-energy applications”. Dr Leigh Powis, Immediate Past Chair of the SA Section, was the master of ceremonies and provided a concise and enjoyable introduction to the program.

Dr Lam presented a very informative talk, taking listeners on a journey from the principles of a 150 year-old lead acid energy-storage system – into a dynamic technology that will open pathways to low emission transport and renewable energy storage.

Dr Lan Lam Research Leader of CSIRO Energy Technology Flagship presenting the talk on “CSIRO UltraBattery for Hybrid-electric vehicles and wind-energy applications”

The presentation considered the need for a new battery cell that combined the advantages of: the supercapacitor and the lead-acid cell. These two technologies combine in UltraBattery to provide the high charge–discharge rates of the supercapacitor and the greater energy storage of the lead–acid cell.
The UltraBattery has been comprehensively tested in Australia and internationally and has been proven to offer a number of advantages over the existing nickel-metal hydride batteries used in hybrid electric vehicles. The Ultra Battery is 70% less expensive than other batteries, it offers faster charge and discharge rates and has a comparable performance in terms of fuel consumption, carbon-dioxide emissions and cycle life.

UltraBattery technology is being developed for two major applications: low emission transport, specifically hybrid electric vehicles (HEV), and renewable energy storage from wind and solar sources. The UltraBattery is not intended to replace regular car batteries. Instead, the technology presents an opportunity to be integrated into new, low emission HEV designs.

There are a number of benefits that the UltraBattery could have for renewable energy supply for example, reliability, stability, load levelling, remote area power supply and emergency backup. For renewable energy storage, it is expected that the discharge and charge power will be 50 per cent higher and the cycle-life at least two times longer than that of the conventional lead-acid counterpart currently used for renewable energy storage.

CSIRO has licensed UltraBattery technology for automotive applications to The Furukawa Battery Co Ltd in Japan and East Penn Manufacturing Co Inc in North America. These commercial licenses extend through the regions of Japan, Thailand, North America, Mexico and Canada.

The opportunity was also taken at the dinner to present Prof Bob Bogner with the charter for the newly established Life Members Affinity Group, and to present Luke Balzan with the 2011 SA Section Distinguished Young Volunteer Award for notable services and contributions towards the advancement of IEEE and the engineering professions and recognition of significant contribution to the South Australia Section.

Chair of IEEE SA Section, Dr Andrew Piotrowski, presents the charter for the Life Members Affinity Group to Prof Bob Bogner, Chair of LMAG.
Chair of IEEE SA Section Dr Andrew Piotrowski presents 2011 SA Section Distinguished Young Volunteer award to Dr Luke Balzan.

I hope that those IEEE members who missed on the 2011 Distinguished Lecture Dinner can join us for the 2012 Distinguished Lecture Dinner. Plans for this year dinner speaker are already underway and if you would like to be a part of the committee please contact me on Andrew.Piotrowski@ieee.org.

AGM

The last business of 2011 was the Annual General Meeting (AGM) that was held on 7 December. The AGM was preceded by a talk by Professor Andrew C. W. Zannettino, Head, Myeloma Research Laboratory on “Mesenchymal Stem Cells: Identification and Therapeutic Use”. This talk was designed to open our engineering community to other topics that are not directly related to the field of engineering. Despite my initial doubts about how this topic would be received by members, it turned out to be a huge success, judging by the number of questions after the presentation.

Prof Zannettino talked about Mesenchymal Progenitor Cells (MPC), that are rare stem cells present within post-natal tissues, and that possess highly promising therapeutic properties. Commercialization of technology for identification and isolation of these rare cells from bone marrow lead to the formation of the Mesoblast Group, which has a combined capitalization of $2.8 billion. Prof Zannettino showed the use of MPC cells to develop therapies for spinal fusion, osteoarthritis, congestive heart failure, heart attacks, eye diseases, diabetes, and bone marrow repair. His very informative story showed the journey of the technologies covering the identification and isolation of these rare MPC cells “from bench to bedside”.

This talk was followed by the AGMs for the SA Section and for the Chapters and Affinity Groups. For each AGM, there was a report by the Chair and the Treasurer, followed by an election of officers for the new calender year. Dr Leigh Powis was the returning officer for the elections. Based on the elections, the list of committee members and chapter officers for 2012 is presented on the following page, noting that the IT Chapter did not participate in the AGM and will hold their elections separately during 2012.

I’d like to personally thank each of these volunteers for helping out in 2011. If you run into one of these folks please let them know that you appreciate their trying to make our Section the best it can be. As you can see from the volunteer list, there are many hands at work to keep our Section going. On closer inspection, you will notice some people holding multiple positions and also some vacant positions. We’re always looking for a few good engineers to provide fresh ideas and perspectives.
I encourage all of our members to actively participate in the Section and Chapter events and activities, most of which are free to members. We now have five chapters: Computer, Communication/Signal Processing (Com/SP), Antenna Propagation/Microwave Theory & Technique (AP/MTT), Control/Aerospace and Electronic Systems (CAES), Information Theory (IT) (SA/ACT/VIC) and three Affinity Groups: Graduates Of the Last Decade (GOLD), Women In Engineering (WIE) and Life Members (LM).

I invite anyone interested to join us at our next Executive Committee meeting. Our next meeting is scheduled for Tuesday, 7 February 5:30 pm at and held at EM324 - Level 3 of Engineering & Maths Building, The University of Adelaide. Hope to see you there.

Wouldn’t it be a great New Year’s resolution to spend a little time networking with and helping out your fellow engineers…?

You can contact South Australia Excom on south.australia@ieee.org

Or visit our website for the latest information: ewh.ieee.org/r10/s_australia

Andrew Piotrowski  
Chair of the IEEE South Australia Section

==============================================================================

<table>
<thead>
<tr>
<th>IEEE SA Section officer positions 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Position</strong></td>
</tr>
<tr>
<td>SA Section Chair</td>
</tr>
<tr>
<td>SA Section Vice Chair</td>
</tr>
<tr>
<td>SA Section Secretary</td>
</tr>
<tr>
<td>AP/MTT Chapter Chair</td>
</tr>
<tr>
<td>AP/MTT Chapter Vice Chair</td>
</tr>
<tr>
<td>AP/MTT Chapter Secretary</td>
</tr>
<tr>
<td>AP/MTT Chapter Treasurer</td>
</tr>
<tr>
<td>C&amp;SP Chapter Chair</td>
</tr>
<tr>
<td>C&amp;SP Chapter Vice Chair</td>
</tr>
<tr>
<td>C&amp;SP Chapter Secretary</td>
</tr>
<tr>
<td>C&amp;SP Chapter Treasurer</td>
</tr>
<tr>
<td>CAES Chapter Chair</td>
</tr>
<tr>
<td>CAES Chapter Vice Chair</td>
</tr>
<tr>
<td>CAES Chapter Treasurer</td>
</tr>
<tr>
<td>Computer Chapter Chair</td>
</tr>
<tr>
<td>Computer Chapter Vice</td>
</tr>
<tr>
<td>Position</td>
</tr>
<tr>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Chair</td>
</tr>
<tr>
<td>Computer Chapter Secretary</td>
</tr>
<tr>
<td>IT Chapter Chair</td>
</tr>
<tr>
<td>IT Chapter Vice Chair</td>
</tr>
<tr>
<td>IT Chapter Secretary</td>
</tr>
<tr>
<td>IT Chapter Treasurer</td>
</tr>
<tr>
<td>GOLD Affinity Group Chair</td>
</tr>
<tr>
<td>GOLD Affinity Group Secretary</td>
</tr>
<tr>
<td>GOLD Affinity Group Treasurer</td>
</tr>
<tr>
<td>WIE Affinity Group Chair</td>
</tr>
<tr>
<td>WIE Affinity Group Vice Chair</td>
</tr>
<tr>
<td>WIE Affinity Group Secretary</td>
</tr>
<tr>
<td>WIE Affinity Group Treasurer</td>
</tr>
<tr>
<td>LM Affinity Group Chair</td>
</tr>
<tr>
<td>LM Affinity Group Vice-Chair</td>
</tr>
<tr>
<td>Immediate Past Chair</td>
</tr>
<tr>
<td>Student activity coordinator</td>
</tr>
<tr>
<td>Membership Development Coordinator</td>
</tr>
<tr>
<td>Adelaide University Student Branch Chair</td>
</tr>
<tr>
<td>UniSA Student Branch Chair</td>
</tr>
<tr>
<td>Flinders University Student Branch Chair</td>
</tr>
<tr>
<td>Webmaster</td>
</tr>
<tr>
<td>Membership Development Coordinator:</td>
</tr>
<tr>
<td>Technical/conference activities editor</td>
</tr>
<tr>
<td>Newsletter editor</td>
</tr>
<tr>
<td>Section History</td>
</tr>
<tr>
<td>Industry Liaison</td>
</tr>
<tr>
<td>Conference Support</td>
</tr>
</tbody>
</table>
**UPDATE YOUR CONTACT DETAILS**
Login to the Membership Portal at http://www.ieee.org/myieee/ to update your contact details. Since most communications from the Section and Chapters is now via email, so please make sure your email address is correct. If you have any concerns about the email delivery system or desire hardcopies of newsletters, please contact the Section Secretary at mailto:south.australia@ieee.org

*Andrew Piotrowski*
*Chair of IEEE South Australia Section*

---

**From C&SP Chapter**

Dr Lin Luo and Dr Ingmar Land (ITR, UniSA) together with Prof Hermann Rohling from Hamburg University of Technology have been awarded an ATN-DAAD project to develop energy-efficient multi-carrier transmission for wireless communications.

This project aims at optimizing the OFDM transmission technique towards a “greener” variant, by employing appropriate technical concepts for saving energy and bandwidth.

Dr Lin Luo, A/Prof Linda Davis and Prof Alex Grant have published an article "4G and Beyond in Australia: Technologies and Opportunities in the NBN Era" in the Telecommunications Journal of Australia, Vol 62, No. 1, 2012.

Focusing on the 3GPP evolution path, this article presents an overview of technologies for 4G and beyond, and considers the opportunities in Australia in terms of spectrum, future wireless networks, and the National Broadband Network (NBN).

*Lin Luo*
*Vice-Chair of Communication and Signal Processing Chapter*

---

**From Computer Chapter**

The next Computer Chapter guest lecture should be on the 17th of April. Venue to be confirmed. Draft abstract below.

Dr Donald Bailey, Massey University
Real-Time Vision
This seminar will review some recent projects in machine vision, robot vision, and computer vision. A common thread through these applications is a need for high speed and high performance processing often with a constrained power budget. This has spurred research into the use of field programmable gate arrays (FPGAs) for implementing vision algorithms. Simply porting software algorithms onto FPGAs often gives disappointing performance. An alternative approach of transforming algorithms for parallel implementation is described. The seminar will conclude with a look into future directions for embedded real-time image processing.

Upcoming event is also another FPGA course similar to the one held last year. The proposed dates are 18th to 20th April. The venue and details on the course will be confirmed soon.

*Sebastien Wong*
*Chair of Computer Chapter*
IEEE SA Women in Engineering Affinity Group
The WiE affinity group is pleased to welcome back our 2012 Chair Dr Giuseppina (Pina) Dall'Armi-Stoks, who was away on sabbatical in US. The WiE affinity group is planning a very exciting line-up of international speakers for IEEE –SA in 2012:

1. Professor Grace Clark from the Lawrence Livermore National Laboratory. Prof Clark is an IEEE fellow and her research is in signal and image processing, tracking and pattern recognition applied to acoustics, electromagnetics, and particle physics. Tentative date of visit: April 2012.

2. Assistant Professor Preetha Thulasiraman from the Naval Postgraduate School, Dept of Electrical and Computer Engineering. Prof Thulasirman is an IEEE member and her research is in wireless communication and wireless networking. Tentative date of visit: May/June 2012.

We are looking for co-sponsorship of joint technical meetings with these speakers. It is envisage that each speaker will give two presentations whilst in Adelaide: one technical presentation and one public lecture. We anticipate that the total cost for accommodation (2 nights) and meals for each visit will be up to $600 per speaker. WiE will cover as much of these costs as we can afford, but we are seeking sponsorship to assist. Contributions of the order of $100-300 would be appreciated. Please email Michele Knight (WIE affinity group Treasurer) at Michele.Knight@dsto.defence.gov.au if anyone is interested in co-sponsorship.

Sherry Randhawa
Secretary, WiE affinity group, IEEE SA

==============================================================================

From IEEE Life Members & IET REG Group
NEWSLETTER 175     January 2012

“New Blips on the Radar Screen”, Radar Research

By Professor Doug Gray,
Director University of Adelaide Radar Research Centre,
Professor of Electrical Engineering University of Adelaide

Wednesday 15th February 2012
1pm in the Sir Robert Chapman Theatre, Engineers Australia,
Level 11, 108 King William Street, Adelaide.

The talk will be preceded by the IET REG AGM.
A light lunch will be available beforehand at 12.15 pm.
Registration required (see flyer). Meeting cost: $10 per head.

Talk Synopsis:
Whilst the genesis of radar can be traced back to the early theoretical work of Maxwell and the experimental demonstrations of Hertz, it was developments during the second world war that established radar as a prime tool for aircraft detection and surveillance. Since then it has
become an essential and ubiquitous sensor for a myriad of applications in both the defence and civil sectors. One might be excused for thinking that for such a mature technology radar developments may have plateaued and that any progress is only incremental. However the reality is that the design of radars and their transmitted waveforms is an area of active research that is leading to new and innovative systems.

An overview of current hot topics in radar research will be presented and illustrated using projects currently underway at the University of Adelaide Radar Research Centre. This will include radars exploiting antennas transmitting multiple orthogonal waveforms, polarimetric techniques and networks of spatially distributed radars for applications in remote sensing, weather monitoring and surveillance.

The Speaker:
Professor Douglas Gray, Director of the University of Adelaide Radar Research Centre and Professor of Electrical Engineering, University of Adelaide.

The focus of the University of Adelaide Radar Research Centre is in the use of radar for surveillance and environmental monitoring. It brings together research groups from the School of Electrical and Electronic Engineering and the Discipline of Physics in the School of Science together with various external organizations such as the Australian Defence Science and Technology Organisation, the Bureau of Meteorology, the Australian Antarctic Division and commercial companies such as Raytheon Australia and ATRAD.

Key research themes in the Centre are in the area of radar systems and technology, RF propagation and radar signal processing.

REPORT OF THE NOVEMBER 2011 MEETING:

Where and When – The GPS Reliant Society, by Dr Don Sinnott, 30 November 2011.

Prof. Don Sinnott's presentation was very well received by 28 people (EA 13, IET 11, IEEE 1, visitors 2) He surveyed a wide variety of applications including aircraft and land transport. Intriguing applications that are supplanting older methods are in stevedoring (locating and handling containers and goods), agricultural machinery, banking (precise timing of transactions), utilities, surveying and geodesy.

With the advent of $3.00 GPS chips now, stimulated by mobile phone needs, the money is not in the GPS hardware as much as in the add-ons - software and applications.

Don surveyed the development of navigation systems since 1570; the arrival in 1957 of Sputnik stimulated the idea of navigation systems based on satellite signals. A wide variety of electronic navigation systems -Omega, VOR DME, Doppler, inertial, Decca, Loran, is giving way to Global Navigation Satellite Systems (GNSS), of which GPS is the first.

What is GPS? - at present it is a system with 24 satellites carrying clocks in orbits of about 2000km altitude. Each radiates 25 watts over the whole of the planet, and thus the signals are very weak. The principle of navigation by time differences but without knowledge of absolute time at the receiver was explained. For example with four satellites at known positions four time differences lead to four quadratic equations which can be solved for the four needed unknowns x, y, z and t at the receiver. When more satellites are available the estimated can be refined.

There are now available or under development several Global Navigation Satellite Systems - GPS (USA), Glonas (Russia), Galileo (Europe), Beidou (China) and QZSS (Japan), and in addition, augmented ground-based systems. Why so many? There are many reasons - the owner sets the agenda and availability. Aspects are commercial marketability or public ownership; guaranteed service for safety, search and rescue, accuracy, encryption, and availability for special regions (eg in Tokyo). Vulnerabilities that were explained include jammability for individual use or by organisations. Ownership of jamming devices is illegal in Australia, but they are widely available elsewhere - a Google search located 390,000 hits. An anecdote illustrated a private use for an amorous purpose.

Are we over-reliant on GPS? Yes, with the demise of fallback alternatives.

The presentation elicited many interesting questions which were well answered.
ANNUAL GENERAL MEETING
The meeting on 15 February 2012 will also be our Annual General Meeting. Those who have been to a previous AGM will realise it will be a brief, but necessary affair. The Chair will give a brief report on the year’s activities, financial statements will be available for perusal, and Committee members will be elected.

Several members of the 2011 Committee will be retiring at the AGM. Please consider the possibility of joining the Committee. Chair (Bob) and Secretary (Jeff) are happy to discuss this matter with you.

TV PROGRAMS WITH AN ENGINEERING INTEREST
At our November 2011 meeting, the Chair asked attendees if there was any interest in collating and advertising TV programs or web sites with an engineering interest. As there was little enthusiasm shown, the Committee has decided to let this idea drop.

TECHNICAL MEETINGS FOR 2012:
IET RETIRED ENGINEERS GROUP
A joint initiative between the IET(SA & NT) and the IEEE(SA)

PROGRAM OF TECHNICAL MEETINGS 2012 6th draft 27 Nov 2011

15 Feb NEW BLIPS ON THE RADAR SCREEN
AGM
Presenter: Professor Douglas Gray, Director of University of Adelaide Radar Research Centre.
Radar continues to evolve. Recent trends will be surveyed and some projects in remote sensing, weather monitoring and surveillance exploiting new advances will be described.
Venue: Engineers Australia, Level 11, 108 King William St, Adelaide. Registration required.

11 Apr LASERS IN OPHTHALMOLOGY
Presenter: Dr Stewart Lake, vitreoretinal surgeon, Dept of Ophthalmology, Flinders Medical Centre.
Lasers have revolutionized eye surgery and represent an invaluable set of tools. The present state of the art will be reviewed and illustrated with examples of current advances at Flinders.
Venue: Engineers Australia, Level 11, 108 King William St, Adelaide. Registration required.

06 Jun WHERE FROM? HOW OLD? (Answers from luminescence.)
Presenter: Ms Frances Williams, Research Associate, Centre of Excellence in Environmental Luminescence, University of Adelaide.
Certain materials produce luminescence when heated or stimulated with light of particular wavelengths. This remarkable property leads to a wealth of applications, ranging from finding the age of sediments and archaeological materials to assessing the effects of a nuclear accident.
Venue: Adelaide Pavilion, Veale Gardens, 12:00 noon. Partners specially invited. Registration required - refer to flyer.

08 Aug OPPORTUNITIES FOR RENEWABLE ENERGY STORAGE ON KANGAROO ISLAND
Presenter: Robert Dickinson, CSIRO.
The talk will give an overview of the economics of renewable energy harvesting technologies including wind, solar and biomass, and associated energy storage technologies, for remote regions such as Kangaroo Island.
Venue: Engineers Australia, Level 11, 108 King William St, Adelaide. Registration required.

10 Oct MICROALGAL BIOFUELS: THE BEAUTY AND THE BEAST
Presenter: Associate Professor Peter Ashman, School of Chemical Engineering, Uni of Adelaide.
The presentation will review ongoing R & D activities in microalgal biofuels by the Microalgal Engineering Research Group and the Centre of Energy Technology, University of Adelaide.
Venue: Engineers Australia, Level 11, 108 King William St, Adelaide. Registration required.

14 Nov T-RAY IMAGING AND SENSING
Presenter: Professor Derek Abbott, School of Electrical & Electronic Engg, University of Adelaide.
Advances in ultrafast lasers have enabled the field of T-rays (terahertz radiation) to emerge. T-ray imaging and sensing techniques are actively researched around the world and show promise for biochemical and chemical sensing.
Venue: Engineers Australia, Level 11, 108 King William St, Adelaide. Registration required.

Meetings start at 1:00 pm unless otherwise noted. Visitors welcome. Meetings at Engineers Australia, 108 King William St, are preceded by a light lunch starting at 12:15 pm, for which registration and prepayment will be required, using a flyer that will be issued with the notice of the meeting.

ENGINEERS AUSTRALIA RETIRED ENGINEERS 2012 PROGRAM
The proposed meetings in the Engineers Australia REG program for 2012 are set out below. Apart from the site visit all functions are luncheon meetings at the South Australia Division office, 108 King William Street, Adelaide.

<table>
<thead>
<tr>
<th>Month</th>
<th>Title</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>7th March 2012</td>
<td>“Nuclear Energy”</td>
<td>Terry Kreig</td>
</tr>
<tr>
<td>11th April 2012</td>
<td>“Lasers in Ophthalmology”</td>
<td>Dr Stewart Lake Specialist Vitreoretinal Surgeon, Department of Ophthalmology at Flinders Medical Centre</td>
</tr>
<tr>
<td>13th June 2012</td>
<td>“Tier 5 presentation”</td>
<td>Mark Lusis</td>
</tr>
<tr>
<td>19th (tbc) September 2012</td>
<td>EA REG AGM &amp; “Adelaide’s Water Supply”</td>
<td>tbc</td>
</tr>
<tr>
<td>November 5th – 9th 2012</td>
<td>Southern Resources: A 5 day excursion to the South East.</td>
<td></td>
</tr>
</tbody>
</table>

Registration is required. Contact Engineers Australia Member Programs Coordinator Ashlea Klingberg (Fax: 8211 7702, Ph: 8202 7110, aklingberg@engineersaustralia.org.au, Level 11, 108 King William Street, Adelaide SA 5000) for a flyer with registration details.

Jeff Schapel  
Secretary of the IEEE Life Members & IET REG

==================================================================================================

Conferences

First Call for Abstracts

Australia’s Defence Science and Technology Organisation (DSTO) and the University of Adelaide’s Radar Research Centre (AR2C) are pleased to announce that the annual Workshop on Progress in Radar Research - PIRR 2012 – will be held Monday 2 – Tuesday 3 April 2012  
National Wine Centre of Australia  
Hackney Road Adelaide  
An opportunity for radar researchers to share their current research and interact with the radar research peer group

About PIRR 2012

The PIRR series of workshops, held annually except for the “3” and “8” years when Australia hosts the International Conference on Radar (RADAR 20xx), is the annual Australian meeting of the community engaged in research into radar and allied fields. PIRR 2012 will follow a similar format to that of previous PIRR workshops, each of which have drawn over 100 registrants for two days of presentations and discussion.

The use of the term Progress in the workshop title indicates that the series invites a stock-take on current, not necessarily completed, radar research and is not only a forum for reports of completed work. It also provides an opportunity for peer-exposure and tuning of formal papers intended for subsequent presentation at a conference or for journal publication.

There is no fee for attendance, including morning and afternoon teas and a cocktail reception, but advance registration is required.

Topics of interest
Research into any area of radar or radar-related science or technology falls within the area of interest of PIRR 2012. Consistent with the intent of the workshop series, PIRR 2012 welcomes proposals for presentations in areas outside radar which bear on issues faced by radar researchers.

**To offer a presentation …**

Offers of presentations should be made by submitting, by the due date, a one-page abstract by email to the workshop manager at don.sinnott@ieee.org. Selection will be made by the workshop technical program committee on the basis of the submitted abstract and no formal written paper is required. No Workshop proceedings will be produced but authors are encouraged (but not required) to make available their presentation or other material to be incorporated in a CDROM to be issued to attendees after the workshop.

**Key dates**
- Cut-off date for submission of abstracts 2 March 2012
- Advice of acceptance 12 March 2012
- Workshop sessions 2-3 April 2012

**Workshop arrangements and registration**

Workshop sessions will run from 9AM to 5 PM on each of the two days in a conference format, with ample times for informal interaction. Lunches, tea/coffee and a reception at the end of the first day are included. Free or low-cost parking is available on Hackney Road close to the venue. A registration web-site will be established shortly and if you received this flyer electronically you will be advised of the site.

DSTO, part of Australia's Department of Defence, is the Government’s lead agency charged with applying science and technology to protect and defend Australia and its national interests. See http://www.dsto.defence.gov.au/. AR2C is a Centre within Adelaide University, focussing on radar research and education within the School of Electrical and Electronic Engineering and the Discipline of Physics. See http://www.adelaide.edu.au/radar/.

PIRR 2012 acknowledges the GOLD sponsorship of CEA Technologies Pty Limited.

5th Microwave and Radar Week (MRW-2012).

This year the MRW-2012 consists of following three conferences:

- 19th International Conference on Microwaves, Radar and Wireless Communications **MIKON-2012**, May 21-23;
- 12th International Radar Symposium **IRS-2012**, May 23-25;

All these conferences will be held in the Sofitel Warsaw Victoria hotel conveniently located at the very heart of Warsaw's Old Town.

============================================================

**Upcoming events**

**ELECTRICAL JTP 2012**

**Zero Carbon Australia Stationary Energy Plan 100% Renewable Energy Generation**

**Patrick Hearps BE (Hons)**

Research Fellow in Energy & Transport Systems at the University of Melbourne's Energy Research Institute

Hosted by Engineers Australia and the Joint Technical Program Electrical & Electronics
Venue: Sir Robert Chapman Theatre, Engineers Australia
Level 11, 108 King William Street ADELAIDE 5000
Date/time: Tuesday 21st February 2012
5:30pm for light refreshments for a 6:00pm start

Abstract
A presentation of the framework, methodology and findings of the Beyond Zero Emissions ‘Zero Carbon Australia Stationary Energy Plan’, a technical feasibility study for powering Australia with 100% renewable energy, primarily through a combination of approximately 60% concentrating solar thermal (CST) with storage and 40% wind power. The performance of this proposed supply infrastructure in meeting projected electricity demand was modelled with real resource and demand data from 2008 and 2009. Finally, the practical feasibility of implementation was tested against the resource and workforce constraints of the Australian economy, and the financial impacts of the scheme were compared with business as usual.

RSVP: Monday 20th February 2012
VISITORS WELCOME
For more information contact Member Programs Coordinator Ashlea Klingberg on (08) 8202 7110 or aklingberg@engineersaustralia.org.au
CPD points: 1

JOINT TECHNICAL PROGRAM 2012

21st Feb, Host EA
Zero Carbon Australia Stationary Energy Plan
Patrick Hearps BE (Hons), Research Fellow in Energy & Transport Systems at the University of Melbourne's Energy Research Institute.
A presentation of the framework, methodology and findings of the Beyond Zero Emissions ‘Zero Carbon Australia Stationary Energy Plan’, a technical feasibility study for powering Australia with 100% renewable energy, primarily through a combination of approximately 60% concentrating solar thermal (CST) with storage and 40% wind power. The performance of this proposed supply infrastructure in meeting projected electricity demand was modelled with real resource and demand data from 2008 and 2009. Finally, the practical feasibility of implementation was tested against the resource and workforce constraints of the Australian economy, and the financial impacts of the scheme were compared with business as usual.
More details about Beyond Zero Emissions are at: http://beyondzeroemissions.org/

7th Mar Host JTP Mech, IEEE
** VISIT to Biomechanical Materials Testing Laboratory at Flinders University – Hexapod Robot
Contact to be advised. Joint event with JTP Mechanical.
Based on the concept of the flight simulator, the hexapod robot is a state of the art biomechanical testing system capable of producing either single-axis or multi-axis displacements and rotations to any material, joint, implant or surgical device. This allows for more realistic simulation of the complex movements of bones and joints and improved understanding of how joints and implants function and why they fail. The Hexapod Robot is the most advanced of its kind in the world and the only one of its kind in Australia – was launched at Flinders University on Tuesday 27 September 2011.
The device, developed over two years by a team led by Flinders Biomechanical Engineer Dr John Costi and including researchers from The University of Adelaide’s School of Mechanical Engineering, can study complex joint motions in 3D to help design and develop improved joint replacements.

20th Mar Host EA
** VISIT to Renewable Energy Centre at Regency campus TAFE
Asbjorn ‘Aussie’ Kanck, Lecturer in Renewable Technology, Training & Technology TAFE, Regency Campus
A site tour of the renewables energy training facilities. The Regency campus houses the "Renewable Energy Centre" which provides significant training opportunities for both industry personnel and those with a general interest in renewable and sustainable energy fields. The centre also trains students who want to obtain Clean Energy Council (CEC) accreditation to design and/or install grid and/or stand alone power systems, such as solar.
17th April Host EA
** VISIT to RAAF Edinburgh AP-3C Orion Flight Simulator **
*Flight Lieutenant Andrew Sibenaler, RAAF Edinburgh*

The simulator activity would allow attendees to fly the AP-3C and possibly attempt a landing or takeoff. Limited to 20 people, meeting at RAAF base main gate at 6:15pm.

15th May Host EA

**The Integration of Complex Engineered Systems in the ADF Technical Regulatory Environment**

*Michael Edwards FIEAust CPEng, Engineering Fellow, Raytheon Australia*

Systems being acquired for use by the Australian Defence Force (ADF) continue to become more complex costing hundreds of millions of dollars and requiring the work of hundreds of engineers and technicians to design, integrate and support these systems. Assuring these systems are fit for service and safe is the aim of the technical regulatory environment established by the ADF. This topic presents the characteristics of complex engineered systems, explores the concept of technical integrity and discusses the features of the ADF regulation that are meant to achieve this technical integrity. We look at what this means practically for organisations entrusted with integrating these systems within the technical regulatory environment of the ADF.