JOINT TECHNICAL PROGRAM 2013

Electrical and Electronic Engineering

A program of general interest talks and visits, and a chance to network with people in your industry
(last updated 11 February 2013)

19th Feb
Host EA

VISIT - Tindo Solar Pty Ltd (Technology Park, Mawson Lakes, Adelaide)

Richard Inwood – Manager Business & People, Tindo Solar Pty Ltd

Three South Australians have invested $6M in a module plant that manufactures technologically advanced solar panels for Australia and the world. Tindo's manufacturing plant is situated in the heart of Technology Park Adelaide, where it operates a state of the art 60MW capacity production line. The production line is fully automated with a focus on quality control and sophisticated engineering.
The planned site tour of the manufacturing facility will include: Discussion on the product and materials, observing a solar module being made, the pro's and con's of DC and AC solar modules, Solar in Australia today and into the future, Engineering challenges of getting product to market (eg manufacturing, technology behind the production line).

26th Mar
Host IEEE

A Short Discourse on Countermeasures Being Developed for Some Emerging Cyber Threat

Dr Mark Anderson DSTO Distinguished Fellow

The strategic advantage in Cyber security remains with the attacker rather than defender. To complicate matters, there is a trend towards a quite different set of threats which the current suite of countermeasures are not well designed to address. After first discussing the strategic backdrop of the defending versus attacking along with why current Cyber Defence approaches are unlikely to succeed in the longer term, a short discourse will be given on countermeasures being developed for a selected set of the newer, emerging Cyber threats.

16th April
Host EA

** VISIT to SA Power Networks – Network Operational Centre

Matthew Napolitano, Network Control Manager SA Power Networks

SA Power Networks (previously ETSA Utilities) is the operator of the South Australian electricity distribution network, operating within the Australian National Energy Market. SA Power Networks owns, operates and maintains a network that delivers electricity from the high voltage transmission network connection points through a network of approximately 87,500 kilometres of powerlines, to about 830,000 residential and business customers throughout South Australia. The network operates from 66kV down to individual customer low voltage connections.
The site visit will be to SA Power Networks' Network Operations Centre (NOC) which controls and manages the real time operation of the distribution network and directs high voltage switching activity for planned and supply restoration work. The Network Operations Centre has remote monitoring and control facilities to over 200 distribution substations. The SA Power Network's NOC has undergone a recent upgrade and expansion, to provide a modernised and purpose built facility and as part of initiatives to provide a step improvement in the management of the distribution network.

21st May
Host IET

TBC

18th June
Host EA
Joint Mech

Large-scale Federated Ship Control System of the AWD

Stephen McAuley, AWD Principal Controls Engineer, ASC

Ship Control Systems are progressively moving away from Mil Spec, proprietary systems to ruggedised COTS-based systems that can integrate a large number of dissimilar control systems. The AWD's Integrated Platform Management System (IPMS) reflects this evolution to large-scale federated systems providing a consistent, integrated view of the AWD platform systems to the operators despite the control elements of these systems being developed and implemented independently. The IPMS architecture, design complexities and some integration strategies will be presented and discussed in this talk.

16th July
Host TSA

Government initiative for a Public Safety Mobile Broadband Network (PSMBN)

Kit Wignall, Communication Practice Leader, UXC Consulting

The talk by Kit Wignall will outline what a Public Safety Mobile Broadband Network is, both from an international and national perspectives. Kit will cover the key factors for establishing such a network, including allocation of spectrum, current technology considerations around such a network and the challenges of funding such a network. Potential demands and applications requiring a public safety mobile Broadband network will also be covered.

20th Aug
Host EA

Maintenance and Support of the Collins Class Submarine - ISCMMS

Gavin Hamilton, Chief Technology Officer, ASC

In general military platforms operate in challenging environments with a long operational life. The systems that are installed on these platforms need to be maintained and supported through to the end of life of the platform. One of the systems on the Collins Class Submarines is the Integrated Ship Control Management and Monitoring System (ISCMMS) which is a real time system with distributed computing nodes and sensors spread around the submarine. This presentation will focus on the ISCMMS and provide an insight into the issues and challenges associated with maintaining and supporting this system for the last 18 years.

17th Sep
Host IEEE

Phase Arrays and Beyond

Prof Douglas Gray, The University of Adelaide

Traditionally phased arrays have been mainly restricted to high end defence surveillance systems due to costs and data processing limitations. However they are finding increasing use in civilian areas ranging from GPS to weather radar applications. Examples of projects within the University of Adelaide Radar Research Centre using phased array technology and the associated advanced signal processing techniques for both radar and GPS applications will be given. Beyond phased arrays the intriguing and controversial area of MIMO array processing looms and some insights into this emerging area of research will be provided

15th Oct
Host IEEE

Luminescence, Ionising Radiation and Archaeological Dating

Nigel A. Spooner, Adjunct Professor of Luminescence, The University of Adelaide

In March 2013 the University of Adelaide opens its new science building "The Braggs", in the basement of which is housed the John R. Prescott Laboratory for Environmental Luminescence. The laboratory will focus on the study of luminescence induced by ionising radiation and the development of new and improved applications of this phenomenon. Luminescence can be used as a dating technique in archaeology, palaeontology and geology (primarily within the last half-million years). It also has unique applications to Defence, National Security and Public Health. These include the forensic detection of prior radiation exposure and quantification of radiation dose over affected areas, following radiological events such as the Fukushima incident. The capabilities of the Environmental Luminescence Laboratory will be discussed along with some program examples.

22nd Oct
Host IET

STUDENT PAPERS NIGHT

Students from our three universities present their final year projects whilst competing in the IET Rex Jones Student Presentation Prize. IEEE Student Subject prizes will also be presented at this meeting.

19th Nov
Host TSA

**VISIT - Bureau of Meteorology Kent Town How do the Bureau Boffins produce a forecast?

Paul Lainio, Senior Meteorologist, Bureau of Meteorology

Knowledge is the key to forecasting. Manager of Engineering Services Scott Tremethick and Paul Lainio will take the group on a tour of the Kent Town observations enclosure providing an insight into the many and varied ways the Bureau collects weather data. Following this, Paul will present a history of the technological leaps that have led to the current methods of forecasting and discussion of some basic climate science. The visit to the office concludes with a tour of the SA Regional Forecasting Centre where meteorologists issue routine forecasts and monitor and warn for significant weather.
Booking is essential as numbers are limited.

CPD Points: It is recommended that attendance at each of these presentations be counted as one CPD point under *Engineers Australia* guidelines

Venue: Engineers Australia, Sir Robert Chapman Theatre, Level 11, 108 King William St., Adelaide (except visits).
Dates: Meetings are generally held on the third Tuesday of each month.
Time: Light refreshments commence at 5:30 PM and the meeting at 6:00PM (except site visits).

For each event, a flyer presenting details of the event will be posted on the websites of EA, IEEE, IET and TSA (see the details overleaf). These websites will also inform about any changes to the above program. Bookings to the visits should be made using the EA's website. Numbers for visits are normally limited so book early - preference will be given to EA, IEEE, IET and ACS-TSA members.

ALL VISITORS ARE WELCOME!

THE COMMITTEE

The Committee normally consists of two representatives from each of the participating Institutions and Societies. The Chairperson is one of these representatives.
The Minute Secretary is agreed by the previous year's Committee and is normally from the Institution/Society which will chair the Committee in the following year.

2012 JTP Electrical & Electronics Committee

Anthony Mew, Engineers Australia – Electrical College
Marcelo Botelho, Engineers Australia – ITEE College
Marek Kwiatkowski, ACS-TSA
Prof. Reg Coutts, ACS-TSA
Mark Pszczel, IEEE
Sophie Ball - IET

The **TELECOMMUNICATION SOCIETY OF AUSTRALIA (TSA)** is Australia's national society for the people and organisations involved or interested in telecommunications and related industries. The Society's objective is to advance the level of knowledge and understanding in the Australian telecommunications industry of the issues, trends, developments and new directions in telecommunications and related areas. The TSA presents free lectures/briefings to members and publishes the Telecommunication Journal of Australia (issued free to members). The Society also plays a major role in collecting, preserving and exhibiting artefacts from Australia's telecommunications history. Individuals and organisations involved or interested in telecommunications and related industries are welcome to join the TSA. The TSA is now part of the Australian Computer Society (ACS) http://www.acs.org.au as a National SIG under the ACS Telecommunications Board chaired by Professor Reg Coutts. Ph: 03 9866 7333
Email: tsa-acs@acs.org.au
Website: http://www.tsa.org.au

ENGINEERS AUSTRALIA is the national professional body for engineers, technologists and associates and with over 90,000 members is the country's largest and most diverse engineering association. Engineers Australia promotes the science and practice of engineering and represents public policy in engineering. Engineers Australia assists members to achieve their personal and professional goals by providing an extensive range of benefits, facilities and services at all stages of their careers. This is accomplished through graduate development programs, publications, presentations, workshops, site visits, technical presentations and career services. Engineers Australia defines the critical competencies required by professional engineers and engineering technologists in Australia, determines whether individual practitioners have demonstrated their capacity to deliver engineering services at these levels and administers the National Professional Engineers Register. Engineers Australia also accredits courses offered by tertiary education providers, under the Washington Accord, for international recognition and facilitates reciprocal membership of overseas institutions through Mutual Recognition Agreements.

For more information call: Ashlea Klingberg, Member Programs Coordinator, Engineers Australia, South Australia Division, Level 11, 108 King William St, Adelaide SA 5000 \
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The **INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)** has over 360,000 members in about 175 countries worldwide, with nearly 40% of the membership outside the USA. IEEE's technical activity is managed under the TAB (Technical Advisory Board) by 37 Societies and 4 Technical Councils, all of which have world coverage, and geographically under the RAB (Regional Activities Board) in 10 regions. Region 10, which includes Australia, is the last region formed, covers the Asia-Pacific, about half of the world's population, and has been the fastest growing IEEE region in recent years. All Australian states except Tasmania and the Northern Territory have at least one section (Queensland has two), and these sections form the IEEE Australia Council. The IEEE South Australia Section has about 450 active members, with 5 technical society chapters, a GOLD affinity group and 3 Student Branches. The Section has staged a number of major international conferences in Adelaide and elsewhere including ICASSP 94, APMC 2000, RADAR 2003 and ASCC 2004.

For further information contact: The Secretary, IEEE SA Section, PO Box 53, Elizabeth SA 5112.
Email: south.australia@ieee.org
Website: http://ewh.ieee.org/r10/s_australia/

The **INSTITUTION OF ENGINEERING AND TECHNOLOGY (IET)** is an international organisation with over 130,000 members throughout the world who have joined together to promote the advancement of electrical and electronic science and engineering. It concerns itself with management, design, science, education and the many fields of technology related to the profession. Following the merger with the Institution of Manufacturing Engineers, the IET is particularly well placed to serve the manufacturing industry and the professional engineers who work in it. One of the functions of the IET is that of a learned society and as such it publishes material on a wide range of related fields. The IET hosts a suite of virtual Professional Networks that link engineers and scientists with a common interest and circumvent many of the issues involved with time and distance. Additional details are available on the IET's local web page home page (see below).
Local contact details: Mr Ashley Keep, Honorary Secretary, The IET SA & NT Local Network, PO Box 992, Kensington Gardens, SA 5068
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