IEEE   IET The Institution of Engineering and Technology   TelSoc   ENGINEERS AUSTRALIA South Australia Division

JOINT TECHNICAL PROGRAM 2018 Electrical and Electronic Engineering
A program of general interest talks and visits, and a chance to network with people in your industry
(last updated 22June 2018)

20th Feb 18
Host

Nil

20st March 18
Host TelSoc

Site visit: RedFlow (Host: Simon Hackett, Managing Director of RedFlow)
RedFlow has designed its unique zinc-bromine flow batteries for stationary energy storage applications ranging from its ZCell residential battery to its scalable ZBM2 batteries for industrial, commercial, telecommunications and grid-scale deployment. Redflow, a publicly-listed company (ASX: RFX), produces high energy density batteries that are sold, installed and maintained by an international network of system integrators. Simon Hackett, Managing Director of Redflow, will lead the site visit which will include a presentation on the technical characteristics of the battery design and performance, and a tour of the battery deployment lab on site.

17th April 18
Host IET

Presentation by Professor Mark Taylor (Biomedical) -
Hip and knee replacements are one the most successful elective surgeries, with failures rates of 5% or lower after 10 years. Although successful, there is still room for improvement, for example to meet the demands of younger, more active patients. Given the success of total joint replacement, this present challenges in trying to evaluate new designs, to ensure that they are at least as good as, or better than existing devices. Computational modelling has been used for over 40 years to assess the performance of primary joint replacement and the current state of the art will be described. Unfortunately, joint replacements do fail and need to be removed and replaced. These failures are often associated with significant bone loss and revision joint replacements consist of an array of components to fill the defect and provide adequate fixation. In comparison with primary joint replacement, there have only been a few attempts to assess the performance of these complex devices. The challenges and approaches for modelling revision joint replacement will be discussed.

15th May 18
Host EA

Storing Renewable Energy to Create a Low Carbon Campus, Dr Stephen Berry, University of South Australia
In the context of local and global efforts under the Paris Accord to reduce anthropogenic greenhouse gas emissions, the University of South Australia is taking action to decarbonise its operational impact through the application of renewable energy and energy storage technologies. Stage 1 of the decarbonisation program is to create a full-scale renewable generation and energy storage demonstration facility at the Mawson Lakes campus in Adelaide meet much of our operational energy needs. A key plank of this project is installation of an electrolyser to utilise surplus renewable energy to produce and store hydrogen, and an associated hydrogen fuel cell to generate electricity on demand. When linked to the planned on-campus photovoltaic array and flow battery facility, this system transforms an irregular intermittent renewable energy resource into an on-demand electricity generator, able to provide additional electrical supply during periods of peak load as well as during periods of little or no renewable energy generation. The presentation explores the socio-technical issues driving the project, and the manner in which technological innovation is providing solutions for a low carbon campus.

Dr Stephen Berry is an energy systems scientist investigating the carbon impact of buildings and precincts, and the reduction of conventional energy use through the application of energy efficiency and renewable resources. Dr Berry has tertiary qualifications in applied science, business studies, public policy and renewable energy, and a PhD in mechanical engineering. Dr Berry has published extensively in key international peer-reviewed journals and regularly presents at major international conferences. Actively engaged with industry both locally and nationally, Dr Berry has returned to Adelaide following a long career in the Australian Public Service managing government policy and programs to improve the energy and greenhouse gas emission performance of the Australian building sector.

19th June 18
Host TelSoc

Mobile Phone Records Used as a Fuzzy Fingerprint of Crime, Prof Reg Coutts, Coutts Communications Pty Ltd
Ten years ago Prof Coutts was asked to participate in a post conviction inquiry into a murder case in which the investigators and lawyers misinterpreted mobile telephone records. The case and his assessment became a feature of an ABC 4 Corners investigation as cited on Web site www.couttscommunications.com. Since then, Prof Coutts and his barrister colleague in Canberra have become concerned about the inaccurate use of mobile telephone records to place the whereabouts of a telephone (and its user) as evidence in criminal trials. In the years since, matters have not improved, and in 2015 the Commonwealth Government enacted new requirements for the Australian Telecommunication companies (Telcos) to keep certain metadata for at least two years to assist crime enforcement. As well as discuss the ways such data can safely be used, In this talk, Prof Coutts will share with the audience some of the intended and unintended consequences of such moves here and overseas to 'improve security' in a post 9/11 world.

17th July 18
Host EA

Radar development in Australia: from World War II to the Jindalee Operational Radar Network
Abstract – Since the earliest days of military radar application Australia has had a vibrant radar research community, principally in government laboratories. The bombing of Darwin in 1942 led to development, construction and deployment of Australia's first radars but the next major step in Australian-designed radars had to wait until the 1960's. Researchers, benefitting from earlier experiments on radar tracking of missiles launched from Woomera, began to plan and implement over-the-horizon radar systems designed for defence surveillance off Australian's northern coast. The outcome has been the Jindalee Operational Radar Network (JORN).
Dr Don Sinnott was Chief of a number of Australia's Defence Science and Technology (DSTO) research Divisions in sensing and IT disciplines (1987-2000), the Department of Defence's Canberra-based First Assistant Secretary Science Policy (1995-1997), CEO of the Cooperative

Research Centre for Sensor Signal and Information Processing and Company Board Chairman of the CRC's spin-off companies (2000-2003). He is currently a Board member for the CRC on Contamination Assessment and Remediation of the Environment (CRC CARE), an Adjunct Professor with Adelaide University and author of two books of biography.

21ˢᵗ Aug 18
Host IET

Site Visit: to the Adelaide new RAH - Maged to follow and confirm and confirm

18ᵗʰ Sep 18
Host

Talk/site visit but not finalised yet. Maged would like this date TBC.

23ʳᵈ Oct 18
Host IET

STUDENT PAPERS NIGHT
Presentation at EA – Organisers: Emilio de Stefano and Maged Awadalla
Students from our three universities present their final year projects whilst competing in the IET Rex Jones Student Presentation Prize.

20ˢᵗ Nov 18
Host

Royal Australia Air force Wedgetail Technology Capability
Presentation at EA – Confirmed by Marcelo; abstract to be provided

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 and workshops).

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 TelSoc members.

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ALL VISITORS ARE WELCOME!

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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.

2018 JTP Electrical & Electronics Committee
Anthony Mew, Engineers Australia – Electrical College
Marcelo Botelho, Engineers Australia – ITEE College
Marek Kwiatkowski, TelSoc
Prof. Reg Coutts, TelSoc
Dr Sherry Randhawa, IEEE
Awadalla Maged - IET
Mohammed Haque - IEEE

TelSoc

The Telecommunications Association (TelSoc) is a multi-disciplinary society whose aim is to promote knowledge, understanding and excellence in telecommunications and its applications including the digital economy. TelSoc's goals are: to keep members abreast of the latest developments and policies in telecommunications and the digital economy; to provide high quality networking with peers; and to promote excellence in the telecommunications community. TelSoc also plays a major role in collecting and preserving Australia's telecommunications history and has been doing so since the founding of the original society in 1874. Individuals involved or interested in telecommunications and the digital economy are most welcome to join TelSoc.
Website: http://telsoc.org

ENGINEERS AUSTRALIA
South Australia Division

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
Office: (08) 8202 7100   Direct : (08 8202 7141)   Fax: (08) 8211 7702
Email: mailto:CFaulkner@engineersaustralia.org.au
Website: http//www.engineersaustralia.org.au

IEEE

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/

IET The Institution of Engineering and Technology

The **INSTITUTION OF ENGINEERING AND TECHNOLOGY (IET)** is an international organisation with over 150,000 members throughout the world who have joined together to promote the advancement of electrical and electronic science and engineering. The IET was formed in 2006 from two separate institutions: the Institution of Electrical Engineers (IEE) dating back to 1871 and the Institution of Incorporated Engineers, dating back to 1884. The IET publishes material on a wide range of related fields, with the ultimate aim of sharing and advancing knowledge to enhance people's lives around the world. The IET comprises of over 100 Professional Local Networks that exist all around the world that link students, industry and academia with a common interest, promote the importance of science, engineering and technology to the general public and provide opportunities for engineers to share and develop knowledge and network with each other. The South Australian and Northern Territory (SA & NT) Local Network is managed by a diverse and active group of volunteers, comprising of University students, engineering professionals, retired engineers and academia. Individuals are most welcome to join the local network and discover upcoming events. Additional details are available on the IET's local web page home page (see below). Local contact details: Ms. Sophie Ball, Honorary Secretary, IET SA & NT Local Network.

Email: sball@theiet.org
Website: www.theiet.org/sant