

IEEE SOUTH AUSTRALIA SECTION

2017 ANNUAL REPORT

SUBMITTED TO REGION 10

IEEE-SA SECTION 2017 CHAIR'S REPORT

Part A Section Summary

A.1 Executive Summary

In my first annual report, as Chair of IEEE South Australia Section, I would like to express my thanks to all the Executive committee members for their support and making it possible for the smooth functioning of the committee during this year. These include: Vice Chair –Sherry Randhawa, Treasurer – Morgan Smith, and Secretary – Anthony Milton.

I also would like to express my gratitude to all the Technical Chapter and Affinity Group Chairs and the members of the respective committees, as well as the leadership teams of our Student Branches.

This year our intent was to see that we support and re-invigorate YP and students branches in the section, so they re-engage, as they are the future of the section. At the beginning of my term we inherited an YP AG considering termination, and non-active student branch at University of South Australia. The section has made some significant steps this year to turn this around. We have been able to re-invigorate the YP AG where they have organised or jointly organised up close to 5x events this year, compared to none in 2016, and we have re-established a student branch leadership team at the University of South Australia, and hope in the coming years will become again an active student branch.

In 2017 the section supported delegates to attend both IEEE Australia Council ANZSCON 2017 and the IEEE Sections Congress.

SECTION EXECUTIVE COMMITTEE MEMBER LIST

| | | |
|---|------------|----------------------------|
| South Australia Section | Chair | Pina Dall'Armi-Stoks |
| | Vice-Chair | Sherry Randhawa |
| | Treasurer | Morgan Smith |
| | Secretary | Anthony Milton |
| WIE Affinity Group | Chair | Gretel Png |
| | Vice-Chair | Shela Cook |
| | Treasurer | Maria Guerrin |
| | Secretary | Victoria Stevens |
| Computer Society | Chair | Andrew McDonnell |
| | Vice-Chair | |
| | Treasurer | Ross Smith |
| | Secretary | Victor Stamatescu |
| CAES | Chair | Luke Rosenberg |
| | Vice-Chair | Fangpo He |
| | Treasurer | Michael Evans |
| | Secretary | Leigh Powis |
| C&SP | Chair | Brian Ng |
| | Treasurer | Ivan Lee |
| AP/MTT | Chair | Withawat Withayachumnankul |
| | Vice-Chair | Bevan Bates |
| | Treasurer | Bobby Yau |
| | Secretary | Shengjian Jammy Chen |
| Young Professionals | Chair | Marek Dziadosz-Findlay |
| | Vice-Chair | |
| | Treasurer | Anthony Milton |
| | Secretary | Scott Sleep |
| IET Retired Engineers Group | Chair | Harry Green |
| | Vice-Chair | Keith Kikkert |
| | Treasurer | Jim Emery |
| Ocean Engineering-Australia Council Joint Chapter | SA rep | Karl Sammut |
| Power & Energy Society | Chair | Wai-Kin Wong |
| | Vice-Chair | Mohammed Haque |
| | Treasurer | Athmi Jayawardena |
| | Secretary | Quazi Uddin |
| Web master | | Bobby Yau |
| Retired Engineers Liaison/Section History | | Michael Evans |
| Student Activity coordinator | | Brian Ng |
| University of Adelaide Student branch | | Michael Sadler |
| University of South Australia Student Branch | | |
| Flinders University Student Branch | | Shela Cook |

Our Section had a year full of high quality technical activities. In support our members and the local community IEEE SA Section and chapters had up to 51 x technical and professional activities during 2017 and held 7x Section meetings (including AGM).

| AP/MTT | PES | CAES | Computer | C&SP | YP | WIE | LMAG | Section JTP |
|---------------|------------|-------------|-----------------|-----------------|-----------|------------|-------------|--------------------|
| 8 | 5 | 5 | 4 | 3 | 4 | 4 | 7 | 10 |

The IEEE SA Section Committee met seven times in 2017 (February, April, June, August, August (International Registration meeting), October, November (Annual General Meeting (AGM)). The Section Committee members also maintained ongoing contact by email to deal with issues that could be handled by electronic means.

As part of the IEEE SA Section participation in the Joint Technical Program (JTP) Electrical, the IEEE SA Section hosted 2x of the 10 JTP technical meetings.

As SA Section Chair, Pina Dall'Armi-Stoks, attended the regular meetings of the IEEE Australia Council meetings in 2017, chaired by Zia Ahmed, in order to coordinate with other Australian Sections.

The SA Section Chair attended the Region 10 Section Chairs meeting in Chiba, Japan in March 2017 to meet the Region 10 leadership team, the IEEE Australia Council team, and IEEE Headquarters office bearers.

SA Section Chair also attended the ANZSCON 2017 and presented as part of the WIE session and moderated one of the WIE panel session. Pina also attended Sections Congress and moderated one of the Education session.

A.2 Financial Report

Our full Financial Report was submitted via NetSuite.

PART B - ORGANIZATIONAL ACTIVITIES

B.1 Membership Development Activities

Our Membership statistics for 2017 (SAMIEE as of 21/1/18) are shown in the table below.

| Section Name | IEEE Current Grade Description | Count of Members |
|--------------------------------------|--------------------------------|------------------|
| South Australia Section | Associate Member | 2 |
| | Fellow | 4 |
| | Graduate Student Member | 48 |
| | Life Fellow | 2 |
| | Life Member | 13 |
| | Life Senior | 5 |
| | Member | 355 |
| | Senior Member | 66 |
| | Student Member | 21 |
| | | 516 |
| South Australia Section Total | | 516 |

The Section overall has declined in size by 11 members from 2016, which when compared to a decline of 42 from 2015, is a good sign that the section is doing its best to maintain its membership numbers. However, more can be done to improve on membership numbers.

The decline is mostly related to members not renewing their membership. But this has been compensated by getting a few new members, for example the section had a slight increase in student membership this year. Overall, the section is moving in the right direction, though more can be done to encourage members renew their membership, get members more engaged to experience the benefits of IEEE membership and to get new members. Something for the section to work on in 2018.

The section in 2017 has also re-engaged with its members and we've had numerous members interested and submitting their application for senior member grade. From 2016 we have had up to 8x members elevated to senior member grade.

B.2 Chapter Activities

IEEE South Australia section has six active chapters: Computer, Communication/Signal Processing, Antenna Propagation/Microwave Theory & Technique, Control/Aerospace and Electronic Systems, Information Theory (SA/ACT/VIC) and Power Engineering Chapter.

In addition the Australia Council has Australia wide Instrumentation & Measurements Society (IMS) chapter and the Ocean Engineering Chapter.

A new petition has been submitted for the establishment of an Electromagnetic Society Chapter, as part of the South Australia Section.

The technical activities for each of the current chapters are shown in their respective AGM reports.

B.3 Students Activities

IEEE South Australia has three student branches at Adelaide University, Flinders University, and the University of South Australia. In order to encourage more student members, the Section has voted to introduce a Student Paper Competition for students from the three universities in South Australia. The winners of the competition will be awarded a monetary prize.

The Student Subject prize-winners for the IEEE South Australia Section 2017 Student Award for Excellence in Engineering with an electrical and/or electronics emphasis were presented to



Lachlan Bateman– (2017) -Adelaide University
Neville Soud Glumart (2017) - University of South Australia
Bryce Beaumont - (2017) -Flinders University

These awards were presented at the 2017 Section's DLD.



The Student Branches at The University of Adelaide, and Flinders University continued their high levels of activity. However, University of South Australia branch has been non-active for a few years, due to not finding students to lead it. However, this now has been addressed and we have students to re-establish the University of South Australia student branch. So hopefully we'll see more activity from the University of South Australia student branch.

Brian Ng was the Student Activities Coordinator of the SA Section in 2017, and has done a fantastic job in supporting the YP and student branches. Brian also represented the SA section on the judging panel for the Australia Council Student Paper Prizes.

B.4 Affinity Group Activities

South Australia Section has three Affinity Groups: Young Professionals (YP), Women in Engineering (WIE) and Life Members Affinity Group (LMAG). The reports for these Affinity Groups are included in their respective AGM reports.

B.5 Awards & Recognition Activities



In 2017 I introduced a Section's Chair Award to recognise an outstanding volunteer from our young members within the section. This year this award was presented to Shela Cook.

IEEE Outstanding Contribution and leadership to the SA section plaques were presented to Past Section Chairs, Dr Karl Sammut and Dr Mark Pszczel.



B.6 Other Organizational Activities

The Section Committee supported Pina Dall'Armi Stoks to attend the 2017 IEEE R10 meeting in Chiba, Japan. The trip was subsidised by Region 10.

B.7 IEEE Australia Council ANZSCON 2017

The Section Committee supported Shela Cook (SB), Michael Sadler (SB), Scott Sleep (YP) and Soumaya Jaber (WIE) to attend the 2017 IEEE Australia Council ANZSCON 2017. The section received a \$100 subsidy from the ANZSCON 2017 committee to support our 4th delegate to attend the Conference.

B.8 Sections Congress.

The Section Committee supported Shela Cook (SB), Michael Sadler (SB), Scott Sleep (YP) Soumaya Jaber (WIE) and Gretel Png (WIE and Pina Dall'Armi-Stoks (Chair) to attend the 2017 IEEE Sections Congress. Region 10 subsidised 50% for secondary delegates Scott Sleep (YP) and Gretel Png (WIE) and 100% primary delegate Pina Dall'Armi-Stoks.

Part C

C.1 Relationship with National Societies

The IEEE-SA Section has also a very strong collaboration with our professional colleagues in Engineers Australia, the Institution of Engineering and Technology (IET), and the Telecommunication Society of Australia (TSA) through the Joint Technical Program (JTP) and IET Retired Engineers Group. As part of the IEEE SA Section participation in the Joint

Technical Program (JTP) Electrical, the IEEE SA Section hosted two of the 10 JTP technical meetings and presentations held in 2017.

14th Feb 2017 Host TelSoc

IoT of Things Network Chris Wood B. Eng. with Hons in Electrical and Computer Systems, Chris has worked telecommunications industry at the beginning with Telecom Australia and later with Cable and Wireless with Hong Kong Telecom as systems architect, he has also started a company with UNI SA to develop and commercialise an industrial grade of augmented GPS system and in 2008 he co-founded Xped, an IoT technology platform for application layer. His talk will cover the new trend and direction of IoT and human interaction to the technology and the potential this platform can provide.

28th March 2017 Host IET

Site Visit: Biomedical- Associate Prof. John Costi Spinal implants and Flinders University Research labs site visit John will talk about spinal implants and Flinders University Research labs at the site visit by Prof. John Costi (Professor of Mechanical Engineering). Prof. Costi will also give a talk about computational and experimental biomechanical testing of bone in six degrees of freedom and site tour to Flinders University Biomechanical engineering laboratory at Tonsley (where the Mitsubishi factory used to be located).

18th April 2017 Host IEEE

Talk-A/P Keith Kikkert: “Towards a Renewable Electricity Supply: Opportunities, Threats & Requirements” Ad the cost of renewable energy is falling and for large scale installations the cost of wind farms and solar is now cheaper than the cost of installation of coal or gas generation. The cost of solar energy is falling more rapidly than wind so that large scale solar will be cheapest of all in the very near future. The difficulty with renewable energy is the short term variability. In SA there is often a 1 GW variation in wind power between windy day and a still day, so unless renewable energy can be stored or shifted around the country, the capacity of fossil fuel power generating capacity plant still needs to be close to the total maximum demand of SA. Consumer based battery storage will in the near future have realistic payback periods, which will accelerate their uptake. Such a large introduction of customer owned generating plant will dramatically change the average power demand but may not change the peak power demands significantly. By 2050, the UK, Germany and several other countries will only allow new electric passenger cars to be registered. Toyota will phase out petrol and diesel cars by 2050. If all cars are electric vehicles, the electric-power demand will double. These trends will cause a significant change in South Australia’s power generating mix, demands and economics. The presentation will discuss this and the steps that need to be taken to keep our lights on reliably.

16th May 2017 Host EA

Solar Power Presentation Sundrop Farms Port Augusta Plant – focusing on the Solar Thermal Plant ‘In 2010 we began operating Sundrop Farms’ first commercial greenhouse facility in South Australia. The greenhouse is situated at the top of the Spencer Gulf, near the city of Port Augusta. Given the lack of fresh water and the harsh climates, traditional horticulture isn’t feasible in this area. With the help of our proprietary technologies, we have been growing delicious, natural and high-quality produce using Southern Ocean seawater and sunlight since then. In 2014, we broke ground on a 20 hectare greenhouse which was completed in 2016. It uses a state-of-the-art solar tower to produce energy to power the plant growing systems and to heat and cool the greenhouses as required. It is 115m high and has 23,000 mirrors pointed

at it. Our water once again comes from the Spencer Gulf, and is desalinated using our cutting edge thermal desalination plant.’ <http://www.sundropfarms.com/facilities/>

20th June 2017 Host TelSoc

Site Visit: Red Flow – Battery Telecommunications Society – Organisers :(Marek) Robert Tait

18th July 2017 Host EA

““Uninhabited and Autonomous Surface Vessels”.” Dr Derek Rogers, FIEAust, CPEng Programme Manager and Engineering Manager, Centre of Excellence in Autonomous Vessels Maritime Systems, Saab Australia Pty Ltd. “While aerial and underwater drones are increasingly prevalent, surface vessels are only now emerging due to the complexity of dealing with the sea-air boundary. Drones offer advantages for the dull, dirty and dangerous but more importantly they open up new operational concepts. In this talk Professor Rogers who is responsible for Saab’s Centre of Excellence in Autonomous Vessels will discuss the various uses of uninhabited and autonomous surface vessels for defence, civil security and other applications along with regulatory, social and economic issues and the challenges of being a corporate entrepreneur or entrepreneur as it is better known.”

15th Aug 2017 Host IET

Site Visit: DPTI- Maged will confirm the site visit with Mohamed

IET – Emilio de Stefano and Maged Awadalla The visit will show DPTI's train simulator in use and how it is integrated into the driver training. This visit will provide an insight to what DPTI is currently working on and what can be achieved in the future. DPTI only requires a list of names of students who will visit by the end of March.

19th Sep 2017 Host IEEE

Site Visit: Adelaide Airport Limited Solar Installation – Adelaide Airport Ltd (AAL) engaged Solgen to complete installation of a 1.17MW solar PV system on the roof of its multi-level car park from November 2015 to March 2016. At this time it’s the largest rooftop solar installation in South Australia and the largest on an Australian airport. This project is central to AAL’s commitment to reducing its carbon footprint, as demonstrated by becoming the first airport in the region to receive Airport Carbon Accreditation from Airports Council International. The event comprises a tour of the solar installation together with presentations by Stephanie Bolt, AAL Sustainability Manager, and Patrick Greene, Director, The Energy Project.

17th Oct 2017 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.

21st Nov 2017 Host EA

Royal Australia Air force Wedgetail Technology Capability Presentation at EA – Organisers: Marcelo

C.2 Special Events

C.2.1 Student- Industry Networking Event



This year the section held a Student-Industry Networking Event on 31st August 2017, which was a joint event between the YP, WIE AGs and student branches. We had up to 75x people attend the event which included students, YP and WIE along with representatives from 9x companies/organisations.

The companies/organisations that attended included ElectraNet, ASC, BAE Systems, Defence Science Technology Group (DST), ARTC, Raytheon Australia, SAAB Australia, Consilium Technology and Cohda Wireless. Both students and industry representatives who attended the event indicated that the event was beneficial and would be interested to be part of it if it is held in future. Some students who attended indicated their interest to join IEEE.



C.2.2 2017 IEEE SA Section Distinguished Lecture

The IEEE SA section distinguished lecture was held on Tuesday, 17 October 2017. The Lecture was given by Professor Veena Sahajwalla FTSE, HonFIEAust ARC Georgina Sweet Laureate Fellow and Director of the Centre for Sustainable Materials Research and Technology (SMaRT). The lecture was on the topic, “*Reviving Waste in Green Manufacturing: Creating new solutions through Innovation and Partnerships*”



Abstract: Australian Research Council (ARC) Laureate Professor Veena Sahajwalla is revolutionising recycling science to unlock the wealth of resources embedded in the many complex wastes currently destined for landfill. As a materials scientist and engineer and founding Director of the Centre for Sustainable Materials Research and Technology (SMaRT) at the University of New South Wales, Sydney and the ARC Industrial Transformation Research Hub for green manufacturing, she is producing a new generation of green materials, products and resources made entirely, or primarily, from waste. Her internationally commercialised EAF ‘green’ steelmaking process, for example, is transforming millions of waste tyres as a partial replacement for coke. She has also pioneered a cost-effective microfactory concept to transform waste locally, such as e-waste, glass and plastics. By collaborating actively with industry, Professor Sahajwalla ensures research success is translated into real world environmental and economic benefits.

Biography: Prof Veena Sahajwalla became one of Australia’s best-known scientists and inventors through her regular appearances as a judge on the long-running ABC TV series ‘The New Inventors’. She continues her community engagement through regular school visits and public talks, her mentoring program for girls in science (Science 50:50) and regular media commentary. In 2016, Professor Sahajwalla was named one of Australia’s most innovative engineers and in 2015 she was listed as one of Australia’s Top 100 Most Influential Engineers and selected as an Honorary Fellow by Engineers Australia. Professor Sahajwalla was also the recipient of the ARC Georgina Sweet Australian Laureate Fellowship in 2014. She won the Australian Innovation Challenge (Overall Winner) as well as the GE Eco Innovation Award for Individual Excellence and a Banksia Award in 2012.



The DLD Committee, comprising Sherry Randhawa, Michael Sadler, Shela Cook, Morgan Smith, and Scott Sleep accomplished an outstanding job in organising a very successful event and arranging the menu and schedule for the evening. They deserve our thanks for having achieved an excellent outcome, especially given the constraints on the DLD budget.



C.3 Collaboration with other IEEE Sections

Collaboration with other neighbouring IEEE Sections has been handled through IEEE Australia Council. In addition we have collaborated on preparations for a joint Conference for IEEE RADAR 2018 (Brisbane 2018). Section is co-finance sponsor with IEEE QLD section for RADAR 2018. Pina Dall'Armi-Stoks is on the RADAR 2018 organising committee representing the section.

C.4 Problems ongoing/anticipated

The Section anticipates that finding young people to be active IEEE members and volunteers is one of the biggest challenges that our section is facing in the future. This problem is also faced by many other sections around the world. Young members are under increasing time pressure from their employers and finding time for IEEE volunteering is a challenge. Another major concern is that we need to develop new Chapters that are in-tune with new directions in the industry. However, a petition has been submitted this year to establish an Electromagnetic Compatibility Society Technical Chapter.

Two new interest groups, Robotics, and Biomedical Engineering have been proposed, to address these emerging areas and it will be the Chair's priority to seek the development of these groups in 2018.

C.5 Best Practices of your section

It would be an understatement to say that South Australia Section Distinguished Lecturer series is an important part of South Australia IEEE Section calendar providing not only opportunity for social interactions between members but also expanding their horizon beyond electrical and electronic engineering. The event is also a way of collaborating with our colleagues from the other engineering professional societies, namely IET, and Engineers Australia, many of whom attend the IEEE-SA DLD.

Part D - GOALS AND PLANS

D.1 Continuation of Project/Activity in Progress and Their Implementation Plans

In 2018, we plan to continue engaging and supporting YP and student branches by organising diverse and interesting events and activities, and continue development of new Joint Chapters in Robotics and Biomedical Engineering that can attract younger members to IEEE-SA section.

Dr Pina Dall'Armi-Stoks
Chair IEEE SA Section
9th February 2018
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