The SAIEE Nuclear Chapter Launch

Inaugural Conference
SAIEE Nuclear Chapter

Thursday 28 November 2019 - Thursday 28 November 2019

Sandton Convention Centre

Scientific Programme

T

Please go to the "**Timetable**" link on the Left Hand Menu

You can switch between **Session View** and **Detailed Contribution** View

The material is clickable to drill down into more detail.

You can download delegate materials (Slides etc)

SOUTH AFRICAN INSTITUTE OF ELECTRICAL ENGINEERS

The Launch and Workings of the SAIEE Nuclear Chapter

SAIEE National Conference, November 27 – 29, 2019

Sandton International Convention Centre

Johannesburg

We invite your participation in dialogue, networking, influence and leadership as we help South Africa charter its way through the next few decades.

Reflections on the National Economy

South Africa's economy is historically based on carbon energy that is primarily driven by the mining of natural resources. The carbon economy has sung the mantra of "world's lowest cost electricity for growth and prosperity". The carbon economy has served many generations of South Africans. Today, both the carbon and mining economies are facing severe headwinds and are struggling to hold onto existing jobs or to create new jobs. The national economy is in decline; unemployment, inequality and poverty are on the increase. The law of the jungle, is surfacing; gender-based violence, violence against children and crime in general, are on the increase.

Reflections on Energy

The Sun is the sole source of all energy. Energy is neither created nor destroyed. It is transformed from one form to another. The energy of the sun is available both in real time as in renewable energy and as in inventory of stored energy. The inventory of stored energy is best defined by the periodic table of elements; carbon, uranium and hydrogen are examples of stored energy. Each of the elements, real time renewable energy included, have boundary conditions for application. The best recommendation is to employ and embrace all the energy resources as per their boundary conditions. Together, all can move South Africa forward, create quality jobs, reduce inequality and push back on poverty.

Reflections on South Africa's Strengths in Nuclear Science, Technology and Engineering

South Africa has historically developed a well-established foundation of excellence in nuclear science, technology and engineering.

In the era pre-1994, South Africa was an active player amongst the global nuclear superpowers of the world. In the 1980's, the RSA–3 satellite launch vehicle began development as on intermediate range ballistic missile initiated by the perceived threat and international isolation of South Africa. The objective of the launch vehicle was to place a surveillance satellite of 330 kg into a 212km x 460km orbit around the earth. The original intended payloads for the launch vehicle were the uranium gun type atomic bombs. Seven of these weapons were built, each with a mass of about one metric ton, a diameter of 65cm and a length of 1,8m. Each device contained 55 kg of highly enriched uranium to produce a fission yield of 10-18kT. In 1989, a decision was made to renounce the nuclear weapons programme. Under international supervision, the facilities were dismantled and in September 1995, South Africa signed voluntarily, the Nuclear Non-Proliferation Treaty.

On the commercial front, South Africa boasts Africa's first and only large scale nuclear pressurized water reactors for electricity generation. South Africa will record, in 2024, four decades of successful twenty-four hour operations of the Koeberg Nuclear Power Station for periods of over 400 days, interrupted only for refueling and first pass maintenance inspections. Koeberg today continues to deliver the world's lowest cost base load electrical energy to the national economy.

Similar accolades have been gained by the application of nuclear science, technology and engineering in the medical faculty. South Africa continues to enjoy valuable foreign exchange earnings from our intellectual wealth in nuclear medicine.

With confidence, South Africa has the capacity and capability to grow a new economy in nuclear science, engineering and technology in support of the National Development Plan and National Economic Renaissance. The nuclear economy will go further and actively promote the next wave of industrialization that will be associated with the hydrogen economy and electric mobility.

This is our call and we invite your contribution of intellectual capital; both for and against the employment of the sun's stored energy of uranium. We do need the for and against intellectual capital contributions so that the proposals and solutions to be developed will be strong, robust and sustainable. For noting, the South African Institute of Electrical Engineers was established in 1909 and continues to grow from strength to strength.

Vision, Objective and Mission of the SAIEE Nuclear Research Chapter

As a first step, the SAIEE is promoting the launch and start of deep conversations on the uranium economy, in support of the emerging hydrogen economy and the existing carbon and renewable energy economies; all in contribution to the National Development Plan for a World Class South Africa. The launch theme is entitled, ***"Taking Stock of South Africa's Experiences in Nuclear***

Science, Engineering and Technology".

The Vision, Mission and Objective Statements for the SAIEE Nuclear Chapter is as follows:

Vision: To integrate and develop South Africa's Nuclear Science, Technology and Engineering Capabilities as Part Contribution to South Africa's National Development Plan.

Mission: To promote New Jobs, Sustain Existing Jobs and to contribute to Sustainable and Resilient National Economic Development

Objective: To promote Prosperity for All and Scientific Growth of the Country.

The launch and establishment of the chapter study sub-committees and working groups will take place at the SAIEE National Conference scheduled for 27-29 November 2019 in Johannesburg. The plans include linking the study sub-committees and working groups to our sister national and international institutes, such as SAIMechE, SAICE, SAIChemE, et al nationally and IEEE, Cigre, IET, IAEA, et al internationally. The SAIEE Conference is planned as a three-year package and plans include South Africa hosting an International Conference on Experiences in Nuclear Science, Technology and Engineering in 2021. Post the 2019 conference, all proceedings will be collated and published in two books; a coffee table edition for stakeholders and an academic edition for libraries.

Thank You

On behalf of the Council of the South African Institute of Electrical Engineers, we extend our gratitude and appreciation for your continued support and contribution to the voluntary workings of the Institute.

On hand, we have the following administrative support from our leadership and staff. We invite your enquiries, communications and ideas on how best we can all work together in supporting the National Development Plan and making South Africa World Class.

Non-Executive Council Oversight and Leadership : Past Presidents Professor Pat Naidoo and Stan Bridgens, Chair of the Power and Energy Section Ms Scebile Dube and Chair of Council Sub-Committee on Technology, Knowledge and Leadership Mr Mike Barker; email naidoop@uj.ac.za, bridgens34@gmail.com, dubeSP@eskom.co.za, mike@mikebarker.co.za

Incoming Chapter Chair and Secretariat : Mr Dave Nicholls, retired Chief Nuclear Officer and Pebble Bed Modular Reactor Developer, Eskom Holdings SOC Limited and Professor Simon Connell, Department of Mechanical Engineering Science, Faculty of Engineering and the Built Environment, University of Johannesburg; email nicholdr@iburst.co.za; shconnell@uj.ac.za

SAIEE Administration: CEO Mr Sicelo Xulu, COO Mr Leanetse Matutoane and Principal

Administrative Officer, Ms Gerda Geyer; email sicelo@saiee.org.za, leanetse@saiee.org.za, geyerg@saiee.org.za

Conference Secretariat: Ms Tamlynne Wilton on email, tamlynne@idna.co.za

The Conference Web Site: http://saiee-conference.co.za/

The Conference Programme is available on: http://saiee-conference.co.za/wp-content/uploads/2019/10/SAIEE-programme-D3.pdf

Thank you

Mr. George Debbo

President

Nuclear Chapter Launch

"Taking Stock of South Africa's Experiences in Nuclear Science, Engineering and Technology"