



THE
SOUTH AFRICAN
INSTITUTE FOR
AGRICULTURAL
ENGINEERS

NEWS '20

PRESIDENT'S MESSAGE

This is a very difficult message to compose. I know that all SAIAE members are feeling very vulnerable at this time..... you are not alone. For the first time in my memory, the world is focussed on one thing; sport, religious events and politics have taken a back seat to the realities of this global pandemic. Many of us have wondered whether the virus deserves the attention it has received, or whether the economic ramifications of our reactions will outweigh the gravity of the illness. Only time will tell.

I wish to formally welcome Mr James Mabadi and Mr Sarel de Wet to the SAIAE National Council. Mr Mabadi has taken over as Gauteng Branch Chair and Mr de Wet has taken over as the Free State Branch Chair. To date, they have both made meaningful contributions to Council and we welcome their continued involvement.

As can be expected, all our Branch Activities have been temporarily suspended until we receive further clarity from government regarding the Lockdown. You can expect your local Branch to keep you informed as things progress.

Our Biennial National Symposium, which is planned to take place between 1st to 3rd September 2020 in Tzaneen in Limpopo, is still proceeding for the moment and we will again keep you informed through our social media platforms on the status thereof. To those of you still wishing to submit abstracts, please send them urgently.

On behalf of the SAIAE Council, I would like you all to stay safe and healthy, and I look forward to seeing you all soon.

Warm regards, Pranesh Moodley

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SAIAE NEWSLETTER

1 BUSINESS MANAGER RESIGNATION

We wish to report that Ms Boeboe Neethling has resigned from the SAIAE, effective from 28 February 2020 to pursue other ventures.

We are very appreciative for all the hard work that Ms Neethling has done for the Institute over the last few years. We will miss her enthusiasm and the energy she brought to the Institute.

I would personally like to wish Ms Neethling the best of success in all her future endeavours.

2 SAIAE INVOICING

All members will have noticed that their invoices for the 2018/2019 year have finally been issued. On behalf of Council, I wish to formally apologise for the delay in getting these invoices finalised and sent out, however there have been issues with the Institute not being compliant with the requirements of the South African Revenue Service (SARS). This largely stemmed from an oversight in our bookkeeping and auditing over a number of years, and ultimately resulted in the Institute having a substantial tax liability with SARS. Together with our current bookkeeper, we are in the process of resolving this tax liability.

As a consequence, we have registered a new Non Profit Company (NPC) so that all business is conducted appropriately, going forward. To those who require it, we can now provide a valid Tax Clearance Certificate and we therefore urge

members to settle all outstanding fees. Thank you to those who have settled their accounts.

Members should also take note that invoices for the 2019/2020 year will be issued from June 2020 onwards. Should you have queries with any of the invoices, please send an email to admin@saiae.co.za.

3 MEMBER PASSING

It was with great sadness that we received the news of Mr Mendel Eloff's passing on 06 March 2020.

Mendel (55) was the Managing Director of MESCA Agri Engineers in Pretoria and was also formerly the Managing Director of EVN Africa Consulting Services in Polokwane. As a Fellow of the Institute, Mendel had over 30 years of extensive experience in the design and construction of agricultural and civil engineering developments.

Our sincere condolences go out to his family and colleagues.

4 NEW SAIAE WEBSITE AND SOCIAL MEDIA PLATFORMS

The SAIAE website and social media pages are being updated and modernised. Please keep up to date and engage on our Facebook (facebook.com/1964SAIAE) and LinkedIn pages (linkedin.com/company/saiae).

To submit articles and content, email info@saiae.co.za



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SAIAE STANDARDS AND NORMS



The purpose of this portfolio is to archive and make available current norms and standards to members as well as to develop norms and standards that can be used by design engineers working in the field of Agricultural Engineering. The objectives of developing updated norms and standards are to:

- Give substance to Clause 1.2.6 in the SAIAE Constitution whose aim is “The establishment of a body that can speak with authority on Agricultural Engineering issues in South Africa and that may also stipulate standards, norms and codes or make recommendations in this regard”.
- Acknowledge recent approaches to Agricultural Engineering design. The revised guidelines should acknowledge new concepts and give guidance to users on the appropriateness and potential application of various approaches.
- Acknowledge recent innovation and technological progress. The new guidelines should not only incorporate established practices and emerging good practices, but also cutting-edge ideas and recent innovative processes and technologies e.g. alternative or innovative materials and construction methods and/or technologies.
- Ensure that technical information, standards and costs (where applicable) are up to date.
- Respond to user requirements and ensure that the guidelines developed are practical, appropriate and user friendly.

The above is necessary given the current lack of mentors for young graduate engineers in the workplace and to also capture expertise of experienced engineers before they retire.

As reported previously to SAIAE members, the current inventory and archive can be accessed from the SAIAE website through the “Standards and Norms” link. Where possible, links are provided to original documents in electronic format or printed documents have been scanned and made available through links on the website. In cases where the original or printed documents are not available, links to the appropriate website are provided with information on how to access the document. Feedback on the current inventory and archive are welcomed!

The current Council initiative is to determine fields for which norms, standards or guidelines are required, or are in need of updating. SAIAE members are therefore requested to send any suggestions to Andrew Butler (africancrake@gmail.com) and Jeff Smithers (Smithers@ukzn.ac.za). All responses will be greatly appreciated!

Warm SAIAE Greetings!
Prof Jeff Smithers and Mr Andrew Butler

UNIVERSITY OF PRETORIA

Article by:
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AgriCAREERConnect



The South African Institute of Agricultural Engineers (SAIAE) was invited to be part of the University of Pretoria (UP) AgriCareerConnect Day that was held on the 5th of September 2019 at Future Africa, UP Proefplaas (Experimental Farm). SAIAE was invited to advertise Agricultural Engineering as a possible career option for high school pupils that were expected to give ear on that day. The aim was to market the spectrum of Agricultural Engineering projects and job opportunities in South Africa.

ACTIVITIES

A team of Agricultural Engineers (Z Mathonsi, N Mofokeng, N Ziqubu, S Miya lead by M Mabadi (Pr.Eng)) from DAFF: Directorate Infrastructure Support (DIS) and B Neethling from SAIAE met learners from various schools and students from the University of Pretoria. The following points were discussed with the students and learners about Agricultural Engineering:

- Detailed explanation of Agricultural Engineering.
- The requirements of becoming an Agricultural Engineer.
- Universities that offers Agricultural Engineering.
- Job opportunities and work environment.
- The demand for Agricultural Engineers in South Africa.



Students and learners were given pamphlets that further elaborate what agricultural engineering entails. It was good to see students changing their attitude towards agriculture as a whole. Most learners and students did not even know that Agricultural Engineering existed.

SUCCESSSES AND CHALLENGES

According to our register it shows that the number of people that the SAIAE representatives interacted with totalled to just less than 90 people, far fewer than what had been anticipated. Another challenge that the team encountered was that amongst the visitors very few were high school students, the majority of visitors were students from the University of Pretoria who are already pursuing their postgrad studies. Upon engaging with the high school students and teachers it was established that the poor attendance was due to the fact that the invitation only allowed for two top students per school.

However, it should be noted that there was a great enthusiasm from both high school students and teachers after they learned about the existence of Agricultural Engineering. Some teachers even went as far as proposing that it would be better if SAIAE was to do high school visits in order for students to get first-hand information about Agricultural engineering.



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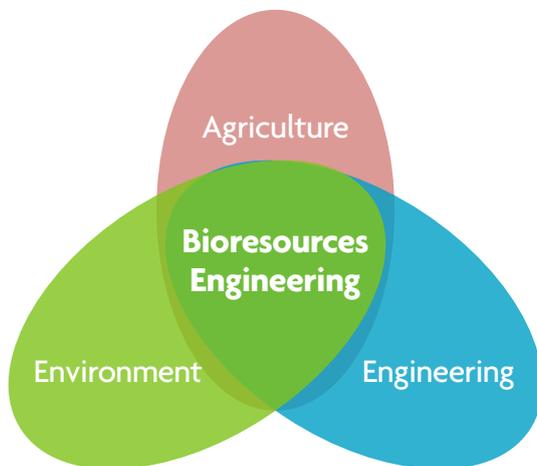
UNIVERSITY OF PRETORIA AgriCAREERConnect **Cont.**

SUGGESTIONS AND RECOMMENDATIONS

It is recommended that SAIAE should visit Schools and Companies to educate students and employers about Agricultural Engineering.

SAIAE pamphlets must include pictures and information relevant to all Agricultural Engineering projects/careers such as:

- Irrigation (Efficient watering of plants).
- Food-fiber technology and energy production system.
- Agricultural and Rural Water Resource Systems.
- Use of Technology to Optimise Food Production, and
- Utilise Sustainable Sources of Energy.



COMPACTLY

“Life on earth needs a sustainable supply of food, water and energy in order to feed and sustain a growing population under a variable and changing climate.

Bioresources/Agricultural Engineers utilise technology to connect the living world of plants, soil, and animals with the technology of engineering (systems, structures and machines)”

2019 AGM and UKZN Bioresources Engineering Student Design Presentations & Prize Giving Ceremony

The SAIAE-KZN branch hosted their AGM together with UKZN’s Bioresources Engineering Student Design Presentations and Prize Giving Ceremony on 16 October 2019 at UKZN’s Life Sciences Campus.

The event showcased six innovative designs of a cassava peeling machine, a mushroom slicing machine, a maize shelling machine, an aeroponic system, a tractor engine performance measuring system and a variable rate irrigation system. This year the credit allocation for the final year design module increased from 24 to 32 credits. The increased credit allocation was necessary as students spent a substantial amount of time on their projects. The expectation of the change in credit allocation also aims to ensure ongoing improved quality and professionalism from students.

The best final year design project for 2019 was awarded to the design, construction and evaluation of a maize shelling machine by Bhothane Mphumelelo Madonsela, Itumeleng Emsy Manailana and Sandile Sifiso Dladla. The students were awarded the SAIAE shield and a prize sponsored by MBB Consulting Engineers.

In order to incentivise and recognise good performance by undergraduate students, SAIAE made awards to the following Agricultural Engineering students based on their academic performance in 2018:

- 1st year - Ashley Zimu (certificate and cash sponsored by SAIAE).
- 2nd year - Malibongwe Ncoshe (certificate and cash sponsored by SAIAE).
- 3rd year - Nosipho Dlamini (certificate and cash sponsored by SAIAE).

A SAIAE Bronze medal for the best final year Agricultural Engineering student at UKZN in 2018 was awarded to Sarah Pickford. SAIAE silver medals were awarded to the following students who graduated in 2019 with PhD degrees in Agricultural Engineering:

- Dr David John Clark
- Dr Edwin Kimutai Kanda
- Dr Siphosibanda
- Dr Toyin Isiaka Busari

Agricultural Engineering Students Embracing International Perspectives

Students and members of staff from the University of Illinois have been visiting UKZN on a Study-Abroad Programme initiated by Prof Alan Hansen of the University of Illinois (previously from UKZN). This is a biennial event which started in 2004. The aim of these visits is to engage and collaborate with final year Agricultural Engineering students at UKZN and is focussed on the design and construction of their final year design project.

Collaboration started early in the year with communication between the students from the two institutions and culminated with students from the USA spending three weeks in south Africa during July and working on the projects. This year twelve students, led by Prof Paul Davidson and Prof Michelle Green visited us from the University of Illinois. As part of the programme and to meet the OHS requirements, the USA students attended and passed a workshop course that all UKZN students have taken in order to proceed with the construction of their projects.

The benefit of these collaboration visits is highlighted by the following comments from UKZN students: *“They were really helpful in an academic and personal manner. They reviewed our theoretical report and contributed to the construction and the final report of this section.*

During their visit, the construction of the prototype moved at a good pace because of us working together in a professional and efficient manner. We would meet with them (UI team) regularly the night before to discuss the tasks that could be completed with the available materials we had”.

As in previous visits from students, working on collaborative design projects promoted an international perspective in the students from the USA while the UKZN students benefited by collaborating with an expanded design team and interaction with students from different backgrounds and academic systems.



Design project teams with UKZN and University of Illinois students

Global Partnerships through the Global Academy Programme

On the 6-7th June 2019, the Bioresource Engineering at UKZN hosted a delegation of academics from the University of Illinois at Urbana-Champaign, as part of their Global Academy programme. The purpose of this visit was to create a robust network of vital, strategic, global partnerships with a goal of jointly pursuing solutions for the Grand Challenges facing humanity. Bioresources Engineering at UKZN was paired with Prof. Tony Grift, from the Department of

Agricultural and Biological Engineering at the University of Illinois. Various research projects and collaborative opportunities were discussed, and plans were laid for future collaboration. Overall it was a very good experience, with positive comments from all participants.

Workshop on Best Teaching Practices to Improve Student Learning: Lessons from University of Illinois

On the 23rd July 2019, the Bioresource Engineering at UKZN hosted Professors Prasanta . Kalita and Alan Hansen, both from the University of Illinois. The purpose of this visit was to provide a teaching workshop with the theme of “Best Teaching Practices to Improve Student Learning”. There was a lot of lively discussion between participants and presenters. Through this workshop we discovered that although we live in very different countries, with often quite different challenges, there are also a number of similarities and parallels. Overall it was a very reflective and informative workshop, with some UKZN staff members already implementing certain concepts in their lectures.

Outcomes from the Agricultural Industry Advisory Board Meeting

Bioresource Engineering at UKZN hold annual meetings with an Industry Advisory Board (IAB). The composition of the IAB includes senior professionals from industry, leadership from the School of Engineering, and academics from Agricultural Engineering at UKZN. The objectives of the IAB are to:

- (i) To serve as a link between industry and Agricultural Engineering at UKZN.
- (ii) To identify emerging areas and trends.
- (iii) To provide feedback to industry on academic programmes offered by UKZN.
- (iv) To obtain input from industry on both the Agricultural Engineering programmes offered by UKZN and on the preparedness of graduates from Agricultural Engineering at UKZN to meet the needs of industry.
- (v) To investigate mutual problems in industry and in Agricultural Engineering at UKZN.

- (vi) To foster collaboration between industry and Agricultural Engineering at UKZN, including identification of new areas of research and focus on existing research strengths.
- (vii) To support and advise Agricultural Engineering at UKZN on matters relating to changes within and future developments in industry

At the IAB held on 17th October 2019, Professor Tilahun Seyoum Workneh, presented an overview of Bioresources Engineering Programme and highlighted accreditation of the Agricultural Engineering by ECSA for the period 2019 – 2023, changes to the Agricultural Engineering programme and accolades received by Agricultural Engineering staff at UKZN. This was followed by discussions on graduate preparedness and feedback from industry on opportunities and threats to the programme, and recruitment and marketing. Strong support and positive feedback was obtained from the industry representative on the scope of the final year design project and valuable other industry professional perspectives were obtained on the quality of graduates and suggestions on how the quality meet industry standards. The meeting was a success with industry representatives emphasising the need for increased visibility of the Agricultural Engineering profession in industry and the willingness to participate and engage in the development of future Agricultural Engineers.



UKZN STAFF UPDATES

Inaugural Lecture: Professor Tilahun Seyoum Workneh

Professor Workneh, in his inaugural Professorial lecture showed the development of multidisciplinary research into innovative post-harvest technologies for the horticultural value chain. This included showing recent innovations in evaporative cooling and packaging technologies and their potential for the reducing host harvest losses in Africa. His conclusion was that “Integrated, innovative postharvest technologies are capable of reducing losses in horticultural crops”. At the end of the lecture, The DVC, Professor Albert Modi welcomed him to the UKZN professoriate. We all congratulate Professor Workneh on achieving this academic milestone in his academic career.



Professor Tilahun Seyoum Workneh (centre) with family and colleagues.

Accolades To Bioresources Engineering Staff At UKZN

AWARDS:

Congratulations to Professor Tilahun Seyoum Workneh and Professor Jeff Smithers who received Research Excellence awards for 2018 by the School of Engineering at UKZN. Prof Workneh also received recognition for being ranked in the top 30 academics

at UZKN for research output in 2018. Congratulations to Dr Aidan Senzanje who was awarded the Best Lecture in Bioresources Engineering in 2019 by the School of Engineering.



UKZN STAFF UPDATES CONT.

New Agricultural Engineering Staff

Agricultural Engineering welcomed Ms. Khuthadzo Mugodo in August 2019 who is appointed as a lecturer under the new Generation of Academics Programme (nGAP). Ms. Mugodo has a masters degree in Agricultural Engineering from the University of KwaZulu-Natal and is currently pursuing her doctoral degree whilst conducting her lectureship through the programme.



SAIAE LEADING AFROAGENG PROJECTS

By: Prof Jeff Smithers

SAIAE as the lead organization, in collaboration with the AfroAgEng project team partners from the Pan African Society for Agricultural Engineering (PASAE), the Institute of Agricultural Engineering (IAgrE) in the UK and Harper Adams University in the UK, successfully completed a one year project on “Planning for the Growth of Agricultural Engineering in Africa by Supporting the Establishment of AfroAgEng” in January 2019. This project was funded by The Royal Academy of Engineers (RAENG) in the UK, in partnership with the Global Challenges Research Fund (GCRF). This project was supported under the GCRF Africa Catalyst programme which aims to strengthen professional engineering bodies in sub-Saharan Africa so that they can effectively promote the profession, share best practice and increase local engineering capacity, to help drive development.

The same AfroAgEng project team, led by SAIAE, submitted a follow on project proposal to the RAENG titled “Growing Agricultural Engineering in Africa: Supporting the Operations and Implementation of the Strategic Plan for AfroAgEng”. This proposal was successful and will run from 1 October 2019 to 30 April 2021. The main aim of the project is to support the growth of Agricultural Engineering in African by supporting the PASAE Council with:

- The implementation of the Strategic Plan for AfroAgEng, which was developed from the PASAE workshop held at the 2018 SAIAE Symposium held in Salt Rock in KwaZulu-Natal.
- The operations of the PASAE Council.
- The administration of PASAE.

Given the above initiatives, the SAIAE Council has included the AfroAgEng projects as one of its strategic portfolios.