THE SOUTH AFRICAN INSTITUTE FOR AGRICULTURAL ENGINEERS

NEWS'20

President's message

I take pride and pleasure in addressing this, our first Newsletter that celebrates Women's month. As a husband, and a father to twin girls, I realise the importance of highlighting issues such as Gender Based Violence and workplace harassment, which are stark realities that we must all acknowledge and confront.

While there is still much work to be done by each one of us to promote a society of equality, we would also like to celebrate the successes in our industry.

I am pleased to note that over the 5 years, 38% of new Agricultural Engineering graduates have been women. This is a promising statistic, and we would like to encourage employers to take note of this, ensuring that the same trend prevails higher up in this historically male-dominated industry.

Lastly but not limited to, SAIAE National has had two female engineers on the national council since 2017, with the aim to continue to embrace the value that women contribute to our industry. This edition of our newsletter highlights a number of women in the Agricultural Engineering field and it is by no means an exhaustive list of the many women making great contributions to our industry.

To all our women members, I take this opportunity to thank you for the vital contributions you make, and I encourage feedback from all SAIAE members regarding any improvements that can be made by the association and industry as a whole. We all need to play our part!

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PRESIDENT'S MESSAGE CONTD.

At the time of writing, it's been almost five months since the first COVID 19 case was confirmed in South Africa and we all know that the world has changed. A number of us are working from home and more and more activities are getting done virtually. It is sad to acknowledge that our economy has taken a hard knock, jobs have been lost, and poverty has worsened. This is now the time for us as Agricultural Engineers to show up, be innovative and come up with ideas and solutions to assist our commercial and small-scale farmers to remain afloat, sustainable and to keep and create more jobs.

I am excited to welcome Mrs. Chikondi Gurira in her new role as SAIAE Business Manager. Chikondi, who is no stranger to SAIAE initiatives and activities at both Branch and National Council level, takes over from Ms. Boeboe Neethling. Chikondi is a qualified Agricultural Engineer with significant experience in the Consulting Engineering field and is also responsible for upgrading our website and keeping our social media handles updated. She currently hosts and arranges all our online activities (webinars) and is doing a sterling job thus far. Please refer to the full article on her below.

As a result, I also wish to announce that Mr Andrew Butler will take over as caretaker Chairperson for the KZN Branch from Mrs Chikondi Gurira with immediate effect. Andrew is familiar with the activities of the institute, so please join me in welcoming him to this additional role.

I am pleased to report that the series of online webinars that have been arranged are being well attended, and that the feedback received thus far has been positive. I wish to formally acknowledge Mr Sarel de Wet and Mr Louis Lagrange for piloting this in the Free State Branch. As a consequence, all virtual Branch Meetings will now become National events. Our current license agreement with Zoom allows up to 100 participants for these events, so please honour your positive RSVPs, as failure to attend will deny another member the opportunity.

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.

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MEET SAIAE'S NEW BUSINESS MANAGER

Chikondi Gurira (née Dlamini) trained as an Agricultural Engineer at the University of KwaZulu Natal, South Africa. She managed a consulting engineering office for MESCA Agri Engineers (previously EVN Africa Consulting Services, Pietermaritzburg Branch), where she designed, and project managed the construction of civil, structural and agricultural infrastructure across the province of KwaZulu Natal (KZN) until March 2020.

Equipped with an ESTP personality, a lineage of multiple Southern African countries and the unique perspective of a female immigrant in South Africa's male-dominated agricultural and engineering industries. Chikondi has managed to thrive in her industry while delivering services to government and private sector clients.

She has invested over 7 years of service promoting interactions between student and practicing engineers, through the South African Institute of Agricultural Engineers (SAIAE). She was the first Black African Female to sit on the National Council of SAIAE and was previously chairperson of its KZN Provincial Branch, after joining the committee as a Student Representative in December 2018.

Having followed in her Agricultural Engineer father's footsteps, she has worked on various types of projects that require different engineering principles. Her work involved creating specifications for agricultural machinery and equipment, design irrigation and water supply schemes along with structures for crop storage, animal handling, agro-processing, and the supervision of the associated construction processes.

Her projects have included dairy farm steel structures and water pipelines, sawmill steel structures, boreholes, dip tanks and some small agro-processing facilities. She assisted clients with sourcing contractors and overseeing agricultural projects from concept feasibility to completion.

Chikondi has always had an interest in public awareness of Agricultural Engineering and Agriculture in general as a sector with the potential to transform society. Her keen interest for public speaking and the promotion of the Agricultural Engineering industry has been demonstrated on the stages of SAIAE's last two Biennial Symposiums, UKZN's Agricultural Engineering Students' Induction ceremonies and more recently the stage of Durban's first TEDx talk.

Chikondi can be contacted on the SAIAE email: info@saiae.co.za.

"Be willing to do more than the minimum required, wherever you are. Learn more, ask more questions and engage people around you because mentors can be found in the most unusual spaces. If you want to become a leader in any specific industry, find a way to learn one skill that is critical in that area, don't wait for someone to hand it to you" (An excerpt from Chikondi's Food For Mzansi Interview) https://bit.ly/3jwWRVM

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FEATURE – KHUTHADZO MUGODO

NEW GENERATION OF ACADEMICS PROGRAMME (NGAP) LECTURER AT UKZN

The first time I heard of Agricultural Engineering, I was sitting on the front porch of my aunt's house, in the dusty village of Tshitereke in Limpopo. Little did I know that it was going to be my field of choice and that it would have taken me in the direction I am in today.

I vividly recall how my friends would laugh at how Agricultural Engineering students, would have to walk a good 10 minutes from the Civil Engineering Centenary Building to UKZN's Mechanical Engineering building of Howard College campus. The insistent question would always be "what degree are you actually doing?". To be honest, at the time, with the diversity of modules, I was also not fully aware of what the degree was about, or why I was sitting in on Electronics Engineering classes.

My understanding of the discipline was broadened when I started doing voluntary work for my compulsory vacation work portfolio, and the company ended up absorbing me into their Professional Development Program. They offered me sponsorship from my third-year at UKZN. I was employed as a junior researcher from 2013, and that is where I was exposed fully to the diversity of the field and its essence in the South African Agricultural sector.

I was given the opportunity to pave a path for myself, as I was in the Agro-processing, Renewable Energy and Agricultural Infrastructure Division. It was very interesting as I was involved in a biogas research project and sat in platforms which were advocating for renewable energy whilst also being part of a poultry construction project. I later started to understand the extent of the diversity of the Agricultural Engineering field and its intra- and inter-disciplinary nature. With time, I started narrowing down my interests and developed a passion for the Agro-processing sector, as I interacted with farmers and several stakeholders in the various Provinces in South Africa.

I then noticed the limited resources and scarcity of technology advancement relevant to the South African Agricultural sector to meet the current conditions, including those of food processing and preservation. For this reason I decided to advance my research skills and pursue my Master's degree. I learnt early on my career that the Agricultural Engineering discipline requires a critical thinker; it taught me decision-making skills, which I find very useful in my personal life as well.

This was advantageous for advancing my career, to the extent that I have collaborated on project initiatives with several Agricultural disciplines. For example, for my PhD project, I am collaborating with experts in food science and plant breeding, where we aim to evaluate and develop an efficient drying technology and produce economically feasible, energy-efficient highly nutritious OFSP chips that can be milled into flour for food applications. In my journey as an Agricultural Engineer, I have realised the essence of the discipline and its value to the Agricultural landscape of the country and the world as a whole.

FEATURE – KHUTHADZO MUGODO contd.

Getting awarded opportunities such as the Orange Knowledge Program scholarship and the Hubert Humphrey fellowship in 2019 gave me an essence of the relevance of the discipline and the work I am doing. At present, I am proud to be a youngster in the academic space and be part of the advancements of the skills of the young Agricultural Engineers. Furthermore, I am most enthusiastic when I add value and impart my experience and lessons learnt thus far.

Although the journey has not been an easy one, as I have failed many times, and I have been in a place where I was not confident of my degree choice. In the end, throughout all those stages, I have learnt to be content with my decision making, and that as a woman I have a lot to offer, I am happy that I found a career path which gives me gratification. Besides that, I have found that consistency, communication and an open mind have been useful in my journey as an Agricultural Engineer.

Poultry Construction Project

A day in the lab – Khuthadzo Mugodo

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FEATURE – THANDEKA MVELASE, PrEng

BULK WATER SUPPLY ENGINEER TSGRO FARMING SERVICES (UNDER RCL FOODS, MALELANE)

Thandeka is a registered Professional Agriculture Engineer who graduated from the University of KwaZulu-Natal in the year 2008. She is also an engineering mentor and a life coach specialising in career coaching, where she assists people with career development and changes. She has 11 years of experience working in the consulting engineering, government, and sugarcane sectors. Thandeka is passionate about transforming, changing and moving people forward towards a better future.

In 2007, Thandeka joined MBB Consulting Engineers (PMB Office) as a student and in 2009 she joined MBB as an engineer in training. During her time at MBB she was involved in a variety of projects including floodlines, design of farm dams, implementation of irrigation projects, vegetable and cut-flower tunnels as well as animal handling facilities and structures. During her time at MBB she was involved with many government and community projects, which allowed her to develop her leadership skills as well as project management skills.

In 2014, she decided to join the KZN Department of Agriculture where she worked as a Candidate Engineer. Thandeka was mainly involved in the development, design and implementation of water related projects such as irrigation, dams, canals and animal handling facilities. While working for the department, she got the opportunity to manage the implementation of the irrigation projects within the KZN province. She was also offered the opportunity to be a member of the Department's bid specification committee and a chairperson for the recruitment of engineering interns. This experience drove Thandeka to pursue a management role.

In 2018, Thandeka joined TsGro Farming Services (under RCL Foods, Malelane) as their Bulk Water Supply Engineer. Her role in this position is to manage the delivery of Bulk Water Supply Services to Small Scale Sugarcane Growers in the Nkomazi area. The focus of the Bulk Water Supply programme is to repair, operate, maintain and secure the grower's bulk water irrigation infrastructure for approximately 6000 ha. The Nkomazi SSG area (6000 ha) is farmed by approximately 1 200 farmers who are grouped into 26 projects. The main irrigation system used in these projects is the dragline system, followed by centre pivots, as well as surface and sub-surface drip irrigation systems. The infrastructure serviced through the programme is from the suction pipe to the field edge of the farmers plot and excludes the infield infrastructure. The infrastructure includes suction pipes, pumps, motors, valves, electrical panels, delivery pipelines and cluster valves.

This role has allowed Thandeka to wake up every day to fulfil her passion and purpose of serving and empowering small-scale farmers. This role allows her to drive sustainable irrigation practices among the farmers, which in return assists the farmers to improve production standards, prevent infrastructure breakdowns and maximises profits.

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FEATURE – ROBYN JOHNSON

AGRICULTURAL ENGINEER MBB CONSULTING ENGINEERS (PMB)

Robyn graduated as an Agricultural Engineer (Cum Laude) in 2013. She continued her studies further, obtaining an MScEng in the fields of hydrology and soil conservation. Robyn joined MBB Consulting Engineers (PMB) full-time in March 2016, having established a close relationship through many years of vacation work there.

At MBB, Robyn has been involved in projects across a wide range of interests, including dam design, irrigation design and agricultural drainage projects. Further along the agricultural supply chain, Robyn has also been involved in the value-adding aspects of agriculture, such as produce packhouses, food-processing facilities, dairies and abattoirs. She also has a keen interest in water resources, getting involved in both the hydrological analysis and legislative aspects of these projects. Being a relatively small company, working at MBB has allowed Robyn to develop a diverse range of skills, such as 3D CAD modelling, as well as project management, tender documentation, specifications and bills of quantities.

The consulting working environment often allows engineers a chance to escape the office, visiting a variety of sites and meeting diverse clients. Days spent working in the outdoors are particularly rewarding and an opportunity to join a dam safety inspection or construction site visit is never turned down. Robyn spent several weeks in Tanzania last year, assessing drainage infrastructure on a large agricultural estate – a highlight of her career thus far. This was a particularly rewarding project including many weeks of demanding manual work, measuring structures in the field, together with detailed desktop modelling and creative thinking, for the overall improvement of the system. Being an agricultural project, all designs had to be environmentally sensible and economical, taking risk of failure, cost allowances and operational constraints into the final solution.

Robyn is particularly interested in the integration of new technologies with agriculture to improve efficiencies with limited resources. The future of food production lies in the hands of young agricultural scientists and engineers. This is an exciting time to be involved in agriculture!

Dam Safety Evaluations are always a good day out!

Assessing drains in Tanzania

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FEATURE – TUMISO NGOEPE

AGRICULTURAL ENGINEER LIMPOPO DEPARTMENT OF AGRICULTURE

I studied a BSc Engineering (Agricultural) at the University of KwaZulu Natal and completed in 2010. After completion, I worked as a student Engineer for Vela VKE Consulting Engineers for 6 months, before joining the Limpopo Department of Agriculture in May 2011.

My journey as an agricultural engineer has been like a rainbow as I have managed to tap into most spectrums of our 'dynamic' career. I have worked on irrigation projects; farm structures (packhouse, packaging shed, ablution facilities, piggery, poultry houses, greenhouse, shade net structures, storage shed, *etc.*) along with animal handling facilities and aquaculture dams.

In the early years of my career, I was seconded as an engineering representative for the implementation of Strydkraal Irrigation Scheme, which comprised of 9 centre pivots, with a total coverage of 300 ha. My love for water projects has since grown from this experience. I was further seconded for the construction of 50 sow poultry units for Malete Piggery and for the construction of 7 x 1 000 bird poultry houses. Working with professional engineers from so early in my career gave me a strong foundation. Recently, I designed a drip irrigation system for Steelportdrift Irrigation Scheme (68 ha). The one project that has been at the centre of my career is Rahlagane Table Grapes. I designed a drainage system to solve their waterlogging problems over 3ha. Alongside this, I designed their packhouse complete with ablution facilities and, a storage shed as well as the rehabilitation of their drip irrigation system and shade net. The project was then accredited to export their table grapes to Europe.

I also designed and managed a contract for the rehabilitation of 4 x 40 000 bird Environmentally Controlled Poultry Houses for Sekhukhune district. I worked on several projects for the Tompi Seleka College of Agriculture. My highlights at the college were the design and contract management for the rehabilitation of aquaculture dams; a concrete lined water supply canal; the construction of the greenhouse; and the construction of paved access roads. The next project I am excited to carry out at the college is the rehabilitation of a 40.5 ha irrigation system including, centre pivot (10.6 ha), floppy irrigation (8.3 ha), sprinkler (4.8 ha), drip (14.8 ha) and flood (2 ha) irrigation complete with shade net structures for grapes and citrus, a balancing dam and pump house.

My professional experience has been nothing short of exciting. I had the best mentor, Mr Tinomudashe Dube, from whom I learnt so much. Being a woman in the engineering field can be challenging however, I appreciate challenges, as they help one to grow as an individual. I have also had my fair share of being referred to as "Mr." in most of my communiques, which I eventually embraced. While also meeting some people, who would undermine you, as you are 'lady' engineer. This has not derailed me. Rather I know that I must always put my best foot forward and equip myself with knowledge, as you always need to prove your capabilities as an engineer. I have found that one needs to be strong willed, focused and very firm in their decisions, not forgetting to always leave a mark. As agricultural engineers have beautiful footprints we have to leave, in the lands of our farmers, and I cannot wait to leave more.

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FEATURE – SAMANTHA MOODLEY, PrEng

AGRICULTURAL ENGINEER DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM

Samantha Moodley graduated as an Agricultural Engineer from the University of KwaZulu-Natal (UKZN) and has also completed a Masters degree in Engineering at UKZN. She has more than ten years of experience and is registered as a Professional Engineer with the Engineering Council of South Africa (ECSA). She is passionate about helping people and making a positive difference in people's lives. She strategically selected her career and is an analytical thinker able to review problems from various angles to ensure that the most suitable solutions are adopted.

She enjoys the diversity of Agricultural Engineering profession and has worked on a variety of projects. By being strong and determined she has earned respect from her colleagues and demonstrated that there are no glass ceilings for female engineers!.

Her Masters study was focussed on improving the logistics and efficiency of loading sugarcane for transportation. The outcome of the study involved the creation of a training DVD and which has had a positive impact on the South African sugar industry.

Upon completion of her Masters degree, she commenced work for a well-established Civil and Environmental consulting company for 5 years. Here she quickly gained experience and skills. Although this company did not specialize in working in the agricultural field, her drive and perseverance to pursue Agricultural Engineering related work contributed to the creation of a new section within the company. She managed projects and resources within a short time after joining the company and her competence and leadership skills were demonstrated by heading task teams for the implementation of large agricultural projects, such as large irrigation schemes, animal infrastructure and stock watering farm dams.

Samantha is committed to giving back to the profession which has afforded her many opportunities and is contributing to the growth of the profession and has been an active member of the KwaZulu-Natal branch committee of the South African Institute of Agricultural Engineers (SAIAE), is currently the Chairperson of the Western Cape SAIAE branch committee and serves on the SAIAE National Council.

Her work experience has included design work, construction administration, project management, client liaison and project procurement. Given her passion for helping others and the development of the country, she took moved to Cape Town in 2017 and took up a position in the Department of Rural Development in their Rural Infrastructural team. Using her technical and management expertise, and experience gained as a consulting engineer, Samantha is assisting in creating systems to ensure that projects are implemented more successfully and is providing technical advice for various socio-economic upliftment rural projects.

We are proud of what Samantha has already achieved in her career as an Agricultural Engineer and look forward to greater contributions from her which demonstrate the role Agricultural Engineers play in using technology to promote food and water security and environmental sustainability.

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FEATURE – IPELENG MAROO-MASEKO

AGRICULTURAL ENGINEER MPUMALANGA DEPARTMENT OF AGRICULTURE

As a young girl growing up in the township of Mabopane, Ipeleng observed the struggles of local households to meet basic needs. She realised how the fresh produce from her parent's backyard garden provided her family with wholesome meals. This sparked her interest in agriculture, and her father persuaded her to consider a future qualification in agricultural science. As Ipeleng's schooling progressed, her aptitude for mathematics and science became apparent; thus, she was interested in becoming an engineer. She then discovered the existence of agricultural engineering, which resonated with her strongly.

Ipeleng completed her BSc in agricultural engineering at the University of KwaZulu-Natal in 2008. This adequately prepared her for the workforce, where she applies engineering science and technology to enhance agricultural production and processes. She commenced her work experience in 2009 with the industry leader in research excellence, Agricultural Research Council (ARC) at the Institute for Agricultural Engineering (IAE). Her research work focused on technical viability, design and prototype development of biogas and biodiesel renewable energy systems for agricultural applications. Since 2011, Ipeleng has been working for the Mpumalanga Department of Agriculture. She is responsible for conceptualising, development and management of various agricultural infrastructure projects in Gert Sibande District. Her service is to implement the government's ambition to support farmers and uplift the agricultural sector. Ipeleng believes that agricultural engineering is improving both the commercial and subsistence agricultural operations. Through a collaborative approach, there can be a transformation of institutional structures and the improvement of socio-economic conditions.

Ipeleng is proving that agricultural engineering goes beyond the farm gate. She has gained international exposure whereby in 2010 she underwent training in Chengdu, China on biogas hygiene technologies. She won best young presenter for her paper on small scale biodiesel production in Novisad, Serbia in 2011. In 2012 Ipeleng was selected in the technical team for appropriate technology selection Dusseldorf, Germany. Her paper on rural development was presented in Portland, USA in 2015. More recently, in 2017 Ipeleng was in the delegation that undertook a fact-finding and benchmarking mission on mechanisation in Alexandria, Egypt. Ipeleng is confident that South African agricultural engineers have the expertise that can be used to achieve national, regional and global food security.

Ipeleng holds an MEng in engineering management from the University of Pretoria. She is currently pursuing her second masters, MSA in sustainable agriculture with the University of the Free state. She is undertaking a study to highlight the role of agricultural engineers and their contribution to the sustainability of the agricultural sector. Her ambition is to have an integrated outlook and to become a thought and action leader in innovative agricultural engineering.

Ipeleng has noted with concern that in the agricultural sector, historically, women have been relegated to working the fields. She commends fellow women agricultural engineers who are facing and overcoming challenges in this male-dominated technical field. Ipeleng lives by a personal motto which is "strive to thrive" and wishes to encourage women agricultural engineers to use their unique feminine organisational and problem-solving skills. Ipeleng hopes that more opportunities for work experience and mentoring will be afforded to women agricultural engineers who are trailblazers for future generations.

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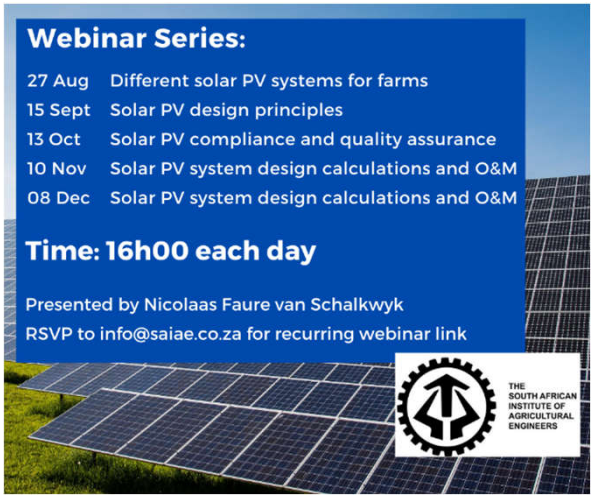
ONLINE WEBINARS

SAIAE has been hosting webinars on several topics in the past weeks, with attendance ranging between 40 to 65 for each session. The Free State Branch, Chaired by Sarel de Wet held the first two online Branch Meetings from July 2020 after which the following webinars were aired as national events arranged by Thabo Mavundza and Louis Lagrange. Recordings will be shared with all who attended the webinars.

11 Aug 2020 – Dam Safety in the Agricultural Environment
13 Aug 2020 –Water resource Planning in the Agricultural Environment
18 Aug 2020 – A case study and forensic audit of Silo Failure

FUTURE/CURRENT EVENTS

The current series of Solar PV Webinars which began on the 27th of August 2020, was well received with 65 RSVPs to date. The Mpumalanga Branch are inviting all SAIAE members to join a presentation on the Status of the Water Resources within the Inkomati-Usuthu Catchment, planned for the 10th of September 2020. More webinars are being planned and will be shared with SAIAE members for the balance of the year – we look forward to your presence and engagement.



SAIAE MEDIA MENTIONS

The links below are media features, where members of SAIAE have shared the value that Agricultural Engineers offer. Please send any member features in media to info@saiae.co.za to be shared in future newsletters.

https://www.foodformzansi.co.za/agriseta-learner-connect-meet-an-irrigation-engineer/
https://www.engineeringnews.co.za/print-version/agricultural-engineers-are-an-endangered-species-2020-07-21