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President’s message

With a quarter of 2015 already behind us, it can truly be said that the year took off with a running start. As the golden jubilee celebrations become fond memories, it is back to business at SAIAE with the election of a new Council for the next 2 year period and planning of new initiatives to serve our members.

Contrary to my own undertaking at last year’s AGM, I decided to accept the nomination for president for second term – I am humbled by the members support and hope that the new Council will continue to contribute to making SAIAE a formidable and respected organisation. The new Council members for the period 2015/2017 are as follows:

President: Ms I van der Stoep
Branch Chairpersons: Mr A Jumman – KZN
Mr R van der Merwe – Pretoria
Mr P de Witt – Limpopo
Mr P Keuck – Western Cape
Mr M van Rooyen - Mpumalanga
Councillors: Prof J Smithers, Dr K Dhavu, Mr J Mutenje, Mr F Reinders

The new vice-president and secretary/treasurer will be elected at the first Council meeting to be held in June 2015. I would like to thank the outgoing Council members for their service and contribution to SAIAE and wish them well with the endeavours: Dr M Marenya, Mr N Bezuidenhout, Mr P Moodley, Mr P Snyman and Mr J Jiyane.

Furthermore, we would also like to remind members that SAIAE will from 2015 be introducing a short course program on agricultural engineering topics. It is proposed that a total of 20 courses are to be developed and introduced over a 5 year period, and repeated (with necessary updates to material) in a 5 year cycle thereafter. The aims of the program are to consolidate agricultural engineering knowledge in a written format and to create credible and relevant CPD options for our members.

The themes within which the courses will be developed are aligned with the structure of the CIGR:

- Land and water engineering
- Animal production and aquacultural engineering
- Plant production engineering
- Agro-processing engineering
- Energy and biomass engineering
- Project management

Where possible, the courses will be standardized to meet the following requirements:

- Length: 4 days (Monday to Friday) with exam on Friday morning
- Presenters: SAIAE members with professional ECSA status preferred
- Target audience: Persons with a tertiary qualification in engineering
- Cost: R5350 VAT excl per delegate (2015) (discount structure to be developed)
- Minimum number of delegates required per course: 12

The preliminary program for 2015 will consist of the following four courses:

- June 2015: Project management (Toolbox for brainwaves)
- July 2015: Energy and biomass engineering (Design of low pressure hydropower generators)
- August 2015: Land and water use planning (Design of small dams)
- September 2015: Plant production engineering (Mechanisation planning)

A more detailed program will be made available to SAIAE members at the beginning of May 2015.
Golden Jubilee Commemorative Publication

By Jeep Veenstra

The Council of the Institute decided in the 1990s to request Mr Jeep Veenstra, as a founding member, to write an historical view of the Institute, with the collaboration of Mr Jabie Bruwer – founding member and ex-President, who is one of the few surviving SAIAE members who still has recollections of the events that preceded the establishment of the Institute, together with Mr Felix Reinders, one of the longest serving Council members of SAIAE. SAIAE would also like to voice its appreciation and gratitude to Ms Rika Reinders – previous Secretary, Boeboe Neethling- current Business Manager, and Charles Crosby- founder member and ex-President and others who assisted with the compilation of information that made this historical composition possible.

The founding meeting of SAIAE in November 1963 was arranged on the initiative of a group of men who were fully aware of a need to provide agricultural engineers in South Africa with a representative body to promote their technical and professional interests. These men can today be seen as the SAIAE pioneers. By their farsightedness the foundations were laid. That the foundations were laid well, can be judged by the fact that SAIAE in 2015 is still alive and serving the profession, more than 50 years after the first council meeting on 11 February 1964.

This write-up pays tribute to these founding members and their successors, through the memory of various actions of SAIAE who carried the SAIAE flame over 50 years and helped SAIAE take a proud place in the company of other professional institutes. The commemorative publication was presented to SAIAE members who attended the 2014 SAIAE symposium but it can also be ordered by other members who would like a copy. An additional number of copies will be printed, based upon interest, and made available at a cost of approximately R300 per copy, plus postage and packaging. If you would like to purchase a copy, please order with Boeboe Neethling so that the correct number of copies can be printed. The final cost will be determined by the number of copies printed.

SAIAE/UKZN Industry Breakfast 2014

By Gareth Lagerwall

The South African Institute of Agricultural Engineers (SAIAE) in conjunction with the University of KwaZulu-Natal (UKZN), hosted a business breakfast at the Kloof country Club on 22 October 2014. The purpose of the event was to encourage industry ties and participation with the discipline of Agricultural Engineering at the university. We had a packed schedule, with short presentations from Ms Isobel van der Stoep (President of SAIAE), Prof Jeff Smithers (Professor of Agricultural Engineering at UKZN), Mr Johannes Grobler of ZZ2. The guest speaker was Steuart Pennington from SA Good News, who gave an excellent talk on Africa - The Story of Changing, and Improving Global Competitiveness. In total there were 52 people that attended from a wide range of different industries. There were excellent comments and suggestions, and a very positive atmosphere. The consensus amongst everyone was that this should become an annual event.
The “Hochschule fuer Wirtschaft und Umwelt Nuertingen-Geislingen (HfWU)” or Nuertingen-Geislingen University (NGU), in Germany, is an outstanding institution of higher education for Business and Environmental Studies and they visited South Africa in March to learn more about Agricultural Engineering (AgEng) amongst other discipline areas. In a joint partnership by the South African Institute of Agricultural Engineers (SAIAE) and the ARC-Institute for Agricultural Engineering (ARC-IAE), they were hosted at ARC-IAE to showcase Agricultural Engineering in practice and were entertained with a traditional South African braai.

They were a group of 41 Germans, with 25 full time students, some former students and professors of the University of Nürtingen (NGU), Germany. They have been in South Africa for 16 days to travel around for an agricultural field trip and visits to different Institutions. Their first week they spend in the area around Cape Town, Stellenbosch, travelled to Mossel Bay, Oudtshoorn and Paarl. Their second week started in Durban from where they travelled to Mooi River, Ballito, Vryheid, Swaziland and then Pretoria. They visited different kinds of farming enterprises, Universities, Research institutions and companies with a mixture of sightseeing places.
Nuertingen in South Germany

Nuertingen is a picturesque place on the beautiful Neckar river with only 42,000 residents. The University campuses include restored historic buildings from the 18th century in Nuertingen’s picturesque medieval city center as well as modern buildings – including their students’ residence hall – at the city’s edge.

After the welcome by Sipho Sibanda; Felix Reinders, Emmanual Bobobee, Johan van Biljon and Piet Snyman presented the different engineering programmes, activities and projects of ARC-IAE to the Group. A visit was also paid to the Mechanisation and Irrigation Laboratories as well as the Renewable Energy Centre. In closure a Cassava harvesting process was also demonstrated.

Felix Reinders presenting to the visiting HfWU from Germany

The day was rounded off with a traditional South African braai that was prepared by SAILI’s Business Manager, Boeboe Neethling with assistance of Richard van der Merwe that braaied the chops and wors and William Shayi that prepared the mieliepap. Everybody enjoyed it thoroughly and came for a second helping. It was surely a memorable experience for all of them at Agricultural Engineering.
Johan van Biljon explaining the testing of Tractors

Good relationships and friendships has been created and the continued partnership between SAIAE and ARC-IAE create a unique platform to further the interest of Agricultural Engineering in South Africa

Boeboe Neethling serving dessert after the traditional braai

Richard van der Merwe braaiing the meat
Deur Fanie Vorster

Die LNR- Instituut vir Landbou Ingenieurswese is op 14 November 2014 besoek deur ’n groep van ongeveer 17 tuisskool leerders uit die Pretoria omgewing en ’n paar van hulle ouers, met die doel om die leerders bekend te stel aan die “wêreld” van die Landbou Ingenieur.

Mnr. Felix Reinders het die besoek ingelei met ’n deeglike oorsig oor die veskillende werksvelde waarin ’n Landbou Ingenieur kan spesialiseer asook wat die opleiding behels.

Daarna het Mnr Fanie Vorster hulle begelei na die Besproeiings laboratoruims, waar Mnr Adriaan van Niekerk hulle ’n oorsig gegee het oor die toets van besproeiings toerusting.

Die besoek is afgesluit by die Biogasverteerders, waar Mnr Fanie Vorster die werking daarvan aan hulle verduidelik het.
Two design projects were undertaken by the 2014 Final Year Agricultural Engineering students from the discipline of Bioresources Engineering in the School of Engineering at the University of KwaZulu-Natal. These are summarised below.

1. **The Design, Construction and Evaluation of a Trimming, Cutting and Planting Mechanism for Eucalyptus Cuttings**

A project proposed by SAPPI on how to automate cutting, trimming, and planting mechanisms of Eucalyptus cuttings was undertaken by Final Year Agricultural Engineering Design Project students Andries van der Walt and Kwanele Mbanjwa. The objectives of the project were to partially automate the processes of cutting, trimming and planting Eucalyptus cuttings, which is currently done manually in industry, and thus to reduce the cost of labour and improve both the production rate and uniformity of planting of the cuttings. After considering various alternatives and undertaking feasibility studies, the solution shown in Figure 1 was adopted for the pilot study. After finalising the design specifications, the frame, conveyor, rotary cutter, cutting mats, funnel and rollers for planting the cuttings were designed and constructed. A 3-D printer was used to construct the cutting mats, shown in Figure 3. The performance of the system was assessed in terms of deviations from the design specifications for the length of the cutting, the efficiency of the cutting, the planting position, the depth of planting of the cutting, and the rate of planting. The results indicate that further improvements to the positioning and depth of planting need to be made. However, the results indicate that there is potential for up-scaling the pilot study and introducing the technology in the trimming, cutting and planting of Eucalyptus cuttings in industry.

![Figure 1 Schematic solution for cutting, trimming and planting](image-url)
2. The Design, Construction and Evaluation of a Net Launcher

The School of Life Science at UKZN required a means of catching birds for research purposes. Currently available birds capturing methods are often ineffective, expensive and unethical and hence Final Year Agricultural Engineering Design Project students Jaco Homann and Nathan Bernstein undertook the design, construction and evaluation of a net launcher to catch birds which is safe and easy to operate, cost effective, marketable and which has a multipurpose use. After finalising their objectives and design specifications, they considered alternative solutions and selected a compressed air and water-powered net launcher. As shown in Error! Reference source not found.a base plate, housing and activation mechanism, a release and trigger mechanism and an aiming mechanism were designed and simulated in Autodesk Inventor prior to construction. The release and trigger mechanism for the net launcher is shown in Figure 4. The assessment methodology included the distance and spread of the net for different operating pressures and the design team concluded that the design met the project objectives and specifications.
Awards Made to Agricultural Engineering Students in the School of Engineering at the University of KwaZulu-Natal

The SAIAE made awards to the following students based on their academic performance in 2013:

<table>
<thead>
<tr>
<th>Award</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best 1st year Agricultural Engineering student at UKZN in 2013</td>
<td>Roanne Sutcliffe</td>
</tr>
<tr>
<td>Best 2nd year Agricultural Engineering student at UKZN in 2013</td>
<td>Jonathan Kirkman</td>
</tr>
<tr>
<td>Best 3rd year Agricultural Engineering student at UKZN in 2013</td>
<td>Nathan Bernstein</td>
</tr>
<tr>
<td>Best final year Agricultural Engineering student at UKZN in 2013</td>
<td>Robyn Johnson</td>
</tr>
</tbody>
</table>
The awards for the best final year design project in 2014 were made to:

<table>
<thead>
<tr>
<th>Award</th>
<th>Students</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBB prize for best final year design project</td>
<td>Jaco Homann and Nathan Bernstein</td>
<td>The Design, Construction and Evaluation of a Net Launcher</td>
</tr>
<tr>
<td>SIAAE shield for best final year design project</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Congratulations to all these students!

Irrigation excellence award to Felix Reinders at international Irrigation Congress

By Felix Reinders

Flow the water, flourish the world was the 22nd International Congress on Irrigation and Drainage with the main theme “Securing Water for Food and Rural Community under Climate Change” that was held at the impressive Kimdaejung Convention Centre in Gwangju Metropolitan City, Republic of Korea.

The Kimdaejung Convention Centre

The Congress was attended by more than 1100 delegates from 61 countries. From South Africa there were 6 delegates that attended the Congress and they made positive contributions. Based on 228 papers and posters from 42 countries submitted, the participants discussed the two Questions i.e.:

- Q. 58: “How Irrigation and Drainage play an important role in Climate Change Adaptation?” and
- Q.59: “How do Irrigation and Drainage Interventions secure food production and livelihood for the rural community”.

At the Congress the International Commission on Irrigation and Drainage (ICID) also awarded “The Best Performing Work Body Award” to Felix Reinders from South Africa as the Chair of the Working Group on On-Farm, based on the work undertaken during the past years that contributed to the knowledgebase of on farm technologies in the World. The ICID Working Group on On-Farm Water Management (WG-ON-FARM) has been promoting the science and art of...
on-farm technology with a view to improve irrigation management and optimal use of various resources, and
technology transfer worldwide.

Their working group’s objectives are:

- To promote on-farm irrigation as part of Integrated Water Resources Management; and
- To promote sustainable efficient approaches for on-farm irrigation

Through the WG’s commitment and active participation of its members they demonstrated a high degree of
performance to the benefit of the irrigation fraternity at large and delivered on their mandate.

Technical publications that were brought out by the Work body under the leadership of Felix Reinders are:

- Planning and Designing of Micro-Irrigation in Humid Regions.
- Micro Irrigation in Arid and Semi-Arid Regions - Guidelines for Planning and Design.
- Manual for Performance Evaluation of Sprinkler and Drip Irrigation Systems in Different Agro-Climatic Regions
  of the World.

The “Best Performing Work Body Award” presented to Felix Reinders on the left as the Chair of the Working Group
on On-Farm by the President of ICID, Dr Gao Zhanyi

GHANA Institution of Engineers - Awards

By Emmanuel Bobobee

President of the Ghana Institution of Engineers Ing. Magnus Lincoln Quarshie says the quality and quantity of Engineers
and Engineering practitioners in any given society is directly proportional to the quality and quantity of its
infrastructure. According to him, any nation that makes engineering a priority becomes wealthy. Ing. Lincoln Quarshie
said this when he delivered his welcome address at the maiden Engineering Excellence Awards to reward Engineers and
non-engineers who have distinguished themselves in the field of Engineering in Ghana at the State Banquet Hall,
Accra on Saturday, 6th December, 2014.

Speaking under the theme: “Design, Build And Construct, Let Us Think Forever”, Ing. Lincoln Quarshie urged Engineers
in the country to ensure that their works stand the test of time. “When we conceive the infrastructure, we must design
and build to last forever. We must think forever, think of our children’s children and leave legacies that become wonders. As a nation, we need to sanitize, organize, and be true and sincere to ourselves and to each other on our finances. I have no doubt that we can raise enough to design and build infrastructure that will last forever”, Ing. Magnus Lincoln Quarshie admonished.

The Special Guest of Honour, Dr. Joyce Aryee inspired Ghanaian Engineers to use their professional knowledge to pursue happier lives for mankind. “An Engineer is an individual pursuing happier lives of mankind using his professional knowledge. An Engineer guides the world from mainstream and a leading actor in society changing the world to a better place. An Engineer is an innovator aspiring changes over stagnation, a pioneer seeking new frontiers over complacency and a leader directing to the future over the present”, Dr. Joyce Aryee emphasized.

The Academic/Research Awards (Student category) went to Mr. George Kwadwo Appiah, an Electrical/Electronic Engineer who graduated from KNUST in 2012, and Ms. Josephine Marie Godwyll who is currently a Geomatic Engineering Student at KNUST The Young Engineer Award was won by Ing. Samuel Boamah Danquah, who graduated with a BSc. Civil Engineering degree from KNUST in 2005 and later attained a Master of Science Degree in Geo-Information Science & Earth Observation from the University of Twente in the Netherlands in 2010. Ing. Danquah has been involved in a wide range of Traffic Impact Assessment (TIA) studies. His most significant and impactful TIA is the TIA for the West Hills Mall in Weija. The External/Associate Award went to Dr. Richard Buamah for his important contribution to the cause of Public benefit engineering. The Public Sector Individual Award was won by Ing. Prof. Emmanuel Y.H. Bobobee for developing a device for the mechanical harvesting of Cassava, Yam and other tuber crops for which a patent is currently under consideration by the African Intellectual Property Organization. The Bui Power Authority received award for being the best in Public Sector Firm contributing to the engineering profession in Ghana. The Academic/Research (Institution category) was won by College of Engineering, KNUST as a leading engineering centre of excellence over the years. The Kintampo North Municipal Assembly received a special award on Sanitation improvement; whilst Mr. Nutor Bibini Nutor, who reported on the sanitation at the Kintampo North Municipal Assembly, also received an award.

The Engineering Excellence Awards, was organized by the Ghana Institution of Engineers (GhIE) was sponsored by Tullow Oil Ghana, Bui Power Authority, Volta River Authority (VRA), Ghana Ports & Harbours Authority (GPHA), WBHO, Vodafone and Graphic Communications Group Limited.


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Membership matters

New members

We would like to welcome the following new members to the Institute:

Mr C van der Merwe          Me N Dube          Mr AJ Cornelissen
Mr N Simango                Mr I Makandwa      Mr DG Wessels
Mr R Naidu                  Mr J Faul          Mr WH Visser
Mr L Machingambi            Mr JG Pieterse     Prof UL Opara

General

Members are reminded to send through proof of payment of membership fees. When making payments, please use the invoice number, or the first three letters of your surname together with the number as shown under “Rekening/Account” on the invoice, as reference for the transaction, as this makes it possible for the secretariat to trace payments from the bank statement.
The secretariat wishes to remind members that when they reach retirement age, they are welcome to apply to change their membership to the Pensioner category which has lower annual fees than the active member and fellow categories.

For any administrative or financial queries, please contact Boeboe Neethling in the SAIAE office on (012) 842-4043 (Mon - Fri 09:00-13:00), or email boeboe@saili.co.za