



SAIAE News Bulletin

South African Institute of Agricultural Engineers September 2008



EDITOR'S NOTE

Welcome to all our readers to the third edition of the SAIAE Newsletter for 2008. This edition is again filled with information for all our members and also note the registration form included.

We kick off with the President, Neels Bezuidenhout, who explains to us the five strategies. Great progress has been made during the past six months. Look out for 'Ons Eie' magazine in which four articles on product processing will be published.

The same questionnaire as the previous year was used for the SAIAE measuring survey for 2008. Results can be compared this way. See how the graph correlates the points with strategic objectives. Louis also discusses five questions with the best feedback and those with the least feedback.

Take note of the multi-day CPD that the SAIAE KZN branch will be presenting from 22 – 23 September 2008 with the main theme of Energy, Water and Agriculture as well as four focus areas.

Interesting News Flashes from UKZN feature the article on international cooperation between the University of Illinois and UKZN. Five projects were handled.

Ebbie Hattingh, Product Manager CASE-IH of Northmec, tells us about this enterprise that extended to 11 branches from 1869, importing agricultural equipment from all over the world, focusing on the grain producing areas.

Enjoy!

Ed Dvd Merwe

FROM THE PRESIDENT Neels Bezuidenhout

A number of SAIAE Council and other activities have taken place over the past six months. Through our five strategies, we would like to inform our members of the progress we are making.

Strategy 1: Branding and positioning
We will be publishing four articles on product processing in the "Ons Eie" magazine.

With the assistance of At van Coller, we are in the process of compiling a DVD about the Agricultural Engineering as a profession which can be utilised for:

- Exhibition at farmers' days
- Exhibition at agricultural shows
- Exhibition at information days at schools for career opportunities
- Marketing purposes to increase the awareness of the farming environment about the special skills of agricultural engineers

Our radio talks once a month on a Friday on RSG seems to gain momentum since the engineers having the talks receive more and more enquiries. Our SAIAE members are welcome to make contact with us

should they have any appropriate subjects they want the public to take note of or which can bring business in for them.

We have confirmed our agreement with the “Landbou-Weekblad” magazine once again to publish any projects or technologies where Agricultural Engineers and Technicians are involved and which are relevant in agriculture, to publish it at no cost. They will publish all events in the yellow pages and in November, “Landbou-Weekblad” have agreed to publish a full page article on agricultural engineering.

With the appointment of Luther Siebert as our business manager, we will update the website more regularly. He will make contact with all our members over time to prompt them for information we can place on our website.

Strategy 2: Representing Agricultural Engineers

Agricultural engineers are well presented at ECSA, CIGR, SANCID, ICID, SAIL, NSTF and SETAG. This representation is important to stay in touch with the development in the field of engineering and to ensure the existence of our profession and to keep us in touch with the requirements of our professional status. Through SETAG, agricultural engineering was declared as a scarce resource.

Strategy 3: Facilitate continued education

The time has come for our multi-day CPD event that will be hosted this year by our KZN branch from 22 to 23 September at the Fern Hill Hotel in Howick. By attending this event, two CPD points will be obtained. The details will be on our website and the main themes will be:

- Energy in Agriculture
- Small Scale Agriculture

- Water in Agriculture
- Bulk Transport Optimisation

We have approached Riana Lombard of SAIL, to assist us with the arrangements of this CPD event.

Strategy 4: Student support and member recruitment

As part of our strategy to support students, the Council approved 3 loans for students studying Agricultural Engineering at the School of Bio Resources Engineering and Environmental Hydrology at the UKZN based on their needs and their previous results. The Council also approved an incentive of R3000 for the best student in the first 3 years.

With the inputs of Council members employed at the University of KwaZulu Natal (UKZN), the UKZN is also busy compiling a general DVD as part of their marketing campaign in which Agricultural Engineering will feature as well.

With the appointment of the business manager and the production of a DVD on agricultural engineering and the arrangement with “Landbou-Weekblad”, a more active approach is intended to recruit more students for agricultural engineering in future.

Strategy 5: Communication with and support of members

To support our strategy, we have appointed Luther Siebert as business manager to increase our communication and support to our members. Luther will:

- Try to get in touch with each SAIAE member to update our database.
- Update our website on a regular basis
- Arrange with SAIAE members for articles and relevant information
- Arrange with SAIAE members for

articles for the news letter

- The SAIAE history book is almost complete and will be available on CD in the near future
- One of the functions of our business manager is to grow our membership and to investigate to obtain bursaries for students.

We however need more activity in our Pretoria and Western Cape branches. The council will focus in the next year to assist and to see that more SAIAE events are held in these regions.

Please feel free to contact any of the council members if you have any suggestions that can be utilised to enhance our profession.

Look forward to see all of you at our CPD event at the Fern Hill Hotel.

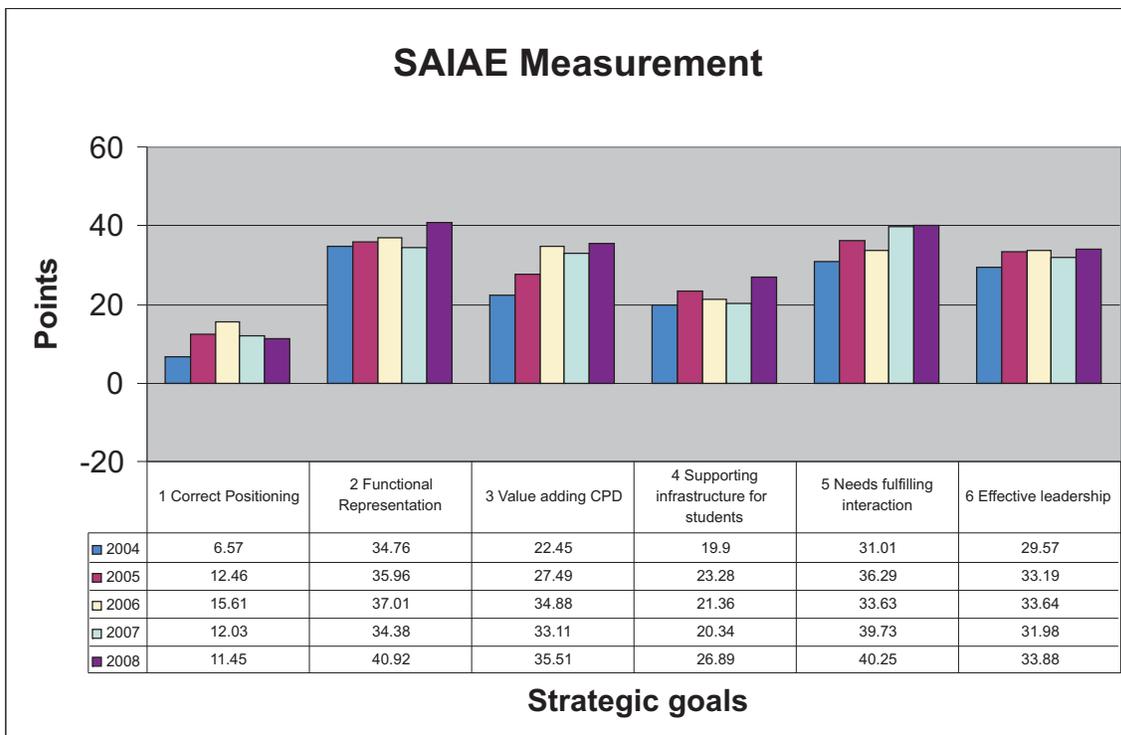
SAIAE measurement survey 2008

Louis Lagrange

As usual SIAIE ran the annual measurement survey early in 2008 in order to determine the perception of the members about the strategic actions that SIAIE Council is pursuing. In order to compare year on year results the same questionnaire as in the past four years was used. The principle is that if the measurement point rise there is an increase in how the members experience that aspect indicating that the Council is succeeding in increasing the member's perception about that aspect. Furthermore when the measurement rises above 40 there is enough momentum to allow the SIAIE Council to spend less energy or resources on building that aspect, but resources can be reduced to just enough to maintain the momentum and these reduced resources can be invested elsewhere. On the other hand when a strategic aspect is below 40 it requires substantial input from SIAIE Council to grow that aspect.

Figure 1 depicts the results over the last 5 years. Areas of growth have been in direct correlation with the amount of resources allocated to it. An interesting trend was that whenever the Council decided to lower resources invested (either expenditure or time spent) on a certain strategic goal there appeared a dip in how the members experience/perceive SIAIE to fare in that area. The Figure indicates that strategic area nr 1, correct positioning of the brand in the market, that received substantially less resources the last 2 years than previously, resulted in a lowering of measurement points. This confirms that the measurement tool reflects the result of the Council resource allocation decisions on the member's perceptions accurately.

The lesson from the overall five year results is that SIAIE is reaching a plateau where with the limited present resources (mostly human capital) SIAIE will only be able to play the one strategic goal off against the other, and will not easily increase the whole graph further. Either more finances or more human time is required to grow the total graph. Taking its cue from the unanimous support from members at the previous Annual General Meeting to consider appointing a business manager, SIAIE Council has appointed such a manager during the last half of 2008. See the article in this newsletter introducing the newly appointed manager. This should enable the SIAIE Council to materialize more actions and grow the graph more where required.



Other interesting results from the study are as follows:

Table 1: Five questions with the best feedback (out of a possible 6):

8. The institute is affiliated to ECSA (Engineering Council of SA)	5.42
51. I have encountered the acronym CPD and know its meaning	5.4
9. I am aware that the symposium has changed to Continuous Professional Development (CPD) event	5.2
5. I have received one/ more invitations to institute meetings in the past year	5.15
44. SAIAE is involved with registration of professional engineers	5.03

Table 2: Five questions with the worst feedback (with a minimum of -2)

49. I have received work due to SAIAE marketing campaign	-1.24
55. I have been approached to participate in the marketing campaign	-0.12
43. I have referred other people to visit the SAIAE website	-0.04
34. I am aware of a list of mentors at SAIAE	0.27
19. I have personally heard a radio talk show/s promoting the profession	0.66

The study will probably be repeated early in 2009 in order for the new Council taking over the reigns in March 2009 to decide on future strategic goals and actions.

CPD news

David Clark

Multi-Day Continuous Professional Development (CPD) Event 2008

The KwaZulu-Natal branch of the South African Institute of Agricultural Engineers (SAIAE) will be organising a multi-day CPD event to be held on 22 and 23 September 2008.

The venue for the event is the Fern Hill Hotel on the Midlands Meander near Howick in the beautiful KwaZulu-Natal Midlands. There is accommodation available at the Fern Hill Hotel, in chalets at nearby Midmar Dam and at various other hotels and B&Bs close by.

The main theme for the CPD event will be ***Energy, Water and Agriculture*** and there will be 4 focus areas:

- 1) ***Energy and Agriculture;***
- 2) ***Water and Agriculture;***
- 3) ***Small Scale Agriculture;***
- 4) ***Bulk Transport Optimisation.***

Energy is a hot topic at present in South Africa, but also globally, and we have arranged a full day programme of speakers on this focus area to bring us up-to-date on energy issues related to agriculture. This includes presentations on general energy issues, various energy sources and the management of energy demand. We have been very fortunate in being able to persuade Mr Andrew Etzinger, General Manager - Demand-Side Management at Eskom to be our keynote speaker.

Water is another a key resource in South Africa and a full day programme on this focus area includes: water licencing, water allocation, research needs, climate change, irrigation efficiency and irrigation management.

There is also a short programme on small scale agriculture, including animal traction, alternative energy sources and automated short-furrow irrigation.

The Bulk Transport Optimization focus area will consist on a full day symposium including vehicle design optimisation, infrastructure planning optimisation and fleet systems and management optimisation.

Note that the SAIAE AGM will take place immediately after the first day's proceedings.

Please join us for dinner on Monday evening (22 September) and catch up with some colleagues that you may have not seen recently. Spouses are welcome.

We hope that by now all SAIAE members have received an e-mail or paper invite to this event. Please respond as soon as possible and please mention it to colleagues who may be interested.

For further details please contact the event organiser Ms Riana Lombard (021 8555412, riana@sabi.co.za) or the SAIAE-KZN branch chairman David Clark (033 2605485, clarkd@ukzn.ac.za).

SAIAE/SAILI CPD Event - September 2008

REGISTRATION FORM

REGISTRANT DETAILS

Title: _____ Surname: _____

Name: _____ Organisation: _____

Address: _____

Tel: _____ Fax: _____ Cell: _____

E-mail: _____

REGISTRATION FEE AND SESSIONS

	<u>Monday 22 September</u>		<u>Tuesday 23 September</u>	
	Energy	Small Scale	Water	Transport
Session 1				
Session 2				
Session 3				
Session 4				

Accommodation will be arranged by Riana's Events (Riana – Tel: 021 – 855 5412)
ALL PAYMENT MUST BE MADE BEFORE 1st SEPTEMBER 2008
 No refunds will be paid if cancellations are received after **1 September 2008**.

Fee	✓	Amount
Professional Delegate: 1 day – R 950.00 (1 CPD Point)		
Professional Delegate: 2 days – R 1750.00 (2 CPD Points)		
Student Delegate: 1 day – R 250.00		
Student Delegate: 2 days – R 450.00		
Late Registration Fee (after 1 September): Additional R 250.00 per day		
Dinner – Delegate: R 150.00 per person (in addition to conference fee)		
Dinner – Spouse: R 150.00 per person (in addition to conference fee)		
Accommodation per person sharing per night – R450.00 (Breakfast included)		
Accommodation – single per night – R550.00 (Breakfast included)		
Total		

Registration fee include: Registration pack, Tea/Coffee and lunch.

PAYMENT (Registration will only be valid with full payment. Registration will be confirmed.)

Fax completed form and deposit slip to: Riana's Events cc
 Tel/Fax: 021 - 855 5412
 E-mail: riana@sabi.co.za

Bank details: Account name: Riana's Events cc
 Bank: First National Bank
 Branch Code: 200612
 Account number: 62086123446
 Swift code: FIRZAJJ

UKZN Snippets

Dr Alan C Hansen

INTERNATIONAL COLLABORATION BETWEEN UKZN AND UNIVERSITY OF ILLINOIS

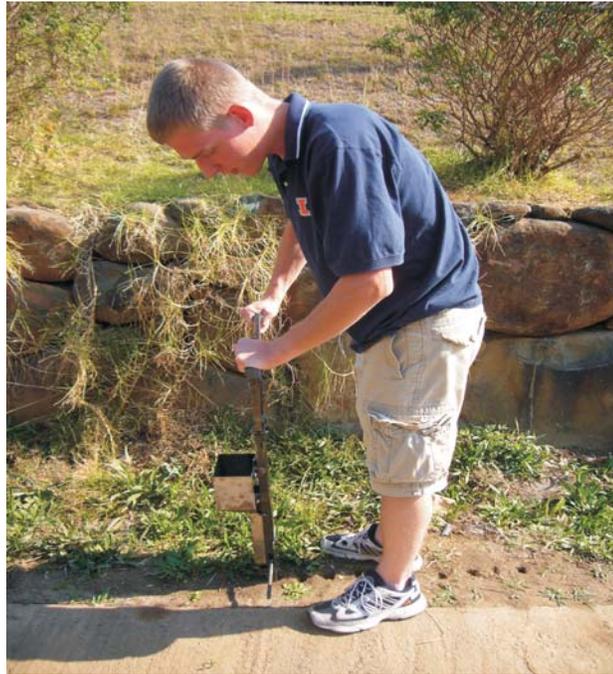
Students and staff from the University of Illinois at Urbana-Champaign (UIUC) spent a month working with UKZN students as well as interacting with staff on the UKZN campus. The group arrived in Pietermaritzburg in the second half of July and included eleven students and three staff members comprising the group director Dr. Alan Hansen from the Department of Agricultural and Biological Engineering, assistant dean from the College of Agricultural, Consumer and Environmental Sciences Andrea Bohn, and Dr. Laura Hahn from the Center for Teaching Excellence.

UIUC students had been partnered earlier in the year with final year UKZN students in the School of Bioresources Engineering and Environmental Hydrology (BEEH) to work on five capstone engineering design projects in teams of four to five students. The five projects were the following: development of a jab planter, design and construction of a biomass stove, development of a system to produce charcoal from biomass, investigation of the use of a heat pump in a broiler house, and the development of an experimental pond for growing micro-algae that would yield oil to be converted into biofuel. In addition a postgraduate student in the group worked on a project for treating effluent water on a crocodile farm. Professor Jeff Smithers and Louis Lagrange from the School of BEEH played a key role in facilitating the arrangements for the institutional student and staff collaboration.

The three UIUC staff members have also been busy on the UKZN campus meeting with counterparts. Andrea Bohn met with staff interested in facilitating international student exchange between the two campuses with the aid of a memorandum of agreement. Discussions also took place with Professor Peter Zacharias, Deputy Vice Chancellor and Dean of the College of Agriculture, Engineering and Science to establish more effective ways of ensuring a two-way exchange process. In the first week of August Laura Hahn and Alan Hansen presented two teaching enhancement seminars that took place on the Pietermaritzburg campus as well as at Westville. These seminars were attended by more than forty staff from the College of Agriculture, Engineering and Science. The seminars addressed the topics of designing and marking group assignments, teaching problem solving skills, and the use of a variety of classroom assessment techniques for improving student communication skills. A panel discussion also took place with five UKZN staff sharing examples of their best teaching practices. In the wrap-up session attendees were given the opportunity to express their opinions as to the next steps that should be taken in continuing the productive dialog that had been created during the seminars as well as what topics future seminars should cover.

This is the third visit with a group of UIUC

students led by Alan Hansen, a former staff member of the School of BEEH at UKZN. Apart from his participation in the teaching enhancement seminar during this visit he has been involved in discussions with the School of BEEH regarding the accreditation process followed in the US, and he has been a guest lecturer in the School. He has also made a presentation entitled “Transportation energy solutions: a US perspective” at a meeting of the local branch of the South African Institute of Agricultural Engineers held on the Pietermaritzburg campus. Hansen's research has focused on the investigation of biofuels for diesel engines.



University of Illinois student Mike Leick testing a prototype jab planter

Picture 4



University of KwaZulu-Natal student Zimu collecting water from the Mzunduzi river as part of the micro-algae project



Ebbie Hattingh

Introduction

George North established his implement business in Port Natal during 1869. Now, 139 years later, Northmec is the oldest agricultural company and distributor that provide a full line of agricultural equipment to Southern Africa.

Northmec imports agricultural equipment of outstanding quality and productivity from all over the world, focussing mainly on the grain-producing areas. Distribution takes place by means of a network of 11 branches that belong to Northmec, as well as more than 40 traders throughout South Africa.

My role as Product Manager of all Case-IH equipment at Northmec

The product manager is responsible for all aspects of the business of equipment, marketing thereof, as well as training and after sales service. As a service to our clients, we make use of powerful software that has been developed over the years to offer mechanisation planning and solutions, as well as to utilise all machines optimally and increase their productivity by correct ballasting if tractors for each tillage.

Everything begins with the identification of the correct product for the South African farmer and conditions for each market segment. Each product is then specified for that specific market segment to conform to all the farmer's requirements. For example, a tractor must have the correct hydraulic flow, raising capacity, tyres for traction and ballasting and must contain the correct equipment to comply with all the different tillage, such as planting, light and heavy soil tillage And harvesting.

Prediction of quantities of machines for each market segment must be done to ensure that the correct machines will always be available for the market. Although, as everyone knows, agriculture is very seasonal and very unpredictable, that makes this task very difficult.

Sales and technical training is given for each model to all personnel involved with the product to ensure that the farmer gets the best service and purchases the correct machine for his requirements.

The role of the agricultural engineer in the commercial agricultural environment

It is essential that everyone is constantly up to date with what goes on in the industry and what

the latest available technology can do, to ensure that each farmer is exposed to the best and newest technology to make his business as profitable as possible and ensure his long-term survival.

As agricultural engineer, mechanisation planning is one of the most important aspects that adds value to each farm and must therefore be managed well. There are only a handful of farmers who calculate the actual cost of mechanisation in their farming enterprises. It is also these farmers who can take more accurate decisions on what type of machines will give the best results when machinery has to be replaced and thus ensure best value for money.

With the correct aids, the farmer's knowledge of each portion of land on his farm, technology to know and measure everything, it is sure that the farmer always has the correct machinery on his farm to complete every task within optimal time in the most cost effective way.

Each farm has unique challenges, requirements and limitations that also have to be taken into account to ensure an ideal solution for the farmer. Two neighbours can plant the same surface with the same rainfall, but have different solutions for mechanisation planning as a result of management, soil characteristics and crops.

Mechanisation also becomes a wider subject by looking at:

- new possibilities such as the use of 100% biodiesel, that is now possible with the latest series of Case-IH tractors and harvesters.
- the use of fully computerised control navigation on tractor and harvester
- the varying applications of products on a wide range of implements to increase productivity and manage costs

New technology

Case-IH Patriot self-driven sprayers



Training regarding ballasting of tractors for optimal performance is given to personnel and the client.

With this tractor and equipment, the fuel consumption is measured for different loads of the tractor. You will notice the influence of tyre pressure clearly.



Case-IH Patriot self driven sprayers from Amerika



Electrically controlled nozzle (AIM COMMAND)

Here can be seen what the fuel consumption difference is over a distance of 100 metres where a tractor is loaded optimally with the correct tyre pressures vs. tyre pressure that are too high.



Pressure is directly proportional to sprayer quality that includes the number as well as the size of drops, the ability to penetrate the crop and the speed of tillage. The "AIM COMMAND" system is very simple if the relation between pressure, flow and the speed is understood and how they influence each other.

The pressure, flow and drops are now controlled on the self-driven Case-IH Patriot sprayer that is equipped with the "AIM COMMAND" function that controls each nozzle separately. There are two benefits for using this new technology, namely: firstly, with the aid of computer control on each nozzle, the volume through the nozzles can be controlled to supply the exact quantity as well as the control of the number and drop size to ensure that herbicides are utilised optimally. Secondly, a series of different pressures can be controlled under different conditions. The farmer can now, irrespective of the speed of the sprayer, which is no longer a limiting factor, always control the application of herbicides, which gives better results. It saves costs and more hectares per hour are sprayed. Spraying quality will be just as accurate on the headland where speed is slow, as in the centre of the field where spraying is done at higher speeds. Drop sizes can now be changed from the cabin, within poison specifications, to counteract the effect of wind and all this can happen without changing the nozzles.

APM (Automatic Productivity Management)

Gear boxes and the composition thereof has always been a very important aspect on any tractor. A gearbox must be strong enough to transfer the load, have enough working gears to handle a variety of different tillage and changing must be made as easy as possible for the comfort of the driver as well as for the protection of the gearbox itself. Until now, gearboxes used to function independently from the tractor. The driver could choose to retain full control over the gearbox by changing gears with the press of a button. The second option was to use the

gearbox in automatic function so that the tractor could, according to the load, choose the correct gear on the drive system. In both cases the driver still had full control over the engine revolutions of the tractor.

With the new APM system, a third option is applied. The tractor's control system controls the gearbox and the engine simultaneously and in cooperation with each other. The only thing the driver must do is to step on the accelerator to the required speed, and the control system will then adapt the correct gear as well as the engine revolutions to obtain the best performance. Fuel saving of between 15 – 25% has been recorded with the same tractor under test conditions in Nebraska's test facility with the different options on the gearbox. This function makes it easier to engage with the automatic function control (Headland Management Control) of the tractor where different functions on the tractor, such as navigation, implement control, speed and engine revolutions is programmed by the driver so that it can all be repeated with the press of 1 button at the headland.

It also increases productivity and the driver can complete the work accurately over longer hours with less stress. It is clear that with the use of new technology, every farmer can farm more productively and so ensure his long-term survival.

Production manager CASE-IH
Northmec
0837627411