



SAIAE News Bulletin

South African Institute of Agricultural Engineers

October 2006



In this issue of SAIAE News Bulletin, Mr. Adriaan Louw explains about the extra mile that the Council offer its members. A few examples of contributions of the Council to offer members value for their money are explained. SAIAE members also receive discount on registration fees with ECSA, and Adriaan urges members to keep up with their membership fees. Contributions to the Newsletters and News Bulletins are also encouraged as these publications are the communication tools among the SAIAE members and it also features on the website for international access.

Mr. Felix Reinders gives feedback on the CPD event that took place from 10 to 12 October 2006. Experts in the agricultural engineering field discussed inter alia aspects such as bio-diesel, irrigation engineering, water management, the Water Act, agricultural energy, processing and rural engineering.

This highly successful mini symposium and CPD event was attended by 117 delegates from all over South Africa.

Enjoy!

Editor

From the Council

The SAIAE Council really went the extra mile for its members to offer its members value for their money. Just to mention a few examples:

- The **CPD (Continuous Professional Development)** event that was arranged so that members can comply with the ECSA requirements for continuous registration.
- The news bulletins that are published to promote communication and general matters among members and the Council.
- The website that simplifies communication further and also introduces SAIAE further over the world.

Besides this, the Council also ensures that we as Agricultural Engineers are represented at ECSA. It also brings with it the responsibility that the standard of candidates who want to register as professional engineers is seen to, as well as the standard of training at University. The qualifications of candidates of unknown foreign universities are also scrutinised before any level of membership is granted and before a recommendation is made for registration to ECSA. This role is of the utmost

importance to ensure that professionalism and standards are maintained within the Agricultural Engineering discipline. Within the Washington Accord, South African Engineers can also obtain professional registration acknowledgement in certain other countries.

Except for direct subsistence & travelling costs for the Council members and services by outsiders, such as secretarial and web services, all this support is given free by SAILI-members.

ECSA grants discount on registration fees to members of an acknowledged institute such as SAIAE. This discount is more than the annual SAIAE membership fees, which means that the abovementioned benefits/services are rendered without any additional costs.

The further benefit is of course the CPD-point that is obtained merely as a result of membership.

It is therefore a pity that it had to be the implementation of the CPD by ECSA to persuade SAIAE members who did not pay their membership fees, and could be and should have been suspended,

to begin to meet their obligations towards SAIAE. It can also not be expected from a few SAIAE members to make contributions in order to give the rest of the members the benefits.

One of the most important contributions that can be made by members is to support the newsletter with articles and letters of activities by agricultural engineers and companies involved in the field. It is important after all that members take note of each other's activities and involvement. Because the articles are also placed on the website, it also makes these articles available worldwide and opportunities, interests and prominence of the profession can be promoted much better.

SAIAE members should prove their involvement in SAIAE by contributing inputs to the newsletter. Even photographs with captions or short descriptions will be welcome. The editor will arrange for translations.

We would like to hear from you.

Adriaan Louw

Neels Bezuidenhout is the newly elected President of SAIAE, and will take office next year in March. Louis Lagrange will retire after four years of excellent service. Congratulations to Neels and all of the best for your term

Continuous Professional Development Event

Felix Reinders Pr Eng

Engineers practicing in the field of Agricultural Engineering convened from 10-12 October 2006 in Pretoria to attend the 3rd Continuing Professional Development Event (CPD), as well as a direction-giving mini-symposium on biofuels. It was organised by the Pretoria branch of the South African Institute for Agricultural Engineers (SAIAE).

The annual CPD event gave engineers and relevant parties the opportunity to be informed on the latest developments on various exiting topics currently taking place within the Agricultural Engineering sector. The accredited event also gave all registered engineers the opportunity to accumulate CPD points necessary for maintaining professional registration as required by the Engineering Council of South Africa (ECSA).

The event was attended by 117 delegates from all over the country and everyone agreed that it was an excellent learning experience, apart from the fact that old friendships were renewed and good networking took place. The following were aspects dealt with in the agricultural field:

Mr. F. Hugo discussed biodiesel and gave an insight into a strategic commodity that can play a positive role in augmenting mineral diesel fuel, in reducing greenhouse gasses and in developing poor rural areas.

Mr. F. Brink presented a talk on the production of bio-ethanol in South Africa that can create new markets for all grain producers and reduce South Africa's dependency on crude oil.

Dr. S. Walford presented a review of the current status of value addition in the wider sugar industry that shows that several value-added commodity chemicals are currently produced from sugar feedstocks. These include alcohol (fuel and food applications), isobutyrate (primarily food applications), surfactants (food and cosmetic sector), organic acids (mainly food applications but increasingly biodegradable polymer applications and polyols (food and pharmaceutical applications).

Mr. F. Reinders gave a course in irrigation system performance and the techniques necessary to evaluate the system. Sprinkler, centre pivot, micro spray and drip irrigation systems were discussed and procedures were demonstrated to calculate the system's efficiency.

Prof. R. Schulze, an expert on Climate Change, presented the impact of climate changes and said climate change has become a reality in the past decade, is already occurring, and will become a major management issue in future. He said the most important challenges faced by water resource engineers and managers are that any change in climate, particularly in rainfall patterns, is amplified through the natural hydrological system.

Prof. J. Smithers presented a course on Design Flood estimation using the SCS-SA Method. The SCS-SA method is a commonly used method for design flood estimation in small catchments in South Africa. The course provided some theoretical background to, and hands-on experience with the SCS-SA model.

Mr. J. van Gass and Mr. E. Hattingh presented mechanisation optimisation and the critical importance with the value of mechanisation planning. They outlined factors that influence the selection of a mechanisation package with a practical demonstration on how to optimise mechanisation.

Messrs. J. van Gass, J. van Biljon, F. Swanepoel and R. Phillips demonstrated in-field the use of Instrumentation for Diesel Consumption Monitoring on a Field Tractor. This training session familiarised the participant with the hardware that can be installed on a tractor to measure fuel consumption, exhaust temperature, actual land speed and wheel speed.

Mr. H. Thompson gave an in-depth discussion on the Water Law. He discussed inter alia Foundation of the Water law, Roman and Roman-Dutch law principles, Utilisation of the Water Resources Water Act, Act 36 of 1998, and the elements of the framework to use water.

In his paper, **Mr. N. Bezuidenhout** looked at the comparison between energy cost of diesel and electricity, the influence of the fixed and maintenance cost of electricity vs. diesel, different options of conversion, different agricultural equipment that can be converted and general pros and cons.

Mr. F. Cilliers presented a course on the Design and Operation of a Biogas Plant with the following aspects: Basic biogas digesters and their application; Biogas process (Anaerobic digestion process); heated and unheated biogas digesters; design criteria for sizing an optimal unheated biogas digester for a household; utilisation of biogas and effluent from biogas digesters and modified gas equipment using biogas as fuel for domestic use; Pilot biogas digesters; management and maintenance of biogas plants; job creation opportunities and problem examples as a basic design exercise.

Prof. R. Schulze presented the New Interactive South African Atlas of Climatology and Agrohydrology as an Agricultural and Water Resources Planning Tool. This atlas has been completely revised, updated and extended, using the latest available climatic databases and models and has over 500 climatic and water resources maps in 22 sections.

Mr. B. Els presented a course on Project Cost Estimates and Budgets and he illustrated typical procedures of project control and he placed emphasis on basic resource documentation, for example, the influence of contracts, scope documents, and milestone planning documents, the cost estimating process and Project Control Concepts.

Dr. A. Parsons gave an excellent presentation on: Introduction to the Essential Oil Industry and Guide to Starting an Enterprise. He pointed out how this industry has grown and continues to grow rapidly and why we are today world leaders in many oils.

Mr. C. Talanda presented an overview of the development of the ARC essential oil distillation unit. The design, construction and testing of the prototype mobile distillation unit for the extraction of essential oils from herbaceous materials were also explained.

Mr. A. Murray gave an indication of the Latest Developments in Food Processing Technologies, which include, among others, thermosonication, ultra high pressure treatment, pulsed electric fields, e-beam technology, induction heating, refraction window drying and osmotic evaporation.

Mr. Murray further elaborated on the New Legal / Regulating Aspects in the South African Food Processing Industry. He discussed the developments and international standards and codes; in particular in as far as the design of processing facilities is concerned.

Mr. AT van Coller gave an overview of CASP / ASGISA and the engineering challenges of the programmes that are implemented in the Department of Agriculture. The technical, support, monitoring and evaluation requirements were addressed.

Mr. K. van Rensburg introduced the Revitalisation of Smallholder Irrigation Systems (RESIS) and said that the programme aims to revitalise approximately 126 irrigation schemes, comprising 18 000 ha. The programme was started in 204 with the adoption of a Programme charter, supported by the management of the Limpopo Department of Agriculture (LDA).

Mr. D. Vause presented the importance of the right Turnkey Project Approach and explained that the LDA is in the process of a large infrastructure programme involving the rehabilitation of a large number of irrigation systems. The Department has chosen the “turnkey” method of procurement where the functions of contracting and consulting are combined in one entity.

Mr. R. Robenson presented his approach on In-field Irrigation Systems and the revitalisation of it. He said that revitalisation is defined as invigorating the existing irrigation schemes through investing in new infrastructure and the challenges that it faced.

Dr. D. Coilkosz gave a short course on Facility Energy Analysis and Assessment. He discussed the principles governing energy efficiency analysis of facilities, and reviewed potential methods for improving efficiency, as well as tools for conducting analyses.

Mr. F. Reinders gave a presentation on behalf of **Dr. M. Shaker** on the Challenge Program on Water and Food and said the CPWF programme’s main objective is to create research-based knowledge, technologies, and methodologies to grow more food with less water, while combating poverty and protecting the environment. In his presentation he focused on the Limpopo benchmark basin projects, highlighting some areas of research and technology transfer challenges in the field of agricultural water management and utilisation.

The president of SAIAE, Mr. L. LaGrange, in his closure remarks, thanked all the speakers for excellent papers and said that the Agricultural Engineers demonstrated that they are on the forefront of technology, research, and implementation of projects.



In-field tractor telemetre demonstration



A word from the SAIIE president



Registration of delegates



Networking by delegates



Discussion of bio-fuels



Lunch breaks