

# SAIAE News Bulletin

## South African Institute of Agricultural Engineers May 2005

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*In this issue of SAIAE News Bulletin, the President explains the decisions of the first Council meeting of this term. He also discusses the strategic aims for SAIAE for the period March 2005 to February 2007. There are five aims, and he also indicates who is responsible for which aim.*

*Also read the interesting discussion on the implementation of a lucern processing plant. The product development division of Escom's Northwest Distributor was involved and Mr. Neels Bezuidenhout tells us more about the plant and its components.*

*The World Congress titled "Agricultural Engineering for a better World" will be held in Bonn, Germany next year. The topics and sub-topics are listed and the dates and due-dates are also given.*

*Editor*

### From the President's desk

#### The new Council – what is happening?

The new Council met in early April 2005 to determine our strategic aims for the 2005 – 2007 period. Members can also set the week of 19 – 23 September 2005 aside for our 2005 Continuous Professional Development event, which will take place in Pietermaritzburg.

The following happened during the first Council meeting:

#### Summary of our strategic thinking process on April 2005:

- We very broadly approached the agricultural market and considered where AgEngs could play a role, identified driving forces and prominent sectors in agriculture to receive attention during the next three to five years.
- We then categorised the sectors and identified specific areas where the Institute (SAIAE) should be involved and rewritten them into strategic aims.
- The strategic aims identified, were panned out under similar headings to the previous aims, however, the strategies and actions to attain the aims are different.
- The meeting assigned responsibilities to each aim and tasked the members to develop the specific action plans and budgets for presentation at next meeting.

#### Summary of strategic aims for SAIAE for period March 2005 to February 2007:

##### **1. Positioning of the profession in the market through branding/marketing:**

(Responsibility: Neels Bezuidenhout, supported by Dr. M Shaker and Mr. Chris Venter)

We need to lobby and promote the profession through liaison with four distinct groups:

- Fellow engineers,
- Wider public,

*Continue on p 7*

# **LUCERN PROCESSING PLANT**

Neels Bezuidenhout Pr Eng

## **Introduction**

The product development division of Eskom's Northwest Distributor was involved in the planning and implementation of a lucerne processing plant on Mr. Kobus Bergh's farm Hoogland near Upington. Lucerne is processed in different forms with this plant. Almost all herbivores and omnivores use lucerne in one way or another in their rations.

This plant enables Mr. Bergh to produce market orientated lucerne at the quality required by the consumer. At this stage, the factory can process lucerne specifically for chickens, beef cattle, horses, game, pigs and sheep. Further refinement will still be done for the ostrich market.

Some of the components that the plant consists of are: a bale breaker, pellet press, round bale press, leaf separator, mixers, hammer mills, etc.

## **Near-infrared (NIR) Spectrometer**

The NIR Spectrometer is used to determine the nutritional value of the different feeds. The apparatus is calibrated for lucerne, wheat, maize, sunflower and chop.

An accurate determination is made within three minutes and a printed report is sent to the consumer with the consignment.

A dairy farmer will, for example, now know precisely what the quality of the lucerne is that he/she purchases and it enables him to measure the rest of his concentrates to add to his/her rations. The user will therefore know exactly what he pays for.

### **Pellet press**

The pellet press used in this plant is driven by a 90 kW electric motor and has a maximum capacity of 4,5 tons per hour.

Mr. Bergh currently manufactures an economic pellet and a standard pellet for cattle, sheep and game, of which the main ingredient is lucerne. Certain concentrates and grains are blended with the aid of a mixer. The only other ingredient is steam. Steam helps to bind the pellet, reduces the wear and increases the production capacity of the pellet press. Molasses can be added as a further option.

The heat treatment by the steam and the friction of the press cause the protein to be more digestive for the animal and it seems that animals perform better. Because the density of the pellet is higher and being packed in bags, a full load can be loaded on a truck and thus reduces the transport cost per ton.

There is also almost no wastage of the pellets during transport or when the animals feed.

### **Biscuit press**

The biscuit press is driven by a 150 kW electric motor and has a maximum capacity of 7,5 tons per hour.

Lucerne bales are broken up by a bale breaker and fed into the biscuit press. High- pressure steam and water are added to aid binding and to produce a pure lucerne biscuit without any other additives. The biscuit is approximately the size of two Weet-Bix blocks compressed together. This biscuit is especially popular with ruminants, game and horses.

The heat treatment by the steam and the friction of the press cause the protein to be more digestive for the animal and it seems as if the animals perform better. Also in this case, because the density of the pellet is higher and being packed in bags, a full load can be loaded on a truck and thus reduces the transport cost per ton.

There is also almost no wastage of the biscuits during transport or when the animals feed.

### **Round bale press**

The round bale press is driven by a 22 kW electric motor and presses approximately 10 to 12 bales of 1,2 m diameter per hour.

The benefit is that the press not only presses a round bale into a square, but also reduces the bale to about half the original size. A full 34 to 36 ton round bales can therefore be loaded onto an interlink truck

No additional packaging is required, since the same ropes removed from the bales are re-used.

Much less storage space is taken up in the storeroom.

### **Lucerne leaf separator**

Approximately 70% of the lucerne leaves are separated from the stems with this leaf separator.

The leaves can also be pelleted to prevent wastage or can be bagged and fed to monogastric animals such as pigs and chickens as a high protein feed. The leaves can also be mixed with other ingredients to make up a ration.

The stems that still have about 30% of the leaves on can be used for a high quality hay for ruminants or it can be ground.

**World Congress Bonn 2006**  
**“Agricultural Engineering for a better World”**  
**3 to 7 September 2006**

CIGR, EurAgEng, VDI-MEG and FAO are delighted to invite you to their joint World Congress, which will be held from **3 to 7 September 2006 at Bonn, Germany**. The World Congress will combine the “XVI CIGR World Congress” with “AgEng2006” and the “64<sup>th</sup> VDI-MEG International Conference Agricultural Engineering”. As part of the congress, FAO will hold a workshop on “Agricultural Engineering Contributions to Solve Future Agricultural Problems” covering two half days. Moreover, a preconference on “Automation Technology for Offroad Equipment” will be held immediately before the World Congress.

**The following topics and sub-topics will be discussed:**

- I. Land & Water Use and Environment
- II. Power and Machinery
  - Tractors
  - Tillage & seeding
  - Fertilising & plant protection
  - Harvesting
  - Automation technology
- III. Information Systems and Precision Farming
- IV. Livestock Technology
  - Structures
  - Environment
  - Precision livestock farming
- V. Processing & Post Harvest Technology and Logistics
- VI. Energy and Non-Food Production Technology
- VII. Systems Engineering and Management
  - Emerging industrial products
  - Marketing
  - Service systems
  - Traceability
  - Work safety and ergonomics
  - Farm management, calculation and planning
- VIII. Fruit & Vegetable Cultivation Systems
  - Protected cultivation
  - Greenhouses
  - Equipment for tree crops
- IX. Global Issues
  - Meeting needs of global markets for equipment
  - Technologies to enable agri-food exports

**Dates and deadlines:**

Submission of abstracts	1 February 2006
Notification of acceptance	15 March 2006

List of Papers made available 15 April 2006  
Submission of full papers 1 June 2006  
For additional information please look up <http://www2006cigr.org/> or contact VDI-MEG,  
Graf-Recke-Strasse 84, 40293 Dusseldorf, Germany. Phone: +49 211 6214266. Fax:  
+49 211 6214177. E-mail: [info@2006cigr.org](mailto:info@2006cigr.org)

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*From p1 From the President's desk*

- Decision makers/lobbying, and
- Own members.

**2. Oversee the interests of the profession:**  
(Responsibility: Felix Reinders)

Professional bodies:

- ECSA / PAC

Other:

- NSTF
- SETAG
- SAI
- SABS
- SANCID

**3. Facilitate continued education:**  
(Responsibility: Dr. Dan Ciolkosz,  
supported by Natal branch committee)

- Continuous professional development event – 2005,
- Accreditation of the CPD event, and
- Possible one day workshops throughout SA.

**4. Facilitate/recruit new entrants in the profession:** (Responsibility: Prof. Jeff Smithers)

- Facilitate and promote bursaries,
- Compile/upgrade the prospectus for Agricultural Engineers,
- Attract new entrants to the profession through multi-media usage,
- Communicate annually to decision makers, and

- Plan to consult existing bursars and recruit new ones.

**5. Facilitate interaction between members and SAIAE:**

(Responsibilities: Web-site: Louis Lagrange,  
Communication: Adriaan Louw, Branch activities –  
branch chairpersons, member issues: Felix Reinders)

- Revamp the web-site with new webmaster and new reporting structure,
- Members administration: Clean-up of members database,
- Communicate through:
  - Newsletters/bulletins,
  - Web-site,
  - Seminars, and
  - Magazines, radio, etc.
- Branch events:
  - Involve industry in meetings,
  - Consider SMS messages to members for meeting reminders,
  - Promote meetings via multi media and radio where and if applicable, and
  - Consider one day seminars.
- History book: the book should be launched during 2005 with a special event.

More details about progress in each strategic aim will be published in the next few editions.

Kind SAIAE regards

Louis