KeSEBAE NEWS

NEWSLETTER OF THE KENYA SOCIETY OF ENVIRONMENTAL, BIOLOGICAL AND AGRICULTURAL ENGINEERS

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Food Engineering

Food engineering comprises of fields such as chemistry, microbiology and physics. It is includes application of engineering principles in agriculture, chemicals and mechanics. The engineers here provide the required technological know-how for effective and efficient production, processing and commercialization of food products and services.

The field of food engineering involves activities such as food machinery, food processing, packaging, instrumentation and control. These activities are carried out by multi-agencies such as government entities, consultancies, industries etc.

Food processing

Food engineering specifically deals with:

- Food and pharmaceutical products
- Design and installation of biological/food production processes
- Design and installation of waste treatment systems
- Technical support for various manufacturing plants

Food engineering being an important field in the day to day support of life, there is need to address the challenges and technological issues associated with employment of modern technologies such as nanotechnology and computational science in a bid to develop new products and processes. This should go hand in hand with improving quality and safety. Due to environmental concerns and cost of production, energy saving techniques as well as exploitation of renewable sources of energy with minimal environmental effects should be taken into consideration.

Advancement in technology and science has been widely applied in food engineering with emerging technologies in improved packaging and preservation of food materials. Automation and system process control are some the priorities in food engineering due to the delicate nature of food materials in relation to consumer health safety. System control and monitoring enables automation and flexibility in food production.

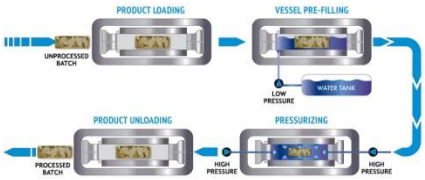
Some of the areas of interest in food engineering include but not limited to progresses in Transport and storage of food, developments in mass transfer of food, chilling and freezing, sanitation and cleaning, new biochemical components of food engineering, non-thermal food preservation such as use of ultrasound, UV, cold plasma, high pressure etc., modern packaging technologies as well as developing sensor systems for monitoring quality and safety.

Emerging technologies in food engineering includes;

i. High pressure processing of foods, salads and ready meals, meat and sea foods, fruits and fruit products

This is a method of sterilizing and preserving food whereby the food material is processed under very high pressure inactivating some enzymes and microorganisms in the food

This technology has been developed to obtain microbiologically safe food products while maintaining the physicochemical, sensory and nutritional properties of the food.



High Pressure Processing of food

ii. Pulsed Electric Fields processing of liquid foods and beverages

This technology involves introduction of high voltage pulses to liquid and semi solid foods placed between two electrodes.

iii. Osmotic dehydration
iv. High Intensity Pulsed Light technology

v. Processing by Radio Frequency Electric Fields
vi. Processing by ultrasound
vii. Decontamination of food by cold plasma
viii. Application of ozone in food

Person of Interest – Eng. Jane Simiyu

Editor

Educational Background

Eng. Jane Simiyu was born on 11th July 1964 at Alfa Maternity home in Eastleigh, Nairobi, as the eight sibling among thirteen. She attended Nairobi South Primary School between 1971 – 1977, before proceeding to Kaimosi Girls High School for "O" Levels between 1978 and 1981 where she obtained a First Division. She then Proceeded to Moi Girls High School Eldoret for "A' levels and obtained 3 Principles and 1 subsidiary (Maths, Physics, Chemistry, and General Paper).

Later she joined University of Nairobi to pursue a degree in BSc Agricultural Engineering and obtained an upper Second class (Hon.)
After which she was posted to Ministry of Agriculture in the function of irrigation and Drainage as this was my preferred option while an undergraduate.
She later enrolled for a Master's degree in Project Planning and Management at the University of Nairobi which she successfully completed.
Eng. Simiyu has attended Agricultural Engineering short term Courses in Japan, Ethiopia, and project management training in Germany.

Work Experience

Eng. Simiyu began her working experience at Ministry of Agriculture in the function of Irrigation and Drainage and moved to various stations like Nyeri, Kiambu, Trans Nzoia and Nairobi. Her major experience was in the design of pump-fed irrigation systems and Drainage works in water logged farm lands.
In 2003, this function was transferred to Ministry of Water and Irrigation and all irrigation staff was taken up in this Ministry.
In 2013, Eng. Simiyu took early voluntary retirement and joined KFW (German Development Bank) where she worked for 3 years overseeing progression of small holder irrigation development program in Mt. Kenya Region, Lower Nzoia irrigation scheme, Rural Roads program (under KERRA)
She later joined Tertiary Consulting Engineers in 2016, where she is to date.

Vision for EBK and Engineering Profession in Kenya

Appointment as member of EBK

Eng. Jane Simiyu was recently nominated by the IEK and appointed as a member of the Engineers Board of Kenya. According to Eng. Simiyu, this appointment sounded a tall order to her, but she promises to put her best foot forward to serve in this special opportunity as such a time as this.

Her vision for EBK is to fully support the board in ensuring that the engineering profession makes greater stride towards achieving integrity and professional ethics in service provision. She will also endeavor to mentor and encourage women engineers towards becoming and adding the members as professional Engineers (P.Es). She admitted that this is very necessary.

According to Eng. Simiyu, EBK needs a political platform to participate in providing technical and professional knowledge in some of the major government engineering projects which ultimately are aimed to have an impact in communities and to the economy of Kenya at large. Her heart deeply reaches out to the famous Galana Kulalu and other food security programs that are planned to take off, especially where irrigation development is a key component. Project delivery models require a consortium of experts in order to achieve optimum options that are fail proof.

Eng. Jane Simiyu`s take on KeSEBAE

KeSEBAE has a divine role to play in ensuring that the engineers in Agriculture are not swallowed up by the Civil and Water / Water Resources Engineers. There has been a competition of some kind.

KeSEBAE needs to bring out clearly the critical and unique role that Environmental, Biological and Agricultural Engineers have in propagating the engineering profession.

We have the voice in food security challenges, climate change challenges, environmental challenges, irrigation and drainage development challenges, and more broadly in achieving a substantial portion of the Big 4 Agenda.

KeSEBAE needs to mentor the young engineers towards professionalism quick enough before they lose their gap in engineering.

We need to find our space in all engineering institutions and organization and be felt accordingly.

Thank You

KeSEBAE ANNUAL CONFERENCE 2019

Theme: Engineering the Big 4 Agenda

Venue: University of Nairobi Towers

Date: Thursday 14 – Friday 15 November 2019

Background

The Government of Kenya has initiated an ambitious development programme known as the "Big 4 Agenda" that prioritizes the following key areas: food security, affordable housing, manufacturing, and affordable healthcare for all. The Kenya Society of Environmental, Biological and Agricultural Engineers (KeSEBAE) recognizes the important role Engineers can play towards the achievement of these Agenda.

In this year's KeSEBAE Annual Conference, nine (9) sub-themes have been identified as vital to the success of this programme. :

Sub-themes

1. Engineering for Food Security
2. Engineering for climate change
3. Engineering the environment
4. Engineering our irrigation
5. Energy for the Big 4 Agenda
6. Engineering our infrastructure
7. Engineering our water and sanitation systems
8. Engineering and technical education
9. Socioeconomics of the Big 4 Agenda

Call for Papers

The Society wishes to invite researchers with complete works on any relevant topics under the above sub-themes. Authors are invited to submit abstracts of their research papers to:

Eng. (Dr.) Duncan Mbuge
Email: info@kesebae.or.ke

Conference Structure

Key note speeches, platform presentations, plenary discussions, poster presentations and exhibitions

Registration

The participants are required to register by paying a conference fee of KES. 5,000 (regular participants) and KES. 1,000 (students) through the payment information below

Conference materials to be submitted as follows:

- Abstracts – October 31, 2019
- PowerPoint and poster presentation – November 8, 2019
- Full papers for publication – November 21, 2019

MPESA: PAYBILL: 303030
Account no.: 2038150696

BANK:
Kenya Society of Env. Bio. & Agric. Engineers
Barclays Bank of Kenya
University Branch
Account no.: 2038150696

Please, submit evidence of payment to 0726305273

KeSEBAE Lecture Series

The Editor

The KeSEBAE series of lectures for this year are as tabled. **All lectures to be held at the University of Nairobi Towers from 5.00pm.**

Date	Theme	Facilitator
October 2019	Renewable Energy Resources	Eng. S. Mwamzali
November 2019	Environmental Engineering	E. Oranga
December 2019	Food Engineering	Prof. M. Okoth
January 2020	The Engineering Profession	Prof. L. Gumbe

Call for membership

The Kenya Society of Environmental, Biological and Agricultural Engineers invite interested individuals to register as members of the society.

EDITORIAL
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