News from EurAgEng

Summer 2016

EurAgEng Executive and MF's Virtual Reality Suite

The Executive holds a meeting each year. One year they travel to check the facilities and arrangements for the next AgEng Conference and the next year they use their contacts to find a convenient, agricultural engineering related, meeting place, to include a technical visit in between discussions over budgets, websites, membership etc.

In March 2016 Massey Ferguson in Beauvais, north of Paris, invited EurAgEng to hold the Executive meeting on their modern site to have a tour of some of the facilities. The tour included some behind-the-scenes engineering test benches and development facilities but the show-stopper was the new state-of-the-art Virtual Reality (VR) suite to support tractor design and development.

EurAgEng Executive members and Secretariat with Thierry Chabrol at MF Beauvais

Massey Ferguson was the first in the tractor industry to employ Virtual Reality for engineering development, and the completely upgraded software and hardware further enhances the solution originally installed at Beauvais in 2005.

Exclusively designed in-house by the Beauvais IT and Engineering teams, this latest design technique enables engineers to visualise the virtual product in a virtual landscape enabling all those involved in the development process to participate in the optimisation of new machines from an early stage.

The user is equipped with 3D glasses and the VR system projects images directly from Computer Aided Design (CAD) models onto a series of screens. Infrared cameras locate the user's position in space in order that the images can be recalculated and 'displayed' around him. This gives the effect of immersing the user in a virtual universe where every detail of the tractor feels real.

"We have been employing Virtual Reality product design techniques here at Beauvais for some ten years now and this new installation makes use of the very latest developments in computer software and hardware," explains Malcolm Shute, Vice- President Engineering at the Beauvais plant which produces Massey Ferguson tractors from 75-400hp.

"Virtual Reality brings multiple benefits allowing us to validate a tractor's design before producing physical prototypes. For example, engineers can verify the useability and accessibility of areas like the cab and controls, and check component assemblies. This increases the productivity of the product development process, decreases the number of prototypes required and enables a

continues over

faster time-to-market.

"Virtual Reality techniques help us to develop better products because we can make multiple, rapid, repeat operations to optimise our designs - something that would not be possible if we were only using traditional physical prototypes," Mr Shute continues. "For example, we use simulations to optimise ergonomics - from vehicle interior ergonomics to the ergonomics of manufacturing and dealer servicing processes.

"It is also a great communication tool and allows teams from different departments to gather together in this virtual tractor world and share their ideas and views of the design," he adds. "It's an amazing experience to see the tractor come alive like this and helps provide us with a much deeper understanding of its potential performance. In addition, the system allows us to collaborate in this virtual world on common development projects with our colleagues at our sister AGCO Engineering Centres around the world."

The Virtual Reality upgrade project was designed, built and spearheaded in-house by the Beauvais site's IT team led by Christophe Laplace.

"This is all part of our wider 'digital chain' approach where we harness and deploy digital product data right through from the conception of a tractor to its development, manufacture, technical documentation and operation with the customer out in the field," he says. "This seamless digital channel acts as a single, dynamic data repository for a particular tractor model throughout its lifetime and helps us boost quality at every stage of the process."

Our thanks to Thierry Chabrol and Malcolm Shute for inviting us to the MF plant at Beauvais and for treating us to some detailed insights of current R&D for tractor design.

Adapted from
www.agrimachinerynews.com/new-virtual-reality-at-massey-centre-of-excellence

European Society of Agricultural Engineers at a glance - EurAgEng

www.eurageng.eu

Who are we?

EurAgEng (pronounced 'Your Agg Enj') is an umbrella association linking 18 national societies of professional agricultural and biosystems engineers from 18 European countries.

It exists to promote the profession of Agricultural and Biosystems Engineering and the people who serve it.

How did it start?

To celebrate its 60th anniversary in 1984 the UK's National Institute of Agricultural Engineering (NIAE), later to be Silsoe Research Institute, organised the first **AgEng conference** in Cambridge. This successful conference led to regular AgEng conferences on a two year cycle ever since.

EurAgEng was established with the first President, Francis Sevila, in 1992/3. Francis organised AgEng Paris in 1988 and subsequent Presidents have come from all around Europe. More detail at *www.eurageng.eu/euragenghistory*.

The Conferences:

AgEng is the name of the EurAgEng conference, but when teaming up with the International Commission of Agricultural and Biosystems Engineering, **CIGR**, it becomes **CIGR-AgEng** and includes conferences for 2006 in Bonn, 2012 in Valencia and for 2016 in Aarhus. These even year conferences cover all aspects of agricultural and biosystems engineering and are more research focussed.

For the odd years EurAgEng teams up with VDI-MEG in Germany for the **Land.Technik-AgEng** series of conferences held as the opening event for **Agritechnica** in Hannover and are focussed on power and machinery.

EurAgEng President Peter Schulze Lammers hands the Award of Merit to Jacques Burel (AgEng2010 Clermont Ferrand)

The Awards:

These are presented at the conferences and include the prestigious **Award of Merit**.

The Award of Merit exists in two forms: *Scientific Understanding* and *Innovation into Practice*. More recently the **Francis Sevila Award** has been added and is given to a high achieving mid-career engineer.

The EurAgEng Innovation & Development Award is a regular feature since AgEng2000. The Award is given for the

best quality paper on Innovation and Development from industry, or an industry / academia collaboration, involving R&D leading to innovative products likely to be marketed commercially.

The Young Engineers Best Paper Award: This award aims to increase motivation and contribution to R&D in agricultural engineering by young engineers (<35) and is for papers describing the development of innovative products or any technical subject applicable to the solution of a problem in mechanisation or engineering applied to an agricultural, food, or biological system.

The Biosystems Engineering Outstanding Paper Award: Publishing high quality papers in peer-reviewed journals is a vital component in research, and EurAgEng recognised this, by adopting ***Biosystems Engineering*** as its Official Scientific Journal in 1994. Since 2008 some of the best papers published in the journal are recognised through the **Outstanding Paper Award** which is sponsored by the UK's National Society, the IAgrE, which is the owner of the Journal, and is a feature of the biennial AgEng Conferences. The Awards are given to authors of outstanding papers published in Biosystems Engineering in the previous two years.

The conference series and main Awards:

- The (CIGR-) **AgEng** conferences are held in June/July of even years and move around Europe. Topics are wide ranging; livestock engineering, greenhouse control and more, as well as power and machinery and in 2016 it will be a CIGR-AgEng conference in Aarhus, Denmark. The Award of Merit for *Scientific Understanding*, the Francis Sevila award and the *Biosystems Engineering* Outstanding Paper, sponsored by the UK's IAgrE, are also presented along with the Innovation and Development and Young Engineers Best Paper awards. Expect several hundred attendees; up to 1200 have attended when combined with CIGR.
- The **Land.Technik-AgEng** conference, which has been fully international since 2007, is led by the German society, VDI-MEG with EurAgEng as a partner along with DLG (organisers of Agritechnica). This is in November of the odd years as the opening event of Agritechnica in Hannover and focuses on Power and Machinery. The Award of Merit for *Innovation into Practice*, with a more commercial focus, is given during this event. Attendance has risen from around 600 in 2007 to 1100+ in 2015.

The shortlist of the 10 nominations for the Outstanding Papers Award are given in this Newsletter but the other awards are announced during the Conference.

Apart from technical presentations **AgEng** conferences include many relevant seminars for other organisations, collaborative project reviews, European initiatives and **AgEng** enables the networking that is important to propose successful collaborative, cross-border European projects. **AgEng** is respected as a highly successful series of conferences and many organisers have volunteered for future conferences; Netherlands in 2018, then Portugal (2020), followed by Germany (in 2022) and Greece in 2024 while **Land.Technik-AgEng** will be held at Hannover in the odd years.

EurAgEng becomes involved in co-sponsoring many other conferences around Europe and publicises these, and other events, that are relevant to engineers involved with agriculture or biosystems.

Membership:

The members of EurAgEng are mainly from the 18 National Societies and pay a small subscription. The members receive the 'Email Update' and printed 'Newsletter' directly from the Secretariat and are automatically members of CIGR.

There are also a few affiliated organisations such as ARO, the Agriculture Research Organisation, in Israel and a small band of founder and lifetime members.

Funding:

EurAgEng is entirely funded through the membership fees and levies from the annual conferences.

Governance:

EurAgEng is governed by a Council of representatives from all of its member national societies and elects an Executive board to run the association with the help of a part-time Secretariat (currently David and Nicky Tinker). Both the Executive and Council meet annually.

Biosystems Engineering:

The scientific journal, now owned by the UK national society, the IAgrE, was selected by EurAgEng as its official scientific journal and EurAgEng members are encouraged to publish their research there.

Why join?

- Discounts for many conferences; not only (CIGR-) AgEng and Land.Technik-AgEng, but also to some of the co-sponsored events. The discount can be several times the annual subscription! EurAgEng members are automatically CIGR members and discounts apply to certain CIGR events.
- The 'Email Update' and printed 'Newsletter' which pass on relevant information including job opportunities, EU research calls etc.
- Belong to a network of fellow professionals across Europe which allows access to collaborations, joint consortia, and contacts at companies, universities and other organisations (log in to the website and use the 'Find a Member' search).
- And give something back to the profession - sharing knowledge and expertise particularly with younger engineers.

So now find out more about us at our stand at CIGR-AgEng 2016 in Aarhus or via *www.eurageng.eu* or contact:

EurIng David Tinker FIAgrE, MIMechE
Secretary General, EurAgEng,
The Bullock Building, University Way,
Cranfield, Beds MK43 0GH
secgen@eurageng.eu

Some Award winners from 10 years ago at CIGR-AgEng 2006 - Bonn . .

. . . and the attendees:- CIGR-AgEng 2006 - Bonn

Have governments realised that agricultural engineering is important?

Claus Sørensen, EurAgEng President-Elect, says on page 8 of this Newsletter that "initiatives bear witness to the importance of Agricultural Engineering and show the keen interest from funding agencies and other stakeholders to support this advancement".

In the UK Dr Robert Merrall, IAgrE President, says, "It has never been so exciting to be an Agricultural Engineer. The (UK) government's Agri-tech strategy and the new Agri-EPI Innovation Centre have put the spotlight on engineering and technological solutions. But developing novel approaches and fresh technologies create new challenges."

In France the French Government launched the 'Agriculture-Innovation 2025' plan during the Paris International Agricultural Show, in February 2016. This action plan is coordinated by the French Ministries of Agriculture, of Higher Education and Research and of Economy and aims at enhancing knowledge in different agricultural areas in order to increase agricultural competitiveness and environmental performance.

The French plan, based on the **'Agriculture-Innovation 2025**' report from last October gathers 30 recommended projects from nine different areas, two of which are agricultural engineering focussed on 1) digital technology, and 2) robotics, and three other areas which bring together all agricultural R&D experimentation and development stakeholders for 1) open innovation specifically targeting experiments and initiatives of farmers, 2) evaluation of multi-performance and innovation in agricultural economics and 3) training that should serve all types of innovation.

Overall the thirty projects focus on priority research and innovation topics which identify issues, actions, stakeholders, financing sources, and, wherever pertinent, a Technological Readiness Level indicator.

The main goal of the plan is to direct funding for research projects dedicated to major agricultural issues and is based on four priorities:

- To strengthen research on agricultural soils and on the relationship between agriculture and climate, particularly through the '4 per 1000' initiative related to carbon capture and storage and the launch of an international research project;
- To put agriculture at the heart of the French National Strategy for Research by including it in three of the five priority action programs;
- To develop digital agriculture through the development of new sensors and related digital services and the implementation of an agricultural data portal;
- To create 'living labs', gathering farmers, industries and researchers, to foster open innovation on the whole territory.

By 2025 the expectation is that the plan will, on both international and regional markets, help set a course for French agriculture and rebuild trust between the various stakeholders, from agricultural producer to the consumer.

In the UK the Agri-Tech Strategy published in 2013 has led to establishing four Centres.

One, Agrimetrics was established in October 2015 and is the world's first Big Data Centre of Excellence for the whole agri-food industry. In the future Agrimetrics will support a revolution in the use of data science and modelling from farm to fork and is a joint venture between Rothamsted Research, University of Reading, the National Institute of Agricultural Botany and Scotland's Rural College.

The other three launched in spring 2016 and are:

- Centre for Crop Health and Protection (CHAP). Led by a consortium including many academic and commercial organisations, it is a £21.3 (27.7euros) million government investment to revolutionise how farmers manage crop threats including pests and disease, both in the UK and elsewhere. The Centre will have its headquarters in York at the National Agri-food Innovation Campus in Sand Hutton.
- Centre for Innovation Excellence in Livestock (CIEL). This is another consortium of academic and commercial organisations and is a £29.1 (37.8euros) million government investment to create new livestock technology and products to boost the profitability and productivity of livestock farming. The Centre will also have its headquarters at the National Agri-food Innovation Campus.
- Agricultural Engineering Precision Innovation Centre (Agri-EPI). This is led by six core partners but involves nearly 90 altogether that are a mix of academic and commercial organisations. It is a £17.7 (23euros) million government investment in the new, fast-moving market of precision agriculture to help the UK's agri-food sector develop advanced technologies that will increase productivity and sustainability in UK agriculture. The Centre will have hubs in Edinburgh, Harper Adams University and Cranfield University.

All four centres are expected to collaborate closely with projects likely to involve expertise from the relevant centres.

AGRIEPICENTRE
Engineering • Precision • Innovation

The Agricultural Engineering Precision Innovation Centre (Agri EPI Centre) will be driving growth and supporting innovative ideas to help farmers and business owners become more profitable and sustainable.

It will deliver research, development, demonstrations and training on precision agriculture and engineering for the livestock, arable, horticulture and aquaculture sectors.

The work will focus on Innovation Hubs and Farm and Processing Centres which:

- Offer one-stop access to leading academic institutions
- Develop exciting new facilities for research and development, demonstration and training
- Initiate 'Think Tanks' to coordinate R&D agenda
- Partner researchers, industry & funding
- Develop business incubation facilities at a range of scales
- Provide data for identification of issues/opportunities
- Design, test & demonstrate new technologies in real farm/processing situations

A central feature of the Centre will be a series of farms and processing facilities equipped with the latest sensing and imaging equipment. These sites will enable the Centre to identify issues for research, but also provide locations to develop and demonstrate technologies to UK producers, supporting the rapidly expanding global market for these technologies.

It does look as if Governments have become aware of the importance of agricultural engineering R&D and this is leading to some optimism amongst European agricultural engineers. If your country or region is successfully setting up a new facility or scheme for agricultural engineering R&D then let the Secretary General know to publicise it through the Newsletter (and on the new website).

References and further information:

• 2015; J-M Bournigal, F Houllier, P Lecouvey, P Pringuet.
'**Agriculture - Innovation 2025 30 projects for competitive and environmentally friendly farming**'
www.acta.asso.fr/fileadmin/ressources/Breves/synthese-Agriculture-Innovation2025_BD_-_Version_anglaise.pdf Accessed May 2016

• 2013; Department for Business, Innovation and Skills.
'**A UK Strategy for Agricultural Technologies**'
www.gov.uk/government/uploads/system/uploads/attachment_data/file/227259/9643-BIS-UK_Agri_Tech_Strategy_Accessible.pdf

Agrimetrics Centre:
www.agrimetrics.co.uk

Crop Health and Protection (CHAP):
http://fera.co.uk/news/showNews.cfm?id=792

Centre for Innovation Excellence in Livestock (CIEL):
www.cielivestock.co.uk

AgriEPI Centre:
www.agri-epicentre.com

smart AKIS
Smart Farming Thematic Network

Smart Farming Network

- **Are you involved in Smart Farming Technologies (SFT)?**
- **Are you a user? A researcher? A developer? Or an adviser?**
- **Do you want to know what is going on with SFT around Europe?**
- **Do you want to network with others involved in SFT?**
- **Are you involved in arable, field vegetable and tree crops or vineyards?**

Then you need to look out for the Smart AKIS website ready in about July **www.smart-akis.com**
In the meantime for some information check out: Facebook: Smart AKIS & Twitter: **@smart_akis**
To be kept informed of the launch date and other information give your contact details; name, organisation, website and email to David Tinker at CIGR-AgEng or email **SecGen@EurAgEng.eu**

Smart AKIS is a European Network mainstreaming Smart Farming among the European farmer community and bridging up the gap between practitioners and research.

smart AKIS Smart Farming Thematic Network

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eip agri AGRICULTURE & INNOVATION

SMART AKIS PARTNERS:

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Delphy
zalf
OLG
BioSense
INTIA Tecnologías e Infraestructuras Agroalimentarias
CEMA European Agricultural Machinery
ACTA les Instituts Techniques Agricoles
David Tinker & Associates Ltd EurAgEng

Winners of the Biosystems Engineering Outstanding Paper Awards 2016 will be announced at the EurAgEng Open Meeting at CIGR-AgEng 2016 in Aarhus, Denmark 27-30th June 2016

They will be chosen from the following shortlist:

1. Vision-based localisation of mature apples in tree images using convexity
Biosystems Engineering, Volume 118, February 2014, Pages 174-185
Eliyahu (Efim) Kelman, Raphael Linker

2. Classification of aggressive behaviour in pigs by activity index and multilayer feed forward neural network
Biosystems Engineering, Volume 119, March 2014, Pages 89-97
Maciej Oczak, Stefano Viazzi, Gunel Ismayilova, Lilia T. Sonoda, Nancy Roulston, Michaela Fels, Claudia Bahr, Jörg Hartung, Marcella Guarino, Daniel Berckmans, Erik Vranken

3. High-precision laser scanning system for capturing 3D plant architecture and analysing growth of cereal plants
Biosystems Engineering, Volume 121, May 2014, Pages 1-11
Stefan Paulus, Henrik Schumann, Heiner Kuhlmann, Jens Léon

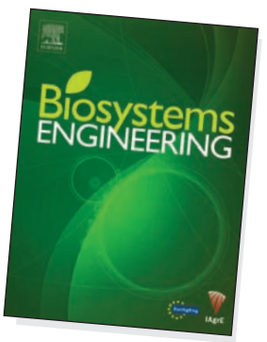
4. Image-based particle filtering for navigation in a semi-structured agricultural environment
Biosystems Engineering, Volume 121, May 2014, Pages 85-95
Santosh Hiremath, Frits K. van Evert, Cajo ter Braak, Alfred Stein, Gerie van der Heijden

5. Characterisation of ventilation rate in naturally-ventilated buildings using heat dissipation from a line source
Biosystems Engineering, Volume 124, August 2014, Pages 53-62
Ivan Lule, Sezin Eren Özcan, Daniel Berckmans

6. Co-robotic intra-row weed control system
Biosystems Engineering, Volume 126, October 2014, Pages 45-55
Manuel Pérez-Ruíz, David C. Slaughter, Fadi A. Fathallah, Chris J. Gliever, Brandon J. Miller

7. A method of optimal traction control for farm tractors with feedback of drive torque
Biosystems Engineering, Volume 129, January 2015, Pages 20-33
Pavel V. Osinenko, Mike Geissler, Thomas Herlitzius

8. Modelling the release of nitrogen from controlled release fertiliser: Constant and decay release
Biosystems Engineering, Volume 130, February 2015, Pages 34-42
Thanh H. Trinh, Kuzilati Kushaari, Anis S. Shuib, Lukman Ismail, Babar Azeem



9. Feasibility of ambient loading of citrus fruit into refrigerated containers for cooling during marine transport
Biosystems Engineering, Volume 134, June 2015, Pages 20-30
Thijs Defraeye, Pieter Verboven, Umezuruike Linus Opara, Bart Nicolai, Paul Cronjé

10. Towards real-time control of chicken activity in a ventilated chamber
Biosystems Engineering, Volume 135, July 2015, Pages 31-43
Ali Youssef, Vasileios Exadaktylos, Daniel A. Berckmans

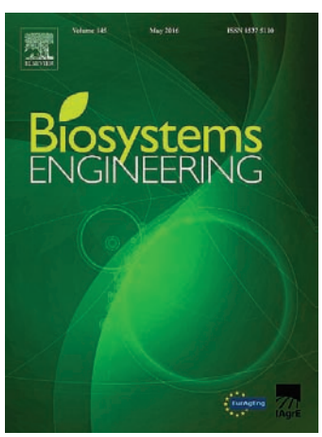
ELSEVIER

Biosystems Engineering
The official journal of EurAgEng and IAgrE

Editor-in-Chief: Dr. W. Day, Harpenden, UK

Read our recent Special Issues on:
Robotics in Agriculture
Innovations in medicine and health care
Irrigated Agriculture: Water Resources Management for a Sustainable Environment

Call for Papers:
Special Issue on 'Sensing and Control of Crop Water Status'
Special Issue on 'Computational Tools to Support Soil Management Decisions'



Impact factor: 1.619

More info: elsevier.com/locate/biosystemseng

STOP-PRESS: EurAgEng 'Rendezvous' seminar at SIMA 2017.
Watch the EurAgEng 'Email Update' for more information.

EVENTS

EURAGENG EVENTS

JUNE 2016

26-29 4th CIGR International - AgEng Conference 2016 - Robotics, Environment and Food Safety
Aarhus, Denmark
http://conferences.au.dk/cigr-2016/

NOVEMBER 2017

10-11 Land.Technik AgEng 2017
Hannover Germany

JUNE / JULY 2018

AgEng 2018 Wageningen

NOVEMBER 2019

Land.Technik AgEng 2019
Hannover Germany

JUNE / JULY 2020

AgEng 2020 Évora

SPONSORED EVENTS

JUNE 2016

14-16 Field Robot Event
Gutmariaburghausen in Hassfurt, Germany
http://www.fieldrobot.com/event/

SEPTEMBER 2016

21-23 Engineering for Sustainable Development of Agriculture
Aleksandras Stulginskis University, Lithuania
http://zuif.asu.lt/en/

27-29 3rd Conference Biogas Science
Ghent, Belgium
http://biogasconference.eu/

OCTOBER 2016

5-6 MCG2016 Machine Control and Guidance
Clermont Ferrand France
http://mcg2016.irstea.fr/

24-27 Engineering and Technology Innovation for Global Food Security
Cape Town Stellenbosch South Africa
www.asabe.org/meetings-events/2016/10/engineering-and-technology-innovation-for-global-food-security.aspx

27-29 ISB-INMA-TEH' 2016
Bucharest, Romania
http://isb.pub.ro/isbinmateh.html

NOVEMBER 2016

24-25 International Symposium on Animal Science (ISAS) 2016
Belgrade, Serbia
http://www.livestocksym.com/

28-29 Advances and Innovations in Agricultural Engineering - 2nd NJF-AGROMEK-EurAgEng Joint Seminar
Herning, Denmark
http://www.njf.nu/seminars/ny-calendar-event-5/

FEBRUARY 2017

10th Symposium - Fruit, Nut and Vegetable Production Engineering - FRUTIC
Berlin, Germany

21-24 45th Actual Tasks on Agricultural Engineering
Opatija, Croatia
http://atae.agr.hr/

23-25 ICORES 2017 6th International Conference on Operations research and Enterprise Systems
Porto, Portugal
http://www.icores.org/

JUNE 2017

13-15 Ciosta 2017 XXXVII CIOSTA & CIGR Section V Conference
Palermo, Italy
http://www.ciosta2017.org/

OTHER EVENTS

JUNE 2016

15 Mobilising pruning residues to expand Europe's biomass market
Members' Salon European Parliament, Brussels
http://www.greenovate-europe.eu/events/mobilising-pruning-residues-expand-europes-biomass-market-results-and-recommendations

21-22 VDI-Congress Drivetrain for Vehicles 2016
Friedrichshafen, Germany
www.transmission-congress.eu

JULY 2016

12-15 12th International Farming Systems Association (IFSA) Symposium
Harper Adams University, Shropshire, UK
www.harper-adams.ac.uk/events/ifsa-conference/#.VlcfkvnhDWI

31- 3/8 13th International Conference on Precision Agriculture (ICPA)
St Louis Missouri, USA
https://www.ispag.org/icpa/

NOVEMBER 2016

New value chains from multifunctional forests
Vienna, Austria by invitation only
https://ec.europa.eu/eip/agriculture/en/news/apply-attend-eip-agri-workshop-%E2%80%98new-value-chains-multifunctional-forests%E2%80%99

FEBRUARY 2017

21-22 4th International Engine Congress
Baden-Baden, Germany
https://www.vdi-wissensforum.de/en/event/nutzfahrzeugmotoren-spezial/

JULY 2017

16-20 11th European Conference on Precision Agriculture
Edinburgh, UK

APRIL 2018

22-25 XIX World Congress of CIGR
Antalya Turkey
www.cigr2018.org

View all forthcoming events online, visit: **www.eurageng.eu/events**

Introducing the new EurAgEng President -

Claus Grøn Sørensen

Claus is Head of the Operations Management Division of Department of Engineering at Aarhus University, Denmark.

His career has been closely connected with the advancement of technologies and operations in agriculture and he has a PhD in Production and Operations Management. For over 25 years his research has been focused on operations optimisation, decision analysis, information modeling, system analysis, and simulation and modeling of technology application in agriculture.

Recently, he has been involved in the creation of a Smart Farming Centre, within the department, which is promoting the research and development of innovative technologies for agriculture. He has been devoted to the global agricultural engineering networking through committee membership of EurAgEng, ASABE, Nordic Association of Agricultural Scientists, chairman of Section V on Systems Management in CIGR, and Chairman of the Scientific Committee for the CIGR-AgEng 2016 conference.

Here he comments on:

Agricultural Engineering and its current status

"Half of the European Union's land is farmed.

This fact alone highlights the importance of farming for the EU's economy, employment, energy use and environment. The globalisation of markets has increased the competitiveness whereas the consumers' needs for healthy, safe and locally produced products highlights the need for high quality produce. According to the Food Agriculture Organisation (FAO), in the next 20 years world food production must increase by 50%, while 80% of that increase must come from intensification.

Meeting this challenge requires the implementation of innovative tools and techniques currently being researched by a number of research organisations all over Europe. Exciting advances include Smart Farming applications involving data collection (edge intelligence), data processing, data analysis and automation technologies in the overall value chain, which, in an integrated way allow operational and management improvements (analytics) of a farm with respect to standard operations (near real time) and re-use of these data (animal-plant-soil) in improved chain transparency (food safety) and chain optimisation (smart data). Other advances include automation and robotics technologies improving productivity and overall economics.

Current initiatives within this area include EU projects like SmartAgrifood as part of the Future Internet Public-Private (FIWARE based) Partnership (FI-PPP) program and promotes the emergence of SMEs and start-ups developing smart applications for agriculture. Other initiatives include the ICT-AGRI programme to strengthen the European Research Area and develop a common European research agenda concerning ICT and robotics in agriculture.

There is also the new Smart-AKIS thematic network for those involved in Smart Farming Technologies of which EurAgEng is a supporter. These initiatives bear witness to the importance of Agricultural Engineering and show the keen interest from funding agencies and other stakeholders to support this advancement.

EurAgEng plays a key role in facilitating and promoting the research and development activities within Agricultural and Biosystems Engineering."

Some of the 73 attendees for the 52 papers at "44th International Symposium Actual Tasks on Agricultural Engineering" 23rd - 26th February 2016, Opatija, Croatia. Papers for this significant SE European Symposium are available at *http://atae.agr.hr/proceedings.htm*

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