

## From the President

### Strategic concepts: Necessity for Agricultural Engineering and Technologies Aad Jongebreuer



Anticipating the future is becoming more and more important for every discipline and related business. Today's society is changing very rapidly: economic, technological, social, cultural and political changes affect us all.

From time to time it is necessary to study the trends and developments in the various areas, accepting the fact that the future is not a mere extension of the present. Examples are developments in information and

communication technology, human mobility and biotechnology. Trends can be described as developments in human behaviour, in individual or collective thinking and in technologies<sup>1</sup>. The following paragraphs discuss how some of them affect our discipline of Agricultural and Biosystems Engineering.

#### Sustainable development

Sustainable development was expounded in the Brundtland report and was originally defined as "the strategy to meet the needs of the present without compromising the ability of future generations to achieve their own needs"<sup>2</sup>. Sustainable development means growth of production and consumption (because of the growing world population and prosperity) without an increase in environmental strain. Calculations have shown that reducing the environmental strain by 50% in the coming 50 years requires efficiency to increase by a factor of 20 in terms of environmental strain per unit of prosperity<sup>3</sup>. Fundamental changes in the management of resources (water, air, land, energy) and raw materials are necessary in order to improve sustainability. Sustainable development of production systems is nowadays a complex transformation process because of the many factors to be taken into account, eg energy-use, emissions, water-use, food security. In the environment we now live, it is no longer accepted that producers can produce and pollute without limit. Sustainable development is today practised with the triple P approach: Planet, Profit and People.

#### Energy

Within the EU, sustainable development is emphasised in policy with regard to research and development and the targets to be achieved within certain timescales. The use of fossil energy is an urgent issue with the price of crude oil at approx €68 per barrel. The European Commission has high ambitions with the European Strategic Energy Technology Plan (SET) - "Towards a low carbon future" - and the plan 20 20 by 2020, Europe's climate change opportunity<sup>4,5</sup>. These ambitions can be summarised by two key targets: a reduction of at least 20% in the emission of greenhouse gases by 2020 compared with 1990 (30% with a broader participation of USA and China), and 20%

of energy consumption in the EU being met by renewable resources. In the year 2050, the emissions of greenhouse gases must be halved and if possible reduced by 60-80%. Research and development in low carbon energy technologies eg wind, solar, second generation biomass will be stimulated in the EU Framework Programme 7 (FP7) for research and technology development.

In FP7, a total of €2350 million is available for energy research, compared with the €1935 million allocated for research in Food, Agriculture, Fisheries and Biotechnology. For the ten thematic priorities of FP7, the total available for collaborative research in the period 2007-2013 is approx €32431 million. Different Energy Technology Platforms for renewables are active such as those for biofuels and photovoltaics. In the Technology Platforms, the stakeholders from industry and science and technology define the Strategic Research Agenda (SRA) on a number of strategic issues with high relevance to society. The national governments have committed themselves to stimulate energy saving and energy efficiency. For the use of biofuels, the EU ambition is a proportion of 5.75% in 2010 and at least 10% by the year 2020 ([www.cordis.europa.eu/fp7/](http://www.cordis.europa.eu/fp7/)).

#### Biobased economy

The EU has further launched the idea of a Knowledge Based Bio-Economy (KBBE), because of growing demand for raw materials and resources. This is important for agriculture as producer of food, fibre, fuel and feed (the four Fs). The European bio-economy has an annual turnover of more than €1500bn and beside agriculture, includes the sectors of Food & Beverages, Paper, Leather, Pulp and Industrial Biotech.

A growing demand for raw materials creates an urgent need for innovative paths in industry with a low use of raw materials and resources and low environmental strain. Biomass can be used for the production of bulk chemicals and fine chemicals, biofuels and biobased materials. Products manufactured partly with agricultural or natural raw materials

have a market volume in EU of approx €450bn. The value of the agricultural raw materials is estimated at €250bn. Experts estimate the potential growth of these raw materials at a value of approx €86bn, mainly for the production of bioplastics ([www.resource-online.nl](http://www.resource-online.nl)).

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## Climate change

Under the topic of Energy, the emission of greenhouse gases and the EU's ambitious goals for its reduction until 2050 have already been mentioned. In 2007 global warming of our planet was a hot issue both with the film "An inconvenient truth" and the message of the Intergovernmental Panel on Climate Change (IPCC) that mankind is responsible for the largest part of global warming during the last 50 years. In the Netherlands the years 2006 and 2007 were the warmest since 1706<sup>6</sup>. The proportion of renewable energy is growing fast with worldwide investments worldwide of some US\$66bn. In Europe, Germany and Spain achieved the largest increase in investment in renewables in 2007.

Worldwide there have been many studies on the potential of biomass. The variation in the estimated potential is high due to availability of water, soil quality and protection of biodiversity. For EU-25 the European Environment Agency (EEA) estimates that in 2030, 12EJ (Exa=10<sup>18</sup>) bio-energy can be produced, which amounts to 20% of the total energy consumption. However these estimations are valid only within certain conditions such as extra agricultural areas for biomass crops and limited use of wood waste (second generation biofuels). The EU target of a 10% use of biofuels for transport in 2020 can only be achieved with the production from sugarbeets, cereals, and oil crops<sup>7</sup>.

## Food or Fuel?

The discussion between food and fuel is very real and in some developing countries the price of food follows the price of crude oil. This leads to problems in those countries where half of the income is utilised for food. Production of biofuels from crops such as maize may have undesirable effects in low salary countries. An article on the emissions of greenhouse gases through the production of grain for biofuels was recently published in *Science* and concluded that the emissions increase through the change in land use<sup>7</sup>. Koonin<sup>8</sup> makes the following statement in an editorial of *Science* "The balance between natural vegetation and cultivation, arable and marginal land use, mechanised agriculture and employment opportunities, and food and energy crops will be important matters of discussion in many forums". However to achieve a 50% reduction in the emissions of greenhouse gases in 2050 compared to the 1990 emissions, we will need all the alternatives for fossil fuels. And for energy security, people must also be ready to accept wind turbines on the landscape.

## Role of agriculture

Agriculture produces food, feed, fibre and biomass for biofuels. For the production of biomass, the sustainability conditions should be met. For example, the net result must deliver a reduction in the emission of greenhouse gases, no competition between food and biomass, the maintenance of biodiversity, the quality of water, air and soil must be protected and the welfare of the employees must be assured. Among the challenges for agricultural engineers in industry, science and practice are energy saving in soil tillage, seeding, ploughing, harvesting and transport of products, utilisation of CO<sub>2</sub> in the production of greenhouse crops and the optimisation of renewable energies. For the second generation of biofuels, agriculture can have a role in the pre-treatment of crops and residues<sup>9</sup>. It may be clear that the role of agriculture is changing on the basis of sustainability conditions in society and the world market for food, fuel, fibre and feed. For agricultural engineers and technicians there are many interesting and exciting challenges if

we are ready to take our logical position and to keep an open mind for new insights<sup>10</sup>.

## Role of EurAgEng

Since 2005, EurAgEng has participated in the Working Group *Agricultural Engineering and Technologies* (AET) of the European MANUFUTURE Technology Platform. This initiative taken by the German organisations VDI and VDMA has given the opportunity to explain the possibilities of our profession to contribute to the sustainable solution of urgent topics. The strategic research agenda and the implementation plan with topics such as radio frequency for food and process control, robotics for crop management and EU standards for sustainable production in dairy farms. Advanced agricultural machinery systems and sustainable energy supplies for agricultural machinery are worked out and offered to the different DGs of the EU ([www.manufuture.org](http://www.manufuture.org)). The trends and developments indicate that there is much work to do before we are able to submit proposals in the framework of EU calls.

Our EurAgEng society offers members the opportunity to be active in the different international working groups. We can observe that activities to formulate the state-of-the-art on actual themes and topics help to make our profession visible and attractive for the authorities and officials. I am convinced EurAgEng is able to do more in the production of position papers based on science, technology and practice. The network of EurAgEng members is invaluable and I urge you to make good use of it. It is also possible to compose materials for university programmes and continuing education in our society.

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Comments are welcome to [aad.jongebreur@planet.nl](mailto:aad.jongebreur@planet.nl)

## The Field Robot Event

### Prof dr ir Eldert van Henten



Agricultural engineering has a low-tech image in West Europe and those high school students interested in technology prefer a career in high-tech and information technology. They just don't seem to be aware that both aspects are the backbone of modern agricultural engineering. The intrinsic biological variability of nature in terms of position, shape, size and colour as well as adverse outdoor climatic conditions such as strongly varying solar radiation levels, unfavourable temperature and humidity levels, dust and rain, pose high-tech engineering challenges not commonly encountered in standard industrial production processes. Agricultural robotics offers an excellent opportunity to confront students with these challenges.

Therefore, in 2003 in Wageningen, The Netherlands, the **Field Robot Event** (FRE) was initiated to stimulate the integration of robotic design projects in current (agricultural) engineering education. To attract student teams, 'competition' as an essential element of game-based learning is used. To limit the required budget, the FRE focuses on small sized vehicles that navigate between the rows of crops like maize. The robots compete in an Olympic manner. Robots are presented during a fair and participants are invited to write a scientific paper about their robot entry for publication in the proceedings of this meeting. Besides being a challenge in robotics and offering

hands-on experience in hardware and software design, the students develop off-curriculum skills like leadership and teamwork, communication, time management, fund raising and public relations.

In five years, the FRE has become a mature competition with a stable number of participants, a considerable group of spectators and a lot of press exposure. The location of the event is rotating through Europe. In 2008 the FRE will be hosted by the University of Applied Sciences Osnabrück, Germany, (refer to: [www.fieldrobot.com](http://www.fieldrobot.com)) and in 2009 - as always in odd years - it will be back home at Wageningen University.



Helios of the Technical University of Applied Sciences of Braunschweig, Germany, the winner of the 2007 Field Robot Event.

## AgEng2008

### Agricultural and Biosystems Engineering for a Sustainable World 23-25 June 2008 Hersonissos, Crete

The AgEng2008 Conference and Industry Exhibition will be held at the Aldemar Resort Hotel in Hersonissos, Crete and is being organised by the Hellenic Society of Agricultural Engineers. The event will combine a full scientific program of oral and poster sessions with an industry exhibition.

A feature of this conference is the emphasis it will place on the role of European agriculture as a producer of energy. Scientific trends in agricultural and biosystems engineering will be highlighted and new issues will be explored. The topics will be grouped under the headings:

- Power and Machinery, Tractors, Tillage & Seeding, Fertilising & Plant Protection, Harvesting, Automation Technology (124 abstracts submitted)
- Information Systems and Precision Farming (69 abstracts submitted)
- Energy Technology, Renewable Energy and Energy Efficiency (78 abstracts submitted)
- Environmental technologies (38 abstracts submitted)

- Livestock Technology, Structures, Precision Livestock Farming (92 abstracts submitted)
- Fruit & Vegetable Cultivation Systems, Protected Cultivation, Greenhouse Technology (41 abstracts submitted)
- Land & Water Use and Environment (88 abstracts submitted)
- Processing & Post Harvest Technology and Logistics (92 abstracts submitted)
- Systems Engineering and Management, Emerging Industrial Products, Marketing Service Systems, Traceability (32 abstracts submitted)
- Ergonomics, Safety and Health (29 abstracts submitted)
- Education and Extension Service (13 abstracts submitted)

For full details of the event and to register, go to [www.ageng2008.com](http://www.ageng2008.com). Members of EurAgEng qualify for a discount on registration fees and there is an early bird discount for registrations made by 13 April 2008.

# EurAgEng and the Landbased Technician Accreditation Scheme (LTA)

## Chris Whetnall - Chief Executive, IAgRE



In 2003, the Institution of Agricultural Engineers (IAgrE) hosted a conference highlighting the skills crisis facing our industry. What became evident was the absence of a clearly defined career path for dealer technicians. And so in October 2005, a group of individuals committed to excellence in technical training, met under the umbrella of the AEA (the UK trade association

representing manufacturers and importers of agricultural and grounds care equipment), to discuss how best to address this issue. At this meeting, the **Landbased Technician Accreditation** scheme was born - **LTA** for short.

The **LTA** scheme is a tiered programme of development from the new entrant to the industry's top technicians and provides a set of clearly defined steps accessible to all. Administered by IAgRE on behalf of the industry, the LTA scheme has four tiers. As technicians progress through the tiers, they will be expected to have attended an increasingly complex and advanced set of specified manufacturers' training courses.

With the exception of LTA1 registrants, all are issued with a photo ID card (see below). There is a nominal charge for the photo id registration card and re-registration will be required at least every five years.

- **LTA1** is for the apprentice (or new entrant). ie those who have not yet been assessed.
- **LTA2** accredits those at the NVQ level 2 and 3, National Diploma or equivalent. ie those who have completed an apprenticeship as well as those who can demonstrate their skill through experience and training. This will be the standard or core tier.
- **LTA3** is for those identified by their dealer and manufacturer to study at advanced level to become experts in diagnostics or specialists in specific products. This will be considered the advanced or diagnostics tier.
- **LTA4** is for those who have progressed beyond LTA3 and considered to be at the top of their profession. They will also be nominated by their dealer and manufacturer to study and be assessed on special high level training. They will lead and mentor others.

Those accredited at LTA3 and LTA4 are required to register as an **Engineering Technician (EngTech)** with the Engineering Council<sup>UK</sup> (EC<sup>UK</sup>) through the IAgRE.

Manufacturers expect all franchised dealers to register all their qualifying technicians under the LTA scheme and also to register their LTA3 and LTA4 technicians with the EC<sup>UK</sup> as Engineering Technicians through IAgRE.

### Licence to Practise

At this stage, the LTA scheme is not designed to be a licence to practise. Rather, it is a voluntary code whereby industry can demonstrate a commitment to employing only those who are qualified and experienced to work on today's highly complex equipment by training for tomorrow. If, in the future, UK or EU legislation requires licensing of technicians, the LTA scheme will be in place to take on that challenge immediately.

### A National Register

Details of all those registered under the LTA scheme will be held by IAgRE on a national register. These details will be held securely and will be covered by the Data Protection Act. The only information that will be passed to a third party will be the LTA tier under which an individual is registered. All other details will be confidential.

### Code of Conduct

All those who are accredited at LTA2 or above will be required to sign up to a code of practice. This is to ensure that the registrants (and their employers) are committed to improving the registrants' skills during the period of their registration.

Over 15 companies and organisations have signed up to a set of protocols (Memorandum of Understanding or MoU) outlining their role and responsibilities under the scheme. Others are expected to sign in due course. The organisations are **AEA, BAGMA, EurAgEng, FTMTA, IAgRE and Lantra**.

The companies are **AGCO, Claas, CNH, JCB, John Deere, Hayter, HONDA, Kubota, Lely and Ransomes Jacobsen**.

At an early stage, it was identified that organisations with a Eurocentric approach to their technician training could benefit from a scheme that could have common currency throughout Europe. Additionally, under its remit to work closely with industry, the Council of **EurAgEng** asked to be involved in this scheme at an early stage. EurAgEng has therefore signed the MoU. As a result, the EurAgEng logo appears on the photo id cards issued to registrants under the scheme. By agreement with EurAgEng, those registered as **Engineering Technicians (EngTech)** through the IAgRE will also show the designatory letters **EurAgEngTech**.



The LTA logo will become more commonly seen as participating manufacturers start to use it on their letter-heads and dealers display the logo on their service vans. Those registered at LTA2 and above receive a photo id card and an A4 certificate of registration. Participating dealers also receive an A4 certificate.

The id card on the previous page shows that Dan is registered at LTA2. Because Dan has been a member of IAgRE for some years and is also registered as an Engineering Technician through the IAgRE, the card shows that as well. This will not normally be the case and LTA2 registrants will not usually be EngTech registered unless they have previously qualified. Registration as EngTech at LTA2 is not a requirement of the

scheme. The reverse of his card shows that he has completed the externally assessed courses listed. There are spaces for up to eight of these additional qualifications.

For the franchised dealer networks, the relevant manufacturers training centres will be acting as assessment centres accredited and audited by IAgRE. For those technicians working in independent dealerships, it may be necessary for those wishing to register on the LTA scheme to "top up" their basic training and experience with additional courses and attend regional centres for the assessments required under the scheme.

For further information on the LTA scheme visit [www.iagretech.org](http://www.iagretech.org) or [www.euragengtech.eu](http://www.euragengtech.eu)

## Are you getting it?

Over 900 members do not have a current contact email address on our database and so are unable to receive the latest monthly updates with news, conference notices and job adverts. Please check your contact details via the members' page on the website, inform us of any changes, and make sure you are not missing out on the latest information. The address is [www.eurageng.net/memlogin.php](http://www.eurageng.net/memlogin.php).

## 36th International Symposium Actual Tasks on Agricultural Engineering Prof Silvio Kosutic, Convenor of the Symposium Prof Daniele De Wrachien, Past President of EurAgEng

The 36th International Symposium **Actual Tasks on Agricultural Engineering** was held on 11-15 February 2008 in Grand Hotel Adriatic, Opatija, Republic of Croatia. The principal Organiser, Agricultural Engineering Department, Faculty of Agriculture, University of Zagreb was supported by the following frameworks: Department of Agricultural Engineering, Faculty of Agriculture, University J.J. Strossmayer, Osijek, Department of Bio-systems Engineering, Faculty of Agriculture, University of Maribor (Slovenia), Agricultural Institute of Slovenia, Hungarian Institute of Agricultural Engineering Gödöllő and Croatian Agricultural Engineering Society. Co-sponsors of the Symposium were CIGR, EurAgEng, AAEE and Association of Agricultural Engineers of South Eastern Europe (AAESEE).

This year, 103 participants from 16 countries attended the Symposium. It consisted of an Opening Session and six Topic Sessions covering all the broad subject-areas that fall under the scope of Agricultural Engineering. The importance of the Event was underlined by the presence of Prof Rameshwar Kanwar, Chairman of the Agricultural and Biosystems Engineering of Iowa State University, USA as a keynote speaker, the Past President of EurAgEng Prof Daniele De Wrachien and the representatives of the National Societies of Agricultural Engineers of Bosnia and Herzegovina Prof S. Skaljic, Serbia Prof M. Martinov and Slovenia Dr Viktor Jecic and MSc Tomaz Poje.

At the Opening Session Prof Davor Romic, Dean of the Faculty of Agriculture, University of Zagreb, delivered his speech emphasising the importance of the Event and its long tradition. The Convenor, Prof Silvio Kosutic brought the greetings of the Croatian Society of Agricultural Engineering, Prof Daniele De Wrachien stressed the long tradition of the Symposia and their future role as one of the main gathering events for agricultural engineers in South-Eastern Europe, and pointed out the

dimension of the tasks and challenges that Agricultural Engineering education in European universities will have to face and cope with in the third millennium. The representative of the Croatian Society of Agronomists closed the Session bringing the greetings of the Society to the Symposium.

Prof Rameshwar Kanwar delivered a keynote lecture titled "Emerging Opportunities and Future Challenges for Agricultural and Biological Engineering Profession" which was really appreciated by the audience. Next, a number of lectures were held among which are worth mentioning: "Possibilities of running tractors by plant oil" presented by Dr Viktor Jecic, "Top soil properties acquisition by novel fusion sensors" presented by Dr Cornelius Jantschke, "Path planning for sludge processing robot by means of trajectory simulations" presented by Dr Nikica Starcevic and "Mapping weed occurrence-an important part of precision farming presented by Jaroslav Cepel. In the Topic Sessions, each starting with a review report, 50 papers were discussed, in oral presentation.

At the Closing Session the Convenor emphasised the role of EurAgEng and CIGR in the ecologically sustainable development and rural development and heritage preservation of agriculture within the East-European countries.

World famous agricultural machinery producers, such as AGCO, Bobballe, Claas, Hardi, Same-Deutz-Fahr. INA-national petrol company presented their new palette of bio-degradable oils showing its progress and keeping pace with well known worldwide competitors. Other companies presented their current programmes by means of video and oral presentations during afternoon Sessions.

Information regarding the 37th Symposium in the year 2009 will soon be available at the web site: <http://atae.agr.hr>

## Sponsored Events

**26-30 May 2008**

### *Forest Technology and the Environment FORTECHENVI*

Organiser: Mendel University, Brno  
Venue: Prague, Czech Republic

**9-11 June 2008**

### *Model-IT 2008: IV International Symposium on Applications of Modelling as an Innovative Technology in the Agri-Food Chain*

Organiser: Universidad Politécnica, Madrid  
Venue: Madrid, Spain  
Web: [www.model-it2008.upm.es/](http://www.model-it2008.upm.es/)  
Email: [model-it2008.agronomos@upm.es](mailto:model-it2008.agronomos@upm.es)

**17-18 June 2008**

### *International Conference on Irrigation in Mediterranean Agriculture*

Organiser: University of Naples  
Venue: Naples, Italy  
Email: [severino@unina.it](mailto:severino@unina.it)

**18-20 June 2008**

### *DEBRIS FLOW 2008 - 2nd Intl Conference on Debris Flow*

Organiser: Wessex Institute of Technology  
Venue: The New Forest, UK  
Web: [www.wessex.ac.uk/debris2008cfp.html](http://www.wessex.ac.uk/debris2008cfp.html)

**23-25 June 2008**

### *AgEng2008 - Agricultural and Biosystems Engineering for a Sustainable World*

Organiser: Agricultural University of  
Athens and EurAgEng  
Venue: Hersonissos, Crete - Greece  
Web: [www.ageng2008.com](http://www.ageng2008.com)  
Email: [secretariat@ageng2008.com](mailto:secretariat@ageng2008.com)

**25-26 September 2008**

### *13th Intl Conference "Biosystems Engineering & Processes in Agriculture"*

Organiser: University of Agriculture  
Venue: LT-54132 Kaunas r., Lithuania  
Web: [www.mei.lt](http://www.mei.lt)  
Email: [conference@mei.lt](mailto:conference@mei.lt)

**14-17 October 2008**

### *10th International Congress on Mechanization and Energy in Agriculture*

Organiser: Akdeniz University  
Venue: Antalya, Turkey  
Email: [antageng2008@akdeniz.edu.tr](mailto:antageng2008@akdeniz.edu.tr)  
Web: [www.akdeniz.edu.tr/antageng2008](http://www.akdeniz.edu.tr/antageng2008)

**18-20 November 2008**

### *3rd International and 20th Croatian Conference of Technologists for Post- harvest Technology - "Zrnko '08"*

Organiser: University of Zagreb  
Venue: Stubicke Toplice, Croatia

Tel: +385 1 2393 818, +385 1 2393625

Email: [zrnko@agr.hr](mailto:zrnko@agr.hr)

**5-9 January 2009**

### *Frutic09 - 8th International Symposium of Information and Technology for the Sustainable Production of Fruit and Vegetables, Nuts, Wines and Olives*

Organiser: INIA  
Venue: Concepción - Chile  
Web: [www.frutic09.org/eng/index.html](http://www.frutic09.org/eng/index.html)

**17-19 June 2009**

### *XXXIII CIOSTA-CIGR Section V International Conference "Technology and Management to ensure Sustainable Agriculture, Agrosystems, Forestry and Safety"*

Organiser: DISTAFA  
Venue: Reggio Calabria, Italy  
Web: [www.unirc.it/archivio\\_eventi/zimbalatti/](http://www.unirc.it/archivio_eventi/zimbalatti/)

**6-8 July 2009**

### *ECPA (European Conference on Precision Agriculture), ECPLF (European Conference on Precision Livestock Farming) and EFITA conference (European Federation for Information Technology in Agriculture, Food and the Environment)*

Venue: Wageningen, Netherlands  
Web: [www.jiac2009.nl](http://www.jiac2009.nl)

## Other Events

**4-5 June 2008**

### *7th Int Conference on Smart Systems*

Organiser: Tampere University  
Venue: Seinäjoki, Finland  
Email: [asko.ellman@tut.fi](mailto:asko.ellman@tut.fi)  
Web: [www.smartsystems.fi/en/](http://www.smartsystems.fi/en/)

**18-20 June 2008**

### *Agricultural Film 2008*

Organiser: Applied Market Information  
Venue: Fira Palace Hotel, Barcelona, Spain  
Email: [sh@amiplastics.com](mailto:sh@amiplastics.com)  
[www.amiplastics.com/ami/AMIConference.asp](http://www.amiplastics.com/ami/AMIConference.asp)

**30 June -4 July 2008**

### *IAMFE Denmark 2008*

Organiser: (IAMFE)  
Venue: Koldkærgaard, Denmark  
Web: [www.lr.dk/iamfe2008](http://www.lr.dk/iamfe2008)

**30 June -2 July 2008**

### *5th International Conference Soil Tillage - New Perspectives*

Organiser: ISTRO - Czech Republic  
Venue: Brno Czech Republic  
Email: [badalikova@vupt.cz](mailto:badalikova@vupt.cz)  
Web: [www.vupt.cz/](http://www.vupt.cz/)

**6 -11 July 2008**

### *International Drainage Workshop on Agricultural Drainage and Environment*

Organiser: ICID in Finland and Estonia

Venues: Finland and Tallinn, Estonia

Web: [www.fincid.fi/idw2008](http://www.fincid.fi/idw2008)

**21 -23 July 2008**

### *8th Portuguese Conference on Automatic Control*

Organisers: UTAD and APCA  
Venue: UTAD, Vila Real, Portugal  
Email: [controlo2008@utad.pt](mailto:controlo2008@utad.pt)  
Web: <http://home.utad.pt/controlo2008/>

**15-17 September 2008**

### *International Conference - Innovation Technology to Empower Safety , Health and Welfare in Agriculture and Agro-food Systems*

Organiser: CIGR V and AIIA  
Venue: Ragusa, Italy  
Email: [info@ragusashwa.it](mailto:info@ragusashwa.it)  
Web: [www.ragusashwa.it](http://www.ragusashwa.it)

**21-25 September 2008**

### *3rd Intl Meeting on Environmental Biotechnology and Engineering*

Venue: Palma de Mallorca, Spain  
Email: [imebe2008@gmail.com](mailto:imebe2008@gmail.com)  
Web: [www.3imebe.org/](http://www.3imebe.org/)

**25-26 September 2008**

### *66th LAND. TECHNIK - International Conference on Agricultural Engineering*

Organiser: VDI Wissensforum

Venue: Stuttgart-Hohenheim, Germany

Web: [www.vdi-wissensforum.de/](http://www.vdi-wissensforum.de/)

**25-26 September 2008**

### *13th Intl Conference "Biosystems Engineering & Processes in Agriculture"*

Organiser: Lithuanian Univ of Agriculture  
Venue: LT-54132 Kaunas r., Lithuania  
Web: [www.mei.lt](http://www.mei.lt)  
Email: [conference@mei.lt](mailto:conference@mei.lt)

**13-19 October 2008**

### *20th International Congress on Irrigation & Drainage*

Organiser: ICID  
Venue: Lahore, Pakistan  
Email: [icid@icid.org](mailto:icid@icid.org)  
Web: [www.icid.org](http://www.icid.org)

**23-28 November 2008**

### *World Conf on Animal Production*

Venue: Cape Town, South Africa  
Email: [wcap@up.ac.za](mailto:wcap@up.ac.za)  
Web: [www.wcap2008.co.za](http://www.wcap2008.co.za)

**15 June 2009**

### *18th Triennial ISTRO Congress*

Venue: Izmir, Turkey  
Email: [istro2009@mail.ege.edu.tr](mailto:istro2009@mail.ege.edu.tr)  
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# Education and Research in Biosystems or Agricultural and Biological Engineering in Europe; a Thematic Network (ERABEE TN)

D. Briassoulis, P. Panagakis, E. Nikopoulos  
efinik@aua.gr



Education and Culture DG

## Background and motivation

During the last decade, Agricultural Engineering University studies in Europe faced dramatic problems such as decrease of student enrolment, reduced prestige, declining funding, etc. The dramatic situation within this specific field of studies along with its chaotic state in terms of programme content was the motivation behind the establishment of a previous Thematic Network, namely USAEE-TN<sup>1</sup>. USAEE-TN defined the traditional Agricultural Engineering discipline as an application-based discipline related to the production and processing of goods of biological origin from the field and the farm to the consumer (ie plant and animal production, post-harvest technology, process engineering, etc.). In fact, Agricultural Engineering was traditionally related to the protection of the natural environment and the preservation of the natural resources (ie soil conservation, rational water management, air pollution control, waste management, preservation of natural habitats etc).

This traditional field of Agricultural Engineering is now evolving into the Biosystems Engineering field, which is a science-based engineering discipline that integrates engineering science and design with applied biological, environmental and agricultural sciences, broadening in this way the area of application of engineering sciences not strictly to agricultural sciences, but to the biological sciences in general, including the agricultural sciences. In short, whereas Agricultural Engineering applies engineering sciences to agricultural applications, Biosystems (or Agricultural and Biological) Engineering, extends this application of engineering sciences to all living organisms applications, including agriculture. Biosystems engineers on top of the aforementioned areas can also be involved in the expanding new areas of biomaterials, biofuels, biomechanics, etc, in the assessment of food traceability, quality and safety and in the design of environmentally friendly and sustainable systems. In contrast, Biosystems (or Agricultural and Biological) Engineering would not pertain to human medical applications.

In fact, the major international political priority relevant to Biosystems (or Agricultural and Biological) Engineering studies was set in USA and Canada back in 2003 by the American Society of Agricultural Engineers (ASAE) and the Canadian Society of Agricultural Engineering (CSAE), respectively. This political priority regarded major changes in the curricula, also reflected in the change of the Societies' names which were considered as a major issue. At that time it had become evident that traditional Agricultural Engineering Departments experienced a marked decline in students. Since the majority of such Departments in USA and Canada added a 'bio' modifier term (ie Biosystems, Biological, Bioresources, Bioengineering, etc) in their titles and aligned their academic programs with the biology-based curriculum (including as a main sub-system agricultural engineering), student enrolment increased. As a result in 2005 ASAE and CSAE decided to change their names to American Society of Agricultural and Biological Engineers (ASABE<sup>2</sup>) and Canadian Society for Bioengineering (CSBE<sup>3</sup>), respectively.

In response to the above dramatic developments, the new Thematic Network for Education and Research in Biosystems Engineering or Agricultural and Biological Engineering in Europe (ERABEE-TN) was established in a way that it will be built-upon and further develop the outputs of the USAEE-TN by adapting and restructuring the Agricultural Engineering programs of studies and contributing to the inevitable transition from the traditional Agricultural Engineering studies towards a new European dimension in higher education in the broader area of Biosystems (or Agricultural and Biological) Engineering.

## Present and future of Biosystems (or Agricultural and Biological) Engineers

Currently employment opportunities for Agricultural Engineers, but also for Biosystems Engineers in the future, are available in areas such as providing services in building analysis, design and construction (ie livestock structures, greenhouses, storage structures, etc), facility planning, and manure management, offer of expertise to the power and machinery industry, conservation of water and soil resources, develop plants and equipment for post-harvest treatment and food processing, propose planning of rural land and green areas, restoration and reuse of historical rural buildings, environmental impact assessment, safety and health at work, investigation of accidents, design and evaluation of new products.

In the future, it is anticipated that the bio-based economy will grow significantly in Europe. Enterprises in the areas of bio-energy and renewable resources and bio-based materials are likely to increase, creating employment opportunities for Biosystems (or Agricultural and Biological) Engineers. Advancements in science and technology will create new opportunities in areas such as bio-safety, risk assessment, sensor/bio-sensors, electronics and use of information technology, remote sensing, GPS/GIS and biomaterials. New emerging opportunities are likely to occur in developing and under-developed countries in areas of environmental quality, infrastructure and rural development (agriculture and bio-energy).

## Impact

The transition from the traditional field of Agricultural Engineering to the emerging field of Biosystems (or Agricultural and Biological) Engineering will directly affect programmes of study, student learning outcomes and competences, information access and course advising. It will further offer a significant contribution towards the harmonization of European Higher Education and possibly pave the way for analogous initiatives of other professional fields. It is expected that the project will also help Europe to catch up with the corresponding developments already in an advanced stage in the USA and Canada. Finally, it will directly and indirectly support industry seeking specialised experts to provide high level knowledge concerning specific subjects in the broader area of Biosystems Engineering.

<sup>1</sup> <http://www.eurageng.net/usaaee-tn.htm>

<sup>2</sup> <http://www.asabe.org/>

<sup>3</sup> <http://www.bioeng.ca/>

## Biosystems Engineering

EurAgEng is proud to have *Biosystems Engineering* as its official scientific journal. Members of EurAgEng are eligible to subscribe to the journal for their own personal use at the much reduced rate of GBP229 per year. If you wish to take up this offer, please contact Dave Tinker at <secgen@eurageng.net>

## Member in the News Dr Friedhelm Meier



The Max-Eyth Society in the Association of German Engineers (VDI-MEG) recently honoured a Past President of EurAgEng, Dr Friedhelm Meier, by presenting him with the Max-Eyth Memorial Coin 2007.

Friedhelm Meier was born in Langenberg in the Rhineland in 1930, studied agronomy in Bonn, and wrote his dissertation about an agricultural-sociological topic under the supervision of Heinrich

Niehaus, a well-known professor of agricultural policy and market theory. After two years of work as a press relations officer at the KTL (Association for Technology in Agriculture), he moved to the Association of German Manufacturers of Agricultural Machines and Tractors (LAV) in Frankfurt. As early as 1972, he became deputy managing director and in 1976, he was promoted to managing director. He represented the interests of the industry in a dedicated way and worked for the welfare of the member companies.

The professional life of Dr Meier coincided with considerable structural change in agriculture and in the agricultural machinery industry. As managing director of the LAV, he made a significant contribution to the adaptation of the association to the changing requirements and the promotion of an international orientation of the industry. He was also an

important player in the reorganisation of trade fairs and exhibitions. Here he had to respect the interests of agriculture, industry, and organisers, which were often very different, while acting as a mediator. In the end, he realised a concept which satisfied all parties involved and was ultimately successful.

Dr Meier established and cultivated contacts with associations and organisations in Germany and abroad:

- As a member of the executive committee of the Association for Technology and Structures in Agriculture and vice-president of the MEG, he contributed significantly to the merging of the VDI Agricultural Machinery Society and the Max-Eyth Society to the Max-Eyth Society for Agricultural Engineering in the VDI (VDI-MEG).
- For decades, he was a member of the DLG, the German Agricultural Society, and its exhibition committees and made a very significant contribution to the Agritechnica, which is so successful today.
- As a long-standing member and later president of the European Society of Agricultural Engineers (EurAgEng), he promoted international cooperation and significantly influenced the international orientation of agricultural engineering conferences.

The journal *LANDTECHNIK* was of particular importance to Dr Meier. He was very much committed to its continued existence and development and served as editor for several years. And as one of the editors of the *Yearbook Agricultural Engineering*, which has been published regularly since 1988, he has guaranteed an excellent standard of contributions and a comprehensive overview of the state of the art in agricultural engineering.

Last, but not least, as President of two foundations, he created and constantly increased possibilities of promoting young agricultural engineers and their financial security.

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