



## ASIAN CAIRNS

### SUSTAINABLE FARMSCRAPERS FOR RURAL URBANITY

Vincent Callebaut Architectures

#### 1. FROM RURAL EXODUS TO CHINESE URBAN BIOSPHERE

At the end of 2011 the number of inhabitants in Chinese cities exceeded the number in the countryside. This urban population is supposed to increase to 800 million by 2020 with 221 cities of at least one million (versus only 40 in Europe of the same size) and 23 mega-cities of more than five million.

Facing this massive rural exodus, the future models of the - green, dense and connected - cities must be rethought! The challenge is to create a fertile urbanisation with zero carbon emission and with positive energy generation.

*continues on page 2*

## From the Secretary General

### Information; how to get it and how to spread it - DAVID TINKER

All EurAgEng National Society members can read the CABI Agricultural Engineering Abstracts FREE of charge on-line through the Members' Login ([www.eurageng.eu/user/login](http://www.eurageng.eu/user/login)).

To get your Username and Password you will need your Membership Number; email me if you do not have it ([secgen@eurageng.eu](mailto:secgen@eurageng.eu)). There are more instructions in this Newsletter about using CABI; it is worth having a go to see what you can find. Don't forget to send to CABI, preferably in electronic form, your conference and seminar proceedings as well as important reports to be included in the database. A major advantage of CABI is that they will take papers in practically any language and produce an abstract in English; it may take a while before the papers appear but we can all discover the information then.

*Biosystems Engineering* is the official journal of EurAgEng. Again there is more information in this Newsletter but don't forget that the Impact Factor has been increasing and good papers are always welcomed. Note that if your paper has been published elsewhere, perhaps as a conference paper, it can't be used again. However just make sure that the conference paper only describes part of the experimental programme and has a limited data set and discussion so that you have more unpublished information for a full paper

in *Biosystems Engineering*. Don't forget to change the title as well. Papers in *Biosystems Engineering* go automatically into the CABI Abstracts. See [www.eurageng.eu/services](http://www.eurageng.eu/services) if you would like a personal copy or online subscription to *Biosystems Engineering*.

Land.Technik-AgEng is soon; this November. Although it is too late to submit a paper there is plenty of networking that can be done, whether finding collaborators, owners of clever research equipment, engineers who know what you want to know or just a gossip to catch up with old friends. Don't leave it too late to register; in 2011 the conference was oversubscribed.

AgEng2014 in Zurich is progressing and by the time you get this you will be able to submit your abstract (until 30 November 2013) so time to check your project milestones and see what good research is ready to be spread to the agricultural engineering community next July in Zurich.

Youngsters are important to the industry and the Field Robot Event in Prague will also be taking place as you read this. There are always some interesting designs, and competitions like this give students a 'real world' experience with deadlines, running repairs and unexpected happenings. It should be good.

Finally I have given talks on "Sensors Applied to Agriculture" to a group of manufacturers

and developers of sensors and systems and then to mechanical engineers.

I covered topics like RTK and autosteer and the impact on reducing inputs and energy use, Voluntary Milking Systems (robotic milking) and the effect on cow welfare, comfort and milk output, as well as examples of image analysis and other technologies. I enjoyed giving both talks and I was congratulated for explaining what is going on in agricultural engineering; they had no idea that all this clever technology was in use; an aeronautical engineer was especially amazed by it all! We still need to spread the word about how really useful we are!

I look forward to seeing many of you in Hannover later this year and we hope that summer does eventually happen for all of those of us that have had cold and wet weather for months, and seen farmers re-sowing their crops.

#### David Tinker

**PS** I hope the 'farmscrapers' give you something to think about, not least what would the tractors and machines be like to work on those fields and orchards?

**PPS** You will notice that this Newsletter has a 'fresher' layout. That's thanks to Steve Gibbs, the new editor.



## 1.1. THE GREEN CITY

Cities are currently responsible for 75% of the worldwide consumption of energy and they produce 80% of worldwide emissions of CO<sub>2</sub>.

The contemporary urban model is thus ultra-energy consuming and works on the importation of wealth and natural resources on the one hand, and on the exportation of the pollution and waste on the other hand. This loop of energetic flows can be avoided by involving the countryside and farming production modes in the heart of the city and creating green lungs by using farmscrapers and wind and solar power stations. The production of food and energy will be integrated into the heart of the city!

## 2. ASIAN CAIRNS, TOWARDS A NEW MODEL OF SMART CITY

Benefiting from its privileged geographical position in the Pearl River delta, Shenzhen faces a spectacular economic and demographic development.

Since the return of Hong Kong to China, both cities have been merging together. In this context of hyper growth the "Asian Cairns" project fights for the construction of an urban multifunctional, multicultural and ecological pole. It is an obvious project to build a prototype of green, dense, Smart city connected by information and communication solutions and eco-designed from biotechnologies!

### 2.1. THREE INTERLACED ECO-SPIRALS

The master plan is designed under the shape of three interlaced spirals.

Each spiral curls up around two towers and forms urban ecosystems with vast public orchards and urban agriculture fields. Huge basins of viticulture and vast lagoons of phyto-purification recycle the grey waters from the inhabited vertical farms.

### 2.2. SIX MULTIFUNCTIONAL FARMSCRAPERS

The huge towers are based on cairns, artificial stone heaps on mountains to mark trails. The six towers include housing, offices and leisure spaces along a vertical central boulevard.



Each spiral curls up around two towers and forms urban ecosystems with vast public orchards and urban agriculture fields

These farmscrapers are aiming at the 10 following objectives:

1. Reduce the ecological footprint by producing and consuming local food and by reducing road, rail and river transport.
2. Reintegrating local employment with the fresh and organic products.
3. Recycling, in a short closed loop, the liquid and solid organic wastes by composting and with green algae producing biogas by accelerated photosynthesis.
4. Improve the rural economy and areas by reducing deforestation, desertification and pollution.
5. Improved oxygenation of polluted city centres.
6. Producing, organically, fruit and vegetables with limited recourse to pesticides and chemical fertilisers.
7. Saving water resources by recycling urban waters, irrigation water and the evapotranspiration of the plants.
8. Protecting the biodiversity and the development of eco-systemic cycles in the heart of the city.
9. Reducing health risks by removing noxious pesticides .
10. Reducing the fossil fuels needed for conventional agriculture and for refrigerating and transporting.

The 'Asian Cairns' project synthesises the architectural philosophy of Vincent Callebaut to transform the cities into ecosystems!

© Vincent Callebaut Architectures - [www.Vincent.Callebaut.Org](http://www.Vincent.Callebaut.Org) and adapted by D Tinker

## Don't miss it!

The email messages sent every month by David Tinker are now the main method of communication with members. Unfortunately, some messages do not get through because they are being sent to incorrect addresses or are being rejected by email systems.

It is very simple to update contact details with EurAgEng to make sure your email address is correct. Go to [www.eurageng.eu](http://www.eurageng.eu) click on Members' Login and enter your username and password. Instructions are on the login page but if you need any help, contact David Tinker on [secgen@eurageng.eu](mailto:secgen@eurageng.eu).

Once you have logged in, click on **Update Your Membership Details** and enter any new details in the boxes. When you press the Submit button, the new information will be sent to the secretariat.

Also, it often helps if you include [secgen@eurageng.eu](mailto:secgen@eurageng.eu) in your address book. However, if you do not wish to receive the emailed EurAgEng Updates, please use the 'Unsubscribe' link at the end of the Update where you will also find a 'Forward' link to send it to colleagues.



# EurAgEng members have FREE access to CABI Agricultural Engineering information website

EurAgEng is pleased to announce that the bibliographic database **Agricultural Engineering Abstracts** continues to be available **free to all members** via the EurAgEng Members' Login.

[www.eurageng.eu/user/login](http://www.eurageng.eu/user/login)

Produced by CABI, a not-for-profit science-based development and information organisation, the Agricultural Engineering Abstracts database is a subset of the highly regarded CAB Abstracts which is used by hundreds of the world's leading research institutions and many premier universities and research centres across the globe.

Updated each week Agricultural Engineering Abstracts delivers all the new highly-targeted, searchable summaries covering key English and non-English language journal articles, reports, conferences and books about topics in agricultural engineering.

Derived from CAB Abstracts and created and indexed by subject specialists, the database provides access to these abstracts using comprehensive indexing and classification codes.

Agricultural Engineering Abstracts includes a fully searchable backfile to 1973. With over 175,000 research summaries and 8,000 records added to the database each year, Agricultural Engineering Abstracts brings a wealth of current and ground-breaking research in agricultural engineering to your fingertips!

Also included are several thousand full text records where the bibliographic record has a link to a PDF of the document held in CABI's Full Text repository - combine your searches with **sc:ft** to find these full text papers.

## harvesting AND sc:ft

**Full text** of papers from **AgEng conferences** are currently being added to the database.

Hosted on the CAB Direct platform and straightforward to use there is information on searching techniques on the **Database Users** pages of the CABI website ([www.cabi.org/default.aspx?site=170&page=2043](http://www.cabi.org/default.aspx?site=170&page=2043)) as PDFs or as videos. However, to give you a flavour of what the database contains, several searches of hot topics in agricultural and biosystems engineering are presented below.

A topic at AgEng2014 will be Controlled Traffic Farming. Current papers can be located by typing "**controlled traffic farming**" into the Search box. In a similar fashion to searching Google, by enclosing the phrase in quotes you can force CAB Direct to search for the exact phrase otherwise it ANDs the search terms together, searching for **controlled AND traffic AND farming** which can display results that you may not always want.

Using "precision agriculture" will give over 3500 results but the most specific records can be found by limiting it to the descriptor or keyword field using a colon, thus:

## de:"precision agriculture"

This still gives over 3000 results so it would be necessary to add other terms. For instance to locate records on precision agriculture and spraying, use brackets to group terms together:

## de:"precision agriculture" AND (de:sprayers OR de:"spraying equipment")

### Spraying descriptors

atomizers  
droplet size  
nozzles  
spray booms  
spray guns  
aerial spraying  
spraying equipment  
band spraying  
drift spraying  
electrostatic spraying  
ultralow volume spraying  
intermittent spraying  
high volume spraying  
spot spraying  
foliar spraying  
mist blowers

an individual record click the "Descriptors", both on the left of the abstracts, to search further.

Another area of intense interest at the moment is the production of biofuels. Because of concerns over land diversion into biofuel production taking away valuable cropland from the growing of crops for food, a lot of research is focusing on the development of second generation biofuels using enzymes to break down crop biomass and waste into sugars which can be fermented into ethanol. The **Agricultural Engineering Abstracts** database has an extensive collection of records drawn from a range of publications both mainstream and obscure from all corners of the world. You can search for these using a simple search string then use the descriptors displayed down left-hand side to narrow your search:

## (biofuels OR biodiesel) AND enzyme

or use the single term  
**saccharification**

The database records are also indexed with subject classification codes (CABIcodes)



[www.cabi.org](http://www.cabi.org)

You can use the CABI Thesaurus (click "Thesaurus" above the Search box) to help find search terms. An example of the detail of possible descriptors is shown for **spraying** in the box. The Thesaurus is particularly useful for searching for similar and related terms but you can do an initial "quick and dirty" search and then either click on "Specific Topics" or to find records similar to

which can be useful in confining searches to groups of records. For example, to find records on the ploughing for field crops, use the CABI code for field crops which is FF005 (as opposed to FF003 for horticultural crops or FF007 for forage and fodder crops), e.g.

## de:ploughing AND cc:ff005

The text box gives some examples of useful CABIcodes, but they are on screen on the left side of the abstracts below "Specific Topics".

### Useful current CABIcodes

<b>NN000</b>	Engineering and Equipment [General]
<b>NN050</b>	Automation and Control
<b>NN300</b>	Farm and Horticultural Structures
<b>NN400</b>	Agricultural and Forestry Equipment [General]
<b>NN460</b>	Cleaning, Grading, Handling, Storage and Transport Equipment
<b>NN600</b>	Processing Equipment and Technology

Who can resist looking up their own name, or names of current and potential collaborators, on the database. Search for author names using author to find authors, editors, author variant names, etc.:

## author:tinker-d

If after searching you fail to find what you want you can always call in the experts. Contact Vera Barbosa (v.barbosa@cabi.org), the editor of **Agricultural Engineering Abstracts** who will be pleased to help you by suggesting search terms and/or suitable search strings.

**Halina Dawson, Content Manager for Environmental Sciences, CABI and David Tinker, EurAgEng**

# Biosystems Engineering

**Biosystems Engineering** is the official journal of EurAgEng. It publishes 12 issues a year with around 12 articles appearing in each issue. The journal has been web-based since 2007 with manuscripts being submitted and published online although printed copies are available. The aim of the journal is to publish novel research in engineering and physical sciences applied to biological systems. Papers are published from around the world covering all aspects of our discipline. To illustrate this I have taken the following edited abstracts from the July issue of the journal.

The journal also publishes special issues. Earlier this year an issue was published dealing with Remote Sensing in Agriculture which was developed from presentations given at AGRI-SENSING 2011, Israel. An issue dealing with Image Analysis, and developed from presentations from CIGR-AgEng 2012, is currently in preparation. More details can be found on <http://www.journals.elsevier.com/biosystems-engineering/>

**Steve Parkin**  
Managing Editor, *Biosystems Engineering*

## Chemical methods for the remediation of ammonia in poultry rearing facilities: A review

**Dorin Bejan, Thomas Graham, Nigel J. Bunce**

*University of Guelph, Ontario, Canada N1G 2W1*

Possible chemical methods for the treatment of ammonia in the air of livestock holding facilities, with particular focus on poultry production, are reviewed in the context of eliminating ammonia by oxidation to elemental nitrogen. Gas phase catalytic oxidation processes are incompatible with the needs of the poultry industry on grounds of both capital cost and energy intensiveness. Most chemical oxidants convert ammonia principally to nitrate rather than  $N_2$ . So-called advanced oxidation processes are unsuited to ammonia oxidation because the hydroxyl radicals that characterize these oxidations react poorly with both  $NH_3$  and  $NH_4^+$ . One promising option is electrochemical oxidation, which does not require the purchase of stoichiometric amounts of chemical oxidants. Among possible electrochemical methods, we favour electrochemical hypochlorination.

## A novel slow-release urea fertiliser: Physical and chemical analysis of its structure and study of its release mechanism

**Ni Xiaoyu, Wu Yuejin, Wu Zhengyan, Wu Lin, Qiu Guannan, Yu Lixiang**

*Institute of Technical Biology & Agriculture Engineering of Chinese Academy of Sciences, Hefei 230031, PR China*

Reducing the release rate of urea can increase its efficiency of use and reduce nitrogen pollution. A slow-release urea (S-urea) was produced using a new method; a bentonite and organic polymer (OP) were used to form a three-dimensional lattice structure by melting urea directly. The structure affected the recrystallisation of urea and increased its stacking density. The specific surface area of S-urea was much lower than that of common urea. The static release experiment showed that 75% of 12 g sample of S-urea was released in 1 l water for about 14 h, much longer than that of common urea (<0.5 h). The kinetic simulation results showed that the release of S-urea was not based on Fickian diffusion but underwent anomalous diffusion with its release rate was mainly affected by the dissolving-eroding process of the medium which was controlled by the compactness of the lattice structure. This process may be strengthened by increasing the amount of bentonite.

## Modelling ventilation rate, balance temperature and supplemental heat need in alternative vs. conventional laying-hen housing systems

**Yang Zhao, Hongwei Xin, Timothy A. Shepherd, Morgan D. Hayes, John P. Stinn**

*Department of Agricultural and Biosystems Engineering, Iowa State University, Ames, USA*

An Excel-based spreadsheet model has been developed to delineate ventilation rate, supplemental heat need, balance temperature (outdoor temperature below which heat need is required to maintain the desired indoor temperature), energy use and cost for heat need in alternative (aviary and enriched colony) vs. conventional cage laying-hen houses. The model was applied to the Midwestern U.S. housing characteristics (same land footprint) and winter weather conditions ( $-30^\circ\text{C}$  to  $5^\circ\text{C}$  ambient temperature, and a constant relative humidity of 70%). Effects of hen stocking density, target indoor temperature and relative humidity, building insulation, and light period vs. dark period on ventilation rate, temperature below which heat need is required and the heat needed were examined. The simulation model was validated with measured heating energy use by a commercial aviary house in northern Iowa and the difference between the predicted and field-measured heat need values was less than 5%.

## Tree stability in winds: Measurements of root plate tilt

**Ken James, Craig Hallam, Chris Spencer**

*ENSPEC Pty Ltd., 13 Viewtech Pl., Rowville, Victoria 3178, Australia*

Tree stability in winds was evaluated by measuring the tilt of the root plate using newly developed instruments that attached to the trunk at ground level. During periods of high winds, tilt sensors recorded data on the dynamic flexure of a tree's root plate which was used to assess the anchorage strength of the tree in the ground. The root plate tilt of 250 trees at 30 sites in Victoria, Australia was measured under natural wind conditions from November 2010 to August 2012. The maximum root plate tilt values recorded were  $0.90^\circ$  on an *Eucalyptus obliqua* and  $0.88^\circ$  on an *Eucalyptus rubida*. These data were recorded during strong winds on 11 June 2011 for *E. rubida* and on 5 September 2012 for both trees. The majority of trees (96%) recorded tilt values below  $0.50^\circ$ , even in high winds. No trees failed during this study and 11 trees (4%) recorded

maximum tilt values above  $0.50^\circ$ . Static pull tests on 10 trees were conducted to determine root plate tilt under controlled loading and to obtain tilt values for comparison to wind induced tilt data. Tilt data of tree root plates in winds is discussed in relation to anchorage strength in the ground and tree stability. No trees in this study failed even though several strong winds occurred during which tree failures were reported in nearby localities. Further work is needed to measure tilt values during tree failure in wind, in order to establish the limits of tilt that will define tree stability.

## The influence of loading conditions on equine hoof capsule deflections and stored energy assessed by finite element analysis

**Glenn D. Ramsey, Peter J. Hunter, Martyn P. Nash**

*University of Auckland, New Zealand*

The biomechanical effects on the hoof capsule of the location of the centre of pressure of the ground reaction force may be important to understand the functioning of the hoof capsule. This study investigated the effect of changes in loading and contact friction on hoof deflections and elastic energy storage by varying the boundary conditions applied to finite element models. For all cases a load of 10 N kg<sup>-1</sup>, typical of the peak load in the trot gait, was used. In one scenario the coefficient of contact friction was varied from 0 (frictionless) to 1, at a constant non-zero joint moment, to simulate the effects of restriction of the hoof at the ground surface. In the other scenario a varying joint moment, with contact friction set at 0, was used to move the centre of pressure (COP) forward. Both increasing the ground surface friction and moving the COP forward caused the hoof capsule deflections and stored elastic energy to decrease. Peak strain energy in the capsule occurred when the frictional coefficient was 0 and when the COP was below the centre of rotation of the distal interphalangeal joint. Minimum strain energy occurred when the frictional coefficient was 1.0 and when the COP location was 30 mm forward of the joint centre. Hoof expansion and elastic energy storage are considerably influenced by ground surface friction and centre of pressure location. Therefore model validation studies should account for these parameters. Maximising the energy absorption may explain why heel first landing is preferred.

# State-of-art new wind tunnel at ATB Research Institute is in operation

**CONTACT:** Dr. Merike Fielder  
Engineering for Livestock Management

ATB Research Institute has a new atmospheric boundary layer wind tunnel which allows the study of air flows around agricultural buildings and dispersion of emissions as well as circulation and ventilation processes in the buildings.

With a tunnel height of 2.3m and a width of 3.0m, it is one of the largest wind tunnels in agricultural research. Scale models of 1:100 to 1:300 can be installed within the tunnel.

The air flow is visualised using laser-light sections. By means of a flame ionisation-detector, the concentrations of tracer gases can be measured. Measurements of velocity and turbulence are performed using both constant-temperature and laser-Doppler-anemometers.

## DETAILS

The new boundary layer wind tunnel at the Leibniz Institute for Agricultural Engineering Potsdam-Bornim near Berlin, is an interdisciplinary research facility in which meteorology and agricultural engineering are brought together in a unique way. With the help of this research facility, the complex agricultural aerodynamic processes in the lower-surface layers of the atmosphere can be investigated systematically to give statistically representative results. This in turn allows technical solutions to be developed for environmentally sound and competitive agricultural production processes.

In the boundary layer wind tunnel, velocity and turbulence fields are measured at high resolution in space and time under controlled laboratory conditions. Thus, the generated data are well suited for validation and further development of (numerical) dispersion models and to complement existing data from field experiments. Environmental data can be supplemented by additional measurement sites. By systematic variation of the external boundary conditions, extra information can be gained.



Windtunnel schematic

The focus of the ATB studies is the analysis, evaluation and development of animal husbandry methods. Therefore, basic research on the relations between animals and their environment is a prerequisite.

Process methods, facilities and buildings for cattle, pigs and poultry must meet the requirements of animal husbandry. A major task is the development of architectural and ventilation technology solutions that minimise energy consumption and reduce emissions.

Furthermore, emissions of harmful gases and odours from agricultural sources can be characterised. These may have global impact as emitted greenhouse gases (climate change), but also cause damage to the environment at regional level or be a source of nuisance odours and dust close to the livestock buildings. In addition, the increasing urbanisation of former rural areas highlights the growing importance of research in this area.

Especially in relation to odours, in addition to mitigation measures, the ventilation system

and signal detection conditions (shape and height of the exhaust air outlet, the exhaust air speed, etc.) play a crucial role in the spread and dilution of odours in the atmospheric boundary layer. Wind tunnel tests are an effective tool for such studies because they allow a systematic variation of the external boundary conditions.

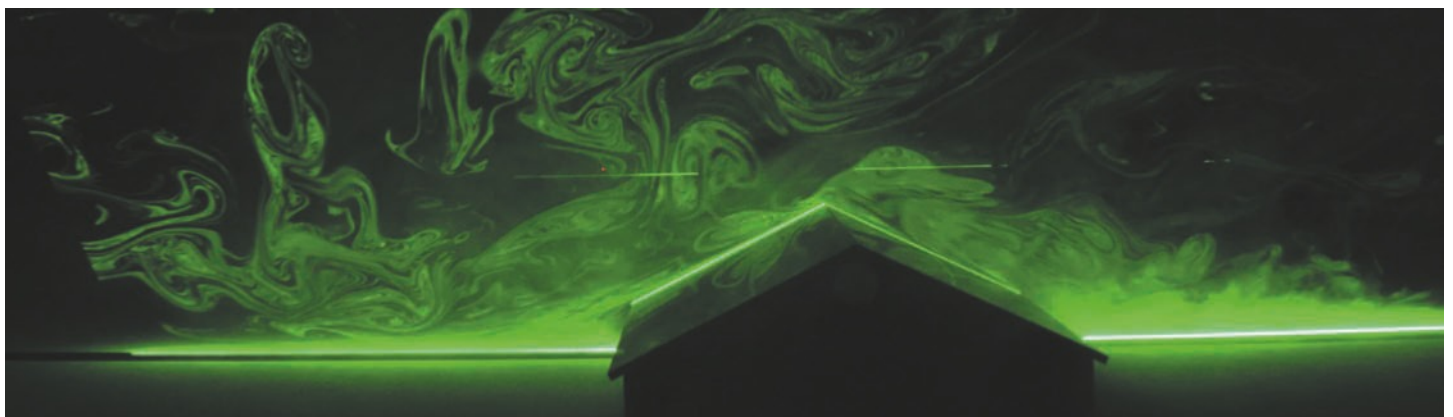
Possible applications in the agricultural sector:

- **Development of architectural and technical ventilation solutions for livestock facilities to reduce the emission potential.**
- **Investigation of odour, gas and microorganism spread from animal husbandry, biogas plants, and manure storage for developing air quality strategies in densely populated rural areas, and taking topography into account.**

For more information, including collaborative EU research please contact: **Prof. Thomas Amon**, Head of Engineering for Livestock Management, [tamon@atb-potsdam.de](mailto:tamon@atb-potsdam.de) or **Dr. Merike Fiedler**, [mfielder@atb-potsdam.de](mailto:mfielder@atb-potsdam.de)

Website: [www.atb-potsdam.de/en.html](http://www.atb-potsdam.de/en.html)

The focus of the ATB studies is the analysis, evaluation and development of animal husbandry methods



# Activities of SitmAfgr

French Association of Agricultural & Rural Engineers

SitmAfgr stands for Société des Ingénieurs et Techniciens du Machinisme Agricole et Association Française de Génie Rural.

This non-profit association promotes the patrimony of agricultural engineering as well as new technologies and legislation. It also has a close link to public and professional institutions including education and research in Agricultural and Rural Engineering in France. Its most prominent activities are the support of conferences, visits and the organising of meetings during the main national agricultural fairs and events.

At the present time it is composed of about 250 members including both individuals as well as corporate membership from the industry, plus journalists, advisors and professional institutions from the field of Agricultural and Rural Engineering.

SitmAfgr and IRSTEA are the national members of EurAgEng.

**Website:** [www.sitmafgr.fr](http://www.sitmafgr.fr)

The General Assembly of the Association was hosted by the AMAZONE company in its French Headquarters located at Auneau on April 4th 2013. Thanks go to Mr Pelikan, AMAZONE France CEO, for his hospitality and the interesting visit.

## ON-GOING PROJECTS OF SitmAfgr:

A Strategic Agenda was decided for 2012 - 2015.

SitmAfgr wishes its activities to be known



*The Association's General Assembly recently visited Amazone's French headquarters*

and supported by a wider audience. With this objective in mind, new targets such as agricultural engineering students are to be considered and made aware about the association's activities. SitmAfgr Awards are envisaged at Master and Doctorate level in order to raise the profile of the association with researchers and professionals. Closer relationships with national research institutes and higher education establishments are also intended for this same purpose.

SIMA Fair 2013 is considered as a pivotal event for the association due to its large participation of the industry, academics, farmers and politicians. The association organised a Round Table, 'Tomorrow's Farm Machinery for the Green Economical Growth', in conjunction with FARRE Association.

Members of the association were also involved in the release of *AgroMAG*, the journal of UniAgro - the association of graduate students from the four higher education institutes of Agronomy.



## COMMUNICATION

The DVD produced by the association on the history of Agricultural Engineering and Farm Machinery is still available (in French).

The official list of members and the contact book of services and agricultural organisations is being updated.

## OTHER EVENTS:

- **Conference at Châlons Fair,**  
Sept 4th 2012: *New Road Legislation for Agricultural Machines* : R. Autellet & P. Van Kempen
- **Conference at Space,**  
Sept 14th, 2012 (Livestock farming fair in Rennes): *Methanization in agriculture (energy, buildings, environment, territories)*.

## CONTACTS FOR SitmAfgr:

**Jean-Claude Souty** (President).  
[jean-claude.souty@wanadoo.fr](mailto:jean-claude.souty@wanadoo.fr)

## Agriculture and Energy Efficiency -

The central objective of the **AGR**iculture & **E**nergy **E**fficiency project is to put energy efficiency in agriculture on the research agenda, based on its short and long term potential and the associated economic and ecological effects. **AGREE** is a project supported by the European Commission through the Seventh Framework Programme (FP7).

One of the EU headline target indicators for Europe is "20% increase in energy efficiency by 2020". It is anticipated that energy use will increase significantly and will have a wide-spread impact on the economy, including the agricultural sector, and raises the importance of research and innovation to develop more energy efficient technologies for agricultural production.

Agriculture plays a substantial role in the European Union economy and the need for energy as an input can determine the profitability of farming which, in turn, impacts heavily upon

the farmers' investment in improved farming systems. Cost-effective energy measures are needed and these promise to reduce carbon emissions at the same time.

Involving countries from the NW, NE, SW and SE of Europe this two year project has collated data on energy use for various agricultural production scenarios. Agricultural production relies not only on the efficient use of solar energy by photosynthesis, but to a great extent on the use of energy from fossil fuels, either directly with the use of fuel or electricity or indirectly with the use of agricultural machines, fertilisers or pesticides. While the discussion on energy use in agriculture is often focused on direct energy use, it needs to be acknowledged that 50% and more of the total energy use is related to the production of nitrogen fertiliser and other indirect energy uses. Different production systems vary substantially in their energy use and

energy saving potential and this project is analysing these for the example countries and relevant agricultural production systems.

**AGREE** has close links with **EurAgEng** and **ENGAGE** (the network of Research Institutes) and had a special session at the **CIGR-AgEng 2012 Conference**, but it also has close links with the **Collaborative Working Group on Agriculture and Energy**. This Group is embedded in the **Standing Committee for Agricultural Research, SCAR**, and the **KBBE-Net** and is well placed to get an effective **R&D strategy on energy efficiency**.

Website for more information and reports [www.agree.aua.gr](http://www.agree.aua.gr)

Project Coordinators: **Philipp von Bothmer** ([p.vonbothmer@fnr.de](mailto:p.vonbothmer@fnr.de)) & **Claudia Lutsyuk** ([C.Lutsyuk@fnr.de](mailto:C.Lutsyuk@fnr.de))

Scientific Coordinator: **Chris de Visser** ([chris.devisser@wur.nl](mailto:chris.devisser@wur.nl))

# EVENTS

## EURAGENG EVENTS

### NOVEMBER 2013

- 8-9 **AgEng2013 71st International Conference on Agricultural Engineering LAND. TECHNIK**  
Hanover, Germany  
[www.vdi.de/landtechnik-ageng](http://www.vdi.de/landtechnik-ageng)

### JULY 2014

- 6-10 **AgEng2014 Engineering for Improving Resource Efficiency**  
Zurich, Switzerland  
[www.ageng2014.ch](http://www.ageng2014.ch)

### JUNE 2016

- 26-29 **4th CIGR International - AgEng Conference 2016 - Robotics, Environment and Food Safety**  
Aarhus, Denmark

## SPONSORED EVENTS

### JUNE 2013

- 25-28 **8th International Research and Development Conference of Central and Eastern European Institutes of Agricultural Engineering**  
Puszczykowo, Poznan, Poland  
<http://www.pimr.poznan.pl/>

- 27-29 **Field Robot Event 2013**  
Prague, Czech Republic  
<http://katedry.czu.cz/en/kzs/home-1/>

### JULY 2013

- 3-5 **CIOSTA XXXV From Effective to Intelligent Agriculture and Forestry**  
Legoland, Denmark  
[www.ciosta.org](http://www.ciosta.org)

### AUGUST 2013

- 27-29 **AgIng - Madrid'2013 Innovation and Production for the Future VII Iberian Congress of Agricultural Engineering**  
Madrid, Spain  
[www.sechaging-madrid2013.org](http://www.sechaging-madrid2013.org)

### SEPTEMBER 2013

- 8-12 **10th Congress of the Italian Association of Agricultural Engineering 'Horizons in Agricultural, Forestry and Biosystems Engineering'**  
Viterbo, Italy  
<http://www.aiia13.com/>

- 12-13 **VDI-MEG Kolloquium Combine Harvester**  
Stuttgart, Germany  
<https://lmd2013.uni-hohenheim.de/96728?L=1>

### OCTOBER 2013

- 4-6 **First International Symposium on Agricultural Engineering (ISAE-2013)**  
University of Belgrade, Serbia  
<http://www.isae.agrif.bg.ac.rs/>

### NOVEMBER 2013

- 3-7 **8th CIGR International Symposium on "Advanced Food Processing and Quality Management"**  
Guangzhou, China  
<http://www2.scut.edu.cn/CIGR2013/>
- 20-22 **6th International Symposium 'Management of Farm Machinery and Processes in Sustainable Agriculture'**  
Lublin, Poland  
<http://www.kerniz.up.lublin.pl/index.php?id=konferencje>

### FEBRUARY 2014

- 25-28 **42nd Actual Tasks on Agricultural Engineering**  
Opatija, Croatia  
<http://atae.agr.hr/>

## OTHER EVENTS

### JUNE 2013

- 20-21 **International Scientific and Technical Conference on Agricultural Machinery**  
Varna, Bulgaria  
<http://www.agrimachinery.net/>
- 23-27 **EFITA, WCCA, CIGR Sustainable Agriculture through ICT Innovation**  
Turin, Italy  
[www.efita2013.org](http://www.efita2013.org)

### JULY 2013

- 7-11 **9th European Conference on Precision Agriculture (ECPA)**  
Lleida, Catalonia, Spain  
<http://www.ecpa2013.udl.cat/>

### AUGUST 2013

- 28-29 **4th IFAC Conference on Modelling and Control in Agriculture, Horticulture and Post Harvest Industry**  
Finland  
<http://agricontrol2013.automaatioseura.com/>

### SEPTEMBER 2013

- 4-7 **2nd World Association of Soil and Water Conservation's World Conference (WASWAC-WCII)**  
Chiang Rai, Thailand  
<http://wreet.org/en/>
- 10-12 **6th European Conference on Precision Livestock Farming**  
Leuven, Belgium  
<http://www.ecplf2013-leuven.eu/default.aspx>
- 19-20 **Engineering of Agricultural Technologies - 2013**  
Kaunas Lithuania  
Email: [Dainius.Steponavicius@asu.lt](mailto:Dainius.Steponavicius@asu.lt)
- 19-22 **6th International Conference on Information and Communication Technologies in Agriculture, Food and Environment (HAICTA 2013)**  
Corfu, Greece  
<http://2013.haicta.gr/>
- 24-26 **11th Conference on 'Construction, Technology and Environment in Farm Animal Husbandry'**  
Goettingen, Vechta, Germany  
<http://www.btu-conference.com/>

### OCTOBER 2013

- 13-19 **SYNERGY 2013 Engineering, Agriculture, Waste Management and Green Industry Innovation**  
Gödöllo, Hungary  
<http://synergy2013.hu/>  
Submission of abstracts 22 July 2013

### SEPTEMBER 2014

- 3-6 **12th International Congress on Mechanization & Energy in Agriculture**  
Cappadocia, Turkey  
<http://www.adageng2014.com/>
- 14-16 **22nd ICID Congress and 65th IEC Meeting**  
Kwangju, Korea  
[http://www.icid.org/conf\\_congress.html](http://www.icid.org/conf_congress.html)
- 16-19 **The XVIII CIGR World Congress 2014 on Agricultural & Biosystems Engineering - Upgrading Our Quality of Life**  
Beijing, China  
Email: [cigrwc2014@yahoo.cn](mailto:cigrwc2014@yahoo.cn)

# 71st International Conference on Agricultural Engineering LAND.TECHNIK – AgEng2013

8-9 November 2013 Hanover, Germany

This autumn will be the time to see and hear about commercial and academic research

THE 71st International Conference on Agricultural Engineering, LAND.TECHNIK – AgEng2013 will be held in Hanover, Germany on 8-9 November as the prelude event to AGRITECHNICA, the most important fair for agricultural machinery, which starts on 10 November with the preview days.

This year's theme "Components and Systems for Better Solutions" underlines the importance of suppliers in the machine development and manufacturing process as well as in the extensive after sales services. Pursuing the ultimate ambition to increase productivity and efficiency with less energy input and to improve the complex process chains of agricultural economies, a well structured network between suppliers and manufacturers is necessary. Therefore the conference will give an excellent platform to discuss new and better solutions concerning components, systems, machines and processes.

The conference is organised in cooperation with the VDI Department Max Eyth Society for Agricultural Engineering (VDIMEG) and the European Society of Agricultural Engineers (EurAgEng). During recent years, the number of participants has

grown to a new record of 850 participants in 2011, when visitors from 31 nations were registered. Thus the conference is one of the most important meeting points for the international community of agricultural engineers.

The topics include all important working fields of agricultural engineering:

- Tractors, motor, machine management, chassis & use, test & evaluation
- Power train, electric drives and mobile hydraulics
- Agricultural information technology, precision farming, software engineering and data handling
- Automation, electronic components and sensors, locating, tracking and navigation
- Soil protection, tillage and sowing
- Harvesting technology
- Industrial product development and market service

Chairman of the program committee is Prof. Dr.-Ing. Thorsten Lang of the Institute for Mobile Machinery and Commercial Vehicles of the Technical University of Braunschweig. The authors of submitted

abstracts were informed that they have been accepted.

EurAgEng members need to register in good time as the maximum number able to be in the Centre was reached last time.

The language of the conference will be English.

**For more information on the conference please visit**

[www.vdi.de/landtechnik-ageng](http://www.vdi.de/landtechnik-ageng)  
Current information on AGRITECHNICA Exhibition is available at [www.agritechnica.com](http://www.agritechnica.com)

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## International Conference of Agricultural Engineering AgEng 2014 Zurich 6-10 July

"Engineering for improving resource efficiency"

If you missed submitting an abstract for Land.TechNIK-AgEng 2013 then be ready for AgEng 2014 when the call for abstracts will be open from June until 30 November 2013.

The website is: [www.ageng2014.ch](http://www.ageng2014.ch) and there is already a lot of detailed information for this important conference.

The topics of the conference are:

1. Energy, emissions and resource efficiency
2. Biomass and renewable energy
3. Soil, tillage and controlled traffic farming
4. ICT and automation
5. Power and machinery
6. Animal husbandry, welfare and rural buildings

7. Work science, ergonomics and safety
8. Grassland, land management and landscapes
9. Fertiliser application, irrigation and plant protection
10. Post-harvest technology

We are looking forward to your interesting contributions!

The conference will be held at the Swiss Federal Institute of Technology Zurich, well known as ETH (Eidgenössische Technische Hochschule). We have reserved some reasonable priced hotel rooms. To make your reservation follow the link under 'Hotels' on our webpage.



ETH University

We are looking forward to having you as our guests, to let you enjoy some impressions of our beautiful country and together push forward Agricultural Engineering throughout Europe.

### More important dates for your diary

The next Land.TechNIK-AgEng conference will be early in **November 2015**.

### CIGR-AgEng2016 - conference, 26-29 June 2016 Aarhus, Denmark.

This will be the fourth International conference where the CIGR (Commission Internationale du Genie Rural - International Commission of Agricultural and Biosystems Engineering) and EurAgEng will run the CIGR-AgEng conference which will highlight "Robotics, Environment and Food Safety". Start planning your research milestones to include a paper and visit for this event.

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