Landwards

Agriculture • Horticulture • Forestry • Environment • Amenity

IAgrE Professional Journal www.iagre.org Volume 69, Number 2 Summer 2014

Conference 2014

RE-IMAGINING AGRICULTURE

How engineering can meet the challenges of sustainable agriculture

In this issue...

IAgrE elect new President

Awards presented at IAgrE Conference

The jewel in JCB's crown

New chairman for FEG

Biosystems Engineering

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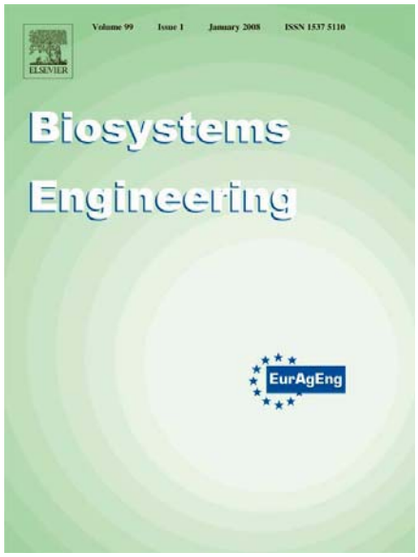

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IAgrE

EurAgEng

The Managing Editor of ***Biosystems Engineering***, ***Dr Steve Parkin***, has kindly summarised some of the papers published in the last three issues which he thinks may be of interest to IAgrE members

Biosystems Engineering

Volume 118, February 2014, Pages 52-67

Investigation into the mechanisms of pipeline transport of slurries of wheat straw and corn stover to supply a bio-refinery

Mahdi Vaezi, Anil K. Katta,Amit Kumar

Department of Mechanical Engineering, University of Alberta, Edmonton, AB, Canada Indian Institute of Technology, Kharagpur, West Bengal, India

Pipeline hydro-transport could be a more economic approach than truck delivery for agricultural waste biomass to a bio-refinery for bio-fuel production. The transportation of slurries of wheat straw and corn stover agricultural waste biomass was investigated through a laboratory-scale closed-circuit pipeline facility. While the slurry was pumped, longitudinal friction loss was measured and analysed as a function of particle type and properties, slurry solid concentration, slurry flow rate, and measured carrier fluid viscosity. The role of particle dimensions and morphological features on slurry friction loss and drag-reducing behaviour was investigated. Above certain flow rates, larger-sized particles at lower solid concentrations produced the same drag ratio as smaller size particles at higher solid concentrations thus requiring lower pumping power. Slurries of wheat straw and corn stover particles affected pressure drop behaviour differently from conventional solid-liquid systems and showed decreasing pressure gradients with increasing solid concentration. The results obtained should assist the design and operation of agricultural waste biomass pipeline hydro-transport processes.

Volume 119, March 2014, Pages 98-107

Air exchange and ventilation efficiencies of a monospan greenhouse with one inflow and one outflow through longitudinal side openings

Meir Teitel, Erez Wenger

Institute of Agricultural Engineering, TheVolcaniCenter, Bet Dagan, Israel

Until about a decade ago, greenhouse microclimates were analysed using a simplified approach assuming a perfectly stirred enclosure. Demands for efficient and sustainable greenhouse operations, stimulated intensive research that focused into the distributed microclimate within greenhouses. Since the distributed microclimate and the air-exchange rate are interconnected the latter is important. Three methods for determining the air exchange in a small naturally ventilated monospan greenhouse were compared: experiments, computational fluid dynamics (CFD) and a model which relates flow rate through openings to their pressure drops. In the experiments ventilation rates were estimated by means of a tracer gas; in the CFD simulations the decay rate of a virtual tracer gas and calculated airflow rates through the openings were used and in the model, ventilation rates were calculated with an equation relating flow rate through the openings to their pressure drop, using local wind-pressure coefficients. All the methods agreed well up to a wind speed of about 4 m/s; at higher wind speeds the ventilation rate values deduced from the decay of tracer gas, both in the experiments and CFD simulations, were much lower than those obtained with the other techniques.

Volume 120, April 2014, Pages 65-80

Special Issue: Operations Management

Traceability issues in food supply chain management: A review

Fabrizio Dabbene, Paolo Gay, Cristina Tortia

CNR-IEIIT, 24 CorsoDucadegli Abruzzi, 10129 Torino, Italy UniversitàdegliStudi di Torino, 44 Via Leonardo da Vinci, 10095 Grugliasco, TO, Italy

In recent years, traceability aspects have become recognised as an essential tool for guaranteeing food safety and food quality. On the other hand, the design of a traceability system requires a thorough rethinking and reorganising of the whole food supply chain. This paper presents a comprehensive literature review on the aspects of supply chain management that are influenced by traceability, which is herein considered fully integrated in the chain management and not kept separately.The objective of the paper is twofold: the first goal is to analyse how traceability concepts, requirements and technologies influence modern supply chain management and are handled by the ensuing optimisation principles. This analysis is based on an in-depth scrutiny of the state of the art, and it is supported by precise pointers to the literature on the subject. The second goal is to highlight what could be, in the authors' opinion, the future trends and perspectives in this field of research.

The Professional Journal for Engineers, Scientists and Technologists in Agriculture, Horticulture, Forestry, Environment and Amenity

Landwards

EDITORIAL:

But for politics, people and profit . . .

CHRIS BIDDLE
Editor
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No need for greed or hunger
A brotherhood of man
Imagine all the people
Sharing all the world . . .

THERE was a host of fascinating opinions, facts, innovations and research laid out before us at the IAgrE Landwards Conference this year - but it didn't stop one of those annoying ear-worms running through my head during the day.

The lines from John Lennon's *Imagine* seemed to sum up both the conference theme and the reason why so many learned and talented people had gathered at Cranfield to try and point the way to the ultimate goal. Feed the World (another song on my earworm playlist during the day).

In the event, there were enough radical ideas and practical solutions to demonstrate that engineering has to be a vital lynch-pin in the quest to achieve sustainable agriculture to satisfy the demand for food in the future.

So the answers are there, no doubt.

But the stumbling blocks are those over which we have little or no control - politics, people and profit. An underlying question mark was continually raised. Is there really the need to build bigger and more powerful tractors and combines for a diminishing land bank? Does our food production need to be smarter and more creative?

Africa is a wonderful region for food production, but the unsafe conditions and politics in many of the African countries make planned agriculture programmes impractical at present.

Who is going to question and influence the supermarkets over their contribution to food waste, whether it be BOGOF offers and often meaningless Use By dates? With the rise and rise of fast food outlets, how is dietary advice going to be promoted effectively? As one speaker said, "We throw away 20% of the food we produce - and eat 20% more food than we need".

And it was all beautifully summed up by another speaker in two words. What Now?

Our scientists and engineers have many of the solutions, but implementing them to long-term effect is quite another matter - and perhaps the subject for another conference!

The views expressed in Landwards editorial are those of the Editor, and do not necessarily reflect those of the Institution

IAgrE
www.iagre.org

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*IAgrE is a founder member of **EurAgEng,** a licensed body of the **Engineering Council** and a founder constituent of the **Society for the Environment***

Volume 69, Number 2, 2014

THIS ISSUE

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NFU wins EU 'tractor MoT testing' victory

The NFU has successfully secured exemptions for agricultural vehicles from MoT testing, following a vote by the EU Parliament.

After a 'trilogue' agreement between the European Parliament, Council and Commission at the end of last year, MEPs in Strasbourg finally decided to ditch the proposals in a full plenary vote.

The plans, which formed part of the EU's wide-ranging 'roadworthiness package', would have introduced costly MoT-style testing for many agricultural vehicles, including tractors and all livestock trailers.

Originally all 'O2' graded trailers, such as a normal livestock trailer towed behind a four wheel drive vehicle, would have been subject to MoT-style testing.

The NFU argued that while safety of vehicles on the road was important, what it called the "prescriptive and onerous testing of tractors and livestock trailers would be disproportionate, costly and bureaucratic". However, after months of lobbying, and backed by the Member State governments in the Council, the MoT-style testing of all livestock trailers will now not be needed.

NFU vice president Guy Smith said, "This is a fantastic result following the lobbying efforts by the NFU's office in Brussels and is a victory for common sense.

"We worked hard to explain to MEPs that imposing MoT tests on standard tractors and livestock trailers, used by thousands of farmers, would mean more needless red tape as well as increased costs in return for little safety benefit.

"The NFU advocates the use of the Farm Vehicle Health Check scheme and as an organisation is committed to ensuring the safety of all agricultural machines on the roads of Britain."

Craig Grant MIAgrE takes over from Julie McMorran

New Chairman for FEG

Craig Grant MIAgrE took over as Chairman from Julie McMorran at the Group's AGM on 27th March this year.

Craig joined IAgrE in May 1996 and became a FEG member in 1999 and was invited onto the committee in 2000 where he quickly built up an impressive record of contributing to running the FEG annual Symposia and other events.

This ability is a result of Craig's solid traditional 'hands on' career background started with the mining engineering company Anderson Strathclyde in 1980 where in 1984 he fulfilled his EITB Engineering Apprenticeship.

Six years later he moved to Norson Power Ltd., the Marine and Offshore Engineers, where within two years he obtained an HNC in Multi-Disciplinary Engineering. To further his interest in hydraulics and their control he moved to Parker Hannifin, Motion Control Engineers in 1994.

In 2003 Craig was recruited by Bosch Rexroth as Key Account Manager and within three years was awarded the Bosch VB award for outstanding sales. This was primarily for his outstanding work with Cargotec Moffett, the leading manufacturer of materials handling equipment.

Being aware of the increasing demand among its customer base for quieter materials handling equipment Hiab Moffett had approached Bosch Rexroth for a solution. Craig, being responsible for the Cargotec Moffett account, was able to find the solution and in so doing was highly commended by the Noise Abatement Society in 2011.

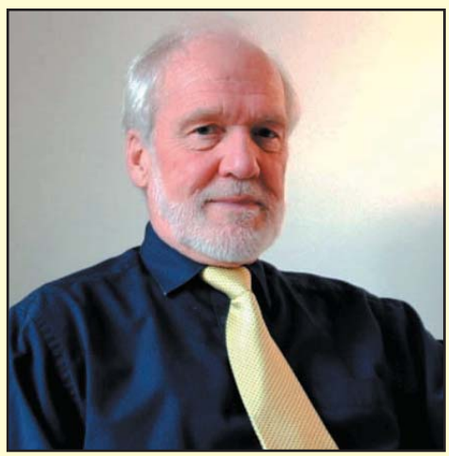
The FEG committee are confident that Craig will tackle his chairman duties with the same 'head on' vigour that he obviously displays in his professional work.

& milestone for Jim Christie

FEG's new chairman, Craig Grant, celebrates IAgrE stalwart

"On the 1st May at an FEG Committee meeting held in UKFPA offices based in Stirling during a discussion on Membership, Jim Christie let slip that he had reached a Milestone of 50 years Membership with the IAgrE.

The committee took great delight in congratulating Jim on this achievement and through this short note wished to thank Jim publically for his contribution.



These 50 years have not been achieved by just sitting back, paying his dues and attending an odd meeting or two. His contribution to IAgrE both on a local and national level has to be commended. And then we get to his involvement with FEG.

As one of the original members, Jim has been a loyal attendee and contributor to all things FEG. The 5th Forestry Engineering Conference will be held in France later this year, but Jim (along with other FEG original members) was part of the driving force behind the success of the first FEC held in Edinburgh back in 1999 - no mean feat.

I personally have known Jim for over 20 years and his enthusiasm, knowledge and humour have shone through. So please join myself and FEG in congratulating Jim on a wonderful achievement."

Trailblazer landbased apprenticeships being developed

Industry at the forefront of apprenticeship reform

The Institution of Agricultural Engineers (IAgrE) has joined forces with a number of top UK companies and industry associations to collectively develop an apprenticeship standard for the role of Landbased Engineering Technician.

The Institution has signed up to the second phase of the Government's Trailblazer apprenticeship initiative, which is being developed by the Landbased Engineering Education and Training Committee (LETEC), which along with IAgrE includes, the Agricultural Engineers Association (AEA) and the British Agriculture and Garden Machinery Association (BAGMA).

Together they will work with employers and machinery dealers, such as CLAAS UK Ltd, Toro, Kubota (UK), AGCO Ltd, Ransomes Jacobson, John Deere and Case New Holland, to develop this new trailblazer apprenticeship.

Alastair Taylor, chair of LETEC and CEO of IAgrE said, "We are really excited about this opportunity and look forward to working in partnership with industry, employers and professional bodies to design the new apprenticeship standards.

"This new approach truly puts employers and industry in the driving seat and will build upon the great work we have been doing to establish a single voice for the training of landbased engineering technicians."

. . . We are really excited about this opportunity and look forward to working in partnership with industry, employers and professional bodies

Alastair Taylor, IAgrE CEO

The group is proposing that the Landbased Technician Accreditation Scheme (LTA) forms the basis of the Landbased Engineering Technician Trailblazer apprenticeship. The LTA scheme is administered by IAgrE which facilitates the registration of suitably qualified technicians as Engineering Technicians (EngTech) with the Engineering Council (UK).

"Registration as EngTech is about promoting professionalism, helping the work-force to feel proud to be employed as a technician, and reassuring the customer that they are benefiting from a well trained and qualified professional", he added.

The industry itself launched the ground-breaking LTA scheme in 2007. Its aim is to establish a clear career path for technicians through the achievement of four qualification levels defined as Entry (LTA 1), Standard (LTA 2), Advanced (LTA 3) and Master (LTA 4).

To date, dealership technicians achieving LTA qualifications have done so by undertaking training courses largely provided by the main tractor and machinery franchises. An independent LTA route is available for those working with non-franchised dealers.

You can read the details of the Foundation and Advanced Standards apprentice proposals online:

LANDBASED SERVICE ENGINEERING (Foundation Apprenticeship) STANDARDS

&

LANDBASED SERVICE ENGINEERING (Advanced Apprenticeship) STANDARDS

Visit *www.iagre.org* for details

In summary, the reform principles are as follows:

- Apprenticeships are to be based on short, easy to understand standards of competence designed by large and small employers to meet their needs.
- Apprentices will be required to demonstrate their competence through rigorous assessment focused at the end of the apprenticeship.
- Grading will be introduced to encourage apprentices to strive for excellence.
- English and maths requirements will be strengthened.
- Trailblazer Apprenticeships will be developed in a range of industries to develop the new standards and assessments.

Together with these reforms apprenticeship educational funding will be channelled through the employer. These reforms will be introduced in 2015 / 2016 changing the face of apprenticeships and superseding the current apprenticeship offerings.

LETEC have circulated the proposals to the industry and have commissioned a survey to gauge reaction.

•JCB achieved its third most profitable year in its 68-year history in 2013.

Earnings stood at £313 million on an EBITDA basis (2012: £365 million) on turnover of £2.68 billion (2012: £2.70 billion). JCB's machine sales stood at 66,227 (2012: 69,250).

JCB Chairman Lord Bamford said, "The global market for construction equipment was more challenging throughout 2013 but I am delighted that, despite difficult market conditions, JCB delivered a strong performance and achieved the third highest profit in its history.

"Turnover remained virtually unchanged year-on-year but volume and earnings were adversely affected by a slowdown in emerging markets, notably India, where JCB has a strong presence. This was further compounded by adverse currency movements in some economies.

"Turnover growth in the UK, Middle East and Africa during 2013 helped to offset reductions in India, Europe and the Far East.

"2014 has got off to a mixed start. Some markets are showing improvement, with stronger demand in the more developed markets of the UK and North America, which is offsetting weaker demand in the more fragile economies of Asia, Latin America and Russia. Political uncertainty created by elections in India and Brazil is also having an impact on markets."

Roger Lane-Nott to retire

AEA to seek CEO as new President appointed for the year

The AEA is to seek a new chief executive after Roger Lane Nott announced his retirement at the AEA Conference in April.

He is to step down at the end of December 2014 after being in the post since February 2007 when he succeeded Jake Vowles. During his time at the AEA he has been heavily involved in ensuring that the legislation issued from Europe was 'fit-for-purpose' for the farm machinery and outdoor power equipment industry in the UK.

In recent months he has headed a new training initiative for the AEA, 'Training for Business', to be based at the Association's headquarters at Peterborough.

In his final address to the Annual AEA Conference, Roger Lane-Nott again made a plea for politicians and legislators to recognise the importance and potency of the land-based engineering sector in the UK. "We need to constantly 'put ourselves about'," he said, "particularly when it comes to attracting young new talent into the industry.

"I would like to see a Land-Based Engineering team on the road for 6 months of the year, visiting schools and colleges, spreading the message about the terrific opportunities offered by our industry."

Also at the AEA Conference, it was announced that David Sturges, Managing Director of Countax had been appointed President.


Roger Lane-Nott


David Sturges

David joined Countax as MD in 2011 following on from a career of almost 20 years with Hayter at Bishops Stortford, starting his career as a Mechanical Design Engineer, moving to International Sales Manager, and for the last 8 years Sales and Marketing Director. He earned a Master of Business Administration (MBA) degree from Cranfield University.

A member of the AEA Outdoor Power Council for 5 years, David became its Chairman in 2013. He has also served on the AEA Board for the last 2 years.

AEA also appointed Ian Small of Briggs and Stratton as Vice President for the Outdoor Power Equipment Council, and Richard Fox-Marrs of JCB as Vice President of the Farm Equipment Council.

UK tractor registrations increase in Q1

UK tractor registrations (over 50 hp) rose 9.6% in the first quarter of this year. Registrations of 3,240 units were up on Q1 2013.

Registrations reached 1,830 units in March, an increase of 14.2% on the corresponding month a year earlier.

The average size of units (over 50hp) registered in the first quarter was 150.4hp, an increase of 1.6% on the same period of last year; the total horsepower sold therefore increased 11.3%.

AEA Economist, Chris Evans, said, "The trade has expected a small improvement of tractor sales in 2014 and if correct this level of increase may not be sustained through coming months but there is a certain confidence returning with better weather and the increase in the Annual Investment Allowances could provide a further mild stimulus.

"Most regions saw a rise, the exceptions being the Home Counties and the South East plus Southern & Central Scotland. The largest increases were in North East England (54%), Northern Ireland (44%) and Wales (40%), predominantly livestock areas and generally areas which saw some substantial falls last year."

CEO View

On being a professional ...

Alastair Taylor

The other day I was driving up the M1 surrounded by the usual plethora of white vans (all going faster than me of course!).

Imagine my pleasure when I was overtaken by the van of a well-known farm machinery manufacturer with the name of the technician emblazoned on the front door. The letters EurAgEngTech, AMIAgrE, Master Technician LTA4 shone out and I hope that the driver was as proud of owning these credentials as I was of seeing them.

All of this suggests that we are making progress with the Land-based Technician Accreditation (LTA) Scheme.

This technician was not alone in having his credentials so publicly stated as after a few moments another van drove by with the credentials of the driver, this time a gas boiler technician, similarly emblazoned on the rear door. I would hope that most householders would appreciate that you should only have your gas boiler serviced and tested by a '*Gas-safe registered engineer*' but wouldn't it be great if the farmer demanded that his machinery is serviced by an approved technician, or better still, the consumer purchased groceries where there was proof that this was not only ethically produced but also that the technology used in its production had been serviced to the highest possible standards by a professional technician. (Although as someone pointed out to me the other day, if the gas boiler is faulty, it does tend to have the effect of demolishing the whole terrace - not sure we can say the same about a faulty tractor)

Perhaps I live in a dream but I hope and believe that we are getting closer to the position where the above question might be asked. Take for example a litre of milk, a product where a machine actually contacts the tissue of the cow's udder, a situation where a poorly designed or maintained milking machine will have a real impact upon the welfare of the animal, and an example which demonstrates that in Agricultural Engineering we are dealing with the crossroads where biology meets engineering. With Parlour Safe, the LTA scheme for technicians working with milking machines I predict the day when milk buyers and consumers will need to be reassured that the machine making contact with the animal is maintained to the highest standard.

However, we do have some obstacles to overcome. The first challenge is the use (or should I say misuse) of the term 'technician'. I was at a graduates fair recently on a stand organised by the Engineering Council promoting professional registration. One young graduate made the comment that how could a 'nail-technician' compare with his four year degree which entitled him to technician status. That is a fair question and whilst not wanting to devalue the training experienced by the nail-technician, it does leave me concerned about the relative status and parity of those who call themselves technicians.

I think I was able to sell the concept of Engineering Council registration and progression to Chartered Engineer to the young graduate but I am left feeling uncomfortable with the way in which the terms 'technician' and associated job roles have been so confused. We have a real job to do, especially with the younger generation to promote the concept and long term value of professional registration.

We have an even bigger job to do to promote the concept of professionalism to the end user. I am bewildered by the fact that most people would not have their accounts completed by anyone other than a Chartered Accountant, nor have their house valued by a Chartered Surveyor; they wouldn't take their dog to the vet and see anyone less than a Registered Veterinary Surgeon, nor would they renew their horse's shoes by anyone other than a Registered Farrier; they certainly would not want to fly on an aeroplane that hadn't been serviced by the very best qualified technician; yet the same people seldom ask if the technician repairing their tractor is approved to the very highest standard.

A farm machinery dealer principal recently commented on his own conundrum as to why the same person who pays a car dealer for the service of his car, is critical of the significantly lower rate charged for servicing farm machinery which often costs many times more than the purchase price of the car. Ironically, the car franchise was in the same building as the farm machinery dealership.

Interestingly, if you visit:

http://ata.theimi.org.uk/ata-technician-search

you can find the names of all registered motor vehicle technicians in your area. How fascinating! At the same time, I can hear all the comments about one employer poaching a technician from the employer up the road, how the cost of registration has to be passed on, etc. All valid points of course but the concept of a register of approved technicians is one which we must embrace.

Technicians and all registered engineers, together with Chartered Environmentalists should be proud to be listed as a professional . . .

MAINTAINING OUR PROFESSIONALISM

As registered engineers and professionals we have an obligation to maintain our knowledge and skills and the need for IAgrE to promote and monitor this is an important part of our Engineering Council Licence.

I am currently preparing for our five yearly reaccreditation which will take place in early 2015 so you will anticipate that a reminder is at the forefront of my mind.

> "We have an even bigger job to do promoting the concept of professionalism to the end user"

In reality the broad range of activities which members pursue to maintain their registration and professionalism is excellent. Training and Continuing Professional Development is a feature of all of our lives and I know that many of you will be engaged in some good quality training and development. Whether it is attendance at a conference, an IAgrE branch meeting, a course which your employer has arranged, or simply some of your own research using the World Wide Web or online media, do please remember that it is important to record this.

However, if you are anything like me, your school report might say something on the lines of 'Could do better'. At IAgrE we can help you to record your CPD so do please read my article on CPD and how you can use the IAgrE platform to record this. We are currently involved in a project to make this accessible from tablet computers so watch this space . . .

IAgrE IN A GLOBAL COMMUNITY

In March, I had the great pleasure of spending some time with Paul Hemmingway, a personal friend and long standing member of IAgrE.

Paul is currently based in Delhi, India working as VP Service, JCB India. Paul is a graduate of Newcastle University having studied Agricultural Engineering. I first met Paul when we worked at Harper Adams University.

Paul has been working for JCB in a variety of positions and as a fellow agricultural engineer, it delights me that we can showcase the heights to which we can aspire. Do read Paul's article; *The Jewel in JCB's Crown* for an interesting insight into the workings of the global economy.

Manufacturers, dealers, educators and specialist bodies come together

Industry first at Barony meeting

How to provide the landbased engineers and technicians of the future - that was the aim of a recent successful meeting hosted on the Barony Campus of Scotland's Rural College near Dumfries.

In what is regarded as an industry first, representatives from manufacturers, dealers, schools, careers service and awarding bodies, together with specialist SRUC Barony staff, met together to chart the way ahead.

According to Drew Easton, Dean of SRUC's Barony Campus and the driving force behind the initiative, "It was an excellent example of education and industry working in perfect harmony. Instead of each group meeting separately we had all the UK main players in one room, discussing an issue that the industry needs to address. We must find the most effective way of attracting, educating and retaining good people while ensuring they have the skills and motivation the sector requires."

Representatives from all walks of the landbased industry came together at SRUC Barony recently to discuss providing engineers and technicians of the future

The event opened with speakers detailing what their particular challenges are now and what they perceive are the challenges of the future. It set the scene, giving an overview of what is happening in the different areas, and how collectively there may be an opportunity to influence and shape the future.

Once the scene had been set the workshop session began involving sub groups who discussed, sometimes robustly, a range of detailed issues including strategies to encourage girls into landbased engineering, how schools can prepare young people for work experience, course levels and structures for the future, smart delivery systems, qualification benchmarking and development, and strategies to retain qualified staff. The agreed outcomes from these group sessions were the focus of a full group discussion in the afternoon.

"The day proved to be productive," said Drew Easton. "The work done will provide the industry with a good foundation to build from, along with a group of people that have the will and ability to bring about change for the benefit of everyone involved."

The work done will provide the industry with a good foundation to build from

Drew Easton, Dean SRUC Barony Campus

The event was supported by the following companies and organisations: CLAAS, John Deere, Massey Ferguson, Fendt, Valmet, Krone, Kubota, Lely, Ritchie, SDS (Skills development Scotland), BAGMA (British Agricultural and Garden Machinery Association), AEA (Agricultural Engineers Association), SQA (Scottish Qualifications Authority) and IMI (Institute of Motor Industry).

Ransomes Jacobsen introduce new Sales & Technician training

Ransomes Jacobsen has introduced a Sales and Dealer Technician Certification and Awards programme. The aim is to recognise and encourage sales staff and technicians in their career development with the technicians' initiative structured around the Landbased Technician Accreditation (LTA) programme.

Hanfried Sievers, Training Manager at the company's Cutting Edge Training department, explained, "Our aim is to recognise personal achievement and development within the Dealer network as it's the individuals within our business, who push themselves to achieve, who are the people that will build and take our business forward. We feel they should be rewarded accordingly and we have introduced an awards element into the programme."

The Awards programme, which recognises participation and merit performance at Bronze, Silver and Gold levels, came into effect on 1 January 2014. Every 12 months a selection process will determine who is eligible for the awards. Salesmen and Technicians will be advised of their progress using the Continuing Professional Development programme, launched in 2013, to guide them through the levels. The Gold level awards will be presented at a 'Gold Club' luncheon ceremony, to be held at Ransomes Jacobsen's Ipswich headquarters, hosted by the President of Jacobsen, David Withers each year.

College course supported by Briggs & Stratton

Manufacturer donates engines to Land Based Services Engineering course

Briggs and Stratton have donated four of their latest eco-friendly engines to South Worcestershire College, a national centre for training apprentices in Land Based Services Engineering.

Darren Layton, Course Manager, said, "We currently have 35 students from all over the country taking this course which is dedicated to training engineers in the maintenance of lawn mowers and outdoor power tools. We have a great national reputation in this field, but in order to continue to offer high standards we need to be able to provide students with the training and experience in working on the very latest engines.

"The College has enjoyed the support of Briggs and Stratton for a number of years and it is immensely positive that we can work together to produce the country's future land based servicing engineers."

One of the local students, Craig Wright of Bretforton said, "Almost all students currently in the College workshop will come across a Briggs and Stratton engine in their workplace. To be able to train on the very latest models means that we are getting real hands-on experience with engines that we are likely to be working on for many years in the trade."

Student Craig Wright with Course Leader Darren Layton

> "..To be able to train on the latest models means we are getting real hands-on experience"

Craig Wright, student

New Assistant Manager for the UK's National Sprayer Testing Scheme

IAN Forman has taken up the role of Assistant Manager for the NSTS.

Before joining the NSTS team Ian managed a 2,300 acre arable farm in Norfolk, having previously studied at Writtle College in Essex.

NSTS Manager, Duncan Russell, said, "We welcome Ian at a time when we are extremely busy and in the process of expanding the scheme. His role has been created to manage and promote this expansion and Ian brings a lot of experience which will be very relevant to NSTS."

Ian commented, "I'm looking forward to working with this important scheme. Having been involved with sprayers over the years in Norfolk I know how important it is to ensure equipment is properly checked and maintained. Regular maintenance and checks help ensure that the machine adds to environmental and public safety while ensuring that pesticides are applied accurately and on-target. I think the vast majority of farmers are aware of this and my role will be to ensure NSTS helps them do that."

Duncan Russell continued by saying, "NSTS tests some 15,500 pieces of application equipment annually. With the coming requirements of the Sustainable Use Directive and expansion into the amenity sector we expect this number to increase substantially, hence the need for an Assistant Manager."

The NSTS was originally the AEA Sprayer Testing Scheme. NSTS was launched in 2003 having been devised by the UK sprayer industry with input from farmers and grower representatives, the chemical industry, contractors as well as crop assurance and supermarkets.

The comprehensive test covers all the application components of a sprayer to ensure the machine is working correctly and efficiently, capable of applying plant protection products on target with further considerations of safety for the sprayer operator and the environment.

"Regular maintenance and checks help ensure that the machine adds to environmental and public safety"

Ian Forman, Assistant Manager NSTS

SDF invest in dealer training scheme

Top Dealer Program to target the 'elite segment'

LAST year's SIMA event saw the launch of Same Deutz-Fahr's new dealer staff training initiative - the Top Dealer Program which targets 'the elite segment' of the Group's sales network and aims to bring the manufacturer's key dealers together to enable them to successfully face future challenges in the agricultural machinery sector.

These are listed as being:

- More demanding and professional customers
- New technology and development leading to more sophisticated and complex problems
- A highly competitive market with many new entrants

The first UK dealers selected to participate in this initiative have just completed module three of the program and with it, completion of the Step one foundation course. Following on will be a second step designed to develop the skills and practices within the dealerships themselves. The foundation course will be run again for different dealers in September.

Module three recently took place over two days at a conference centre based in Daventry, Northants and, under the guidance of course tutor, Andrea Pontiggia, Professor of Organisation and Human Resources management, Bocconi University, Milan, took an in depth look at understanding and managing internal processes and people within the dealership.

According to Rob Edwards, SDF's dealer development manager, UK and Ireland, the Top Dealer Program has been well received by dealers. "We've had some really positive feedback," he says. "They clearly appreciate the opportunity to expand their knowledge and awareness of just what it is that makes for a successful dealership."

Franco Artoni, SDF Group Sales, Marketing and After-sales Executive Vice President, who heads up the all-markets Top Dealer Program comments, "We are focusing on three key points - developing distributors' managerial capabilities, launching initiatives aimed at strengthening corporate identity and, improving processes by employing 'Dealer Operating Standards'."

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Secretary: **Paul Miller** Administrator: **Elizabeth Stephens**

Activities of the DOUGLAS BOMFORD TRUST

An update

General Management Board meeting held in April

A meeting of the Board of Trustees was hosted by AGCO in early April and was attended by all trustees together with Professor Mark Kibblewhite as an observer pending his potential appointment as a trustee later this year. At this meeting the Trustees:

- Reviewed the administration and financial position relevant to The Trust;
- Reviewed the progress of research projects and other activities that are funded by The Trust;
- Examined new proposals for funding and made recommendations as to which of the submitted proposals should be funded. The Trust agreed to support two new activities that are related to summer vacation activities for Undergraduates (with the Royal Academy of Engineering) and those at school (with the Arkwright Scholarships Trust);
- Agreed to work with The Institution to further develop a mentoring scheme for those in the early stages of their career and considering joining the engineering for agriculture community.

Studentships and prizes

STUDENTSHIPS

As indicated in the Spring edition of *Landwards*, this year The Trust presented Student Awards to six candidates at Harper Adams University based on the evaluation of their written applications only rather than a written application and an interview because the interview dates clashed with the student groups going to Agritechnica.

The meetings between representative trustees and the recipients of the Student Awards are viewed as an important component of the Award and therefore this year all student awarded students were invited to a lunch in the Conference dining room at Harper Adams University on Wednesday 7th May.

This lunch was very successful and is now likely to become an annual event that will involve more of the trustees and provide a good opportunity for successful students to meet with Board members of The Trust.

PRIZES

Very many congratulations go to Joanna Niziolomski who is a researcher at Cranfield University working on developing machinery designs for optimising soil disturbance and mulch attenuation options to reduce soil loss, increase water use efficiency and negate environmental impacts of growing high value row crops in the UK.

Joanna reports:

"I just thought that I would let you know of a recent conference that I attended on Saturday. I was given the opportunity to present my work at the British Federation of Women Graduates Research Presentation Day in London after submitting an abstract earlier on in the year. It was a great day, full of female PhD students from all over the country presenting their work. Topics varied - Parkinson's disease, birth control in China, Greek mythology, nanotoxicology to name but a few.

"The audience received my research really well, and enjoyed my presentation -so much so that I was awarded the best presentation award! My presentation was filmed for a documentary that they were creating on Women in Science, and as a result of winning I was also interviewed.It was really good day."

It is really good to see those working in our sector producing winning performances - congratulations again to Joanna and to the team she is working with at Cranfield University.

Joanna Niziolomski at the recent IAgrE Conference

The Douglas Bomford paper award for the best paper published in Biosystems Engineering by a member of The Institution of Agricultural Engineers during 2013 was awarded to Dr Abdul Mouazen for his paper entitled '*Non-biased prediction of soil organic carbon and total nitrogen with vis-NIR spectroscopy, as affected by soil moisture content and texture*'. The award was presented to Abdul at the Annual Conference by emeritus trustee Mr John Fox - (see also Page 15 with picture).

The Douglas Bomford Trust award for the best student on the Land Reclamation and Restoration course at Cranfield University has been won this year by Alexandra Cooke - our congratulations to her. The award will be presented at the Prize Giving Ceremony at Cranfield University on 5th June.

Attendees at the Student Awards lunch at Harper Adams University on 7th May.
(L-R): David White (Trustee), Alex Skittery, Christopher Siddons, Cormac Flaherty, Andrew Dawson, Jennifer Williams, Jacob Smith, Anthony Burgess (Trustee)

IAgrE Conference 2014

Re-imagining agriculture

This year's event centred around finding new ways of ensuring the step changes needed to ensure global food security whilst reducing the environmental impact of agriculture.

CHRIS BIDDLE reports

ALMOST 100 delegates attended the 2014 IAgrE Landwards Conference held at the Cranfield Management Research Institute (CMRI), Cranfield University on Wednesday 21 May.

The conference programme and theme ***Re-Imagining agriculture: Engineering as the strategic enabler*** was put together by the new IAgrE President, Professor Mark Kibblewhite

Introducing the conference, Professor Kibblewhite said, "Today is all about freeing up our mind, letting our imagination run wild, go beyond current agricultural technology and allow us to dream a little."

He added that he hoped that the Conference would kick-off a new partnership between scientists and engineers. "I would like to think this conference will create momentum and a network to refine ideas, develop options that could be taken forward into practice.

"We should not be afraid to challenge accepted practices, for instance is tillage essential or just tradition or when is a weed not a weed? Are animals a luxury we cannot afford, or are they essential to efficient agriculture? Why don't we eat more insects, fungi and rodents? Why are field designs originally suited to horse teams and early mechanisation still the same today?

"There are so many exciting challenges that engineering can solve - and I hope that today we can open our minds to how these might be achieved.

Professor Mark Kibblewhite

Professor Sir Peter Gregson

After a welcome to the Conference from **Professor Sir Peter Gregson** (Chief Executive and Vice Chancellor of Cranfield University), the lead speaker was the Government's Champion for Global Food Security,

Professor Tim Benton

Professor Tim Benton.

"There is no recipe for sustainable agriculture," he said, "but big changes are needed to achieve sustainability - and engineering has to sit at the heart of change".

Low-yielding organic farming has biodiversity benefits, he said but high yielding organic agriculture can impact on ecology in similar ways to conventional farming.

"We need to increase food production from existing farmland in ways that place far less pressure on the environment and which do not undermine our capacity to continue producing food in the future."

“The definition of an engineer in the Oxford Dictionary is ‘an artful contriver’”

Professor Karl Ritz

“Soil is the Biological Engine of the Earth,” said **Professor Karl Ritz** in an entertaining examination of the role, purpose and functions of soil.


Professor Karl Ritz

And in order to demonstrate the resilience of soil, Professor Ritz brought out a sledge hammer (not to crack a nut on this occasion) but to demonstrate how material goods, this time a memory stick from a colleague’s computer which was trashed, whilst the soil hit with force reformed.

Using an album cover from heavy metal band, Iron Maiden, Professor Ritz argued that rows of combines in spearhead formation were not the answer. “We need machines to establish, harvest, process temporally, spatially, botanically diverse systems.”

The head of East Malling Research, **Professor Peter Gregory** presented a paper on pathfinder developments in agricultural science.


Professor Peter Gregory

“There is no doubt that we need new approaches to increasing crop yields,” he said, “and food security has become major political concern both here in the UK and internationally.”

He questioned whether the focus of producing more cereals at the expense of pulses was resulting in diets that were less diverse and less nutritional. “By growing more cereals at the expense of pulses, the world population is becoming deficient in essential minerals such as iron, zinc, iodine and selenium,” he said.

The importance of a 40ft container was central to the paper given by **Dr James Taylor** of Lancaster University who outlined the work being carried out at the university to grow plants in a controlled environment (eg within the container) using LED lights and micro-climate conditions, whereby every stage could be controlled to affect look, taste and quality.


Dr James Taylor

Senior Scientist at Aarhus University in Denmark, **Dr Dionysis Bochtis** used an extract from the Disney film, *Finding Nemo,* to illustrate that scientists, rather like the fish in the film who cleverly engineered an escape from their captive fish tank, only to end up with the answer to their immediate solution but no long term plan. *Now What?* was their plaintive cry.

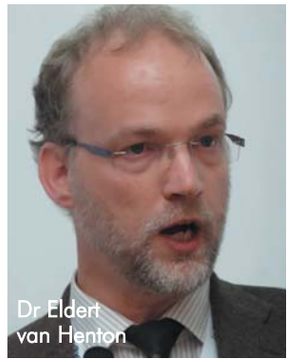
Dr Bochtis said that many of the answers to greater productivity lay in the advanced coordination of machinery and equipment movements by mapping of routes to minimise travelling time.


Dr Dionysis Bochtis

Dr Eldert van Henten, professor of Biosystems Engineering at Wageningen University in Holland summed up many of the issues raised by the speakers.

“We have the technology,” he said, “now we need to harness the ‘brain-power’ of all those involved to agree an agenda to move forward.”

He described the establishment of a futuristic ‘roundel’ for sustainable egg production, the creation of which involved input from farmers, consumers, researchers, supermarkets and even ‘Wakken Dier’ which Dr van Henten described as the Dutch equivalent of the UK’s Animal Liberation Front


Dr Eldert van Henton


Anne Miller

Finally, **Anne Miller**, Associate Director of Conference sponsor, Knowledge Transfer Network, updated delegates on the current projects being handled by KTN and of the grant opportunities presently available.

GALLERY


AGM


Alastair Taylor


Delegates


Marion King & Alison Chapman

Soil Scientist Professor Mark Kibblewhite appointed President

Mark Kibblewhite (right) presented outgoing IAgrE President, Andy Newbold, with a special plaque to mark his term in office

Mark Kibblewhite, Principal of MK Soil Science based in Beaminster, Dorset, and an Emeritus Professor at Cranfield University, was appointed as the new President of IAgrE at the Conference

Mark, a Fellow of IAgrE since 2002, specialises in the assessment and management of soil resources. He has 35 years' experience in agricultural and environmental sciences, gained in industry, government and universities.

At Cranfield he was Head of the Natural Resources Department and Director of the National Soil Resources Institute. Other former roles have included being Chair of the European Soil Bureau Network, Head of Land Quality at the Environment Agency and Managing Director of the Environment Division of Hyder Consulting.

He graduated in chemistry from York University, did a PhD in soil science at Aberdeen and has an MBA from Cranfield. He is a chartered environmentalist and chartered chemist.

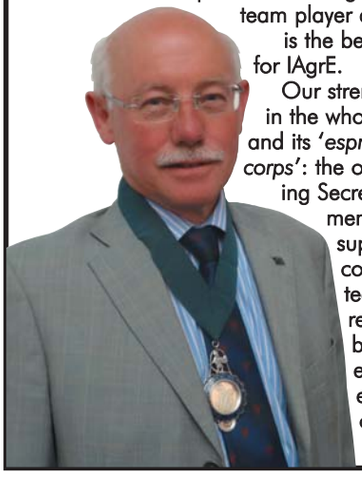
Mark takes over the President's role for two years and the new President Elect is **Dr Robert Merrall** whose specialism is technology for sustainable agriculture. Rob spent his early career in agricultural engineering research at Cranfield University before working in roles with the Renault Group, as a director of two major UK farm equipment distributors and as a director of the Royal Agricultural Society of England.

Rob now works closely with the Technology Strategy Board in the delivery of the Agritech Strategy, and said of his appointment, "I am delighted to have been appointed and look forward to supporting Mark in his Presidency at what is a very exciting time for everyone in our sector."

MARK KIBBLEWHITE offers his first President's Musings . . .

Our Institution has grown ever stronger over the past decade and the opportunities for its members are arguably the best for a generation; the World needs the creativity and expertise of agricultural engineers as never before to deal with the challenges of food security and climate change. It is an exciting time to be starting my service to members as their President.

I want to thank Andy Newbold for passing on the helm of a sound ship set on a good course. Andy was instrumental in the recruitment of our excellent new CEO, Alastair Taylor, and his guidance has ensured that the Institution is centre-stage in UK Agri-technology policy development. He is a great team player and that is the best style for IAgrE.



Our strength lies in the whole team and its '*esprit de corps*': the outstanding Secretariat, members supporting committees and regional branches, the editors of *Landwards* and *Biosystems Engineering* and others. My first objective as a new President is to support this wider team.

IAgrE is already and I hope will become more important to its members. My own experience is that professional relationships are the most enduring feature of working life and also the most valuable. Few are still able to remain with one employer from apprentice to retiree. Organisations come and go as markets change and develop and the landscape of work is more and more ephemeral.

However, our professional institutions remain and to my way of thinking are ever more important to develop and retain networks, develop new expertise and skills to keep pace with technological innovation and enjoy professional solidarity with their peers.

My second objective as President is to make the IAgrE 'offer' to our existing and potential members irresistible. In part this is because I have some concern about our demography. We need to bring more of our student members in to the mainstream of the Institution and we are behind the curve compared to our peer institutions in encouraging women to develop a career in our sector.

Moreover, I am convinced that there are increasing numbers of engineers who would be keen to work with us but who have yet to discover us. While we must continue strong support for our traditional partners in further and higher education, we should be reaching out to recruit more engineers from mechanical, electrical and information engineering backgrounds.

On my 'must-do' list for my first week is an assignment as an 'expert reviewer' of the synthesis report that the International Panel on Climate Change will publish later in 2014. The report is still confidential, but the working group reports published recently say enough. Humanity is definitely in the 'last chance saloon'. And agriculture is both a large part of the problem and holding the keys to solutions.

More than a fifth of current greenhouse gas emissions are down to the land-based sector and the industry has been less successful than most others in achieving reductions. Meanwhile the impacts of climate change on agriculture look set to be large without a miracle in global governance: recent indications are that up to a quarter of food production could be lost in some regions.

My third objective as President is to help to position our Institution as an energetic source of technological innovation for climate change adaptation and associated food security. I refuse to be other than optimistic that solutions can be found - but only with the creativity and expertise of agricultural engineers. It is a big responsibility for us all.

IAgrE Award Winners - 2013 / 2014

IVEL AWARD

Awarded to **Garford Farm Machinery** for the Garford Robocrop Spot Sprayer judged to be the best new product at LAMMA 2014 that demonstrated the most positive contribution the environment.
Presented to Michael Garford by Mark Kibblewhite.

BRANCH MERITORIOUS AWARD

Awarded to **John Gough** MIAgrE, of the Wrekin Branch who worked for a farm machinery distributor before moving into education sitting on the NVQ development committee.

DOUGLAS BOMFORD PAPER AWARD

Awarded to **Dr Abdul Mounem Mouazen** MIAgrE for his paper Non-biased prediction of soil organic carbon and total nitrogen with vis-NIR spectroscopy, as affected by soil moisture content and texture.
Presented by John Fox.

MICHAEL DWYER MEMORIAL PRIZE

2014 WINNER was **Austin Jarrett**, managing director of Turfmech Machinery Ltd, manufacturers of the Allett brand of high quality and commercial mowers.

AWARD FOR CONTRIBUTION TO THE LAND BASED INDUSTRIES SECTOR

2014 WINNER was **Richard Danby** FIAgrE, who has recently retired from RDS Technology after 40 years, and managing director since 1991. The company are specialists in electronic monitoring devices for yield monitoring and mapping.

AWARDS OF MERIT

Presented to **Alan Plom** MIAgrE (above) for 2014 for his contribution to farm safety, and to **Dr Bill Day** FIAgrE, Editor in Chief of Biosystems Engineering (below) who was presented with the 2013 Award.

Other Awards were presented at LAMMA last January to **Daniel George** of Coleg Sir Gar (Student Project Award), and to **Jamie Venables** of Harper Adams University who won the IAgrE Safety Award.

Young Engineers Competition 2014

Report by **RICHARD TREVARTHEN** IEng MIAgrE

THE Young Engineers' Competition took place on April 1st and was held at the JCB Visitor Centre, Rocester (where it was held in 2004 when the competition first started).

The competition continues to be run on similar lines to those first envisaged by Richard Robinson (Autoguide Equipment). It is open to all UK landbased colleges and teams of two students are given a set of wheels, a battery and maximum dimensions and have to produce a remote or radio-controlled vehicle to power up a curved ramp, with the one going the highest declared the winner.

This year 16 teams took part, with two from Askham Bryan, three from Babcock, four from Eastern and Otley, five from Plumpton, one from Reaseheath and one from SRUC Craibstone, Aberdeen.

Following scrutineering, 12 vehicles were placed in Class 1 and the remainder in Class 2, all being outside the maximum dimensions.

Following a warm welcome from JCB and some last minute fine-tuning, (and in some cases, a little panic!) battle commenced. Each team has the opportunity to compete in three rounds.

Round 1 saw Askham Bryan's vehicle (SJ Racing) reach a height of 220. This was also achieved by six other teams, some were very close and six failed at the first attempt.

Rounds 2 and 3 saw much excitement as the remaining competing teams strived to go higher.

At this stage it is worth quoting Richard Robinson who said, "The competition is intended to reward the team willing to invest time in building a vehicle which must conform to the rules and understanding the strategy necessary to beat the opposition".

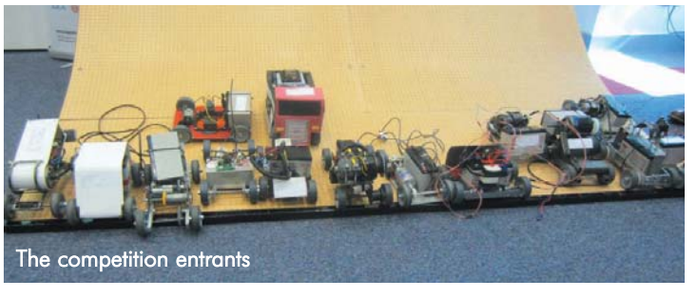
So once all the rounds had been completed, the teams which made the most effort went home with the top prizes, which included cash prizes and power tools sponsored by Bosch Rexroth.

Peter Leech explains the rules to the students

Last minute adjustments

Tackling the ramp

Craibstone Rover



The competition entrants

JCB Story Exhibition tour

CLASS 1

- *First*: **Easton and Otley College**.
  Team: Nick Armstrong and Tom Wilkinson with TORPEDO 850.
  (This unique four-wheel drive designed vehicle earned a bonus prize).
- *Second*: **Plumpton College**.
  Team: Ella Clifton and Ryan Haward with ABERDEEN 03.
  (We hope that Ella's success will inspire other girls to take part in future competitions).
- *Third*: **SRUC Craibstone, Aberdeen**.
  Team: Matthew Jamieson and Scott Watson with CRAIBSTONE ROVER.
  (They also received a bonus prize for their aesthetically designed vehicle.)

CLASS 2

- *First*: **Easton and Otley College**.
  Team Dean Revell and Kyle Green with DEANO AND GREENO

After a delicious lunch generously provided by JCB, we were split into groups for our VIP tour, spending approximately one hour in the excellent 'JCB Story Exhibition' and a similar timescale taking in the assembly line and test area.

In both cases there was much to see and all were inspired by what we learnt and saw.

CONCLUSION

Special thanks go to:

- **Richard and Rob Robinson**, the prime movers and shakers of our competition
- Our Sponsors, **Autoguide Equipment**, **Bosch Rexroth**, the **Douglas Bomford Trust** and the **IAgrE**.
- To all at **JCB** for hosting and helping with the event and for making it such a special day.
- **Sylvia Harris**, IAgrE, for all her hard work put in behind the scenes to ensure everything went smoothly.

PROVISIONAL DATE FOR 2015 COMPETITION

Tuesday March 17th 2015.

Winning team in the Class 1 category Ike Neave and Harry Gillingwater from Easton and Otley College, with left Craig Grant of Bosch Rexroth who co-sponsor the event with Richard Robinson (sponsor) of Autoguide Equipment

Dean Revell and Kyle Green from Easton and Otley who came first in the class two category

Figure 2. Corsican pine wood chips as received

Renewable energy: time to get serious

Martyn Newton, UEA's Assistant Director of Estates - Risk and Sustainablity

BRIAN SIMS reports on a bold initiative at the University of East Anglia (UEA) to produce heat and power from renewable woodchip biomass

INTRODUCTION AND BACKGROUND

The continued dire warnings from the Intergovernmental Panel on Climate Change (IPCC) are surely too cogent and persuasive to be denied any longer.

Burning fossil fuels has contaminated our atmosphere to such an extent that increased global warming is inevitable and we are set to hit an up to 5C rise before the end of the century. UN climate talks continue to tip-toe around the problem with the Doha conference in 2012 agreeing (with some notable and important exceptions such as Canada, Russia and the US) to keep an extension of the Kyoto Protocol on emissions control on the agenda.

The problem resides in the short-term vision of both industrial and industrialising countries. Energy consumption is unlikely to fall as we push for economic growth (even as we fully realise the impossibility of infinitely continuing economic growth that depends on the consumption of finite resources).

In the UK we have seen the firm rejection of fracking (hydraulic fracturing) in Sussex last August. Fracking is a last desperate attempt to squeeze the remaining fossil fuels from our land, after the profligate consumption of North Sea gas with no investments being made for the future. As a result we are increasingly dependent on gas supplies from potentially unreliable sources such as Russia and the Middle East.

Now is precisely the time when urgent attention must be focused on deriving energy from renewable sources in the UK; the government's commitment is to produce 20% of our electricity from renewable sources by 2020. At the moment renewable energy (principally from biomass and wind) amounts to about 12% of our production - so we still have a way to go.

Biofuels are also gaining in popularity, largely as a result of the EU directive that 10 percent of all transport fuels should be derived from renewable sources by 2020. The increasing production of biofuels in the UK is ringing some alarm bells as it is mainly at the expense of food production.

UEA'S CONTRIBUTION

The University of East Anglia's Norwich campus provides an innovative component to the renewable energy debate and could be a pointer to the way ahead.

The Tropical Agriculture Association (TAA - *www.taa.org.uk*) organised a visit to UEA's gasifier plant in September 2013 and a small group of IAgrE members participated.

The set up at UEA is a combined heat and power (CHP) unit which generates electric power but also captures much of the heat that would otherwise go to waste. The generator is 36% efficient in that it converts 36% of the fuel into electrical power; but at the same time 50 percent of the fuel energy is captured as heat making the system 86% efficient overall. The losses amount to 11% through the flue and 3% via radiation.

The plant can only achieve its goal of reducing UEA's carbon footprint by 35% on 1990 levels if the CHP plant is integrated into a regime of sustainable forestry where carbon can be sequestered.

Figure 1 (*above right*) gives an idea of how the biomass carbon cycle works.

The visit, presentation and explanations were led by UEA's Assistant Director of Estates, Risk and Sustainablity, Martyn Newton.

Fuel

The gasifier plant uses woodchip biomass as its fuel, this is derived from Corsican pine (Pinus negra var. maritima) which is

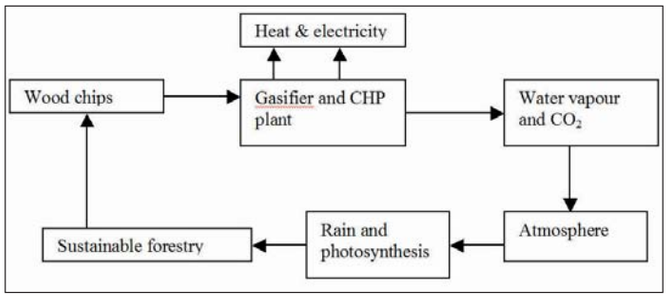


Figure 1. The carbon cycle envisioned for the conversion of wood chip biomass to heat and power via gasification.

currently abundant in the region's renewable forests.

The requirement is for 150 tonnes per 10 days and large chunky chips are preferred (**Figure 2**). Typically the chips are delivered at up to 50% moisture content and this has to be reduced to around 25% by a drying process using engine heat.

The chips are lifted by an automatic grab (**Figure 3**) and taken to a drying conveyer before being fed into the gasifier.

Figure 3. Automatic grab to feed chips to the drying section.

Gasifier

The biomass is fed into a gasifier (**Figure 4**) where it is ignited and supplied with just enough air to keep it alight. Pyrolisis precedes gasification but essentially hydrogen and carbon monoxide are produced from the biomass and the steam driven from it.

$$C + H_2O \rightarrow H_2 + CO$$

Other products of the gasification are methane (CH4), tar and charcoal, which has potential as a source of biochar for improving agricultural soils deficient in organic matter. The charcoal (which amounts to 8-10% of the woodchip mass) is taken from the base of the gasifier via a discharge pipe.

The gasifier reaches a reaction temperature of around 1200C which produces a gas mixture at 500C which needs to be cleaned and cooled (to produce heat) before being fed to the engine.

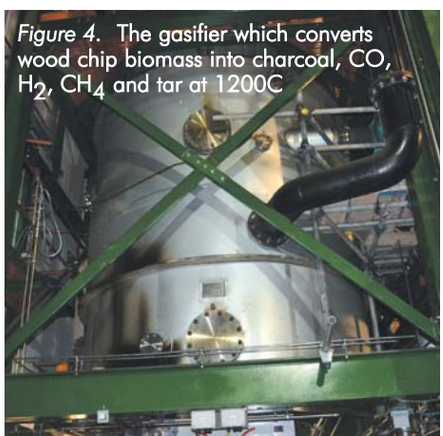


Figure 4. The gasifier which converts wood chip biomass into charcoal, CO, H_2, CH_4 and tar at 1200C

Heat exchanging and cleaning the gases

The gases emanating from the gasifier are spun in cyclones to remove particulate matter; cooled somewhat and then scrubbed to remove the tar before being taken through a final cartridge filter to the engine. The flow of gases is a result of the engine sucking them through the system.

The engine and generator

The gases are the fuel for the Austrian-made GE-Jenbacher gas engine (*www.ge-energy.com*).

This 120 litre V-20 engine (**Figure 5**) is connected to a generator producing 1.7 MW at 11 000 volts. This is, of course, in addition to the 2.2 MW of heating power from the heat exchangers. The engine exhaust is fitted with a catalytic converter to remove any residual CO. **Figure 6** gives a schematic overview of the complete plant.

Economics

The cost of the set up was approximately £10 million (offset to some extent by a DEFRA grant of £1 million) and this will need to be amortized over a number of years. A payback period of 5 years has been estimated.

With a reduction in UEA utility costs (60% of electricity is now generated in-house), income from Ofgem Renewables Obligation Certificates (ROCs) and exporting power to the grid, the annual balance is positive (£3.4 million in 2008).

Teething problems and practicalities

The UEA plant has experienced some technical difficulties which are being resolved as they occur. This situation is not surprising and only to be expected when an innovative project develops from the drawing board to a working installation.

Some points mentioned by Martyn Newton include:

- The original wood chip conveying augers were not up to the job and rather ground the chips into smaller pieces which then clogged up the system. Swedish technology solved the problem.
- Flow through the gasifier. This problem seems to be a little more intractable. The system depends on a steady flow of biomass through the gasifier to achieve continuous power and heat generation. To date runs in excess of 12 hours have been difficult to achieve. Design alterations have been incorporated and the situation is gradually improving. However more rapid progress has been hindered by the fact that the original manufacturer has now gone out of business.

Figure 5. GE-Jenbacher 120 litre gas engine.

CONCLUSION

UEA's green initiative is a bold step in the right direction and, if scaled up could make a healthy contribution to the UK's need to cut greenhouse gas emissions and meet its goals on increasing the renewable content of our energy consumption.

We are already at, or beyond, peak oil and gas production and there is a limit to what can continue to be extracted from finite resources.

If we can learn to leave renewable energy sources (coal, gas and oil) in the ground and wean ourselves off our suicidal dependence on their consumption, then perhaps *Homo sapiens* will have a future to look forward to.

LINK

Further information on UEA's CHP initiative can be found here: *tinyurl.com/oe59lfa*

ACKNOWLEDGMENTS

Thanks to TAA's Hugh Back for coordinating this technical visit; and to Martyn Newton for his expert guidance and clear presentation of the CHP plant.

Thanks also to Martyn for reviewing a draft of these notes, although I am, of course entirely responsible for any errors that may have crept in.

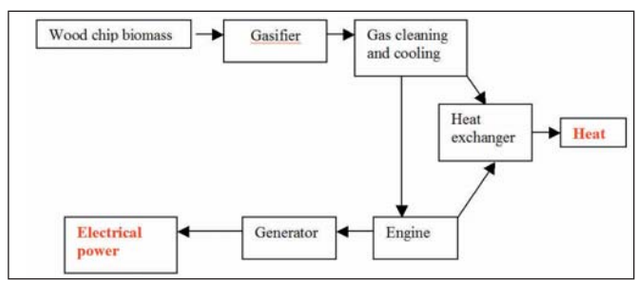


Figure 6. Overview of the wood chip biomass gasifier CHP plant

Development

CPD and your responsibility as an IAgrE member

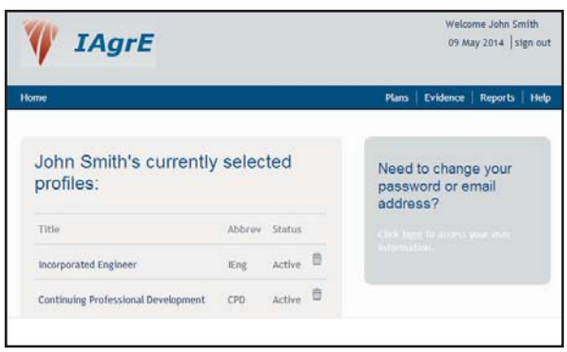
by
ALASTAIR TAYLOR,
IEng CEnv MIAgrE
CEO IAgrE

CONTINUING Professional Development (CPD) is described as "*the systematic maintenance, improvement and broadening of knowledge and skill, and the development of personal qualities necessary for the execution of professional and technical duties throughout the individual's working life*".

We all do CPD and I doubt there would be a single member at the top of their game who wouldn't be undertaking a broad range of good quality CPD.

It is your responsibility, as a professional, to maintain a level of CPD commensurate with your levels of responsibility both to your employer and the public. Maintaining an appropriate level of CPD activity will:

- **help you to exercise the highest standards of professional judgement and competence relevant to the business environment in which you operate.**
- **contribute to your professional development**
- **enhance your employability**

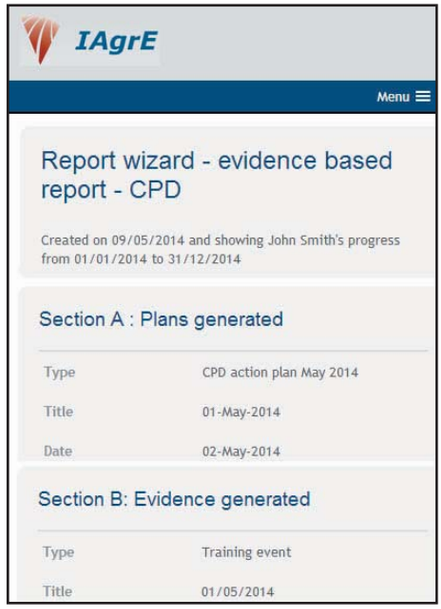


Continued membership of IAgrE implies compliance with IAgrE's CPD requirements. As part of this, it is your responsibility to record your CPD activities. Evidence of CPD will be expected from members who wish to upgrade their IAgrE membership or register with the Engineering Council and/or the Society for the Environment.

I would anticipate that those of you working with larger employers will follow the in-company systems and processes for recording training. I imagine your human resources department will maintain a good quality record of what you do to keep up-to-date. I wouldn't be surprised if your appraisal includes a review of your CPD and the impact of this on your work performance. If you are LTA registered, we know that there will be a comprehensive record of the various training events you have attended together with your achievements.

However, not everyone works for a large employer and has access to the systems described above and to help these people, IAgrE provides an online CPD planning and recording tool called ***MyCareerPath***, which can be used to record:

- **Courses, conferences and seminars**
- **Organised visits**
- **Writing articles and papers**
- **IAgrE committee work**
- **Professional updating by private study & reading**
- **IAgrE technical meetings**
- **Secondments and exchanges**
- **Further education**
- **Distance or open learning**



The scheme is provided by IAgrE as a service to members. It is available to all members at any grade and stage of their careers. We acknowledge that ***MyCareerPath*** is not for everyone (even though we like you to use it if you can, so an alternative paper based system is available).

The IAgrE does not lay down a specified number of CPD hours or points, but requires a route to achieving enhanced professional performance. Members should consider their objectives using professional judgement as to what is required to achieve development needs, and put in place the necessary CPD activities to meet these goals.

We know that many of our younger members and particularly those thinking about how to upgrade their membership or applying for Engineering Council and/or Society for the Environment Registration will be looking for a mentor to help them with their application. IAgrE does offer a mentoring service. We are in the process of planning improvements to this service later this year.

IAGRE *MYCAREERPATH* ONLINE PROFESSIONAL DEVELOPMENT TOOL

The IAgrE online planning tool - ***MyCareerPath*** - benefits both young professionals and experienced members alike who wish to use an online method to record their professional development against set standards for Initial Professional Development (IPD) or against guidelines for Continuing Professional Development (CPD).

Recording both IPD and CPD is increasingly important for members seeking to gain registration, upgrade membership or simply progress in their career.

To access ***MyCareerPath***, you must first log in as a member.

MyCareerPath has been developed by the Engineering Council and is used by a range of different Engineering Institutions. Recently we have been looking at a new version of this designed for use on a tablet computer which so many of you use these days so do watch this space for more details as and when they become available.

CPD DOCUMENTATION (AS AN ALTERNATIVE TO THE ONLINE TOOL ABOVE)

It is important to keep a record of your CPD activities although the actual manner of keeping it is flexible.

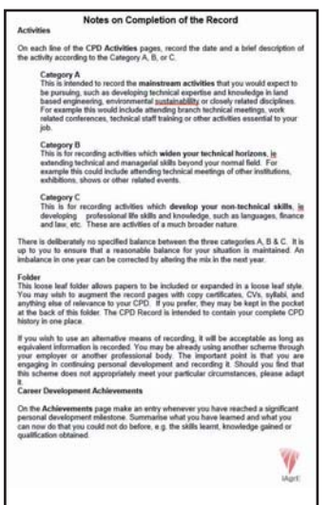
As an alternative to the ***MyCareerPath***, you may find it convenient to keep your record of CPD progress on computer and if so, these downloads contain the Word (and pdf) files of pages that could form the basis of a CPD Record Book. If you wish to use another format, it should be simple to use a word processor to translate from the downloaded files to the style required.

> “. . Recording both IPD and CPD is increasingly important for members seeking to gain registration, upgrade membership or simply progress in their career”

If you visit the IAgrE website, in the CPD section under the membership tab you will find links to the following documents:

- ***cpdnote*** **- notes on completion of the record**
- ***cpdpers*** **- personal information about the participant**
- ***cpdrecd*** **- record of activities under three categories, A, B and C**
- ***cpdachv*** **- record of achievements**

You may already be using another layout and if your method includes all the required features, then please feel free to use that method.


Notes on Completion of the Record

Activities

On each line of the CPD Activities pages, record the date and a brief description of the activity according to the Category A, B, or C.

Category A
This is intended to record the mainstream activities that you would expect to be pursuing, such as developing technical expertise and knowledge in land based engineering, environmental sustainability or closely related disciplines. For example this would include attending branch technical meetings, work related conferences, technical staff training or other activities essential to your job.

Category B
This is for recording activities which widen your technical horizons, ie extending technical and managerial skills beyond your normal field. For example this could include attending technical meetings of other institutions, exhibitions, shows or other related events.

Category C
This is for recording activities which develop your non-technical skills, ie developing professional life skills and knowledge, such as languages, finance and law, etc. These are activities of a much broader nature.

There is deliberately no specified balance between the three categories A, B & C. It is up to you to ensure that a reasonable balance for your situation is maintained. An imbalance in one year can be corrected by altering the mix in the next year.

Folder
This loose leaf folder allows papers to be included or expanded in a loose leaf style. You may wish to augment the record pages with copy certificates, CVs, syllabi, and anything else of relevance to your CPD. If you prefer, they may be kept in the pocket at the back of this folder. The CPD Record is intended to contain your complete CPD history in one place.

If you wish to use an alternative means of recording, it will be acceptable as long as equivalent information is recorded. You may be already using another scheme through your employer or another professional body. The important point is that you are engaging in continuing personal development and recording it. Should you find that this scheme does not appropriately meet your particular circumstances, please adapt it.

Career Development Achievements

On the Achievements page make an entry whenever you have reached a significant personal development milestone. Summarise what you have learned and what you can now do that you could not do before, e.g. the skills learnt, knowledge gained or qualification obtained.


Personal Details

Name & Title

Home Address

Home Tel No

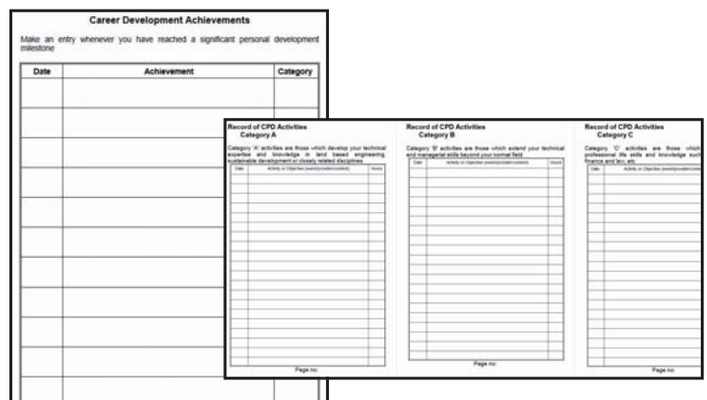
Home Fax No

Employer's Address

Employer's Tel No

Employer's Fax No

Job Title & Function


Career Development Achievements

Make an entry whenever you have reached a significant personal development milestone

Date	Achievement	Category

Page no

Record of CPD Activities Category A

Record of CPD Activities Category B

Record of CPD Activities Category C

The Jewel in JCB's Crown

Fig.1 Delhi plant


Fig.2 All plants at Pune

Paul Hemingway, CEng FIAgrE is VP Service of JCB India, based in Delhi.
He is a graduate in Agricultural Engineering from Newcastle University, and formally lectured at Harper Adams University.

For many British manufacturers in the post Independence era, India has been a challenging market. Massive, diverse with uniquely complex social and cultural structures. An amalgam of former princely states and independent countries pulled together by the British rule which ended in 1947.

Per capita income at US$1,492 per head compared to US$38,589 (IMF, 2012) in the UK puts it in the bottom quartile of the countries of the world which would seem to suggest that sales of capital goods would be challenging in the extreme. And yet, beyond this India today is emerging as one of the global powerhouses within the world economy.

The need for both urban and rural infrastructure is truly immense and the opportunity for significant business development was spotted by Lord Bamford, JCB's Chairman as long ago as 1979.

At that time it was not possible for inward investors to India to own more than 40% of companies and so a joint venture was formed which gave JCB a foothold in the market, accelerated distribution development and more critically an understanding of how to effectively transact business in India.

The start of the business was slow and in the first full year of production less than 100 machines were sold pan-India. Every machine was a concept sell, demonstrating the benefits and potential wealth generation that it could offer the buyer.

The business grew and in 2002 Indian legislation changed allowing inward investors the opportunity to increase their holding and finally become sole owners in their businesses.

JCB bought out 100% of the business and then embarked on a massive investment programme that has seen them achieve a strong position within the Indian Construction Machinery market.

The JCB India Headquarters at Delhi (*Fig.1*) is today the world's largest Backhoe Loader plant routinely producing in excess of 100 units off a single shift giving it leadership of the Indian backhoe market. As in the UK, in India the initials JCB are synonymous with a backhoe loader.

The product range offered continues to expand with JCB Engine powered Gensets added in 2013 and Skid Steer Loaders and Telescopic Handlers due to come on line in 2014.

In 2006 JCB built a new factory in Pune (*Fig.2*) in Maharastra state to manufacture fabrications. With an output now in excess of 1,000 tonnes of cut steel per week this is one of the largest fabrication facilities in India making full use of laser cutting, robot welders and machining centres to ensure world class finished goods quality and integrity.

A second factory at Pune followed in 2007 to manufacture a range of heavier equipment and today it produces tracked excavators, wheeled loaders and compaction equipment.

In addition the Pune site accommodates a significant Training and Parts distribution centre and also a Design and Innovation centre with fully integrated test facilities producing and validating designs for JCB machines manufactured throughout the world.

In 2013 the market dipped some 20% and yet JCB has such confidence in the medium term demand for machinery in India that it is just completing the construction of its biggest single development project to date building on a 110 acre site at Jaipur in Rajasthan with production commencing in May 2014.

So what have been the keys to the success of JCB in India that stand alongside those of the most successful inward investors to the country, companies like Cummins Engines and Microsoft?

A number of key factors emerge amongst which the most significant are:

1. **A total commitment to the country and investment on a scale not representative of the business as it is today but of what it may become in the future. This is possible because JCB as a family owned company has some freedom to invest in ways which may not be shared by those with public ownership.**
2. **The realisation early on that if it was to be successful in India JCB would need to modify its products and in some cases its practices to suit the needs of the market. This has resulted in some products being produced exclusively for the Indian market. By way of contrast after 35 years in India JCB is now producing certain models of machines in India purely for export markets.**
3. **The realisation that the extent of the cultural challenges are such that to manage and grow in the Indian environment demands an inspired Indian management team who have the ability to 'think global but also act local' in their driving of the business.**
4. **The passion and ability to deliver 'one global quality' in its products and services in an environment where high quality is not a given.**

So today India sits as JCB's biggest single market and the Indian business represents approximately a third of the Group volume. Truly the Jewel in the Crown of the organisation.

Book Review

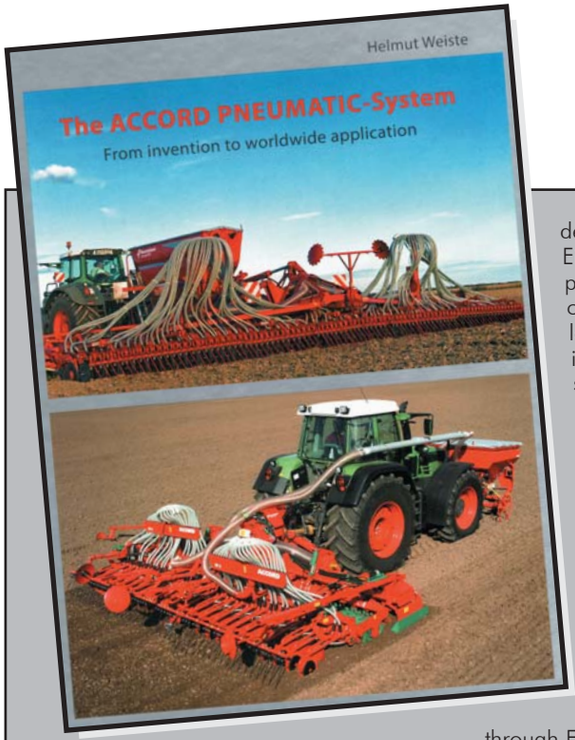
The Accord Pneumatic System -

From invention to worldwide application

by Helmut Weiste

Book review by

DONALD BOWLER



This book is nominally about the Accord Pneumatic System, which, when developed in the 1960s, was a revolutionary idea for sowing seeds.

The story told by author Helmut Weiste is though more an autobiographical story of his life with farm machinery, both on the family farm and working in the agricultural machinery company, Heinrich Weiste &Co. GmbH., of Soest, West Germany, that his father formed in 1948.

One of the company's early machines was rice planters and later on came improvements to 3 point linkages, with hook couplings and 'A' frames. In 1963, at the age of 17, Helmut went on his first demonstration tour abroad, to Eire. The book is full of interesting photographs; the one of the company's VW Transporter lashed to the deck of a freighter in gale force winds being one such image.

The Accord Pneumatic System appears to be very simple, and it is in principle, though a substantial amount of research was involved in getting it to work properly, the answer being that "You have to whirl the grains!"

It was decided to show the new seed drill in Moscow in 1966, a road trip that involved going about 2,400 km, with a Unimog in the convoy, from West Germany through East Germany, Poland and Russia.

Heinrich was introduced to General Secretary Brezhnev at a Kremlin reception, and the Russians must have thought highly of the Accord Pneumatic System as they went and copied it, ignoring the fact that Weiste had invented it - the Russians even tried to Patent it, claiming prior art, though Weiste managed to demonstrate that the idea really was theirs.

A natural development of the pneumatic seeder was the pneumatic fertiliser distributor, which in 1983 was launched as the Turbo-1, an 18 metre wide spreader.

The author describes the work that the company has done around the world to improve sowing and cultivation techniques, with some very impressive equipment being seen on his travels. In the mid 1990s Weiste became involved with John Deere, providing their Accord Pneumatic seeding hoppers for use with Deere's Direct and Mulch drills, thus extending their market.

Kverneland took over the Accord Company in May 1996, but manufacture continued at Soest.

This book will appeal to anyone with an interest in agricultural machinery, farm mechanisation, minimum cultivation techniques and especially seed or fertiliser distribution.

A moving image of the Accord Pneumatic System may be found at **tinyurl.com/qykrtrx** from where the book may also be ordered, at 39.95 Euros Europe, 43.95 Euros Worldwide, including shipping, payment by credit card, debit card or PayPal.


The Company VW Transporter on its way to Dublin in 1963

> "..The Accord Pneumatic system appears to be very simple, though a substantial amount of research was involved in getting it to work"

Let's not beat ourselves up!

'Membership is healthier than probably any time in our history'

Well done - an excellent Spring issue. Two articles particularly took my attention.

The **Managing Floods** paper was superb. It is so good because it states clearly the problem and solutions and even touches on the politics of the implementation. The solution is not rocket science but the press and television just send out the same sensational headlines and pictures which do not explain things clearly, as this paper does.

This piece needs wider circulation and would be a good way to promote the Institution to a wider public.

The **CEO article** on the future of IAgrE was very good but I could not help thinking that this is similar to what was written 20 years ago - looking forward to 2014.

Things were a lot worse for IAgrE then and the achievements over the past 20 years demonstrate all the lessons we need to remember. It is unlikely that anyone will come up with innovative new ways to show that a professional institution is good for you.

I would suggest looking back to what brought the membership from 1500 to where it is today - healthier than probably any time in its history. Let's not beat ourselves up and create unrealistic targets.

I remember Dick Godwin's call for a new beginning and first we 'rebranded' and had our, now familiar, logo designed. We worked extremely hard and extended our Engineering Council Licence by showing how professional such a small Institution could be.

We targeted students. The President personally invited CEOs and Professors, who controlled our profession to join, even although they themselves might not have been Engineers. This meant that their staff were more easily recruited.

We created an easier entry to membership, which encouraged people in and graded them later. These sorts of initiatives and hard work over the last 20 years are responsible for doubling the membership - while other Institutions have been losing members.

There is one common denominator to everything we have done over the last 20 years - the right people. IAgrE has always had good people and a welcoming, efficient administration. People retire and things change, so an absolute priority is to ensure that the friendly atmosphere is maintained.

When it comes to Eng. Council 2015, look up the files from 15 years ago and take note of what we did then. It was one of my most terrifying interviews when I faced the Council as (the, then) IAgrE President, but by having this trusted, friendly, high quality group behind me I knew we would make it - and we did.

I repeat, don't let us beat ourselves up - look back and concentrate on targeting the right people for membership, staff and President.

These are just the musings of an old - but still professionally active - Past President who has the continuing wellbeing of the Institution at heart.

> "... IAgrE has always had good people and a welcoming, efficient administration"

Geoff Freedman
Rural Bridges
PhD CEng CEnv FICE FIAgrE FIWSc
Rosewell

If you would like to respond to any articles which have been featured in *Landwards* please write to the Editor at : *chris.biddle@btinternet.com*
Or the IAgrE Communications Officer, Marion King on *pressroom@iagre.org*

Land drainage debate

'Our members should be the leaders'

Well done producing another wide ranging, informative and well presented edition of *Landwards*.

I am intrigued by the current Land Drainage Debate.

I served as a MAFF Land Drainage Officer in the Lincolnshire Fens having trained at Rycotewood College and the 'Myers Academy of Drainage" at Lincoln.

At that time the Main Rivers were managed unquestionably by dedicated River Authorities. They were ably backed by extremely competent Internal Drainage Boards who were responsible for and were paid for the drainage of land below the 6m contour.

At that time land was still being reclaimed from the Wash, with in one case, a grant aided Flood Protection Bank for the out marsh.

Once the grain stores had been filled by the early 1980s I moved onto other things. I now live in Shropshire and have recently seen such surface run-off as I never thought possible.

I wonder whether the basics have been ignored/forgotten in the Gadareen dash to diminish agricultural production and to create 'Wetland Environments' per se - without due regard to basic physical parameters.

Both in the article by Tim Havard, whose provenance should have been explained, and elsewhere in the issue there seems to be confusion about the term "soil water storage capacity".

It is what it says. It relies on rainwater penetration and good soil structure and is very helpful.

I thought that it had been established that well structured and drained land actually had a buffering effect under high rainfall conditions. This is particularly so in the mineral soil fens. Poor drainage causes saturation, soil slaking and structural collapse, literally a race to the bottom of the soil profile followed by ponding and sheet run off.

I read a later article by someone, perhaps not very well informed and definitely against intensive farming, that land drainage caused more rapid outflows and therefore urban flooding.

All things being relative, surely any delay in concentration of water due to drainage through the soil would be preferable to sheet run off over the surface because the land had either surface compaction or was saturated or both.

The fundamental rule is that the water flows downhill and must be got away, albeit in a managed way.

Subject to bed gradient and tide locking, watercourses are for the carriage of water and flows should be attenuated or engineered to manage this as effectively as possible.

Generally reservoirs are built 'off stream' to enable managed filling and in particular to prevent uncontrolled full flow overflow events .

Perhaps the Conservation bodies should also consider the creation of 'off stream' wetlands for similar management reasons. There should not be any misunderstandings about the priority of the function of watercourses.

The concept of balancing ponds is well known to property developers.

The design relies on a holding pond engineered to the expected catchment run off capacity. There is a similarly engineered overflow and low rate discharge pipe. This system works automatically, it attenuates flood flows and does not require the manual interventions described in Harvard's article.

Doubtless suitable irrigation water could be stored in the lower part of a big reservoir but the top part would have to be available at all times to contain the designed flood event.

Our IAgrE members, unless the appropriate ones have all reached retirement, should be the leaders in this debacle.

Please would appropriate *Landwards* readers or former MAFF colleagues set the record straight before the Green Lobby becomes even more confused.

Guy Cholmeley
MIAgrE

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www.iagre.org

Issue 69 Number 2 Summer 2014

BRANCH REPORTS

SOUTH EAST MIDLANDS BRANCH

PRESENTATION ON WIDE SPAN VEHICLES

IMAGINE my surprise when I found myself listening to a guy who was promoting the idea of wide span vehicles as the "next generation of agricultural tractors"!
Of course this was music to my ears as it mirrored my own thoughts exactly! His talk, entitled '*Development of a wide span vehicle for vegetable production*' started on an uncertain note trying to define what a wide span vehicle actually is. It was soon evident that there is no specific definition and he did the next best thing by illustrating with an example taken from the many that David Dowler produced, back in the last century.


Dowler

Continuing with this theme of past machines, he pointed out that the wide span vehicle idea is nothing new, dating back to the 1850s (and maybe even beyond that) with the steam driven 'cultivator' designed and built by Alexander Halkett (J. Soc. Arts, 7: 1858). He also paid tribute to David Dowler (a practising farmer), who from 1975 until his untimely death in 2003, never lost his belief that the tractor of tomorrow was indeed the wide span or gantry tractor.

Other machines touched upon by the speaker were the Israeli FPU, the Californian Cotton Research station wide frame research vehicle and in a similar vein, those vehicles at the then National Institute of Agricultural Engineering at Silsoe (latterly SRI), all worked upon in the 1980s.

Before going on to the main topic of the evening (the ASA-Lift WS9600 vehicle) he pointed out that our need more than ever was to produce food more efficiently and with less negative impact on the environment, as outlined by Lord Rees of Ludlow OM in his address as President of the Royal Society in 2009.

The only thing standing between us and that ambition our speaker believed was a lack of vision, wrong perceptions, and a deep-rooted belief that there was no alternative to an annual cycle of soil damage and repair and the tractor as we know it today.

Development of the WS9600 was prompted in Denmark by Jens Kjeldahl, of Bdr. Kjeldahl (*http://www.brdr-kjeldahl.dk/*), a vegetable farmer based at the northern end of the island of Samsø. With Danish government support, the project got underway in January 2011 and miraculously and with very limited funding, produced the first prototype by June 2013. This was designed to provide non-inversion tillage and most importantly, onion loading from windrows. With a capacity of 15,000kg, the loader elevates the onions into trucks on the headland.


The WS9600 in its 'tillage' mode

On the road, the vehicle is a little over 3m but in the field its track gauge is 9.6m, designed to fit in with Jens' present seasonal CTF system based on tractors with a track gauge of 3.2m.

The vehicle has an amazing range of features, all designed to deliver to the farmer's needs, which were researched by Hans Henrik Pedersen as part of his ongoing PhD at Aarhus University.

The illustration shows some of these features, including the swivelling cab to


The WS9600 in its road mode

PREVIEW
SOUTH EAST MIDLANDS BRANCH -
RENEWABLE ENERGY TOUR - 'More food for thought'

For IAgrE's 75th Anniversary, SEM Branch organised an interesting tour of on-farm renewable energy facilities to coincide with the Landwards Conference (at nearby Cranfield University).

This enabled delegates to join us on the tour and for supper. The 'long-distance' prize went to visitors from Newcastle and Totnes, and several other new faces reflected the interesting topic.

It followed a presentation in January by Branch Vice Chair James Hunter, about his two on-farm wind turbines. Comparing these in-situ with an adjacent 5MW/35ac 'solar panel farm'and Biogen's 2.9MW AD plant nearby was very informative.

This is the largest AD facility in the country, processing ~65kt/year. Each tonne prevents 0.5-1t of CO2 entering the atmosphere and produces a nutrient-rich biofertiliser, replacing fossil-fuel based fertilisers.

This was a good 'warm-up' for the

Conference. A detailed report and what we learned from it will be published in the next edition of *Landwards*.

Alan Plom

enhance the driver's view of operations and the unique double swivelling of the drive wheels that give it a long wheelbase in the field and narrow width on the road, albeit at the expense of extra length.

Development of the onion loader was no mean feat either. This alternative centre section has many novel but tried and tested features that include two retracting lifting elevators, a vertical elevator to the holding tank and self-unloading to a standard truck.

So who was the 'crank' giving this talk?

Well, it was me of course and it begs the question: 'am I a crank with a misguided belief?'

I naturally don't believe that I am and it's a belief I've held for over 30 years, prompted as it happens by being invited as a 'young engineer' to give a paper to the annual conference of the Institution of Agricultural Engineers back in 1980! So it seems that I (and discussion on the 'wide span' concept) have come "full circle", but has the time for wide span now come?

I think there are presently so many 'drivers' for change to a more efficient production system and clever technologies now available to aid its development, that its time is finally here.


The WS9600 in action loading onions from a windrow

This view was also endorsed by several 'farmer enthusiasts' in the audience, but it needs a groundswell of support from the industry to which it will deliver so much.

Don't let if flounder through complacency; give ASA-Lift (or Grimme, who now have majority shares in ASA-Lift) your verbal or written support, to encourage them to continue development.

For those of you who don't recognise it or haven't read it before, this article is based on CTF Europe's Facebook post on 17 March 2014. Tim invites you to post any comments or e-mail him at **Tim@ctfeurope.eu**

Tim Chamen

WESTERN BRANCH

'TECHNOLOGY IN AGRICULTURE' - AMAZONE LTD

After the IAgrE Western Branch AGM at Lackham College on 5 March the new Branch Chairman, Rupert Caplat welcomed the evening's guest speaker, Simon Brown, Brand Manager of Amazone Ltd and his colleague Nigel Jones. Some 25 members, guests and students were in attendance.

Simon's presentation was titled '*Technology in Agriculture*' and began by recounting the history of Amazone, a German company founded in 1883 and owned by the Dreyer family ever since.

The company has grown from its earliest days manufacturing potato harvesters and a machine named after the Greek Warrior Amazone (which the company later adopted as its name) to a multinational producer of agricultural machines, with 1800 employees, a turnover of 500 million Euros and seven factories.

80% of Amazone's production is exported to 70 countries around the world. The company is particularly proud of the fact that it manufactured its 1,000,000th fertiliser spreader in 2013.

Simon's presentation included the latest Amazone innovations. He began by talking about the Cirrus 03 trailed drill which features a tyre inflation/deflation system which adjusts tyre pressure whilst the machine is in use. This has the benefit of controlling ground compaction and reducing fuel consumption. Trailed implements with lifting axles were also discussed, which helps traction by transferring weight from the implement to the tractor.

Simon talked a great deal about the benefits of electronics and how they increased productivity through precision, whilst reducing operator fatigue through automation. Fertiliser spreaders are a typical example where variable nitrogen application can be controlled through electronics depending upon crop density thus optimising fertiliser coverage. The largest mounted fertiliser spreader offered by Amazone has a 4200 litre capacity and can deliver 50 hectares per hour at 30 km/h to a working width of 54m.


Amazone spreader

ISOBUS systems were discussed; the principle being a 'plug and play' structure of controlling systems between tractors and agricultural machines. However, it is essential that tractors and machines are specified with the correct protocols so that each can communicate with the other. Failing to do this can result in costly retrofits.

Simon also discussed electric drive systems which are being developed in place of mechanical drive systems. These systems use electric power from the tractor to actuator motors on the implements in place of a traditional PTO system. There are two main options being favoured by different tractor brands; 400V AC or 700V DC.

Simon concluded by sharing details of the new Amazone Pantera self-propelled crop sprayer which has a Deutz diesel engine featuring an Exhaust Gas Regeneration (EGR) system for the latest exhaust emission legislation. The main advantage over Selective Catalytic Reduction (SCR) systems is that the exhaust treatment urea based solution AdBlue® is not required meaning a lower machine weight and less equipment. The Pantera machine has a very low residual spray volume of just 19 litres which means there is less product to clean up after spraying

N J Handy

WESTERN BRANCH

VISIT TO JCB WORLDWIDE HEADQUARTERS

The Western Branch took 20 members and guests on a visit to the JCB Worldwide Headquarters at Rocester, Staffordshire on March 11th.

The group met at Autoguide Equipment in Heddington, Calne and travelled by coach to the JCB VIP Visitor Centre, arriving in glorious springtime sunshine. They were welcomed by guide Ian Roberts and his colleague Laura, who directed them into the restaurant where they were served a delicious organic lunch which used ingredients from the Bamford family organic farm.

After lunch the group made their way to the JCB theatre where they were shown two video presentations.

The first recounted innovations that the company has made and milestones that it has reached. These included the invention of the backhoe loader in 1953, the telescopic handler in 1977 and the first full suspension draft agricultural tractor in 1991.

The second video was by Lord Bamford, the chairman of the JCB Group and son of the founder. In this video he talked about the significance of JCB manufacturing their 1,000,000th machine and the importance of re-investing in the company, which has grown to 11 plants in the UK and 11 plants overseas. He also discussed the importance of the people in the company and the products, as well as the vital relationship with their dealers and customers.

After the theatre the group made its way to the JCB Story, which was undoubtedly the most enjoyable part of the visit for many of the group.

The JCB Story began with an introduction to Bamfords Ltd of Uttoxeter, a company that was founded by Henry Bamford in the 1800s. Joseph Cyril Bamford (Mr JCB) was a great-grandson of Henry Bamford, and went to work for the family firm. However, Joe Bamford left the business to start his own enterprise in 1945 at a rented garage for which he paid rent of 30 shillings per week.

On display was the ex-war department arc welder he bought at a surplus sale for £1 which he used to make the company's first JCB product; an agricultural tipper trailer that used a screw thread to tip the trailer body. This he sold for £45 at Uttoxeter market.

The JCB Story also housed other early JCB products such as the Si-Loader - a tractor fore-end load which had a single side boom. The example on show was fitted to a Ferguson TE20 tractor. The company also made fore-end loaders with twin booms which were fitted to Forson Major tractors.

After a trip to Norway where Joe Bamford saw a primitive backhoe excavator, he had the idea of fitting a backhoe excavator and fore-end loader to a tractor at the same time and thus the backhoe loader was born. An early example of this, the JCB Mk1, was on display.

The JCB story also housed other exhibits of note from the first JCB Loadall to the JCB Dieselmax, which holds the landspeed record for a diesel engine car having reached over 350 mph at Bonneville Salt Flats in 2006.

After the JCB story, the group where accompanied around the JCB Hydraulic Business Unit. It is there that hydraulic cylinders are manufactured for all JCB plants around the world.

The group learnt how blank tube and rod are made into cylinders and piston rods respectively. JCB had recently invested £4½ million in the HBU which had the capacity to produce 28 cylinders and rods per hour.

The group were then shown the JCB backhoe loader production facility. Cabs, engines, transmissions and all other major components are built by JCB at other plants and shipped to Rocester for assembly. The 14 different cylinders used on a backhoe loader come from the HBU that the group had just toured.

At the start of backhoe loader production, the parts are kitted and these kits follow the machine along its journey down the line. The parts that are fabricated at Rocester include the chassis mainframe and booms. These are laser or plasma profiled from flat plate, then folded and robot welded before being painted, sub-assembled and then assembled with cab, engine and transmission.

The group were told that the production has capacity for producing 65 backhoe loaders per day and are currently working a five day week. The group saw the whole process, culminating with the finished machine inspection area.

At the end of the tour the group enjoyed tea and biscuits back at the visitor centre reception, and Richard Robinson proposed a vote of thanks to Ian and Laura before the group assembled for a photograph.

N J Handy

A group picture finished the trip off

NORTHERN IRELAND BRANCH

ANAEROBIC DIGESTER VISIT

IAgrE Northern Ireland branch members recently visited the working anaerobic digester on the Blakiston Houston Estates Carrowreagh farm in North Down.

The Hochreiter installation consists of a 4600 cubic metre digester producing gas to fuel a continuously running CHP (combined heat and power) 250kW generator.

The unit cost around £ 1.2 m and received grant assistance through the EU European Regional Development Fund. It currently supplies electricity to the grid at the sale value of around 5p / kWh and qualifies, as a sustainable energy production facility, for Renewable Obligation Certificates (ROCs) to the extent of around 17 p / kWh. As a region, Northern Ireland currently still relies on importing around 96% of its energy needs.

The digester was set up to utilise slurry from the farm's 300 cow enterprise and also directly uses forages such as grass / crop / maize silage. It currently takes around 4000 tonnes of slurry and 6000 tonnes of silage to produce around 2m kWh of electricity and 2.25m KWh of heat from the CHP generator. About 30% of this heat is circulated to maintain the working temperature within the digester.

Surplus heat is also being diverted for bulk drying of timber, which is sourced from the estate's forestry area and supplies a wood-chip production enterprise. The processed solid digestate coming from the digestion process is stored in a new 22m ring tank for subsequent land spreading as a bio-fertiliser. Some of the land at Carrowreagh is near urban housing so the reduced odour, compared to that expected during normal slurry field spreading, is a welcome feature.

Discussing forage intake to the BH digester

THE DIGESTER

The German designed Hochreiter digester consists of ring-in-ring 6 metre deep tanks.

The inner ring is 22m diameter (holding 2200 cubic metres) and the outer is 32m (2400 cubic metres) The floor, walls and lid are highly insulated against heat loss from the digester which is maintained at a working temperature of 52 degrees C. It was built by a local construction company (Form Builders) to the detailed Hochreiter plans.

The digester is fed by pumping slurry into the outer ring from a 150 cubic metre reception tank and forage is metered in at around 680 kg / hour from a static Fliegl feeder.

Bulk contents are loaded to this feeder from the adjacent bulk silo area. On the day of the visit this consisted of grass silage, maize silage and chopped fodder beet. It was interesting to note how similar the acceptable diet was to that of a ruminant animal.

An integral mechanical mixing system keeps the digestate moving round the outer ring. The average retention time is 110 days and best results are obtained by using finely chopped material.

When the digester was first filled it took 28 days to add enough heat to reach the required working temperature.

ELECTRICITY GENERATION

The digestion process produces gas, collected from both the inner and outer rings, which is fed through a gas storage bag into an internal combustion engine driving a 250 kW generator.

The Deutz TCG2015-V8, running at 1500rpm, has spark ignition and is specially adapted to run on biogas. It is known as a combined heat and power (CHP) unit because (1) it drives the generator producing AC electrical power and (2) the engine combustion heat is recovered through a heat exchanger.

Some of the heat is used to maintain digester working temperature and the rest is available for use elsewhere. The generator performance is continuously monitored and a control panel records the export of electricity sold to the grid as well as that retained for use on the farm.

Blakison Houston Estates will also soon implement plans to add a second 250kW CHP generator to the installation.

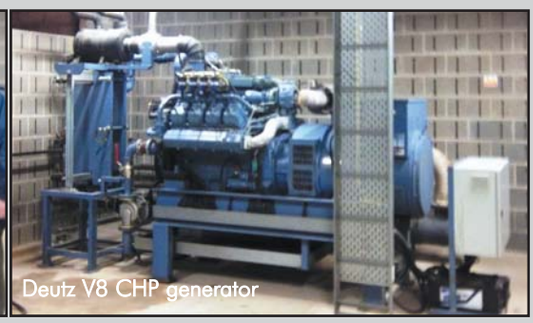
The visit was hosted by Blakiston Houston Estates managers Ivor Lowry and Jim Torney and concluded with a technical discussion which included the following related topics.

- Waste management certificates for some specific feedstocks.
- The choice, installation and commissioning of the system on site
- Expansion plans to double the existing output
- Details of the maintenance programme for the CHP system
- How to manage the system when the grid connection is temporarily unavailable.

George Wallace, Branch Chairman, thanked the managers on behalf of the IAgrE group for hosting such an interesting afternoon at what is one of the first commercial on-farm anaerobic digesters working in Northern Ireland.

Terence Chambers

The NI branch group



Deutz V8 CHP generator

NORTHERN IRELAND BRANCH

AGRICULTURAL TYRES AND THE IMPORTANCE OF BEING FLEXIBLE

Held at CAFRE's Greenmount Campus, Antrim, the guest speaker was Mr Chris Eakin, (Agricultural Sales Manager [Ireland] for Michelin, Kleber and Taurus tyres) who gave an illustrated talk on 'Tractor and trailer tyres'.

The Taurus brand of basic radial tyres is manufactured in Hungary, Kleber is an established French tyre brand and Michelin, the parent company, is famous for the development of the radial tyre. Radial tyres now outlast and out-perform the old cross-ply designs in most applications.

They first developed the 'X' radial tyre back in 1946 for the iconic Citroen 2CV car, truck radials followed in 1952 and tractor radials later. The Michelin UK headquarters is at Stoke on Trent and one of its production plants is in Ballymena, which makes bus and truck tyres for the world market. This is only a few miles from where this talk was given.

Michelin has continuously developed the design and range of its radial tyres aided by a large research and development department. Field testing is an important part of its remit

George Wallace and Chris Eakin at CAFRE

INNOVATIVE TYRES FOR AGRICULTURE

The same revolution has been taking place in tyres developed for agriculture. Although some basic cross-ply tyres are still available the market emphasis for premium tractor tyres is now on radials which provide a greatly increased footprint.

The benefits include better traction (typically by around 12%), less soil compaction, longer service life and a more comfortable ride. The improved efficiency means fuel savings, better crop yields and increased field-work rates. The additional flexibility of radial tyres improves their self-cleaning. Michelin tractor radials, such as the "Agribib" range, also have 15% deeper tread lugs for extended service life compared to the average standard market tyre.

Michelin have now taken their designs a stage further with their 'Ultraflex' technology giving very flexible high endurance tyre casings capable of carrying loads reliably at lower pressures in the field and on the road. Better flotation means less ruts and less soil compaction in the field.

On driven axles, the flexibility of a wider and longer footprint puts more tread lugs on the ground for better grip and efficiency in work.

FOLLOWING THE MANUFACTURER'S RECOMMENDATIONS

Regardless of make, it is essential to choose the correct size of tyres for the job and to maintain them at the recommended working pressures.

For agricultural tyres there is a trade off between using relatively high pressures to carry a heavy load at speed on the road and being able to run at lower pressures to minimise soil compaction and stay on top in the field. Tyre manufacturers like Michelin provide detailed technical data sheets to show each tyre's performance, always stating that "the inflation pressure must always be appropriate for the load per tyre, the speed of travel and the work to be done".

Michelin make a range of tractor tyre designs to match the various power bands. For example, their Multibib radial is suitable for 80-200hp tractors and can work over a wide range of pressures.

At low speeds, with limited load, inflation pressure can be as low as 0.4bar (6psi) and increasing the pressure to 1.6bar (23psi) permits speeds of up to 65kph (where local traffic legislation permits) depending on tyre size and on the load to be carried.

The Axiobib Ultraflex version suits tractors up to 250hp, can work at inflation pressure down to 0.4bar and travel at up to 65kph with 0.8bar (12psi) pressure or more. Other Michelin tyres using this technology include row-crop sizes to carry spreader/ sprayer loads, heavy duty versions to fit the biggest combine harvesters and trailed equipment. There is also a specialist range of tyres for skid steers, loaders and telescopic handlers.

TRAILER TYRE COMPARISON

An example of how tyre technology has advanced is a comparison between the Michelin XS (described as an off-road truck tyre suited to agricultural use) and a specialist Ultraflex version.

Used on a trailer the 525 / 65 R20.5 XS version travelling at 40kph and 4bar (58psi) inflation pressure can carry 5430kg per tyre. The lowest recommended pressure for this tyre is 1.5bar (22psi) when it can carry 2370kg.

By comparison, the hi-tech 500 / 60 R22.5 CargoXbib can carry 5270kg at 4bar and 40kph and 3025kg at 1.5bar. It can also run as low as 1bar (15psi) for high flotation in the field and still carry 2330kg at this low pressure when travelling at 40kph on the road.

The Michelin demonstration teams are always keen to demonstrate how a trailer fitted with these low pressure tyres is both easier to pull and less likely to cause wheel ruts in the field.

Mr Eakin showed a selection of video and other visual aids demonstrating tyre performance in the field as well as applications for the tyres available for all sizes of tractors and agricultural machines.

PRACTICAL CONSIDERATIONS

To get the best from a tractor tyre it needs to be operated within the limits specified by the manufacturer in terms of inflation pressure for the load conditions and speed.

Appropriate additional ballast may be required in certain field operations to maximise traction for draft work. The almost universal popularity of 4 wheel drive on modern tractors means that tyre sizes front and rear must match the tractor gearing.

Care is therefore needed when choosing replacement tyres. If those on one axle are well worn and the other is new the difference in rolling circumference can cause transmission wind up on hard surfaces. Many four wheel drive tractors automatically engage the front axle drive during braking on the road.

Similar problems can occur with equal size wheeled telehandlers. Rather than let one axle set wear down excessively ahead of the other it is good policy to swap round the wheels in rotation and replace all the tyres as a set when the time comes.

WHERE TO SOURCE THE TECHNICAL INFORMATION

The Michelin Agriculture Tyre Data Book contains all the technical information about the agricultural tyre ranges and associated useful information such as how to care for them and what all the tyre sidewall markings mean.

It is available through the local tyre supplier or the Michelin Contact Centre (Stoke on Trent) Tel 0845 366 1540. Technical product information may also be viewed on *www.michelin-agriculture-tyres.co.uk*

QUESTION AND ANSWER TIME

A lively technical question and answer session followed when the following were some of the topics discussed: -

- The differences between tyre types and models
- Experience with early radials on high powered tractors
- Correct use of water ballasting
- Tyre care
- Tyres suitable for high speed tractors on transport work.

The chairman thanked Mr Eakin for his most informative and enjoyable presentation.

Terence Chambers

WREKIN BRANCH

MEASURING RIVER FLOWS USING RADIO CONTROLLED BOATS

Stephen Baker of the Environment Agency held the attention of members with a fascinating description of the problems and past techniques of measuring river flows.

Such a task of initially working with monitored weirs, troughs and cableways across rivers trying to assess flows was fully described. He linked this to the continuous development of accepted safe working principles and minimal disturbance to local traffic / pedestrians on bridges whilst raising working efficiencies following a trend to ever lower labour inputs.

He outlined how, in recent years this has been developed to include Acoustic Doppler profilers, initially drawn across rivers by hand but more recently using 2m long ARC radio controlled boats with ranges of 200m and multi beam depth sounding and velocity profiling devices that can scan the flow and bed profile, while operators remain on the bank. Indeed often getting operators to either bank represents a challenge. The acoustic doppler principle measures the movement of suspended particles in the water and thus relates this to actual water movement.

He detailed the key features of the ARC-Boat which are that it can carry a variety of ADCP's (Acoustic Doppler Current Profilers) and other instruments, it can provide high quality data collection with minimal underhull air entrainment and is of a robust and reliable design with excellent manoeuvrability. The whole design has been made with operator safety in mind and is lightweight and easy to transport as it has a unique detachable bow. It can also measure certain environmental conditions in lakes.

In most recent years the boats have been fitted with GPS facilities enabling links to real time and spatial data available to the mapping industry. Still and movie cameras are also now commonplace.

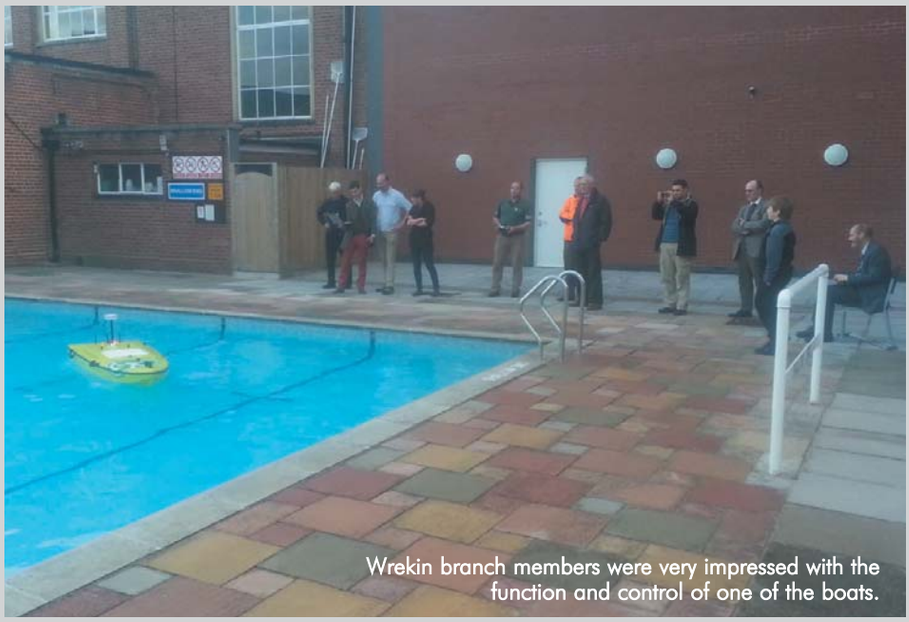
He described how the use of the boats, scanning before and after dredging operations had been illuminating and which offers further development possibilities to ensure efficient dredging operations. Considerable use of the boats had been made throughout the winter of 2013-14 surveying flooded rivers, land and relating flows, though Stephen reported that residents of such flooded areas react rather poorly to seeing a number of hi vis jacketed operators apparently 'playing boats' when EA and other agencies might be seen as more functionally involved with restoration activities.

Of course data collection in such events is of considerable benefit to further knowledge and which allows better predictions for the future.

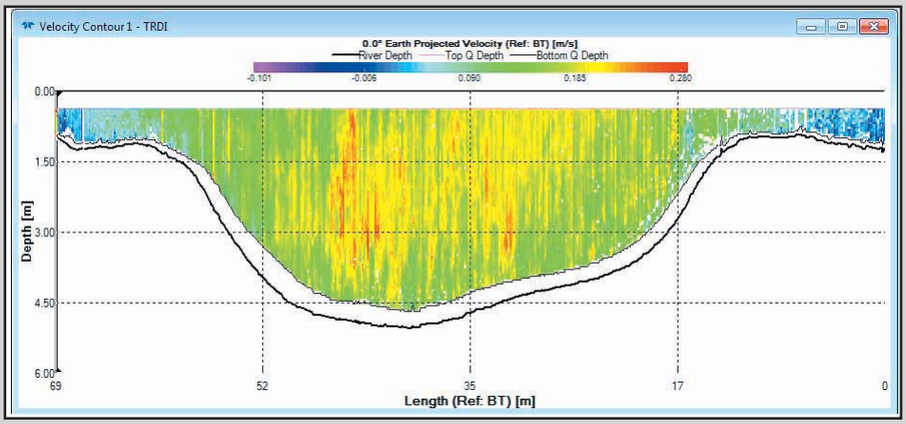
Members enjoyed a practical demonstration of one of the boats, some with hands on control enjoyment when the unit was put in the swimming pool at HAU, though the water cleanliness and shiny surface of the pool tiles did not yield much useful data.

It is hoped that a more detailed article from EA may be available for inclusion in *Landwards* in the near future.

Bill Basford



Wrekin branch members were very impressed with the function and control of one of the boats.



A typical cross section of a river provided by one of the boat scans

Membership changes

Admissions

A warm welcome to the following new members:

Member

Ascough G (Gloucestershire)
Daccache A (Bedfordshire)
Leach K B (Suffolk)

Associate Member

Abblitt J L (Cambridgeshire)
Branson M T (Peterborough)
Ekers R G (Cornwall)
Gould L J (Norfolk)
Huskins C W (Devon)
Lewis M (Shropshire)
Mollentze C T (Somerset)
Morris J W (Shropshire)
Pitcher R T (Norfolk)
Robson I D (Northumberland)
Tatton J N (Shropshire)
Williams R (Cornwall)
Young M S (Devon)

Associate

Athanasiadis T (Greece)
Morahan A (Ireland)
Ridgers S (West Sussex)

Student

Askham Bryan College

Clark A
Crawshaw S
Harrison J E R
Hayton L
Heath T
Hutchinson S
McAdams J
Quigg H
Petch T
Shepherdson L
Thwaites R

Limerick Institute of Technology

Beechinor P
Brosnan P
Burke R
Burke S
Cooke R
Dolan C
Eagers M
Fitzpatrick D
Foley K
Gibbons C
Griffin P
Hamill P
Hardiman M
Hogan R
Holohan J
Kelly M
Kelly P
Langan P
Langton J
Lowry P
McCarthy D
McCormack J
McDonald W
Mahony S
Mason J
Melbourne B
O'Callaghan B
O'Donoghue D
O'Grady S
O'Neill J P
O'Sullivan T
Peoples W
Quinn D
Rynne J
Shorten A
Smyth A
Sweeney C
Walsh P

Herefordshire & Ludlow College

Impey D C
Kerby-Collins D P
Protheroe R G

Myerscough College

Adamson M C
Atkinson O R T
Bamber C S
Barlow L J
Barrow D A
Barton M
Bradley R L
Cotterill M J
Dickinson W
Flaherty B
Foster B
Green M
Hesketh J
Hodkinson J
Holden J L
Holt D
Jenkinson A J
Jenkinson W J
Leech S J
Linney J T
Maloney B
Marshall K
Middleton R
Middleton R
Norry M
Ormrod J
Pagan D
Robinson J M
Shuttleworth K E
Smith C
Walbank Z M
Watson J A
Winterbottom M J

Riseholme College

Atkinson H J
Bird R
Brett R
Dyer A
Elliott A
Featherstone T
Filmer H
Firth J F
Green B
Hudson L
Palmer Brown S
Tarplee R J
Thompson J

South West College - Omagh

Begley J
Boyd J W
Bradley G
Browne A
Browne G
Buchanan C
Catterson S
Conway C
Crawford S
Crawford G J
Daly D
Devlin K
Dunwoody J
Forbes M
Gillen C T
Kelly E
McAdoo M
McAskie M
McCullagh M
McKenna D
Radcliffe A C
Rennie M A
Sutton T
Warwick G
Williamson J

Deaths

We have recently learned of the death of the following members and we send our condolences to their family and friends:

Dr Lewis Gerald Campbell (CEng CEnv FIAgrE) (Philippines) - a member since 1959

Mr Ian Constantinesco (CEng FIAgrE) (Cumbria) - a member since 1953

Mr Philip Anthony Laughton Orbell (MIAgrE) (Northampton) - a member since 1953

Mr Ian William Scrafton (AIAgrE) (Cambridgeshire) - a member since 1995

Mr Dennis Hughes Jordan (CEng FIAgrE) (Essex) - a member since 1985

Transfers

Member

Roberts D G (Flintshire)
Smith M C (Hampshire)

Associate

Robinson S (Scotland)

Engineering Council

Congratulations to the following members who have qualified as Chartered Engineers, Incorporated Engineers and Engineering Technicians entitling them to use the designatory letters CEng, IEng and EngTech after their names.

Registrations

CEng

Alker R (Lancashire)

IEng

Grant C D (Scotland)

EngTech

Abblitt J L (Cambridgeshire)
Branson M T (Peterborough)
Eker R G (Cornwall)
Gould L J (Norfolk)
Huskins C W (Devon)
Lewis M (Shropshire)
Mollentze C T (Somerset)
Morris J W (Shropshire)
Pitcher R T (Norfolk)
Robson I D (Northumberland)
Rook D (Cambridgeshire)
Sumpter I P (Bedfordshire)
Tatton J N (Staffs)
Williams R (Cornwall)
Young M S (Devon)

Long service certificates

Name	*Grade*	*Date of anniversay*
60 years		
Francis Pepys Durie **Moore**	FIAgrE	13/4/14
50 years		
James Robertson **Christie**	IEng FIAgrE	2/4/14
James Donald Greig	CEng MIAgrE	2/4/14
William T. Worthington **Cory**	CEng MIAgrE	5/4/14
35 years		
John Michael **Walton**	MIAgrE	4/4/14
Richard H **Trevarthen**	IEng MIAgrE	17/4/14
Trevor David **Beaumont**	MIAgrE	24/4/14
John Lloyd **Williams**	IEng MIAgrE	29/4/14
David **Green**	IEng MIAgrE	23/5/14
William **Charnley**	EngTech MIAgrE	14/6/14
25 years		
Daniel Ezra **Perlman**	AMIAgrE	13/4/14
Brian Charles **Robinson**	CEng MIAgrE	26/4/14
Alexander Philip Charles **Keen**	AMIAgrE	27/4/14
William **Day**	FIAgrE	5/5/14
Christopher L. Edwin **Dyer**	MIAgrE	17/5/14
Duncan James **Wilson**	CEng MIAgrE	17/5/14
Richard Bernard **Silvester**	AIAgrE	1/6/14
Simon William Ernest **Butler**	EngTech MIAgrE	21/6/14
Richard **Earl**	CEng FIAgrE	26/6/14

Academic members

Askham Bryan College
Askham Bryan
York
YO23 3FR

SRUC- Barony Campus
Parkgate
Dumfries,
DG1 3NE

Bicton College
East Budleigh
Budleigh Salterton
Devon
EX9 7BY

Bishop Burton College
York Road
Bishop Burton
Beverley
HU17 8QG

Brooksby Melton College
Asfordby Road
Melton Mowbray
Leics
LE13 0HJ

Coleg sir Gar
Pibwrlwyd Campus
Pibwrlwyd
Carmarthen
SA31 2NH

Cranfield University
Cranfield
Bedfordshire
MK43 0AL

Easton & Otley College
Easton
Norwich
Norfolk, NR9 5DX

Greenmount Campus
CAFRE
22 Greenmount Road
Antrim, Northern Ireland
BT41 4PU

Harper Adams University
Newport
Shropshire,
TF10 8NB

Institute of Technology
Tralee
Clash, Tralee
Co Kerry, Ireland

Pallaskenry Agricultural
College
Co Limerick
Ireland

Plumpton College
Ditchling Road
Lewes
East Sussex
BN7 3AE

Reaseheath College
Reaseheath,
Nantwich
Cheshire,
CW5 6DF

Royal Agricultural
University
Cirencester
Gloucester, GL7 6JS

Riseholme College
Riseholme Park
Lincoln
LN2 2LG

SRUC - Auchincruive
Auchincruive Estate
Ayr
KA6 5HW

Wiltshire College -
Lackham
Lacock
Chippenham
Wiltshire
SN15 2NY

Commercial members

Agricultural Engineers
Association (AEA)
Samuelson House,
62 Fodder Way, Hampton
Peterborough,
PE7 8JB

AGCO Ltd
Stoneleigh, Abbey Park,
Kenilworth,
Warwickshire,
CV8 2TQ

BAGMA
Middleton House,
2 Main Road,
Middleton Cheney,
Banbury,
Oxon,
OX17 2TN

Alvan Blanch Development
Co Ltd
Chelworth, Malmesbury
Wiltshire, SN16 9SG

Autoguide Equipment Ltd
Stockley Road
Heddington
Calne, Wiltshire, SN11 0PS

Bomford Turner Limited
Salford Priors
Evesham
Worcestershire
WR11 5SW

David Ritchie (Implements)
Ltd
Carseview Road
Suttieside
Forfar, Angus,
DD8 3EE

Douglas Bomford Trust
The Bullock Building
University Way
Cranfield
Bedford
MK43 0GH

FEC Services
Stoneleigh Park
Kenilworth Warwickshire
CV8 2LS

Huntaway Consulting
Ivy Cottage
Torlundy
Fort William
Inverness-shire
PH33 6SW

John Deere Ltd
Harby Road
Langar
Nottinghamshire
NG13 9HT

Shelbourne Reynolds
Shepherds Grove Ind. Est.
Stanton
Bury St Edmunds
Suffolk,
IP31 2AR

SSAB Swedish Steel Ltd
Narrowboat Way
Hurst Business Park
Brierley Hill
West Midlands
DY5 1UF

We want to hear from members

Send branch reports or correspondence to:
The Editor, Chris Biddle
Email: *chris.biddle@btinternet.com*
Or the IAgrE Communications Officer, Marion King on:
pressroom@iagre.org

Landwards

EVENTS

IAgrE Branch Meetings and Events

Wrekin Branch
Wednesday 9 July 2014 - pm
BRANCH SUMMER VISIT - IBERS, ABERYSTWYTH UNIVERSITY
Venue: IBERS, Aberystwyth University
A visit to the Robotic Greenhouse at the Institute of Biological, Environmental and Rural Sciences (IBERS), Aberystwyth
For further information please contact the Branch Secretary: David Clare
Tel: 01952 815087
Email: dclare@harper-adams.ac.uk

Other Events:

Saturday 14 June 2014, 10.30am
Pioneering Technology Specialist Group (PTSG)
VISIT TO CHEDHAM'S YARD
Venue: Chedham's Yard, Wellesbourne, Warwickshire
A blacksmith's and wheelwright's workshop dating from the early 19th century, a prize-winning heritage site.
Please book your place with William Waddilove
Email: william@waddilove.co.uk
Web: www.chedhamsyard.org.uk

Monday 16 - Wednesday 18 June 2014
The Club of Ossiach
AGRIFUTURE DAYS 2014 - ICTS IMPROVING FAMILY FARMING
Venue: Villach, Austria
The following 3 key issues in areas where the application and the use of ICTs make a difference for family farming will be focused in the conference program.
1. Informing farmers and family farming communities; 2. Improving farm's production, productivity and marketing efficiencies; 3. Enabling greater resilience in family farming.
The Club of Ossiach invites speakers from private, public, commercial, community and research sectors to send proposals for participation and presentations.
Tel: +43 (0) 4242 26332
Email: clubofossiach@agrifuturedays.com
Web: www.progis.com/events/agrifuturedays2014/index.html

Monday 16 - Friday 20 June 2014
AgriFood ATP
APPLIED PRECISION CROP PRODUCTION COURSE
Venue: Harper Adams University
This 5-day course is for anyone interested in the application of precision farming technologies in crop production for the purpose of improving crop performance and environmental quality.
Closing date for applications: 26 May 2014 Cost £1,200 + VAT
For more information contact Zoey Sermon, Harper Adams.
Tel: +44(0) 1952 815148
Email: zsermon@harper-adams.ac.uk
Web: www.agrifoodatp.ac.uk/aatp/courses/crops/applied-precision-crop-production.aspx

Monday 23 June 2014
Women's Engineering Society (WES)
WOMEN IN ENGINEERING: THE CHALLENGE
Venue: IMechE London
A one day event taking place on National Women in Engineering Day.
Web: www.nwed.org.uk/
Web2: www.nwed.org.uk/wes-conference.html

Tuesday 1 July 2014, 4pm
SocEnv/Inst of Water
THE ENVIRONMENTAL IMPACT OF FRACKING
Speaker: Rob Cunningham (RSPB), Tony Grayling (EA) and Steve Thompsett (UKOOG)
Venue: Can Mezzanine, 49-51 East Road, Lower Ground Floor Conference Rooms, London N1
Web: bit.ly/RYm9PD

06 July 14 to 10 July 14
EurAgEng
AGENG 2014 - ENGINEERING FOR IMPROVING RESOURCE EFFICIENCY
Venue: Zurich
A conference focusing on the latest research and development in the whole field of agricultural engineering.
Deadlines: Submission of abstracts: 1 November 2013 Submission of Full Papers: 1 May 2014
Contact Robert Kaufman
Email: AgEng2014@art.admin.ch
Web: www.AgEng2014.ch

Thursday 17 July, 2014
Westminster Food and Nutrition Forum
NEXT STEPS FOR UK FOOD WASTE POLICY: CHALLENGES FOR INDUSTRY AND THE FUTURE OF ANAEROBIC DIGESTION
Venue: Central London
Guests of Honour: Mark Little, Head of Food Waste Reduction, Tesco; Dr Liz Goodwin, Chief Executive Officer, WRAP (Waste & Resources Action Programme) and Dr Henk de Jong, Agricultural Counsellor, Embassy of the Kingdom of the Netherlands, London
This timely seminar focuses on key issues surrounding food waste, and next steps for improving efficiency across the supply chain.
Web:
www.westminsterforumprojects.co.uk/forums/event.php?eid=843

Thursday 4 September 2014
FEG
FEG AUTUMN SYMPOSIUM 2014
Venue: tbas
Further details will follow in due course
Tel: 0131 464 0500
Email: bruce.hamilton@forestry.gsi.gov.uk

Monday - Thursday 8 - 11 September 2014
Institute of Brewing & Distilling, Scottish Section
WORLDWIDE DISTILLED SPIRITS CONFERENCE
Venue: Glasgow
Tel: +44(0)208 748 8868
Email: info@wdsc2014.org
Web: www.wdsc2014.org/

Wednesday 10 September 14
TILLAGE LIVE 2014
Venue: Down Ampney Airfield, Gloucestershire
Web: www.tillage-live.uk.com/

Wednesday 24 - Thursday 25 September 2014
Rethink Events
WORLD AGRI-TECH INVESTMENT SUMMIT 2014
Venue: London
With a specific focus on seed breeding, advanced agro-chemicals and software-driven precision farming, the summit will bring together global leaders in resource-efficient agriculture with the world's most innovative technology developers and the international cleantech investment community.
20% discount for IAgrE members.
Web: worldagritech.rethinkevents.com/

Tuesday 7 - Wednesday 8 October 2014
EWWM
8TH EUROPEAN WASTE WATER MANAGEMENT CONFERENCE & EXHIBITION
Venue: Manchester Town Hall
Web: tinyurl.com/k7ohbc7

Tuesday 6 - Thursday 8 January 2015
OXFORD FARMING CONFERENCE
Venue: Oxford Univerfsity Examination Schools, Oxford, UK
Web: www.ofc.org.uk/

Tuesday 17 March 2015
IAgrE
2015 IAgrE'S YOUNG ENGINEERS COMPETITION
Venue: TBA
Annual competition for students with cash prizes as well as products from our sponsors. Visit the Young Engineers page of our website for more information.
Tel: 01234 750876
Email: secretary@iagre.org
Web: www.iagre.org/careers/devcareeryecomp

Sunday 23 August 2015
Society for Ecological Restoration (SER)
SER 2015: 6TH WORLD CONFERENCE ON ECOLOGICAL RESTORATION
Venue: Manchester, UK
Web: www.ser.org/programs/world-conference

Full details of forthcoming events can be found on www.iagre.org/events

EVENTS OF INTEREST

JUNE 2014

13-15	Three Counties Show, Malvern *www.threecounties.co.uk/threecounties*
17-18	Cheshire County Show *www.cheshirecountyshow.org.uk*
18-19	Lincolnshire Show *www.lincolnshireshow.co.uk*
19-22	Royal Highland Show, Edinburgh *www.royalhighlandshow.org*
22	Derbyshire County Show *www.derbyshirecountyshow.org.uk*
25-26	Royal Norfolk Show *www.royalnorfolkshow.co.uk*

JULY 2014

2-3	Livestock Event, Birmingham NEC *www.livestockevent.co.uk*
5-6	Smallholders Show, South of England Showground, Ardingly *www.smallholdershows.co.uk*
8-10	Great Yorkshire Show *www.greatyorkshireshow.co.uk*
11-13	Kent County Show *http://kentshowground.co.uk*
18-20	CLA Game Fair, Blenheim Palace, Oxfordshire *www.gamefair.co.uk*
21-24	Royal Welsh Show *www.rwas.co.uk/royal-welsh-show*
24	Launceston Show *www.launcestonshow.co.uk*
29-31	New Forest & Hampshire County Show *www.newforestshow.co.uk*

AUGUST 2014

3	Herefordshire Country Fair *www.herefordshirecountryfair.co.uk*
7	Honiton Agricultural Show *www.honitonshow.co.uk*
13	Vale of Glamorgan Ag Show *www.valeofglamorganshow.co.uk*
12-13	Anglesey County Show *www.angleseyshow.org.uk/anglesey-show.html*
19-21	Pembrokeshire County Show *www.pembsshow.org*
28	Bucks County Show *www.buckscountyshow.co.uk*
31-2/09	spoga-gafa 2014 *www.spogagafa.com*

SEPTEMBER 2014

2-4	IOG Saltex 2014 *www.iogsaltex.co.uk*
18-20	APF 2014, Ragley Estate, Alcester, Warwickshire *www.apfexhibition.co.uk*
20-21	Royal Berkshire Show *www.newburyshowground.co.uk/show-2013*

Venue for next Council Meeting -
23 October 2014