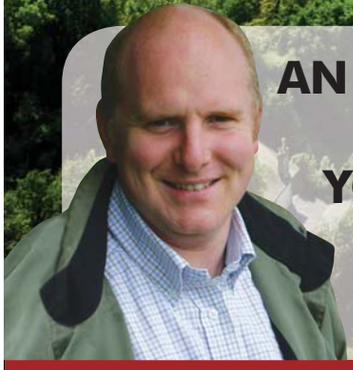
Landwards

Agriculture • Horticulture • Forestry • Environment • Amenity

IAGRE CONFERENCE 2011

Report and Pictures of the Cranfield event



AN AGRICULTURAL ENGINEER IN YOUR LIFEBOAT?

Dr Robert Merrall on the challenges posed by the Foresight Report

MEA/LTA LAUNCH

Milking equipment suppliers and technician accreditation

IAgrE Professional Journal www.iagre.org Volume 66, Number 2 Summer 2011

Biosystems Engineering

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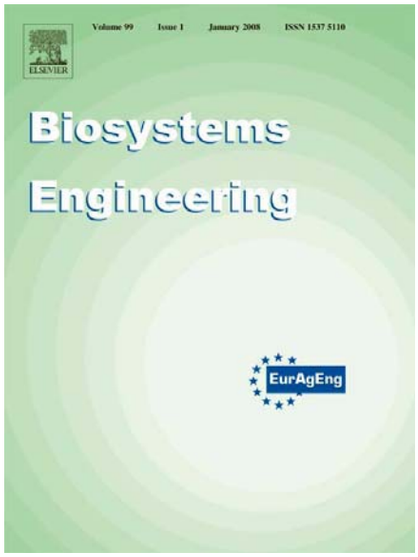

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IAgrE

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 108, Issue 2, February 2011, Pages 104-113

Development of a low-cost agricultural remote sensing system based on an autonomous unmanned aerial vehicle (UAV)

Haitao Xiang and Lei Tian
University of Illinois at Urbana- Champaign, USA

To provide an improved remote sensing a system was developed based on an autonomous easily transportable helicopter platform weighing less than 14 kg. Equipped with a multi-spectral camera and autonomous system, the UAV system was capable of acquiring multi-spectral images at the desired locations and times. An extended Kalman filter (EKF) based UAV navigation system was designed and implemented using sensor fusion techniques. A ground station was designed to be the interface between a human operator and the UAV. The UAV could be automatically navigated to the desired waypoints and hover around each waypoint to collect field image data. An experiment using the UAV system to monitor turf grass glyphosate application demonstrated the system, which indicated the UAV system provides a flexible and reliable method of sensing agricultural field with high spatial and temporal resolution of image data.

Volume 108, Issue 3, March 2011, Pages 237-243

The mechanical performance of cordwood

R. Mouterde, J.C. Morel, V. Martinet and Frédéric Sallet
ENSA Lyon, Vaulx en Velin, France
Université de Lyon, Vaulx-en-Velin, France

Cordwood structures are used by only a few independent builders and to date the only real technical development has existed in North America. However, cordwood structures could help reduce environmental impact because cordwood has very low embodied energy and is able to store carbon dioxide. The goal was to test this composite material with a new approach in order to establish if the strength of cordwood walls was sufficient to be used instead of conventional materials. Compressive tests were carried out on representative samples mainly composed of organic aggregate mortar and wood with moisture content greater than 30%. Wet wood rather than dry wood was used to reduce the impact of wood shrinkage which usually induces a lack of cohesion between the wood and mortar. Different log arrangements were also tested in this paper. Results appear to indicate that cordwood could reasonably be used for individual houses and the research on organic aggregate mortar and new log arrangements may provide improved performance.

Volume 108, Issue 4, April 2011, Pages 311-321

Intelligent multi-sensor system for the detection and treatment of fungal diseases in arable crops

D. Moshou, C. Bravo, R. Oberti, J.S. West, H. Ramon, S. Vougioukas and D. Bochtis
Aristotle University of Thessaloniki, Agricultural Engineering Lab, Thessaloniki, Greece
Department of Biosystems, K.U. Leuven, Belgium
Istituto Di Ingegneria Agraria, Universita Degli Studi di Milano, Italy
Rothamsted Research, Harpenden, UK
University of Aarhus, Department of Biosystems Engineering, Tjele, Denmark

The development of a ground-based real-time remote sensing system that can be carried by tractors or robotic platforms is described. This prototype system makes possible the detection of plant diseases in arable crops automatically at an early stage of disease development and during field operations. The methodology uses differences in reflectance between healthy and diseased plants. Hyperspectral reflectance and multi-spectral imaging techniques were developed for simultaneous acquisition in the same canopy. Experimental platforms were constructed, and the advantage of using sensor fusion was demonstrated. Field tests were carried out to optimise the functioning of the multi-sensor disease detection device. An overview is provided on how disease presence data are processed in order to enable an automatic site-specific spraying strategy in winter wheat.

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Landwards
Agriculture • Horticulture • Forestry • Environment • Amenity

VOLUME 66 Number 2 2011

THIS ISSUE

EDITORIAL

LTA building blocks

IS it really almost four years since the industry gathered at the National Heritage Museum to create the Land Based Technician Accreditation (LTA) scheme?

The idea was simple and utterly persuasive.

Establish a visible and credible scheme to identify the competence and qualifications for technicians throughout the industry, regardless of franchise or dealership.

Two principal benefits emerged. First, a clear career path would be established whereby identifiable 'stepping stones' were in place for those already engaged in the industry, or who were considering land-based engineering as a career.

Second, the customer would be provided with industry recognition as well as franchise recognition of the competence of technicians carrying out servicing and repairs on complex, costly machinery.

So has the LTA scheme ticked all the boxes as far as the industry is concerned since the launch in December 2007?

Most definitely in terms of ambition. It was at the Smithfield Show in 2002 that the idea was first presented in the presence of HRH Princess Royal - and it is a tribute to the organisations and individuals involved that there was the will, the drive and the ambition to set up LTA in the first place - and subsequently make it work.

And in the intervening years, the scope of LTA has widened as others recognised the benefits. It has been adopted in Ireland, those in the vital after-market provision (parts and accessories) have been brought into scope - and only recently the Milking Equipment Association decided to use LTA as the basis for accreditation of their specialised technicians.

Despite these advancements, LTA has however reached something of a plateau from which it now needs to kick on.

It is very disappointing that one of the major 'Big Three' tractor and farm manufacturers chooses not to engage at all with the LTA scheme, whilst others fail to provide whole-hearted support to the concept.

Others, including Deere and Claas, are avid and committed supporters, but for the LTA scheme to be credible and effective across the industry, it does need to receive universal cross-industry support.

Despite the odd inevitable tensions, AEA, BAGMA and IAgrE are in constant ongoing discussions to improve and enhance the scheme - and their influence is going to be vital over the coming months and years.

LTA is envied by many outside our industry - now we need to ensure that it is fully appreciated inside!

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

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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***

Richard Johnson elected new AEA President

RICHARD Johnson FIAgrE, of John Deere has been elected as President of the Agricultural Engineers Association for 2011/12.

He made his inaugural address as President to the Association at their annual conference which took place at the Institution of Civil Engineers building near Westminster on April 12th.

After studying agricultural engineering at Harper Adams University College, Richard became one of the first Work Placement Students to work at John Deere.

A single-company man, Richard started his career with John Deere as a management trainee and subsequently held a number of key positions, initially in the UK where he became Business Development Manager, and in Germany where he rose to lead the Parts & Service Marketing group for Europe, Africa and the Middle East.

Further promotion in 2004 saw Richard returning to the UK in the role of Agricultural Division Sales Manager for the southern half of the UK and in 2006 he succeeded Alec McKee as Managing Director of the UK Branch of John Deere Ltd, the position he holds today.

In 2009 the Institution of Agricultural Engineers awarded Richard the prestigious Michael Dwyer Memorial Prize which acknowledges a mid-career engineer who has made outstanding progress in the agricultural engineering industry.

Risk guidance for engineers

New advice issued by Engineering Council

AT a special event at University College London recently, the Engineering Council launched an important new guidance document for the engineering profession.

The Council say '*Guidance on Risk for the Engineering Profession*' provides generic advice and is relevant to the challenges faced by all those in the profession. It establishes six principles to help engineers and technicians meet their professional obligations, and to ensure that the identification and management of risk is an important consideration in their everyday engineering activity.

The new document is similar in format to the sustainability guidance, published by the Engineering Council in May 2009.

Professor Kel Fidler, Chairman of the Engineering Council, said, "Risk is inherent in the activities undertaken by professional engineers. Members of the profession therefore have a significant role to play in managing and limiting risk."

The guidance has been developed by a working group chaired by Professor David Bogle FREng CEng, comprising members of ten professional engineering institutions with additional input from a number of other organisations including the Health and Safety Executive (HSE) and members of the Hazards Forum.

"The working group included considerable expertise across a range of engineering disciplines," Professor Bogle comments. "This, and the wide interest from members of the engineering profession, has helped to ensure a sense of ownership amongst the profession, and it made sure we produced something that will have wide relevance.

"It also acts to demonstrate to society the engineering profession's commitment to managing risk effectively."

Judith Hackitt CBE, Chair of the HSE, said, "Understanding and managing risk is an essential and integral part of every engineers' role. From design through construction operation and ultimate demolition, when superseded by new technologies, the changing risk profile needs to be identified and the most important risks addressed as far as they can be, even though they may not be eliminated.

"I very much welcome the publication of this risk management guidance and the Engineering Council's decision to embark on such a project. It is a timely reminder of the important principles for experienced engineers and an invaluable tool for new engineers of all disciplines."

The new guidance replaces the Code of Professional Practice on Engineers and Risk Issues produced nearly twenty years ago by the Engineering Council.

Further details and a copy of the guidance document can be downloaded from: *www.engc.org.uk/risk* .

A handy wallet card listing the six risk principles on one side with those for sustainability on the other, is available from: *info@engc.org.uk*

Young people encouraged to consider engineering

IAgrE encouraged young people to choose an engineering career in the landbased sector at the National Engineering & Construction Recruitment Exhibition which took place at the NEC at the start of May.

IAgrE joined an impressive range of leading engineering and construction companies.

The Institution also joined the Engineering Council and other Professional Engineering Institutions (PEIs) on the Professional Development Hub.

Chris Whetnall, chief executive of IAgrE said, "The exhibition provided the Institution with a good platform to advise on careers in the landbased sector, professional development options and information about membership of the Institution and profession registration. In fact we received interest about signing up from a JCB employee even before the exhibition had officially opened."

This year the Professional Development Hub covered more engineering disciplines than ever with a greater number of PEIs taking part.

Jon Prichard, chief executive officer of the Engineering Council said, "By working together on the Professional Development Hub we can help engineers to develop an understanding of the importance of professional registration both for their own career development and for the profession as a whole."

MICHAEL WOODHOUSE analyses the responses to the recent CPD questionnaire amongst IAgrE members

CPD survey results 'thought-provoking'

THERE has been a very good response by IAgrE members to the survey carried out to review the Institution's approach to Continual Professional Development (CPD) ***writes Michael Woodhouse.***

The responses to the questionnaire were detailed and thought provoking and what was striking was the wide range of views.

The questionnaire sought to tease out views on CPD, whether members saw it as important and, if so, how do we develop a new approach to ensure we meet members' needs at local and national level?

Encouragingly 95% of respondees agreed that CPD is important, but 63% said that Branch level events were not meeting their CPD requirements.

To start to meet members' CPD requirements, we need to look at more technical events covering both true engineering disciplines and a wider remit on environmental issues. These need to be badged as counting towards CPD and should be led by local branches.

However, this reference to local branches raised more issues due to the variability of branch activity.

One aspect of the questionnaire that Council did feel strongly about was the need to widen the appeal of IAgrE to a larger audience.

With engineering being very important and at the heart of IAgrE, we need to recognise that to ensure continued development we need new members from differing disciplines.

We need to broaden our offer possibly through better links with Higher and Further Education (HE & FE) providers and get employers to buy into CPD.

Through these links it will be possible to increase the number and range of CPD type events.

IAgrE branch members at a recent event

To support this view there was a 97% response to the need to join in with other Institutions to run joint events.

As to who IAgrE should team up with for events, seventeen different organisations were mentioned, but the overwhelming desire was to see better use of the HE and FE Institutions, with lecturers in agri-engineering.

> "... 97% thought that IAgrE should team up with other organisations to run CPD events"

The other top favourite was links to IMechE who run a similar number and type of events. Other partners mentioned were CIWEM, Energy organisations, land agents and Institution of Engineering and Technology.

As to the nature of CPD 'nuts and bolts'. **66% did not wish to see CPD as mandatory,** with the possibility if it was, members would leave - point taken!

The majority were content with 15-20 hours per year as a suitable CPD quota.

Nearly 90% wanted to use the IAgrE website to record their CPD hours and a similar number were content to use email for alerting members to CPD events.

Your need for CPD and the views of the employer, provoked the biggest range of answers, and covered all aspects from ***no CPD required*** or ***not valued*** to the comment that ***CPD is part of the philosophy*** of the employer.

As an Institution we should be encouraging the latter - CPD is important not only for an individual to learn but for you to impart your knowledge to others based on the adage that we are never too old to learn and what we know is not always known by others.

This may then help to resurrect those branches that are struggling for members and hopefully act as an incentive for others to join IAgrE.

This is a challenge for the IAgrE management, in particular in ensuring we keep our younger members involved and interested to maintain a suitable age demography within IAgrE.

My last comments based on the survey, are that there is genuine interest in the areas of CPD given the high number of quality responses and we now have to translate that into action.

Four new members elected to Council

Dan Massey

IAgrE has made four new appointments to Council with the new members providing good representation across the Institution. They are Jane Rickson, John Palmer, Paul Mudway and Dan Massey.

Professor Jane Rickson has over 25 years experience in soil and water management and engineering, specialising in soil degradation processes (focussing on soil erosion), soil conservation and land management. She currently leads the Soil Convservation and Management Group within the National Soil Resources Institutute, Department of Environmental Science and Technology at Cranfield University.

John Palmer is the training and development manager at Claas UK and has been involved in various aspects of engineering throughout his working career, with the main involvement being agricultural service engineering. He is also a committed supporter of the Landbased Technician Accreditation Scheme.

Paul Mudway is a forestry civil engineer and **Dan Massey** is an LTA 4 lead service technician with JE Buckle Engineers. Dan is also one of the first John Deere Master Technicians in the country.

Dan said, "I am very happy to be on the Council, it is a great honour to have worked my way up through IAgrE. I feel that I am correctly placed to see the industry from the 'front line' so I would like to think I can bring in some fresh ideas and hopefully promote the Institution more. I am also a great believer in the LTA scheme and hope to help where I can on this too."

Representation from students and pre-professionals will be appointed to Council later in the year.

NSTS hits target

THE National Sprayer Testing Scheme has again achieved its government agreed target of testing sprayers covering 85% of the sprayed area of the UK. To achieve the actual figure of 85.7% over 14,200 sprayers were tested.

NSTS Manager Duncan Russell said, "This is a magnificent achievement, over 14,000 sprayer tests per year is the highest number achieved since NSTS started in 2003. It's very much down to the scheme becoming a recognised part of UK agriculture, a requirement of crop assurance schemes and of course our band of testers".

Results from tests show that repairs and rectifications were required on 62.3% of machines with leaks and drips, hoses, worn nozzles and faulty pressure gauges being the main reasons. These have remained stable over recent years.

In addition to liquid application machinery of all types, NSTS also carries out tests on granular applicators and foggers. NSTS tests apply to machines working in agriculture, amenity and horticulture. The scheme covers the whole of the UK, and in addition machines working abroad are also covered by the scheme.

NSTS received much support during the Sustainable Use Directive consultation, which enters force later this year and requires that sprayers are tested at a minimal interval of 5 years falling to 3 years after 2020. The Government in its consultation response has said it will not gold plate the legislation and will introduce the legal requirement at the minimum interval.

NSTS and the continuation of annual testing received much praise and support during the consultation process and annual voluntary testing will continue to be promoted by the Voluntary Imitative and as a requirement of crop assurance schemes and supermarket protocols.

The big challenge for NSTS remains the amenity sector and its acceptance of testing vehicle mounted machines.

AEA establish Precision Farming Forum

Designed to bring together related companies

THE Agricultural Engineers Association has formed an '*AEA Precision Farming Forum*' - bringing together those companies that are active in this innovative area of farming that will provide one of the key inputs to increasing crop yields significantly by 2050.

The aims of the Forum are:

- *To provide a forum for members to discuss collaboration, connectivity and promotion*
- *To provide members with access to AEA Farm and Outdoor Power Equipment members and the opportunity to showcase their products, services and ideas.*
- *To provide the basis for promoting the sector to Government (UK and EU), farmers and any other potential users.*
- *To assist in getting sensors and Information and Communications Technology onto the EU Research Framework Programme (FP8) funding agenda and other funding opportunities.*

Membership is free but members of the Forum will be encouraged to join the AEA.

Amongst the projects agreed at the first meeting on 13th April in Peterborough are:

- *Access the feasibility of creating a robust knowledge database that provides hardware and software connectivity information for all farm and PF equipment.*
- *Evaluation of the current ISOBUS standard (ISO 11783) which despite many claims does not seem to be ideal for farmers in many applications.*
- *Improved Precision Farming events including a new feature at 'Tillage Live'.*

- *Discussions with the British Banking Association and banks to improve the funding of Precision Farming projects.*
- *More application to both the UK Technology Strategy Board and the EU Framework for Research and Development.*
- *A major survey of farmers to establish concerns, requirements and feedback.*

If you or your company wish to be involved contact Roger Lane-Nott at *ceo@aea.uk.com*

OBITUARY:

Tony Lighton, LAMMA Show Chairman

IT is with great sadness that we report the untimely death of LAMMA Show Chairman, Tony Lighton, following a brief illness.

With more than thirty-five years of involvement with tractors produced under the Marshalls of Gainsborough banner, particularly Track Marshall crawlers, Tony was very well known to farmers and Dealers, both in the UK and around the world. After joining Marshalls on a commercial apprenticeship in 1964, he spent two years on the shop floor, followed by two years of commercial training before, in 1968, being appointed Office Manager. After spells as both a Regional Sales Manager and National Sales Manager, Tony became World Sales Manager for Track Marshall in 1982.

Despite a hectic work schedule Tony also served as a Director of the Gainsborough Building Society from 1972 up to its merger with the Yorkshire Building Society in 2001.

The traumatic period of business rationalisation and amalgamation experienced, nationwide, during the late 1970s & 80s had a dramatic effect on the then Marshall Tractors company. A series of changes in ownership of the business between 1975 and 1998 culminated in the purchase of the Track Marshall business by Tony's own company TMS Gainsborough Ltd.

Although production of Track Marshall tractors had ceased in 1996, there were many hundreds of tractors still operating around the world and TMS Gainsborough, in addition to supplying genuine spare parts became involved in overhauling and refurbishing Track Marshall tractors of all ages and later as a supplier of parts for cultivation equipment, fasteners, bearings and general supplies.

In the Autumn of 2000, Tony became Chairman of the Lincolnshire Agricultural Machinery Manufacturers Association, the organisers of the LAMMA Show, a position he held up to his death. During his Chairmanship the LAMMA Show grew from a small regional event to become the UK's largest and most successful farm machinery show with a national and rapidly growing international reputation.

Tony is survived by his wife Marie and daughter Sarah.

No such thing as a free lunch

CEO VIEW

A BIT of a change in tack this issue . . no wise words on anything of direct relevance to the profession . . . no hand wringing over a lack of research funding or how we are going to feed 9 billion people, just a few heartfelt words relating to something that affects us all, right now, whether we like it or not.

I was in attendance at the recent AEA conference where the lunchtime speakers were from Help for Heroes (H4H). The charity's co-founder, Bryn Parry, spoke of his desire to help by initially raising some £40K. Now 4 years on, they have raised almost £100 million, outstanding by anyone's measure.

We also heard from three of the heroes - and I use the word advisedly. One officer and two from the ranks spoke of their experiences leading up to, and following, their injuries.

No bravado - just matter-of-fact comments.

To be told by one speaker, that to lose his sight in the saving of 6 colleagues was worth the sacrifice and something he would do again, was humbling in the extreme.

Engaging another speaker in conversation after the event - a Fijian who had lost both legs, he sat as I stood talking with him - me assuming that sitting with two prosthetic limbs would be more comfortable. Never assume. He asked if I minded if he stood as he found it more comfortable than having to crane his neck! He spoke of his new energy in becoming a Paralympic shot putter. He can also be seen running on the rugby pitch wearing carbon fibre blades.

(And just why is it that 137 years after the great Fijian Chief Cakobau ceded Fiji to Great Britain (by asking Queen Victoria to look after Fiji in preference to the USA who failed to respond to his letter) do we still have Fijians ready to fight our battles?)

Whatever our views on the various conflicts that our politicians have managed to get us in to, these men and women deserve our support. I can do no better than quote from the H4H website:

"We are strictly non political and non critical; we simply want to help. We believe that anyone who volunteers to serve in time of war, knowing that they may risk all, is a hero. These are ordinary people doing extraordinary things and some of them are living with the consequences of their service for life. We may not be able to prevent our soldiers from being wounded, but together we can help them get better".

The results of the injuries, both mental and physical, that our service personnel (and however you look at it - they are ours) have suffered will be with them and us for years to come. So it is never too late to contribute to their well being.

There are many ways to help. Visit *www.helpforheroes.org.uk/donations.html* and see how.

And finally, thanks to Roger Lane-Nott for the invitation to lunch. Perhaps something a little less challenging next year Roger?

Christopher Whetnall

Fuel efficiency record set

THE 280hp, Fendt 828 Vario has recorded the lowest ever fuel consumption in an independent PowerMix test carried out by the German DLG Test Centre. With its record figure of 245gm/kWh it sets a new benchmark for fuel efficiency, providing a 6.5% lead over the second best tractor.

The manufacturer says this result is the product of Fendt Efficient Technology in which the latest SCR engine technology with AdBlue exhaust treatment is combined with the productivity of the tractor's continuously variable transmission.

The Fendt 828 Vario, in common with all models in the latest 822 to 828 Fendt Vario range, is powered by the latest technology Deutz, 6.06 litre capacity engine, which is equipped with SCR technology.

This system allows the engineers to set the engines for optimum efficiency without the need for additional cooling or mechanical devices and then treat the exhaust gases with AdBlue additive. This is injected after the combustion process, and converts harmful nitrogen oxide (NOx) into harmless nitrogen and water.

The PowerMix test was developed by the DLG Test Centre, as a dynamic way to measure fuel consumption while taking account of a wide range of parameters that represent common working conditions.

Instead of testing just the engine, it takes an average of 12 different load cycles including draft, PTO and mixed applications including using the hydraulics. In this way the PowerMix test simulates the conditions the tractor will be working under when, for example, it will be ploughing, power harrowing, baling, cultivating or on haulage operations and other tasks.

IAgrE produce new booklets

Information sources for the LTA Scheme and the Institution

IAgrE has produced three new promotional booklets designed to offer information about the Institution itself and about the LTA Scheme to both employers and employees, as well as to customers.

The IAgrE booklet explains how the Institution promotes professionalism in the land-based sector. It introduces the Institution as both a professional membership organisation and as a learned society which organises technical meetings for its members nationwide.

It describes the various membership categories for individuals, from student membership to fellow, and also talks about the membership categories for organisations (Commercial and Academic).

It goes on to highlight the wide range career opportunities which members enjoy, it talks of the technical groups available within IAgrE, and it spells out the benefits of membership.

The LTA guide for employers and employees booklet firstly explains what the Scheme actually is and then sets out what it means for a technician and for an employer. It talks of public trust, integrity, professional identity and standards.

The booklet aimed at customers explains how using dealers with accredited technicians means their equipment servicing, and after sales support will be of the highest standards.

CFE embraced by Young Farmers

ENTHUSIASTIC young farmers are up for the challenge of making the Campaign for the Farmed Environment (CFE) succeed.

That was the message the Campaign says came out of a YFC Regional Link Day at a CFE Beacon farm in Gloucestershire in March, where a group of young farmers found out how the Campaign can deliver environmental benefits through practical management, without the need for regulation.

The YFC members were given a tour of host farmer Simon Pain's 125ha holding near Berkeley to learn some practical tips on the key target options in ELS and Campaign voluntary measures that count towards the CFE.

Simon Pain said, "The enthusiasm that the young people displayed for the Campaign was fantastic. Hopefully they will be inspired to do the simplest of things to support the CFE on their own farms which might also encourage members of their county groups to take part in the Campaign."

Herefordshire young farmer Richard Thomas said, "The walk around Billow Farm demonstrated that through simple management we, as young farmers, can help the Campaign succeed. As an industry we certainly don't need further regulation and I will be encouraging fellow young farmers in Herefordshire to look at the management they are doing on their farms and put in place key target options in ELS and Campaign voluntary measures."

Young farmers at the meeting received free supplies of wild bird seed, courtesy of CFE supporters, Kings Game Cover and Conservation Crops, to help them get on their way with option establishment on farm.

Energy prize for Harper man

THE winners of the prestigious Environment and Energy Awards 2011 - seen as one of the highest accolades for sustainability in the corporate sector – have been announced.

Taking home the ESTA Energy Manager of the Year prize was Paul Moran of Harper Adams University College.

Paul is pictured above holding his award, flanked by Steve Parry, the Olympic medallist and GB swimming team captain who hosted the black tie evening (left) and Martin Fry, Chairman of ESTA.

Economic value of UK environment 'in the billions'

THE UK economy benefits to the tune of "billions of pounds" from the environment according to a new report from the National Ecosystem Assessment (NEA).

Whilst the NEA does not attempt to quantify the overall benefit in actual figures, it does say that, for instance, they have calculated that the health benefit for people living close to an open space or countryside "can be £300 per year".

Commenting on the report, Environment Secretary Caroline Spelman said "The UK NEA is a vital step forward in our ability to understand the true value of nature and how to sustain the benefits it gives us."

In the report, the NEA sought to include the economic contribution from eight types of open spaces including farmland, woodland, parks, coasts and urban areas.

On the balance between maximising food production and care of the environment, the NEA report says that there has been a price to pay. "England, for instance, has the smallest percentage of forest cover anywhere in Europe."

Commenting on the report, NFU chief environment adviser, Dr Diane Mitchell says "There will be a need to produce more food, but with three-quarters of UK land area in agricultural management, farmers and growers carry a unique responsibility for managing the countryside.

"We hope that this report will help to move forward the debate on how to produce more but impact less."

http://uknea.unep-wcmc.org

Rear Admiral Nigel Guild takes the helm

New Chairman for Engineering Council

THE Engineering Council has announced that Rear Admiral Nigel Guild CB, PhD, DEng, CEng, FREng has been elected as the new Chairman of its Board of Trustees.

He succeeds Professor Kel Fidler CEng, FREng, HonFIET, who has completed two very successful terms as Chairman, having served on the Board since the creation of the new Engineering Council in 2002. Throughout this period, Prof Fidler has led the development and implementation of the UK Standard for Professional Engineering Competence (UK-SPEC), which has gained the respect and admiration of many of the organisation's international partners.

Rear Admiral Guild said, "I am looking forward to the challenges of the next few years, as we continue the good work of the Engineering Council in ensuring that the competence and commitment of the UK's professionally qualified engineers is recognised as the benchmark to aspire to."

Well qualified to take the helm of the Engineering Council as it develops its strategic objectives for 2012-2015, Rear Admiral Guild has been an active member of the Engineering Council Board since 2005, and Chairman of the organisation's Finance, Audit and Remuneration Panel.

Following a career in the Royal Navy spanning more than 40 years, Rear Admiral Guild moved on to new opportunities two years ago. His naval career began in 1966 and he read engineering at Trinity College, Cambridge. A Weapon Engineer Officer, he served at sea in HM Ships HERMES, EURYALUS and HMS BEAVER and on the staff of Flag Officer Sea Training. His shore appointments were mainly in the Procurement Executive, culminating in service on the Admiralty Board as Controller of the Navy. Rear Admiral Guild's final appointment was as Senior Responsible Owner for Carrier Strike, in the Ministry of Defence. At the same time, he also held the post of Chief Naval Engineer Officer.

A Fellow of the Royal Academy of Engineering, the Institute of Marine Engineering, Science and Technology (IMarEST), Institute of Engineering and Technology (IET), Institute of Mathematics and its Applications (IMA) and City & Guilds Institute, Rear Admiral Guild is the immediate Past-President of IMarEST. Since October 2009 he has also been Chairman of the Board of Atlas Elektronik UK Ltd.

Alison takes over Membership at IAgrE

THERE is a new face in the office at IAgrE headquarters at Cranfield.

Alison Chapman is taking over from Wendy Hickman as Membership Secretary who retires in August.

Alison lives locally in Cranfield and before joining IAgrE worked in Customer Care for Riley McLaren Electrical Contractors Ltd and as an administrator for Millennium Print Ltd.

Joe Bell to head AEA Farm Equipment Council

JOE Bell, Managing Director of Kverneland Group UK Ltd, has been elected as Chairman of the Farm Equipment Council of the Agricultural Engineers Association for 2011/12.

He has been a member of the Council for the last 4 years and has been a member of the AEA Board for 3 years contributing to the policy direction for the organisation.

Joe is married with 4 children and his outside interests include long distance running.

Letters for *Landwards* should be sent to the Editor (chris@nelsonpublishing.co.uk) or by post to
The Editor, Landwards, Nelson Publishing Ltd, 25A New Street, Salisbury, Wiltshire, SP1 2PH

Restoring our soils

It was illuminating to compare the articles by Brian Keeble and Evandro Chartuni Mantovani in the Spring issue of *Landwards*. Both are concerned with sustainable crop production intensification and ecosystem improvement.

Keeble's work highlights the potential benefits of no-till in terms of soil organic matter, earthworm numbers, reduced run-off, gross margins and lower CO2 emissions. However it seems to me that some key elements of conservation agriculture (CA) have been underrepresented.

CA (*www.fao.org/ag/ca/index.html*) is solidly under-pinned by three fundamental principles: no-till planting; permanent soil cover and; crop and cover-crop rotation and diversification. Keeble recognises that the failure to retain crop residues in situ is a disadvantage. Baling and carting straw removes organic matter, nutrients and weed suppression potential from the system.

Although crop stubbles are retained, there is, as yet, no attempt to maximise permanent soil cover through the use of cover crops. I think that this is an area crying out for research and we should be able to offer leguminous cover crops (clover species for example) which will continue to provide soil protection and weed suppression functions between harvest and crop establishment. One further point is the need for better rotations; wheat, wheat, barley, oil seed rape, wheat does not appear to be very suitable for CA.

Chartuni Mantovani's lecture illustrates well how commitment and persistence can overcome seemingly insurmountable technical problems. The success of CA in Brazil's Cerrado region (and, indeed in the states of southern Brazil) has shown what complementary interventions from farmers, researchers, the state and donors can do.

There are some key comparison points here. Firstly the region allows two crops to be sown in a year so that soya can be followed by maize and, in the more temperate regions by, inter alia, wheat, oats or beans. Of course, no crop residues are removed, the subsequent crop being directly planted through the mulch of residues of its predecessor. There are other aspects of Brazil's successful CA story which give food for thought for European producers. Crop diversification is one vital constituent.

Chartuni Mantovani mentions a range of crop options from rice to sugar and the Cerrado is a major coffee producing region. But in addition to crop diversification there is a recognition of the advantages of enterprise integration. So cattle production is rotated with crop production; grasslands are direct planted to cash crops where the accumulated organic matter and improved soil structure directly benefit crop yields. Land is returned to pasture as part of the rotation (we've been here before, remember the Norfolk four-course rotation of the 18th century?).

The World Agroforestry Centre ICRAF is currently excited about the potential of evergreen agriculture to help to pacify the perfect storm of population increase, natural resource degradation climate change and falling food production*.

Evergreen agriculture comprises the incorporation of trees , especially leguminous trees, into the farming landscape to safeguard our non-renewable environmental resources. The integration of no-till crops, livestock and agroforestry into one stable evergreen system is the logical way to go and it is gratifying to see that the lessons are being learnt, created and shared, in the Cerrado.

Brian G Sims,
Engineering for Development,
Bedford

** www.worldagroforestry.org/evergreen_agriculture*

Forest damage

I am a member of IAgrE but on the soil and water side, not forestry.

However, the other week my wife and I were walking in the forest of Cannock Chase and were not impressed by the mess caused by taking trees out of the forest.

The included images will give you some idea of the damage caused to tracks. Indeed, in places, at junctions, crossing the track was almost impassable.

Is this kind of damage widespread? I hope not, but I wonder if *Landwards* can revisit the topic of logging and remind foresters that it can be done better than this.

If you were a farmer you could certainly be accused of not keeping your land in good agricultural and environmental condition, and it might even cost you as money could be docked from the Single Payment Scheme.

Robert Evans,
Anglia Ruskin University

PRECISION FARMING EVENT

Advanced technology is the way forward

ADVANCED technology holds the key to unlocking the potential in the land, while controlling costs by targeting inputs more effectively and protecting the environment, learned visitors to the Precision Farming Event in March.

The comprehensive seminar programme at the event attracted large audiences keen to learn how this technology is being put into practice. Simon Parrington, Soyl's managing director explained the importance of managing data and the best ways to ensure this is transferred and stored securely.

David Bowman Challenger's application specialist, told a rapt audience about the huge gains that dairy and livestock producers are making by using slurry and manure more effectively. "By delivering the right amount of nutrients required by the growing crop, injecting slurry not only cuts the need for 'bagged' fertiliser, it helps to cut odours, prevent pollution and turn a by-product into a valuable resource", he said.

Indeed where and how to target seed, fertiliser and other inputs are some of the big questions still vexing potential users of precision farming techniques. This is where agronomists come in, explained Stuart Alexander of Masstock's Precision Agronomy Service.

UK yields have hit a plateau, he said, but by combining the farm's own local knowledge and records with modern technology agronomists can target the areas that hold the most potential to lift the average.

Speaking with one voice

IAgrE President, PETER LEECH celebrates the industry coming together over Education and Training to form LE-TEC

IT is absolutely great to see our industry coming together to speak with one voice on all matters related to Education and Training.

I refer here to the recent announcement of the formation of **LE-TEC**, the **L**andbased **E**ngineering **T**raining and **E**ducation **C**ommittee. Why is this such a big deal you might ask? Well, for many years the 3 key organisations representing our industry, AEA the manufacturers association, BAGMA the dealers association and IAgrE the Professional Institution, have all had their own Training & Education committees and while all have been doing commendable work they have often been at cross purposes with each other, sending out mixed messages to government agencies, funding bodies, colleges, employers and the industry in general.

What LE-TEC does is bring together voting membership of these 3 organisations under an independent chairman with the facilitating organisations of Lantra (the Sector Skills Council responsible for our industry) and LANDEX (the land based colleges association) in attendance. The input to LE-TEC will be the 3 existing Training & Education committees and the output will be decisions and direction for our industry which all are aligned to, and we can move forward with one voice.

This really is great progress when those of us who have been involved in such activities for several years can easily remember the days when it would have been difficult to have all these organisations talking in the same room, never mind cooperating together for the common good.

You will also recall the Careers Project which was formed out of the industry manpower crisis conference back in 2003 and collected substantial sums of money from dealers and manufacturers to support initiatives related to Recruitment, Retention and Development of new recruits into our industry particularly at dealer technician level. This has been an admirable project and much good work has been initiated or funded which has moved the position forward a long way. Coming to mind immediately is of course the LTA Scheme (Landbased Technician Accreditation) part funded by the Careers Project, the web sites and research such as '*The cost of losing a professional technician*'.

Like all projects it was never intended to run forever, consequently its purpose and remaining funds will be subsumed into LE-TEC.

I would like to thank all those who have been involved in and active with the Careers Project over the years I think they can all be proud of having achieved the original objectives of the project and of having helped move the industry a long way forward. I would also like to thank all those involved in developing LE-TEC for their foresight into how to make the voice of our relatively small industry not only louder but one single voice. I wish them well.

HAVING mentioned LTA earlier I would also like to congratulate those involved in the continuing growth of the scheme.

We now have around 2,600 technicians on the registers and many have and are moving to the higher grade levels. There is still much to do to accredit a wider range of manufacturers and manufacturers' courses and to further develop the independent route so that the scheme can fully include all technicians within our industry.

The scheme needs to become better known to end user customers and although much promotion has been done there will be more to come. Watch out for displays at Cereals and more IAgrE branch meetings at dealers.

In addition the scheme is so well thought of that the Milking Equipment Association have now developed a specific route to LTA accreditation for Milking Equipment Technicians which was launched on 25th May.

DIESEL Engines - The Final Frontier? our annual conference which took place at Cranfield on 10th May was a great success with the highest number of delegates at an annual conference for some years showing the interest there is in this subject and reflecting on the calibre of the speakers we were able to assemble.

The conference is well reported elsewhere in this issue so I will only state that it was very educational and stimulating. The conference title was a question and in my summing up I stated that it had become clear during the day that controlling exhaust emissions of particulate matter and NOx were not the final frontier and we would see further stringent regulation of other emissions such as carbon.

I would like to thank our panel of high profile speakers for the giving of their time and expertise to enlighten and entertain us all - presentations are available on the IAgrE website.

At the conference we also presented the annual IAgrE Awards, reported separately in this issue, however I would once again like to congratulate the award winners for exemplifying all aspects of IAgrE activity.

I hope the one thing that is clear in these comments this month is that as your professional institution we are busy shaping and developing educational and training opportunities for all our constituents because personal develop and achievement of higher professional standards is our mission.

> "This really is great progress"

IAgrE Landwards Conference

10 May 2011, Cranfield University

Diesel Engines

under the spotlight

IAgrE President Peter Leech (centre) with speakers (l-r) Carl Stow (Shell), Declan Hayden (AGCO), Mark O'Driscoll (Sauer-Danfoss), John Radke (John Deere Power Systems), Craig Grant (Bosch Rexroth) and Peter Halstead (Donaldson Filter Components)

MIKE BEARDALL reports

MORE than 80 delegates took part in the annual IAgrE conference at Cranfield University, this year focussing on diesel engine developments and emission reductions.

Called '*Diesel engines - The Final Frontier*', the conference had an impressive array of speakers including Dr. Carl Stow of Shell Global Solutions, John Radke of John Deere Power Systems, Declan Hayden from AGCO, Mark O'Driscoll of Sauer-Danfoss, Peter Halstead of Donaldson Filter Components, and Craig Grant of Bosch Rexroth.

IAgrE president Peter Leech said: "It is clear that this is not the final frontier and that we have a lot further to go.

"We have seen from this conference that there are lots of effective ways of improving engines, not just from technological developments in lubricants but from hydraulics, filtration and a wide variety of ways of reducing emissions. Looking at carbon reduction will be the next hurdle to get over."

**All the diagrams and statistics from the conference appear on the IAgrE website - www.iagre.org*

DR CARL STOW
Shell Global Solutions

Shell's 4D approach to fuel and lubricants

DOCTOR Carl Stow of Shell Global Solutions looked at legislative changes involving emissions and fuel specifications and the effect these would have on engine hardware choices for off-highway equipment manufacturers.

These legislative changes and market drivers were reviewed in the context of hardware choices, especially in terms of exhaust after-treatment systems (EGR, SCR, DPF) the equipment manufacturers are having to make.

The impact of changing fuel properties on engines was examined along with the impact of lubricants and their chemistry on exhaust after-treatment systems.

On-highway landscape was reviewed as it paves the way for emissions legislation, the hardware and after-treatment solutions and the lubricants specification responses that informs the direction for off-highway lubricants.

Forthcoming legislative and market drivers for on-highway vehicles, especially fuel economy were looked at to see where the future may be for heavy duty diesel engine oils.

Dr Carl Stow

"Tier 4 covers non-road equipment, cooled EGR, disel particulate filters, filter regeneration, diesel oxidisation catalyists, enhanced VGT and close crankcase ventilation," said Carl.

"The future, after 2015 will include SCR, NOx sensors and enhanced fuel injection.

"We have come a long way but Shell have developed what we call a 4D approach - to Demonstrate through testing, to Define with an insight into problems and applications, to Design - with science applied for complete understanding of lubricant design needs - and finally to Develop using innovative and bespoke component selection to meet design objectives."

JOHN RADKE
John Deere Power Systems

Why John Deere chose the EGR system

JOHN Radke is the manager of Worldwide Customer Support for John Deere Power Systems.

In his position, John leads the customer support processes and organisations for engines and drivetrains produced in Waterloo, Iowa, USA; Saran, France; Torreon, Mexico; Rosario, Argentina and Coffeyville, Kansas, USA.

This includes direct support of equipment manufacturers' customers using John Deere engines and drive trains, as well as providing next level product support for John Deere machine factories' product support organizations.

He outlined why John Deere had been looking at emissions technology and had decided to concentrate on cooled EGR (Exhaust Gas Recirculation) and exhaust filter systems as more convenient than SCR (Selective Catalytic Reduction) which, he said, was a more complex system of emission control.

They had opted for their PowerTech Interim Tier 4 Solution Engine Technology

"Cooled EGR provides customers with a simple solution for IT4," said John.

Breaking down the reasons:

- Single fluid solution simplifies operator involvement
- Monitor and fill only one tank with diesel fuel
- Eliminates all Diesel Exhaust Fluid (DEF) availability and storage concerns
- No DEF freezing or degradation concerns
- No de-rate issues associated with SCR

Engines:

- PowerTech Plus™ engines adopted cooled EGR technology for T3/Stage IIIA
- Cooled EGR technology is the foundation for Interim and Final Tier 4 emissions regulation requirements

John said that high pressure fuel systems were more effective because of:

- Electronic multiple fuel injections
- High pressure injection atomizing fuel into finer particles which burn more completely and reduce PM (Particulate Matter).

He believed that Deere fuel systems are the first step in equipment integrated for fuel economy

"Deere fuel systems optimize fuel economy, reducing operating costs," he said.


John Radke

He said the Advanced Cooled EGR with Venturi Flow Measurement and Exhaust Filter with DOC/DPF resulted in:

- Passive and Active Filter Cleaning
- In-Cylinder Hydrocarbon Dosing System
- Exhaust Temperature Management

Engines featured:

- Wastegated Turbocharger (WGT)
- High Pressure Fuel Systems
- Four-Valve Cylinder Head
- Full Authority Electronic Engine and Aftertreatment Controls

"The John Deere Stage IIIB/IT4 advantage is clear," said John. "It's a simple solution that is field-proven, it's an integrated equipment solution, a fuel-efficient solution and a fully supported solution."

The Deere 9.0L was the first engine, he said, to be IT4/Stage 3B Certified for durability with 300,000+ test hours before launch.

How lubricant chemistry affects after-treatment systems

Sulphur:
- de-activates oxidation catalyst
- poisons SCR catalyst
- forms sulphate particles blocking the DPF

Ash:
- blocks DPF (particles cannot be regenerated)

Phosphorus:
- poisons catalysts (oxicat & SCR)
- poisons NOx sensors

. . whilst AGCO opted for SCR

DECLAN HAYDEN
AGCO

DECLAN Hayden of AGCO is responsible for managing the commercial aspects of AGCO's corporate engine strategy and production planning, to ensure compliance with legislation and permitted transition strategies, as driven by emissions development and the regulatory agencies, including:

- European Union Emissions regulations
- EPA (USA - 49 States), CARB (California) and Canada (if different from EPA).
- Other countries developing engine emission standards (i.e. Japan, Australia, Brazil, Mexico etc.)

This involves coordination of AGCO's global sales and marketing managers, engine and vehicle engineering managers, global purchasing and manufacturing site leads within AGCO as well as the external agencies.

Declan also takes a lead role in global machinery forecasting and inventory control, by directing the internal sales and operations planning processes.

Declan has carried out a number of roles since joining Massey Ferguson as a graduate trainee in 1977 His most recent role prior to his current position was Vice President Sales and Marketing for Massey Ferguson, Europe, during which he was responsible for the launch of the MF8600 series notable as being the first commercially available tractor in the world to be powered by an SCR engine.

One of Declan's proudest claims is that he contributed significantly to the understanding and acceptance of SCR within the agricultural press in Europe and beyond.

He told the conference that AGCO had chosen to go down the route of SCR (Selective Catalytic Reduction) after looking at the options.

"In IT4 final stage NOx drops to 0.2g and Particulate Matter is driven to low levels at Stage 3B," he said. "We had to look at how we could achieve this."

The two choices were Cooled EGR 9 (Exhause Gas Recirculation) Technology - where re-circulated exhaust gas lowers the temperatures inside the cylinder during the compression stroke and also decreases the airflow of the engine to reduce Nitrous Oxides - and Urea SCR Technology where a NOx reducing agent (a water solution of urea) is injected into the exhaust gas upstream of the SCR catalyst.

In this second method the water evaporates and the remaining ammonia sets off a

continues over

chemical reaction eliminating NOx and leaving only nitrogen and water in the exhaust.

Making the decision was driven by:

- Overall machine cost and HP targets for the future had to be achieved:
- EGR held technical challenges for cooling configurations and packages.
- Major impact on cooling package height to achieve similar power as SCR
- Estimated height would mean that water radiator height would go from 700 to 850mm.
- The hood and the cab would have to go up by the same thus reducing visibility, turning radius, and other performance limiters.
- Product cost would therefore also adversely affected.
- Higher HP targets could be achieved using SCR without additional performance.

Cooled EGR

Constraints.

- Increase cooling power by 10per cent without cooling package enhancements.
- With SCR base combustion can be optimised with good fuel economy, low particulate and low heat rejection, but producing some amount on NOx emission


Declan Hayden

Key advantages of SCR base technology comparing to EGR were seen as:

- Better fuel economy
- Lower heat rejection
- Less PM and smoke
- Less soot contamination to lube oil - longer service interval

"Based on what we knew, AGCO chose SCR because it will improve the thermal efficiency of the diesel process," said Declan. "The engine will be fully tuned to utilise the fuel and convert it to horse power, with the SCR system managing the emission levels in the exhaust pipe.

"This results in lower total operational costs for the end user and results in lower development costs due to packaging coolers and fewer constraints."

- The SCR system on a SISU Diesel Engine will consist of a system of components that sprays the urea solution to act as a reagent to reduce NOx in an 'exhaust gas after-treatment system' attached to the vehicle's engine.
- There were no effects to the engine design.
- Treats the exhaust 'after' the emissions are released by the engine.
- Allows Tier II versions to easily be available (less SCR components) for noncompliant markets.
- Green technology converts harmful emissions into harmless Nitrogen and water.

AGCO has chosen to call this complete system and process e3, using SCR technology in AGCO SISU Power Diesel Engines.

e3 promises to deliver the following:

- Uncompromised horsepower and torque
- Cooler running engines.
- Significantly improved fuel economy.
- Reliable performance.

"Improvements to diesel emissions that not just meet regulations, but exceed them," said Declan. "Technology that is helping to improve air quality without impacting performance."

Hydraulic fan drives the way forward

MARK O'DRISCOLL
Sauer Danfoss

MARK O'Driscoll is an Applications Engineer for Sauer Danfoss where he has worked for the last 16 years.

His time at Sauer has given him experience in the mobile hydraulic and electrohydraulic industry, working in a variety of roles such as hydraulic repairs, warranty and service in the aftermarket and internal sales - to his current role as an applications engineer involves working with OEM's on new products, technical support, optimizing hydraulic and electrohydraulic solutions, through to sign off and field testing.

Mark said the pending Tier 4 diesel engine emissions regulations will increase technical requirements on designers of diesel-fueled engines, as well as the designers of vehicles which use diesel engines.

"According to major engine manufacturers, Tier 4 compliant engines will reject more heat to their various cooling loops than previous engines of similar power levels," he said

"To cope with the increased heat rejection, to reduce parasitic power losses, and to save fuel, it is expected that many off-highway machine types which have not previously used hydraulically driven cooling fans will require hydraulically driven, variable speed cooling fans in their upcoming Tier 4 compliant versions."

Hydraulically- driven fan circuits are a solution to reducing harmful PM (Particulate Matter) emissions, said Mark. "When these are suspended into the air during combustion PM mixes with exhaust gases to form a harmful aerosol that is smog-like."


Mark O'Driscoll

He explained:

- Tier 4 implementation will demand more engineering time than Tier 3 did
- Engine and after-treatment must be tested and certified as a complete installation
- Redesign of exhaust system is a big issue.
- Prepare for 300degC at the exhaust
- Shielding of after-treatment devices will be required, 500degC surface temperature
- Stainless steel tubing to cope with chemicals and condensation
- Need to reduce/eliminate joints (leak paths) in exhaust system
- Significant impact on net power, System Heat Rejection, and engine compartment space

Mark said that Tier 4 final engines will most likely employ SCR and EGR in combination.

- To reduce SCR consumption (Urea), exhaust NOx levels will need to be reduced even further.
- This will likely be accomplished by increased EGR flow, which means more heat rejection from the EGR cooler.
- Demand for fan cooling will increase. The benefits of hydraulic fan drive are:
- 10-15 per cent temporary power boost during peak load
- Simple design. No hardware required with hydraulic fan drive system
- Tested concept and verified benefit

Mark said that Tier 4 will create a need more efficient hydraulic systems and that Sauer Danfoss is getting requests for solutions to recover or compensate for lost horsepower

"By disabling the hydraulic fan drive and allowing that power to be routed to other functions during peak engine load conditions we can vary power consumed by fan drive based on coolant temperature and engine load."

PETER HALSTEAD
Donaldson Filter Components

Effective filtration systems improve efficiency

PETER Halstead , UK sales manager (engine divisions) of Donaldson Filter Components, was born in Wakefield , West Yorkshire, and has worked in the automotive industry for more than 40 years, about 32 of these spent working for Donaldson.

In his current position, Peter has a team of people reporting to him who manage the UK's leading engine and vehicle manufacturers, and the independent aftermarket channel.

Peter himself manages global accounts such as AGCO, Thermoking and Nacco Material Handling Group, which involves travelling to Switzerland, Ireland and Holland on a regular basis.

Peter's presentation introduced effective filtration systems, which focused on the impact of air filtration with the introduction of Tier 4 engines, the restriction of available space for fitting air filters "under hood" coupled with increased power .

"This was the prime driver for Donaldson to introduce new technology, which features nanofibre media (paper) increasing pre-cleaning efficiency in a more compact package," he said.

Peter identified future trends in electronic monitoring of intake air using MAF sensors, which required higher efficiency levels versus current technology, explaining the virtues of the nanofibre media which provides 99.99per cent efficiency, and extended service intervals.

The latest air cleaner technology invented by Donaldson is called Powercore, and Peter highlighted the progress which is being made by Donaldson with the Powercore product which is now in Generation 2 providing substantially reduced package size, explaining Generation 3 is now being developed.

Peter touched on fuel filtration, explaining that substantial increases of pressure in injectors, tighter tolerances in the fuel delivery system, and higher temperatures are driving the specifications for finer fuel filtration.


Peter Halstead

"Donaldson have introduced bulk liquid filtration solutions to reduce debris and contaminant in the delivery of fuel from the source, and continue to develop high efficient fuel filtration for mobile applications," said Peter.

CRAIG GRANT
Bosch Rexroth

Engine downsizing with no loss of performance


Craig Grant

CRAIG Grant is Key Account Manager - Mobile Applications - for Bosch Rexroth and supports customers such as Caterpillar, NACCO, and Moffett as well as having responsibility for all Terex locations in the UK.

He came into Hydraulics in 1990 whilst working as a technical support engineer at Norson Power (Marine & Offshore Engineering). Craig then moved into mobile hydraulics in 1994 when he joined VOAC Hydraulics before they were in turn taken over by Parker Hannifin, were he held a similar position to his current role.

His experience has seen exposure to Open Centre, Closed Centre & Load Sensing Hydraulics moving on to hydrostatic drives and now into mobile electronics (mainly CAN-based systems) shifting towards a more systems / application sales approach rather than component.

As a member of IAgrE he is also on the committee for FEG (Forestry Engineering Group) and involves himself with such Institute initiatives as the Junior Engineers competition which Bosch Rexroth have been supporting for the past few years.

Craig told the conference that the key issue was to control electronics for driving and working hydraulics and controlling electronics of the combustion engine.

"The object is to lower fuel consumption, reduce emissions, optimise machine performance and improve system dynamics," he said.

Downsizing an engine from net 68kW to 55kW shows:

- Improved hydraulic efficiency, more efficient use of energy.
- Modifications considered are with travel drive, implement hydraulics and electronics management.

"By downsizing systems we have a closed centre LS control block and an open loop compensating pump," said Craig.

With a downsized system the result with a 400bar high pressure pump plus variable motor and gearbox was:

- Increased tractive force by 19per cent.
- Total efficiency gain up to 21per cent.

"It is clear that this is not the final frontier and that we have a lot further to go"

IAgrE President
Peter Leech

AWARDS 2011

The 2011 IAgrE Awards Ceremony was held during the Conference.

Several prestigious awards were made. *The Award of Merit* and the *Award of Honorary Fellowship* are the highest honours that the Institution can bestow.

The IAgrE Award Of Merit

The Award of Merit is made to a person distinguished by their work in agricultural science or engineering or one that has rendered outstanding service to the Institution.

The award was made this year to **Professor E Wynne Jones OBE**

Prof Jones joins a list of distinguished recipients of this award including Brian Finney, Sir Anthony Bamford, Professor Godwin, Dr Helmut Claas, Joe Bamford (Mr JCB) and Tim Chamen.

IAgrE Honorary Fellowship

The Award of Honorary Fellow is made to a person distinguished by their work in agricultural science or engineering or to a distinguished person whom the Institution decides to honour for services rendered to the Institution, or whose association therewith is of benefit to the Institution.

An Honorary Fellowship was awarded this year to **Richard Robinson**

Peter Leech congratulates Richard Robinson on his Honorary Fellowship

IAgrE Award For Contribution To The Land Based Sector

This Award is made to IAgrE members who have made sustained contributions to the land based sector throughout their career. There were three winners this year:

- **Nigel Penlington**
- **David Pullen**
- **David Bartlett**

Receiving Awards for their Contributions to the Land Based Sector were (above) David Pullen and (below) David Bartlett

Michael Dwyer Memorial Prize

The prize is to a mid-career engineer who has made outstanding progress in the agricultural engineering industry.

The winner this year was **Charles Nicklin** of JCB.

Charles Nicklin accepts the Michael Dwyer Memorial Prize from Peter Leech

Douglas Bomford Paper Award

The Award is offered to the author or authors of a paper which, in the previous calendar year, was published in full in the Institution journals *Landwards* or *Biosystems Engineering*. At least one of the authors must be a member of the Institution.

The winner of the Award this year was **Dr Malcolm McGechan**.

Other Awards

The **Johnson New Holland Trophy Paper Award** was won by **Patrick McInerney** of Institute of Technology, Tralee, Ireland for his final year project. Whilst the IAgrE Safety Award went to **T J Stack** of the Institute of Technology, Tralee, Ireland.

These awards were presented at LAMMA 2011 (see *Landwards Spring 2011*).

BRANCH MERITORIOUS SERVICE AWARDS

Made to members who have consistently rendered outstanding service to their Branch of the Institution over a number of years. The awards this year went to:

- **Jim Loynes** CEng, MIAgrE (*Wrekin Branch*)

- **David Morris** CEng, CEnv, MIAgrE (*Northern Ireland Branch*)

- **Paul Skinner** CEng, CEnv, MIAgrE (*East Midlands Branch*)

- **John Stafford** CEng, CEnv, FIAgrE (*South East Midlands Branch*)

Successful launch at Worcester Warriors RFC Sixways stadium

Milking equipment suppliers join LTA

THE principal suppliers to the milking equipment market are to become part of the Landbased Technician Accreditation (LTA) scheme, with a tailored set of categories.

The Milking Equipment Association (MEA) which is run by the AEA (Agricultural Engineers Association) has agreed to the detail of a formal accreditation and specialised training courses to be organised by Reaseheath College.

The full members of the MEA are **DeLaval, GEA Farm Technologies, Fullwood,** and **Lely Atlantic,** with **Boumatic** as an associate member.

The official launch of the scheme was held at the Sixways Stadium, the home of Worcester Warriors RFC, on Wednesday 25 May and was attended by over 80 people representing producers, the milk industry, milking equipment specialists, dealers, colleges, manufacturers and trade associations.


Stewart Fraser

The meeting, chaired by **Stewart Fraser** of GEA, *above* heard from **Jim Brook,** MIAgrE, of DeLaval who said that it was a poor reflection on the industry that, "there was no specific qualification for those involved in the maintenance of diary equipment, and that badly performing equipment could significantly affect milk quality".

He said that there were around 500 specialist milking equipment technicians in the UK, and as with other industry sectors, "more were leaving than being recruited."

He hoped that by establishing a clear career path and industry training programme, that "around 50 to 60 new recruits could be attracted each year."

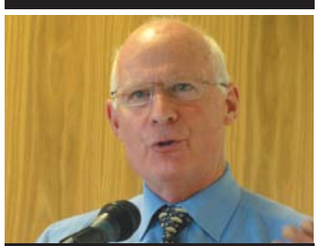
Amongst those also lending support to the launch was **Pat Smith**, MIARgrE, of leading dealership, TH White Ltd who said that the scheme could "only enhance the status and competence of the technicians working in this specialised sector."

The meeting also heard from vet **Roger Blowey** on the affect that poor performing milking equipment could have on cattle.

"Damage to the cows teat end is virtually always caused by the way the milking machine has been set up, or the way it is used," he said.


Jim Brook


Pat Smith


Roger Blowey

Other speakers included **Chris Whetnall**, CEO of IAgrE, who will administer the scheme, who provided details of the registration process, the categories within the scheme and the costs involved.

Roger Lane-Nott, FIAgrE, CEO of AEA and of the MEA said that the purpose of the scheme was to provide quality technicians and the need to attract a new generation of technicians through the prospect of a full career - all with the aim of ensuring the highest quality of animal health standards.

Finally, **Graham Higginson**, MIAgrE, from Reaseheath College gave details of the training modules developed by the College that are due to start later in the year.


Graham Higginson


Roger Lane Nott (AEA) left and Chris Whetnall (IAgrE)


Over 80 delegates attended the MEA/LTA launch

Why you need an agricultural engineer in your lifeboat

A personal view by IAgrE member Dr ROBERT MERRALL

The **2012 IAgrE Landwards Conference** to be held at RASE on **Thursday 10 May 2012**, is entitled ***'Weathering the Perfect Storm – Who do you want in your lifeboat?'*** and will consider the issues raised by the Foresight Report on Food and Farming

Dr Robert Merrall runs a consulting business specialising in rural innovation and monitors a range of agricultural research projects for the Technology Strategy Board.

Rob completed his Cranfield Engineering Doctorate at Silsoe, where he trained as an agricultural engineer. Having held a number of commercial positions within the agricultural machinery sector, he developed an interest in policy matters which impact on agricultural sustainability as a director at the Royal Agricultural Society of England.

He can be contacted at **rob@merralls.com**

PROJECTS stand or fall on the makeup of the delivery team, and whenever I'm putting any kind of project team together, I find myself subconsciously applying the '*who would you want in your lifeboat*' disaster scenario.

You know the kind of thing. Could you could endure days at sea in someone's company? Who would be an asset in a desert island situation?

Preventing mankind from making the globe uninhabitable in its efforts to feed itself is a pretty big project - one which really needs to include a few agricultural engineers. Here are a few thoughts about why.

To start with, what do I mean by an agricultural engineer? At all levels from the technician servicing a tractor, to the professor leading research thinking, this is a unique group with an understanding of how man-made systems interact with plants, animals and the environment.

Actually, there are not many people who really appreciate the interaction between engineering technology and living things, mainly because our education system tends to segment scientifically minded people into one of two groups: biologists and technologists.

Of course, these two terms are often fused as 'biotechnology', an area that has outstanding potential to deliver huge benefits through some undeniably sexy technology. However, in this enthusiasm, it is easy to forget that there are other disciplines which demand an understanding of biosystems and engineering. It is that ability to deliver on the practical 'desert island survival' issues that I want to focus on.

Back to the sweeping statement I made about education segmenting people. Agricultural engineering is one of the few areas requiring cross-disciplinary understanding: an appreciation of a very broad range of classical engineering subjects (including mechanics, hydraulics, pneumatics, electronics, control systems and IT) alongside decidedly 'bio' areas like plant, animal and soil science.

Understanding how 'engineered' systems impact on plant and animal development is absolutely not craft knowledge, passed on solely through experience.

Because of this requirement to have a foot in both camps, the agricultural engineer is someone who can really help to bridge the gap between the technologist and the environmentalist within project teams.

The recent Foresight Report talks a lot about a new item on the policy agenda: 'sustainable intensification'.

Delivering this will surely require agricultural engineers. In achieving it, man's ingenuity will be tested, and the work will be a challenge of both innovation and application. However, UK funding over recent years appears to have favoured more conceptual rather than applied work.

As a consequence, many of the institutions that fostered the UK's young engineers in this arena have ceased to exist, with the result that much of this relatively applied activity now happens overseas. For an example of this, one only has to look at the amount of space given over to near to market agricultural engineering projects from German universities on display at Agritechnica in Hannover.

This makes me wonder about the future. I became interested in agricultural engineering as a child, because I was fascinated by technical innovation, but wanted to be involved in technology with purpose.

In today's health and safety obsessed climate, I doubt many youngsters (particularly from non-farming backgrounds) have the opportunity to be exposed to the sort of influences I experienced as a young child helping on a friend's farm. Working with animals and farm equipment obviously presents certain hazards, but I would argue that if children are kept utterly apart from such things until their late teens, they have lost the naive inquisitive approach that it is so important for any sort of innovative technologist to possess.

Therein lies (in my opinion) part of the reason for today's childhood obsessions to be less about Lego and Meccano and more about Nintendo.

That said, there are amazing, hi-tech, aspects of modern agricultural machines that appeal to the intergalactic fighter pilot in everyone. The use of fibre optic systems in harvesters is commonplace, powertrains and fly by wire technology are some of the most advanced of any industry. In saying that, there is a myth about agricultural engineering that needs to be thoroughly debunked - that it is all about machines with big tyres and exhaust stacks. It absolutely is not.

IAgrE's challenge is to make more youngsters aware of the opportunities presented by this diverse sector, utilising the draw of developing purposeful technology to overcome the real sustainability issues we all face.

A broad range of innovative approaches can help with this: advances in LED lighting allowing new forms of intensive under cover cultivation, innovation in robotics allowing the development of small, intelligent and task driven machines, breakthroughs in sensor technology which allow more intelligent use of resources.

So, back to Foresight, and why agricultural engineers are needed.

The report itself talks a lot about 'modern technologies', by which I think it means, in the main, biotechnological and agrochemical solutions. It appears that physical interventions are thought somehow 'old fashioned', and I wonder if the authors (and by implication policy makers) fully appreciate the sustainable impact that some physical interventions can deliver.

Also mentioned in detail, is the challenge of achieving closer co-ordination between food production and the wider areas of energy, water supply, land use, the sea, ecosystem services and biodiversity. With their understanding of technology interacting with natural systems, agricultural engineers are surely well placed to deliver here.

If we are to tackle the inefficiencies in post harvest processing and transport infrastructure that holds back progress, again, we are going to need some engineers.

They'll need to be communicative too, to spread best practice, and collaborative, to help achieve some of the "real sustainable gains" that the Foresight report rightly says are to be made through "combining biotechnological, agronomic and agro-ecological approaches."

A real understanding of soil science (particularly soil mechanics) will be needed to optimise lo-till solutions and ensure the sustainability of systems that are adopted (in the desire to mitigate GHG, there is the possibility of creating systems that are disastrous for the overall soil structure).

These are just a few examples of why agricultural engineers make a great choice for your lifeboat. Imagine you've reached your desert island. You need your companions to be the sort of people that make things happen, make things grow and who'll help implement infrastructure for survival.

That's why, to implement the Foresight Report's recommendations, we are all going to need more agricultural engineers.

Foresight challenges that need Agricultural Enigineering input

- Delivering "Sustainable Intensification"
- Achieving sustainable gains through combining biotech, agronomic & agro-ecological approaches
- Achieving closer coordination between food production and energy & water supply, land use, ecosystem services & biodiversity
- Work on the assumption there is little land for agriculture
- Improving efficiency of post-harvest processing & transport
- Understanding the impact of lo-till on GHG (and production efficiency)
- Making better use of anaerobic digestion
- Encouraging youngsters in to (applied) agricultural science

. . . IAgrE's challenge is to make more youngsters aware of the opportunities presented by this diverse sector, utilising the draw of developing purposeful technology to overcome the real sustainability issues we all face

CE Marking

for farm buildings should prevent further collapses

The weight of snow caused some farm buildings to collapse

That was the view heard by the seminar audience at the recent Agricultural Buildings Show which took place at the NAC, Stoneleigh

IT's too late to help the owners of the 4,000 farm buildings that collapsed during the past two winters, but forthcoming CE marking for the design and construction of farm buildings will ensure such catastrophes don't happen again.

At the recent Agricultural Buildings Show at the NAC, Stoneleigh, Geoff Simpson, managing director of S&A Fabrications told a packed seminar audience that while some of the buildings that fell were undoubtedly old and structurally weak, some were relatively new and one was even brand new and had never been used.

Startling pictures of the carnage wreaked by the weight of snow on buildings drew audible gasps from the audience. "As far as we know, nobody has been killed in any of these incidents, but there have been some very narrow escapes. One dairy herdsman left the building seconds before it fell; and another came down while the farmer's daughter was riding her pony inside," said Mr Simpson. A large number of stock have however been killed in building collapses.

According to Mr Simpson these buildings failed for a number of reasons including their age, insubstantial or incorrect connections to foundations, too light steel structures as well as lack of strengtheners in the buildings or steelwork. In some cases bolts failed because they were simply too small, while in others the spans were too wide.

Also in other incidences a new building erected too close to existing units allowed snow to fall from one roof to another, demolishing it in the process.

Currently the farm building industry is unregulated in England and Wales. There is a British Standard - BS 5502 - but compliance is not mandatory. In Scotland, where many buildings came down, planners do require evidence of structural design.

But from 2013 all steel, concrete and timber frames used in UK will have to be CE Marked. This will ensure that manufacturers will need to not only design the building to the correct standards, but also have a factory quality control system in place that complies with the relevant Euro codes.

CE Marking, says Tony Hutchinson, national secretary of the event's associate, the Rural & Industrial Design and Building Association (RIDBA), is a big step for frame manufacturers, because in the past England and Wales had no checks that a frame has been designed correctly.

"This past lack of inspection does, undoubtedly, mean that some agricultural buildings have not been correctly designed and are not fit for purpose, but farmers have had no way of knowing," he adds.

To help both its own members and their customers, RIDBA is working closely with industry specialists to ensure the necessary designs, checks and procedures are put in place by 2013, when CE Marking becomes mandatory.

> "... there have been some very narrow escapes"

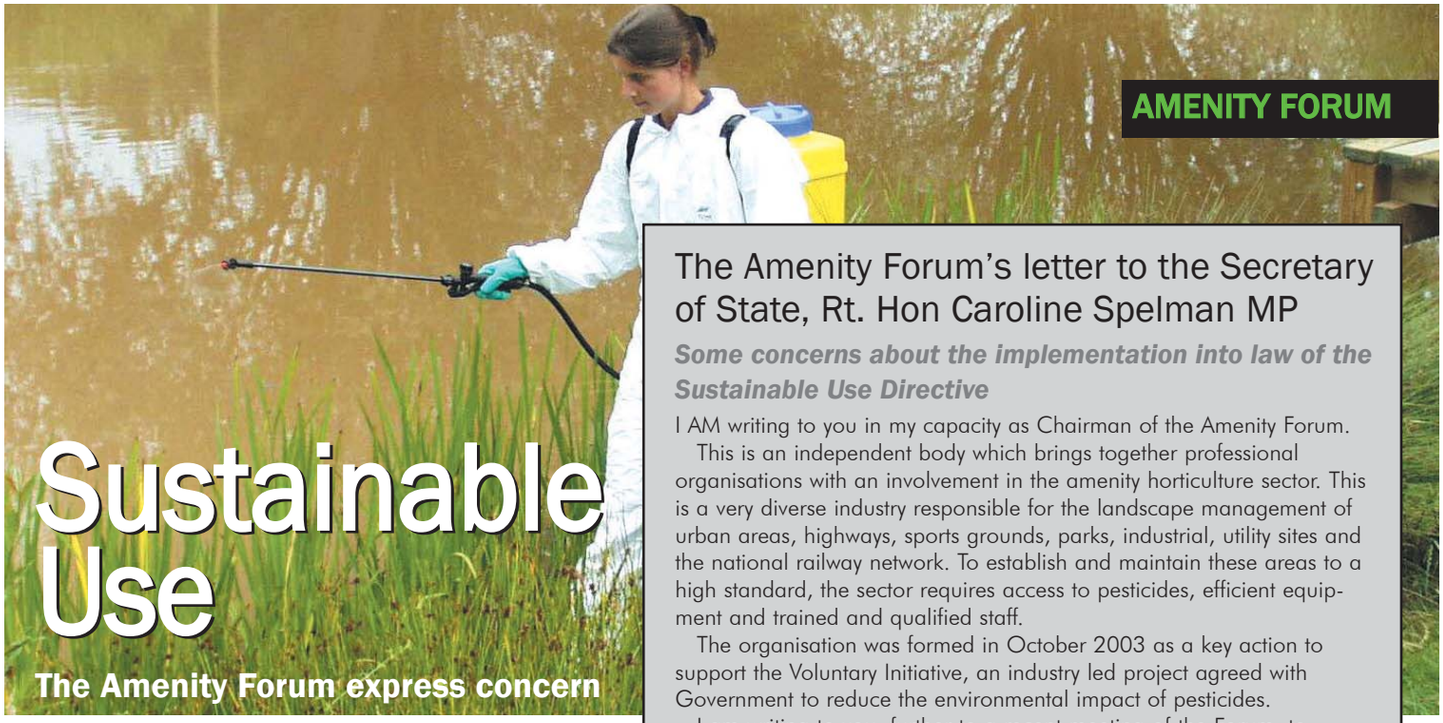
"This is why it is so important that the farmer buys his buildings from a reputable frame manufacturer such as a RIDBA Corporate member who will have CE Marking procedures in place and will have also signed the RIDBA Code of Practice and agreed to comply with the Complaints Procedure," he added.

In the meantime Geoff Simpson of S&A Fabrications warned farmers considering erecting a new building to think carefully before committing to what is often the cheapest quote.

He advised potential purchasers to consider the following points:

- Get three quotes but do not assume they are for the same specification.
- Consider using a structural engineer to asses the design.
- Visit the manufacturer's premises and look at their previous work.
- Ask for and take up references from other farmer customers
- Insist the building complies with BS 5502
- Insist that whoever supplies or erects the building is a RIDBA member.

"Different quotes may look the same, but they can vary significantly in terms of specifications and how strong the building will be. Ask what you are getting and ensure that your potential supplier takes you through the quote so you understand exactly what is involved," added Mr Simpson.



Sustainable Use

The Amenity Forum express concern

THE Amenity Forum has written to the DEFRA Secretary of State and other Government Ministers. They have expressed concerns about comments being made recently and emerging from discussions within Government departments.

These relate to the implementation into law of the EU Sustainable Use Directive.

The concern is that current controls on the use and distribution of pesticides may not be maintained but reduced. The Forum fear that this will put back much that has been achieved and penalise those in the sector who have helped so much to improve standards and public safety.

The Forum recognises the Government's wish not to unduly add to requirements in the Directive unless absolutely necessary but, if the current text of the Directive was just transposed into UK law, it believes that the changes would undermine the status of current professional standards on user and adviser certification and training.

The Forum say they have done much recently to improve standards and encourage wide scale use of continuing professional development and qualified staff. The wording of the Directive states that Member States would be required to provide access to training, rather than stating that all sprayer operators and advisers must be trained and certificated by law. This is seen as a backward step and the Forum urges the UK government to make clear its commitment to current standards.

The Chairman of the Amenity Forum, John Moverley said, "In considering the consultation on the changes last year, we had always believed that the Directive sought to reinforce controls on the use and distribution of pesticides, rather than weaken them.

"We urge the Government for a continuation of the UK's current statutory requirement for certification of sprayer operators and an extension of this requirement to all advisers, as well as provisions for ongoing training and professional development."

Gary Harland, Chairman of the Communications group of the Forum said, "The Forum remains committed to promoting best practice in the distribution and use of pesticides and we feel that this must be underpinned by legislation to protect and enforce minimum standards".

Steve Hewitt, Chairman of the Education and Training group of the Forum said, "Whilst application of the measures may be maintained through our membership by existing voluntary approaches, changes in legislative needs would be a backwards step after the agricultural and horticultural sector has worked hard to set the very best standards. In amenity we recognise there remains much to be done and we do not want to see slippage in this area of requirement."

The Amenity Forum's letter to the Secretary of State, Rt. Hon Caroline Spelman MP

Some concerns about the implementation into law of the Sustainable Use Directive

I AM writing to you in my capacity as Chairman of the Amenity Forum.

This is an independent body which brings together professional organisations with an involvement in the amenity horticulture sector. This is a very diverse industry responsible for the landscape management of urban areas, highways, sports grounds, parks, industrial, utility sites and the national railway network. To establish and maintain these areas to a high standard, the sector requires access to pesticides, efficient equipment and trained and qualified staff.

The organisation was formed in October 2003 as a key action to support the Voluntary Initiative, an industry led project agreed with Government to reduce the environmental impact of pesticides.

I am writing to you, further to a recent meeting of the Forum, to express serious concern about comments being made recently and emerging from discussions within Government departments. These relate to the implementation into law of the EU Sustainable Use Directive.

The concern is that current controls on the use and distribution of pesticides may not be maintained but reduced. We fear that this will put back much that has been achieved and penalise those in the sector who have helped so much to improve standards and public safety. The existing certification scheme has been working successfully since the 1980s. We have been working very hard to strongly promote certification in our sector and support a voluntary assurance scheme. Any reduction in current controls would be a serious backward step.

We recognise the Government wish not to add to requirements in the Directive unless absolutely necessary but, if the current text of the European Directive was just transposed into UK law, we believe that the changes would undermine the status of current professional standards on user and adviser certification and training.

It is in the latter area where our key concerns exist as the Forum has done much recently to improve standards and encourage wide scale use of continuing professional development and qualified staff. The wording of the Directive states that Member States would be required to provide access to training, rather than stating that all sprayer operators and advisers must be trained and certificated by law. This is certainly not something we can support and we urge the UK government to make clear its commitment to current standards.

In considering the consultation on the changes last year, we had always believed that the Directive sought to reinforce controls on the use and distribution of pesticides, rather than weaken them. We urge the Government for a continuation of the UK's current statutory requirement for certification of sprayer operators and an extension of this requirement to all advisers, as well as provisions for ongoing training and professional development.

Whilst application of the measures may be maintained through our membership by existing voluntary approaches, changes in legislative needs as we understand them would be a backwards step after the agricultural and horticultural sector has worked hard to set the very best standards. In amenity we recognise there remains much to be done and we do not want to see slippage in this area of requirement.

The Forum remains committed to promoting best practice in the distribution and use of pesticides and we feel that this must be underpinned by legislation to protect and enforce minimum standards. We would be pleased to work with the relevant members of the Government and civil servants in helping develop a more appropriate way forward. We wish to make these points in a very positive way and help find solutions.

Professor John Moverly OBE, FIAgrE
Chairman of the Amenity Forum

the cost of FOOD

GEOFFREY WAKEHAM considers the state of food production worldwide and offers his thoughts as to what the industry's priorities ought to be

IN New Zealand the cost of milk is on the rise. Their largest dairy company blames the increase in the consumption of latté coffee.

In India there have been riots over the cost of onions. Across the Arab world the riots and insurrection have in part been blamed on the rapid rise in food prices. Commentators around the world expect food prices to stay high and continue to rise in the future.

On receiving the spring edition of *Landwards* I find it peppered with references to the imminent end of the world as we know it due to food shortages. Details of a presentation on the 28th March entitled *Water Management for Food Production- Global Challenges and Opportunities* have just appeared in my inbox.

In October 2009 wheat was trading at £80 per tonne and experts were predicting stocks would be at a record high in 2010. On the 14th March 2011 wheat is trading at £182 per tonne in the UK. Maples are trading at £924; how quickly the world changes.

But if the New Zealand dairy herd was to be increased by 0.05% it could cope with half the population drinking an extra latté once a week even if one ignores the reduction in the number of flat whites consumed. While there I was not aware of any shortage of milk in the shopping malls.

A small commercial cheese maker I talked to had stopped buying milk from their farm based supplier and used their local supermarket and, I presume, a big trolley instead.

In recent years export of onions from India have increased by 200% and in 2010 they helped the Pakistani flood victims by shipping large quantities to the devastated regions. It is interesting to note that Britain exported £10.8 billion of manufactured food products in 2010 and this did not include Scotch whisky either.

Many Arab countries have large balance of payment surpluses and could easily reduce domestic prices for basic foods while reducing the trade imbalance with trading partners.

So are we seeing corrupt government, rare meteorological conditions and speculators influencing the perception of an impending food crisis?

IN the short term this is undoubtedly true but there is one underlying problem and that is continuing world population growth with an increasing expectation as to food availability and sophistication.

In the United States expanding urban populations are demanding water supplies at the expense of crop irrigation and some ancient aquifers are approaching the end of their useful life. At some locations the Ogalla Aquifer, covering some 225,000 square miles, has dropped 85 metres since extraction commenced in the early twentieth century. Some say Beijing has to drill to 1000 meters to find drinking water.

In Australia aquifers are being similarly depleted turning productive land back to marginal deserts; irrigation driven increases in salinity are reducing available land in many regions. Some once mighty rivers now dry out before they reach the sea. Some lakes are shrinking at alarming rates due to reduced inflow and increased extraction.

Population growth and expectations hasten the year when oil production fails to meet demand. Green fuels with their tax advantages and dubious environmental benefits are grown at the expense of food crops and the natural environment. Increasing population with its real or imagined fear of rising global temperatures will only increase the pressures on food production as rural land is turned over to providing industrial raw materials and energy crops.

Population growth may slow

“. . where big gains can be made is in the reduction of waste”

in the future and in some rich nations may actually go into reverse but it has been estimated that food production will need to increase by some 70% in the next forty years.

BUT let us be positive and look at what should be our priorities throughout our industry that in practice extends from the clearance/conservation of land to the food in our mouths.

Controlling population growth and world wide expectations of what constitutes an acceptable lifestyle is most probably beyond our control. We need to see that more food is available to those that are hoping for a better life without impacting on my enjoyment of a varied and extensive diet.

The supply of water to cities and for irrigation would seem to be a good starting point. There are better ways of managing domestic water consumption; there are ways to significantly reduce industrial use of water driven by cost and legislation.

Even so enforced reduction of water availability to agricultural and increased salinity will impact on crop yields so new cultivars and improved systems of irrigation need to be developed. Interestingly some areas of the Ogalla aquifer have seen a significant rise in water levels and the overall reduction recorded over some eighty years averages out at just four metres.

Yields of wheat in the UK over the past sixty years have increased by 300% mainly due to the efforts of engineers and, more recently, plant breeders. There must be scope around the world to achieve similar gains in local crop strains. Should more effort go into the development of perennial cereals? With better water management and cropping systems significant gains in food availability can be achieved.

Where big gains can be made is in the reduction of waste. It is difficult to get definitive figures but studies in the UK indicate that for every two kilos of food bought one is thrown away. When was the last time you had a roast chicken and as a fourth meal boiled up the bones for a delicious soup? For every kilo the food industry processes and delivers to the supermarkets it disposes of one kilo as waste.

According to a BBC study some 17 million tonnes was being disposed of in landfills as recently as 2005. The industry is committed to reducing this to zero but I can find little evidence it is expecting to significantly reduce the overall level.

There is a need to find better ways of reducing or reusing this waste material than relying on expensive small scale anaerobic digestion producing electricity at fifteen times that from a large gas fired power station (This is an estimate as I can find no hard data on running costs and ‘available’ output). Seventeen million tonnes of food would feed a lot of pigs. If one includes harvest and other on farm losses, for every kilo we eat farmers have to ‘grow’ five kilos of food.

In underdeveloped parts of the world where a high proportion of food is produced on small peasant plots, wastage of household food is likely to be limited. The spectre of starvation sees to that but wastage there is. Estimates put field losses as high as 50%, (in Gabon 60% losses are due to elephants alone), while storage losses can reach 40%. Nine kilos potential crop may result in as little as one kilo available to eat.

Radically improved crop protection, removing the problem of local small scale storage by developing infrastructures that allows marketing of crops, improved cultivars and a supply of affordable foods from around the world could significantly increase food availability.

There are solutions, regulating the amount of food served at lavish weddings as suggested by India’s food ministry will have little effect on the availability of onions.

The efforts of engineers and crop scientists will.

Public database of technician qualifications & programmes available

Engineering Council develop web-based facility to assist potential applicants

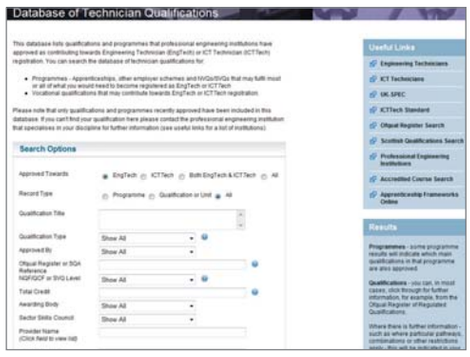
TO assist potential applicants, the Engineering Council has developed a public database of approved qualifications and programmes which contribute to professional registration as Engineering Technician (EngTech) or ICT Technician (ICTTech).

The database, found on the Engineering Council’s website, can be used to search for apprenticeships, other employer schemes, NVQs / SVQs or vocational qualifications. Providers and employers who are aligned with particular qualifications and schemes can also be identified.

In addition, most records contain a link to further detail in the Ofqual Register of Regulated Qualifications, or to the SQA Subject and Qualification finder website.

Users can be fully confident in the quality of qualifications and schemes found on the database, as each one listed will have been through a rigorous approval process by one or more of the 32 professional engineering institutions that are licensed to do so by the Engineering Council.

“We already have a well established database of accredited courses leading to qualifications that partially or fully satisfy the education requirements of Incorporated Engineer (IEng) and Chartered Engineer (CEng) registration, which is used by more than 7,500 visitors each month,” said Jon Prichard, Chief Executive Officer of the Engineering Council.



“The addition of this database of technician qualifications and programmes is now proving equally invaluable for those looking to register professionally as technicians.”

The database of technician qualifications and programmes can be found at: *www.engc.org.uk/education--skills/technicians/database-of-technician-qualifications*

PROFILE:
Chartered Professional

CHRIS WATTS is a senior research scientist and soil physicist working at Rothamsted Research. Chris works as part of a multidisciplinary team seeking to provide the knowledge base and tools to perhaps double wheat yields during the next 20 years and his role will be to develop a mechanistic understanding of how soil properties and root characteristics interact to determine water uptake and nutrient acquisition.

FOLLOWING graduation with a BSc in Agricultural Engineering from NCAE, Chris Watt's early career was at the NIAE/Silsoe Research Institute studying sustainable soil management systems ranging from the design and testing of novel and commercially successful high speed shallow cultivators to the measurement of processes responsible for the aggregation of clays and their role in sequestering soil organic carbon.

During this time he obtained a PhD from Cranfield University looking at interactions between tillage energy, soil structural stability and organic matter. He has worked on a number of competitively won projects funded by Defra, UK research council's, the EU and commercial companies and has collaborated with Universities in the UK and throughout the world and is a visiting professor at Dezhou Institute in China.

Chris has over 30 years of experience in the study of sustainable soil management systems. The earlier part of his career concentrated on soil machine interactions with the emphasis on tillage machine performance. This evolved into the influence of machines on soil quality with particular emphasis on effects on the environment.

With the move to Rothamsted the evolution continues to soil crop interactions and sustainable intensification of crop production. Rothamsted's scientific research ranges from studies of genetics, biochemistry, cell biology and soil processes to investigations at the ecosystem and landscape scale. Over its 160+ year history, Rothamsted Research has built an international reputation as a centre of excellence for science in support of sustainable crop management and its environmental impact.

Although Chris is the author of over 150 papers, technical and contract reports including more than 30 refereed papers in high impact factor journals plus a couple of book chapters he says he still gets most satisfaction from finding practical solutions to real problems. Perhaps that's why he considers himself an engineer rather than a scientist.

Currently Chris is conducting research in soil physics leading to more sustainable land management practices and an improved environment. As an example, he is currently working on an EPSRC funded project together with colleagues from Manchester and Open Universities and a UK sensor manufacturer on the non-invasive acoustic-seismic sensing of soil strength and structure. In addition, he is working with plant scientists to develop an integrated approach to increasing water use efficiency and drought tolerance of wheat production in UK.

Q&A

Why did you choose to become a Chartered Professional?

I suppose the short answer of why I became a CEnv is to formally register my professional competences and formalise my continuous professional development (CPD).

However, many of us working in agriculture also have a passion for maintaining and enhancing the environment in which we live and work. I have always thought the environment needs people who not only identify problems but are also able to provide realistic solutions. I believe agricultural engineers are trained from the start to work with natural systems and are thus well equipped to find practical and sustainable solutions to many of the global problems now facing us.

More recently I have become a member of the IAgrE membership committee and this gives me the opportunity to help maintain the high standards of the profession while providing encouragement to future generations of agricultural engineers and environmentalists.

How do you feel that being professionally registered helps you in your career?

I have been a member of IAgrE for most of my career. Membership has helped provide a useful forum to present my work to a wider audience and receive feedback from experts working in a wide range of different specialities.

I found this really useful particularly as we have all tended to focus on narrower specialist areas of work. As I now work mainly alongside scientists with backgrounds in crop science and biology being a member of IAgrE is a useful way of keeping abreast of engineering advances.

What discipline areas have you worked in and which discipline area are you now working in?

During my early career at NIAE I was an agricultural / mechanical engineer working on the design, development and testing of tillage and traction equipment including developing instrumentation systems to measure their performance under field conditions. I also participated in long-term field trials of tillage and field traffic experiments.

More recently, I have worked in soil science and in particular soil physics, researching into aspects of the strength, stability and

Name
Chris Watts

Position
Senior Research Scientist and soil physicist at Rothamsted Research, Harpenden, the largest agricultural research centre in the United Kingdom and almost certainly the oldest agricultural research station in the world.

Current Assignment
In general terms I conduct research in soil physics leading to more sustainable land management practices and an improved environment

Academic Career:
- 1978: BSc 2 (ii) Agricultural Engineering, NCAE, Cranfield Institute of Technology
- 2004: PhD (Interactions between tillage energy, soil structural stability and organic matter). NSRI, Cranfield University.
- 2007: Visiting Professor Dezhou Exp. Station, Institute of Agricultural Resources and Regional Planning (IARRP), Chinese Academy of Agricultural Sciences (CAAS)

Areas of Expertise:
Over 30 years of experience in the study of sustainable soil management systems.

resilience of agricultural soils plus measurements of water and gas movements through soils and the development of novel sensors. With the move to Rothamsted the emphasis has been on soil plant interactions.

What makes your work important?

Food security, global and environmental change, together with the requirement for sustainable development are some of the great issues that face the world today. As agricultural engineers and soil physicists I think we are particularly well placed to address many of these problems and find practical solutions.

I hope my work helps provide a solid foundation and a better understanding of the effects of agricultural management on sustainable soil function plus practical ways of maintaining or improving soil quality.

In my view the provision of robust measures of soil physical quality combined with accessible advice on soil management are vital components of a sustainable and productive UK agriculture

What have been your main achievements?

During the early part of my career at NIAE at Silsoe I was lucky to be working on a commercial contract with Bomfords to develop a novel high speed cultivator. I was given a free hand but huge technical support to come up with the concept, early prototype design and field testing of what became the successful Dyna Drive.

More recently I developed physically based measures of soil quality enabling us to quantify the effects of tillage of different intensities on soil structural stability and the loss of organic matter. We were then able to identify and quantify the benefits of increased levels of soil organic matter, cultivating the soil only at appropriate water contents and in conjunction with reduced tillage intensity (energy).

These techniques provide a practical approach to maintaining soil physical quality.

How do you see your work developing in the future?

Ensuring food security is a major challenge given the projected need to increase world food production by 40% in the next 20 years.

I hope to continue to work as part of a multidisciplinary team seeking to provide the knowledge base and tools to substantially increase wheat yields during the next 20 years. Wheat is a particularly important crop providing a fifth of the calories consumed by man and is the major UK crop, being grown on 63% of arable land.

As a soil physicist my role will be to develop a mechanistic understanding of how soil properties and root characteristics interact to determine water uptake and nutrient acquisition.

Any tips for those newly qualifying?

I think try and develop self-belief based on your own growing professional judgement but always be willing to seek and where appropriate, take advice.

I have been very lucky in my career and have always received lots of support from those I have worked with and those I worked for.

As professional engineers and scientists most of us have also benefited considerably from our technical support. I have had my bacon saved on more than one occasion by my technician. However, technicians are often rather undervalued within organisations which is one reason why I am particularly pleased the IAgrE is probably the leading organisation offering professional recognition to them.

Available in full on Landwards e-Xtra - *www.iagre.org*

Large Chick Trailer

by **Jim Ward** MBA, MIAgrE, IEng

Background

Unitrans Freight and Logistics is a leading transport company based in South Africa active in a diverse range of transport and logistics activities.

In 2010 Unitrans Freight ran some 2000 trucks, ancillary vehicles, and yellow equipment. Total operations generate 7 million km per month and comprise 64 contracts across South Africa. Unitrans Freight has five operating divisions, of which Foods Division (Foods) is one. Foods run 18 contracts and their vehicles generate 1.45 million km per month.

Specialised activities

A long standing client of Foods is the foremost poultry producer in the country. This producer operates three modern processing plants and manages vast poultry farms in several provinces producing over 4.5 million birds per week.

All essential poultry production transport activities are provided by Unitrans Foods.

A requirement arising from this long standing relationship was the need for three ultra large day-old chick carriers (coining a term LCT, Large Chick Trailer) to handle the increasing demand from new farms, contract growers and long distance chick transfers. Approximately 3/4 million chicks are transported by specialised vehicles in different areas each day.

This requirement prompted an overseas fact finding tour in May 2009, meeting with manufacturers, poultry producers, live animal transport specialists to identify best practices and concepts. The author's Membership of the Institution of Agricultural Engineers was invaluable in organising many of these meetings, with others arising from technical contacts arranged from South Africa.

Jim Ward of Unitrans Foods, and Mario Boshoff of Carrier Transicold jointly developed a semi-trailer with a number of special features to meet this requirement. Three such LCTs have since been built locally and commissioned, and the full

article concerns the design and development thereof.

Design brief

The client wanted a semi-trailer capable of transporting 108,000 day-old chicks without undue stress, over long distances, in all seasons and regions.

Internal temperatures were acceptable in a range between 18°C and 37°C as day-olds leave the hatchery at 37°C. There was to be no recycled air. The trailer also had to meet or better three live bird transport requirements: 1) clients own historic specifications, 2) EU/HSA advisories for live chick transport, and 3) breeder requirements based on its worldwide distribution and transport of hybrid chicks.

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MEMBERSHIP MATTERS

BRANCH REPORTS

YORKSHIRE BRANCH

Speaker: Jack Knoops

Harrier Jump Jet

THE most recent meeting of the Yorkshire branch of the IAgrE was held at the Fox and Hounds, Copmanthorpe, when 16 people attended.

The evening was opened by our new chairman thanking all for coming and welcomed our speaker for the evening Jack Knoops.

Jack first of all gave us a synopsis of his career before his retirement, which was quite a few years ago. He joined the RAF and worked on many types of jet planes used by the RAF in many of the air bases around the world.

His main subject for the evening was the Harrier Jump Jet which Jack worked on for many years. He started by explaining the various parts of the plane and how it was originally envisaged. It started life as we all know as the Flying Bedstead and eventually was made into a 'conventional' aeroplane. It was basically an engine which was made to fly by adding wings and a cockpit for the pilot.

Jack then explained how the various components worked to provide the downward thrust for the hover. The nozzles were worked front and rear each side and kept in sync with a chain which was lined up with witness marks for assembly.

On the cowl of the engine inlet there are some inlets which are a little like spring loaded letter boxes which are closed when the engine was not working. One of these was quite convenient for resting tools when working on the top of the plane and if the tool dropped through this slot it would drop into the air intake and if not retrieved would wreck the engine on start up.

Also if whilst working on the top of the engine you happened to drop an item it would usually tinkle down until hopefully it landed through the engine and onto the bottom paneling. Unfortunately there was only one small panel in the bottom of the engine bay to gain access and so man's ingenuity had to be taxed as it was at least 8 hours to remove the engine to retrieve the offending item.

The way this was overcome was for the fitter to return at night when all was quiet and lay under the plane, gently tapping the fuselage with a hide hammer and hoping to coax the item nearer the opening, and if it was steel catch it with a magnet. This obviously did not happen often!

Jack ended his lecture with the workings on in flight fuelling, as one of the characteristics of the Harrier was its capability to land and take off vertically. Unfortunately a loaded harrier used up a large amount of its fuel getting airborne vertically so mid flight refueling was needed.

One of the members of the audience had brought parts of a nozzle from a plane and so this helped Jack to explain the workings of this operation.

Jack apologised for his lack of actual statistics but it was many years since he worked on a Harrier and obviously he was not allowed to keep his books etc. on the Harrier.

Our chairman then gave a vote of thanks and commented that even without his books we had been given a wonderful insight into the workings of the Harrier.

Gordon Williamson

WEST MIDLANDS BRANCH

60th Annual General Meeting

8th March 2011

IN a meeting at the AGCO training centre at Stoneleigh, there were great celebrations at the recent meeting of the West Midlands branch AGM on the 8th March.

It was their 60th Annual General meeting and it was celebrated by the cutting of a special 60 cake.

Some of the members were considering what they were doing 60 years ago?

At the same time the opportunity was taken by the President's representative, Michael Woodhouse, to present a 35 Year certificate to William Waddilove who was not a member sixty years ago!

After eating the cake and toasting the future of the branch we were told about the development of Fendt tractors a distinct name within the AGCO group by Ben Agar an area sales manager.

William Waddilove

Michael Woodhouse presents a 35 year certificate to William Waddilove

The West Midlands Branch celebrated their 60th Annual General Meeting with a special cake

SOUTH-EAST MIDLANDS BRANCH

Advances & Developments In Combines For International Markets

Lecture presented by Paul Freeman (Case IH) on 7 March 2011

PAUL Freeman (a Case IH product specialist) gave an interesting insight into the many challenges and factors considered by manufacturers when developing and marketing machines for the global marketplace.

Although ostensibly focussing on the special issues relating to combine harvesters, Paul talked knowledgeably and expansively about the wider challenges of bringing tractors to the market too. We must thank Paul for the excellent evening had by all.

Paul started by defining 'marketing' and gave some interesting examples of successful (and some not so successful!) strategies emphasising the importance of manufacturers knowing their market and listening to customers and users to develop and inspire new products.

Problem solving is a vital component in the process, epitomised by the development of the original McCormick Reaper in the mid 1800s through its evolution from the first tractor drawn combine harvester (in 1925) and self-propelled machine (1942), into the highly sophisticated and complex leviathans we know today - all developments driven by the eternal limiting factors of weather and labour.

Paul also explored the other key drivers in product development, i.e cost control and productivity (for both manufacturers and users) and the major influences of competition, new technology, innovation and legislation, such as on health and safety and exhaust emissions. He gave an interesting insight into how his company manage (and encourage) this process, enabled by modern communications throughout the many countries in which they operate.

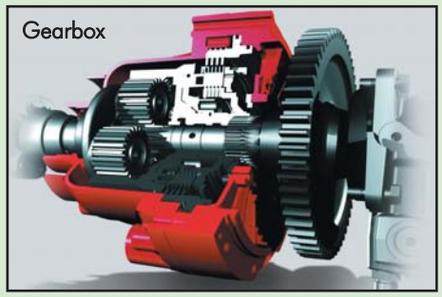

Auger

Investment in developing new technologies has also been crucial to the company's success, e.g in the Power Plus CVT drive system to cope with the increasing demands for powering the various components. This has also led to a reduction in moving parts and simplified drive systems, e.g on the standard Case IH Axial Flow 20 series down to 9 belt and 3 chain drives - in turn reducing maintenance and enhancing safety.

This feature and the ability to reverse the crop flow to remove blockages led to the Axial Flow machine receiving the RASE Silver Medal and HSE's *Safe Design* Award at the last Royal Show. Paul admitted that whilst the *Safe Design* award came as a surprise, the company now feature this in their marketing. The opportunity to provide easier access and set-up, and allow for fumigation (required to cross between States in USA and Canada), has also been beneficial.

Encouraging and enabling feedback from users and technicians around the globe and quickly translating comments and adopting new ideas through the use of computer modelling and simulation has also played a major part in speeding up the process of turning new concepts into product on the market place.

The most recent 'giant leap' has been the use of virtual reality (VR) technology, introduced by Case from the car industry via the Fiat Group. This is now used to demonstrate and market-test new designs, and will save significant costs of development by reducing the need for building prototypes and carrying out lengthy trials in different environments.


Gearbox

We were shown a glimpse of the future through a very realistic VR demo of the new 670hp Quadtrack tractor. With full 360 degree visualisation and the ability to add virtual implements, this technology will enable 'Virtual Vehicle Integration' and to plan and design new elements in consultation with users and technicians. New features such as cab design and layout of controls, multi-function propulsion control levers, use of touch screens, operator visibility and comfort, etc, can be tested in a virtual working environment. Whilst primarily considered as a design tool, its value in marketing and for training operators will also be increasingly exploited.

Paul also touched on the extent of development of new control systems such as auto-steer and observed that the technology on tractors is now more advanced than on cars. With 'Vehicle to Vehicle' and GPS technology it is now possible for the combine driver to take control of tractors and trailers within 100m to guide them in and unload. This can significantly reduce crop losses due to overfilling or inaccurate alignment, as well as avoiding potential damage (and vital time lost) caused by collisions with ever-wider headers. The driverless machine and round-the clock working is also a reality - when health and safety will allow it!

Whilst to some people, all this new technology and use of gizmos may seem to be the preserve of the 'YouTube generation', Paul explained how the company has actually had to set up its own YouTube site to counter the modern tendency for sneak previews of any new designs discovered under test to be disclosed worldwide via the Web. This has even led to Case IH receiving their latest award at SIMA - for a machine that has not even been built yet! However, this has to be balanced against the knock-on effect of farmers delaying purchases until a prospective future variant is available. This can be catastrophic for a manufacturer.


Case IH Combine

Another major challenge is achieving homologation within the EU and compliance with the myriad of legislative requirements in a global market. Not least the latest controls on engine design and emissions being phased in across the globe - although not in all countries. Being faced with different standards being acceptable in different countries and regions over a long period has significant implications for manufacturing, marketing and sales.

Paul described how, to help overcome these factors and remain profitable, a modern global manufacturer needs complex management systems and IT-based processes to estimate, regularly review and keep tight control of all inputs and outputs. The important role they have to play in feeding the world is paramount. The need for closer cooperation between manufacturers to share design, engines and other components is also growing.

It was clear from Paul's enthusiasm and wide ranging knowledge that his company are certainly progressing into the 21st Century with confidence and vigour and there are interesting times ahead as further innovations and wizardry are developed and deployed.

'Bring it on', as the youth of today might say! Paul's presentation certainly stimulated our audience's somewhat more mature collective creative juices and led to vigorous debate about alternative designs for the future. Too much to be covered in this brief report, but Paul has no doubt already fed our discussion back into the 'design loop'. It was an excellent session, and who knows, perhaps we shall see some of our suggestions working in the field - and sooner than traditionally!

Alan Plom

WEST MIDLANDS BRANCH

The Story Behind Modec

Speaker: Colin Smith

IN April the West Midlands branch were given an insight into the story behind Modec electric vehicles by Colin Smith, Modec's Engineering Director. Originally planned as a factory visit the event was reorganised as a branch talk due to Modec unfortunately going into administration.

Colin started his presentation with how he had originally become involved in electric vehicles when he was at London Taxis International (LTI). LTI had explored the concept of an electric taxi with the idea soon being discounted when it was realised that there was no guarantee as to what destination the driver's next fare would request, and whether this would be within battery range. This led to the idea that electric battery power may have potential for an inner city electric delivery vehicle where the operating range was more within the driver's control, unlike taxis.

To investigate the technology further, a development vehicle was built based on a modified electric milk float fitted with lead acid gel batteries. Given the name 'Ernie' the milk float managed to clock 72mph at the MIRA test track.

LTI then decided that electric vehicles weren't for them, so Colin and other interested parties set up a business in 2004 to further investigate the concept of an inner city delivery vehicle. This led to three prototype vehicles being built within a seven month period each incorporating different technologies.

One used lead acid batteries, one was a diesel electric hybrid and one used Zebra batteries. After extensive testing the one fitted with Zebra batteries turned out to be the most promising. Zebra batteries use sodium nickel chloride technology, sometimes known as molten salt as they have an internal temperature of 300°C when charged.

Following the three prototypes the decision was made to go with an all electric vehicle with the design parameters set at; a 2 tonne payload, a 100 mile operating range and a 50mph top speed.

Early in the design process the decision was taken to design the vehicle around a single easily removable battery cassette so as battery technology evolved the vehicle could easily be upgraded. The idea also being that the customer could have a spare battery if they wanted to double shift the vehicle as it only took 20 minutes to swap the battery using a hydraulic vehicle lift.

In reality none of the customers made use of this facility. This was a different concept to other electric vehicles at the time where a standard petrol or diesel vehicle was converted to electric motor drive and the batteries were fitted in the remaining space, often leading to the vehicle's payload and handling being compromised.


'Ernie' - first development vehicle

As the battery cassette weighed close to 1 tonne it was felt that it was important to keep it positioned as low as possible within the vehicle to aid stability. The battery was protected by the chassis side members which acted as additional protection from impact or crash damage. With the battery being not far off the full width of the vehicle, the chassis rails were reduced in width at the front to achieve a small turning circle of 10.8m kerb to kerb for city use.

The water/glycol cooled electric traction motor used was built by Zytek and had a maximum power output of 70kw and a peak torque of 300Nm. This torque was available once the motor had reached an operating speed of only 30rpm, so under acceleration a fully laden vehicle with a weight of 5.5 tonnes had no problem in keeping up with surrounding traffic.

As the vehicle had only one gear the electric motor had to cover the full operating speed range of 0 to 50mph.

The electric motor also formed part of the regenerative braking system, recharging the battery under braking. This was found to add on average around 7% to the operating range of the vehicle. As the vehicle was rear wheel drive the amount of energy that could be obtained from the regenerative braking had to be carefully managed to prevent the risk of the rear wheels locking up in icy or wet conditions. Steps also had to be taken to ensure that the regenerative braking worked in conjunction with the Bosch ABS system and not in conflict with it.

Other features that also consumed energy from the vehicle's battery were the electro-hydraulic power assisted steering which consumed very low amounts of power, and the heating system.

Also some types of body fitted to the Modec chassis, such as supermarket refrigerated home delivery vehicles required a power supply as well.

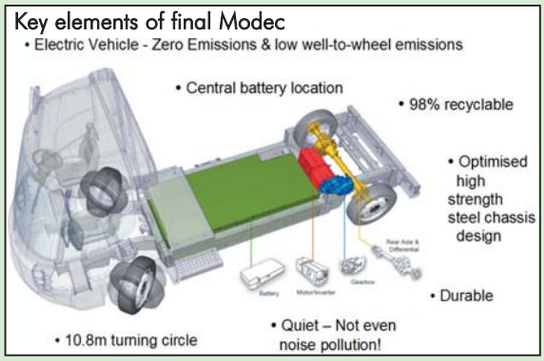
Later production vehicles were fitted with a lithium ion phosphate battery in place of the original Zebra battery.

The lithium ion battery had the advantage that when the vehicle was left standing the battery did not discharge. The Zebra battery would discharge itself over a period of 12 days as a certain amount of the charge was consumed in maintaining its operating temperature of 300° C.

Rated at 85kWh with a range of 100 miles when fully charged the lithium ion battery could be recharged 1000 times, giving a operating life of 100,000 miles, before its performance started to reduce. At this stage the battery is still capable of being recharged another 1000 times at least, but it is de-rated to a range of 60 miles. At the end of its working life the battery can be recycled.

With the battery costing as much as the vehicle chassis on its own, innovative ways had to be found to make the vehicle appealing to customers to purchase compared to existing diesel engine delivery vehicles such as the equivalent payload Ford Transit. The economic model that Modec came up with was that the customer purchased the chassis outright at a price similar to the Transit and leased the battery from Modec at a set amount per mile. The leasing charge for the battery, plus the customer's electric cost to recharge it was worked out to be slightly less than the running costs for the conventional diesel vehicle.

So why with all the above technology and effort to produce an innovative and ground braking vehicle did Modec go into administration? It was a combination of factors, the cost of developing the vehicle and putting it into production had been immense. The company had debts of £40 million and sales in Europe had only amounted to just over 400 vehicles since production started in 2007.



To potentially increase future sales Modec had for a while been working with Navistar from America who were going to launch the vehicle in the States, a vast market. An arrangement was made where Navistar would purchase Modec, but at the last minute they pulled out forcing Modec into administration.

Several days after the talk it was reported in the local newspaper that Navistar had purchased the intellectual rights to the Modec vehicle from the administrators. It is now expected that production will be transferred to a factory in the USA in order to serve the North American markets.

Ian Moore

NORTHERN IRELAND BRANCH

Evolution of the modern forage harvester

Speaker: William McKnight, Area Territory Manager for John Deere

Using various visual aids Mr William McKnight, Area Territory Manager for John Deere, summarised the various stages of development of John Deere forage harvester ranges in Europe from the early trailed machines to the advanced self propelled harvesters of today.

John Deere forage harvester milestones in Europe

The first trailed John Deere 34 forage harvester was produced in the US in 1966 and was soon followed by the heavier duty 3400 and 3800 series for European conditions.

They introduced the 5200 and 5400, their first self propelled forage harvesters (SPFHs), in 1972 with around 200hp. With the market for SPFHs developing in Europe, production of the 5400 models commenced in France in 1978. New and more powerful versions were introduced in 1981 with a new quiet cab and the Dura Drum cutter head.

1986 saw the first kernel processor for forage maize crops. Production moved to Germany in 1992 with the 6010 series which featured a more energy efficient straight through crop flow concept, Tech Centre cab and improved metal detection. Kemper (manufacturer of maize headers in Germany) was acquired by John Deere in 1997.

By 2003 the 7000 series featured infinitely variable length of cut (IVLOC).The 7050 series followed in 2008 with advanced concepts of Pro-drive transmission; Harvest Lab crop dry matter monitoring and AutoLOC chop length control. The series now has 6 models ranging from the 380hp 7250 to the latest flagship 7950. The latter is powered by an 812hp 19 litre Cummins engine and the others by John Deere Power Tech engines.

Grass pick ups range from 3 metres wide to 4.5 metres and maize headers up to 9 metres on 12 row versions. The latest innovation due to be launched soon is a dual purpose maize header which can also harvest whole crop.

Europe is now a well established centre for the development and production of SPFHs from several manufacturers for the world market.

The following summary of some of the technical features on the John Deere machines, as described in the talk, demonstrates the sophistication of the systems on the latest generation of SPFHs.

Crop intake

The hydro-mechanical IVLOC (Infinitely Variable Length of Chop) feed roll intake system enables the driver to change chop length on the move and there is now an option for this to be automatic in response to on-the-move crop dry matter monitoring.

Sensitive metal detection is provided by 3 magnets in the lower front feed roll. When the feed shuts down automatically the system can inform the driver where to find the offending item.

L-R Gary Connolly (IAgrE Branch Chairman); Randal McConnell and Robbie Hewitt (both from dealers Johnston Gilpin and Co) and guest speaker William McKnight (John Deere Area Territory Manager).

Cutterhead

The 610mm diameter / 710 wide cutter head on the medium sized machines carries 40/48/56 replaceable separate knives and has reverse sharpening and automatic shear bar adjustment. The straight through crop delivery system is designed to minimise power requirement and wear.

Wearing parts

The quick change and other wearing parts of the crop flow section are available with Dura Line high wear resistant metals to extend service life. This can be up to 5 times that of conventional steel surfaces in abrasive crop conditions.

The main crop flow and spout discharge tip are coated with a unique high tech Busatis ceramic material and there is the option of automatic spout positioning using 3 sensors to control rotation, height & flap discharge settings when filling the trailer.

Engine and transmission management to save fuel

All the John Deere Power Tech engines have 4 valves / head and are using variable vane turbochargers and exhaust gas recirculation to comply with Tier 4 standard emissions.

When full power (as during high output maize harvesting) is not required the Field Mode facility automatically reduces engine speed during headland turns and other crop light or idle times in the field giving fuel savings of up to 10%. It will also vary the travel speed to maintain a constant load on the cutter head if crop density changes in the swath. The Pro Drive variable speed transmission automatically maintains the required travel speed and provides high road speed travel (up to 40 kph) at reduced engine speed when travelling between jobs.

Maintaining traction in the field

There is diff lock control and automatic slip reduction (ASR) using a form of ABS to maintain traction. This also applies to the hydro mechanically driven rear axle on the 4wd versions.

On the move moisture and crop yield measurement

The advance of technology is also most apparent in the optional Automatic Management Solutions (AMS) system as fitted in the 'i' versions of the harvesters.

AotoLOC chop control will vary the chop length in response to on-the-move dry matter monitoring by the discharge chute mounted Harvest Lab meter. This suits customers such as biogas plant operators who prefer to match crop chop length to dry matter and so maintain constant crop density. The German DLG testing station recently carried out field tests confirming that the dry matter results were consistently accurate within 2% variation. This near infra red instrument can also be taken off and used back at the farmyard for testing individual crop samples.

The harvester can also be fitted with Harvest Monitor which uses a crop-flow sensor to record the amount of crop passing through the machine. This information can be presented in various ways such as yield / hectare, work rate, fuel use / tonne and total amount harvested.

For example the 7950i has recorded material throughput of more than 200 tonnes/hour with fuel usage was as low as 0.49 litres / tonne of fresh maize. Yield across the field can be mapped with the StarFire II Differential Global Positioning System (DGPS) readings so that this information can be stored electronically for future farm management reference.

It also makes it possible for contractors to consider different invoicing systems, such as charging by the tonne rather than by area, where crop yields vary between years and seasons. One County Tipperary based John Deere customer already has a harvester suitable for this purpose.

Service backup

As well as the normal routine dealer service it is now possible to equip the machine with diagnostics hardware and software to detect bearing vibration levels and so permit service replacements to be anticipated well in advance.

Discussion

A wide ranging discussion session followed and included topics such as; The use of the automatic management system for fuel saving; The working height of SPFHs in fields; The international market for used SPFHs; Automatic steering systems.

Branch Chairman, Gary Connolly, thanked Mr Mc Knight for his most enjoyable and informative presentation.

Terence Chambers

SOUTH-EAST MIDLANDS BRANCH

Hydraulic Solutions to help meet the challenge of Tier 4 Implementation in Off Highway Vehicles

Sean Kilgallen, Divisional Sales Manager, Bosch Rexroth

THIS was a South East Midlands and IMechE Automotive Division Luton Centre joint branch meeting, which took place on 11 April 2011.

This excellent evening gave us all an insight into how the greatly reduced emissions of the upcoming regulations challenge not only the builders of diesel engines but also vehicle constructors.

Generally known by their US title of Tier 4 Interim and Tier 4 Final, these diesel engine emission regulations on particulates and NOx are synonymous with the EU Stage IIIb and Stage IV regulations and come in over a period of time, mainly dependent upon engine power output.

If you are lost already then you obviously didn't attend the recent IAgrE national conference* either and you need to attend a session on this far-reaching and complex topic!

The Tier 4 emission limits are really the first time that major after-engine treatments have had to be applied to exhaust gases and involves design changes such as larger radiators, diesel particulate filters, air coolers and multi-stage turbochargers for Exhaust Gas Recirculation or the extra equipment for using Ad-Blue for Selective Catalytic Reduction.

These after-engine components add up to a volume that can be six times that of the core engine and was one of the factors that suddenly woke up engine users, rather than engine builders, to the impact that these regulations would have on the whole vehicle.

How to package it all? How to justify the increase in cost? How to get the best fuel efficiency while maintaining productivity? There are also other, less obvious, impacts such as reduced engine braking from a Tier 4 engine that will have an impact on vehicle design and use.

Sean covered many aspects that Rexroth have worked on, often by combining the sensor and engine control capabilities of their parent company Bosch, to provide improved or integrated control of the engine and the vehicle hydraulics or auxiliary drives. The talk touched upon improved engine braking that was required for self-propelled sprayers, integrated control for telehandlers to combine the hydraulic circuit controls with engine control for improved total efficiency, hydromechanical variable transmissions to improve efficiency and productivity of wheel loaders, power storage on excavators using pressure accumulators, the highly successful regenerative braking on refuse trucks (that stop-start every few yards) and the downsized but higher-productivity compact skid-steer type loader.

This compact loader with an engine 'downsized' from 68kW engine to 51kW meant that it would more easily comply with the emission regulations as it only has to meet Tier 4 Interim by 2013; whereas the 61kW engine has to meet Tier 4 Interim by 2012 and the even more onerous Tier 4 Final by 2014. By raising operating pressures and better matching and control of hydraulic pumps, motors, auxiliaries and hydraulic lifts the 'downsized' loader actually has better productivity.

There were loads of things to think about and discuss, not only the many examples of how engine emission regulations are now impacting the design of off-road vehicles but, more importantly, how these design problems can be resolved and, by improving fuel efficiency, within a reasonable payback period.

This was one of two meetings SE Midlands Branch run jointly each year with the local Centre of the Automotive Division of the IMechE and was an excellent topic for both groups of engineers. We take turns in selecting the subject for our joint meetings. This issue obviously has very wide implications for all industries and other Branches might consider using this approach and topic to stimulate and increase attendance at meetings.

Contact Dave Tinker *tinkerd@iagre.biz* for more information including Sean's contact details. Sean is primed and prepared for more talks!

Dave Tinker

**For more details, see also the papers on the IAgrE website from the very recent national conference on "Diesel Engines - The final frontier?" There is discussion and insight into EGR (John Deere's Tier 4 Interim solution) and SCR (AGCO's preferred route) as well as the need for changes to engine oils, auxiliary drives and air and oil filters - all knock-on effects brought about by Tier 4.*

LONG SERVICE CERTIFICATE

J Shewring - 60 years membership

IT seems but a short time since a visitor to our office remarked on my 50 year certificate of membership of the Institution, framed and hung on the wall, amidst, I must ashamedly add, the usual calenders and usual busy office clutter.

Never-the-less it came as a surprise to receive a 60 year certificate, for which I thank you, with the suggestion from the President that I write a few lines covering the past six decades. Where has the time gone and how things have changed?! Perhaps I am one of the few left who saw the rapid change from horse to the tractor.

I started 'country life' at Harper Adams Agricultural College just prior to the outbreak of the War - two stables full of working Shires and a standard Fordson tractor which never left the shed as 'Big Bill Thompson' the agricultural lecturer and farm manager was convinced that tractors panned down and ruined the land. What he would say about the weight of modern beet harvesters and the like is indescribable. Never-the-less he would probably have a very valid point.

Hand milking (Shorthorn cows, no Friesians) was the order of the day and one soon learnt the easiest way to harness up a seventeen hand cart horse!

Then followed a stint at the Henry Ford Institute of Agriculture on their Boreham Estates in Essex - the Institution was a role model in basic practical instruction in mechanisation which consisted of standard Fordsons, Cockshutt and Oliver ploughs. No hydraulics, but when you left you were able to strip and completely overhaul a standard Fordson including the running of the white metal bearings!

The War years saw the standard Fordson, now green as opposed to the vivid orange colour, come to the fore in winning the food battle. Other wartime memories are of assembling CKD (completely knocked down) International Harvester trailed combines shipped and crated over in bits - the first one was an extremely interesting project! Other 'wartime relics' although invaluable at the time were the Massey 20A and 21 self-propelled combines and a few cumbersome yellow trailed Minneapolis Moline engine driven units, not to forget the Australian made Sunshine Harvester self binders.

The then agricultural dealers' workshop staff were strictly divided in hierarchy. There was the agricultural fitter (top dog) and the tractor mechanic. The former was the self binder expert and usually no mean hand on the forge as well. Ransome, Albion, Massey Harris and International were the most sought after agencies, not to forget Bamlett & Bamford. How many of us can remember the root cutters by Corbett, Pierce of Wexford and the like? Probably only those

who now collect cast iron seats.

Many repairs were also carried out by the then numerous village blacksmiths and farriers. Few if any had electric welding sets, many had oxy-acetylene welding kits (remember the Mr. Sif-Bronze advert?). But fire welding ('shutting' in Black Country terminology) was the norm and demanded great skill in judging the exact heat to obtain success.

THE war years were followed by a dearth of new agricultural machinery and such was the scarcity that a regulation was passed forbidding the auction price of used equipment to go above the then price list. Should bidding exceed this price, bidders names were put into a hat for a draw, the lucky one paying new list price.

Any present day dealer with a yard full of over-priced 'trade ins', will be reaching for smelling salts.

In the early fifties, on the subject of education, I recall my early membership days in Norfolk. Colin Foulkes of the Norfolk Education Committee, who did tremendous work in promoting the Institution (East Anglia was the original branch), organised evening machinery classes on the principals and maintenance of farm machinery held in the village schools and local pubs.

Considered simplistic by today's standards classes were held on subjects such as the principal of threshing and the combine harvester; two and four stroke engines; and the secrets of the magneto and its associated impulse starter. However, they were well attended and led to lively discussions. On reflection it marked the final end of the horse era and the rapid rise in mechanisation.

It is heartening to note that the Institution continues to actively support apprenticeships and qualification with the support of the leading equipment manufacturers, and may it continue to do so. The importance of this aspect cannot be over emphasised.

Earlier, I also did a stint, the experience of which I am forever grateful, on the engineering test section at The National Institute of Agricultural Engineering at Askham Bryan. There were many standard Fordsons and trailed ploughs with a wide variety of tractors for test, the likes of which are now keenly sought after by the veteran enthusiasts for the rallies. There were also Field Marshall Mark II and David Brown Cropmasters, not to forget the gas powered Fordson conversion fuelled with anthracite.

Following relocation to Silsoe and various name changes, the NIAE was finally wound up and the staff dispersed. Perhaps their significant role in experimental work had become of less importance as the large tractor manufacturers gradually built up their own development departments urged on by increasing world wide competition.

AFTER nearly twenty-five years in the industry I changed direction, or to be more explicit was customer bulldozed into meat plant engineering. This was very akin to agricultural engineering in that livestock and meat products vary as much as do soil types and weather conditions in farming.

An agricultural engineering background is an excellent basis for post harvest food production engineering, dealing with a wide variety of engineering facets. The work change brought about by a change in lifestyle in that foreign travel became the norm working in most third world countries and the Far East on meat and allied projects.

Here one saw the value of the agricultural engineer in the more basic form - adapting and simplifying equipment and methods to suit the local environment and skill standards. There is huge potential for food production in most third world countries embracing the abilities of the agricultural engineer, but sadly this potential will not be fulfiled until peaceful regimes are established.

It is in these regions that the more basic skills and knowledge of the engineer is required. The broken-down most sophisticated machine is of no help when many of the population are living in poverty and near starvation. Of more importance than electronic diagnostics is the ability to provide such essentials as a clean water supply and instruction in the basic maintenance of a combustion engine even down to checking water and oil levels.

THIS poses the question as to whether agricultural machinery is becoming too sophisticated. Is this sophistication customer or sales led? Sales personnel are convinced that there is an ever increasing need for 'additions' in order to entice the customer and keep ahead of the competition. Hand in hand with this policy comes more complication, price increase and need for more specialist maintenance equipment.

Talking to many users, one gets the impression that the customer would prefer a more simplistic approach with the advantage of increased reliability and simpler, more economical repair bills.

Last harvest on my own farm, the contractor's combine broke down during the first week of August on the first field and received innumerous visits from the dealer's mechanics. Success in re-starting the engine was only achieved four weeks later after harvest had been completed utilising a hired machine.

As the fault apparently lay with the engine failing to start, the question is posed as to whether the training now being provided is lacking in basics with too much emphasis on electronics and the like. A sound apprenticeship embracing mechanical engineering is a requirement which can then be followed by specialist course training.

Are we approaching the stage when we have queues of experts awaiting to programme and repair our computer, but cannot find anyone who can fit a new washer to the bathroom tap?

The Autumn 2010 issue of *Landwards* contained the report on training ('*College Day*'), held at Cranfield University and was attended by both manufacturers and educationists.

Reading the report, I am left with the impression that the need for this essential "fundamental education", call it basic training if you wish, is being overlooked in the rush to keep up with the speed of today's technical advancements and production of the specialist.

Pure agriculture and associated engineering at our own county Agricultural College would appear to be on a back burner with the emphasis and expenditure on equine and other sport activities. I may be wrong, but this view has been echoed by others which I find is disturbing.

The economic climate of America and European countries has suddenly taken a dramatic change, heralding in an urgent need of frugality. What effect is this going to have on our industry and future equipment development.

I have been privileged to see the change from live horse power to mechanical horsepower, from post-war equipment scarcity to the advent of self-tracking combines and the like. What will the next sixty years bring?

One thing is for sure, with a worldwide population expansion, increased food production will be a necessity and the Institution will have to be playing its part in bringing about the necessary achievement.

J. Shewring

I suggested present day training appeared to lack an emphasis on basics.

To illustrate my point, these pictures show a field drilled this spring by an agricultural contractor - not a pretty sight!

Is the result depicted due to a lack of operator training or lack of pride in one's work? When challenged the operator put it down to 'too deep drilling'.

Membership changes

Admissions

A warm welcome to the following new members:

Fellow

Lawrence D (Norfolk)

Member

Clarke R (Leicestershire)
Connolly J M (Lincolnshire)
Lawton S E (Pembrokeshire)
Rowley S (Shropshire)

Associate Member

Bowers S (Cambridgeshire)
Delahay P (Shropshire)
Johnson R A (Staffordshire)
McCullogh N (N Ireland)
Misiewicz PA (Essex)
Moloney J (Australia)
Sharratt B (Hampshire)
Webb C J (Hampshire)
Williams G W (Shropshire)

Associate

Freeman T J (Middx)
Koutsovoulos K (Greece)
Lockhart A W J (N Ireland)
Mees C J (Warwickshire)
Mees E (Warwickshire)
Miller M (Hampshire)
Roberts S (Warwickshire)
Sheehy J (Ireland)
Waters M J (Suffolk)
Winterbottom A W (Yorks)

Pre Prof

McInerney P (Ireland)

Student

Barony College

Agnew T
Alexander P M
Cameron C M
Courton A R
Craig A J
Creamer G
Dixon A
Henry M
Johnston C J
Jones S
McKinnon C
MacLean F
Metcalfe M J
Paton M G
Ramsay A
Robertson R C
Robinson S
Smith C J
Wellburn R G
Young S

Bishop Burton College

Arnold A
Branton L
Burton J
Campbell C
Chester J
Clarkson D
Fraser-Burns J
Harrison O
Hawkins D J D
Hopper M
Leyland B J
Paton D W F
Reed W

Brooksby Melton Col.

Bell B
Black K A
Bower J
Cowin J
Eggleston C
Kane C
Simmons T
Taylor A
Taylor B

Cranfield University

Al-Asadi R
Halcro G J
Okparanma R N
Sanchez Martinez P J
Theuer J
Yang H

Harper Adams Uni. Col.

Chico-Santamaria L

Myerscough College

Baker A
Baldwin R
Ball M
Brown S M
Cross S
Davies M O
Dobson C M
Dooley R
Ginger K
Goodson J
Hayton R S
Hilton B
Hilton S
Jeffries J
Lloyd E
Mackereth C
Penswick S J
Prescott T S
Roberts M
Smith S L
Wilkinson R

Plumpton College

Ansell J
Brooker A
Brown A
Calway M
Coleman M
Dadswell K B
Freeston S
Gardiner J
Garrett M
Graff J
Hatcher J
Hill T D
Horace A J
Jones S
Lawrenson R
Leggat C
Lindsay J
Miller A
Morley L
Overy D
Pont N
Robertston B
Smithson H
Strevett L E
Sturgeon D
Sweetman W
Tiffin B W
Widgery P
Wooller N

Reaseheath College

Alexander O
Almey L
Barker J
Benn E P
Bolton S
Boyden A P
Bryant J
Bufton W
Burns-Brodie A L
Butler C
Carman G R
Carnie J
Chapman C
Chapman T L
Cox B E
Court M
Cree W R
Deakins A F
Deach A W
Dolbear O J E
Done S J
Emery R J
Evans D H
Farroll A
Flack M
Foster J P
Fox J
Fuller P J
Gedney A
Griffith D L
Griffiths S
Guise L
Gwilt J
Hague P M
Hales J L
Harper A
Haynes M
Hickinson J
Hitchenson L
Horne S
Hughes M
Hurdman J W
James A
James C
James D
Johnston S
Jones H
Keen T
Langle GG W
Lunt T
Morton B G
Mills A
Neville S
Newman J
Norton F
Prentice L
Rathbone S
Redfern J
Reed J
Reed J
Reed R J
Roberts D W
Rogan S
Sadowski W A
Scott J
Scott M
Smith T G
Strickland J
Taylor T
Wakelin J P A
Wallbank M J
White S A
Whittall D
Wilkson T
Woodland L
Worthington C A
Wyers C

Strathclyde

Wilson M W

Inst. of Tech., Tralee

Ashe J
Buckley D T
Carroll S
Cleary P
Considine V J
Galvin J
Lucey R M
Lynch A
Morris P
O'Donoghue D T
Sheehy J T
Thompson J D
Walsh J

Re-admissions

Associate

Coker B B (USA)
McDevitt J (New Zealand)
Peets S (Estonia)

Associate Member

Willner M J (Shropshire)

Deaths

Davies R H (Shropshire)
Isle PH (Durham)

Transfers

Fellow

Rickson R J (Bedfordshire)
Yule I J (New Zealand)

Member

Merrall R J (Worcestershire)
Shewring JJ (Norfolk)

Associate Member

Almey S (Cambs)

Associate

Farmer G J (Warwickshire)
Fryer A S (Lincolnshire)
O'Hare D J (Cambridgeshire)
Whitehead F J (Shropshire)

Engineering Council

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

Registrations

EngTech

Clarke R (Leicestershire)
Connolly J M (Lincolnshire)
Lawton S E (Pembrokeshire)
Shewring JJ (Norfolk)

CEnv

Perera N R (Essex)

Long service certificates

Name	*Grade*	*Date of anniversay*
60 years		
John Cecil **Weeks**	HonFIAgrE	1 May 2011
Mervyn Renouf **Billot**	IEng, MIAgrE	9 May 2011
50 years		
Michael **Anderson-Upcott**	MIAgrE	27 Jun 2011
35 years		
Alan Mervyn **Jones**	AIAgrE	13 Apr 2011
Anthony Graham **Cox**	IEng, MIAgrE	2 Jun 2011
Clifford Linden **Secker**	AIAgrE	21 Jun 2011
Harold Watson **Barr**	MIAgrE	21 Jun 2011
25 years		
Richard Peter **Stock**	MIAgrE	11 Apr 2011
Stuart James Michael **Renfree**	AIAgrE	21 Apr 2011
David John **Welch**	MIAgrE	29 May 2011
Edward George **Ward**	MIAgrE	29 May 2011
Peter John **Williams**	CEng, MIAgrE	9 Jun 2011
Laurence Edward Daniel **Smith**	MIAgrE	12 Jun 2011

Academic members

Askham Bryan College
Askham Bryan
York
YO23 3FR

Babcock International Group
Mere Way
Ruddington Fields Business Park
Ruddington
Nottinghamshire
NG11 6JZ

Barony College
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 College
Easton
Norwich
Norfolk
NR9 5DX

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

Harper Adams University College
Newport
Shropshire, TF10 8NB

Institute of Technology Tralee
Clash
Tralee
Co Kerry
Ireland

Myerscough College
Myerscough Hall
Bilsborrow
Preston
Lancashire PR7 0RY

Oatridge Agricultural College
Ecclesmachan
Broxburn
West Lothian
EH52 6NH

Pallaskenry Agricultural College
Co Limerick
Ireland

Plumpton College
Ditchling Road
Lewes
East Sussex
BN7 3AE

Reaseheath College
Reaseheath
Nantwich
Cheshire, CW5 6DF

Royal Agricultural College
Cirencester
Gloucester
GL7 6JS

Scottish Agricultural College
SAC Ayr Campus
Auchincruive Estate
Ayr
KA6 5HW

Sparsholt College
Sparsholt
Winchester
Hampshire
SO21 2NF

Willowdene Training Ltd
Chorley
Bridgnorth
Shropshire
WV16 6PP

Wiltshire College - Lackham
Lacock
Chippenham
Wiltshire
SN15 2NY

Commercial members

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

British Agricultural & Garden Machinery Association (BAGMA)
Entrance B, Level B
Salamander Quay West,
Park Lane, Harefield
Middlesex,
UB9 6NZ

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

Garford Farm Machinery Ltd
Hards Lane
Frognall
Deeping St James
Peterborough
PE6 8RR

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
De Salis Court
De Salis Drive
Hampton Lovett
Droitwich
Worcestershire
WR9 0QE

White Horse Contractors Ltd
Lodge Hill
Abingdon
Oxfordshire
OX14 2JD

We want to hear from members.
Send branch reports or correspondence to:

The Editor, 25A New Street, Salisbury, Wiltshire, SP1 2PH.
Email: *chris@nelsonpublishing.co.uk*
Or the IAgrE Communications Officer, Marion King on *pressroom@iagre.org*

EVENTS

IAgrE Branch Meetings and Events

Southern Branch
Weds 07 September 2011 starting 10am
IAGRE SOUTHERN BRANCH SUMMER VISIT
Venue: am: Stockbridge, Hants; pm: Whitchurch, Hants
The morning is taken up with a visit to Leckford Estates. This 4,000-acre estate supplies Waitrose Stores across Britain. It is a modern agricultural operation with 600+ dairy cows, sheep, grain, vineyard and many other items of interest. Guided tour on tractor towed passenger trailer included. Lunch, followed by a visit to Silk Mill, Whitchurch, Hants from 2pm, a working silk mill powered by original water wheel. Fee: OAP: £3, Adult: £3.50, Children: £1.75. Escorted tour £1. Please register a place by contacting the organiser, Denis Welstead (Highfield, Hookpit Farm Lane, Kings Worthy, Winchester SO23 7NA).
Tel: 01962 880696 Email: djwelstead@btinternet.com

Ireland Branch
Tues 23 November 2011 starting 19:30
RENEWABLE ENERGIES FOR THE AGRICULTURAL SECTOR
Speaker: Ag Eng Department, University College Dublin
Venue: FTMTA Headquarters, Nass, Co. Kildare
For further information please contact the Branch Secretary: Michael Ryan
Tel: 00353 61 393100 Email: pallaskenryengineering@eircom.net

Other Events:

Monday 20 June 2011 starting 5pm
Environment Agency
IMPROVE AGRICULTURAL PRODUCTIVITY WITH RESOURCE EFFICIENT MATERIALS
Venue: Witney Lakes Resort, Witney
Free half day workshop for farmers, growers, livestock producers, market gardeners, horticulture businesses, FACTS advisers, agronomists, and foresters. High performance, quality assured recovered materials can help you increase efficiency and stay competitive. Hear from the experts and other users, see technical spec and market information. Similar event being held on 30 June at Hadlow College Tonbridge (9am to 1pm). For further details contact Eva Beresford.
Tel: 020 8816 7546
Email: eva@envcouncil.org.uk
Web: www.environment-agency.gov.uk/aboutus/wfo/epow/129200.aspx

Tuesday 21 June 2011 starting 14:00
Controlled Traffic Farming
CTF WORKING GROUP MEETING
Venue: August Farms, Signet Hill, Burford Oxfordshire OX18 4JE
CTF Discussion and Farm Walk. Any queries please contact tim@ctfeurope.eu or visit the CTF website
Web: www.controlledtrafficfarming.com/content/istro.aspx

Wednesday 22 June 2011 to Thursday 23 June 2011
On-Farm Energy Generation:
SECURING REVENUE STREAMS FROM LAND BASED ENERGY
Two days packed full of information, covering all aspects of renewable energy. Programme and registrations details from the following link:
Web: http://mark-allen-group.msgfocus.com/files/amf_mark_allen_group/project_32/PDFs/On_Farm_Energy_2011_Programme.pdf

Thursday 23 June 2011
Public Service Events
RENEWABLE ENERGY IN THE PUBLIC SECTOR; UNDERSTANDING OPPORTUNITIES.
Venue: The Barbican, London
Understanding the opportunities offered by programmes such as the Renewable Heat Incentive and the Feed-in-Tariff is important during this time of austerity. With the launch of the Green Investment Bank hotluy anticipated, and an energy white paper expected in the spring there is a great deal to be discussed. Speakers include: RtHon Chris Huhne MP; Sara Parkin (Forum for the Future); Dr David Pencheon (NHS Sustainable Dev Unit); Cllr Gary Porter (LG Group); Ray Morgan (Woking Borough Council; Barbara Hammond (West Oxford Community Renewables). For further information and to register on-line visit public service events website.
Tel: 0161 832 7387
Email: agreally@public-sector-events.org.uk
Web: www.publicserviceevents.co.uk/event/overview.asp?ID=183

Thursday 30 June 2011 starting 9am
Environment Agency
IMPROVE AGRICULTURAL PRODUCTIVITY WITH RESOURCE EFFICIENT MATERIALS
Venue: Hadlow College, Tonbridge
Details same as 20 June event. For further details contact Eva Beresford.
Tel: 020 8816 7546
Email: eva@envcouncil.org.uk
Web: www.environment-agency.gov.uk/aboutus/wfo/epow/129200.aspx

Wednesday 13 July 2011 to Thursday 14 July 2011
Aqua Enviro
CONSTRUCTED WETLANDS - DOMESTIC, COMMERCIAL AND INDUSTRIAL - CWA ANNUAL CONFERENCE
Venue: The National Coal Mining Museum, Wakefield, UK
This conference aims to share and promote best practice in the many applications of constructed wetlands for both domestic and industrial sectors. There will be 20 technical presentations over the 2 days and delegates will also have the opportunity to visit the wetands on-site at the National Coal Mining Museum. For further information visit the website or contact Sarah Hickinson.
Tel: 01924 257891
Email: sarahhickinson@aquaenviro.co.uk
Web: www.aquaenviro.co.uk

Tuesday 06 September 2011 to Thursday 08 September 11
IOG
IOG SALTEX 2011 - EXHIBITION
Venue: Windsor Racecourse, Berks
An exhibition attended by open space management professionals and contractors - from groundsmen and greenkeepers through to play officers, architects, designers and surveyors as well as local authority and outdoor leisure facility managers.
Web: http://www.iog.org/shows-and-events/iog-saltex

Wednesday 14 September 2011
AEA
TILLAGE-LIVE
Web: http://www.tillage-live.uk.com/

29 September 2011 to 30 September 2011
Soc for Engineering in Agriculture (SEAG)
'ENGINEERING IN AGRICULTURE - DIVERSE CHALLENGES INNOVATIVE SOLUTIONS'
Venue: Hotel Grand Chancellor, Surfers Paradise, Gold Coast, Queensland, Australia
This event is the 2011 CIGR International Symposium of the Australian Society for Engineering in Agriculture. The theme will include: irrigation, water and environmental management; post harvest technologies and processing; Structures, equipment and environment; Power & Machinery; Precision agriculture and livestock management; Plant production and handling; Information management. There will be associated meetings and workshops and a pre-congress tour including a conservation agriculture field on 27 and 28 Sept. Early Bird booking til 29 April 2011 Symposium Secretariat - Engineers Australia
Tel: 02 6270 6563
Email: seagconference@engineersaustralia.org.au
Web: www.seagconference.com.au

Friday 11 November 2011 to Saturday 12 November 2011
VDI Max Eyth Society for Ag Eng and EurAgEng
69TH LAND TECHNIK-AGENG 2011 - SOLUTIONS FOR INTELLIGENT AND SUSTAINABLE FARMING
Venue: Hanover
Tel: +49(0)211 62 143 59
Fax: +49(0)211 62 141 29
Email: koenig_b@vdi.do
Web: www.vdi.de/landtechnik-ageng

Monday 14 November 2011 to 16 November 2011
Aqua Enviro
16TH EUROPEAN BIOSOLIDS & ORGANICS RESOURCES CONFERENCE, SEMINAR & EXHIBITION
Venue: The Royal Armouries, Leeds
This event attracts experts in the area of biosolids and organic resource handling, treatment and recycling. For further details see website or contact Sarah Hickinson.
Tel: 01924 257891
Email: sarahhickinson@aquaenviro.co.uk
Web: www.european-biosolids.com

Monday 28 May 2012 to Monday 02 June 2012
BALWOIS
FIFTH INTERNATIONAL CONFERENCE : BALWOIS 2012 ON WATER, CLIMATE AND ENVIRONMENT
Venue: Ohrid, Republic of Macedonia
Web: www.balwois.com/2012

If anyone is interested in car sharing to any of these events you can liaise with fellow members by using the discussion forum in the Members Only section of the IAgrE website - www.iagre.org/memaccess.php

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

EVENTS OF INTEREST

JUNE 2011

23-26 Royal Highland Show, Edinburgh
29-30 Royal Norfolk Show

JULY 2011

2-3 Smallholders' Show, South of England Showground, Ardingly
2-14 Great Yorkshire Show
15-17 Kent County Show
18-21 Royal Welsh Show
23-25 CLA Game Fair, Blenheim Palace, Oxfordshire
26-28 New Forest & Hampshire Show

AUGUST 2011

3-4 Bakewell Show
3 North Devon Show
6 Garstang Show
9-10 Anglesey County Show
16-18 Pembrokeshire County Show
19 Dunster Show
25 Melplash Show
29 Glendale Show

SEPTEMBER 2011

4-5 Spoga-Gafa 2011, Cologne
4-7 Autumn Fair, Birmingham NEC
6-7 Dairy Event & Livestock Show, Birmingham NEC
10 Romsey Show
10 Usk Show
10 Kington Show
17-18 Royal Berkshire Show
19-21 GLEE 2011, Birmingham NEC

OCTOBER 2011

1-2 South of England Autumn Show & Game Fair, Ardingly
5 Dairy Show, Bath & West Grounds
9 East of England Autumn Show
22-23 Countryside Live, Harrogate
27-29 Green Industry & Equipment Expo, Louisville, USA

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