Landwards

@IAgrE

The professional journal for the Institution of Agricultural Engineers

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In this issue...

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Dr Emma Wilcox
Chief Executive Officer of the
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IAgrE

Contents:

Peter Hill (centre) receiving the IAgrE sponsored British Guild of Agricultural Journalists (BGAJ) award from CEO Charlie Nicklin (right) accompanied by BGAJ Chair Johann Tasker at the recent Cereals 2022 event

Landwards is published on behalf of the IAgrE by FarmSmart Publishing Limited.

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Design – Ann Newbold, Smart Design and Print www.smartdesignprint.co.uk

Editor's Welcome

What a difference a few months makes? Whilst writing the last edition we were furrowing our brows at the cost of electricity and inflation, and now sadly we are watching war unfold.

Given the human tragedy we are witnessing it seems trite to mention that food and farming is coming firmly back into the public eye, perhaps better to consider being generous and clicking on this link https://donation.dec.org.uk/ukraine-humanitarian-appeal .

Your humble correspondent is working his way through a recent book called Farming month by month from 1943(!) and he was drawn to this part "Few of the townsfolk, who admire the scenery from car or train windows, realize what the country would look like if left to its own devices, and care little that the farmer has to make great sacrifices and efforts to feed the people of the towns. It is only at times of national crisis that they realize the importance of home-produced foods and clamour for the farmer." Whilst the terminology is not perhaps how one would write today, the sentiment perhaps is.

Our role as agricultural engineers is to support farmers, the land-based sector and society at large with technologies and solutions. Let's not forget it.

This summer edition welcomes a new President (p8 and 12). We also say goodbye to some great friends of the Institution (p22), acknowledge well-deserved award winners (p16), and enjoy some time with international manufacturers.

I trust that there is something for every reader in this edition. As ever please let me know if you have any suggestions for future editions.

Andy Newbold

Editor

andy@farm-smart.co.uk

Reunion of past students of the National College of Agricultural Engineering

There is a reunion of past students and partners who attended the National College of Agricultural Engineering at Silsoe Bedford, intake years 1 to 7, and also staff members during those years (1962-1968).

Where: The Cross Keys Restaurant, 13 High Street, Pulloxhill, Bedfordshire. MK45 5HB.

When: Thursday, June 30 2022

Time: starting at 11am for refreshments followed by a buffet lunch (1pm) and a rendition of Silsoe 'Then and now 'and 'What I did after Silsoe'.

Lunch: buffet lunch £25 per person with drinks extra.

Please RSVP:

Paul Baskerville: **phbaskerville@yahoo.co.uk** and

Graham Thompstone: **graham.thompstone@gmail.com** with the following information:

1.Confirmation that you will attend the event with your payment for the lunch to Graham.
2. BACS payment to: Rainsbury House: sort code 20-68-15 account number 73847152 with a transfer reference the year you started Silsoe and your surname (e.g, 66Thompstone - Note this is a business account.)

The Institution loses a true friend

The farming industry has been paying tribute to Caroline Drummond MBE, LEAF's chief executive, who recently passed away following a short battle with illness.

"Caroline was a true friend of the Institution of Agricultural Engineers, and she recognised the intrinsic role that all land-based engineers played within her passionate, lifelong drive to demonstrate farming and the environment," Charlie Nicklin, CEO of the Institution said.

Caroline's involvement with IAgrE stretches back over many years. She was awarded the IAgrE Award for Contribution to the Land-based sector in 2017. Her citation read:

"Caroline Drummond is the Chief Executive of LEAF (Linking Environment and Farming). She has been running the farming and environmental charity since it started in 1991. Caroline graduated in agriculture and has broad practical agricultural experience gained from both the UK and overseas. Her work at LEAF focuses on encouraging more sustainable farming practices and building a better public trust and understanding of farming, food and the environment – values that she is personally extremely passionate about.

In the 2009 Queen's Birthday Honours, Caroline was awarded the MBE for services to the agricultural industry and has an Honorary Doctor of Science from Harper Adams University, a Nuffield Scholarship on 'Health by Stealth - What can farmers learn from science to improve the nutrition of our food', and was awarded Honorary Fellowship of the Society of the Environment.

She has been a director of the Rothamsted Research Institute, a governor for the Royal Agricultural University, a trustee for CPRE (Council for the Protection for Rural England), and a director for IGER (the Institute of Grassland and Environment Research) and the Oxford Farming Conference.

She was a Fellow of the Royal Agricultural Societies (FRAgS), a Fellow of the Institute of Agricultural Management, a Fellow of the Royal Society of Arts, a Fellow of the Society of Biologists, a Chartered Environmentalist and a director for LEAF Marque."

On more than one occasion she has contributed to the Institution's annual Landwards conference including the 2017 Engineering Innovation for Water Management in a Changing Climate conference.

Again in November 21, Caroline supported the Institution's Future Fuels in Agriculture conference. Head here to watch again **https://www.youtube.com/watch?v=0NPMvtLH-UU**

The Institution has lost a dear friend and passes on its condolences to her family.

Steve Constable, appointed President of the Institution of Agricultural Engineers (IAgrE)

Steve Constable, managing director of Spaldings Limited is the new President of IAgrE.

Steve has worked for Spaldings for 32 years and was previously operations director before being appointed managing director in 2019.

He studied a degree in agricultural engineering at Harper Adams University and has an MBA in Business Management and Marketing.

Steve became President at an official ceremony at the Institution's annual AGM and award ceremony held this year at the Claas UK headquarters in Little Saxham, Suffolk. His Presidency will last for two years.

Steve said: "I am privileged to be appointed President of the IAgrE at a time when the need for qualified engineers, researchers and academics has never been more important. Recent events such as Covid, Brexit and the conflict in the Ukraine have highlighted to all stakeholders the importance of producing food efficiently, effectively and with the least harm to the environment. I am committed to working hard in helping develop this Institution to remain at the forefront of this exciting industry."

President Elect is Dr Mark Moore FIAgrE. Mark is Director, Government Affairs at AGCO.

Young engineer award winner – Stephen Davies from Llanymynech, Powys

Stephen Davies from Llanymynech was presented with the Young Engineer Award on day two of farm machinery show LAMMA in Birmingham on May 5. His entry – the DTec 200 – is a feeding and mixing bucket, which when attached to a small tractor or telehandler allows accurate mixing and delivery of feed rations to cattle. It is believed to be the first such product for use on a small scale.

"I'm really surprised and delighted to win," said Stephen. "Winning the award will give me more confidence and I hope now to push the product on more." The first DTec 200 will be available for sale in October this year and Stephen now has several other projects in the pipeline too.

Presenting the award, Robert Willey from sponsor Househam Sprayers said he was particularly impressed with Stephen's entry because of its role in increasing efficiency on farms. "All farms, whether they are producing crops or livestock, have got to use inputs in the most cost effective and sustainable way."

Charlie Nicklin, chief executive of the Institution of Agricultural Engineers, which supported the award, agreed: "Stephen's entry was impressive because he came up with a novel system that was commercially viable for a smaller farm.

"It is essential that we promote agricultural engineering in the UK and encourage more people into the industry. Awards like this are really important – they highlight individuals and the great work that is going on."

The other finalists were: Will Dunn, creator of the Ag-Drive app; Thomas Land for the Landwrx IRM-8R inter seeder; Hywel Phillips who developed a modified 40ft combine header trailer; and Colin Taylor for his Rumex intelligent spraying system.

Have you been trying to call IAgrE

We're sorry if you have had difficulty getting through to us at IAgrE recently. We hope that BT have now resolved the issues but if the service goes to answer-phone then please do leave a message as these always get to us.

A reminder of the extensions:

Option 1 for Alison Chapman
Membership Secretary

Option 2 for Sarah McLeod
Business & Events Secretary

Option 3 for Jo Martindale
Finance Officer

Option 4 for Marion King
PR & Communications

Option 5 for Charlie Nicklin
CEO

We look forward to speaking to you.

From the CEO's desk ...

The sun's shining, the grass is being chopped and we're visiting LAMMA? That doesn't seem right, usually it's wet and cold!

The show's timing, the lack of some key manufacturers and inclusion of some machinery dealers has certainly caused some debate. It was a shame to not see the large tractor makers there, but it felt like a successful show and was well attended.

IAgrE sponsored the 'Young Engineer' award with Househam Sprayers which, against some stiff competition, Stephen Davies won the award for his cost-effective mixer/feeder bucket. It's great to see the various ideas submitted and hopefully more will be made of this next year when the innovation awards return. I for one would like to see more engineering and technology focus at the show, maybe a 'technology zone' supported by colleges, universities, and research centres. Many families with young people and students visit the show, it would be a great way to showcase the different parts of our industry and the careers surrounding them.

Face to face at last

Two very notable events in IAgrE were held, more so because they were at last face-to-face! The first was the meeting of the Executive Committee, albeit partly virtual using our new hybrid meeting capabilities, which will be useful going forward for other committee meetings. The second notable event was of course our Annual General Meeting and awards ceremony, held at Claas UK's impressive new offices in Saxham, Suffolk. It was great to meet people face-to-face and celebrate the achievements of some of our members, which will be covered in more detail in this edition.

The AGM of course handed over the IAgrE presidency from Paul Hemingway to Steve Constable, and announced our new President-elect Mark Moore. I would like to formally thank Paul for his hard work and support during his term, which I'm sure has been very different to previous presidents due to the pandemic. I'm very much looking forward to working with Steve over the next couple of years and moving the institution forwards. Our day in Saxham culminated in an excellent tour by our hosts of their brand new facilities, including the impressive training facility. Claas is the first original equipment manufacturer to be offering in-house apprenticeship training for their dealer technicians in the UK, which I'm sure will be of a very high standard.

Accreditation

Carrying on with the theme of education, the IAgrE Accreditation Team visited Munster Technological University in Kerry, Ireland to carry out a successful re-accreditation of the university's BSc (Hons) and BEng Agricultural Engineering programmes for EngTech, IEng and CEng. Whilst at the university we were given a tour of the new AgriTech Centre of Excellence (ACE) where they were experimenting with virtual and augmented reality tools for service and diagnostic work.

The university has also secured £30M funding for a new Agricultural Engineering building which will commence construction later this year. Cranfield University has also undergone re-accreditation work for the three MSc programmes we accredit in Food Systems, Food Sustainability and Environmental Engineering for CEnv registration. Both universities have excellent facilities and highly professional, enthusiastic staff. Thank you to Chris Watts and Steve Parkin for their very thorough assessment work leading up to and during both university visits.

Charlie Nicklin C.Eng MIAgrE

ceo@iagre.org

An Admin note:

We've introduced a new direct debit provider to remove the old paper-based system for new members.

This is also being rolled out for existing members using the direct debit payment method so your bank may contact you for confirmation.

It's worth noting you pay £5 less using direct debit and it also reduces a significant amount of administration for us for annual subscriptions.

Thank you to those that have paid their subscriptions to date.

Please contact Jo at;

finance@iagre.org

for further details.

President's Musings

Steve Constable

Cometh the hour, cometh the engineer, incoming President Steve Constable reflects on where we are and our direction of travel.

Welcome to my first musings as President. I would like to acknowledge the outgoing President Paul Hemingway who has worked tirelessly over the past two years for the institution, with the added challenges caused by the pandemic and lockdown resulting in having to adapt to a very different way of working and still delivering outstanding service to all members with the help of Charlie, the secretariat and several talented individuals. I would like, on your behalf to thank Paul for his leadership and service to the institution under those challenging circumstances and for handing it over in good shape.

A changing world

It has been well documented that the world is facing unprecedented threats from climate change, food availability and clean water capacity. We can already see the fragility of the current systems and how rapidly external influences such as conflict, pandemic and of course Brexit can change economic stability to one of increasing input costs leading to higher food costs for the consumer and in some cases shortages in the supply chains.

As I write this, the governor of the Bank of England has been criticised for suggesting that the country is facing potential food shortages of apocalyptic proportions due to the Ukrainian conflict.

The most recent UN estimate predicts an increase in the world's population from the current 7.9 billion to around 9.7 billion in 2050 with the UK being 67.22 million today and a Eurostat estimate of 87 million by 2050.

These are difficult subjects, however, potentially a very exciting time to be involved in the land-based industries. All these challenges mean the need for highly qualified scientists, technologists, engineers, academics, researchers and managers from all land-based disciplines has never been greater.

It could be argued that this institution is the cornerstone in developing and maintaining the professional standards and qualifications required by industry in order to feed the population, it should be no surprise that many of our members are already operating at the forefront of high-tech complex systems aimed at developing our supply chains in order to ensure that safe food is available and affordable to all whilst considering the added challenge of sustainability and climate at its core.

We can clearly see that the expected increase in population means that traditional agricultural methods of production will not be sufficient to satisfy that demand let alone meet government targets for carbon capture whilst maintaining production standards.

Agri-tech

There are many recent start-up Agri-tech companies in the UK who are gaining funding in order to develop the industry and make it fit for purpose with new and exciting methods that challenge existing thinking. These can be broadly categorised into agricultural software, non-software agri-tech, satellite imaging/mapping and urban farming. Every one of these ventures have founders and teams from a diverse background who should be encouraged to be members of the IAgrE, and we need to present to them the reasons why they should join.

Finally, I am very keen to continue encouraging the development of the younger generation to join the IAgrE as I did when studying engineering at Harper Adams. We need to highlight the advantages they can gain in their careers with professional qualifications and ongoing CPD but most of all the networking opportunities with highly qualified and knowledgeable individual members who are forward thinking.

Biosystems Engineering

Biosystems Engineering, owned by the IAgrE, and the official scientific journal of EurAgEng, is published monthly with occasional special issues.

Biosystems Engineering

Volume 214, February 2022,

Pages 165-176

Airflow temperature and humidity patterns in a screenhouse with a flat insect-proof screen roof and impermeable sloping walls – Computational fluid dynamics (CFD) results

Meir Teitel, Shay Ozer, Vered Mendelovich

Institute of Agricultural Engineering, The Volcani Center, Israel

Insect-proof screenhouses are commonly used to grow plants in warm climates. However, there is relatively little literature on their microclimate compared to greenhouses. This study presents computational fluid dynamics (CFD) results of airflow, temperature, and humidity ratio patterns in a screenhouse with a roof consisting of a large flat insect-proof screen and impermeable walls. First, vertical profiles of velocity, temperature, and humidity at the centre of the screenhouse were obtained by 2D steady-state CFD simulations and validated by experimental results. The main deviation of the CFD results from the experimental results was observed with the air velocity in the upper region of the screenhouse. Inflow and outflow in the leeward and windward parts of the flat roof were observed, respectively. This resulted in large-scale airflow within the screenhouse opposite the outside wind direction at the canopy level. The results suggested that the leeward section of the screenhouse is warmer than the windward one and has a lower humidity ratio. Large-scale rotating airflow formed in the centre of the screenhouse, close to the roof, a large area with a humidity ratio similar to ambient conditions.

Biosystems Engineering

Volume 215, March 2022, Pages 143-155

Intelligent ballast control system with active load-transfer for electric tractors

Shengli Zhang, Bin Xie, Changkai Wen, Yirong Zhao, Yuefeng Du, Zhongxiang Zhu, Zhenghe Song

College of Engineering, China Agricultural University, Beijing, China

Beijing Key Laboratory of Optimised Design for Modern Agricultural Equipment, Beijing, China

State Key Laboratory of Power System of Tractor, Luoyang, China

For agricultural tractors fixed ballast cannot provide high-efficiency traction under time-varying resistance in the field. Combining the characteristics of electric tractors with high-weight battery packs, this paper develops an intelligent ballast control system including a battery position adjustment (BPA) mechanism and an active ballasting control method. A tractor traction performance prediction model was developed to predict traction performance parameters and load-transfer in real time. The movement of the battery pack enables load-transfer based on the BPA. To ensure the lowest sliding rate of optimal tractive efficiency, an active ballasting control method based on a particle swarm optimisation algorithm was proposed that enabled control of the optimal battery position. The results of a hardware in the loop test showed that the average tractive efficiency in the mode of active ballasting mode higher than that of the no ballasting mode (> 6.6%) and fixed ballasting mode. Mean wheel slip in active ballasting mode was lower than that of the no ballasting mode and the fixed ballasting mode. This study provides theoretical support and technical reference for optimising the traction performance of electric tractors.

(a) Physical prototype of the electric tractor (b) Battery position adjustment mechanism

Biosystems Engineering

Head to; **https://www.sciencedirect.com/journal/biosystems-engineering** to view the full article list of the latest edition and to find out more about depth and breadth of articles accepted for publication. Reduced subscriptions are available to IAgrE members.
Go to; **https://iagre.org/biosystemsinformation** for details of the preferential rates for both paper and electronic versions.

Editor in Chief

Biosystems Engineering

Location: Home-based
Employment: Part-time, highly flexible
Tenure: Contract-based

Biosystems Engineering is a high quality international peer-reviewed journal with a 2020 Impact Factor of 4.123 and ranked 7th out of 58 for multi-disciplinary agricultural journals. Owned by the Institution of Agricultural Engineers (IAgrE) and published by Elsevier, Biosystems Engineering is also the official scientific journal of the European Society of Agricultural Engineers (EurAgEng).

Due to impending retirement, IAgrE is looking to recruit a new Editor in Chief (EiC) to lead the editorial team comprising of two senior and seven associate editors. Reporting to the IAgrE Publications Management Committee, the EiC, supported by the Senior Editors, will take responsibility for all aspects of the strategic direction and management of the journal.

From around 1500 submissions per annum, the EiC will facilitate the editing of 12 issues of the journal per year, each containing around 15/20 high quality papers, plus occasional special editions. Key priorities will include ensuring the journal remains a publication of choice; maintaining content is of a high quality and identifying ways to promote and increase circulation.

The successful candidate ideally will:

- Be highly proficient in written English.
- Be technically experienced in significant aspects of the engineering or physical sciences associated with agricultural or other related biological systems.
- Be operationally experienced in managing an editorial team and liaising with publishers.
- Have a history of publication in international peer-reviewed journals.
- Have significant experience as a reviewer for such journals.
- Be experienced in decision making in relation to scientific research.

As the editorial team and publisher are internationally based, a high-speed internet connection is essential. Occasional overseas travel will be required for conferences. Attractive remuneration will be available to the successful candidate.

If you are interested and would like further details please contact:

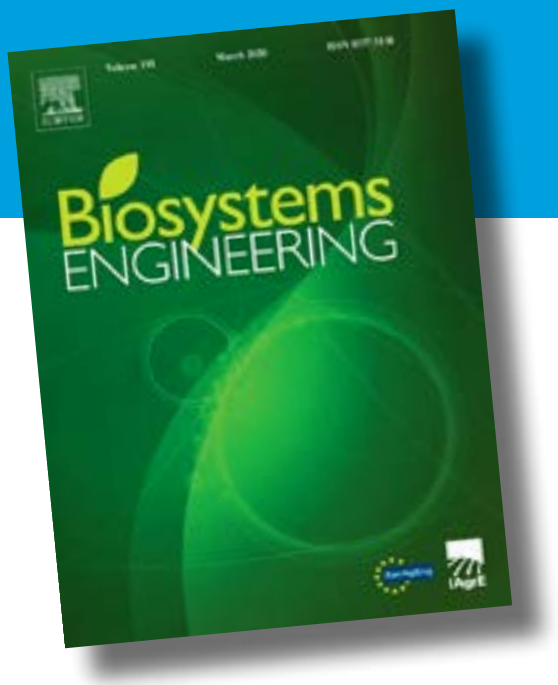
Mrs Sarah McLeod
Email: secretary@iagre.org
Telephone: +44 (0)1234 750876

Closing date for applications **30th June 2022**, interviews shortly thereafter.

See links for more information on Biosystems Engineering, EurAgEng and the IAgrE

IAgrE requests no contact from agencies or media sales.

The Editor in Chief of Biosystems Engineering, Dr Steve Parkin, has kindly summarised a selection of papers published in the last three issues, which will be of interest to IAgrE members.



Biosystems Engineering

Volume 216, April 2022, Pages 186-197

A machine learning framework to predict the next month's daily milk yield, milk composition and milking frequency for cows in a robotic dairy farm

Boyu Ji, Thomas Banhazi, Clive J C Phillips, Chaoyuan Wang, Baoming Li

Pig Improvement Company, Shanghai, China

University of Southern Queensland, Toowoomba, Australia

Curtin University, Perth, Australia

Estonian University of Life Sciences, Tartu, Estonia

China Agricultural University, Beijing, China

Robotic milking systems (RMS) are increasingly utilised by modern livestock farmers because they can reduce labour costs, and they have the potential to collect data that will improve animal welfare and animal productivity through better monitoring. Sensors and devices installed in RMS enable farmers to routinely collect data on environment conditions, individual animal's behaviours, health, productivity, and milk quality. This dataset can be used to train artificial intelligence algorithms to predict trends in these variables. This study developed a machine learning framework using 5 years' behaviour, health and productivity data from 80 cows in a robotic dairy farm. Here we demonstrate the development of a framework to automatically train models with up-to-date farm data and predict daily milk yield, composition (fat and protein content) and frequency of individual cow milking during the subsequent 28 days.

A time series cross-validation was applied to simulate the application of this framework under commercial conditions and to evaluate the performance. A high accuracy of prediction was achieved with the models created by this framework. The practical potential of using such frameworks to enhance the management efficiency and animal welfare in robotic dairy farms is discussed.

People

Meet the President

A long road into agricultural engineering

Incoming IAgrE President Steve Constable spent some time with Landwards editor Andy Newbold explaining his journey so far and what the future holds for the discipline.

Tell us your background and how you became an ag engineer?

Growing up on Exmoor in a small village called Luxborough was a fantastic time. The freedom was amazing and in hindsight it is the life that most people are aiming for now. It was so remote that we did not have any mains services until I was 19 which was only electricity which we installed ourselves after digging a trench nearly a mile long to the nearest transformer pole.

Previously, we ran Lister generators of which I was keeper and mechanic. I guess this was the start of my interest in engineering. I also had owned trials and motocross bikes since I was 9 years old and my father helped me and my brother if we needed to repair them but the onus was on us to do it.

I had worked on my best friend's 800 acre mixed farm since I was small

"The IAgrE has been the bedrock of my career."

and when I left school at 16 I went full time. My job involved operating the kit and repairs or servicing as well as all livestock related tasks for the 1000 ewes and 70 suckler cows so it was very busy. I was keen and was told to have a day off on my three year anniversary as I had never had one since I started because of feeding round, etc.

After some time, I knew that I really enjoyed the machinery side so with help of my then girlfriend who is now my wife, we planned how I was going to do it as I had left school with only a CSE in metalwork.

As I had no real qualifications and was missing the basics, I had to walk a path to reach my goal of being a qualified agricultural engineer as soon as possible. I really wanted to go to Harper Adams as I knew it quite well because my wife was an agri student there. I had seen the facilities and was aware of their outstanding reputation.

The first stage was to attend Cannington College, near Bridgewater to gain a one-year certificate in agriculture. On the course we undertook duties in the mornings in pig, poultry and dairy farms. I was slightly older than most students so I started to occasionally milk cows for a farmer and drive his tractors at silage, so he let me live in his cottage out of college.

My next move was to Lackham College, I met with the principal at the time and was told that I wouldn't be able to do the ND Ag Eng, as my maths were non-existent. So I returned to Cannington to re-assess my next move. Shortly afterwards, however, I was contacted by the Lackham principal and told that if I committed to extra maths then they would give me a chance. The course

People

Meet the President

was very hands-on and there was a sandwich year where I was a mobile fitter with a van after three months, enjoyable but very long hours.

On qualifying, I approached Harper Adams and the principal Tony Harris invited me to come up and have a look. We met, and he personally took me for a full tour (not as extensive as it is now I must add) and then a cup of tea in the staff room. I was so nervous, but he put me at ease very quickly.

He explained that he was looking to start a new two-year course for students who had previously had some industrial exposure, but the only issue was my maths level. I explained how it worked at Lackham. A couple of days later I received an offer with the proviso that I still maintained extra maths to reach the standard.

The course was everything that I had wished for and stretched me, but with the help of the brilliant staff I made it and reached my goal. Incidentally the first year was when I joined the IAgrE, Geoff Wakeham had mentioned to me the benefits and I became a member.

Talk through your career progression

After leaving Harper I really wanted to undertake some form of product development and research. I secured a position at Spaldings in Lincoln as assistant manager of the product development department. After a couple of months my confidence was really boosted after winning a bronze medal award from the Douglas Bomford Trust for innovation on my Harper project. I was fortunate enough to have a very talented brother-in-law who was a director for GKN at the time, he advised me that an MBA would be very commercial and extremely useful. So I studied with the Open University part-time to raise the bar and qualify.

After a short time, I was promoted to manager and then set up the QC department which was non-existent when I arrived. I then became a director and in 2003 we were fortunate enough to buy Spaldings. I ran it for 10 years and then sold it to the Marubeni corporation. I now am the managing director and many of the original team have retired.

What advice do you have to younger engineers or potential engineers?

Follow your dream but have a goal to aim at, it doesn't need to be fixed but have a direction, talk to other people who are qualified, learn from their successes and mistakes, we all have them!. Remember that all areas of engineering will involve exciting areas and not so exciting ones like standing in a field of mud. The overall level of satisfaction that you can make a difference is precious.

How has the IAgrE membership helped?

The IAgrE has been the bedrock of my career. When you're young starting out on your journey you have great ideas, enthusiasm, and drive. It's very easy to think that you know more than others and you can get into a position where you are like a boat adrift and your direction becomes unclear.

What would you like to achieve as President in the next two years?

There has never been a more exciting time for the younger person to get involved in this industry as it is the focus of many governments and the realisation that maintaining our natural resources is vital for the good of humanity.

As President I think that increasing our membership is important so encouraging younger generations to be part of this exciting industry, to be involved and make a difference is a vital task.

The IAgrE allows the younger person to build on their academic proficiency and gain professional qualifications just as doctors and lawyers do, that will help their career progression. Continuous Professional Development can be registered as their careers progress and the networking opportunities with professional members is high.

I would also actively encourage inclusion of people from all backgrounds who have a genuine interest in making a difference in this industry and remove any perceived barriers.

This is a brief summary of the interview with Steve. You can hear it in full on the Landwards Podcast, including Steve's views on getting into the industry, big data and the challenges ahead.

The Landwards podcast

The Landwards podcast is on iTunes, Spotify or for the latest one click on:

https://www.buzzsprout.com/1067353/episodes

for the latest one.

People

Awards

Smiling winners from the first face to face awards in three years

IAgrE Awards 2022

After a two year break, it was great to be able to hold the awards face-to-face immediately after the Institution's AGM at CLAAS UK, Saxham, Suffolk on Wednesday 27th April.

The Douglas Bomford Trust Award, Dr Diogenes Antille

Given to the author, or authors, of a paper published in either Landwards or Biosystems Engineering. At least one of the authors must be a member of IAgrE.

Kojo Atta Aikins, James B. Barr, **Diogenes L. Antille**, Mustafa Ucgul, Troy A. Jensen, Jack M.A.

Desbiolles - Analysis of effect of bentleg opener geometry on performance in cohesive soil using the discrete element method.

Biosystems Engineering, Volume 209, 2021, Pages 106-124, ISSN 1537-5110,

https://doi.org/10.1016/j.biosystemseng.2021.06.007

(https://www.sciencedirect.com/science/article/pii/S1537511021001318)

Dio could not join the ceremony as he is based in Australia. A short video clip of him receiving the award ran.

The IAgrE Student Awards

IAgrE offers a number of awards to students, the first two are kindly sponsored by CNH Industrial, and these are awarded for a thesis or dissertation undertaken as part of their studies.

The 2022 CNH undergraduate award, along with a £250 prize went to James Shaw from Harper Adams University for his MEng project 'An investigation into the geometric properties of Anaerobic Digestion plant digestate pellets to be used within commercial agricultural distribution methods as a biodegradable natural fertiliser'

The 2022 CNH post graduate award, along with £500 prize went to Diego Corona Lopez from the University of Manchester for his PhD study on 'Electrical Impedance Tomography for Root System Analysis'

The 2022 IAgrE Student Safety Award, along with a £150 prize went to William Campbell from Loughborough University for his project 'Development of a forward collision avoidance perception module for an autonomous agricultural ground vehicle.' Due to the pandemic's impact on face-to-face education last year there was no award for student projects.

People

Awards

Continual Professional Development Awards - David Thaemert (pictured) and Stephen Williams

CPD is a very important part of any profession, it doesn't matter what level you work at, it's good to keep yourself up to date with latest developments in the industry or just broaden your professional knowledge. The Institution decided this year to recognise some of the excellent CPD done by members and has made two awards.

Branch Meritorious Award – Dr John Stafford

Branches are a vital part of IAgrE and the Institution took this opportunity to thank all hard-working volunteers who give up their time to arrange the excellent annual programmes at the different branches around the UK. The Branch Meritorious Award is made to members who consistently provide outstanding service to a branch or group of the Institution over a number of years.

John joined the South East Midlands Branch in 2006 and has served as the branch's secretary since then. This is not the first time John has received this award, he was also presented with it back in 2011 for his efforts in keeping the branch going under difficult circumstances. Since then, John has continued to put significant effort into branch activities, including maintaining a full programme of technical meetings and their annual student competition. The student competitions are unique to the South East Midlands branch, where 4 or 5 students present a piece of work they've undertaken to the judging panel, the winner receives £100 from IAgrE. All this takes considerable effort in pulling together. The last couple of years have further complicated things as the branch has faced the challenge of doing this during the pandemic, which they did so successfully. We are delighted that John once again receives this award in recognition of his long-standing contribution to the South East Midlands branch.

The President's Award - Daniel Hefft

This is made to a mid-career engineer who has made outstanding progress in agricultural engineering or associated industries.

Daniel has a BSc in Food Science and Technology from TH OWL in Germany and an MSc in Food Technology and Quality Assurance from the University of Reading. Daniel started his career as a Process Development Engineer in Weetabix which is when he first came into contact with IAgrE.

Under the mentorship of Dr Steve Parkin, Daniel gained Chartered Engineer status in 2018. Since his time at Weetabix, Daniel took on a research post at Birmingham University and has since moved to the University Centre Reaseheath where he is now the Academic Director for the Institution of Sustainability and Food innovation.

Daniel has impressed IAgrE with his enthusiasm and determination to promote Food Engineering as an important component of agricultural engineering. Supporting this, Daniel started the IAgrE Engineering for Food & Drink special interest group which has held a number of specialist seminars with international attendance over the last year or so. All this makes Daniel a worthy recipient of the IAgrE's President's award.

People

Awards

Award for Contribution to the Landbased Sector - Dr David Llewellyn

This award is for individuals who have made a sustained contribution to the land-based sector throughout their career.

David has made a huge contribution to the land-based sector, this was recognised in the 2022 New Year Honours where he became a CBE. It is therefore very fitting and appropriate that our Institution confers this with the award of 'Contribution to the land-based sector' recognising all the work David has done, particularly for agricultural engineering. David joined Harper Adams in 1998 and in 2009 he became the Principal and also a Fellow of IAgrE.

When university status was gained in 2012, David became the Vice-Chancellor. Under David's leadership Harper Adams has gained multiple national awards and has been ranked a top university via a number of different channels. Throughout his time at Harper Adams, David has been an active supporter of agricultural engineering.

He had a key role in all stages of building the innovation centre and has worked effectively to ensure links have been maintained with key businesses and organisations. David has been instrumental in creating the National Centre for Precision Agriculture within the Engineering Department. This team has also established a world first with the hands-free hectare project, which has gone on to receive many awards. David also played a significant part in the establishment of the Agri-EPI centre at Harper Adams, one of four in the UK helping provide innovative solutions for the industry. David retired from Harper Adams last year and the presentation of this award is a fitting tribute to all his contributions and achievements to the sector during his career.

The 2022 Honorary Fellowship - Professor Jane Rickson

These fellowships are given to people distinguished by their work in agricultural science or engineering, or a distinguished person whom the IAgrE wishes to honour for services rendered to the Institution, or in this case both.

Jane has been involved in IAgrE since 2005, she's a Fellow, a chartered environmentalist and also a past president. Jane has a BSc, an MSc and a PhD all focussed on a subject she is an expert of the highest calibre in, it's the basis for agriculture and food production, it is of course soil. Jane's passion for the subject has been influential in shaping government thinking and public awareness of soil and the need to protect it. Her work over the years in research, consultancy and teaching has focussed on better understanding of soil, including agricultural production, water regulation, erosion and land reclamation. The output of her work is very much aimed at research councils, industry, farmers and policy makers.

Jane has been a real advocate for IAgrE and very keen to

promote the wider agricultural engineering discipline, especially as it relates to food security, something that's increasingly discussed at present. Jane has made a significant contribution to the work of a number of organisations, such as the Society for the Environment and The Royal Academy of Engineering, keeping IAgrE at the front of developments. She was also part of the Cranfield team that won its 5th Queen's Anniversary Prize back in 2017 for research and education in soil science, the first time it's been awarded in this subject area.

As well as being IAgrE's first female president, Jane has won both the Outstanding Achievement and the Engineering, Science and Maths awards at the annual Women's Leaders awards back in 2019.

Her dedication to the environment and the land-based sector, as well as to the Institution make her a worthy recipient of the IAgrE's highest award, that of Honorary Fellow.

The Award of Merit – Dr Nick Tillet

This award is made to a person distinguished by their work in agricultural science or engineering, or one who has rendered outstanding service to the Institution.

Nick is an international expert in in-field guidance and the control of systems for plant-scale husbandry. He is a director of Tillett and Hague Technology Ltd – a company that he co-founded in 2005, with a turnover now in excess of £4.0M.

Following graduation in mechanical engineering from University College London in 1979, Nick started his career in production engineering. Nick then joined Silsoe Research Institute in 1984 and was involved in a variety of projects. One such project was the use of computer vision techniques to guide field machinery without the need for satellite guidance technology. This early work spurred various weed control developments, some of which have been taken up commercially.

The closure of Silsoe Research in 2005 led to Nick forming his company, which carried on the research he was doing at Silsoe. The vision guidance techniques, coupled with mechanical weeding were further developed for commercial use in 2008. Other solutions such as guided spot spraying, were further developed and remain an active project within the company today.

Although the company's principle activity was contract research, this dependence has reduced as Nick has licensed the use of their technology, and more recently sales of complete systems, where they have seen rapid international growth. Despite this growth, Nick manages to remain close to product development and customer support.

Nick, an active member of IAgrE since 2011, has received several awards for his work over the years from some prestigious organisations such as the Engineering Council, the Royal Agricultural Society and of course the IAgrE. Dr Nick Tillett is an outstanding agricultural engineer whose work has provided the foundations for both technological and commercial success. This well-deserved award of merit celebrates Nick's achievements and contribution to the agricultural engineering industry.

People

Obituary, Dr Tony Harris OBE

Tony Harris was an unfaltering champion of British agricultural education

Principal Harris hosts Margaret Thatcher for the opening of the Harper Adams Soil Hall indoor field

The IAgrE was saddened to learn of the passing of one of its former members and Principal of Harper Adams Agricultural College, Dr Tony Harris, aged 92, writes Paul Hemingway.

Tony Harris was an unfaltering champion of British agricultural education and an individual well known throughout British farming circles in a career spanning over five decades, extending well into retirement to serve on a variety of agriculture and rural committees at both regional and national levels.

From 1950-52 Dr Harris studied agriculture at Seale-Hayne Agricultural College, near Newton Abbott in Devon, qualifying with a College Diploma in Agriculture and the National Diploma in Agriculture, after which he completed his National Service in the Intelligence Corps.

In 1953 he embarked on his career in agricultural education as a lecturer in agriculture at the Dorset College of Agriculture. Two years later, in 1955, he moved to teach crop production at Harper Adams Agricultural College where he worked for three years before taking the position of Vice-Principal at the Shropshire Farm Institute, subsequently Walford College of Agriculture.

In 1967 he moved to Surrey to take the position as Principal of Merrist Wood Agricultural College where among many notable achievements he was instrumental in the development of the first arboriculture and tree surgery courses outside the USA.

Following a decade at Merrist Wood, Tony Harris returned to Shropshire in 1977 as Principal of Harper Adams Agricultural College, home at the time to 400 students, where he remained until his retirement.

A clear vision

During his time as Principal, it was his clarity of vision that led a period of continual growth and expansion in both the institution's fabric and educational offering. It was transformed from the more traditional college of his predecessors' days to a forward looking, technologically orientated agricultural institution. In many ways the work of Tony Harris while Principal of Harper Adams laid the foundations upon which the University institution of today has been built, and of which his successors were the fortunate beneficiaries.

He oversaw the transition of study at Harper Adams from HND to degree and postgraduate level work although he maintained a tight rein on course diversity resisting moves to expand into too many areas.

The Agricultural Engineering industry owes him a debt of gratitude in that under his leadership, in 1978 the farm machinery department was transitioned from teaching mechanisation to agriculture students to teaching Agricultural Engineering, firstly at HND and then degree level.

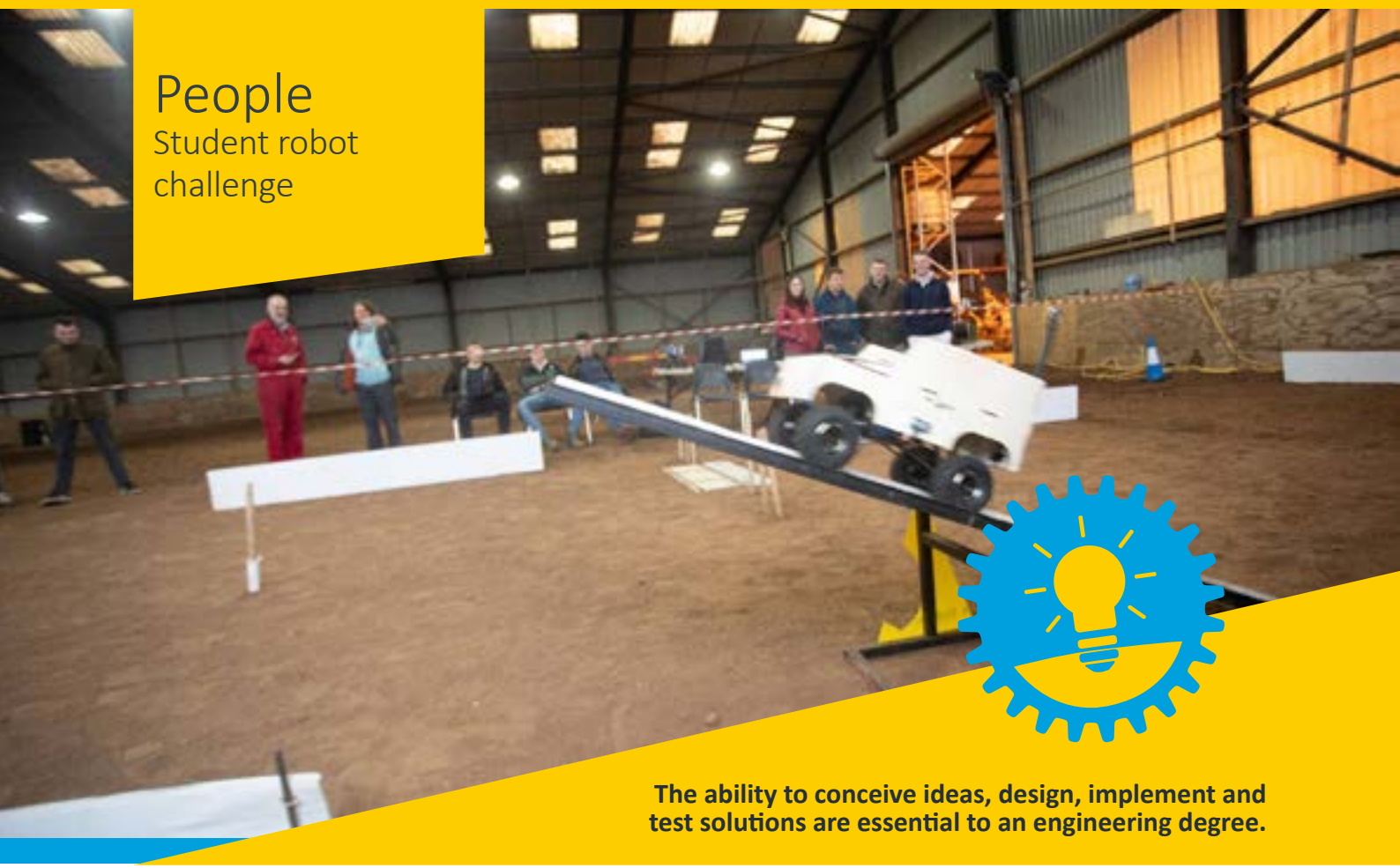
Such courses were expensive to deliver and came under close scrutiny in the difficult years of the 1980's but his commitment to the agricultural machinery industry ensured the retention of the courses and expansion of the facilities which have resulted in Harper Adams becoming the foremost institution teaching Agricultural Engineering in the UK today.

As a College Principal he set high expectations of both staff and students and led by example with a work ethic that few could match. By the time of his retirement in 1994 Harper Adams student numbers had increased to around 1500.

In 1991 Tony Harris was awarded an OBE for services to agriculture and in 1996 he was awarded a Fellowship of Harper Adams and conferred with an Honorary Doctorate of the Open University.

In the 2005 New Year Honours, Dr Tony Harris was appointed CBE. We extend our condolences to his family at this sad time.

People
Student robot challenge



The ability to conceive ideas, design, implement and test solutions are essential to an engineering degree.

Robots at the ready!

Fourth year engineering students at Harper Adams University tested their robotic buggies during an event in the Soil Hall in April. The Robot Challenge was part of their assessment in the Mechatronics Design and Control module.

To succeed in their brief, students had to examine the course and propose a robust navigation strategy which had to be implemented by developing an algorithm and integrating sensors to the buggy and the controller.

The ability to conceive ideas, design, implement and test solutions are essential to an engineering degree. All students had put in a lot of effort. The competition was hard, but there was a clear winner: Gareth Goodchild, Ryan Pinder, and John Morgan achieved a score of 95% – an outstanding accomplishment.

Even though Gareth, Ryan and John were declared overall winners on the day, the true winners were everyone who took part.

Here is what the students had to say about the day:

Rachel Brown from Lancashire says:

"I really enjoyed taking part in the challenge day. It gave me the chance to see my coding skills work in the real world.

"Participating in the Buggy Challenge was not only a fun afternoon, but it was also a valuable learning experience.

"I came to Harper Adams for the Agricultural Engineering course because I enjoy problem solving, have a passion for farming and strive for improvement.

"Studying here has exceeded my expectations! The lecturers offer a great level of support as they know each individual student, also the Engineering Design Centre in the library is an appreciated resource that creates a great sense of community."

Another student, Alex Sluijmers said:

"I really enjoyed the event, it was great to be able to test our buggy and see how our work paid off, along with seeing the buggies designed by everyone else on the course.

"Having the freedom to play a bit with the design of it was also good fun, and added to the enjoyment when seeing it go around the track. It tested several skills with coding, design and problem solving when an issue occurred. Also we had the chance to work with sensors.

"The course of agricultural engineering which I am studying really appealed to me, as I have always had a passion for agriculture. The opportunity to expand my theoretical knowledge but able to apply it to real life situations. "It has been great fun along with hard work to succeed and develop my skills with like-minded people."

Joe Boeg, from Kent says,
"I loved the opportunity to compete against other course mates. It was very satisfying to watch the buggy go round the course. We were also able to have a bit of light-hearted fun with the design of our buggy.

"A love for vehicles and the opportunity to learn about them in an applied way and gain specialist knowledge about 'Off-Road' Vehicles.

"Great for self-development in and out of the course. I have met a variety of people from different backgrounds and parts of the country."

New Robotics specialist interest group

The application of AI and robotics to agriculture has seen an explosion in interest and investment in recent years. In what is being heralded as the Fourth Agricultural revolution, there are increasing numbers of engineers and technicians involved in the development and use of robotic technology.

The application of robotics to agricultural problems will undoubtedly redefine the economics of food production and open new opportunities for farmers and farming methods.

The aim of the robotics and AI special interest group is to provide a forum for all IAgrE members to discuss, learn and increase their understanding of agricultural robotics and AI. The topics explored by the robotics special interest group will be both commercial and technical.

All Robotics and AI Special interest group events will be open attendance to encourage involvement and interaction from a diverse audience, however the back catalog of event recordings will only be accessible to IAgrE members.

The Robotics and AI special interest group is being headed up by Raymond King AMIAgrE, Lead Engineer at Small Robot Company and Kit Franklin C.Eng, MIAgrE, Senior Lecturer at Harper Adams University and Principal Investigator of Hands Free Farm.

For more information or to find out how to get involved please contact Sarah - secretary@iagr.org

Profession

Visit to Claas

A Claas tour

Following the Institution's AGM and Awards ceremony on 27th April, delegates were treated to the full CLAAS UK headquarters tour. Andrew Dunne, Claas Academy Manager kindly showed the editor's group round.

Opened in October 2020, the CLAAS UK headquarters at Saxham in Suffolk, was the culmination of a three year build, with an impressive almost 33,000m^2 footprint, combining a Manns dealership branch, the training academy, parts warehouse and distribution, and full height glass fronted machinery showrooms.

The new CLAAS UK headquarters covers almost 33,000 m² and includes a Manns dealership branch

New green build

The new state-of-the-art building makes use of the latest energy efficient systems in order to minimise its environmental impact. The passive solar design of the building makes full use of its north facing aspect, and features a full height glazed façade. The building incorporates 2,860m2 of glass. Renewably-generated electric power and heating for the whole site is sourced from the neighbouring 1.4MW Symonds Farm AD plant. Power for the electric vehicle (EV) charging points on site comes from a photo voltaic solar panel array on the roof generating 112 MWh. A water harvesting system with a total

Profession

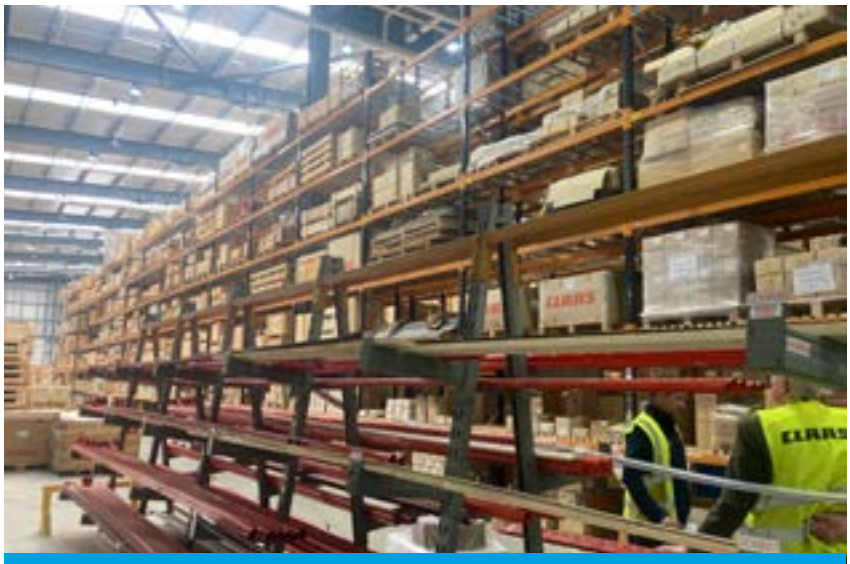
Visit to Claas

capacity of 30,000 litres serves a specially designed washdown bay for machinery, saving over 1 million litres of water a year.

Incidentally, in the event of a power cut, the batteries of the company's EVs can power the site via the EV charging points.

Parts and logistics

The new central UK Parts warehouse has streamlined parts handling and replaces five individual buildings. It accommodates over 47,000 line items or 850,000 individual items totalling 700 tonnes, with space to spare for future expansion. For larger items there is now 45 metres of cantilever racking and the amount of bulk racking has been doubled, while a mezzanine area holds 70% of the total contents of the previous warehouse over three levels. All parts are identified and located using a scan and bar code system to help improve pick rate accuracy and efficiency for the 1000 tonnes of parts that pass through the warehouse each year.



The central UK parts warehouse accommodates over 850,000 items.

On site dealership

The Manns dealer group has six dealerships throughout the eastern counties where it employs 33 people. The roots of the company go back to the 1930's when local farmer Bill Mann started importing CLAAS combines from Germany. The Manns company moved to the site at Saxham during the 1950's and the previous headquarters building has been a landmark alongside the A14 for many years.

Vera the service van set Manns apart from the start by offering prompt in field customer service

Get hands on

On the other side of the road is the new Customer Experience Centre. This includes an outside track to enable customers to drive machines with different transmissions on varying surfaces and around obstacles. Inside this track there are two material handling centres – one with clamps of rubber chips to simulate loading silage and the other as a rehandling area with sand to replicate loading grain with a telehandler or loader.

Finally, there is a sand filled arena to demonstrate autosteer and guidance.

Working in green

Coincidentally to the AGM and Awards being on site at the end of April, CLAAS was running its very own CLAAS in grass working forage demonstration in the field alongside the Customer Experience Centre. So members were able to have a look at some of the equipment in action.

Rubber chip clamps are available to simulate loading

A forage demo was in full swing on the day

The sand arena enables GPS and autosteer demonstration

The academy delivers over 3,000 man days annually

The CLAAS Academy

The Saxham site is also home to the CLAAS Academy, which provides industry leading training for dealer sales, service and parts staff, in addition to customer operator training. Here the team of 11 staff provide over 3000 man days of training each year, both on-site but they are also leading the way in the development of remote online training programmes.

Facilities include digital training suites where each apprentice is issued with a fold-over laptop containing all the training materials, service manuals and parts catalogues, which can be taken out into the workshop and used as a tablet whilst working on machines.

There is a green screen studio for virtual training, which allows trainers to 'walk around' machines remotely, or in the case of the photo Peter Leech was able to give the weather forecast!

The visit was a fascinating insight into how a global machinery company looks after its customers, keeps products working and develops agricultural engineers. Our thanks go to CLAAS UK for a great day.

Peter Leech gives the forecast

Saxham redevelopment in numbers	
Total footprint	32,907m^2
Construction man hours	170,832
Total concrete used	3,560m^3
Steel tonnage total	770 tonnes
Glass area	2,860m^2
PV array capacity	112 MWh
Water harvesting capacity	30,000 litres

Profession

Merlo

Merlo offers 12 courses including accreditation with BAGMA for Consolidated Fork Truck Services (CFTS)

Merlo UK raises parts delivery and training to a higher level

Service and reliability are paramount in retaining existing business and developing relationships with potential new customers. IAgrE corporate member Merlo UK has ensured that both areas are 'fit for the future' with a £750,000 investment at its location in Ringwood, Hampshire. The Institution was invited to a recent trade press day which provided an opportunity to see the facilities in use.

By 2025, Merlo wants to be one of the three leading telehandler manufacturers in the world, explained Merlo UK's general manager Shaun Groom. A bold statement which requires reliability and confidence in the supply chain. This is where Merlo UK has managed to reduce the effects of global instability with a HM Revenue & Customs approved bonded warehouse. National parts manager Robin Cooch explained this arrangement has multiple benefits. Due to reduced levels of checks at the EU border, parts remain on the same delivery vehicle from Italy through to unloading at the company's Ringwood base.

Robin's previous experience in the parts supply chain led Merlo UK to partner with Carousel, experts in logistics management for critical spares. Dealers are requested to place orders from 8.00am to 5:30pm with delivery scheduled to their sites overnight to secure lockboxes. Engineers can plan their daily tasks confident that parts will be available before 8am. Customers are therefore benefitting from true next day delivery for replacement and serviceable components. By having a Customs Freight Simplified Procedure (CFSP) in place, Merlo UK

Going green

Shaun Groom explained that green goes beyond the exterior paintwork with the introduction of two new 100% electric powered models, the e-worker. With a battery duration of approximately eight hours and a maximum speed of 25km/hr the range is now commercially available. All part of Merlo's sustainable commitment to zero use of fossil fuels, zero emissions and zero noise.

can rapidly source items from the parent company's base in Cuneo, Italy. As part of the new build project, existing racking layout was rotated by 90° to increase floor space by 30%. Current stock holdings are estimated to be 6,500 items with plans to accept more to meet dealer requests.

New training facility

Included in the 432m² building extension is a product training facility whose foundations can withstand the 28-tonne outrigger shear loading from Merlo's biggest telehandlers. Product development and training manager Nigel Perrin has over 25 years' experience of the green liveried Italian workhorses. This level of knowledge is essential for tutoring as the Merlo Group produces over 90% of the components comprising the overall assembly. All ranges of engineering disciplines are required to machine drive trains, mould display consoles and programme software. Another important factor which reduces reliance on third party suppliers. A standalone Roto cab unit mounted on casters can be wheeled into position for attendees to fault diagnose in a simulated environment.

A total of 12 courses are currently on offer including accreditation with BAGMA for Consolidated Fork Truck Services. Other training packages are under consideration to increase engineer numbers beyond the 300 who have attended so far.

Education

Hartpury agri-tech

Farmers digital literacy varies tremendously which impacts on their ability to keep up and reap the benefits

Hartpury pumps life into education and smart farming

A late March visit to Hartpury University and Hartpury College in Gloucestershire provided an opportunity to view both lecture facilities and the new Agri-Tech Centre. Mike Whiting reports.

Courses are targeted at the requirements of machinery dealers and manufacturers with Level 3 diplomas in land-based engineering and agricultural farm mechanisation. The integration of lecture rooms and workshop ensures students have a seamless transition between theory and practical sessions.

The dedicated welding section was alive with the sound of arcs striking up whilst groups of students huddled around dismantled engines in the workshop. It was one of those visits where I would have happily put on my overalls and got involved. Richard Rudge, Lecturer in Land-based Technology referred to capital expenditure plans which are in place to further enhance the facilities in line with industry requirements. Machinery manufacturers should take note of this, as the college seeks to develop relationships with the agricultural, horticultural and amenity sectors.

With a 'can do' approach Richard explained how through Covid they utilised handheld cameras and video streaming to give detail on engine components. This ensured that remote learning minimised the impact on students' learning.

Recent investment in the dairy unit with a 30/30 rapid exit parlour provides students with the all-important livestock experience, including some early morning starts! Access is via a purpose-built bio-secure building incorporating changing facilities.

Agri-Tech

The Hartpury Agri-Tech Centre focusses on improving awareness, access and training for current and future generation famers with the latest proven and available technologies. Working with businesses with commercially

Ben Thompson, Hartpury's Agri-Tech Centre Manager

robust solutions or products which can support landowners and operators in their precision farming journeys. Ben Thompson, Hartpury's Agri-Tech Centre Manager explains that farmers digital literacy varies tremendously which impacts on their ability to keep up and reap the benefits. This is evident with the wide range of farmers linked into their Digital Farming Network, including locally based high-profile Twitter user Jake Freestone.

Accelerator programme

Hartpury also provides its Tech Box Park accelerator programme, offering SME businesses dedicated, practical working space and support packages, access to the Hartpury's commercial farm, Home Farm and an extended farming network for practical trials, feasibility testing, research and to help accelerate the development and launch of new products or enhance existing ones. This opens up all aspects of the food production sector including soil health, agronomists, and ways to reduce carbon footprint. The ability to tap into real time data from sensors located on farms reduces delays in processing information and making effective decisions. This will expand the network of businesses who can add to the mix. The links with the educational establishment mean that students are exposed to commercial activities making them much more appealing to future employers.

Ben Thompson is very keen to promote the opportunities for those who can bring ideas and solutions to the digital farm landscape. He quotes:

"What we do and how we operate is unique. It provides the framework to successful adoption and utilisation of the latest available technologies on farm. Whether this is through knowledge and skills transfer, hands-on experience and demonstration or disseminating outputs from industry impactful research, we are collectively serving industry through our Agri-Tech Centre, including current and active farming professionals but also the future generations as well."

Hartpury College: Facts and Figures

Location	On the A417 in Gloucestershire
Number of students	2,300 students across undergraduate, postgraduate and research degrees.
Agri-Tech Centre	Hartpury College 10-year 2030 Digital Innovation Farm Vision programme. £2M Agri-Tech centre phase 1 completed in early 2020. £2M Tech Box Park facility scheduled for completion 2022. https://www.hartpury.ac.uk/commercial/hartpury-agri-tech-centre/ https://www.hartpury.ac.uk/media/9517/digital-innovation-farm-tech-box-park-e-flyer.pdf
Farm size	400 hectares across five sites.
Farm produce customers	Muller, Sainsburys, Glencore
Industry links	ADAS research plots for crop biodiversity. Southwest Promar International Milkminder award 2019.
Engineering courses	Level 3 extended Diploma land-based engineering. Level 3 foundation Diploma Agriculture (Farm mechanisation). Level 3 National extended Diploma Agriculture (Farm mechanisation).
Equine	Two international competition areas, four additional arenas. Stabling for 230 horses. Equine therapy centre.
Sports facilities	1500m² sports hall Four football pitches Four rugby pitches Two 3G all-weather pitches Under-cover golf driving range with GASP video analysis Modern Pentathlon pistol range

Book Club

New book provides one stop shop for Conservation Agriculture

Farmers around the world are rapidly adopting Conservation Agriculture (CA) practices. A new book has collated extensive scientific research, field experience and technical advice into one place.

CA techniques - like cover crops and reduced tillage - have been gaining popularity as an alternative to conventional farming in recent years. But with so many options available it can be hard to know where to start, particularly given different agricultural landscapes and situations.

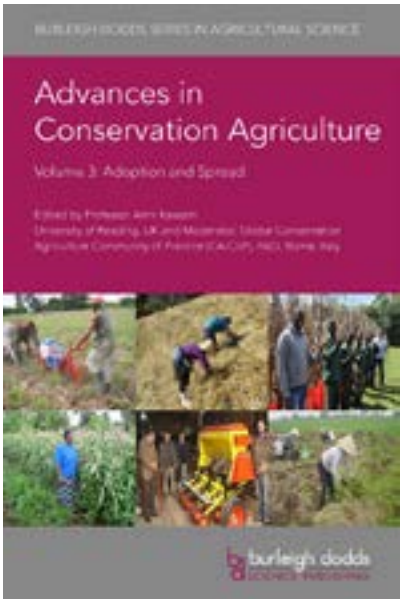
The new book, Advances in Conservation Agriculture, Volume 3: Adoption and Spread, provides farmers, researchers and academics with key information on practices around the world, reflecting differing local knowledge and techniques.

The area of arable land under CA has grown from two million hectares in 1970 to more than 205 million hectares in 102 countries by 2019.

This growth has been driven largely by innovative farmers and machinery manufacturers, who have shared new approaches as they evolve.

“The more farmers that find CA can sustainably boost their incomes, the faster the pace will change,” says Amir Kassam, visiting professor at the University of Reading and editor of the book.

The new book provides farmers, researchers and academics with key information on practices around the world



Research-led findings

Another important aspect explored in the book is that formal research has been important in developing new and more effective techniques and management approaches. This research has focussed on crop performance, soil health, ecosystem services, global warming and farm incomes. "These validation studies have helped to boost the case for policy and institutional support of CA," says Professor Kassam.

This is particularly important as the popularity of CA has so far spread largely without explicit supportive government policies. "It seems certain that the rate of adoption could be accelerated by targeted incentives like finance for machinery and management practices to boost soil health and enhance water resources, for example," he adds.

Although international bodies like the UN Food and Agriculture Organisation (FAO), have only invested relatively small resources in CA, they have played an important catalytic role. "The FAO has placed CA at the core of its vision for sustainable food and agriculture, particularly for smallholder farmers," says Professor Kassam.

The book is the third volume in the CA collection and deals with the challenges and opportunities of such practices. It complements the previous two volumes on Systems and Science, and Practice and Benefits.

"In each book, chapter authors review 100 to 200 journal articles on the latest CA research and synthesise that into 20 or 30 pages," explains Rob Burleigh, managing director at Burleigh Dodds Science Publishing.

"Scientists, researchers, farmers and academics don't have the time to read and synthesise all the latest research – so we have done all the hard work. We can signpost straight to the most appropriate book chapter – it's a really useful shortcut."

Qu Dongyu, director general of the FAO says: "These volumes are a timely celebration of the most progressive change in farming practices over the past 60 years, which is gathering momentum around the world at an extraordinary pace.

"They will serve as an immensely valuable source of reference – and inspiration - for all those who are committed to putting the world's food systems on a truly sustainable footing."

For more information about the book visit:

https://shop.bdspublishing.com/store/bds/detail/work-group/3-190-106341

Membership Matters

The Centre was established to meet the growing demand for apprenticeships and is designed to have a capacity of approximately 300 apprentices on program with up to 50 on-site at any one time

East Midlands Branch

April visit to the new John Deere Apprentice Training Centre

Report by Richard Trevarthen

Thirty people consisting of members and some ex-John Deere staff came to learn about this new facility which opened a few weeks ago.

The evening commenced with a very detailed illustrated talk by the Branch Training Manager, Allan Cochran. The purpose-built centre was constructed on the site of a disused farm yard with the two storey training centre finished to a very high standard. It now incorporates a huge workshop and classrooms (each of which are well equipped and laid out to cover a special discipline), a computer/ study library area, staff offices and canteen. All this is set in 15 acres of grassland which is used to enhance the apprentice product and industry knowledge during their training blocks. This helps connect technical learning to customer applications. At the Apprentice Training centre there are five members of staff involved in technical training delivery and a number of other staff involved to support the mentoring and development of apprentices in the workplace.

The centre was established to meet the growing demand for apprenticeships and is designed to have a capacity of approximately 300 apprentices on program with up to 50 on-site at any one time. There are currently approximately 200 apprentices on programme covering all areas of the John

Deere businesses in the UK & Ireland including Ag, Turf, Parts, Construction & Forestry, with significant growth in numbers from all areas. Apprentice training consists of 8 weeks of formal training per year at the centre, in addition to study projects and assignments, plus a number of practical tasks in the workplace which are guided by their workplace mentor and that their employer facilitates during their time back at the dealership.

As an overview Phases 1 and 2 are focused on system construction and operation and then Phase 3 on diagnostics. At the end of each Phase there is a gateway assessment and successful completion of this allows progress to the next phase, after successful completion of each of the 3 phases the apprentice completes their End Point Assessment to achieve their apprenticeship. Successful apprentices and their parents are invited to their graduation ceremony to celebrate their achievement.

Following Allan's introduction, we were split into small groups and a member of staff took us around for a tour of the superb facilities. Each classroom was extremely well laid out for a given discipline. For example, in the electrics one, each apprentice had a box of equipment to enable them to complete various projects. The huge workshop was extremely well-equipped, including welding bays, six engines on stands (used for strip down, measurements and assembly), six new, running engines on test benches which are used for diagnostic work, etc. The workshop was fitted out with a welding/exhaust fume extraction system and, of course, had all the other equipment necessary to run an up-to-date workshop including several Ag and Groundcare machines.

Following this, the evening ended with a brief Q&A session with Allan. It was obvious from this that everyone present was absolutely amazed at the thought, planning, layout and operation of this superb facility – and the staff commitment! It was very evident they are all very proud of it – and have every right to be!

We all came away wishing the John Deere team every success and we thank them for a fascinating evening.

East Midlands Branch

May visit to Bailey Trailers of Sleaford

Report by Phil Spencer

You could tell the moment we arrived that this was a family-run business. We were greeted at the entrance by Michael Bailey, Managing Director handing out teas, coffee and biscuits!

After a brief introduction, the 16 members in the group were taken on a guided tour of the production facility and the state of the art steel cutting, shaping and welding workshops. The first Bailey trailer was produced in 1982, designed and built by Tom Bailey in his workshop at Aunsby, Lincs.

This caught the attention of the local farming community and the success of his first trailer and other products led to the growing demand for his high quality equipment meaning that he had to move to bigger facilities and so transferred to the current 70,000 sq ft site on the edge of Sleaford.

With some careful planning, Bailey Trailers were able to continue production throughout Covid, securing the jobs of over 100 staff

Bailey is now the UK leading brand for agricultural trailers but also produces equipment for large contractors, including heavy haulage of aggregate and plant machinery. Michael said about 40% is exported to countries including Scandinavia and New Zealand.

Three generations of the Bailey family are involved in the operation and Michael was proud to say that in which ever part of the company a customer needs help, they would almost certainly be speaking to a Bailey family member!

Over the years, to increase production and maintain quality, they have invested in the most up to date equipment. There was a range of machinery in the workshops at various stages of assembly and we were able to see much of this being demonstrated on the visit. One of the latest investments was a £900,000 fully automated steel cutting machine. Other machinery included laser cutters and robotic welding machines. There is also a new conference centre and machine shop. We also visited the paint finishing and final inspection workshops.

Their range includes dump trailers, beaver tail loaders, bale transporters and fuel bowsers. The company has the ability to alter the standard product to suit an individual customer's own requirements. For example, trailer braking systems, air braking, weight sensors, rollover covers, hydraulic doors and out riggers.

The evening was completed by a question and answer session, with some discussion on the cost and availability of steel at the present time. Also with some careful planning, Bailey Trailers was able to continue production throughout the Covid epidemic, therefore securing the jobs of over 100 staff, and the continuation of supply to their customers.

This was a most interesting visit, hosted by a company who knows what their customers need and continues to work towards that aim.

Membership Matters

Members of the IAgrE Northern Ireland branch enjoyed a recent visit to a New Holland dealership

Northern Ireland Branch

Visit to Burkes of Cornascriebe

Report by Terence Chambers

Northern Ireland IAgrE Branch members and guests recently enjoyed an invitation to visit the above well known, Co. Armagh based, New Holland dealership. It was set up as part of the rural business being run by the Burke family since 1910. Our visit was hosted by Mr Harry Burke and his son Mr Lindsay Burke.

Company history

The family first set up their butchery/greengrocery business in 1910 which developed further to become a general farm supplier. They still run their own farm enterprises of breeding Belted Galloway cattle and Bramley apple orchard production.

Harry Burke joined the family business in 1970 and his son Lindsay is now also closely involved in running the tractor sales and service operation. Burkes still trades as an independent family business with a significant tractor market share in their area. We really enjoyed hearing about the many aspects of their knowledge and experience in this busy tractor dealership.

Lead times

Like most manufacturers, order delivery times for new machines has gone up recently due to international component supply delays. Examples include microchips used in engine management systems and even some specific tyre brands and sizes. It is therefore now vital that customers and dealers plan and place their orders well ahead.

Innovation

New Holland has recently announced the imminent start of production for their bio-gas powered version of the T6.180 tractor. It can run on the gas generated from an on-farm anaerobic digester and is claimed to reduce running costs by 30%, and CO_2 emissions by 10-15%, compared to the diesel version. Its first public showing in the UK was on Burkes' stand at the recent 2022 Balmoral Show.

Purchase patterns

Although most NI family farm customers still prefer outright purchase for tractors and machinery the trend for large institutional farms in GB seems to be towards more short-term leasing. This provides predictable costs and the flexibility to change farm cropping systems at short notice. As a result, some relatively new tractors from these sources are now being offered for sale in other regions including Northern Ireland.

Service technical skills.

Burkes employs eight full time service technicians who service and repair the wide range of model ages and types which have been supplied over the years. We discussed the ability of dealerships to not only master the latest electronic management components but also the traditional mechanical systems.

For this reason, well trained and motivated technicians will always be in demand across the industry and their expertise can be shared with other dealerships across these islands.

Thanks and sincere best wishes were expressed to the Burke family for their warm hospitality and sharing of such interesting historical and technical information. We wished them every success in keeping up the good work for many more years to come.

The group in front of the entrance to the Catesby tunnel

Western Midlands Branch

April visit to the Catesby Project site

Report by William Waddilove

Oh, but it just an old railway tunnel! Yes true, but what an exciting use for a tunnel. It was only opened in December 2021 and some development work is continuing.

Just think of it, a 1.7 mile long straight smooth track with no side or head winds and all at the same even temperature day after day.

That is what the facility has to offer. A test track with truly repeatable conditions all the year round and right here in the Midlands. No need for testing with scale models or the problems of setting up wind tunnels. Just drive your real vehicle and record the results.

We were welcomed by Charlie Smith, one of the marketing team who handed us over to Rob Lewis a director of ARP (Aerodynamic Research Partners) whose vision, enthusiasm and perseverance had created the facility.

The main entrance by the main road is the newly built offices and welcome centre designed to set the scene and in the design of a traditional railway locomotive building. Half a mile along the old central railway track is the discretely positioned workshops just outside the entrance to the tunnel.

Book the tunnel and an adjacent workshop and clients can use it as much as they wish all day. One of the examples given could be testing wind drag on various designs and as all is so convenient, changes could be easily made and tested within minutes. As Rob explained, how can you determine a 1% improvement in aerodynamics when there is a +/- variation of 3% when the testing is done outside in the open air, even on a quality test track.

As it is expected that many clients will be testing prototype or secret development vehicles, the two large workshops are each self-contained and large enough to take a vehicle delivery lorry and with toilets and kitchenette. With equipment only needing to emerge when fully prepared for a test and to enter the tunnel.

As Rob said we could walk the tunnel but it would take you ages so he laid on a minibus to take us to the far end. There, there is a powered turn table. The actual far end is closed off although with an emergency escape door through the bat roost.

Who can use it? Anyone. Unlike some other similar, but smaller facilities it is not restricted to a single company or membership group. If you have a need, just book it.

Membership Matters

Western Branch

Taking the heat out of welding fume control

Report by Mike Whiting

Engineers will stare intently at the molten pool of a weld through their visor and often forget the effect of fumes generated by the process. Although it's a subject which has received greater focus when the HSE is visiting engineering premises. Scientific evidence has shown that exposure to welding fume, regardless of the source, can cause lung cancer. To protect workers health, appropriate risk control measures are required in the hierarchical order, starting with local exhaust ventilation. This includes 'Al Fresco' welders whose equipment outsizes the workshop. To help us understand the subject, Hugh McPhillips, President of the South West Branch of The Welding Institute explained the science behind fume generation.

Particulate matter from welding is within the microscopic band width occupied by tobacco smoke, coal dust, cement, and pollen. We're aware of how these substances can affect the lung and other respiratory functions. Whilst we're getting the foundations in place, the process of plasma, flame, laser cutting, hard facing and resistance welding also generate dangerous fumes.

Combined research by both the US safety organisation OSHA (Occupational Safety and Health Administration) and the HSE has resulted in issuing safety warnings regarding fume inhalation. Hugh didn't hold back with the resultant effects on the human organs if we fail to apply appropriate control measures. Cancer, occupational asthma, irritation of throat and lungs, metal fume fever, and deterioration of neurological functions have all been identified.

Risk management starts long before the rod is clamped in the holder, or the wire feed roller starts turning. Moving to the far end of the risk scale, welding stainless steel generates hexavalent chromium, Cr(VI). Manual metal arc process can lead to a Cr(VI) airborne content of 87%, compared with 50% for Flux Cored Wire methods, reducing further to 16% when selecting Solid wire mag. The commonly known Tungsten Inert Gas (TIG) process can be included in this later group. Welders may think that ramping up the amperage can improve the weld quality, but it also creates excessive spatter and associated fumes. Effective storage of consumables is important, as carbon monoxide is created when the electrical current 'dries' out the fusion media.

Hugh's presentation provided more details on the HSE's primary risk control method of local ventilation. The extraction hood must be positioned between the welder and the source of the fume, and not simply in the 'vicinity'. Obtaining the minimum transport air flow velocity ensures fumes are removed without excessive extraction. The weld process relies on the protective gas shield around the molten pool. The loss of this can result in oxidation, a weak joint and an unsightly finish. Regular inspection and maintenance by qualified and competent engineers of all fume control systems is a priority for demonstrating compliance. The use of on-torch extraction systems has been available for a while which may be more appropriate where space around the welder and workpiece is congested. As with all safety management systems, the primary activity is to undertake a risk assessment and apply the guidance accordingly.

Cleanliness is the mantra when working on equipment which has just left the field. Residues

of fertiliser can create high concentrations of nitrogen, at worst a potentially explosive atmosphere. Some lesser contamination can result in an extremely hard surface and subsequent weld failure. The application of a solvent to chemically clean the surface is recommended to ensure a safe, fume free and robust welding process.

Timely reminders were provided on electrical safety, fire prevention and isolating hydraulic power supplies. Areas which can easily be forgotten when unnecessary downtime affects harvesting or crop establishment schedules.

'To be informed allows us to make appropriate decisions' was Hugh's strapline throughout the presentation. We were certainly much more aware of what contributes to fume generation and how to protect both ourselves and colleagues. We'd like to thank Hugh for his 'hands on and practical' presentation in addition to upcoming event information from the Welding Institute.

Future branch meetings

Whilst the summer months traditionally have slim pickings for branch meetings the autumn and winter programmes are starting to fill up, head over to:

https://iagre.org/events

If you can't wait that long, the IAgrE's youtube channel has recordings of all the previous years branch meetings, alongside lunchtime lectures and some of the specialist groups presentations too.

https://www.youtube.com/channel/UCCiJwRVjGizSE3EZ-KQ3uVg

Exposure to welding fume, regardless of the source, can cause lung cancer

Membership Matters

Admissions

Fellow

Member

Mr Andrew Tingey (East Midlands)
Mr John Kireia (East Anglia)

Associate Member

Mr Thomas Fry (Western)
Mr Oludare Durodola (Scottish Region)
Mr Adam Kemp (East Midlands)

Associate

Affiliate

Mr Stuart Morris (West Midlands)
Mr Gavin Haverson (East Anglia)
Mr Michael Raymond (Mauritius)

Technician

Students

Harper Adams University

Miss Maisie Wildgoose

Munster Technology University

Mr Shane O'Connell
Mr David O'Sullivan
Mr Cormac Moynihan
Mr Ciaran Walsh
Mr Jack Goggin
Mr Stephen Young
Miss Adelaide Mukucha
Mr David Jones
Mr Paddy Wallace
Mr Daniel Kealy

Re-admission

Affiliate

Mr Eion O'Connor (Southern Ireland)

Member

Mr Alex Fisher (East Midlands)

Deaths

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

Mr N C Portch CEng MIAgrE

A member of the Institution for over 30 years. He joined IAgrE in 1988 and gained Chartered Engineer registration in 1995.

Mr J M Swanson MIAgrE

A member of the Institution for over 50 years. He joined IAgrE in April 1970.

Mr J H Park IEng MIAgrE

A member of the Institution for over 35 years. He joined IAgrE as an Associate Member in 1979, then transferred to Member grade in 1981 when he also gained Incorporated Engineer registration.

Transfers

Fellow

Professor Simon Pearson (East Midlands)

Member

Mr Malcolm Adamson (Southern)

Associate Member

Affiliate

Technician

Mr Rhodri Williams (Wrekin)
Mr Thomas Evans (Wrekin)
Mr Joe Treadgold (West Midlands)

ENGINEERING COUNCIL

Registrations

CEng

Mr Kit Franklin (Wrekin)
Professor Edwin Ekwue (Trindidad & Tobago)

IEng

Mr John McAdam (East Midlands)

EngTech

Mr Rhodri Williams (Wrekin)
Mr Joe Treadgold (West Midlands)

SOCIETY FOR THE ENVIRONMENT

CEnv

Mrs Marion Perrett-Pearson (West Midlands)

Long Service Certificates

	Name	Grade	Date of Anniversary
60 years	Gabriel John Harris	AIAgrE	26 June 2022
	Jeffrey Nicholas Tullberg	FIAgrE	26 June 2022
50 years	Richard Edward Hughes	FIAgrE	27 April 2022
	John David Stephenson	MIAgrE	27 April 2022
	Andrew Murison	MIAgrE	27 April 2022
	Jeffrey Burr	MIAgrE	27 April 2022
35 years	James Wilson Turnbull	MIAgrE	23 April 2022
	Stephen Michael Nott	MIAgrE	30 April 2022
	Michael James Povey	MIAgrE	13 May 2022
	Norman John Skea	MIAgrE	28 May 2022
25 years	James Stuart Garner	MIAgrE	18 April 2022
	Peter Homer	MIAgrE	2 June 2022

Academic members

Askham Bryan College
Askham Bryan, York, YO23 3FR

Berkshire College of Agriculture
Hall Place, Burchetts Green, Maidenhead, Berks, SL6 6QR

Bishop Burton College
York Road, Bishop Burton, Beverley, HU17 8QG

Brooksby Melton College
Asfordby Road, Melton Mowbray, Leics, LE13 0HJ

City College Norwich
Easton, Norwich, Norfolk, NR9 5DX

Coleg Cambria – Llysfasi
Rhuthin, Sir Ddinbych, LL15 2LB

Coleg sir Gar
Gelli Aur Campus, Llandeilo, Carmarthenshire, SA32 8NJ

Cranfield University
Cranfield, Bedfordshire, MK43 0AL

Duchy College
Stoke Climsland, Callington, Cornwall, PL17 8PB

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

Harper Adams University
Newport, Shropshire, TF10 8NB

Hartpury College and University
Gloucester, GL19 3BE

Lincoln Institute of Agri-Food
Technology, Lincoln University, Lincoln, LN6 7TS

Manchester University
School of Electrical and Electronic Engineering, C39, Sackville Street Building, Sackville Street, Manchester, M1 3WE

Munster Technological University
Tralee Clash, Tralee, Co Kerry, Ireland

Myerscough College
Bilsbarrow, Preston, Lancashire, PR3 0RY

Newcastle University
King's Gate, Newcastle Upon Tyne, NE1 7RU

Plumpton College
Ditchling Road, Lewes, East Sussex, BN7 3AE

Reaseheath College
Reaseheath, Nantwich, Cheshire, CW5 6DF

Royal Agricultural University
Cirencester, Gloucester, GL7 6JS

Salesian Agricultural College
Pallaskenry, Co Limerick, Ireland

Sparsholt College
Sparsholt, Winchester, SO21 2NF

SRUC – Auchincruive
Auchincruive Estate, Ayr, KA6 5HW

Suffolk New College
Suffolk Rural Campus, Charity Lane, Otley, Suffolk, IP6 9EY

University of Manitoba
Winnipeg, Canada, MB R3T 2N2

Warwickshire College Group
Warwick New Road, Leamington Spa, CV32 5JE

Wiltshire College Lackham
Lacock, Chippenham, Wiltshire, SN15 2NY

Writtle University College
Lordship Road ,Writtle, Chelmsford, Essex, CM1 3RR

Commercial Members

Ace Aquatec Ltd
16B City Quay, Camperdown Street, Dundee, DD1 3JA

Agri-EPI Centre
1-4 Bush House Cottages, Edinburgh, Technopole, EH26 0BA

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

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

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

Amazone Ltd
Orchard Farm, Hurst Lane, Aukley, Doncaster, South Yorks, DN9 3NW

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

BAGMA
225 Bristol Road, Birmingham, B5 7UB

Briggs Irrigation
Boyle Road, Corby, Northants, NN17 5XU

Case New Holland
Cranes Farm Road, Basildon, Essex SS14 3AD

City and Guilds
1 Giltspur Street, London, EC1A 9DD

City Farm Systems Ltd
25 Hepplewhite Close, High Wycombe, Bucks, HP13 6BZ

Claas UK Ltd
Saxham, Bury St Edmonds, Suffolk, IP28 6QZ

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

Douglas Bomford Trust
The Bullock Building, University Way, Cranfield, Bedford, MK34 0GH

DSL Systems
Adbolton Hall, Adbolton Lane, West Bridgford, Nottingham, NG2 5AS

Fullwood
Grange Road, Ellesmere, Cheshire, SY12 9DF

Household Sprayers
Roughton Moor, Woodhall Spa, Lincs, LN10 6YQ

HSS Hire
Building 2, Think Park, Mosley Road, Manchester M17 1FQ

JCB
Rocester, Staffs, ST14 5JR

John Deere Ltd
Harby Road, Langar, Nottinghamshire, NG13 9HT

Knight Farm Machinery
Wireless Hill Industrial Estate, South Luffenham, Rutland, Leicestershire, LE15 8NF

Magna Specialist Confectioners Ltd
Magna House, Stafford Park 3, Telford, Shropshire, TF3 3BH

Marks & Clerk LLP
90 Long Acre, London, WC2E 9RA

Mastenbroek Ltd
83 Swineshead Road, Boston, Lincs, PE21 7JG

Merlo UK Ltd
The Paddocks, Headlands Business Park, Salisbury Road, Ringwood, Hampshire BH24 3PB

National Fluid Power Centre
Carlton Road, Worksop, Notts, S81 7HP

NFU Energy Services
Stoneleigh Park, Kenilworth, Warwickshire, CV8 2LS

Nick Young Tractor Parts
Unit 2, The Forge, Moor Road, North Owersby, Market Rasen, Lincolnshire, LN8 3PR

Reesink UK Limited
1-3 Station Road, St Neots, Huntingdon, PE19 1QF

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

Spaldings Limited
25-35 Sadler Road, Lincoln, Lincolnshire, LN6 3XJ

Teagle Ltd
Blackwater,Truro, Cornwall, TR4 8HQ

TeeJet London Ltd
Headley House, Headley Road, Hindhead, Surrey, GU26 6UK

Witham Oil and Paint Ltd
Outer Circle Road, Lincoln, LN10 6YQ

Douglas Bomford Trust

(From l to r): Beth O'Sullivan (Nottingham), Paul Miller (Trustee), Qaisar Ali (Reading), Silvia Arpano (Cranfield), Dr Paula Misiewicz (Senior Lecturer/Supervisor at Harper Adams), Alan Plom (Trust Secretary), Ana Prada (Harper Adams), Dimitris Mallis (Nottingham), Scott Ewing (Glasgow), and Liam Burlace (Birmingham) standing behind Mavuto Banda (Cranfield, based in Malawi) and Prof Matt Bell (Supervisor ex-Nottingham, now at Hartpury)

Let loose at last.....

Secretary Alan Plom is relieved to report on the Trust's first face-to-face meetings for 2½ years, especially as the Trust is celebrating its 50th year.

Agri-Food Charities Partnership (AFCP) National Student Forum

This 'biennial' Forum was held at Cranfield on 30th March. Nearly 60 attended, with more than 30 posters displayed. Eight of our current PhDs were able to discuss their research with students funded by other charities from around the country, as well as some supervisors and trustees.

Two also gave presentations: Dimitris Mallis (travelled back from Greece) and Silvia Arpano (who only had to walk across the Cranfield campus!). Brief details of all their projects and posters and photos of our tour of the Agri-Epi Centre and Labs can be viewed at:

https://www.dbt.org.uk/researchprojects

The event warned us that Covid isn't done with us yet. One of our students Alex Ansell was self-isolating and a few who did attend tested positive afterwards, although no-one was seriously affected.

Josie Lynch (Worcester University), was also unable to attend, due to speaking at a conference in Hungary

(Front l to r): Eric Murray, Jack Hughson, Toby Jones, Jessica Evans and Rachel Brown. (Back l to r): Alan Plom (Trust Secretary) , Richard Robinson (Trustee), and David White (ex-Trustee/Senior Lecturer in Agricultural Engineering

(sponsored by DBT), not surprisingly, this had to be held on-line due to the Ukraine situation.

Lincoln outing

Our bi-annual Board meeting was hosted by Trustee Prof Simon Pearson at Lincoln Institute of Agricultural Technology (LIAT) on 5th April - the first time some of our Trustees had actually met each other. Although Rebecca Geraghty was unable to join us, she appeared 'larger than life' on a monitor.

Trustees also met many of the LIAT-based PhD students and their Supervisors involved in the AgriFoRwArdS* robotics programme, toured the research facilities at Riseholme Campus and watched demonstrations of their innovative projects.

Harper Adams University Scholarship Presentation Ceremony

This greatly missed 'annual' awards event was held on 11 May, attended by Trustee Richard Robinson and Secretary Alan Plom, who presented the certificates to the five successful students. It was nice to meet them as well as many 'old friends' face-to-face at last, after two years of online interviews.

Jack also received a scholarship from the Jenner charity, and it was notable that a number of other agricultural engineering students received scholarships from other sponsors this year, including recent DBT Scholars Will Flittner (a one-year placement with Claas) and Sam Scales (the prestigious 'Harper Adams Club Postgraduate Scholarship'). Both are keen ambassadors for IAgrE, actively support their local Branch, attended the AGM and recently set up an Engineering Society at Harper.

Trustees have also been involved in several other virtual and face-to-face meetings, including 'set-up' meetings with research students and their supervisors.

50th Anniversary

We are all looking forward to our special **'Jubilee' Event** in September (Covid permitting!) and meeting a cross-section of invited representatives of organisations and institutions the Trust has worked closely with over the past five decades, and some beneficiaries to reflect on what the Trust's support meant to them. [nb. Keep an eye on your inboxes….and junk folders?]

Please share how any support from the Trust (eg sponsoring your research, scholarships, travel, or 'hardship' grants, mentoring, etc.) during the past 50 years has helped.

Please send a short, written testimonial and ideally a 'selfie' video recording, to the Secretary via **enquiries@dbt.org.uk** , asap.

We would also welcome further donations from beneficiaries, to enable us to support even more research – vital for all our futures. Thank you.

Research round-up

First sowing of genetically edited crop under new UK regulations

Less restrictive rules will speed up advances in plant breeding, say scientists

Farm staff at Rothamsted Research notched up a UK first this month by sowing seeds of genetically edited Camelina sativa just weeks after regulations for scientific field trails were eased, allowing much more freedom for researchers to plan their field experiments.

Using a seed drill specifically designed for the relatively small seed numbers used in field trial work, the plot was prepared and seeded in just a few hours. However, the big difference was the time saved in applying for permission to conduct the trial.

Under previous regulations, trial sites had to be specifically identified and permission sought from DEFRA following a detailed application procedure. Now, under the government's new Qualifying Higher Plant (QHP) status - the post-EU non-GM classification for GE crops, plants can be sown anywhere on Rothamsted's farm. For the current trial, the approval process for QHP status took just a few minutes as opposed to the months required under the older pre-Brexit regulations which lumped GM and GE crops together.

Professor Johnathan Napier, who is leading Rothamsted's research into genetically altered Camelina plants that can produce long chain omega-3 oils said: "The new regulations make it significantly easier to carry out research trials and we are very pleased to be able to take immediate advantage of this. I am excited by the opportunities that the new QHP status will bring in terms of reduced regulatory burden and in advancing our research and development of oilseeds with improved nutrition and higher yield."

Rothamsted is currently one of the very few sites in the UK where field trials of crops developed using new genomic techniques can take place at farm scale. Testing crops in this way is an essential part of evaluating whether the promise of new traits has practical potential.

"Many traits are identified in the lab, but agricultural cultivation and the variable conditions crops are grown in bears limited resemblance to these controlled conditions. So field evaluation is a critical part of the process to deliver useful traits and societal benefit from our research," said Professor Napier. "Previously, regulation made it very hard to carry out such trials for GE and GM crops which impeded innovation. Hopefully these new rules for GE research trials will encourage more researchers to move out of the lab and into the field to validate their discoveries."

Survey seeks farmers' views on GHG emission reduction

Beef and dairy farmers are being asked for their views on the role of precision livestock farming technologies in reducing greenhouse gas (GHG) emissions.

Researchers at SRUC have shared a survey about enteric methane emissions – the single largest source of direct GHG in beef and dairy systems – as part of the EU-funded GrASTech project.

The project, led by Belgian colleagues ILVO (Flanders research institute for agriculture, fisheries and food), focuses on the management of grassland and grazing cattle to reduce GHG emissions.

It aims to identify best management practices and precision livestock farming (PLF) technologies - both to support management decisions that directly target GHG mitigation and to reduce technical inefficiencies such as ill health, infertility and deaths, that increase emissions intensity indirectly.

The anonymous survey will take around ten minutes to complete.

https://survey.ilvo.be/index.php/994524?lang=en

About the Land-based Education and Training Committee

The Land-based Training and Education Committee (LE-TEC Ltd), a private company limited by guarantee, is sponsored by three main industry bodies: AEA, BAGMA and the IAgrE. Its aims are to promote training and education for people working with farm and horticultural machinery and associated areas.

LE-TEC

Landbased Engineering Training and Education Committee Limited

Research round-up

Online delivery opens up Data Science postgraduate course to students across the world.

Starting this September, Harper Adams University will be offering a fully online postgraduate certificate course in Data Science for Global Agriculture, Food and Environment – and is offering financial support to overseas students.

The course can be taken as a stand-alone or built upon – via further study at the Harper Adams campus - to level up to a Postgraduate Diploma or by also completing a Masters' Research Project to qualify with a full Masters' degree.

The PgC in Data Science comprises four bespoke modules – all of which will be open to students across the globe thanks to digital delivery – in Statistical Analysis for Data Science; Techniques in Machine Learning and Artificial Intelligence; Data Visualisation and Analytics; and Experimental Design and Analysis.

The Harper Adams postgraduate Data Science suite of courses was a UK first when launched in 2020, when programme leader, Dr Edwin Harris, explained: "The agriculture, food and environment sectors are experiencing a radical shift in demand for data scientists, thanks to applications in agri-tech, and smart farming together with a surge in demand for general skills using big data and open data across the sector through to 2030.

"At the same time, there is a huge demand for data-driven solutions for best-practice solutions for conservation and environment issues that are compatible with the future of farming. This new course, the first and only of its kind in the UK, seeks to address these challenges."

The course has attracted global interest, but overseas students have faced challenges in accessing the learning, particularly during the pandemic.

Now, having moved fully online the postgraduate certificate is open to all. And in the courses' inaugural year, Harper Adams University is offering scholarships of £2,500 to overseas applicants to support the global drive to create more data scientists specialising in agri-food and environmental management.

The Data Science curriculum at Harper Adams University is designed to meet the requirements of two types of potential students.

The first are individuals who have an undergraduate or technical background in some aspect of data science and are looking to obtain the necessary agriculture and food experience. The second group comprises individuals with a background in agriculture and/or food who wish to train in data science.

Dutch-UK collaboration will advance innovation for global sustainable farming

- The four UK Agri-Tech Centres – CHAP, CIEL, Agri-EPI and Agrimetrics - are progressing a sustainable farming partnership with world leading agricultural research and training organisation, Wageningen University & Research (WUR) in the Netherlands

The new partnership will seek to advance science and innovation to help meet the challenges of sustainable global food production, including the reduction of its environmental impact.

Recognising the UK Agri-Tech Centres' position as the hub of UK agri-food innovation, WUR approached the Centres with a proposal to collaborate. The partners will seek to establish new, joint opportunities for innovative public-private partnerships in agri-food science and business.

The partnership will explore opportunities in areas such as regenerative agriculture; crop, pest and endemic disease management; data platforms and modelling; automation to address labour shortages; genomics; and precision agriculture and aquaculture. These are in alignment with the UN Sustainable Development Goals and the aims of the European Green Deal.

A senior team from the Agri-Tech Centres returned recently from a successful trip to the WUR, where the partners learned more about each other, toured the impressive facilities and discussed common goals. A representative from the UK Embassy in The Hague joined the visit to support the partnership's development.

The IAgrE Lunchtime Lectures

For more details on future lectures head to the upcoming events page at

https://iagre.org/events

Don't forget that the Lunchtime Lectures are available to watch on the IAgrE's youtube channel :

YouTube

https://bit.ly/3kpKVF8

TECHNICIAN GRADE

NEW ROUTE INTO IAgrE FAMILY

DAIRY EQUIPMENT TECHNICIAN

The Technician grade of IAgrE Membership is for those who are qualified at a vocational or technical level. They may have completed an apprenticeship or extended diploma. Alternatively they may have gathered technical training at work or participation on an IAgrE approved training programme such as Parlour Safe. To qualify, you will be working in industry and will have built up experience and career development in the workplace.
You will be keen to be part of the IAgrE family and seeking a cost effective way of getting involved and benefiting from being part of the community of professional engineers.

The IAgrE Technician Grade for Parlour Safe Technicians
If you are registered under the Parlour Safe scheme and have attended training courses at Reaseheath or Hartpury Colleges you are eligible to apply for IAgrE membership and use the letters TIAgrE after your name and on your business card as a way of demonstrating your high standards to your customers and colleagues.

If you have completed the training and assessment at Parlour Safe Category 3 and above you can also apply to become a professionally registered engineer. This will permit you to use the title of Engineering Technician and join the growing number of engineers who use the letters EngTech as a demonstration of high standards and professionalism.

ACCREDITATION SCHEME
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To apply and find out more:
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