

WORLD of OPPORTUNITY

Careers in
Landbased
Engineering

*Fast moving,
challenging,
dynamic,
different*



Our people . . .

- Enjoy being part of a team
- Are fascinated by innovation
- Have excellent IT skills
- Are always up for a challenge
- Love to problem-solve
- Enjoy the outdoor life
- Like meeting people
- Want a satisfying career



Welcome

Thank you for your interest in Landbased Engineering – and welcome to our world.

Welcome to a World of Opportunity, and to a career that we believe is the best – on earth.

We realise that the meaning of the phrase Landbased Engineering might raise a few quizzical eyebrows.

But it is how we sum up an industry that ranges from tractors and combines, farm machinery, dairy equipment, chainsaws and forestry tools, off-road vehicles through to the grasscare machines you see at work at Wimbledon, Lords or Wembley.

We are a traditional industry with a very modern outlook that now seeks young people with IT, scientific, communication and specialist skills to meet the technological revolution that is sweeping through all aspects of our business.

Robots, GPS satellite guidance systems, data management, alternative fuel sources, remote diagnostics and the like are encompassed on the machines of today – and tomorrow.

Not so many years ago, tractors and farm machinery were built bigger and bigger, and faster and faster.

Today, the emphasis is on smart technology as we, as an industry, seek more and more innovative ways of feeding a growing world population.

This brochure can only lift the lid slightly on the exciting opportunities within Landbased Engineering – but hopefully it will encourage you to learn more about the career potential within our wide-spread industry that for those in it are not simply a job, but a career with endless opportunities.

CONTENTS

| | |
|-----------------------------------|-------|
| Introduction | 3 |
| What is Landbased Engineering? | 4-5 |
| Get to know Us: The Dealers | 6-7 |
| Get to Know Us: The Manufacturers | 8-9 |
| Apprenticeships and Training | 10-11 |
| Where can I study? | 12-13 |
| Directory | 14 |
| FAQs and Further information | 15 |

WORLD OF OPPORTUNITY

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WHAT IS LANDBASED ENGINEERING?



ONE OF THE BEST CAREERS – ON EARTH



The agricultural and food production industry uses some of the most advanced and progressive engineering in the world. It harnesses innovation and technological wizardry to meet the changing demands.

How will we feed the world in the future? How do we protect our natural resources?

The need for new engineering and technology as a solution to the challenge has never been more important.

The skills needed in the future will encompass robotics, computer-based imaging, GPS technology, science-based solutions, climate forecasting . . . and much, much more.

Do you want to be part of that solution and leave the world a better place?

Today's tractors have an engine capable of producing 200 hp and upwards and will be packed with as much computer-power, electronics and sophisticated control systems as an F1 car. Tractors and combine harvesters use GPS systems

What will the future hold? Inevitably, driverless tractors, robotic fruit pickers and drones to provide accurate mapping of fields.

So as tractors and machines grow in complexity, so the service support required to keep the equipment working at full efficiency requires a new breed of technician and technical support, highly trained, committed and adaptable.

WHAT TO EXPECT

Working in Landbased Engineering is both rewarding and challenging. You will probably enjoy the outdoor life, working on a variety of technologies, and be attracted and fascinated by new innovations - and above all you will relish a challenge. Whether as a design engineer or a service technician, career opportunities are broad ranging. The network of some 3000 UK agricultural, turfcare, dairy and forestry equipment dealerships, most of them working hand in hand with one of the major manufacturers, are always on the lookout for fresh talent, and offer a variety of training opportunities. You will work as part of a team, but be given the opportunity to build a career in a specialist sector.



NEW TECHNOLOGY

Precision farming and the technology of mechatronics such as remote sensors, robotic systems and automation is now playing a vital role on our farms and in efficient food production. Sensors and systems are adding a new level of precision and sophistication to performing accurate operations in the field, saving on seeds, fertiliser and pesticides.

DAIRY

We drink around 5 billion litres of milk in Britain each year - the equivalent of 2,000 Olympic-size swimming pools - but many of us rarely think about the journey that milk makes from farm to fridge. With modern dairy equipment, engineering meets biology. Farmers need qualified technicians working on their machines where raw milk is in direct contact with the machine - and must have the confidence that they are receiving the highest level of expertise in design, installation, maintenance, servicing and repair.



FORESTRY

Today's forestry equipment is packed with innovative technology, designed to make the job of the professional forester and landscaper easier and safer. Chainsaws and cutting equipment are high power, compact and ergonomically designed. Forestry is as much about timber production as it is the management of the forest as an amenity, so engineers are involved in innovative projects such as the design of bridges and structures to give improved access to the natural environment.



ENVIRONMENT

Landbased Engineering will play a leading part in developing alternative fuels in the coming years. As producers and users - many tractors are today designed to run partly or wholly on biodiesel - farmers will increasingly be stepping up production of wheat which goes to make alternative fuels such as ethanol, or biodiesel made from rape seed.

TURFCARE AND GARDEN MACHINERY

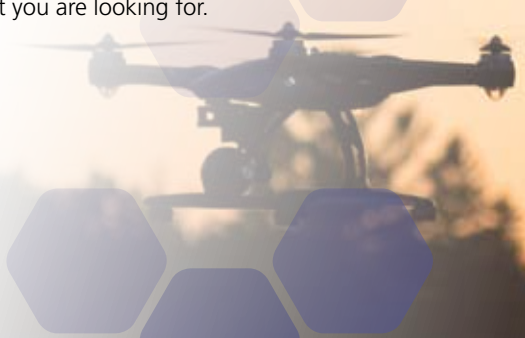
As with agricultural machinery, there are a range of qualifications that can lead to you working with a garden machinery and grounds care dealership. And once you are there, the opportunities are endless. You might be maintaining machinery for golf courses, working on fine turf machines for homes, - even working at a Premiership football club, a Championship golf course or a Test Match ground.

OFF-ROAD VEHICLES

The term ATV (All-Terrain Vehicle) is used to describe a whole range of versatile vehicles that enable farmers, land-owners and event organisers to get around areas that would be largely inaccessible by a car or off-road vehicle. Many farm machinery and grass machinery dealerships hold one or more of the leading ATV franchises, and there are plentiful opportunities to become a trained service engineer, salesman or trainer passing on riding skills and operator safety.

IS IT FOR YOU?

If you are keen on science, technology, engineering or information technology - and want to make a difference - then a career in landbased engineering could be just what you are looking for.



GET TO KNOW OUR INDUSTRY: THE DEALERS

The phrase Landbased Engineering opens up hundreds of job opportunities for those who are looking, not so much for a job, but a career full of exciting opportunities.

Manufacturers of tractors, farm machinery dairy equipment and turfcare machines are getting ever more inventive in the way that equipment is designed and operated.

We are entering an era of smart farming, incorporating some of the world's most sophisticated technology. Robotics are becoming more and more utilised in crop production, in dairy and in grass maintenance equipment.

The new breed of land-based engineer will certainly require IT skills but also other specialised skills that include robotics, computer based imaging, GPS technology, science-based solutions, environmental controls and much, much more.

Job opportunities in the land-based engineering industry are not limited to technical skills. Both manufacturers and dealers are always seeking those with sales, marketing, communication and retailing experience.

The opportunities for advancement within the industry are endless, with a variety of jobs and roles available. If the following applies to you, then land-based

engineering could well be an attractive and long-lasting career option

- The ability to work as part of a team, and have good social skills but also
- The ability to work alone – often outside
- Excellent problem-solving and analytical skills
- A high level of IT literacy. Much of your work will involve computer work, both in the traditional sense but also in their use for machine diagnostics
- A love of the outdoors

The way the industry works is that manufacturers sell their equipment through a network of dealers spread across the country. These dealers provide advice and guidance to customers on what equipment best suits their needs, and once supplied, provide after-sales service and spare parts support.

For those students not going onto higher education or university, the starting point is often a job with a dealer. Let's look at how the typical dealer works, and what opportunities there are.

DEALERSHIPS

Unlike a car dealership who generally only sell one brand of car, a typical dealer will represent several manufacturers (or franchises). There are around 3000 dealers in the UK, ranging from small, single branch companies offering a personal service to local customers, to much larger dealerships with branches spread across several counties.

However, almost without exception, dealers large and small are independent, family-owned businesses where the opportunity to advance into management or more senior roles is more likely than in a public company. Some dealers specialise in different types of equipment. It may exclusively sell tractors or farm equipment, it may sell mowers and turf equipment to homeowners or sportsgrounds, it may specialise in forestry equipment, in dairy equipment or in ATVs (all terrain vehicles) or quad bikes.

In truth, many dealers sell some or all of these, often through specialised branches.

Let's look at one or two typical dealerships, all industry Award winners, to illustrate the diversity of the industry

JOE MATTHEWS
 Service Technician
ERNEST DOE LTD
 Essex and branches



Joe has worked for dealer Ernest Doe for over 25 years and has always been interested in anything mechanical. He loves the variety and challenges of his role as specialist combine technician. He is a Level 4 Master Technician.

"What you need in this job is a good deal of common sense, good dexterity and strong customer facing skills. I get a real buzz out of us working together as a team and when customers ask for you by name, you do really build strong relationships with customers"

LISTER WILDER

Established in 1947, Lister Wilder operates from seven branches in the south of England stretching from Bristol in the West to Kent. It specialises in four areas, Agriculture

"We make sure our people enjoy the respect and recognition for a job well done. Helping them develop skills and progress their careers is just part of a normal day with us"
 Ian Nutt, Managing Director



(tractors, farm machinery and off-road quad bikes), Construction (excavators and dumpers), Grasscare (mowers for homes and sportsgrounds) and Forestry (chainsaws and accessories). The company employs over 200 people working in sales, parts, service, admin and transport). Lister Wilder was voted the Farm Machinery Dealer of the Year in 2014 and Turfcare Machinery Dealer of the Year in 2016.

ARWEL AGRI-SERVICES

Arwel Agricultural Services Ltd are a family-run farm machinery dealership run by Arwel and Georgina Evans based in Harford, Carmarthenshire, providing new machinery, parts and service to farmers across West Wales. In addition to the owners, Arwel employs seven people to sell new and second-hand tractors and machinery and provide an engineering service for general agricultural products. Arwel Agri-Services were voted Farm Machinery Dealer of the Year in 2016, beating off competition from several much larger companies



CHESHIRE TURF MACHINERY

The company started life more than 60 years ago when it was formed to sell garden machinery and turf equipment, and was later bought by Electrolux (owners of Flymo). When in 1980, Electrolux decided to sell the business, it was acquired by present MD Steve Halley along with two fellow directors. The company specialises in supplying commercial mowing equipment to golf courses, sportsgrounds and local authorities across the north of England. A winner of the Turf Machinery Dealer of the Year, Cheshire Turf Machinery is the preferred machinery supplier to both Manchester City and Manchester United football clubs



SIMS GARDEN MACHINERY

Leading garden machinery dealership, Sims Garden Machinery of Stratford on Avon has more than 100 years history in the farm and grass machinery business. Founded in 1908, the family-owned company is now run by Barry Sims and his son, Ben. Several years ago, Sims decided to move from selling farm equipment to concentrate exclusively on lawnmowers and garden equipment and the showroom is one of the finest in the UK having been professionally designed to showcase most of the leading brands on the market today



WANT TO KNOW MORE?

Most Landbased engineering dealers in the UK are represented by the **British Agricultural and Garden Machinery Association (BAGMA)** who will provide further information on dealers in your area. Many dealers will encourage interest from those wanting more information about the industry in general, or their business in particular – and can arrange for you to visit them and learn more.

British Agricultural and Garden Machinery Association,
 225 Bristol Road, Edgbaston,
 Birmingham B5 7UB
 Tel: 01295 713344
www.bagma.com



CARA JEFFREY
 Branch Manager
BURDEN BROS
 Framfield, Sussex

Before joining Burden Bros Agri, the main John Deere dealer for Kent, Sussex and Surrey, Cara had gained extensive experience with major retail groups including senior roles with Marks & Spencer, Matalan and Homebase.

"After many years working with well-known retail brands, I am delighted to be working with a company that has family at the centre of its values, whilst being at the cutting edge of innovation and development within the agricultural and turf machinery sectors"



GET TO KNOW: THE MANUFACTURERS

The UK has a long tradition for the design and manufacturer of tractors and farm machinery. Names such as JCB, Househam Sprayers and Brian Knight are synonymous with quality UK products, whilst the industry contains many international

companies such as John Deere, AGCO (brands such as Massey Ferguson) Case-New Holland (CNH), CLAAS and Kubota. CNH produces tractors at its production plant in Basildon, Essex (pictured above)

where it employs over 500 people and builds over 25,000 tractors a year, the majority of which are exported.

Several of these companies also operate in the mower and turf maintenance market, notably John Deere, Kubota and Alamo Group, whilst long-established mower manufacturer Ransomes is still making mowers

in Ipswich almost 180 years after

acquiring the first patent from the inventor of the lawnmower Edwin Budding in 1832. The company offers an apprenticeship scheme, open to two age groups – those aged 18 and under and those aged between 19 and 24 who spend a day at college and the rest at the production plant.

All of these are major international companies, but the UK industry is fortunate in having numerous small manufacturers such as Garford Farm Machinery, often specialising in innovative and ground-breaking products which are best developed by small R&D teams. Garford have developed a weeding machine for field crops (vegetables and salads) that uses a camera to identify only the weeds, and applies weedkiller to the plant itself rather than spreading the chemical across the soil and crops.

Many manufacturers offer students taking degree courses in relevant agricultural, science or engineering courses, the opportunity to work within their organisation on placements in various departments to gain experience of life on the 'front-line'. These secondments, usually lasting a year or so, often include opportunities to work within the manufacturer's dealer



network or indeed overseas and may result in an offer of full-time employment. Whilst this is not guaranteed, the experience gained is an invaluable step to a rewarding career. The sophistication and new innovations coming through onto the market means that

manufacturers must work closely together with their dealers on training new recruits and apprentices as well as updating current staff. In 2016, John Deere opened a new purpose-built apprentice training facility near Nottingham recently, whilst CLAAS invested in a new £1.2 Academy at its headquarters in Suffolk.

Our industry encourages and rewards those with a 'can-do' attitude, a willingness to learn, good team players and those who relish face-to-face contact with customers. Above all, this is a 'people-business' and one which can bring great rewards, not only financial but in real job satisfaction. We think it's one of the best careers – on earth.



Manufacturers and suppliers are represented by:

AEA (Agricultural Engineers Association)

Samuelson House,
62 Forder Way, Hampton,
Peterborough PE7 8JB

Telephone: 0845 6448748

www.aea.uk.com





Diary engineer Soil scientist Retail manager
 Machinery advisor Sportsturf consultant
 hydraulics technician

ROUTE TO THE TOP: FROM DEALER TECHNICIAN TO MANAGING DIRECTOR

Jonathan Henry started as a technician with Scottish farm machinery dealer Grangestone, representing Scotland in the Technician of the Year competition. He then studied at Scottish Agricultural College gaining an HND in Mechanisation. Jonathan then joined John Deere UK as a management trainee in 1993 working as an area manager in the south-west of England. He undertook further roles in precision farming technologies followed assignments at Deere plants in the US and Germany. After a number of senior roles, Jonathan was appointed Managing Director of John Deere UK in July 2106,



OUR PEOPLE



JACK ROBBENS
 Service Technician
BEN BURGESS LTD
 Norwich

Jack joined Burgess at the age of 14 after a two-day work experience whilst at school. He took a 3-year apprenticeship and in 2017 was awarded the title of John Deere Apprentice of the Year at a ceremony in Germany

"I cannot think of a job which provides so much variety and job satisfaction. I'm constantly having to think on my feet, and whilst I love working with my hands, today you also need IT skills to be able to diagnose and solve performance issues on a wide range of equipment. I hope to become a product specialist with the company in due course"



ADAM HAYWARD
 Combine Specialist
CLAAS UK

Gained a BSc (Hons) in Agricultural Engineering at Harper Adams University, before gaining a placement at CLAAS UK, as a result of which he took a 3-year posting with a CLASS dealership in Australia before returning to the UK and becoming a Combine Product Specialist for the UK and Ireland

"Getting a placement with an international company such as CLAAS opened up so many opportunities, gave me the chance to travel and work in Australia for almost three years. There is great satisfaction working in this industry- and the most important factor is job enjoyment and the opportunity meet so many people"



STEPHEN COPNALL
 Senior development and Testing Engineer
TURF MECH MACHINERY
 Makers of professional mowers

Stephen studied and gained an HNC (Higher National Certificate) in Mechanical Engineering through a University whilst working full-time. He has recently gained Incorporated Engineer status

Being technically minded, I enjoy problem solving and developing new methods to improve product quality and learning new technologies. My main duties include designing and implementing product test programmes to replicate product life and working conditions. I am also involved in new product development and improving manufacturing quality and implemented changes where necessary. I enjoy meeting new challenges, particularly if they are daunting and difficult but with hard work and determination they start to look easier and simpler.



TONY RALPH
 Service Manager
RIPON FARM SERVICES
 North Yorkshire

Tony joined John Deere dealer Ripon Farm Services at the age of 19 as an apprentice service technician, and by the age of 23 had been appointed Service Manager. Tony was awarded the Star of the Dealership Award at the 2017 Service Dealer Industry Awards

"What I love about this job is how we constantly have to problem-solve and use our initiative – often in unfriendly weather and conditions – and that gives you a real buzz. We also get very close to our customers, socialise with them in rural events and so you do have to be a 'people-person'"

YOUR ROUTE TO THE BEST CAREER: ON EARTH

Challenging. Inspiring. Dynamic. Influential. Different. Fast moving

Take a look at the vast range of opportunities offered by Landbased Engineering. Whether it's working on a big tractor with enough gadgetry under the bonnet as a Formula One car, or keeping mowers in tip-top condition to prepare Wembley, Lords or Wimbledon for major occasions – they all come under the banner of Landbased Engineering.

APPRENTICESHIPS

Earn while you learn

Apprenticeships are an excellent way to gain nationally recognised qualifications and valuable workplace skills, all whilst earning a wage.

Why wouldn't you be interested in that as a package? Training in the skills which employers want, an apprenticeship gives you choices in your career.

Following your apprenticeship, you will most probably continue working for your employer or progress to higher education at college or university. The options are varied and exciting. The main benefits being:

- Earn a wage
- Paid holiday
- Gain a nationally recognised qualification
- Learn through working alongside experienced staff
- Learn job specific skills
- Start your training at any point in the year

Apprenticeships are designed to allow you to 'earn while you learn' with most time spent at your workplace and usually training away from the workplace 'off-the-job' at a college or training provider.

NEW APPRENTICESHIP STANDARDS

You might have heard that the Government have introduced the new Trailblazer Apprenticeship scheme. As an industry, we have recently developed new Landbased Service Engineering Trailblazer apprenticeship standards.

Now officially recognised amongst a raft of new standards for various industries are

- Foundation Level 2 Landbased 'Service Engineer'
 - Advanced Level 3 Landbased 'Technician'
- The advantages of the new Trailblazer Apprenticeships are that the qualifying standards are set by the industry itself – rather than by a central body.

GETTING STARTED

In Landbased Engineering, you will need to find an employer, machinery manufacturer, local college or training provider who offers apprenticeships. Many manufacturers and dealers offer their own enhanced apprenticeships.

Local employers will often offer apprenticeship opportunities and send you to a local college or training provider for 'off-the-job' training.



SUMMARY

- Talk to your local Landbased college - if they don't offer apprenticeships in Landbased Engineering, they will be able to refer you to someone who does (there's a listing on page 14)
- You might already have a job lined up with a local machinery dealer and they may already be working with a local college of training provider.
- Most large machinery manufacturers will have a chosen college or training provider in place and will recruit apprentices from time to time

YOUR CAREER PASSPORT

LTA SCHEME

More than 10 years ago, the landbased engineering industry came up with a unique scheme to recognise the professional competence of technicians and others as their career progressed.

The Landbased Training Accreditation Scheme (LTA) provides a nationwide means of benchmarking, monitoring and assessing the competence of technicians and key staff.

FOR SERVICE TECHNICIANS THESE ARE:

Standard technician

Standard Technicians will have a skillset mapped against level 3 advanced apprenticeship

Advanced Technician

Applies to those who have attained the Standard Technician criteria and from this foundation accumulated experience in their chosen industry sector together with the accumulation of a pre-set minimum number of training credits obtained through specialist training. An Advanced Technician may be a product or diagnostic specialist

Master Technician

Will be gained by those who have gained the Advanced Technician criteria and accumulated a track record. They will have undergone specialist training and a stringent task and assessment programme. All training is accredited by manufacturers in conjunction with the employers to guidelines agreed jointly.



LANDBASED TRAINING ACCREDITATION

FOR PARTS AND AFTER SALES STAFF

The parts and accessories operation of a land-based engineering dealership, is an essential part of the company's overall success and profitability.

The objective of the LTA Parts Career Path defines the career development for those working within parts departments of the land-based engineering industry.

All training is accredited by manufacturers in conjunction with the employers to guidelines agreed jointly.



MILKING EQUIPMENT

A separate and complementary LTA scheme is available to those technicians working in the dairy industry. The scheme has been established by the Milking Equipment Association (MEA). Technicians registered under the Parlour Safe Scheme will be those working on milking equipment supplied by manufacturers who are partners in the scheme. In conjunction with Reaseheath College and Hartpury College, the MEA has developed a series of courses, designed to be delivered over three years, specifically aimed at those working on today's sophisticated milking equipment.



"Many technicians and engineers become registered professionals with the Institution of Agricultural Engineers"

Institution of Agricultural Engineers

The Bullock Building, University Way, Cranfield, Bedford MK43 0GH Tel: 01234 750876 www.iagre.org



WHERE CAN I STUDY?

The UK and Ireland boasts a network of further and higher education colleges and universities offering a range of courses spanning the range of landbased engineering sectors including agriculture, turfcare, dairy and forestry. Here is a brief focus on four training centres (a full list is on page 14)

REASEHEATH COLLEGE, CHESHIRE

Reaseheath College is one of the top training centres in the UK for agricultural engineering and is the preferred training provider for leading companies such as JCB, Case IH, Claas and New Holland. Employers, both dealers and manufacturers, constantly look to Reaseheath when recruiting - and there's always high demand for newly qualified engineers. Reaseheath offers Level 2 and Level 3 diploma courses in Agricultural Engineering as well as apprenticeships in Landbased Engineering, in Parts, Sales and Marketing and training for the Parloursafe qualification for the dairy equipment industry.



SCOTLAND'S RURAL COLLEGE (SRUC)

Four Scottish colleges, Barony, Elmwood and Oatridge Colleges and Scottish Agricultural College, merged in 2012 to become Scotland's Rural College (SRUC). Together they deliver comprehensive skills, education and business support for Scotland's landbased industries.

The colleges offer a strong curriculum of landbased related courses, notably in agriculture, turfcare and forestry from introductory engineering courses through a range qualification levels.

A range of topics will be covered during the courses including engine repair, service and maintenance, hydraulic systems, welding and fabrication.

Scotland has a strong forestry tradition and the curriculum at SRUC recognises this by offering specialist courses to meet the demands of maintaining forestry and arboricultural machinery.



RISEHOLME COLLEGE, LINCOLNSHIRE

Riseholme College (part Bishop Burton College) is based in the UK's most important agricultural county. Almost every student who completes their course at Riseholme College finds gainful employment or moves on to a higher level of study within six months and this was recognised at this year's Business Technology Education Council (BTEC) Awards, where Riseholme was crowned the 2017 Outstanding BTEC College of the Year. The £3.5million Technology and Skills Centre is a new purpose-built unit on campus focusing on advancing land-based study. The state-of-the-art training gives students access to the latest technology in precision farming, including global positioning systems, CAN bus electronics, drone technology and refrigeration engineering.



HARPER ADAMS UNIVERSITY

Harper Adams University was named modern university of the year in the *The Times & Sunday Times Good University Guide 2017*. The university, which is ranked in the top 10 for graduate employment in the UK, provides state-of-the-art facilities and courses for undergraduate, postgraduate and lifelong learners in agriculture, agribusiness, animal, engineering, food, rural and land-based studies. All undergraduate courses include a 12-month commercial placement spent away from the university, where students can gain practical experience in the workplace before they graduate.

Harper Adams is also the home for the Agricultural Engineering Innovation Centre, and home to the National Centre for Precision Farming.



LOOK NO HANDS

The robots are coming – from fields to football



HANDS FREE HARVEST

THE WORLD'S first "hands free harvest" was completed at Harper Adams University during 2017. The ground-breaking project aimed to be the first in the world to plant, tend and harvest a crop with only autonomous vehicles and drones. It began in October 2016 and 11 months later the barley crop had been gathered in.

The project team plan to make a Hands Free Hectare beer with their harvest!

Martin Abell, lead researcher said: "This project aimed to prove that there's no technological reason why a field can't be farmed without humans working the land directly now and we've done that. We set-out to identify the opportunities for farming and to prove that it is possible to autonomously farm the land".

The team used machinery that was readily available for farmers to buy; open source technology; and an autopilot from a drone for the navigation system. Martin Abell said "Our major challenge leading up to harvest was getting the combine ready. We spent a lot of time practising; getting our headland turns right and on the day they appeared to be perfect, which was amazing to see".

A tractor which was used earlier in the project for the spraying, drilling and rolling, and was smaller and lighter than most tractors used nowadays. The team's mentality that smaller is better was carried through to harvest. The team believe that the use of smaller agricultural machines could improve soil and plant health.

"Team member Jonathan Gill said "The weather can be an issue when farming, and provide only small windows for work to be completed; we've experienced it ourselves with this project. Just like anywhere in the UK, we've had to adjust our spraying times and harvest times due to the rain".

"Now it's going to take new talent entering the industry to develop the technology. We hope that this project has helped to inspire some people and shown them the range of interesting and innovative jobs that are available now in agriculture."

More info: www.handsfreehectare.com

CUTTING EDGE

Newest member of the Football League, Forest Green Rovers use a robotic mower to cut the pitch "We call it, 'The Mowbot'," says the head groundsman "it works from satellites and will cut the whole pitch in three days. If there is ever a problem and it gets stuck, it sends a text to my phone to tell me. "It works off solar and windpower – and charges itself. If anything gets in its way, it stops and goes in another direction. Then it will come back two hours later to the same area because it knows that it needs to cut every blade of grass".



DRIVERLESS TRACTORS

Within the next decade, farming as we know it is expected to be revolutionised by the use of self-driving tractors and robots that can perform time-consuming tasks now done by humans.

Europe's CNH,, known for its Case IH tractor brand, has recently unveiled an autonomous concept tractor which could work unmanned around the clock and uses GPS and sensor technology. The farmer could remotely monitor and control the machine using a device such as a tablet.

Meanwhile in Lincolnshire, Lincoln University is trialling an advanced new mobile robot to support agri-tech experiments at the University's agricultural field station.

The Thorvald agricultural robot, developed with scientists from Norway has been built to perform a wide variety of agricultural tasks, and can navigate between rows of crops without touching plants.



DIRECTORY VOCATIONAL COURSES

These are offered by a further education or specialist landbased college. The duration will vary from one to four years depending upon the level of the courses. Further information on colleges and the courses they offer in landbased engineering can found on the website of LANDEX, an organisation representing the interests of colleges and universities across the UK www.landex.org.uk

England

| | |
|--|-----------------------------|
| Askham Bryan College | York |
| Bishop Burton College | East Yorkshire/Lincolnshire |
| Bicton College | Devon |
| Brooksby Melton College | Leicestershire |
| Craven College | Skipton |
| Duchy College | Cornwall |
| Easton and Otley College | Norfolk |
| Hadlow College | Kent |
| Hartpury College | Gloucestershire |
| Myerscough College | Lancashire |
| Plumpton College | East Sussex |
| Reaseheath College | Cheshire |
| Sparsholt College | Hampshire |
| Warwickshire College (Moreton Morrell) | Warwickshire |
| Wiltshire College (Lackham) | Wiltshire |

Scotland

| | |
|------------------------|--------------|
| Barony Campus (SRUC) | Dumfries |
| Oatridge Campus (SRUC) | West Lothian |

Wales

| | |
|--------------------------|----------------------|
| Coleg Cambria (Llysfasi) | Ruthin, Denbighshire |
| Coleg Cambria (Northop) | Northop, Flintshire |
| Coleg Llandrillio | Glynlifon |
| Goleg Sir Gar | Carmarthen |
| NPTC – Newtown Campus | Newtown, Powys |

Northern Ireland

| | |
|--------------------|--------|
| CAFRE (Greenmount) | Antrim |
| SWC (Omagh) | Tyrone |

HIGHER EDUCATION

Many Universities offer learning programmes in engineering, agriculture and environmental subjects and a number in Landbased Engineering or Agriculture Engineering. These include:

| | | | |
|-------------------------|---------------|-------------------------------|-----------------------------|
| Cranfield University | Bedfordshire | Royal Agricultural University | Gloucestershire |
| Harper Adams University | Shropshire | Institute of Technology. | Tralee, Republic of Ireland |
| Newcastle University | Tyne and Wear | | |

Keep an eye out for programmes which link Science, Technology, Engineering and Mathematics (STEM) subjects. Another key word to look for when researching courses is Agri-Food or Agri-Tech.



FAQS

What GCSE Levels do I need for an apprenticeship?

Employers might ask for two or more GCSE grades (A - C) or equivalent. However, qualifications required are always at employers discretion.

What are the best subjects to study at A-Level for Higher Education?

Ideally you should study, Maths, Physics and English. Electronics, chemistry, design technology, biology, geology or geography are also useful. For those students without A-level Maths, some colleges such as Reaseheath offer a Technical Baccalaureate (TechBacc) where you can study a Level 3 Extended Diploma in Agricultural Engineering alongside a Level 3 Maths qualification.

Do I need to have a farming or rural background?

Not at all. You will however need an interest in engineering, science and computer studies. You will be enthusiastic, adaptable, resourceful and keen to learn. You will also be likely to enjoy the outdoor life.

What if I am thinking of becoming an apprentice?

Many young people enter the industry through a dealership, either a farm machinery specialist or grass machinery dealership (although many sell and service both and a whole lot more equipment). Talk to a local farm or garden machinery dealer to see what opportunities they offer.

What other branches of agriculture are landbased engineers involved in?

Numerous courses and job opportunities are complementary to landbased engineering including conservation work, soil science, irrigation, water management, drainage, environmental controls, agronomy, microbiology, geneticists, animal welfare, construction projects . . . the list goes on.

As an individual, how could I best progress my career?

Dealers and manufacturers have their own trade associations (BAGMA and AEA) which they join as companies. For individuals, the industry's professional member organisation is the Institution of Agricultural Engineers (IAgrE) who provide a range of membership grades for students, technicians and others as they progress their career www.iagre.org

Is it a long-term career?

Think about it. Between 1990 and 2010 the world population grew by 30 percent. At the same time, as land resources reduce, and as climate changes, the need for solutions to feed the world are urgently required – and Landbased Engineers hold the key to many of these solutions.

Landbased Engineering

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