Agriculture • Horticulture • Forestry • Environment • Amenity

LANDWARDS

Autumn 2001

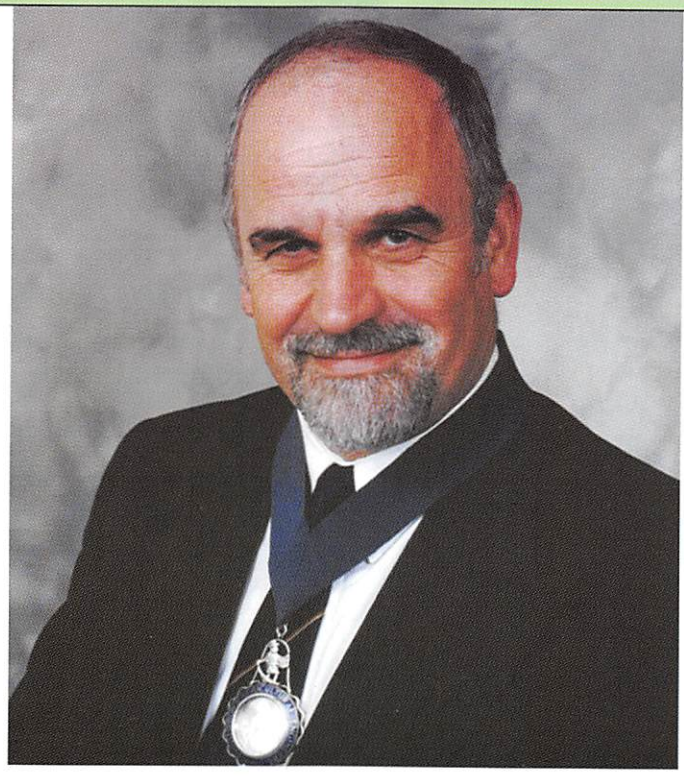
MACHINE DESIGN

CLIMATE CHANGE LEVY

LICENSING OF engineers

IAgrE JOURNAL Volume 56 No.3 www.iagre.org

LICENSING AND MAINTENANCE OF QUALIFICATIONS



This is becoming an important issue for Engineers at a time when the profile of the profession is being promoted. It is therefore incumbent on the profession to make the correct decisions on the subject. Licensing is something which is required when the general public's safety is at risk from the actions of a practitioner. Licensing is uncommon in engineering but is present for the control of those who are more at the technician end of the scale (e.g. gas fitters and medical engineers). However, it is being actively discussed for other branches of the profession and at Chartered level. Generally, Engineers are viewed as having acted responsibly in the past and licensing therefore has been seen as being unnecessary. On the other hand accidents have happened and in our increasingly legislative society, licensing may bring protection for Engineers as well as for the general public.

If it were to be introduced, the question would arise as to which body would control the licensing. The United Kingdom Accreditation Service (UKAS) is generally the controlling body but this may be different for professional Engineers, especially if given the choice. Whoever is in control, it will involve many checks and audits, generating much paperwork and no doubt substantial costs. These costs would be additional to the amounts an Engineer already pays to Engineering Council and to the Institution. The returns are not immediately measurable and could be poor value. One way to ensure control of the licensing would be for the Institution or Engineering Council to become the body responsible but this would result in substantial changes to these organisations.

What benefits would licensing bring to the Engineer who would have to shoulder the additional cost of paying for his license? It would ensure that unqualified personnel could not operate as Engineers. This would improve public safety, prevent non-Engineers from doing their work, give them more control over fees and enhance the image of Engineers in the eyes of the general public. It would be beneficial for Engineers if it were introduced in a way which suited them, for example, perhaps the Profession should consider voluntary licensing now, in advance of any measures which might be imposed, outwith our control.

Basically, licensing ensures that professionals are qualified and that their knowledge remains up to date. It involves training, accredited qualification and regular checks to ensure that competence and qualifications are maintained. However, as Engineers already have so much of this in place it might be possible to modify procedures a little and so bring about a system which could satisfy professional licensing and ensure minimal cost. We already have audited accreditation procedures for qualification and a continuing professional development (CPD) system but because the latter is not formally monitored, it could not satisfy licensing. Surely it could be possible to transform the CPD system into one monitored by a peer group? This would involve minimal financial outlay and could be regarded as a voluntary licensing system. CPD systems controlled by Institutions have been tried and proved costly to manage whereas counter signatures by qualified colleagues would not be expensive and it would reflect the academic/professional world in which research work is refereed.

Engineers are under a professional obligation to stay up to date but self-assessment would not stand up in law. I am suggesting that Engineers voluntarily 'maintain' their qualifications by having their current CV endorsed by qualified colleagues. The resulting document would become an accredited portfolio and a powerful tool in the licensing game. In the meantime, this document could become known as a 'maintained' qualification.

Your professional Institution would hold an up to date copy of this maintained CPD for scrutiny by outside bodies. The costs would be small but would be additional to the Institution's normal services to Members. Prospective employers could check on prospective employees and those with a maintained qualification would be at an advantage.

If such a procedure became popular, it could be put forward to a body like UKAS after some years of operation with a view to it becoming a sufficient form of licensing. If tackled in this way, we could introduce protection both for ourselves and the Public at very little cost and allow us more control over professional fees.

Geoff Freedman, President

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LANDWARDS

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

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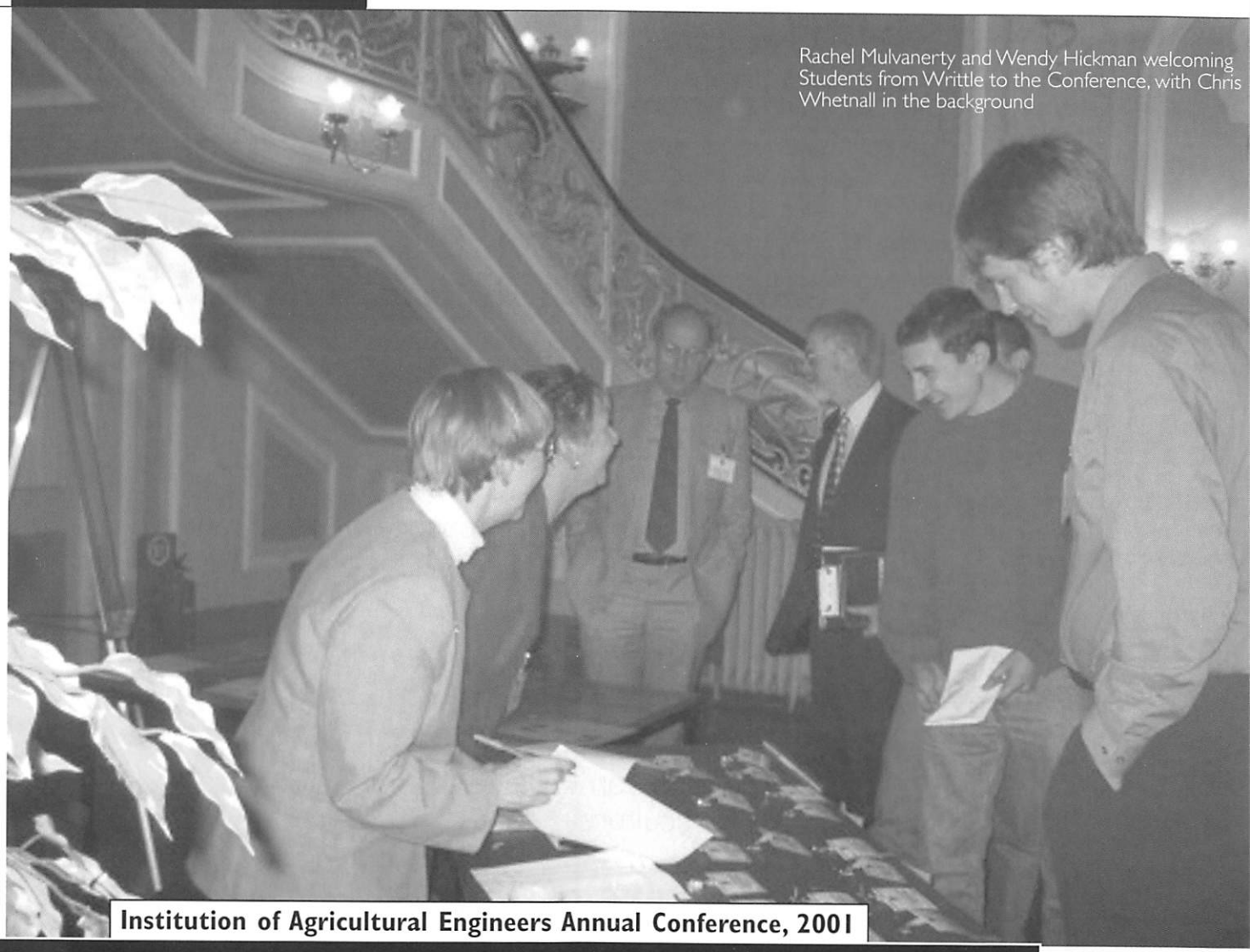


Rachel Mulvanerty and Wendy Hickman welcoming Students from Writtle to the Conference, with Chris Whetnall in the background

Institution of Agricultural Engineers Annual Conference, 2001

INFORMATION ENGINEERING FOR AGRICULTURE AND HORTICULTURE

The Institution's 2001 **Annual Conference** took place in the elegant setting of Wrest Park House, where the Silsoe Research Institute is based. Over 100 delegates attended ranging from four Past Presidents through a medley of members, speakers, award winners and non-members including some 15 post-graduate and 20 under-graduate students, whose attendance was generously supported by the Douglas Bomford Trust.

The first event of the day was the Institution Annual General Meeting attended by 30 Members; the Agenda was successfully completed in 40 minutes

Following a Welcome from the President, Geoff Freedman, the conference proper commenced under the Chairmanship of Dr John Stafford, who introduced a plenary **Information Technology** session consisting of two papers from Dr John Marchant of SRI and Peter Henley of Farmade Management Systems Ltd.

The first paper reviewed the role of sensing and control in agriculture, aquaculture and food production. Dr Marchant demonstrated by using examples from the Mechatronics Research Programme how the use of automatic control can produce the benefits of reduced costs, improved product quality, better working conditions and increased competitiveness.

Peter Henley discussed the implementation of Information Technology (IT) in agriculture,

noting that the new IT technologies had rapidly been taken up in the management of agricultural enterprises. He went on to discuss the types of users in agriculture, the resources they were likely to have for the introduction of IT and its benefits. He also reviewed the requirements of a successful software package and its application to the enterprise.

The IT Session was sponsored by **agmachine.com** (see Press Release).

For the latter part of the morning the delegates divided between two parallel sessions featuring developments in **Field Machinery** and **Livestock Engineering** chaired by Andy Scarlett and Christopher Wathes respectively.

In the Field Machinery session, speakers were Peter Hieronymus (Claas KGga, Germany), Tessa Mackenzie (New Holland UK) and Lawrence Defty (RJ Herbert Ltd, Wisbech), giving a wide variety of fascinating information from automatic laser pilot steering on combine harvesters, the growth and development of electronic systems on tractors and the size and quality grading of potatoes using computer controlled systems.

The Livestock Session featured three speakers from Silsoe Research Institute – Maria Velasco-Garcia on the topical subject of biosensor technology in livestock, Jeff Lines on applications within the developing fish farming industry which help to meet the strict rules on environmental pollution and Paddy Schofield who described a revolutionary pig feeding management system based on actual measurements of animal size.

After the traditional surroundings of the Conference Room and Cherub Room for the morning, a buffet lunch was enjoyed in the comparatively new Ferguson Building whose light-filled atrium provided an unusual setting for the **Awards** ceremony.

Whilst some of the sense of atmosphere may have been lost in not having a sit-down meal and acoustics that did not always favour our softly spoken Scottish president, the Awards were duly presented, and the more informal atmosphere allowed ample opportunity for networking and catching up with old acquaintances.

For the afternoon there were two further parallel sessions for **Soil & Water and Horticulture**, chaired by Dick Godwin and John Weir. The Soil & Water papers were presented by two speakers from ADAS and two from Cranfield University at Silsoe, and covered a variety of topics.

Dr Mike Hann's paper compared the cost and accuracy of several methods of measuring topographic variation, which may be used for explaining crop yield variations.

Prof Peter Leeds- Harrison described the use of strength measurements in helping to define soil structure and assessing soil tilth.

Brian Chambers explained some of the work being undertaken to improve the utilisation of the nutrients in farmyard manures and to reduce the dangers of water pollution by the use of Waste Management Plans.

Finally Eunice Lord described the integration of spatial data with models of water pollution for use in making water quality policy decisions. The models so far have concentrated on nitrogen movement but new research is now commissioned to extend the work to sediment and phosphate losses.

The Horticulture session began with Jesper Aaslyng giving a paper on a new climate control system being developed in Denmark to reduce energy consumption.

This was followed by a paper from Andrew Muir covering defect and disease detection in potatoes using spectrophotometric methods.

Stan Burrage, Imperial College, Wye and Chris Watts, SRI, outlining different ways of controlling irrigation water use, gave the final two papers.

Summing up the day's proceedings, the President said he was extremely impressed with the wide diversity of topics covered and the fascinating developments that are taking place in the different parts of the industry.

It was widely agreed that the Parallel Session format was successful giving delegates an opportunity not only to hear of the latest developments in their own field but also in other sectors of the industry.

This ability to look beyond their own specialisation is a major strength of agricultural engineers; a conference of this nature can only be beneficial in stimulating further cross-germination of ideas.

The President thanked the convenor, speakers, chairmen and secretariat staff for their input to a successful day.

John Neville

Note: Full versions of some of the papers presented are scheduled for publication in Landwards.

Tractor testing in unmanned carousel (AGCO Ltd)

Geoffrey F D Wakeham

TESTING OF AGRICULTURAL MACHINERY

If one is to satisfy the demands of one's customers, it is inevitably necessary to test any new product before launching it onto the market. The level of testing and hence the commitment of funds to this phase of a product's life cycle is likely to depend on the nature of the product, and the size of the market but may be restricted by the cash flow surplus available at the critical time.

There are some products such as fixed plant or specialist one off mobile equipment where it is not feasible to undertake full life testing prior to sale. Here the money must be committed to the design process. The use of propriety parts of proven worth should reduce the risk - but risk there will be.

In the case of products that are likely to be built in batches of more than 10 over a period of years, then a proportion of the projected income discounted to present day values must be ear marked to cover the cost of testing. The level of this funding may be decided on the basis of the current warranty costs. The higher the warranty cost, the more that is required to be spent developing robust designs suitable for the current manufacturing systems.

The nature of the test programme will be determined by the funds available, the expertise available and by the demands of the market. Any test programme needs to be developed in a logical way and based on the original marketing specification. It is unwise to test the product to unrealistic standards as this will price the product out of the market. On the other hand the test engineer needs to be aware that customers have not read the marketing specification and sales staff are reluctant to forgo sales into unsuitable environments.

As with any project it is necessary to draw up a schedule that details the test requirements, hardware and

staff commitment, time constraints and critical decision points, sometimes known as 'gates'.

A major decision is on the nature of the tests to be carried out. There is a large range of options including real time field testing, simulated (or artificial) field testing, rig testing of whole or parts of machines, the use of Rapid Prototype production methods and the use of computer based modelling techniques. Time, money and risk will determine which methods will or will not be used.

Testing in Kenya (Simba International Ltd)

Field testing

This requires a complete machine, the necessary staff to run that machine, and work equivalent to that encountered during the life of the product. A plough may need 4000 hectares of land and 300 days of work. When completed, the question will still remain as to whether the plough has covered enough light sandy soil, heavy clays or hit enough rocks to match the work of any one typical customer.

Likewise, one needs to ask the question as to how one can find 3000 hours of sugar beet harvesting in one year? These are the sort of figures needed to approach a real life test. If one assumes it costs £80/hour to run and support such a test programme, this gives a cost of £240,000 to show that the product may not meet the customer's expectations.

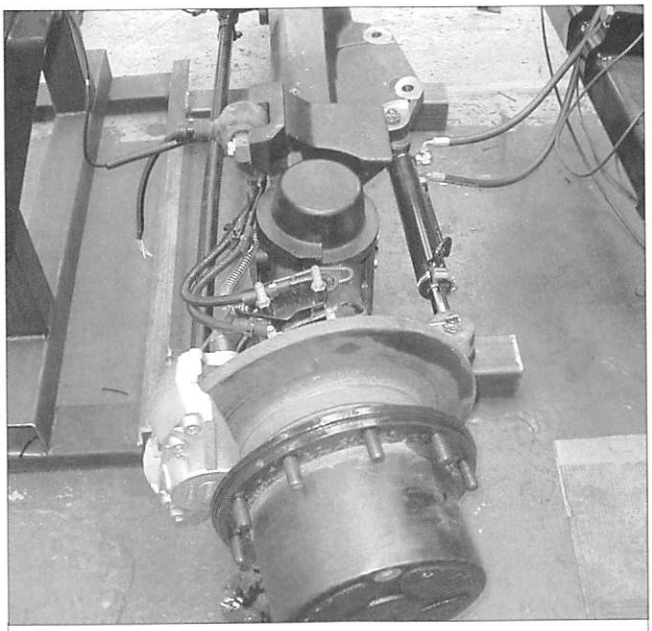


Fig.2 Rig Testing axle assemblies (JCB Landpower Ltd)

There is no doubt that field testing is necessary to check the function of the product. Tests must be run over a range of conditions but it is unlikely that 100 hours under any one condition of crop and machine will throw up any more problems than 8 hours of work.

Field testing needs to be clearly thought through before committing machines and resources.

Simulated field testing

The problem of limited seasons of available work for agricultural machines may in part be overcome by the use of a test track that simulates field conditions. Under these circumstances, testing may proceed for 20+ hours a day and 3000 hours can be 'clocked up' in under four months if all goes well.

The main problems here are that simulation of ploughing, planting or harvesting are almost impossible and the costs will approach those of full field testing. What can be done, however, is to simulate particular parts of the product's life where problems are anticipated such as rough road transport work where only 5 or 10% of the product's total hours may be required. Experience with previous products highlighted by warranty and spares sales may indicate what tests are required.

Combined with focussed field testing, realistic prediction of function and life should be possible. The needs for 'high tech'. equipment or full understanding of the imposed loading is minimal. Customer use patterns are necessary, however, to ensure correct conditions and hours of use are covered.

Rig testing

Rigs to accelerate or compress test periods to an acceptable timescale are used by many companies. It is not necessary to use highly sophisticated systems as used by the motor industry but, as a minimum, a realistic understanding of loading patterns is required. The use of rigs to test prime function is limited to short runs due to the difficulties of presenting realistic crop or soil conditions over long periods.

BIO NOTE

Geoffrey Wakeham is Principal Lecturer in Agricultural Engineering and Engineering Course Manager at Harper Adams University College, Newport, Shropshire TF10 8NB. He will be closely involved with the Annual Conference in 2002 on 'Faster by Design' (see separate announcement: Call for Papers)

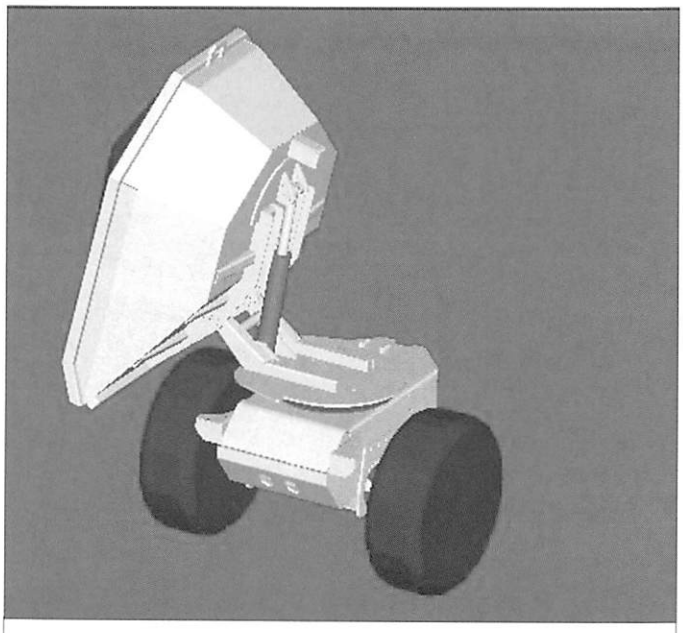


Fig 3. Pro Engineering 3D models

Rigs are best used to test component parts under specific conditions with particular reference to fatigue life. If only limited loading data is available, then one is restricted to comparison tests between known products and the 'improved' design.

To obtain the greatest benefit from the use of rigs in 'life testing', it is necessary to have a clear understanding of the loading patterns, the relationships between loading levels and cycles to failure and the effects of accelerated rates of loading on the behaviour of structures and systems.

By careful analysis of the situation, it is not unrealistic to expect meaningful results in days or weeks rather than months or years if field testing is the alternative.

The capital cost of such test rigs can be contained by the use of standard loading, control and monitoring systems that can be used for a range of components over a number of years. As rigs can run for hours without supervision, labour costs are controlled to a more acceptable level.

S J Maddock's book 'Fatigue Strength of welded structures' is a useful starting point for understanding fatigue failure and so help in the design of test procedures and ways to compress the time taken to life test on rigs. The website www.twi.co.uk. maybe worth looking into as a route to in-depth information.

Rapid prototyping methods

There are instances where the use of rapid prototyping methods such as Stereolythography & Selective Laser Sintering can be justified but these are likely to be limited and the capital cost involved beyond all but a few companies. Costs, however, are coming down and it is possible that, in the future, the benefits claimed by the motor industry may be relevant to agricultural engineers. If it is possible to eliminate potential problems prior to the production of expensive production tools, then the time and cost to get a product into the market place will be reduced.

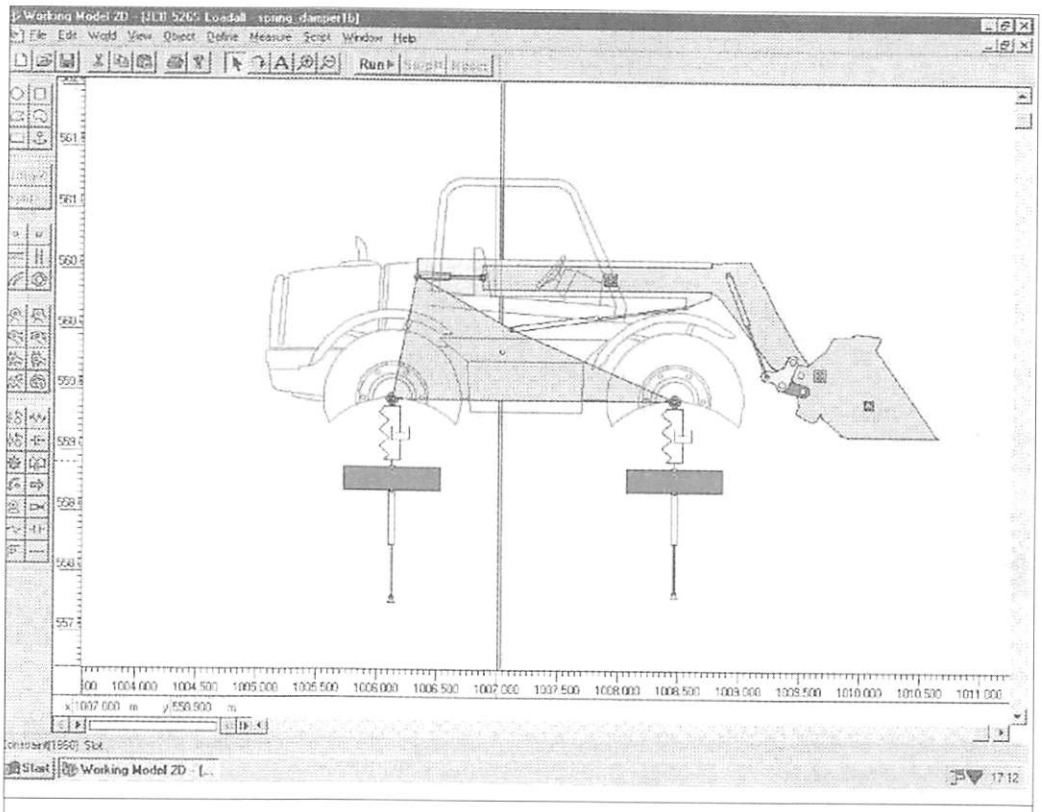
A useful contact for more information and advice is Warwick Manufacturing Group, Advanced Technology Centre; University of Warwick, Coventry.

However, 'bureau' services are becoming more widely available and if the modelling data is available from a Computer Aided Design (CAD) system then an economic solution may be feasible, particularly if, for example, it is possible to eliminate potential problems prior to manufacture of expensive production tools. Hence, time and cost to get a product to market will be reduced.

Modelling

The availability of cheap and powerful computing power coupled with sophisticated software has expanded the possibility of producing models of complete products in a virtual world. These models can be used to refine styling, analyse assembly strategy, assess visibility and 'sell' the product to marketing. It is now possible to crash test cars or ensure assemblies and mechanisms work and are accessible for manufacture and service.

On a smaller scale, because of the rapid advances in PC technology, it is now possible to utilise Finite Element Analysis (FEA) and Computational Fluid Dynamics



Working Model Screen Display

(CFD) software to carry out stress, vibration and thermal analysis of components, as well as fluid flow investigations, on a desk-top machine. Dynamic analysis packages can be used to analyse mechanisms to provide values for velocities, accelerations, but are also useful for a more general investigation of products involving the determination of displacements and forces due to motion.

The working model and pro engineering examples shown, are from work undertaken as project work by Harper Adams Engineering students.

Software is available to check the fatigue life of a virtual component that produces plausible results from realistic virtual prototypes. The website www.ncode.co.uk is a source of information from a typical supplier of systems.

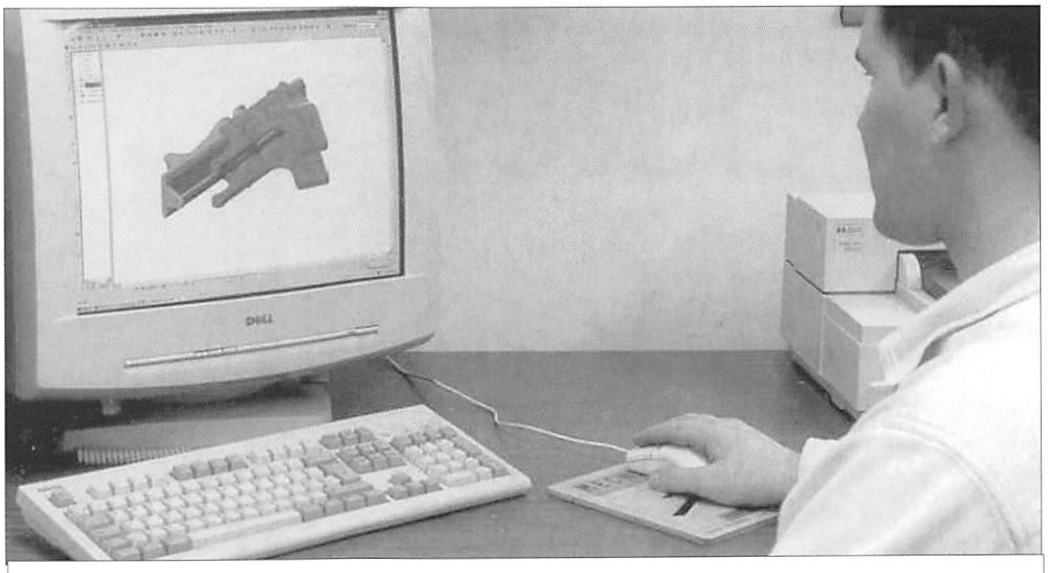


Fig5. Fatigue analysis based on FEA modelling.

As with rapid prototyping systems, these tools do not remove the need to produce the product and carry out tests in the real world. What they do is speed up the process of development and, if used with care, reduce the number of failures late in the process. Late changes have a high cost in time and money.

If a company is to build and retain a reputation for the quality of its products, then it is necessary to set aside time, money and expertise to the validation of all new or modified machines. If that commitment is to provide the maximum benefits then careful planning of this phase of development is required. There are many routes that can be followed. Choosing the correct combination of tests is the mark of a good engineer.

AMENITY

Forestry Commission pledges continued support for National Forests

The Forestry Commission demonstrated its continued support for the National Forest today with the signing of a new formal agreement.

The Concordat was signed by Sir Peter Hutchison, Forestry Commission Chairman, and National Forest Company Chairman, Viv Astling, at a meeting of the Forestry Commissioners at the Commission's HQ in Edinburgh. The new agreement formalises the working partnership between the Commission and the National Forest Company (NFC) and sets out a joint agenda and action plan for the two organisations over the next three years.

Welcoming the Concordat, Sir Peter Hutchison, Chairman of the Forestry Commission, said: "The Commission has always been a key player and a keen supporter in the development of The National Forest. I am delighted now to announce a pledge to supply continued support to this outstanding project over the next few years. The National Forests' achievements to date speak for themselves. By formalising our working arrangements with the Concordat in this way and by setting out clear and practical objectives and sharing our resources, we will achieve even more."

Viv Astling, Chairman of the NFC, said: "Over the years there has been a very happy informal partnership between ourselves and the Forestry Commission. Now, with this Concordat, we have a more formal structure to work within and it promises to be very fruitful for both parties. The aim is to put one and one together and to make three. By working in close partnership the benefit should be greater than the sum of the parts."

The Concordat sets out key objectives to:

- help to build a thriving sustainable wood-based economy in the Forest area;
- promote woodland recreation and tourism in the Forest to improve the quality of life and healthy living for local people;
- increase the Forestry Commission estate by 500 hectares by 2005;
- promote more joint working through a new jointly funded Forester post;
- seek new funding sources from the regions, Government and Europe.

The Forestry Commission has played a key role in the growth of the Forest since its development stage a decade ago. The site of the Forest's first visitor centre, the Rosliston Forestry Centre, was purchased by the Commission in a partnership with South Derbyshire District Council. The Commission has been a partner in the unique National Forest Tender Scheme, which encourages private landowners to create new woodland.

Faster by Design

There will be a Morning session with papers on:

- Dynamic Modelling
- Finite Element Analysis
- Data Management
- Problem Solving

.....with Specialist Group parallel sessions in the afternoon focusing on Design.

IAgrE Annual Conference

Harper Adams University College

May 15th 2002

IAgrE

The professional body for engineers, scientists, technologists and managers in agricultural and allied industries including food, forestry and biological systems

Plan now to be part of this event. Papers are particularly invited from the IAgrE Specialist Groups. Please contact your Specialist Group Chairman or the Conference Convenor:

Denis Cartmel IEng MIAgrE
dcartmel@forgecomm.freeserve.co.uk

Final Call for papers

AGRICULTURE · HORTICULTURE · FORESTRY · ENVIRONMENT · AMENITY

www.iagre.org

Industry Innovation Award

AgEng
Budapest 2002

After a successful Industry Innovation Event with 14 entrants at the AgEng2000 International Conference in Warwick, we wish to encourage and increase participation by industry in our AgEng conferences. Therefore we are inviting companies from the agricultural industrial sector in Europe to submit papers describing the innovations embodied in their new products or systems to the AgEng2002 Conference in Budapest.

During the Conference, we will be holding a special session in which papers on innovation in industry will be presented. The presenters of the best papers will receive the EurAgEng Award for Innovation in a ceremony to be held during the Open Meeting at the end of the Conference on 3 July 2002. Other papers from industry not entered for the Innovation Award will be welcome for possible inclusion in the normal scientific presentations or posters.

Innovations considered for the Award must have been announced or launched in the years 2000 or 2001. They can involve new products or new technology or research in any area related to agricultural or biological engineering, including novel manufacturing techniques or the organisation of the production process. Other innovations may include the successful creation of spinoff companies based on agricultural or biological engineering research, or the application or transfer of advanced technology into the agricultural and biological engineering field.

To enter for the Award, the Company should submit an abstract of no more than 400 words in English on two sides of A4 paper, as described in the Call for Papers. The abstract should be accompanied by a completed entry form for the Innovation Award. Later, the full paper should be submitted following broadly the following format:

- An introduction including the motivation for the innovation and the aim (very briefly)
- An overview of the state of the art (briefly)
- The innovative approach in principle
- The materials and methods of realisation, including cooperation with scientists
- The present position, measurements and early practical results
- The outlook, including economics.

A special committee for Awards to Industry will assess the papers presented during the Conference. A ceremony will be held at the Open Meeting at the end of the conference to present the awards to the winners.

FURTHER INFORMATION

please visit www.eurageng.org/indinnov.htm, or contact:
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It is also worth visiting the conference website at http://ageng2002.szie.hu for information on the conference and the procedure for submitting papers

PEOPLE

Mike Edmond is new Farm Equipment Council Chairman

Mike Edmond of McCormick Tractors International Ltd has been elected as the incoming Chairman of the AEA's Farm Equipment Council for 2001/2002.

Mike is Sales and Marketing Director of McCormick Tractors International, which was formed last year following the purchase of the Doncaster tractor factory by Landini. Prior to joining the new company Mike had been with Case IH for over 20 years holding various positions within the marketing function, both in the UK and in Europe.

Within the AEA Mike has been an FEC member for several years and has participated in the activities of the European association CEMA and is shortly to become Vice-Chairman of the Economic Committee.

FOOD

Obligatory sticker on fresh poultry

This article is part of a series about intensive animal husbandry in the Netherlands and is published by the Business Unit Agro Industry of Jaarbeurs Exhibitions & Media, organisers of the VIV Europe trade fair. This international exhibition will be held from 6th to 9th November 2001 at the Jaarbeurs Utrecht, the Netherlands. This article concerns the sticker that will obligatory on all fresh poultry meat from 1st August in **The Netherlands**.

The purpose of this sticker is to warn consumers of possible salmonella or campylobacter bacteria contamination. The obligatory sticker will apply to all fresh and raw poultry, including turkey. This legislation from the Ministry of Public Health arrives precisely at the same time as the sector is tightening measures to prevent salmonella or campylobacter bacteria infection.

Back in 1997, it was agreed that at the close of the year 2000 no more than 10% of the flocks should be infected at the end of the slaughtering chain. The figure for the campylobacter bacteria was set at 15%. The Commodity Board for Poultry and Eggs (PVE) developed a specific plan of action containing five main points:
1) taking adequate hygiene measures;
2) regulations for cleaning and disinfecting poultry houses;
3) in-coming and out-going quality checks at each link of the production chain;
4) effective control of eventual infection sources; and
5) exchange of relevant information.

At the end of 1999, it was apparent these were insufficient measures. Figures from the Food Inspection Department for that year show that salmonella infection caused 25 mortalities and campylobacter 30. Ignorance of correct kitchen hygiene, preparation methods and incorrect minimum storage temperatures were seen as the causes. The PVE fully agrees with minister Borst of Public Health that stricter measures are necessary to further reduce the incidence of infection.

To achieve this target, infected flocks must be culled in the breeding and rearing phase and strict standards applied to animal feed. It is compulsory for animal feed manufacturers to inform the PVE of any contamination. The logistics surrounding slaughtering processes must be tightened to help reduce salmonella and campylobacter infection; safe meat must be protected from contamination by only slaughtering infected animals at the end of the day.

Plan of action

The stricter plan of action which came into force last January must ensure that the sector reaches its goals this year. By the close of 2001, the level of salmonella infection per abattoir must be reduced to less than 10%. The level applying for December 2002 has been set at less than 5%. The PVE's new plan also includes an improvement in monitoring the quality assurance of meat: namely that a better feedback of relevant information from the production chain can deliver a substantial contribution. The PVE has warned that sanctions await anyone breaching the regulations. The Commodity Board will apply disciplinary jurisdiction.

Brussels

The Dutch government has long been a fervent supporter of obligatory warning labels or stickers. The original intention was to have had the obligatory stickers on all fresh poultry products from 1st January 2001. Brussels was opposed as the sticker only referred to a warning about infected meat. Reasons cited include trade barriers and a false sense of security. Consumers could be lead wrongly to believe that all fresh poultry meat without a sticker was safe, while incorrect preparatory methods or storage could still result in infection.

The sector has not waited and, in the meantime, has introduced its own sticker on fresh poultry products; in view of integral food chain management, 98% of all fresh poultry meat has carried the warning sticker since 1st January 2001. The Commodity Board regrets that an essential piece of advice is missing from the sticker. According to a spokeswoman, PVE is disappointed that on the sticker required by the Ministry any reference to correct storage temperatures for meat has been omitted. This should be 4 degrees Centigrade, minimum, a fact unknown to many consumers. If the refrigerated temperature is too high, there is still a risk of contamination even if the meat was originally 'safe'. The remainder of the advice on both stickers is practically the same and concerns cooking temperatures and the avoidance of contact between raw and cooked meat or kitchen utensils. From 1st August, the Ministry of Public Health sticker will be used on meat.

Eggs

Egg producers are also taking measures to guarantee the delivery of safe products. Natural farm De Boet has been marketing eggs free from salmonella infection for the past two years under the name 'Corn straw, free range eggs'. To maintain quality, the company, with 200,000 birds on four locations, receives a certificate every three months following inspection. Egg shells are cleaned by spraying with water of 40°C for a few seconds. Vaccinated hens guarantee that the contents of the egg are salmonella-free. De Boet ran the first trials in 1995. This company controls 20% of the domestic market (representing four million eggs weekly). Twenty five percent of this market already comprises corn straw, salmonella-free, free range eggs. De Boet expects to double this percentage within a year.

CONTACT

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Fax: +31 (0)30 295 57 09
Email: viv.europe@jaarbeursutrecht.nl Internet: www.viv.net

FOOD

People use two-thirds of antibiotics administered in the EU

Two-thirds of the antibiotics prescribed in the European Union (EU) in 1999 were consumed by people while only one-third was used in veterinary medicine, according to a new study by the European Federation of Animal Health (FEDESA).

The study estimates that people in the EU and Switzerland consumed 8,528 tonnes of antibiotics in 1999, or about 65% of the total, while animals consumed 4,688 tonnes, or 35% of all antibiotics prescribed during the year.

Of the antibiotics that were given to animals, 3,902 tonnes (just 29% of the total overall usage) were administered to help sick cows, pigs, goats, rabbits, horses and chickens recover from disease while only 786 tonnes (just 6% of the total overall usage) were given to farm animals in their food as growth promoters. The survey estimates that the amount of antibiotics used as growth promoters has fallen by 50% since 1997 (when animals consumed 1,599 tonnes in their feed, or 12% of total usage). The report attributes this drop partially to a decision by the European Council to ban the use of four antibiotics in animal feed, but it goes on to say that 'the reduction is considerably greater than might have been expected from the effect of the EU ban.'

The results of the research undermine those who argue that the authorities should restrict the use of antibiotics in animals because the practice threatens human health by leading to the emergence of so-called 'super-bugs', new disease-carrying microorganisms that have developed a resistance to modern medicines.

"By showing that farm animals account for only one-third of the antibiotics used in the European Union – even though their combined liveweight is three times greater than the human patient population – this study suggests that treating sick animals with modern medicine can only be a very small contributing factor to the problem of antimicrobial resistance, if it's a factor at all," said Dr. Johan Vanhemelrijck, secretary general of FEDESA. "The study should make government officials pause before jumping to the erroneous conclusion that they can stop the emergence of new bacteria by over-regulating the use of antibiotics and restricting the proper treatment of farm animals."

Vanhemelrijck released the study during an EU conference in Visby, Sweden, that looked at the threat of antimicrobial resistance. It is the second study since 1997 to measure the volume of antibiotic use in the European Union and Switzerland.

It was conducted for FEDESA by Boatman Consulting and was commissioned by the animal health industry. The authorities have called upon the animal health industry to monitor the volume of antibiotics used in the EU, as one way to develop strategies to stop the spread of super-bugs.

CONTACT

Dr Johan Venhemelrijck, DVM, Secretary General, FEDESA. Tel: +32(0) 2543 7560.

RECYCLING

Wastetraders: re-manufacturing the waste industry

Businesses now have the opportunity to reduce the costs of their waste disposal, profit from the sale of waste and improve their environmental image at www.wastetraders.com – the online waste exchange.

Companies that send waste to landfill can use the Wastetraders website as a way of reducing waste costs. If the waste they generate is of value to other manufacturing processes they may be able to sell their waste or surplus materials. Everything from timber to steel, polystyrene to packaging, masonry to sand – the more they trade, the more they save!

Anyone involved in procurement should consider the benefits of using unwanted materials to help their company save money, maximise profits and reduce their own environmental impacts.

Andy Nolan, Managing Director said: "This is the next Industrial Revolution – being able to maximise the productivity and efficiency of materials is essential if we are to become truly sustainable on a global scale. Businesses must fully utilise the materials they buy to stay profitable and work with their suppliers and customers to do so. By trading and exchanging waste through Wastetraders it will be possible to create a much more efficient manufacturing industry that will remain sustainable into the next century".

By registering now at www.wastetraders.com users have the chance to try out the service for free, and gain access to the members section with a wealth of information and resources to assist effective waste management.

CONTACT

Andy Nolan Tel: 07946 594607.
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CAREERS

MORI Schools Survey 2001

Seven out of 10 children of secondary school age say they know either not very much or nothing at all about engineering. And when boys and girls are looked at separately, it emerges that eight out of 10 girls say that they have little or no knowledge of the professions. Only three per cent of girls say they are likely to consider engineering as a career.

Over half of all children still associate engineering with a dirty working environment; two fifths think it will offer interesting work, but only a third associate it with good pay.

These disturbing findings are from the latest poll carried out by MORI for EMTA, the National Training Organisation for Engineering Manufacture. The survey is carried out at two-yearly intervals to track attitudes and knowledge among schoolchildren to the engineering profession.

There appears to be no evidence of any improvement in the standing of engineering since the last survey in 1998. The worrying implication is that highprofile initiatives such as the Year of Engineering Success are making little headway, or that the profession is having to run to keep still. Though engineering is strongly associated in schoolchildren's minds with transport and high technology, these associations are not being translated into career aspirations.

On a positive note, the survey does suggest some pointers to where effective action might be taken. Engineering remains popular as a career that boys say they will consider. The continuing lack of appeal to girls, though worrying, appears not to be attributable to perceptions of sex discrimination. And the association between engineering and a dirty working environment is at least beginning to decline, though slowly.

The key problem, suggests MORI, is a lack of exposure to effective information, and that children's resulting ignorance about engineering fuels misconceptions.

'There is a strong relationship between knowledge of engineering and its perceived attractiveness as a career,' says the MORI report. Over half those who say they know a great deal about engineering, and two fifths of those who say they know a fair amount are likely to consider an engineering career. But the number who say they know a great deal or a fair amount about engineering has dropped by five percentage points since the last survey in 1998.

Moreover, from a list of 11 jobs, professional engineer proved one of the most popular among boys, being chosen by 13% and behind only professional sportsperson, working in the army or navy and lawyer. Engineering's popularity was more consistent across age groups than professional sportsperson, which tended to be a passing fad.

But fewer than 0.5% of the girls in the survey listed professional engineer as a preferred job, the most popular choices being vet, teacher, lawyer and nurse. The reason for this could be a perception that engineering does not offer the things girls see as important in a job. The top three attributes respondents to the survey sought in a job were good pay, interesting work and responsibility.

Only a third of children associate engineering with good pay but this perception is stronger among boys than girls by a margin of 41% to 25%. Similarly, while two fifths of children overall associate engineering with interesting work, boys holding this opinion outnumbered girls by a factor of two to one (54% to 27%).

'Lack of knowledge about engineering is a key barrier to enhancing the image of the sector,' says MORI. Over half of those who said they knew nothing about engineering also thought it was boring, compared with 11% of those who said they knew a great deal about it.

Girls are also less likely to think that it is necessary to be clever to do engineering, in other words associating it with unskilled work. Girls, however, are more likely to disagree with the view that engineering is a job mainly for men, suggesting that perceived sex discrimination is not a barrier.

Lack of knowledge about engineering is compounded by a mismatch between what children say are their main channels of information and the most useful ones. The most common sources of information about engineering were parents and guardians, TV and radio and careers teachers at school.

Parents may have a positive influence: only 29% of those receiving information from parents agreed that engineering was boring, compared to 36% overall.

But when asked what was the most useful source of information, pupils most commonly cited work experience or a visit to an engineering company, followed by parents and then careers officers. Boys were more likely to have obtained information from school careers teachers or a careers adviser than girls and were more likely to have visited a company or had work experience.

But those who received information about engineering from careers teachers were also less likely to regard engineering as interesting work than those getting their information from parents, work experience, or radio and TV. 'This suggests the sector needs to be more actively promoted in careers literature and among careers professionals,' concludes MORI.

Engineering was widely seen as important to transport, new technology and computers and to respondents' day-to-day life in general. Associations with looking after the environment were somewhat less strong. But this importance is not translated into appeal as a career. These links need to be capitalised on,' says MORI.

What lessons can be drawn from this? The main obstacle, according to MORI, is that children do not associate an engineering career with the factors they consider important in a job. Pupils who are more exposed to engineering through school work are more likely to view it favourably so greater prominence in the curriculum could help, says MORI, provided the teaching of technology related subjects is undertaken in a way that emphases the practical and creative aspects. To address the unpopularity of the profession with girls, careers literature should contain positive female role models.

Promotional material needs to be targeted at younger children. At age 11 or so they are more likely to be open to considering engineering than older children: by 14 they have tend to have formed fixed impressions of what they're interested in.

BOOK

New biotechnology book

AOCS Press have released a new biotechnology book, Dealing with Genetically Modified Crops.

The book, edited by Richard F. Wilson, Ching T. Hou, and David F. Hildebrand, consists of papers presented at a symposium at the American Oil Chemists' Society Annual Meeting 2000. Research and development professionals will be interested in the international perspectives on the ongoing topic of genetically modified organisms. The regulations and legislation affecting GMO crops and current research on GMO development are also included. Any professional dealing with genetically modified organisms will find this book useful when referencing current information and research on the subject.

CONTACT

AOCS, PO Box 3489, Champaign, IL 61826-3489 USA. Tel: + 1 217 359 5401 Ext 148. Fax: + 1 217 351 8091. Email: general@aocs.org (ISBN 1 893997 22 7 Cost $30)

FOREST CHECK

Accreditation for woodland and forest management

ForestCheck, a forest certification scheme, has been launched with the accreditation by the United Kingdom Accreditation Service (UKAS) of Checkmate Certification International Ltd (CMi). Edinburgh-based CMi is the first organisation in Britain to receive UKAS accreditation for this purpose.

The national Standard against which certification will be made was developed by the UK Forestry and Environmental communities facilitated by the Forestry Commission and will be administered under the UK Woodland Assurance Scheme (UKWAS).

The standard has been created in order to provide a benchmark for sustainable forest management, which has the support of all interested parties. It should ensure that the purchaser of wood can be confident that the woodland has been maintained in a sustainable and responsible manner. It will give enhance consumer confidence that products can be traced to forests managed according to international standards.

Over the last few months a UKAS team, including a forestry expert, performed assessments of CMi's ability to certify woodlands and forests to the UKWAS standard. The assessments were conducted to international requirements and UKAS assessment methodology for certification bodies. The process of assessment included a review of CMi's technical procedures and management controls followed by interviews of technical staff and an assessment of their ability to evaluate woodlands to the requirements of the UKWAS Standard.

Working with CMi on this pilot assessment programme, UKAS has established competence criteria for auditors who evaluate forests/woodlands and their technical supervisors, enabling a benchmark to be set for UKAS accredited certification bodies operating in this field.

Chris Piper, the ForestCheck Scheme Manager said: "Buyers of timber and timber products are increasingly demanding to trace the source of those products to forests managed according to internationally-agreed Standards, and its accreditation by UKAS further enhances our customers' confidence in the scheme."

In support Linda Campbell, Chief Executive of UKAS added: "UKAS accreditation of CMi to EN45011 demonstrates its integrity and competence in providing of forests and woodlands. This will assure the purchaser of wood that it is from a woodland certified to UKWAS requirements."

MORE INFORMATION

UKAS, Lal Ilan. Tel: 0208 917 8432. email: lbi@ukas.com
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Stuart Goodall, UKWAS Support Unit, c/o Forestry Commission. Tel: 0131 314 6367. Fax: 0131 334 0442. email: ukwas@forestry.gov.uk
Peter Brown, Checkmate International Certification Ltd. Tel: 0131 317 2500. email: peter.brown@sfqc.co.uk
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AMENITY

Coastal plan creates unique protection area, economic agreement and new opportunities for First Nations

The British Columbian (BC) government has agreed to protect significant valleys within the internationally recognised Great Bear Rainforest and is entering into a unique agreement with First Nations on land-use planning in BC's central and north coast regions, Premier Ujjal Dosanjh announced today.

These two achievements mark the latest milestones in BC's 10-year land-use planning programme which has put more responsibility for regional land-use planning in the hands of local communities and residents.

"While the preliminary recommendations of the Central Coast land-use process are still a work in progress, the government is accepting them today to give protection to more of BC's unique natural heritage and provide greater economic and community stability for the region," Dosanjh said.

"The people of the coast – and all British Columbians – can take pride in these achievements," said Dosanjh. "They have reached a hard-won consensus aimed at saving areas of global significance. They've shown that what is good for the environment can be good for working people and communities."

Dosanjh said the government has accepted the preliminary map agreed upon by the Central Coast land-use table, including the protection of major valleys within the Great Bear Rainforest and other areas, subject to consultation with First Nations and confirmation of boundaries.

In creating the 96,458 hectare Spirit Bear protection area, the government is saving essential habitat of the Spirit Bear – a rare white subspecies of black bear – and recognising the cultural significance of the area to the Kitasoo and Gitga'at nations.

"The area referred to as the Great Bear Rainforest is an icon of the unique environmental and cultural values BC can share with the world," said Dosanjh. "All of the people involved in this decision – First Nations, environmentalists, industry, workers, communities and government – have recognised what's at stake, and have fulfilled BC's role as environmental leaders on the world stage."

"We are also preparing an enabling agreement to be signed by the province and the 17 central coast First Nations participating in the planning process. This agreement will set out a process for their continued participation, as well as a mechanism for further discussion of resource management issues."

The BC government is also signing a First Nations protocol on interim measures and land-use planning with six First Nations today. This protocol agreement covers an area ranging from Cape Caution in the south to the Alaska border – including Haida-Gwaii – and has a population of around 80,000. It includes the territories of the First Nations signing the agreement.

"This protocol agreement will establish a leadership role for First Nations in remaining land-use decisions and ongoing management, helping ensure that future decisions respect the region's unique environmental, cultural, tourism and resource values," said Dosanjh. "First Nations may develop their own land-use plans, work with stakeholders and be able to address any outstanding issues with the province. The protocol agreement will ensure regional economic opportunities and environmental sustainability that will benefit costal communities and families."

Guujaw, president of the Council of the Haida Nation – speaking for the six First Nations – welcomed the protocol agreement. "It involves compromise from all parties, including ourselves and the BC government. While compromising can be difficult, the alternative is much less acceptable." He also noted that the ongoing conflicts on the coast are detrimental to everyone's interests.

The agreement was also hailed by environmentalist David Suzuki, whose foundation works with the First Nations involved in the agreement. "I am proud that the BC government has signed this agreement. This could lead to a sustainable, diversified economy for generations to come."

Other areas of agreement stemming from the costal land-use process, include the following.

- The designation of protection, operating and 'option' areas, as well as special management zones for visual quality as recommended in the preliminary map.
- Further implementation of ecosystem-based logging in operating areas that seeks to encourage a viable future for forestry on the coast while ensuring the coexistence of healthy, fully functioning ecosystems and human communities. This principle has been agreed by the forest companies in the Central Coast region.
- Shared economic transition strategies:
  - while land-use planning continues, agreement has been reached that Forest Renewal BC will contribute $10 million for short-term mitigation;
  - it is anticipated the government, the forestry industry and the environmental community will share in the costs of longer-term community transition strategies.
- Creation of an independent information team to examine outstanding issues and make recommendations to the land-use planning tables. The team must consider ecological and socio-economic impacts.

"This is a large and unique part of our province – the planning achievements reached so far reflect those unique values, and set the stage for the successful resolution of outstanding issues," said Dosanjh. "I applaud the work of the many people who contributed to this complex process. In all, around 60 groups and over 100 people have participated, and their ability to reach this initial consensus speaks to the commitment they share of protecting our environment while furthering economic stability and prosperity for local communities."

Participants in the Central Coast land-use

process also welcomed the achievements. "International markets want resolve on issues involving critical ecosystems and endangered forests on the BC coast," said Linda Coady, vice-president of Weyerhaeuser. "This agreement will help the coastal BC forest sector address other market access challenges, including pressures for independent, third-party certification and competition from other forest jurisdictions and wood substitutes."

"This is a real turning point for the future of BC's rainforests," said Merran Smith, senior forest campaigner for the Sierra Club of BC. "It means that the ancient rainforests that have stood in over 40 coastal valleys for the last thousand years, will be standing for the next thousand."

"As a result of these agreements, we will suspend our campaigns targeting the major coastal logging companies," said Tzeporah Berman, BC co-ordinator for forest ethics. "We look forward to working with all stakeholders over the next two years to achieve resolution."

It's estimated the work of the independent information team and the resolution of outstanding land-use issues and final boundaries will take between 12 and 24 months. With the protocol agreement, it's also been agreed that any final decisions by government in response to the final land-use recommendations will be made in consultation with First Nations.

The Central Coast land-use region ranges from Bute Inlet in the south to Princess Royal Island in the north – including the coastal nearshore waters – and incorporates much of Tweedsmuir Park to the east. About 4,500 people live in this area, most of whom are First Nations.

SAFETY

Employers should have a compulsory duty to investigate workplace incidents

The Health and Safety Commission (HSC) launched a consultation on its proposal to introduce a compulsory duty for all companies and organisations to investigate all reportable work-related accidents, ill health or 'near misses' which could have resulted in serious injury.

The Health and Safety Executive (HSE) estimates that if every single reportable incident not at present investigated by employers was investigated and acted upon, this could save society up to £1.8 billion per year in preventable incidents, including £600 million to businesses.

The proposals – which would require an amendment to present health and safety law – would require employers to:

- investigate all reportable incidents to find out how they happened and how they might be prevented in future;
- keep a record that an investigation has been carried out and that its conclusions have been taken into account in revising the workplace risk assessment. Such records would be kept for a minimum of three years and could be subject to scrutiny by the HSE and its inspectors.

The consultation will also ask whether the proposed duty to investigate should be extended to non-reportable accidents, diseases and dangerous occurrences as well. The HSE would provide guidance on how to implement an effective investigations process.

HSC Chair Bill Callaghan said: "Accidents and ill-health in the workplace take a terrible toll, both in terms of economic cost and human suffering. Most work-related accidents and cases of ill-health are preventable. By investigating incidents, identifying the causes, and taking effective steps to remove those causes, employers can prevent repeat incidents and cut the human and financial cost dramatically".

Employers have a duty to their staff to provide a working environment where risks are reduced to their minimum. Most responsible employers – both large and small – already have a system for investigating health and safety incidents and there can be no excuse from those who refuse to follow their example."

Mr Callaghan concluded: "Investigation is a key part of an organisation's health and safety management systems and should feed into a revision of the risk assessment process, as well as arrangements for planning, organising and monitoring workplace health and safety arrangements. I would like more employers to wake up to the fact that health and safety incident investigation – including 'near misses' – can provide a powerful mechanism for improving business performance.

We would like a response to the consultation from as wide a range of stakeholders as possible, and in particular from small firms to ensure that we address their views."

MORE INFORMATION

The closing date for comments on the consultation document is 3 September 2001. Copies of Proposals for a new duty to investigate accidents, dangerous occurrences and diseases (CD169) are available free from HSE Books, PO Box 1999, Sudbury, Suffolk, CO10 2WA. Tel: 01787 881165. Fax: 01787 313995. The full text can be viewed and downloaded from the HSE website: www.hse.gov.uk/condocs

PUBLICATIONS

Brighter research

Journal title

A fresh outlook on research is unfolding just over the horizon, offering greater impact and brighter images. From 2002, ask for **BIOSYSTEMS ENGINEERING**. You'll recognise it when you see it, for the cover design remains largely unchanged (for now). But do not judge a book by its cover. Rebranding of the **Journal of Agricultural Engineering Research** is not just about changing the title. The focus of research within our fields of interest is becoming more multi-disciplinary and the change of title reflects that trend, whilst retaining the international reputation which has been established and developed over almost fifty years.

The journal continues to attract articles on the latest research from around the world. Authors acknowledge and respect the rigorous editorial and peer review procedures required to achieve the high scientific and presentational standard of all papers accepted for publication. There is an increasingly heavy demand for publication space as is evident from the continuing expansion in the journal contents. The Impact Factor has increased, along with the publication of numerous Review Papers. A classification system based on nine interest field identifiers (IFI) has also been introduced for the articles and the volume contents are sorted into these categories.

Colour graphics

In addition, colour graphics are now offered free of charge in the print version of **BIOSYSTEMS ENGINEERING**. This extends the established use of free colour graphics already available for the online versions of articles in the **Journal of Agricultural Engineering Research**. All research papers appear on the International Digital Electronic Access Library (IDEAL) some two months before they are available in the print version, but now 'what you see is what you get'.

The scope of the journal already encompasses high quality research of complex phenomena using the latest imaging technology, for example:
(a)colour photographs of innovative machine design features, soil structure, plant/seed features;
(b)colour contoured spatial distribution patterns, such as yield maps, stress concentrations, airflow distributions, climate change;
(c)chromatographs; and
(d)digital images for Red/Green/Blue discrimination for timber grading, carcase grading, crop/weed location and identification, plant disease detection; tomographic scans.

Additionally, there is increasing use of three-dimensional graphs showing colour contoured surfaces and complex bar charts advantageously including colour. Diagrams illustrating multiple flow paths and graphs with a number of lines sometimes can be followed more readily in colour.

Many of the scientific techniques, adopted at an early stage in the research as the most appropriate approach for the investigation, present the results by means of colour graphics. Adapting the output to simplified grey scales of adequate contrast for publication in monochrome is often perceived as a retrograde step, with consequential loss of essential detail and irritating duplication of effort, but this is not entirely the case. How many of us have been subjected to a mass of detail on overhead projector acetates to which no reference is made or discussion offered? How many of us have stared at dark transparencies seeking revelation or at least clarification? It remains the authors' responsibility to use colour wisely to improve comprehension of the research article.

Clarity

Incorrect use of colour is counter-productive, with some pastel colours being barely visible. Remember that there is a substantial male minority who are red/green colour blind, so different line styles remain important even in colour. Furthermore, colour printers and photocopiers are seldom readily available when downloading or copying reference texts for research purposes. Adequate contrast remains beneficial for reproduction in monochrome and a poor quality colour image is not an acceptable substitute. This is equally relevant to the editorial process for which three monochrome copies are required initially, and colour hard copies will be used only if submitted. During the final stages of the editorial process when e-mail is used to a greater extent, high resolution colour images are space hungry and require handling correctly in the appropriate file formats to avoid tedious downloads and excessive file sizes on compact discs.

Whilst not all articles require colour graphics, it is a valuable extra facility when used with discretion to enhance the quality of the published article and aid its understanding. **BIOSYSTEMS ENGINEERING** will continue to incorporate advances in information technology to benefit the research community.

MORE INFORMATION

For more information on these changes please refer to the Editorials and Announcements in the last volume of the *Journal of Agricultural Engineering Research*. The latest developments will be posted on www.landtec.co.uk over the next three months. Changes will also take place to the Publishers' website as the journal imprint of Academic Press is transferred from Harcourt Brace to Elsevier.

Professor Brian D Witney
Editor, research journal

Quarterly AUTUMN 2001

MEMBERSHIP MATTERS

THE NEWSLETTER OF THE INSTITUTION OF AGRICULTURAL ENGINEERS

IAGRE MEMBERS HELP THE DISABLED THROUGH REMAP

What is REMAP?

Last year, thanks to the efforts of over 1500 dedicated volunteers, more than 3000 disabled people received the gift of an improvement in their quality of life.

The recipients, whose ages cover the whole spectrum, were unlucky enough to have disabilities so disruptive that they were unable to lead an ordinary life – until a rather unusual national registered charity stepped in.

REMAP, which officially stands for Rehabilitation Engineering Manufacturing Advisory Panels, but more popularly 'Real Engineers Make Anything Possible', was formed at ICI Billingham in 1964, and exists to make one-off technical aids, at no cost to the user, when the item needed is not available on the commercial market, or a commercial item is not quite suitable for a specific user.

The men and women who are REMAP's volunteer members belong to the 107 autonomous panels set up in 8 regions throughout the UK, including the Isle of Man. Panel membership generally comprises 10 to 20 people, and includes professional engineers, therapists, craftsmen and women with wide experience and technical expertise in many fields. A typical member will be able to combine design, sourcing materials and practical construction.

REMAP is a most cost-effective charity, by far the greatest part of the value of its output comes from the design and construction work provided by volunteers; the material costs are usually minimal. Panels often utilise scrap materials and off-cuts, including a high proportion of components from scrapped wheel-chairs and small domestic appliances, promoting effective re-cycling. REMAP thrives on the quality and dedication of practical engineers, who give their time and facilities freely.

A number of the Institution's members already belong to REMAP panels, and play an important role in their work. Agricultural Engineers can offer a broad mix of practical and theoretical capabilities, a 'hands-on' approach, plus in many cases an empathy with providing engineering solutions for living creatures.

REMAP work is fully insured and agrees with the medical devices directive where applicable.

How does REMAP get its work?

New clients, usually identified by Health Service professionals or by Social workers, are referred to their local panel. If there is no obvious 'off the shelf' equipment to provide a solution an initial visit is made by a member of the panel, normally acting with the guidance of an Occupational Therapist. This is followed by a detailed discussion of the proposed solution at panel level, and one or more members then undertake the assignment to design and make the required item, usually in their own home workshops. Normally the member will see the project through to conclusion.

Typical Projects

These are some of the projects of the Bedfordshire (North) panel, which has three Institution members amongst its 10 volunteers.

An elevating cot

A young mother with chronic back problems had to lie down for most of the day, and wanted her baby in a cot at the same level as her own bed. To attend to the baby, she was able to stand for short periods, and needed the baby to be raised to above waist level. A standard drop-side cot was adapted with a specially constructed motorised lifting base to achieve this end. The design included limit switches at each end of its travel range to set the height automatically.

Standing frame for a Multiple Sclerosis patient

The patient needed to stand for a period each day, to maintain lower body bone density. The panel designed and made a 'standing frame' to support the client in a standing position. Because it took two of his MS day centre carers to lift him from a wheelchair into a frame at the centre, the design included a hand-operated winch and seat sling. The resulting frame is now in use in his home and enables his wife, alone, to winch him gently upright. His feet are located in guides, and his knees enter padded nacelles as he is moved forward and upward, but the refinement of these to allow him to stand without pain

or cramp took several weeks of minor adjustment visits as he could not be winched more than two or three times per visit. Before it went to his home the use of the frame was fully tested and approved by the physiotherapist at the MS day centre. Whilst from a medical point this has greatly reduced the risk of long-term damage to bone structure, it gave an immediate psychological boost by enabling him to converse in his kitchen with visitors, at the same eye level, rather than always looking upwards from a wheelchair.

Treadmill therapy rig

Some patients who have lost the use of their legs through stroke or accident can be helped to regain some degree of mobility through the use of treadmill therapy. Following a contact from a progressive physiotherapist in the Rehabilitation Unit at Bedford Hospital, who had read some research papers on the benefits of making some spinal injury patients 'walk' lightly on a powered treadmill, REMAP undertook to build a rig to allow her to investigate these claims practically.

The patient is suspended in a parachute harness, which is pulled upwards by weights through a system of rope and pulleys. The patient stands on a proprietary treadmill (bought second-hand), with up to 50% of his weight relieved. The physiotherapist and a helper grasp his ankles and move them in a walking action. The treadmill as bought was unpowered, but was fitted with an electric motor and sophisticated speed controller to give the very low speed required.

One particular patient has made remarkable progress to date, and 2 others are now using the rig. A similar system is used by the actor Christopher Lee, following an accident which left him paraplegic.

The original rig was built from scaffolding scrounged from a local builder, the harness from a member with contacts in the aero industry and the weights were 5 kg parcels of sand – the whole thing was meant to be a temporary 'look-see' but with a coat of paint it is still in use after 18 months.

FOR FURTHER INFORMATION

IAgrE members, Roger Balls, Brian Finney and John Kilgour, are involved with the Bedfordshire North Panel and other IAgrE members may well participate in the work of Panels elsewhere.

If you would like to help this valuable and satisfying work by joining REMAP, please contact the appropriate National Organiser, who will put you in touch with the nearest panel.
England, Wales and N. Ireland: J.J. Wright, 'Hazeldene', Ightam, Sevenoaks, Kent TN15 9AD. Tel: 01732 883 818. Fax: 01732 886 238.
Scotland: John Golder, Maulside Lodge, Beith, Ayrshire, KA15 1JJ. Tel: 01294 832 566. Fax: 01294 832 374.

OBITUARY

GORDON POWELL SHIPWAY CENG 1925-2001

Gordon Shipway joined the Institution in 1952. He died after a short illness on 5 July 2001. As with so many of his generation, Gordon's education was punctuated by wartime service, appropriately enough, the Royal Engineers. His return to civilian life took him directly as an undergraduate, reading Agriculture, to the University of North Wales and thence to King's College, Newcastle for an MSc in Agricultural Engineering. Not surprisingly he was taken up in the early 1950's by the then National Agricultural Advisory Service (NAAS) as a graduate trainee. In 1959 he was then appointed Horticultural Engineering Advisor at the Ministry of Agriculture, Fisheries and Food (MAFF) Liaison Unit, Wrest Park – the start to a uniquely successful and productive advisory career with MAFF which ended on his retirement from the Service.

Gordon's appointment at Wrest Park came at a crucial time for our protected-cropping industry. In the face of increasing competition from overseas, it was in urgent need of revitalisation and his work in technology transfer played a key part in paving the way for the successful implementation of the MAFF Horticultural Improvement Scheme. In 1966 he was appointed to the post of West Midlands Regional Mechanisation Advisor, which brought him back into mainstream agricultural engineering, with wide-ranging responsibility, at a period of rapid development and increasing complexity of farm equipment. All this he handled with his particular style thoroughness and competence and it was from this post that he retired in 1985.

Despite a demanding working life, Gordon found time for active involvement in Institutional affairs. As a founder member of the Wrekin Branch, he served on the committee from 1969 to 1984 while acting both as Chairman and Vice Chairman for spells within that period and it was in recognition of this that he received the Branch Meritorious Award in 1986. He also served as an ordinary member of the Institution's Council in the mid-1970's. It was very much to the relief of the newly formed Horticultural Engineering Specialist Group that he accepted our invitation to join the Committee as Honorary Secretary – at the time, typically Gordon, he expressed doubts about his competence to fill this post, but we had none!

Gordon had strong religious convictions which he assiduously kept to himself, using them as a model for his own professional and personal lifestyle. Habitually modest, often to a point of self-deprecation, assiduously avoiding the limelight and politics of his profession, he never let this inhibit him, however, from speaking up to defend any issue on which he held strong views. He had a deep admiration of straightforward 'craftmanship', whether in drafting a document or designing a piece of equipment; in both of which he was himself a master. His lifelong interest in furniture making and restoration exemplified this and more by accident than intent led to his developing a thriving antique restoration interest throughout his retirement. In fact, as a member of Wolverhampton's mediaeval, St Peter's Church Buildings Committee the painstaking restoration work he carried out would be, in itself, a most fitting memorial to Gordon.

He leaves his wife, Joan, a daughter, Lesley, and two sons, Colin and Philip.

John Weir

YOUNG ENGINEERS EVENING
WRITTLE COLLEGE IAGRE HERTS AND ESSEX BRANCH

The annual display of final year BEng/BSc projects took place at the College on May 9th. There was a wide selection of material to see, question and analyse, with the judges from the local branch obviously impressed with some of the projects more than others.

There was an investigation into the ground compaction under a dual wheel and a single wheel configuration of an agricultural tractor; and the dynamic track properties as they affect locomotive forces exerted on a horse. An investigation into the design of a rig simulating environmental conditions when testing alternators for agricultural and construction vehicles was an interesting project, whilst the study of a protective cover for concrete livestock areas and slatted units was also good if rather cut short by the Foot and Mouth crisis.

After much discussion and not a little heartache, the evening was rounded off with two projects that were awarded 'special commendation', namely Yousuf Al-Senani for his design of a solar drier for dates, for the benefit of Oman farmers. Drying of dates is seen as a problem for many farmers in many countries, and it was decided to construct a prototype solar drier to dry the produce under controlled and protected conditions. This was considered important to reduce the maturation time spent required to dry dates and improve the dried product as well as minimising the loss of dates.

Secondly, a 'special commendation' was awarded to Stephen Hunt for his study into ways of dealing with waste cooking oils and fats. The project was taken on from a previous study where Stephen had driven a tractor from John O'Groats to Land's End on waste cooking oil. The final year BSc project looked into uses for waste cooking oil, namely pouring it down a drain, taking it to a landfill site, turning it into a fuel for diesel engines (biodiesel), taking it to a rubbish burning power station or using it to power a diesel engine in oil form.

The top prize for the evening, the 'Scantlebury Trophy', was given to Tom Kindred for his work on the design of a cab suspension system for a backhoe loader. The study was completed in collaboration with JCB Excavators, where the student spent his year in industry. The project looked at the awareness of whole body vibration as caused through operating machines over rough terrain, and how this has been solved in some agricultural tractors through the use of cab suspension. This then offers lower fatigue levels for the driver as well as higher productivity. A design was carried out using Unigraphics CAD, and then a prototype manufactured and tested. The results were encouraging with JCB keen to make further developments in the future.

The evening had gone very well, with refreshments laid on for the judges, and then a formal prize giving at the end, with Mrs Scantlebury present. As a note of interest, it had been pleasing to see non-engineering students and staff from Writtle College take an interest in the annual event; long may it continue to encourage a positive view of engineering to the non-engineer.

R W Langley

REGULATION NEWS

The Board for Engineers' Regulation agreed to the recommendation for the Institute of Railway Signal Engineers (IRSE) to become a nominated body of the Engineering Council. It also decided that the British Institute of Non-Destructive Testing should be offered a 'conditional' licence for the Licensing of Competent Persons in the area of Non-Destructive Testing. This will be subject to clarification and agreement. Chapter 16 of the Nomination and Audit Committee Policy and Procedures Manual on the subject of Licensing of Competent Persons was agreed by the Board.

INSTITUTION MEMBERSHIP CHANGES

Admissions

Member
G Giovanniello (Italy)
M Teanby (Hertfordshire)

Associate Member
E M Aman (Ukraine)
N P Porat (Buckinghamshire)
A T Wharton (Cumbria)

Transfers

Fellow
O Bissonauth (Mauritius)

Member
A C Mwitwa (Zambia)
N P Porat (Buckinghamshire)
A J Ruff (Cambridge)

Associate Member
S A Bentley (West Sussex)
R J Craven (Derby)
A J Watts (Bedfordshire)

Deaths

W G Cover (Hereford)
J T Cowie (Aberdeenshire)
G P Shipway (West Midlands)

Engineering Council Registrations

CEng
R T H Caplat (Staffordshire)

IEng
A J Ruff (Cambridge)

SCIENTISTS AND ENGINEERS CREATE A NEW WORLD FORCE IN THE MARITIME PROFESSION

The Institute of Marine Engineers (IMarE) has received official approval from HM Privy Council to change its name to The Institute of Marine Engineering, Science & Technology – IMarEST.

The change heralds the first significant move by any UK-based learned body to broaden its scope of activity and widen its membership to professionals engaged in all sectors of the marine industry.

All qualified individuals in the marine science and marine technology fields can now join an internationally respected professional learned body alongside their professional engineering counterparts and have their qualifications and experience formally recognised by designatory letters.

The 112-year old IMarE has been forcing the pace of change amongst the professional institutions. The new IMarEST name and new Royal Charter and By-Laws are the culmination of a number of visionary ideas by marine engineers to bring together professionals and develop a world-class maritime professional and learned body for the benefit of the Marine Industry.

Marine scientists and technologist will now have access to the major IMarEST information base, access to its 46 branches throughout the world and have a vehicle to present scientific and technical papers to a wide international professional audience.

The change of name is coupled with the formation of new professional categories, decoupling membership requirements from the UK Engineering Council and placing a greater emphasis on competence to practise. Existing Institute members may be eligible to revise their current membership category and a much greater number of the marine community will now have the opportunity to join the Institute.

It is the first global membership body to adopt an all embracing approach for the whole industry. The membership service and learned society activities will focus on meeting the needs of the different marine sectors, which include offshore, shipbuilding, oceanography, marine ecology, and sub sea technology. In addition to continuing membership of the Engineering Council, the Institute has become a member of the Science Council.

The official launch of The Institute of Marine Engineering, Science & Technology is planned for next spring. The Institute President, Professor Tom Ruxton BSc (Hons) CEng FIMarEST says: "Through our Royal Charter we have a responsibility, as a leading marine institute, to be a driver and deliverer of the highest professional standards and to promote the scientific development of Marine Engineering, Marine Science and Marine Technology in all its branches. By taking up the challenge of our revised Charter the Institute is very much a vanguard of modern neering, science and technology. "thinking on future technological development as the true wealth creator for the world. IMarEST's mission is to be the chosen professional society for those engaged in every aspect of marine engi

CONTACT

David Long, Institute of Marine Engineering, Science & Technology, 80 Coleman Street, London, EC2R 5BJ. Tel: +44 (0) 20 7382 2600. Fax: +44 (0) 20 7382 2670. Web: www.imarest.org

CELEBRATING SUCCESS IN ENGINEERING DESIGN

Six pupils from Year 9 at Moulsham School visited the Engineering Department at Writtle College, as part of the prize for successfully designing an egg saver.

Staff from Writtle College organized an engineering-based activity at Moulsham School's 'Insight into Industry' day. Jamie Gething, Elizabeth Hunt, Ruthel Hussain, Carlie Johnson, Andrew Millane were all members of the winning team. Writtle staff awarded them first prize, for being the best designers of a device that would allow an egg to drop from two metres onto a concrete floor without breaking.

Following their success, the pupils were invited to Writtle College, one of the country's leading providers of agricultural engineering degrees, to see what engineering is all about.

Malcolm Carr-West, Head of Engineering, at the College said: "The pupils from Moulsham School demonstrated the skills and thinking required to become successful engineers. They worked well as a team and had a good understanding of the needs of design. We are always keen to encourage young people to see professional engineering as a career possibility. Engineers from Writtle College are to be found in a wide variety of occupations from designing JCBs, to managing airline engineering sections."

The students spent their afternoon at the College doing various activities, which included operating a mini digger, testing the stability of a forklift truck, and designing machinery in the Computer Aided Design centre.

LONG SERVICE CERTIFICATES

35 years

Peter Richard Delatour Blackwell	EngTech MIAgrE	27 Jul 2001
David Henry Burlingham	IEng MIAgrE	27 Jul 2001
Richard John Godwin	CEng HonFIAgrE	27 Jul 2001
Barry Anthony Linger	CEng MIAgrE	27 Jul 2001

25 years

Harry Morgan	FIAgrE	9 Jul 2001
Antoine Mulder	AMIAgrE	13 Jul 2001
Christopher Meek	AIAgrE	13 Jul 2001
David Bernard Tinker	CEng MIAgrE	15 Jul 2001
Charles Ralph Powell	MIAgrE	16 Jul 2001
Nicholas John Shiles	MIAgrE	17 Jul 2001
David Arthur Thurnam Wynne	AIAgrE	17 Jul 2001
Michael William Inman	EngTech MIAgrE	26 Jul 2001
Raymond Alan Smith	AIAgrE	29 Jul 2001
David Mark Zarnet	IEng MIAgrE	1 Aug 2001
David Frances Powell	IEng MIAgrE	24 Aug 2001
Edward Arthur Rogers	IEng MIAgrE	24 Aug 2001
Ranjith Tissa Weerasinghe	IEng MIAgrE	8 Sep 2001

HONORARY AWARD FOR GEORGE JACKSON

George Jackson is one of five recipients of Honorary degrees this year from Coventry University. He commented "I am delighted to receive this sensitive and thoughtful honour from Coventry University. The Award emphasises the interdependence of city and countryside. It is a great encouragement at a time when the countryside and country people are under such pressure and livestock farming in particular is struggling to survive the world's worst epidemic of foot and mouth disease." George Jackson will be conferred with an Honorary Degree of Doctor of Science (HonDSc) for his contribution nationally to agricultural and farming policy. Conferment of the Honorary Awards will take place at Coventry Cathedral during the University's Annual Degree Ceremonies in November.

Letter to the Editor

9 August 2001
Dear Sir,

Loss of Democracy and Accountability

As the shadow Engineering and Technology Board outlines its vision for the future of the profession, it appears that the Registrants will no longer have the right to elect their representatives to either the governing body or the body that controls the standards for the Register. This is in spite of the fact that the Registrants have paid over 80% of the costs of the Engineering Council since its formation and will also be expected to pay the costs of the proposed 'Regulatory Board' (RB) and to make a major contribution towards the costs of the Engineering and Technology Board (ETB).

It seems likely that the ETB will have a number of representatives from the institutions, business, industry, training and academia amongst its members and that they will not be asked to contribute towards the running costs. I imagine that initially the ETB will concentrate of finding ways in which it can represent the wider community of engineering as outlined in the Malpas Report. Whilst I believe that such auctions would be laudable, it seems likely that the interests of the Engineering Council Registrants will not be a high priority for the ETB. I therefore consider that there should be a number of directly elected representatives of the Registrants on the ETB who would be able to monitor the funding contribution from the Registrants subscriptions and ensure that it is primarily used in ways that would relate to the standing of Registered Engineers and Technicians.

At the time of writing, the proposal for the RB indicates that the ETB will nominate a third of its members, with the Institutions nominating the remainder. The RB will not be autonomous as all decisions require a 75% majority and in addition the RB will have to refer all matters of importance to the ETB. It seems that the RB will be responsible for the work currently done by the Board for Engineers' Regulation and its committees, together with some aspects relating to the wider engineering community. This proposal gives the Registrants no direct involvement in the body that will be responsible for setting and controlling the standards required for the Registration. The RB will also be repsonsible for issuing licences for the registration processes to the Institutions and for monitoring the way in which the Institutions comply with the rules; this may pose problems for Institution nominees.

The proposals for the ETB and the RB that I have outlined above, together with other similar proposals that are being considered, seem set to ensure that the Registrants will have no direct say in the way in which the Register is financed and operated or in the way that the standards and the international agreements are controlled. I think that this is a significant erosion of the rights of the Registrants and should not be undertaken without the Registrants agreement in a referendum. The Senate will be asked to endorse the final recommendations of the Shadow ETB and to arrange to dissolve itself in favour of the proposed 'Engineering and Technology Board' which would inherit the Engineering Council's income. Senate members should try to ensure that the interests of the Registrants are adequately protected and if they are not completely satisfied, they should insist that the Registrants be consulted about ways of continuing their right to elect members to the ruling and regulating bodies.

Yours faithfully,

Gordon McCoombe
OBE, CEng, Registrant
Elected Member of Senate
1996-2000

MEMBERSHIP MOVEMENTS

Mem No	*Name*	*From*	*To*
6709	S H M Aikins	Bedford	Ghana
6605	K N V Barrowcliff	Leicestershire	Derby
3660	B H Griffiths	Madagascar	South Africa
6370	J A J Gander	The Netherlands	East Sussex
6129	J C A Henry	Cumbria	Leicestershire
5452	T C Lansdell	Essex	Suffolk
6856	W S Legg	Shropshire	Zambia
5712	S Nath	Swaziland	Papua New Guinea
4919	C J Studman	New Zealand	Botswana
3775	D G Wilson	Oxfordshire	France

Gone Away

Does anyone know the whereabouts?

Name	*Last known address*
David Graham Bennett	Bucyrus India Pvt Ltd, 6/13 Gurappa Avenue, Primrose Road Cross, Bangalore 560 025, India

COMMERCIAL MEMBERS

Autec Design Ltd
Stockley Road
Heddington
Calne
Wiltshire
SN11 0PS

Douglas Bomford Trust
16 The Oaks
Silsoe
Bedford
MK45 4EL

Bomford Turner Limited
Salford Priors
Evesham
Worcestershire
WR11 5SW

John Deere Ltd
Harby Road
Langar
Nottinghamshire
NG13 9HT

Farm Energy Centre
NAC
Stoneleigh
Kenilworth
Warwickshire
CV8 2LS

G C Professional Services
for land-based and related industries
Highdown Cottage
Compton Down
Winchester
Hampshire
SO21 2AP

Law-Denis Engineering Ltd
Millstream Works
Station Road
Wickwar
Wotton-under-Edge
Gloucestershire
GL12 8NB

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

Rotomation Ltd
Summerwood Lane
Halsall
Ormskirk
Lancashire
L39 8RH

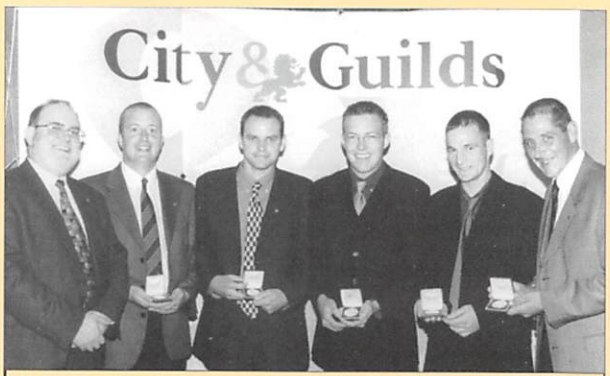
White Horse Contractors Ltd
Lodge Hill
Abingdon
Oxfordshire
OX14 2JD

CITY & GUILDS AWARDS MEDALS TO TALENTED AGRICULTURALISTS, HORTICULTURALISTS AND FLORISTS

City & Guilds, the UK's largest awarding body, has awarded prestigious Medals for Excellence to 11 candidates who have triumphed in their City & Guilds agriculture and horticulture qualifications.

The talented group were awarded their medals at recent ceremonies held in Manchester and London.

Among the winners were: **Craig Tiffany** and **Martin Brayford**, NVQ Amenity Horticulture Levels 1 and 4, respectively; **Siobhan Charnock** and **Sarah Lawrence**, NVQ Floristry Level 2; **Michael Dray**, NVQ Agriculture and Commercial Horticulture



Some of the medallists at the London presentation – from left to right: Chris Humphries, Director General, City & Guilds; Andrew Wood; Michael Dray; David Price; Andrew Dunne; Ian Smith

Candidates' qualifications ranged from Garden Design and Floristry to Sports Turf Maintenance and Service Engineering Agricultural Machinery.

Medals for Excellence are awarded annually to candidates throughout the UK and Ireland who have displayed exceptional standards in a City and Guilds qualification. The medals are a mark of special distinction and a source of pride for the medallists and those who have taught and trained them.

Last year almost 20,000 people registered for a City & Guilds qualification in agriculture or horticulture making these 12 winners very special indeed.

Extensive Crop Production Level 3; **Andrew Dunne**, NVQ Service Engineering Agricultural & Groundcare Machinery Level 2; **Sarah Hulatt**, National Certificate in Professional Floristry; **Caroline Palin**, NVQ Animal Care – Caring for Animals Level 2; **David Price**, NVQ Service Engineering Agricultural Machinery Level 3; **Ian Smith**, National Certificate in Horticulture Greenkeeping & Sports Ground Management; **Susan Antcliffe** and **Andrew Wood**, NVQ Amenity Horticulture Sports Turf Maintenance Level 3.

A NEW VISION FOR ENGINEERING

A major Conference, held at the Institution of Electrical Engineers, to determine the need for a new body to represent the UK engineering community, was in many ways a watershed. It saw the emergence of a new vision for British engineering. Equally important, it was a vision which won the public support and endorsement of everyone present. The audience included all the engineering institutions and other engineering bodies, academe and a broad cross section of industry, from the large to the small high tech companies in many diverse fields.

The outcome was a decision to establish a new, very different sort of organisation, the Engineering and Technology Board. The ETB will have a span of activity greater than that of the many existing organisations. Indeed by providing linkages and a focal point for all of them, it should be able to help the process of gradually, and voluntarily bringing them together with a common aim to the benefit of UK wealth creation.

The project is ambitious and challenging in every respect, and most immediately in its timetable. Our aim is to have established the ETB by October this year, thus allowing it a few months to settle down, and be fully operational by the start of 2002.

Why the haste? One answer is that many people would say that we have delayed too long before launching radical reform and we must now make up for lost time. A second, more important reason, is that as the engineering and technology dependent sectors of the economy increase rapidly in importance, the need for new structures to support and assist individuals and companies in those sectors also becomes increasingly urgent.

The ETB will effectively take over, and significantly expand the promotional role of today's Engineering Council. But in doing so it will have a very different approach and focus. Its focus will be what has rapidly become known as 'the wider engineering and technology community'. To understand this wider community we need to grasp the significance of some of the work done for, and by, the 'Hawley Group', which completed its task on 14 February.

The Hawley Group asked Sir Robert Malpas to conduct a review of all the areas of economic activity, which might fairly be described as 'engineering'. The resulting report was highly illuminating. It showed that there are at least 2 million people engaged in relatively high level engineering and technology jobs in the UK. These include many of the most innovative, knowledge-based industries on which future wealth creation will undoubtedly depend – aerospace, nanotechnology, materials, biotechnology. These are the areas from which the next technological revolution will spring, just as the IT revolution which took us all by surprise because of its speed and impact sprung from the older disciplines of electrical engineering and electronics.

The distinctive feature of the highly skilled people who make up this 'wider community', however, is that they do not think of themselves as 'engineers' (though many of them have engineering degrees), and they have few, if any links with the existing engineering institutions.

They are most likely, the research shows, to see themselves as 'technologists', or at least as working in the technology sectors of the economy. Of the 2 million people estimated by Malpas to be working in relatively highly skilled, science and engineering based jobs in the UK economy, only some 200,000 are UK resident registered engineers (CEng, IEng, Eng Tech). A further 400,000 people are members of the institutions, and can therefore be said to be part of 'the profession', but are not on the Engineering Council register.

That presents us with a 'market' of almost one and a half million people who are clearly part of the 'wider engineering and technology community', but not (yet) part of the engineering profession. The ETB's aim is to establish links with this community; to provide them with the focal point that they need, with a more coherent voice, and to facilitate the process of bringing the existing profession, and the wider community, closer together.

The research carried out for the Hawley Group showed that there is a strong demand for this approach. Individuals and businesses in the technology and knowledge-based economy face all too familiar problems – worries about skills shortages, about the relevance of qualifications; about keeping up to date with fast-changing knowledge, and about maintaining competitive edge.

The vision is for the ETB to make an impact on these problems, for this vital, growing sector, and thus add value on a very significant scale.

Another considerable benefit coming from this fresh analysis is that there is now far greater clarity about the role of the various different organisations. The ETB will focus on the 'wider community'. The Institutions focus on the needs of their members, who make up today's engineering profession. The Royal Academy of Engineering concentrates on engineering and engineering excellence. The Engineering Council is primarily concerned with the qualifications, standards, and auditing of registered engineers.

Clarity about different roles will be necessary in avoiding one of the problems of the past – duplication of effort. It also brings out one vital point, which has sometimes been missed by those commenting on the current process, which is the continuing need for a body to regulate the profession. There can be no dilution of the standards required for CEng, IEng and EngTech, or of the rigour with which these are enforced. The process is essential for international reasons, and indeed in order to provide the reassurance increasingly needed on safety, public health and environmental issues.

Thus there will still need to be a Regulatory Body – a successor to today's Engineering Council. The current work on establishing the ETB is also looking at this aspect of the new arrangements. Two key considerations are already clear:

First, the ETB and the Regulatory Body will need to be tightly linked, so that they can benefit from each other, and in particular so that that the profession can be linked more effectively to the 'wider community' and the growth economy.

Second, regulation needs to be more tightly linked to the work and development of the institutions themselves, so that they feel a greater sense of 'ownership' of the regulatory process than in the past.

Tackling these issues, together with defining the priorities for the ETB in each of the key areas of activity – meeting business needs; communications; education and training; continuing professional development; and membership marketing, is complex and demanding within the timetable.

One of the reasons we are confident of success is the extent of support for the process. Using a web-based working group structure, which is highly appropriate to the task, we are able to involve over 200 people in the work, from all sectors of the profession and the wider community. This is giving the operation breadth and depth which would otherwise be almost impossible to achieve in the space of a few months.

October will see the birth of the ETB, and with it a real prospect of the re-invigoration, on a far broader scale, of British engineering.

Dr Robert Hawley, Chairman of the Engineering Council

NEWS OF MEMBERS

On 5th May, 2001 the **Revd Alan Whitehouse** officiated at the marriage of **Robert Merrall** to **Rebecca Laws** at St. Egwin's Church Norton and Lenchwick. Alan is now a curate of the parish where the marriage took place and was formerly a director of Bomford Turner and at one time the Institution Treasurer. Alan says that it was a great pleasure to conduct the marriage for an Agricultural Engineer and to meet old friends from Silsoe at the reception as well as many younger engineers. I would like to express our best wishes and congratulations to the young couple and to thank Alan for providing this piece of good news.

Congratulations to **Mervyn R Billot** on receiving his fifty year membership certificate and my thanks to him for providing information on his career. His first job in the farm machinery industry was with one of our founders, the late Douglas Bomford at Pitchill near Evesham in Worcestershire. He also spent some time with Ransomes of Ipswich and a short spell with Melotte, where he was concerned with field machinery. He says that in the main they were happy times until the 'take overs' and mergers came along and spoilt it. "Those names no longer exist on their own if at all, lost like International Harvester (IH) and so many other old big names which is very sad". In the late sixties, when garden machinery businesses were just starting, he saw an opportunity, and he and his wife decided to move back to Jersey and start their own business. Fortunately, as he was well known in the industry in the UK he was able to obtain some excellent agencies and the business prospered. The business is still flourishing, being let to a tenant, as Mervyn retired some years ago.

Cliff Studman has moved from New Zealand to Botswana where he has become the Director of the Research and Development Unit at the University of Botswana with the rank of Professor.

Martin Ede went to Bolivia in 1978 as a volunteer, to build coffee dryers in the tropics. When he arrived he found that the agency who had requested the volunteer did not want technical assistance to build coffee dryers, but the need was for an engineer to provide technical assistance to rural communities in the construction of rural infrastructure such as drinking water and micro-irrigation systems. As Martin was trained as a mechanical engineer he accepted the challenge to re-tool, as there was definitely a demand for work in rural infrastructure. In the five years that he was there Martin developed skills in the field of community rural infrastructure such as water supply systems, sanitation, and a dumped stone and reinforced concrete dam built at 4,800 metres above sea level. For this last project, water was carried in an open earth irrigation channel to 7 communities up to 13 kilometres from the dam – the dam formed a lake of about 480,000 cubic metres. The dam and other projects were the subject of a Central Television documentary called 'In the Footsteps of the Incas', filmed in 1982 and screened in 1983 as part of the Village Earth series of documentaries. The work as a volunteer set the seal for the rest of Martin's career which has focused on rural infrastructure and community development projects. The wide geographical experience has helped him to build up a real respect for other cultures, in Latin America and Central America, the Caribbean, Africa and the Pacific Islands. Membership of the Institution of Agricultural Engineers and particularly the status of 'Chartered Engineer' has proved to be an important qualification when working overseas. Martin has recently been working on a water and sanitation project in Guatemala.

In February of this year **Jim H Ward** accepted a transfer within the Unitrans Freight Transport Group by leaving the Sugar Division and joining the Commercial Division. He is now managing the contract responsible for the deliveries of animal feeds for a major feed manufacturer in South Africa, serving mainly the Natal Midlands, from their feed mill in Pietermaritzburg. This market is highly price sensitive and they deliver around 15,000 tonnes of feed a month to rearing, layer and broiler farms, dairy and beef cattle and pig farms, the biggest customer being Rainbow Chickens. Their bulk tankers are equipped with hydraulically driven discharge equipment (augers and conveyors) and they operate two sizes, 12 tonne rigids and 24 tonne semi-trailers. The trucks are American built Tyco Internationals with Cummins engines and proven Fuller/Rockwell transmissions and cover approximately 60,000 km per month.
The complexities of the operation arise from several issues, briefly as follows:
(a) the multitude of feed types, with approximately 170 variants produced for specific livestock requirements, and tankers frequently loaded with split loads, i.e. two or more different types of feed in adjacent compartments, destined for different feed silos;
(b) gravel access roads on certain sites that might be best described as challenging, in the wet Natal Midlands weather;
(c) bio hazards and feed contamination as critical areas, with strict shower-in/shower-out regulations for drivers on every load for the commercial poultry farms; dedicated vehicles for rearing sites; and trucks themselves undergoing chemical washes before every trip as well as needing to be maintained at a high state of cleanliness inside.
The continuous washing creates a corrosive and difficult environment for paintwork, and on board electronics, and these various factors combine to create an unusual mix of transport, man management and logistics problems.
Jim says that they miss their life on the South Coast but are gradually settling into their new home, work and physical environments. It is the first time that he has worked in a region with really distinct seasonal changes for some 15 years, so the cool autumn has been a refreshing change after the heat of the Swazi lowveld and humidity of the coast. Jim's 1964 Mk2 Jaguar remains his pet hobby, and he attends events where there are often a selection of old tractors as well as cars. He hopes to make contact with other Institution members in the area over time.

Tony Chestney

Produced by: Land Technology Ltd, Edinburgh Printed by: Barr Printers, Glenrothes

New technologies force changes in $30 billion global seed markets

The global seed market is now worth $30 billion, and seeds have changed from a commodity product to one of high commercial value, according to the latest publication from Agrow Reports.

"The global seed industry has seen considerable investment from leading agrochemical companies over the last few years due to the growth of the biotechnology industry. This has helped to transform seeds from a commodity product to a high value, high technology industry" explains Liz Ingle, the author of the report. "Moreover, the rise of e-commerce will transform the supply and distribution side of the industry. We can expect to see the leading farmers using the Internet exclusively to source seeds within five years. They will find it quicker and easier to compare prices between suppliers, and this increased transparency will force down prices. Suppliers will see their margins cut. There is also the intriguing possibility that farmers will use the Internet to illegally trade farm-saved seed. This has been successfully policed by seed producers when conventional media have been used (e.g. classified ads in farmer magazines). However, the ease of setting up new websites, and the speed of electronic communications now make this much harder".

The report, Global Seed Markets, presents a comprehensive analysis of the seed industry, discussing the factors that are driving growth, and analysing the world market for the 16 most important crops. Profiles of the leading seed companies are also included in the report. As might be expected, the US is the largest national seed market, accounting for almost one fifth of world sales. This is followed by China, Japan and the CIS/ Russia. The ten largest national markets account for 63% of the total (Table 1).

In terms of the most important crops, it is not possible to estimate the value of the seeds bought and sold worldwide, since prices vary so much between countries and in some regions farmers save significant amounts of their own seeds from one season to the next. However, it is possible to calculate the volume of seeds sown each year (Table 2). Wheat is by far the largest, with almost 35,000 tonnes of wheat seed being sown in 1999. The largest producers of wheat are China, India, Russia and the US. Wheat breeding programmes have been highly successful over the last 20 years. Yield, grain quality, disease resistance and agronomic characteristics such as straw length and resistance to sprouting have all been selected, and average wheat yields have increased by 134%. There has also been significant investment in developing hybrid wheat. However, the high costs of male sterilisation techniques and seed production have delayed the commercial launch of hybrid wheats. DuPont is the leading researcher in this field, with Monsanto having announced in mid-2000 that they were abandoning their own research programme. Some hybrid wheat varieties are now under trial but the high costs of production mean that they will need to show significant yield and agronomic advantages over conventional varieties, to be financially viable. Research has also been conducted on genetically modified wheat. These are expected to be available within 5-10 years, although there are reports that Novartis are hoping to launch a GM wheat with improved bread and biscuit-making characteristics by 2002.

Table 1. Global seed market, value plantings by country

Country	*Seed value, $ million*	*% total*
USA	5,700	19
China	2,500	8
Japan	2,500	8
CIS/ Russia	2,000	7
France	1,370	5
Brazil	1,200	4
Germany	1,000	3
India	970	3
Argentina	930	3
Italy	650	2
Others	11,180	37
Total	**30,000**	**100**

Table 2. Global seed markets, mass plantings by crop, 1999

Crop	*Seed market, 000 tonnes*
Cereal crops	
Wheat	34,747
Rice	17,536
Barley	9,397
Maize	5,193
Oats	3,416
Rye	1,902
Triticale	387
Oilseed crops	
Soybean	4,880
Groundnuts	1,858
Sunflower	682
Oilseed rape	479
Linseed	162
Legumes	
Pea	809
Beans	114

MORE INFORMATION

The information in this press release is taken from the report Global Seed Markets. It was published in October 2000 and is available for from PJB Publications. Tel: +44 (0)20 8332 8965/66. Fax: +44 (0)20 8332 8992.

Adrian Moerman - pot plant grower and Chairman of the Horticultural Development Council's protected crops panel – who chaired the Forum

Already in operation, the Climate Change Levy aimed at energy usage is basically an added production cost for both intensive livestock production and for Horticulture. Collectively, these account for 3% of the energy used by Industry, but Horticulture and especially the glasshouse sector accounts for some 80% of that 3%.

The object of the Forum, held at the Farm Energy Centre at the National Agricultural Centre (NAC) on 26th April and organised the Institution's Horticultural Engineering Group, was to bring together experts in the various related fields to seek some practical solutions to save, or make better use of, energy for glasshouse growers.

The event was chaired by Adrian Moerman, himself a very well-known pot plant grower, currently Chairman of the Horticultural Development Council's Protected Crops Panel and whose own operation comprises 10 ha of glasshouses. Setting the scene, he pointed out that the Levy will not get smaller and therefore the only way forward is to improve production and possibly save energy by plant breeding, more intelligent ways of using energy, and better application of energy.

Geoff Lawson

THE CHALLENGE OF THE LEVY

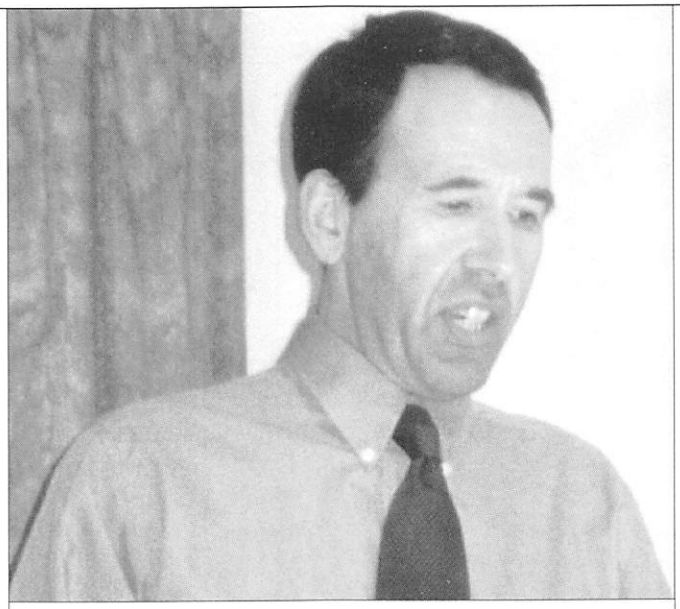
Chris Plackett, Commercial Energy Manager at the Farm Energy Centre, at this point standing in for Jacob Tomkins, National Farmers Union (NFU) Environmental Policy Manager, gave details of the Climate Change Levy. As from 1 April 2001, this is imposed on all industrial energy users at the following rates: 0.43 p/kWh for electricity, 0.15 p/kWh for gas or coal, and 0.07 p/kWh for liquid petroleum gas (LPG). Though a 50% reduction has been negotiated by the NFU on behalf of the protected-cropping industry, it remains to be ratified by the European Union (EU). He also pointed out that there was a need for a yardstick or 'blueprint' for pot plants, and other non-edible crops, so that growers could measure how efficiently there were operating. Similarly, advantage could be taken of the tax allowances that are available for combined heat and power (CHP) systems, boilers, supplementary lighting, thermal screens, etc.

Taking a different approach Alan Langton, Plant Physiologist at HRI, said that energy conservation can be

Geoffrey Lawson is Information Officer for the IAgrE Horticultural Engineering Specialist Group

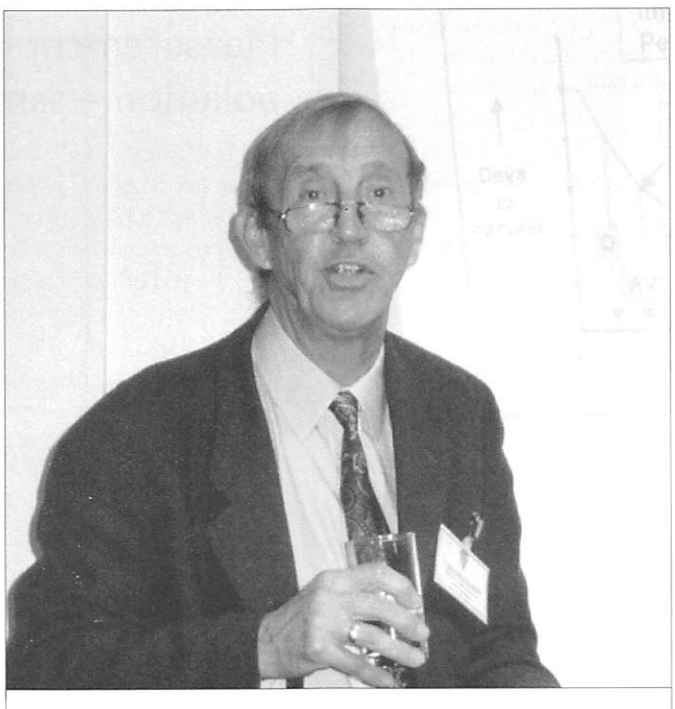
achieved by plant breeding, or by improving plant performance in response to its environment. There is currently a joint project between HRI and Silsoe Research Institute, the aim of which is to optimise the output of saleable produce per unit of energy. One approach is to investigate 'averaging' between day and night air temperatures - that is, working at a lower set temperature at night while increasing day temperature or vice versa to achieve a given average temperature. Maintaining such temperature regimes under all conditions would call for the integrated use of thermal screens. This could result in energy savings of up to 40%. But there are many other factors to consider such as plant species' response and supplementary lighting. The future, he said, was probably one of 'dynamic optimisation' with climates being adjusted continuously responding to the changes in outside conditions. The other approach was the Intelligrow system: an environmental model where design photosynthetic response is used as a basis to control other inputs such as light, CO_2, etc.

The first priority in making the most of energy, according to Peter Verheul of Hortisystems, was simply to employ good housekeeping techniques within the glasshouse. In short, to make sure what you have is already working correctly, for example proper closure of thermal screens since gaps between each screen or their pelmets can act as a thermal chimney resulting in an unnecessary significant heat loss. New screen materials are available which in themselves will save energy, but other techniques such as using double or even triple screen systems and the further application of supplementary lighting should be considered. In summary, Peter Verheul said that there was a need for proper verification of systems together with greater emphasis on educating growers on the benefits and application of this technology.



Chris Plackett, Commercial Manager at the Farm Energy

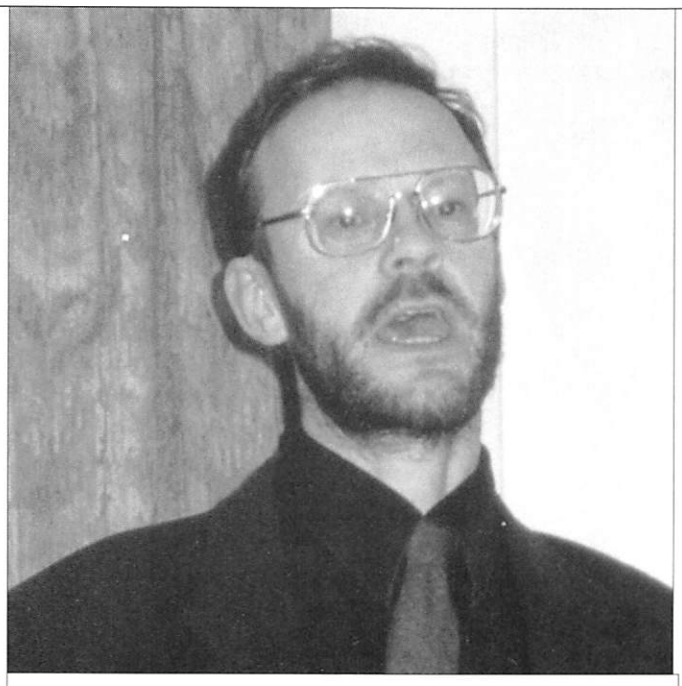
Andrew Marchant, of Hennock Industries, unfortunately seriously delayed by traffic, could only briefly outline some of the details in his very comprehensive paper reviewing energy efficiency and saving in protected cropping, which would be essential reading to any grower. The paper also reminds us of other sources of energy, e.g. Bio-gas, and wood as a fuel either from coppice systems or waste which have yet to be explored on a wider scale and do not suffer a levy. Reviewing CHP systems, he said that generally speaking at the moment it would be difficult to justify their use on economic grounds because of currently high fuel costs and low prices for surplus energy sold back to the grid. However, if night-time supplementary lighting is involved then the situation becomes more attractive. He said that micro-turbines are the latest development in this field, being available from several sources with outputs from 32 kW up to 100 kW and an installed cost of around £500/kW.



Alan Langton, Plant Physiologist at HRI

Speaking again, Chris Plackett, and this time in his own field, said that there was a need for integrated energy management. This especially true for Northern Europe where daylight levels are such that supplementary lighting is both needed and economically viable - a point well illustrated by its increasing uptake. Associated with this is the pressing requirement for good overall design. He also said that there is a lack of knowledge on the relationships between light thresholds and plant physiological response, thus emphasising need for greater co-operation between engineers and plant scientists.

The subject of micro-turbogenerators was covered briefly by Yan Evans, of Advantica Technologies Ltd, since the technical visit in the afternoon was to see one of their generators installed at the Borden Hill Nursery. These units are sized from 30 kW up to 500 kW and can be ganged together according to requirement. In fact, the one at the nursery was the smallest, installed to provide electricity for the high-intensity supplementary lighting for plant production and, since the exhaust gasses are clean, feeding them directly into the greenhouses boosting CO_2 levels. The discussion following the presentations was all too short for our overly ambitious programme but, nevertheless, several important points arose from this. There was clearly a need for better computer modelling of environmental systems and further integration of information from all sources. Integration was emphasised as



Andrew Marchant of Hennock Industries

the essential element of a comprehensive system giving much more intimate control and fuller optimisation of the glasshouse environment.

Surprisingly, at least for some, Chris Addis of Priva UK said that such systems do exist but are not in general use as yet, and that he thought that environmental control computer programs were more advanced than many realised so far.

In summary, it became clear that the key issue is a pressing need for much stronger co-operation between those working within this very diverse sector which brings together greenhouse environment technology and crop physiology. But all this will be of no avail if these efforts remain uncoordinated, as the ultimate objective is to provide greenhouse growers with the technology they need to improve production and quality while economising in energy usage. Unless these two factors are properly implemented, there is no doubt that our protected cropping industry will be progressively more disadvantaged in an increasingly competitive marketplace.

The question yet to be answered is, who will undertake this work and how can it be promoted?

Footnote

Since the Horticultural Engineering Specialist Group meeting, the EU has ratified the 50% rebate on the Climate Change Levy rates and the associated package of support for horticultural businesses.

Over the next 5 years, government will work in partnership with the horticultural industry to secure a 15% improvement in energy efficiency. The support package available to growers will include energy audits, research & development and demonstration projects.

In addition, a number of energy efficient technologies will be eligible income tax breaks in the form of enhanced capital allowances (ECA's). Technologies included that are of specific interest to growers include thermal screens, pipe insulation, combined heat and power units, boilers and discharge lighting. Further information on ECA's can be found on a dedicated website www.eca.gov.uk.

TRAINING

Measurement of indoor air pollution – sampling of house dust

The Guideline VDI 4300 describes general aspects of measuring indoor air pollution as well as the boundary conditions of importance for individual substances or classes of substances which should be taken into account before or during, measurement.

In the end of 1997, studies of house dust samples from the parquet floors of former American housings showed elevated concentration of polycyclic aromatic hydrocarbons (PAH). These PAH concentrations determined in the house dust result from tar-containing or bituminous parquet adhesives used until the 1970s in Germany and caused public concern.

Part 8 of Guideline VDI 4300 describes the different sampling methods for house dust as vacuuming with flat filter systems, vacuuming with commercial vacuum cleaners, wiping and deposition together with their characteristic properties. Restriction to a single method is not possible, rather the sampling must be optimised to the particular problem. Operating instructions for sampling house dust are given in order to allow the highest possible reproducibility of the measurement data obtained for the sampling method specified in measurement planning.

MORE INFORMATION

Guideline edited by VDI Verein Deutcher Ingenieure (The Association of Engineers), Kommission Reinhaltung der Luft (KRdL) im VDI und DIN – Normenausschuss (Commission on Air Pollution Prevention of VDI and DIN – Standards Committee). Released in German and English priced 97.90 DM. Available from Beuth Verlag GmbH, D-10772 Berlin, Germany. Email: postmaster@beuth.de

INNOVATION

NESTA Award for Safe Training Systems Ltd

Inventor David Ward, from Berkshire, has been given a NESTA Invention and Innovation award of £49,000 to develop a new instrument that instantly and accurately checks levels of chemical contamination on surfaces. This could be a major breakthrough for research labs and the food, health and pharmaceutical industries, where chemical contamination can be a serious issue.

David Ward is the technical and scientific expertise behind a small company, Safe Training Systems Ltd, which currently specialises in design and manufacture of sophisticated training simulators, especially in the nuclear industry. He is joined by David Lambourne who leads on financial management.

Industries such as food, health and pharmaceuticals must regularly check the chemical contamination of surfaces such as factory floors and clothing. This is currently done using solvents, swabs and laboratory analysis and it can be time consuming (sometimes rendering the plant inactive for several days until the results come through), expensive and not one hundred percent effective. David Ward's new instrument will use fluorescent technology and could produce accurate results instantly and economically.

The NESTA award will make it possible for David to carry out further research into the fluorescent chemistry of relevant molecules, to see whether fluorescence technique can indeed detect the different types, and levels of, chemical contamination found in industry. It will also fund the development of a prototype, working on the optics, mechanical structure and the electronics of the proposed instrument.

NESTA's funding is important to the project because it comes at such an early 'pre-proof-of-concept' stage; too early for traditional funders to get involved.

If tests prove successful, the market for this new instrument could be considerable. It will offer cost savings and major improvements in hygiene and safety to a wide range of health and food industries as well as university research laboratories where chemical contamination is a real hazard.

MARKETING

UK Trade 2000 – agricultural and outdoor power products

Last year remained difficult for UK exporters. Many overseas markets showed weakness and Continental Europe saw machinery sales moving into a cyclical downturn. Trade has gained no respite from the currency as the Pound remains strong, especially against the euro, making it difficult for British exporters to compete.

Within the crucial tractor sector, exports dived by over 14%, mainly due to reduced demand but there was also an element of dislocation as the Doncaster production unit changed hands. The decline in exports of agricultural machinery was more limited at only 5%.

The reduction in the value of imports into the UK broadly matched the downturn in the domestic market place. The overall balance of trade deteriorated by 19% to £529 m. The vital tractor sector performed marginally better with a dip of 14% to just under £600 m (a trade deficit is run on certain other products).

There can be no doubt that the year 2000 was an extremely demanding one and at least in the short term the situation is likely to remain so.

Destinations of UK exports

The EU is an important trading partner: for machinery over 66% of exports go to other member states, whilst the figure for tractors is only a little lower at 62%.

North America remains the next most important region of destination taking approximately 10% of exports of machinery and nearly 13% of tractors last year.

Not surprisingly the top 10 destination markets for machinery is dominated by EU member countries with Ireland (16%) and France (14.3%) occupying their traditional positions as the major destinations. For tractors, France occupies a predominant position in terms of value but, in terms of units, the USA was the highest market.

CONTACT

Chris Evans, Economist.
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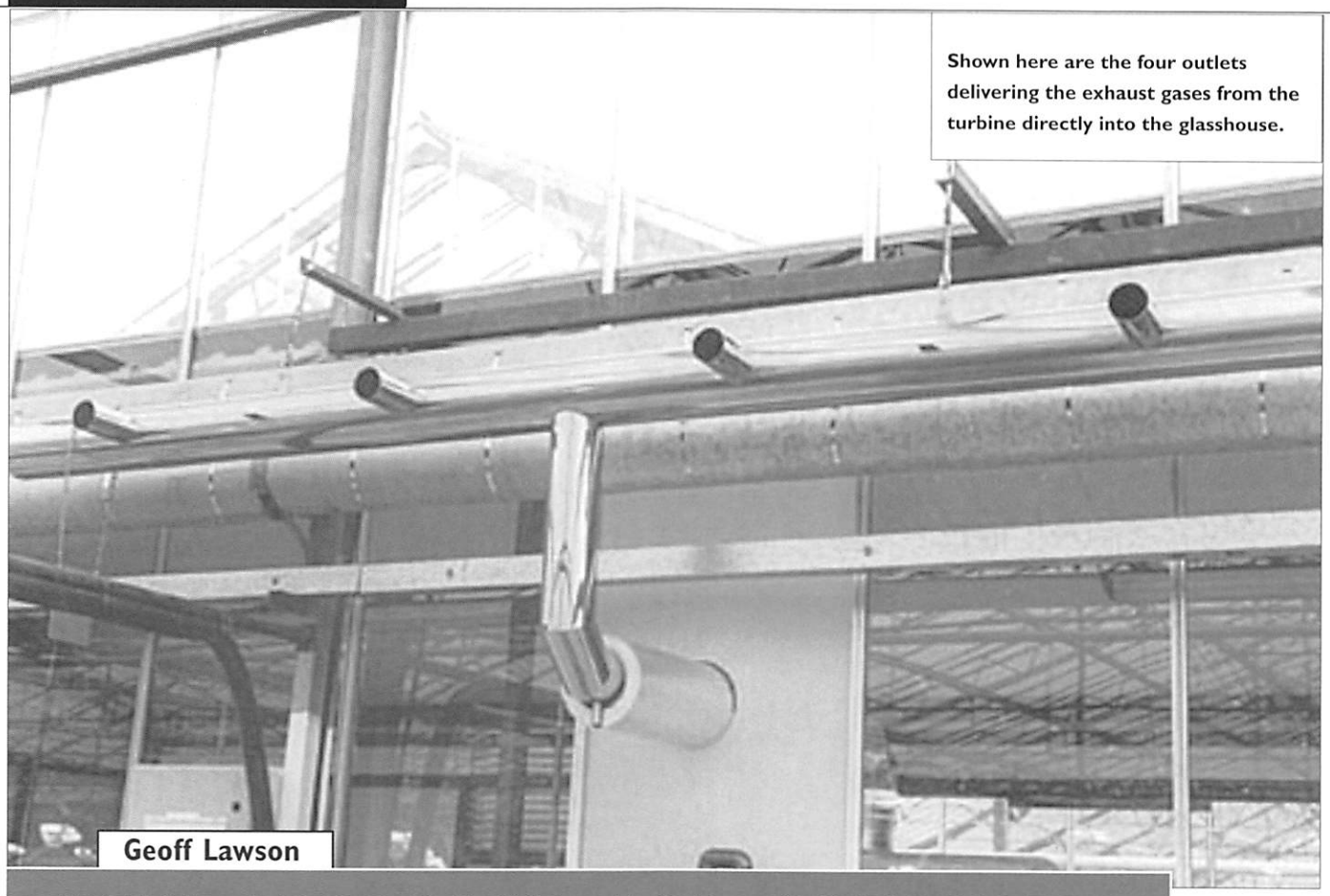
economics@aea.uk.com



Shown here are the four outlets delivering the exhaust gases from the turbine directly into the glasshouse.

Geoff Lawson

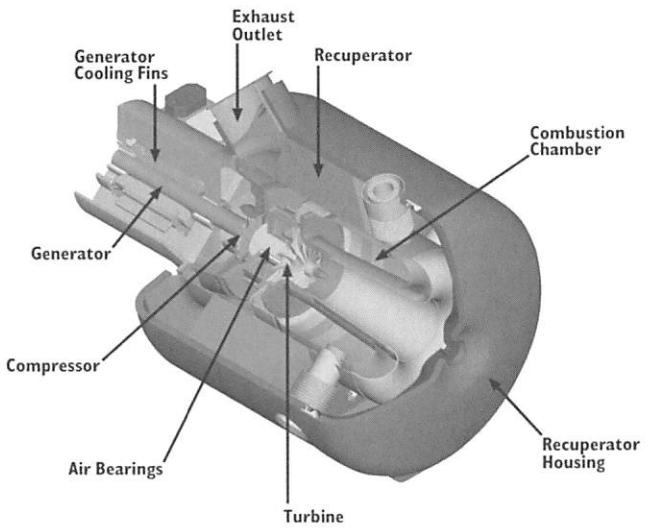
NEW APPROACH FOR COMBINED HEAT AND POWER

Whilst Combined Heat and Power (CHP) systems may seem an ideal solution it has, so far, been plagued with two aspects of the same problem. First of all, and since electrical energy is relatively inexpensive to buy, then it follows that any sell back income is going to be too small to be viable. The other alternative is, of course, to use the electrical energy within the glasshouse complex if the need is there. Such was the case at W Findon & Son's Bordon Hill Nurseries in Warwickshire, which proved a very successful venue for the Horticultural Engineering Group's technical visit earlier this year, and where any additional electrical energy demand would have necessitated the installation of a large and expensive transformer.

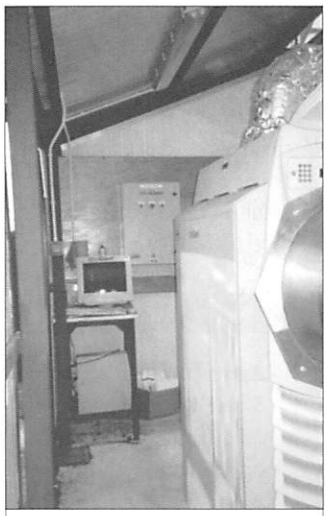
Devoted to large scale pot plant production the nursery, so far, had not had any means of increasing the levels of CO_2. The answer to these problems, with the added advantage of providing heat, was the installation by Advantica Technologies Ltd. of a Capstone Microturbine. The model chosen was the 30 kWe Minigen and this was placed in a lean-to alongside one of the glasshouses. Powered by gas the turbine unit is mounted at the top of the overall casing shown in the accompanying photo, and the internal arrangement is shown in the cutaway illustration. The rotor is directly coupled to the generator and revolves at 96,000 rpm and is supported on 'air bearings' and, because of the high speed, the electrical output is electronically converted to the normal useful voltage, etc.

The electrical output is used for supplementary lighting. The exhaust is 'clean', the NO_x levels are very low at only 9 ppm, but the gases are fed straight into the 300 m^2 glasshouse where the CO_2 they contain raise levels to around 2,000 ppm.

The gases are fed in to the glasshouse by a high level, four



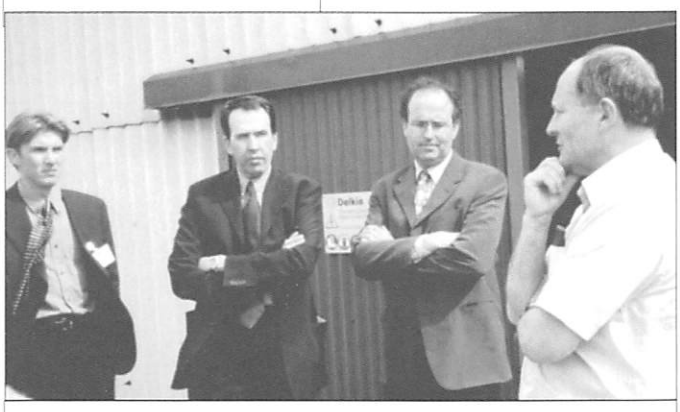
This cutaway illustration shows the layout of the major components of the Minigen micro-turbine.



Computer controlled, the Mingen unit is relatively small. The air inlet is seen centre right and the insulated exhaust top right

exit manifold and this is necessary not only for good distribution but also because the exhaust gas temperature at the point is 281°C.

The installation has worked well for the Nursery and David Findon, a partner of W J Findon & Son, is satisfied with the results. Over a 2,700 hour period the unit has generated around 74MWh of electricity for supplementary lighting and about 60 tonnes of CO_2.



David Findon (right) discusses heating problems with members of the HEG.

TRAINING

Engineering Council supports the rail industry in vital training of engineers

The introduction of tougher professional standards will help Railtrack find the right signal engineers to deal with managing the railways. The Engineering Council, the UK regulator of standards for engineering professionals, has recently awarded full membership to The Institution of Railway Signal Engineers (IRSE) to join its list of 35-strong, professional engineering institutions.

At the centre of professional engineering standards is the UK register of qualified engineers and technicians, led and maintained by the Engineering Council in partnership with its 35 professional engineering institutions. Together, they are responsible for setting the standards for further and higher education courses in all areas of engineering and for promoting lifelong learning or professional development for all professional engineers and technicians.

"High standards are vital to the health of the economy and to the current and future safety of our nation. Recognised engineering management practice must be restored to the heart of the rail business – without it, we will continue to see an alarming number of safety warnings, as is now coming to light with the Hatfield inquiry, pass unheeded," said Malcolm Shirley, Director General of the Engineering Council.

"Engineers play a vital role in the nation's ability to operate a safe and efficient railway system. That's why we are delighted that The Institution of Railway Signal Engineers has joined the other 34 engineering institutions which ensure that safety-critical standards – such as those required in the rail sector – can be met."

Mr Shirley expressed concern about whether the industry has enough of the right skills to address the current and future work programme. Much experience across the industry has been lost and little training is now being undertaken to maintain the proper succession of engineering skills. He urged the industry to think very seriously about training and issues of management as these were key to solving current and future problems in the sector.

"We are already in touch with Railtrack to see how we can help with their Engineering Competence Development Strategy – they continue to share our commitment to promoting high standards in engineering."

"This assistance comes in many shapes and sizes – the Engineering Council is developing a scheme 'to license competent persons' and The Institution of Railway Signal Engineers already has an established Licensing Scheme which operates in the UK, Australia and Hong Kong."

RECREATION

Earthworks: construction and creation in mud architecture

Artist-led courses have been a popular feature of Education and Community events at Yorkshire Sculpture Park (YSP) for many years. The popular series of practical sculpture masterclasses takes place in the open air on a workshop site, where works created can be seen by other visitors.

Earlier in the year, the unique preparation and structural creation processes involved in using soil as a sculptural and architectural medium was explored, providing a unique opportunity to experiment with heavy and large-scale materials in an imaginative and exciting way. Earthworks, a five-day course led by artist Jim Buchanan and aimed at '...the ambitious gardener, artist, teacher, environmental worker or designer', focused upon the construction and inventive medium of soil. As well as acquiring technical expertise, participants could take inspiration from the park's landscape and international exhibitions, discovering for themselves how raw materials can be manipulated to create sculpture.

The course covered how to evaluate and test a soil's construction potential (each participant was requested to bring two buckets of soil from home before leading to the construction of an earth shelter and bread oven (soil supplied!).

Jim Buchanan trained in Landscape Architecture at Leeds Metropolitan University. More recently he has applied his skills to large-scale land art projects. These range from the monumental-permanent to the ephemeral installation. At Fort Augustus, he recently created a two ha land drawing by using a rotovator to design a pictish spiral manala and in Tapton Park, Chesterfield, he has created the world's largest permanent 'Earth and Wildflower' labyrinth, using 15,000 t of soil.

MORE INFORMATION

For information about events contact Keith Cowans.
Tel: 01924 830642.
Fax: 01924 830614.
For YSP visitors, The Bothy Café makes excellent home-made food and there is a picnic area next to the workshop. Electric mobility vehicles are available. Details on local accommodation can be supplied.

SAFETY

Don't take risks on fragile roofs, warns HSE Chief Agricultural

The Health and Safety Executive (HSE) is becoming increasingly concerned that, whilst disinfecting premises in the wake of foot and mouth, individuals may be taking risks on fragile roofs.

Linda Williams, HSE Chief Agricultural Inspector, said: "Last year five people died on farms as a result of falling through roofs containing fragile materials. That was before people were involved in disinfecting buildings. Since April one person has been killed and another seriously injured in falls through roofs on farms being disinfected.

The pressure to cleanse premises thoroughly may cause individuals to consider standing on the roofs of farm buildings. Unless they are completely sure the roof is not fragile, the risk should not be taken. Duty holders must identify and enforce a safe way of cleansing and disinfecting farm buildings.

I urge the industry to ensure that further tragic accidents during cleansing and disinfecting do not add to the distress of the foot and mouth outbreak."

Sometimes an entire roof surface may be fragile, such as many fibre cement roofs. Some non-fragile roofs may contain roof lights which are fragile. Falls may also occur through metal roof sheets which have rusted to the point where they are no longer able to carry a person's weight.

Where work on fragile roofs is necessary, it must only be carried out by people who are competent in working at height. Suitable safety equipment must be provided and used. Guidance is available in the HSE's agricultural information sheet Preventing falls from fragile roofs in agriculture (AIS 32).

The industry should also note that high pressure water jets should not be used to clean asbestos cement sheets. This cleaning technique can result in release of, and exposure to, asbestos fibres.

CONTACT

Agricultural Information Sheet No 32 Preventing falls from fragile roofs in agriculture, and other relevant free guidance is available from HSE Books, PO Box 1999, Sudbury, Suffolk, CO10 2WA. Tel: 01787 881165. Fax: 01787 313995. Web: www.hse.gov.uk (under Agricultural section)

RESEARCH

Silsoe Research Institute prizewinners

The Engineering Applied to Agriculture Prize given by the Automobile Division of the Institution of Mechanical Engineers has been awarded to N D Tillett, T Hague, J A Marchant and C M Onyango of Silsoe Research Institute for 'a body of research' submitted over several years.

Papers from the research include: 'A Robotic System for Plant Scale Husbandry'; 'Computer-vision Based Hoe Guidance for Cereals - an Initial Trial'; 'A Bandpass Filter Based Approach to Crop Row Location and Tracking'; 'Shadow Invariant Classification for Scenes illuminated by Daylight'; and 'Navigation and Control of an Autonomous Horticultural Robot'.

The prize is awarded for a paper, lecture or research on a subject associated with mechanical engineering applied to agriculture.

globalfarmers and ADAS present formidable E-trading offer

globalfarmers, the UK's most innovative on line agricultural market place completed a deal with leading agricultural consultants ADAS which will secure it's future for the long term. The deal is seen as a major initiative that will spearhead the way that the agricultural industry trades in the future.

Edinburgh based globalfarmers has been operating an Internet based e-commerce agricultural trading exchange for the last six months. During this time it has attracted over 5,000 registered farmer users, providing them with direct access to over 200 suppliers and several thousand agricultural products. Trading mainly in agro-chemicals, fertilisers, seeds, animal health products and equipment, the exchange provides the opportunity to buy and sell agricultural products as well as access to a wide variety of services including weather reports and news. globalfarmers recently won the prestigious Grand Prix at the New Media Age Effectiveness Awards, receiving considerable praise from the judges for its 'multi platform approach, good functionality, ease of use and depth of content and strong range of offering.' It also scooped the key business-to-business award at this event.

ADAS is the largest independent UK consultancy, directly advising the agri-food and rural economy sectors and the farmers of some 5 million hectares of UK farmland on the latest farming techniques. With over 1,200 staff and a turnover in excess of £54 million, ADAS consultants provide consultancy and business management services to over 40,000 businesses from small rural enterprises to major corporations, including national and local government. ADAS has developed a successful but more conventional telephone based trading service for its customers, 'ADAS Direct', which facilitates trade between the UK's leading supply companies and farmers across the UK. This service has provided a valuable route to market for companies selling items such as livestock, milk quota, semen, dairy cake and agro-chemicals. The intention is to integrate ADAS Direct with globalfarmers creating immediately one of the largest markets for farm inputs in the UK.

Commenting on the new merger, David Hall, ADAS Executive Director said, "For sometime now ADAS has been firmly committed to developing its web presence. We have produced a number of new and innovative products aimed at providing our customers with the latest information and support to enable them to run their businesses more efficiently." Mr Hall continued, "Our customers tell us that they like the concept of access to a 24 hour 'virtual' consultancy, but at the same time want to be able to call upon 'real' experts for personal advice when this is required. Our tie up with globalfarmers enables them to do just that whilst at the same time improving their operating efficiency."

Jonathan Land, Chief Executive of globalfarmers also believes in this philosophy. "We have developed an extremely effective e-commerce platform that is easy to use for suppliers and buyers alike. What we have found, however, is that people trading on the site often value the reassurance of being able to discuss their transaction with one of our experienced traders, before finally making their purchase. It is clear to us that 'the human touch' is a vital ingredient in Internet trading".

"In this respect ADAS and globalfarmers share the same views. Combining the e-commerce expertise of globalfarmers with the UK's leading agricultural business consultants, provides the industry with a powerful method of competing in today's challenging and volatile global market place."

Research by Promar International states that 75% of farms now have internet access and 90% of these would consider buying on line. Farmers Weekly recently published a survey, which showed that 25% of farmers sampled, regularly use globalfarmers.

In conclusion, ADAS' Head of Group Development Andy Offer, commented, "ADAS very much regards e-commerce as a strategic platform in shaping the future of UK agriculture. We see the inclusion of an e-commerce capability within the ADAS portfolio of services as an important addition, which will benefit our customers by enabling us to deliver existing services more efficiently and to develop new products like our 'ADAS inter@ctive' information

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TYRES

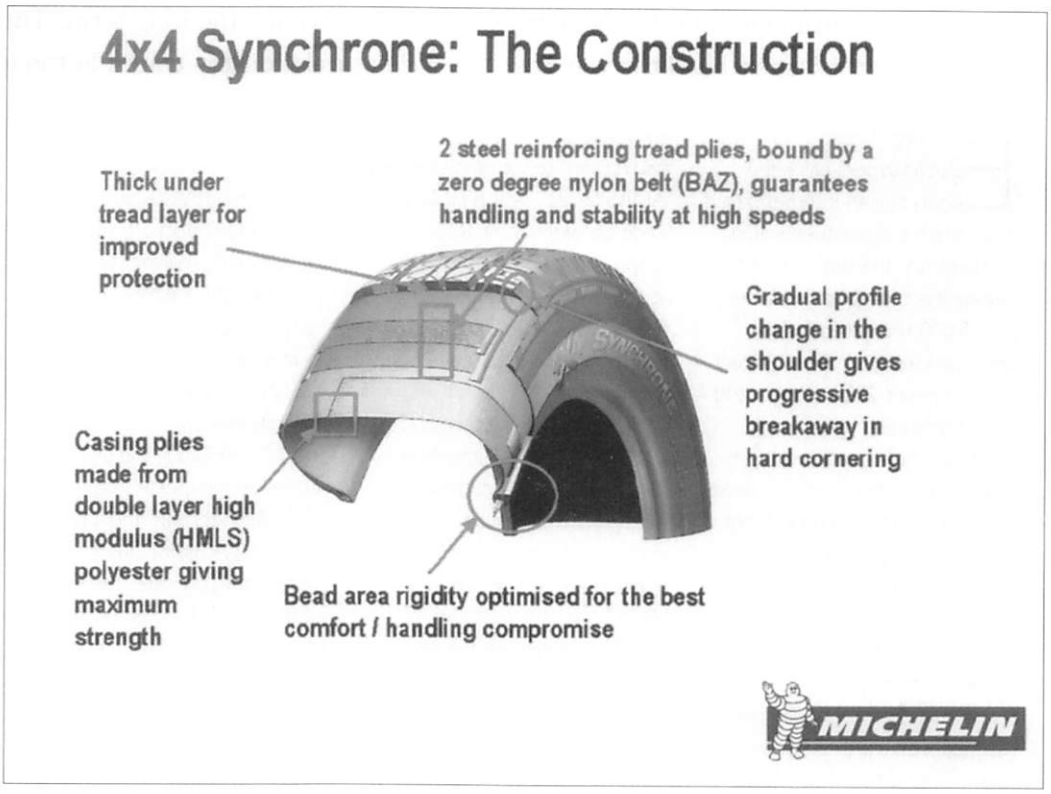
New for 2001: two Michelin tyres for the 4 x 4

March 2001 sees the launch of two new Michelin tyres, the Michelin Synchrone and Michelin Diamaris, for the 4 x 4 vehicle market. These tyres bring the very latest developments in tyre technology to the recreational and high-speed luxury on-road 4 x 4 market.

The new Michelin Synchrone has been carefully developed to replace the industry renowned Michelin XPC tyre. Building on established XPC strengths of lateral wet grip, aquaplaning and long tyre life, the Michelin Synchrone performs equally well over rough terrain and on the road. Michelin Synchrone is the ideal fitment for all purpose family and recreational compact vehicles, meeting the very latest manufacturer's requirements.

Michelin Diamaris is an innovatory which has been developed by Michelin in close co-operation with prestige 4 x 4 car marques such as BMW, Mercedes and Audi. It is the ultimate tyre for the growing niche market of high performance, luxury 4 x 4 vehicles offering impeccable steering, braking and perfect road holding in dry and wet conditions.

Michelin Synchrone gives complete on and off road security for those happy with the traditional highway and the more adventurous who wish to tackle off road terrain. Features include a deep 10.5 mm tread and a 5 rib symmetrical tread pattern. The tyre profile is made up of a central 'on road' section and two wide circumferential grooves for good water evacuation. The shoulder profile provides outstanding levels of grip in most off road conditions. Staggered shoulder blocks give excellent lateral grip on slopes.



A high level of protection is provided for the Michelin Synchrone by an extra layer of rubber at the tread base. Silica based compounds reduce the rolling resistance (by 20% compared with the 4 x 4 XPC) and provide good grip in cold conditions. Tread block spacing has been optimised to reduce noise levels. The tyre's casing plies are made from double layer, high modulus polyster for maximum strength.

Michelin Diamaris is the ultimate tyre for those seeking to maximise road performance from a luxury, on-road 4 x 4 vehicle. This tyre features an asymmetric tread pattern, lower noise levels, increased comfort, superb handling in wet or dry conditions and a deep tread of 8.5 mm.

A construction employing the very latest developments in tyre technology gives the Michelin Diamaris its inherent strength. A zero degree nylon belt that guarantees excellent handling and stability at high speeds, binds two steel reinforcing plies. The casing has a 2-ply rayon construction for resisting high temperatures. The shoulder profile gives excellent high-speed endurance and progressive breakaway on hard cornering.

Massive tread blocks provide a stable tread pattern and maintain precise handling under extreme cornering conditions for the Michelin Diamaris whose tread block arrangement has been optimised to produce lower noise levels. A major research and development programme has resulted in a reduced noise level for the Michelin Diamaris, of 1.9 dBA in coast-by noise at 80 km/h (in comparison to the XPC).

The Michelin Synchrone and Michelin Diamaris tyres are industry leaders providing comfort, safety and excellent handling for this expanding vehicle sector.

CONTACT

Ian Hughes, Michelin Press Office. Tel: 01923 415101. Fax: 01923 415250.

Matrot introduce new Maestria sprayer range

Matrot, who specialise in high capacity self-propelled sprayers fitted with front-mounted booms, has launched a new self-propelled sprayer range, the Maestria, which is available in six models with tank capacities of up to 4500 litres and aluminium boom widths from 24 m to 48 m.

The Maestria replaces the Matrot M44D which in France leads the way in high capacity spraying. Combined with the smaller M24D, since 1987 Matrot has sold over 2000 units and annually accounts for around 50% of the French self-propelled sprayer market. Of those sold, nearly 70% are 3,900 litre capacity sprayers with 112.5 kW engines and 36 m or 38 m front-mounted booms.

"The greatest benefit of front-mounted booms is the quality of work achieved," argues Geoff Avis of Matrot UK. "On booms of this width, it is important that the operator can clearly see what is happening, which he cannot if the boom is rear-mounted. Having everything in front of the operator means that his workload, and subsequently fatigue, is reduced, and it ensures that he can accurately follow field margins and spray into corners."

Active pneumatic suspension

The centrally mounted tank and counter-balancing the weight of the front mounted boom by the rear positioning of the engine enables a 50/50 weight distribution between front and rear axles. To ensure greater operator comfort when working at higher speeds, a load sensing pneumatic suspension system is fitted as standard.

As the weight of liquid in the tank alters, a three-way levelling valve linked to an air compressor automatically injects or releases air from the pneumatic suspension system, so that a consistent suspension height is maintained regardless of whether the tank is full or empty.

Hydro-Mechanical transmission

The inclusion of this pneumatic suspension system has also enabled Matrot to make available a higher 40 kph road speed transmission on the Maestria, an option that was not available on the old M44D.

Whilst in principle the Hydro-mechanical drive system is the same as was previously used, it does incorporate some important changes. As before, the Sauer hydraulic pump is mounted at the end of the engine. This drives a four-speed hydraulic motor, which in the standard 25 kph guise provides three field speeds and one road speed, with electro-hydraulic on-the-move selection. Where the 40 kph transmission is specified, a mechanical splitter provides a total of four field and four road speeds.

The hydraulic motor is coupled to a transfer gearbox, from which drive shafts transmit power equally to the front and rear axle. In addition to differentials in each axle, a third inter-axle has now also been incorporated into the transfer gearbox, which won a Commendation at the recent SIMA Show. Locked for field-work and unlocked on the road, this third differential has been added to avoid imbalance between the speed of the front and rear axle. Such an imbalance can be caused by the transfer of weight onto the rear axle, when the booms are folded, so causing greater tyre deflection and reduced tyre circumference. The result is that load on the transmission is reduced and noise levels reduced.

Booms up to 48 m

A total of four 25 km/h and two 40 km/h models are available in the Maestria range. Bottom of the range is the Maestria 12 powered by a transverse mounted 94 kW Deutz engine, 3000 litre tank and 24 m to 36 m aluminium booms, whilst the top-of-the-range Maestria 22-45 features a 168 kW engine, 4500 litre tank, 32 m to 48 m aluminium booms and 40 km/h road speed.

All the front-mounted booms utilise a pendulum suspension system and have variable geometry with hydraulic accumulators to independently cushion each half boom section. The booms are fitted with Quadri-jet nozzle holders and operating height can range from just 30 cm up to 2.9 m.

All the main spray functions are controlled by just two valves, which govern all the main fill, transfer and pump requirements. Positioned alongside the valves is a push-button controlled chemical inductor.

New cab design

The cab on the new Maestria range has been specially designed to provide an uninterrupted 80° visibility over the boom and front axle. A three-stage filtration system using media, paper and carbon filters ensures optimum operator protection.

All the main sprayer and boom functions are controlled using a joystick and control console which is mounted on, and moves with, the operators seat.

As standard all Maestria models come equipped with a Teejet 860 computer, which provides the operator with an extensive range of information and setting functions, in addition to GPS compatibility and a print-out facility.

The Matrot Maestria range is immediately available for this season, and prices start at £60,000 for the Maestria 12 with 3,000 litre tank and 24 m front-mounted booms.

CONTACT

Geoff Avis, Matrot UK Ltd, Crossways, Cockfield, Bury St Edmunds, Suffolk IP30 OLN. Tel: 01284 828888. Fax: 01284 828173.

TRACTORS

European farmers embrace award winning Case IH tractor technology

With a continued drive towards increasing productivity and reducing costs, European farmers are looking at the new breed of 'intelligent' tractors, featuring continuously variable transmissions, for further improvements in tractor performance. Case IH are the leaders in the field with their CVX120, CVX130, CVX150 and CVX170 tractors (model numbers sensibly refer to horsepower ratings) and have recently picked up a number of awards.

The Case IH CVX has recently won the 'Tractor of the Year' award, presented annually by the magazine 'Trattori'. This is the second year running that Case IH has picked up the award – last year it was won by the MX Magnum range of tractors. A panel comprising agricultural machinery journalists from leading trade magazines in 12 European countries selected the winner based on the following criteria: engine, transmission, electronics, controls, comfort, design and price to power ratio.

The Case IH CVX tractor was also voted 'Tractor of the Year' at the last Agritechnia show in Germany. Through extensive research and customer input, Case IH has once again given the agricultural machinery sector major technological advances.

At the FIMA international agricultural machinery exhibition in Saragossa, Spain, Case IH received further international recognition by winning the event's most prestigious award – the Technological Innovation prize, for the CVX tractor's continuously variable transmission. The organisers presented the trophy to Automocion 2000 SA, Case IH's distributor in the country. The FIMA is one of the big European trade shows, bringing together the largest agricultural machinery manufacturers to display their flagship products. The FIMA jury also presented a second special award to the CVX range for it's independent front suspension.

"It is with great pleasure that I receive this Trattori prize on behalf of all the Case IH team," said Luciano Paiola, Worldwide Vice President of Tractor Activities for CNH. "I would particularly like to thank Case IH engineers whose knowledge allows us to supply farmers around the world with innovative agricultural solutions such as these."

A panel of judges comprising agricultural machinery journalists from leading trade magazines in 12 European countries voted the Case IH CVX tractor as the 'Tractor of the Year' based on the following criteria: engine, transmission, electronics, controls, comfort, design and price to power ratio

These series of awards pay tribute to Case IH's product innovation strategy, of which the CVX is a perfect example. Through extensive research and customer input, Case IH has brought to the market a major technological advance, using the same techniques previously successfully applied to other award-winning products such as the MX Magnum tractor and the Axial-Flow® combine harvester.

The continuously variable transmission is one of the key assets of the Case IH CVX tractor, contributing to optimum engine use, thus giving better speed control and improving profitability. It is an integral part of the revolutionary Automatic Productivity Management (APM) system which controls and co-ordinates the engine, transmission and PTO. Depending on the required speed, the APM automatically selects the most appropriate engine speed, eliminating potential fuel or energy waste. This represents real progress for farmers, who will make even greater demands of their equipment in the future.

"Each time our agricultural products receive recognition – from customer satisfaction or through awards such as these, presented by trade professionals – it reinforces our commitment to creating innovative agricultural products which simplify farm work, whilst raising productivity," said Günther Apfalter, Vice President, Sales, Case IH, Westem Europe.

CONTACT

Case International Ltd, Marketing Division, PO Box 121, Wheatley Hall Road, Doncaster, South Yorkshire, DN2 4PN. Tel: 01302 733382. Fax: 01302 760314. Web: www.caseih.com

SEED DRILL

Modifications improve efficiency of Amazone front tanks

Amazone Ltd has announced a new range, the '03 series front drill tanks for their AS rear seed rails to enable more efficient working and improved handling.

According to Simon Brown, product specialist of Amazone Ltd, "The principal changes for the new series are a number of new driveline features which include a simplified drive linkage from the landwheel which is now hydraulically lifted on both models. They are fitted with the new Vario single range gearbox, infinitely variable to give seed rates from 2-400 kg/ha. The fan drive is encased in plastic to reduce noise."

The FPS models are carried on the steering tyre packer which features three enlarged tyres with an integrated tyre cleaning system, whereas the FRS models are carried on the front of the tractor.

The front tanks are based on a 1500 litre – extendable to 2000 or 2300 litre – with a hydraulic fan to meter the seed of to the rear seed rail and an ability to handle either seed or fertiliser

Amados III replaces the Amados II control box, which in addition to controlling the tramline system, seed rate and monitoring shaft drives and fan speed and other data, now offers the opportunity of 'electric corner drive'. With this electric corner drive, the metering system can be primed to provide seed at the coulter as the drill is starting to pull forward to avoid misses in field comers. The overload protection clutches on the folding power harrows and rotary cultivators can also be operated from the Amados controller.

The front tanks are based on a 1500 litre capacity, extendable to 2000 or 2300 litres – with a hydraulic fan to meter the seed to the rear seed rail – and an ability to handle either seed or fertiliser. They are available with a single (103) outlet for 3 m to 4.5 m drills or a double (203) outlet for 6 m drills.

The front tanks also come with standard spot and sidelights, side delivery pipes and an easy to use calibration kit with seed rate slide rule.

CONTACT

Simon Brown, Amazone Ltd, Blyth Road, Harworth, Doncaster, S Yorks, DN11 8NE. Tel: 01302 751200.

WEIGHBRIDGE

Shering launch revolutionary weighing system

The product of years of research and investment, Shering Command is the first system in the world to allow an infinite number of weighbridges to be controlled and monitored from a single command centre across any distance, using an innovative software package.

After extensive testing, Shering are now confident that the new system will lead to a wide range of benefits for their customers, putting them years ahead of their competitors.

Says company Chairman & Chief Executive Douglas Shering: "Shering Command is the most exciting technological breakthrough in the weighing industry to date and is a system we have invested in heavily, simply because we were convinced it would be of enormous benefit to our customers. It can be used to centralise the control and surveillance of any number of weighbridges across any distance, so the implications for customers are significant in terms of streamlining operations and bringing a greater degree of accuracy, efficiency and cost saving to systems."

"A wide range of functions can be operated from this central command point, including viewing of the weighing system, talking to security staff and monitoring site processes and equipment."

"We have just completed the final stages of testing at our research unit in Dunfermline and we're looking forward to taking Shering Command to our customers throughout the coming months."

The technology behind the Shering Command system is based upon a set of modules, each of which controls a different part of the system operation, allowing each module to be developed, managed, deployed and enhanced independently. The system can therefore be tailored to meet the customer's requirements, allowing for improvement of communication internally and externally and achieving ultimate control and efficiency throughout business networks.

The system provides a client-server database management system which can handle a greater value and range of data than previous management systems. As a result the customer can also reap the benefits of a safer, more secure system which is less susceptible to potential fraud.

STEERING

Lynx front linkages for New Holland TM supersteer tractors

The all-new 3.5 t capacity Diamond SuperSteer front linkage from Lynx Engineering is now available to fit 79 to 120 kW New Holland Series TM SuperSteer tractors. Series TM tractors fitted with SuperSteer have a 65 degree turn angle for a high level of manoeuvrability. This is achieved without increasing the front wheel castor angle at full lock, the whole front axle moving as the wheels are turned to provide the necessary clearance between the tractor body and wheels.

The movement of the SuperSteer front axle prevents fitting a conventional fixed front linkage because the front wheels would not have the necessary clearance at full lock. The SuperSteer linkage gets around this problem by bolting directly to the front axle and in place of the SuperSteer front weight pack. This allows the linkage to move with the axle and stops it compromising the manoeuvrability of the tractor.

The SuperSteer is otherwise built to the same specification as existing Lynx Diamond linkages and is supplied as standard with a multi-use valve. This enables the operator to switch the linkage lift rams between single and double acting to offer full float or provide down force as required.

Lynx Front Linkages for New Holland TM Supersteer Tractors – Pictured is the new 3.5T Diamond SuperSteer front linkage from Lynx Engineering. The linkage is now available to fit 78.75 kW to 120 kW New Holland Series TM SuperSteer tractors. Tractors that are fitted with SuperSteer have a 65 degree turn angle which allows increased flexibility and manoeuvrability.

A gas accumulator is also incorporated in the linkage hydraulics. This acts as a shock absorber to protect both the linkage and front axle. It is of particular value when operated with heavy front implements, particularly at high transport speeds.

A PTO can be specified either with the linkage or added at a later date. Rated at 128 kW at 1,000 rev/min, it is supplied complete with the acclaimed Lynx engagement system with its own independent low-pressure hydraulic circuit. This incorporates an independent PTO clutch that allows the operator to select the speed at which full power is transferred to the PTO. An in-cab PTO speed monitor is also supplied as standard.

Manufactured by Zuidberg Technick in Holland, the new Diamond SuperSteer linkage is £1800. The self contained PTO system, which includes the engagement control system, cab monitor and an integral low-pressure hydraulic pump, is £2250.

CONTACT

Nick Ewbank, Lynx Engineering, Wharf Works, Long Buckby, Northampton, NN6 7PP. Tel: 01327 843215. Fax: 01327 844341.

CULTIVATOR

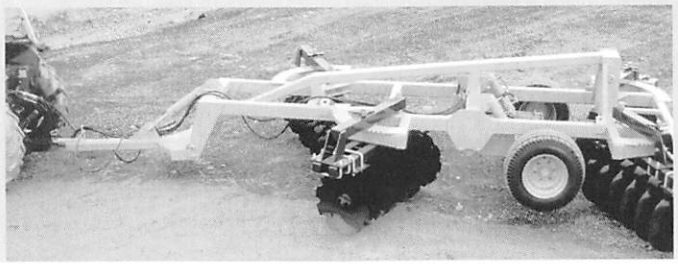
Re-designed disc harrows from Knight Farm Machinery

Re-designed versions of the Parmiter range of cultivation equipment taken over by Knight Farm Machinery at the end of last year are now available.

The disc harrows joined Knight's existing Triple-Press family of press rolls which won a Gold Medal from the RASE in 1999 to create a broad range of cultivation equipment.

Knight continues to offer the popular Utah offset machines in rigid form with working widths from 2.75 metres to 4.1 metres. Work is in progress to develop wider models with hydraulic folding for this autumn.

A new range of folding machines based on Parmiter's LFD units has been developed. Called 'Excalibur', these models retain the original chassis design to provide well-balanced, cost-effective performance. Hydraulic and manual folding models are available in widths from 3.5 to 5 metres. Future developments will include the option of incorporating a packer into the unit.



CONTACT

Knight Farm Machinery Ltd, Wireless Hill, South Luffenham, Oakham, Rutland, LE15 8NF. Tel: 01780 722200. Fax: 01780 722201. Web: www.knight-ltd.co.uk

Honda rolls out its big gun

Honda (UK) has revealed its new TRX 500, the largest Honda All Terrain Vehicle (ATV) ever to be launched in the UK. It is Honda's first water-cooled quad bike and features a revolutionary new transmission. The new model will cement Honda's dominance of the high power ATV market.

"The TRX 500 continues the trend for increased power," says Tom Gardner, Marketing Manager Power Equipment, Honda (UK). "Applications for ATVs are evolving from simple go anywhere transport into heavier duty applications that require the ability to move more equipment for bigger jobs without the expense and impracticality of larger, conventional 4x4 vehicles."

Like previous Honda ATVs, the new 500's engine is mounted longitudinally in the frame, this makes for a lower centre of gravity as well as a more efficient drive output to the front and rear axles. A unique design feature is the 'under-head' camshaft that reduces the overall engine height giving a more compact power unit.

The TRX 500's transmission is unique. It uses both hydrostatic and gear drives and offers fully automatic or manual operating modes. Power from the engine drives a hydrostatic pump to provide an oil flow that drives a hydrostatic motor.

In automatic mode the oil pressure and flow rate are varied automatically providing stepless gear shifting from standstill up to full speed. Because the gear change simply alters the rate of oil flow, the shift is smooth even under full acceleration, removing the typical 'lurch' of standard ATV transmissions.

In manual mode the five pre-programmed ratios can be selected as if using a conventional gearbox. A pair of F1 style thumb operated push switches adjacent to the left hand brake lever are used to change up or down.

There are two automatic modes, one for general mobility and adequate for most working situations, and another offering a slower rate of gear ratio change. The delayed ratio change means increased torque which is better for situations such as heavy trailer work or pulling grass harrows.

The TRX 500 is also the first Honda ATV to have a choice of gear ranges. A lever linked to a mechanical transfer gearbox is used to select high, low, neutral or reverse. Manual or automatic modes can be used in either low or high range and the high torque auto mode can only be used in high range.

The TRX 500 has permanent four-wheel shaft-drive to both front and rear wheels. Honda's advanced Sure-Trac torque-sensing front differential allows light steering, and a tight turning circle under normal conditions, but when wheel slip is sensed the drive plates within, lock up and, drive to the wheel is immediately engaged ensuring excellent traction in all conditions, on and off road.

The TRX 500 has enclosed footwells between the wide front and rear mudguards. This offers more foot protection for the rider, and improved comfort during longer working periods as feet can be moved around rather than being restricted to resting them on narrow footpegs. An enormous seat also provides plenty of user comfort.

A large LCD screen shows speed, total and trip distances, along with information about which transmission mode and gear are selected. Actual time and working hours are also displayed to help keep track of service intervals.

MORE INFORMATION

For more information about Honda's range of ATVs click on the Power Equipment icon at www.honda.co.uk or call 0845 200 8000 for your free brochure.

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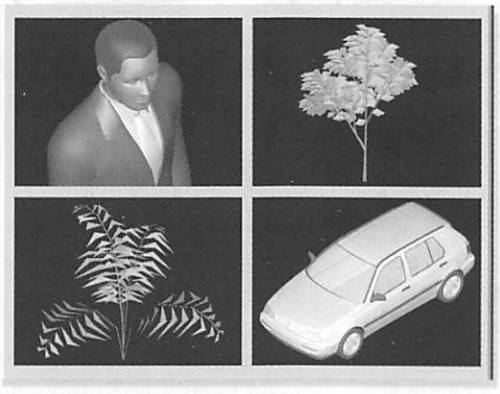

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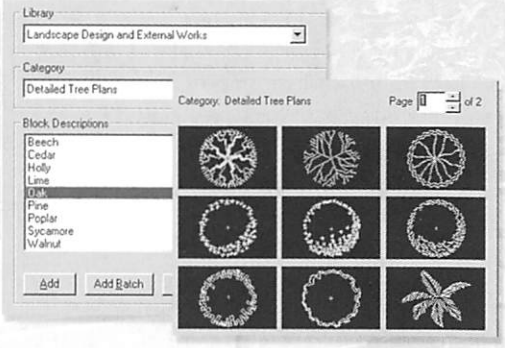

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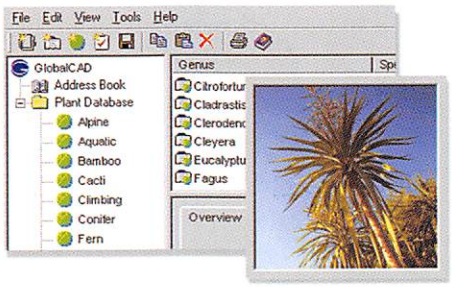

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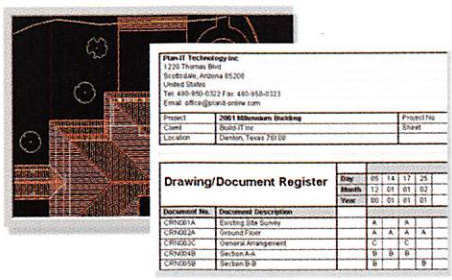

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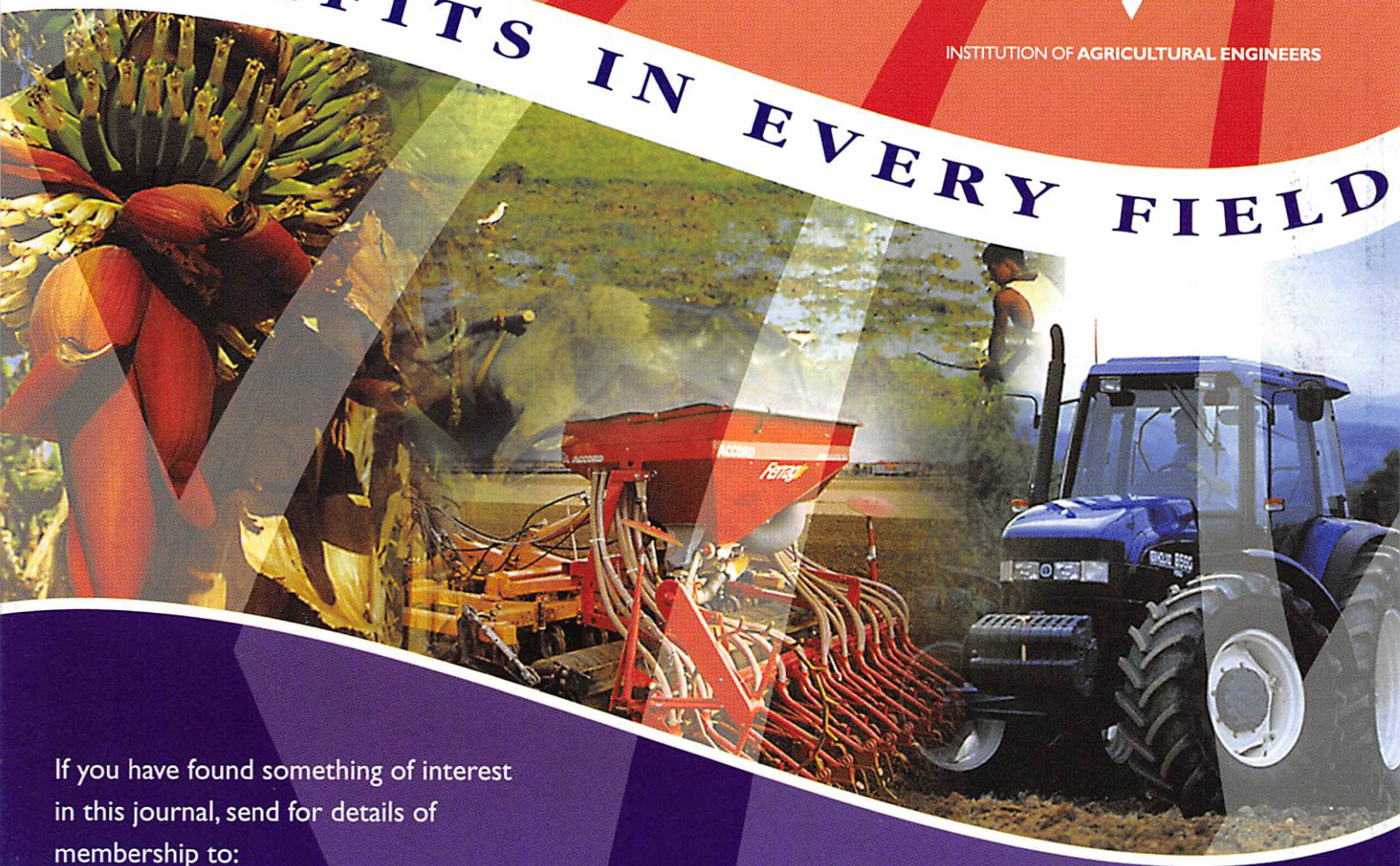

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