



# ALAM Newsletter

Spring 2011

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## 2011 Conference

Plans are coming together for a conference to be hosted by Claas UK at their headquarters in Suffolk. The date is set for the week beginning 18th July 2011, so keep the date free and see our next newsletter or the website for full details nearer the time.

## One-Day events

There's one of the reports from the one-day Valtra event hosted at Walford College in this newsletter, all about Valtra's Field Guidance systems.

We are always open to ideas and suggestions from members for future one-day updates, and names of useful contacts would be most welcome. Please contact the ALAM secretary, Graham Higginson at Reaseheath College.

## Membership

You will find a list in this newsletter of all the paid-up members for the current 2011-12 year, as of June.

We have had cases where members banks are taking money from their accounts, but it is not reaching ALAM's account. We also still have a couple of cases of unidentifiable standing orders, so if your name is not in this list please check your bank statements and ask your colleagues to do the same. If anyone has standing orders taking money from their bank but are not on the membership list, please get in touch with the treasurer. Subscriptions are normally taken at the beginning of April.

## Parts Offer

John Gough has a range of warranty return items sourced from JCB, which are available for colleges to use for teaching. For full info about what is available, contact John by email at [gough.j@btinternet.com](mailto:gough.j@btinternet.com) - note this is a new email address. Phone - 01630 685 942 - evenings 7 to 10pm, please.

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# ALAM Committee 2011-12

Updates are highlighted in **bold** text.

Position	Name	Work			Mobile	Home	
		Place	Tel	Email		Tel	Email
Chairman	Phil Goddard				<b>07760 087730</b>		phil.goddard24@talktalk.net
Secretary	Graham Higginson	Reaseheath College	01270 613230	grahamh@reaseheath.ac.uk		01948 667982	gphigginson@sky.com
Treasurer	David Heminsley	JCB Training	01889 594700	david.heminsley@jcb.com	07971 273725	01889 566882	
Chair Elect							
Conference Organiser 2011	John Palmer	Claas UK					
Conference Organiser 2010	Gwynfor Williams					01995 604538	Gwynfor@dorchester.entadsl.com
Committee	John Gough	Walford College	01939 262100 ext 2158	j.gough@wnsc.ac.uk		01630 685942	gough.j@btinternet.com
	Jonty Roston	Appleby Heritage Centre			<b>07976 966331</b>		Jontyrostron@yahoo.co.uk
	David James	Coleg Meirion Dwyfor		d.james@llandrillo.ac.uk	07919 458878		
	Neil Jewell	Reaseheath College	01270 613239	neilj@reaseheath.co.uk	07968 067298	01270 652554	neil.jewell@tiscali.co.uk
	Charles Szabo	<b>Riseholme</b>					szabocharl@aol.com
	Paul Clarke						

## ALAM ARCHIVE

# Old ALAM photographs uncovered.

Gwynfor Williams has uncovered a few old photos of ALAM, of which at least one at Ford Tractors, Boreham Wood. Do you recognise any of the faces?



# ALAM ANNUAL CONFERENCE 2011.

Kindly hosted by

**CLAAS UK Limited**

18th – 21st July 2011



	Morning	Afternoon	Evening
<b>Monday 18<sup>th</sup></b>	12:00 – 12:30 Registration 12:30 Lunch	14:00 – 17:00 Froment Dynamometers	
<b>Tuesday 19<sup>th</sup></b>	Claas Steering Systems. Overview and driving.		Evening meal & AGM Claas Conference Centre
<b>Wednesday 20<sup>th</sup></b>	Claas Harvesting Products. Overview and practical exercises inc. use of Hydratest®.		Cereals and liquids transport technology (inc evening meal). Bury St Edmunds.
<b>Thursday 21<sup>st</sup></b>	Claas Tractors. Question and Answer Debate session.	Summary and Depart	

Please note that the content is subject to change due to product availability and weather conditions.

**ALL** delegates are requested to bring relevant PPE and outdoor clothing.

The cost to cover the events etc provided is £80 members, £100 non-members.

**IMPORTANT** - Please NOTE that delegates are responsible for marking their own accommodation arrangements and covering the associated cost. There is a list of accommodation local to the venue on the next page.

To reserve a place at ALAM Conference 2011, please forward the attached booking form to Graham Higginson, 8 Alkington Gardens, Whitchurch, SY13 1TG or email the relevant detail to [gphigginson@sky.com](mailto:gphigginson@sky.com) . If you are sending Purchase Orders, please ensure they are made out to ALAM.

## ALAM Conference 2011 Booking

Name		Phone	Home: Mobile:
Address		Email	
		Purchase Order	

## ALAM ANNUAL CONFERENCE 2011.

### Conference Accommodation List

Please note that this year we have a slight change to the usual procedure. Delegates are responsible for marking their own accommodation arrangements and covering the associated cost.

Options for accommodation near Bury St Edmunds, as suggested by Claas, are as below.

The treasurer and secretary have plumped for the Golf Club, as the secretary has stayed there before, and we know there is enough room for everyone to stay at the same place.

**Golf Club,**

Fornham St. Genevieve  
Bury St. Edmunds  
Suffolk  
IP28 6JQ

[www.oxfordhotelsandinns.com/home](http://www.oxfordhotelsandinns.com/home)

[reservations.suffolk@swallowhotels.com](mailto:reservations.suffolk@swallowhotels.com)

*Out of town but has gym & pool.*

**The Regency House Hotel**

3 Looms Lane  
Bury St. Edmunds  
Suffolk.  
IP33 1HE

[www.regencyhousehotel.co.uk](http://www.regencyhousehotel.co.uk)

*Middle of town, easy to get to, reasonable parking.*

**The Angel Hotel**

3 Angel Hill  
Bury St Edmunds  
Suffolk  
IP33 1LT

[www.theangel.co.uk](http://www.theangel.co.uk)

[reservations@theangel.co.uk](mailto:reservations@theangel.co.uk)

*In middle of town. Not much parking.*

**Ramada Hotel**

A14 Bury East Exit  
Symonds Road  
Bury St. Edmunds  
Suffolk.  
IP32 7DZ

[www.butterflyhotels.co.uk](http://www.butterflyhotels.co.uk)

[reception@ramadaburystedmunds.co.uk](http://reception@ramadaburystedmunds.co.uk)

*On edge of town, but right next to dual carriageway (easy to get to, but room may be noisy if close to front).*

**Old Cannon Brewery**

Cannon Street  
Bury St. Edmunds  
Suffolk  
IP33 1JR

[www.oldcannonbrewery.co.uk](http://www.oldcannonbrewery.co.uk)

[info@oldcannonbrewery.co.uk](mailto:info@oldcannonbrewery.co.uk)

*Hotel/Pub, near centre of town. Good reputation. Limited parking.*

**CentreParcs**

Elveden Forest  
Brandon  
Suffolk  
IP27 0YZ

[www.centerparcs.co.uk/villages/elveden/index.jsp](http://www.centerparcs.co.uk/villages/elveden/index.jsp)

*Out of town. Prices and availability according to season.*

**The Three Kings**

Fornham All Saints  
Bury St. Edmunds  
Suffolk  
IP28 6LA

[www.the-three-kings.com](http://www.the-three-kings.com)

[thethreekings@keme.co.uk](mailto:thethreekings@keme.co.uk)

*Good place, but out of town.*

## ONE-DAY EVENT

# Valtra Field Guidance

Part of the Valtra day at Walford College, October 2010

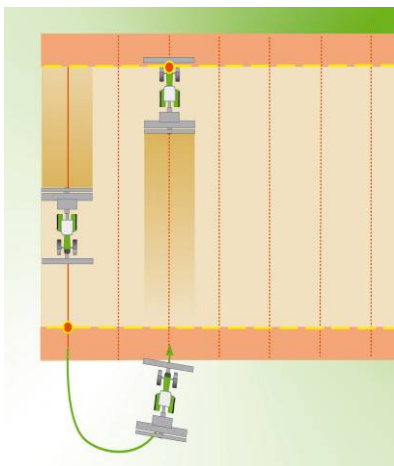
In the pleasant surroundings of the new Engineering building at Walford College, we were informed by Sam Thompson and Gareth Jones through a PowerPoint presentation the details of the Guidance systems Valtra uses on its tractors.

To begin, the benefits of guidance systems were extolled, these being;

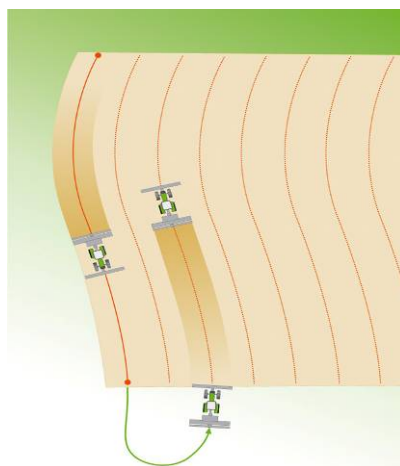
- A reduction in costs – saving on pesticides, fertilizer, fuel etc
- Reduced driver fatigue
- Reduced overlap – this tying in with the first point on cost savings

Most guidance systems use the same forms of pattern, these being;

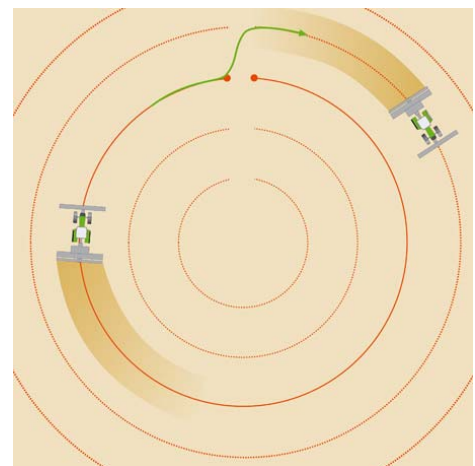
- Parallel – similar to tramlines
- Centre pivot – circular
- Contour – matching headlands



Parallel



Contour



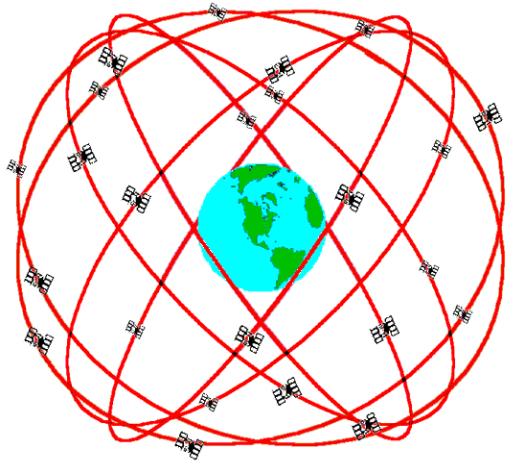
Centre pivot

All these systems have a common element; that being the wayline or the path of the centre line of the tractor. The system is then programmed with the implement width and the process can begin.

The parallel system involves driving between two fixed points on a field, (Way point A and Waypoint B), just like using marker poles for setting out a straight line whilst ploughing. This gives a straight line between these two points, which is recorded for future use.

The contour system will drop a marker every 5-6 metres of travel (maximum of 500 points or markers), and then compute the best line of fit to follow the contour, thus recording the wayline (from the path of the vehicle along the field boundary or margin).

The centre pivot system requires the creation of a circular path of up to  $\frac{3}{4}$  the distance around the circle, the computer can then predict the remaining  $\frac{1}{4}$  circle.



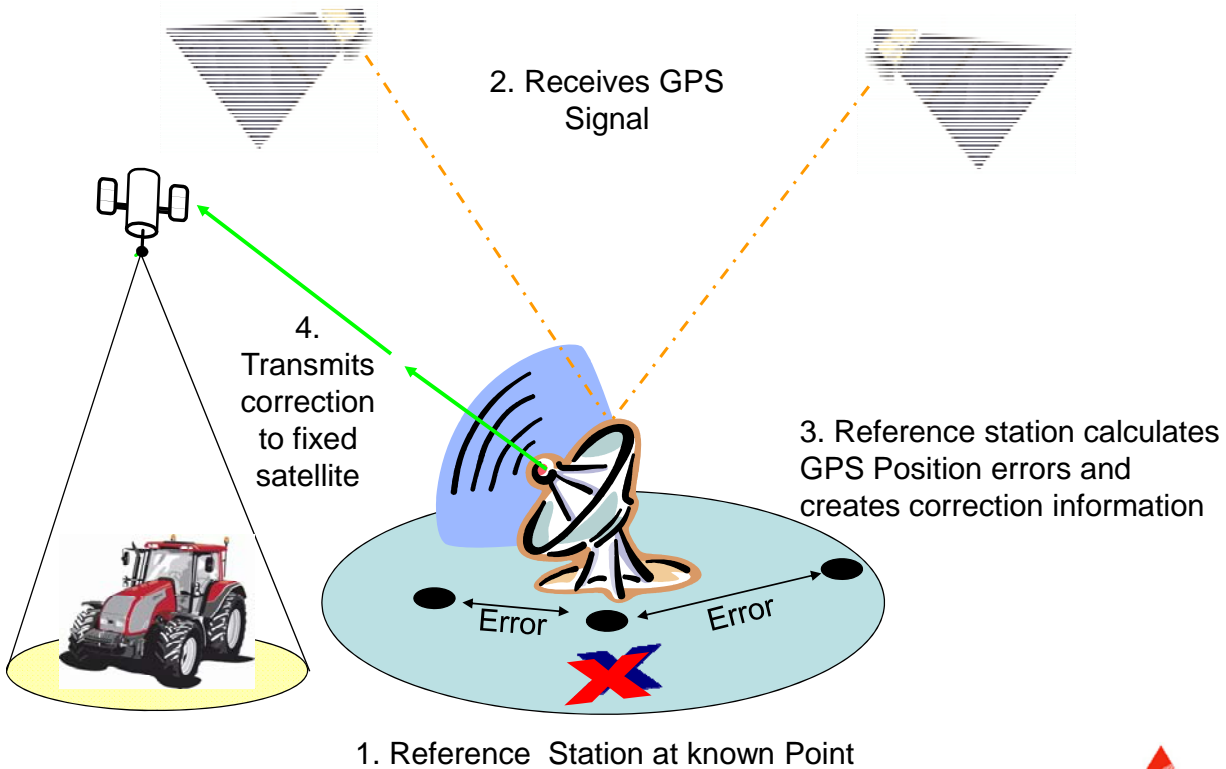
**GPS Nominal Constellation**  
 24 Satellites in 6 Orbital Planes  
 4 Satellites in each Plane  
 20,200 km Altitudes, 55 Degree Inclination

All these systems have historically used GPS (Global Positioning Satellites) where 24 satellites belonging to the US Army are used to calculate position to an accuracy of  $\pm 5m$ . These satellites usually orbit about 28 degrees from the Equator at a altitude of 24,000km, employing a figure of 8 pattern which helps them hold orbit, enabling 5-12 satellites to be seen at any one time from one point on earth.

For sat nav systems this is probably accurate enough but for field guidance system where we need an accuracy in millimetres, then a more advanced system is now needed.

This system is called the DGPS (Differential Global Positioning System). It calculates the error in the GPS by referencing the signal to a reference station (there are two in the UK, one in Aberdeen). The reference stations receives the GPS signal, calculates any positional errors and then creates correction information which is then transmitted to a fixed satellite (Omnistar) and then on down to the vehicle.

## DGPS



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The accuracy of any system is down to several factors:

- GPS including correction signal
- System and tractor factors (tractor weight distribution, tyre pressures, steering sensitivity)
- Implement type (mounted or trailed)
- Conditions in the field (slope, ground conditions)

There are different levels of accuracy obtainable from GPS systems:

- Pass to pass accuracy – this is dynamic over a 15 minute period
- Static – accuracy down the rows over an extended period of time (tramlines)

The pass to pass accuracy can also be divided down to three levels:

- sub-metre level ( $\pm 20\text{cm}$  dynamic) – this system is best suited to primary tillage work
- decimetre level ( $\pm 5\text{cm}$  dynamic) – this system is suited to drilling, spreading and spraying
- RTK (Real Time Kinetic) – ( $\pm 2\text{cm}$  dynamic) this is the most expensive, requiring a base station in the field.

Accuracy Level	Correction Source	Correction Source	Pass to Pass Accuracy	Static Accuracy	John Deere Starfire offering
Submetre	Satellite	CDGPS	$\pm 33\text{cm}$	2-5 metres	NA
Submetre	Satellite	WAAS	$\pm 33\text{cm}$	2-5 metres	NA
Submetre	Satellite	OmniSTAR VBS	$\pm 20\text{cm}$	$\pm 80\text{cm}$	SF1
Decimetre	Satellite	OmniSTAR XP	$\pm 12\text{cm}$	$\pm 25\text{cm}$	SF2
	Satellite	OmniSTAR HP	$\pm 5\text{cm}$	$\pm 10\text{cm}$	
Centimetre	RTK Base Station	RTK Base Station	$\pm 2\text{cm}$	$\pm 2\text{cm}$	Starfire RTK

Examples of these systems are:

- Omnistar VBS – cheapest but least accurate, requiring an annual subscription fee
- Omnistar HP – more accurate as it uses two frequencies to assist it to converge the signal. Typical cost for a HP+ system is £1000 per annum.
- TopCon – this is an RTK system using a base station in the field, providing a signal for multiple machines at one time

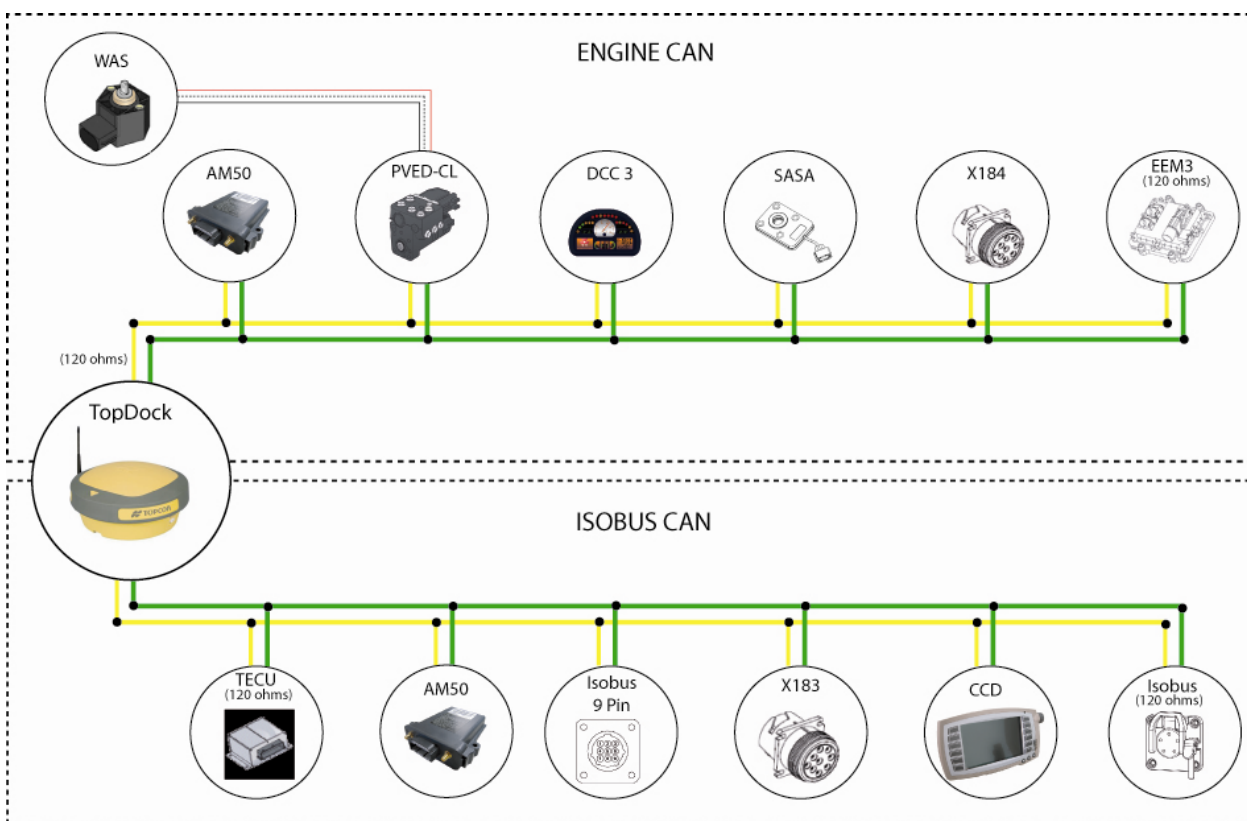


Examples of TopCon systems are:

- TopCon 110 – this has a receiver on top of the cab and a display bar in the cabin. It relies on manual guidance, the driver steering according to lights on a light bar mounted on top of the display unit. The further from the wayline the vehicle moves, more lights illuminate up on the display.
- TopCon150 – this is a full guidance system including auto guidance (hands free steering).

Each system will also include an IMU (Inertia Measuring Unit) which is usually built into the top unit. At a rate of 100 times a second it monitors the attitude of the tractor, it can determine whether the tractor is tilting either fore and aft, or side to side. This allows the GPS system to compensate for the tractors attitude. This IMU also acts as a digital compass. There are currently modules available to control implements, particularly sprayers.

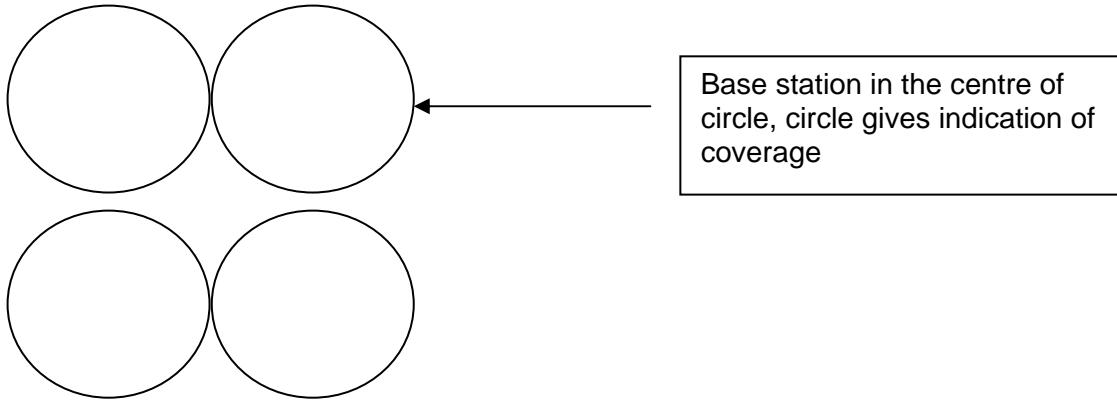
All these GPS units now make use of the tractor or vehicle ISOBUS CAN network along with the ENGINE CAN network for full integration, similar to cruise control in a car.



### The future

The future may revolve around RTK Networks.

Suggestions include the possibility of a base station sending signals to a main server and then via a mobile phone system direct to the tractor or vehicle. This will need a network of RTK base stations, probably set up on individual farms.



Another thinking is the use of more satellites, in 2009 TopCon started using a 72 channel receiver with G3 technology to hook up to more satellites using GNSS (Global Navigation Satellite System) which uses the current 24 US Defence satellites along with a number of Russian GLONASS satellites along with a number of the European Galileo satellites that will be increased in number of the next few years. The Galileo system has been devised to reduce the reliance on the US Defence satellites, giving Europe its own system.

II – GNSS information – b) G3 technology

*G3 Technology*

<p>USA</p>		<ul style="list-style-type: none"> <li>• Launched: 1978</li> <li>• 24 Satellite Constellation</li> </ul>	
<p>Russia</p>		<ul style="list-style-type: none"> <li>• Launched: 1982</li> <li>• Current Satellite Constellation: 20</li> <li>• Planned Constellation: 24</li> </ul>	
<p>E.U.</p>		<ul style="list-style-type: none"> <li>• Test Satellite Launched: Dec. 2005</li> <li>• Planned Constellation: 30 Satellites</li> <li>• Under development, available in 2013 if no further delays</li> </ul>	

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Having being thoroughly put in our correct position with regard to guidance systems and GPS, the session was closed with a show of hands for the AGCO team.

**Phil Hurrell**

October 2010

## ALAM BOOK REVIEW

**The Farmer's and Groundsman's Workshop -**

A Guide to Planning Vehicle and Machinery Maintenance

Brian Cairns, a member of ALAM for a number of years, has submitted this review of his latest book for the ALAM newsletter.

AS well as the planning aspects of Vehicle Maintenance, this book gives lots of very useful and interesting information on how tractors and implements work and are serviced.

It starts off with information on machinery maintenance schedules, Health & Safety and on setting up a Workshop, with some useful tips for dealers, farmers and vintage collectors.

The chapter on Machinery Evolution takes the reader briefly through the development of Farm Machinery.

Particularly interesting are the chapters that explain how various vehicle systems work, both on older machinery and right up to the current day, dealing with subjects like Common Rail Diesel Injection, as many engineers will have been trained in pre-electronic control unit days, and so may have only a vague idea about common rail.

The chapter on Hydraulics demystifies many things and explains the difference between open and closed centre systems. The book is copiously illustrated with exploded diagrams that show examples in clarity that pure words never could, especially in the case of the more modern types of gearbox. Even if readers of this book were never to carry out their own maintenance on their equipment, they will still benefit from the insights it gives.

This book will appeal to students and lecturers in Agricultural Engineering, to machinery dealers, farmers with an interest in on-farm servicing and all tractor and implement enthusiasts.

The author started his working life as an apprentice agricultural mechanic at Rycotewood in 1977 and went on to obtain a degree in Agricultural Engineering at Writtle.

Brian is currently Director for Sustainable Built Environment and Land-based Industries at MOVE Life Long Learning Network in the East of England, and has been a member of ALAM for a number of years.

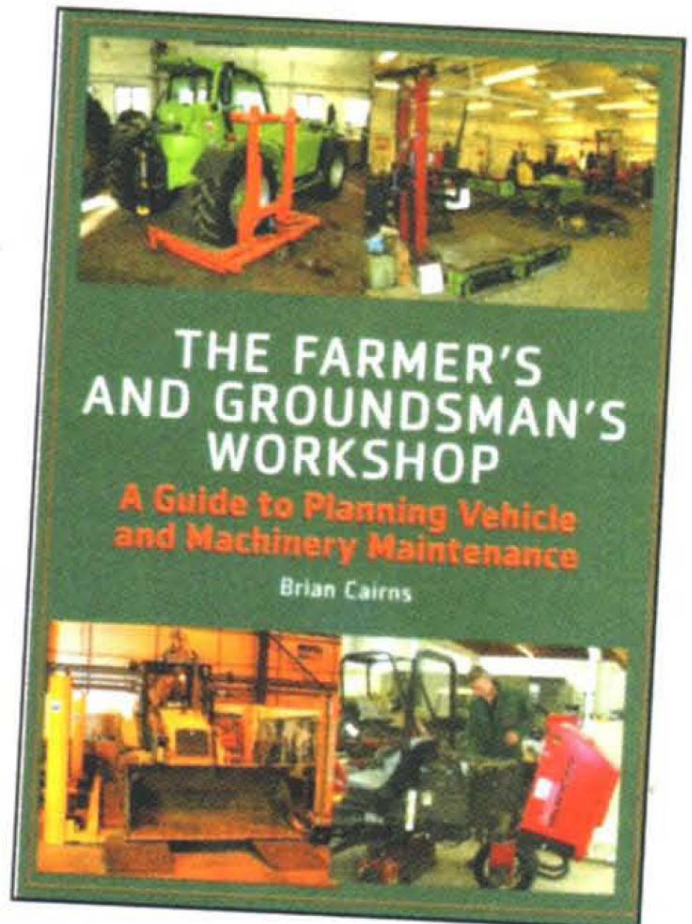
**Donald Bowler**

AMIAgrE, CEnv

Publisher: The Crowood Press

ISBN: 978 1 84797 110 4

Price: £25.00

Web: [www.crowood.com](http://www.crowood.com)

## ALAM MEMBERSHIP 2011-12

This is the list of all those whose membership has been renewed as of June 2011.

We still a couple of unresolved issues with unidentifiable standing orders so please ask your colleagues to check their bank statements– if any have standing orders taking money from their bank but are not on this membership list, please get in touch with the treasurer.

Name	Member No.	Mail to	Name	Member No.	Mail to
Gerald Anderson	11/069	Easton College	Melvin Johnson	11/002	Reaseheath College
Bruce Badger	11/048	Sparsholt College	John Jones	11/063	Home address
Tim Ball	11/075	Reaseheath College	Chris Keeble	11/HON	Home address
Robin Blackford	11/068	Home address	Brian Kessell	11/049	Duchy College
Denis Bloomfield	11/026	Otley College	David Lankester	11/045	Writtle College
John Bumby	11/HON	Home address	Nigel Macpherson	11/046	Sparsholt College
Brian Cairns	11/076	Home address	Patrick McLeod	11/025	Hartpury College
Denis Cartmel	11/062	Home address	Chris Morgan	11/013	Walford College
Harry Catling	11/037	Royal Agricultural College	Tym Morgan	11/039	Warwickshire College
Stuart Christie	11/017	Cannington College	Richard Newman	11/033	Home address
Richard Clarke	11/071	Otley College	Brian Nicholls	11/029	Reaseheath College
Ian Coleman	11/019	Hereford College of Technology	Tim Northmore	11/018	Kingston Maurward College
Peter Coleman	11/064	Home address	Mike O'Dowd	11/HON	Home address
Chris Creasy	11/024	Home address	Robert Patmore	11/027	Home address
Kevin Davenport	11/056	Myerscough College	Clive Perrins	11/035	Home address
Alan Davey	11/030	Cannington College	Brian Poulson	11/023	Home address
Wynn Davies	11/009	Home address	Freddie Pullan	11/066	Walford College
John Dixon	11/054	Lackham College	Robert Rattray	11/065	Home address
Neal Dodd	11/010	Coleg Powys	David Ross	11/055	Newton Rigg College
Oliver Dunthorne	11/079	Home address	Jonty Rostron	11/070	Home address
?? Edward	11/077		Jon Sarsfield	11/021	Home address
Sandy Ellis	11/038	Askham Bryan College	Michael Sidlow	11/044	Lackham College
Colin England	11/059	Kingston Maurward College	Roger Soper	11/072	Home address
Nigel Fox	11/041	Sparsholt College	David Sparkes	11/001	Home address
Andrew Frank	11/014	Home address	David Stephenson	11/060	Home address
Philip Goddard	11/043	Walford College	Rick Sunderland	11/042	Bishop Burton College
John Gough	11/HON	Walford College	Charles Szabo	11/015	Riseholme College
Julian Greenman	11/028	Lackham College	Ian Taylor	11/005	Barony College
David Harris	11/058	Brinsbury College	Emlyn Thomas	11/053	Home address
Paul Harrison	11/067	Otley College	Roger Tiller	11/073	Sparsholt College
Steve Hasell	11/032	Cannington College	Martin Towsey	11/007	Brackenhurst College
Richard Heath	11/016	Home address	Tom Turney	11/HON	Home address
William Helen	11/008	Home address	Mark Tyson	11/036	Home address
David Heminsley	11/HON	Home address	Arthur Walker	11/HON	Home address
David Henley	11/061	Bicton College	Peter Walley	11/074	Home address
Graham Higginson	11/020	Reaseheath College	Richard Waterson	11/052	Home address
Vic Hird	11/047	Brackenhurst College	Stephen Watson	11/051	De Montfort University
Tony Houghton	11/040	Home address	John Welwood	11/022	Home address
Phillip Hurrell	11/050	South Cheshire College	Ian Whitehead	11/HON	Home address
Tim Hutchinson	11/034	Warwickshire College	Gwynfor Williams	11/HON	Home address
Andrew Jackson	11/003	Home address	David Wilson	11/006	Home address
David James	11/031	Coleg Meirion Dwyfor	Duncan Wilson	11/078	Home address
			Peter Woodliffe	11/057	Home address
			Paul Wray	11/011	Home address



## ASSOCIATION OF LECTURERS IN AGRICULTURAL MACHINERY

## Membership Application Form

Title	Initials	Forename		Surname	
Home Address			College Name		
			Address		
Postcode			Postcode		
Phone			Email		
My connection with education in agricultural/horticultural engineering is:					
Signed			Date		
Proposer (Member of ALAM)					
If you don't know any members, just return the form and we'll arrange contact with one in your area.					
HOW TO PAY- The current rate is £10 per annum, payable on April 1st each year.					
<b>By cheque:</b> Cheques should be crossed and made payable to "The Association of Lecturers in Agricultural Machinery", and sent with this form to the treasurer.					
<b>By standing order:</b> It will help us provide an efficient service to members if you pay subscriptions by Standing Order, by completing the following, and returning the whole form to the treasurer.					
Bank Name			Name of Account		
Branch			Account No.		
Address			Sort Code		
			Payment Reference		
Postcode			Please write your Initial and Surname as a Payment Reference in the space above, to ensure ALAM can clearly identify your payments.		
Please pay to Lloyds Bank, 12 Lendal, York, YO1 2AF, (Sort Code 30-99-99) in favour of The Association of Lecturers in Agricultural Machinery (Account Number 1373714), the sum of £10 immediately, and then annually on the first of April each year, until cancellation by me of this standing order, debiting the account specified above.					
This order cancels and replaces all previous orders in favour of The Association of Lecturers in Agricultural Machinery.					
Signed			Date		
Standing Orders are for a fixed amount, which can only be altered by you. It is not a Direct Debit, which allows the payee to vary the amount drawn.					

Return completed forms to David Heminsley, ALAM Treasurer,  
The Old Byre, Lower Street, Doveridge, Ashbourne, DE6 5NS.

For use by the treasurer							
Details recorded		Payment received		Bank Order processed		Member number	

Form revised June 2009