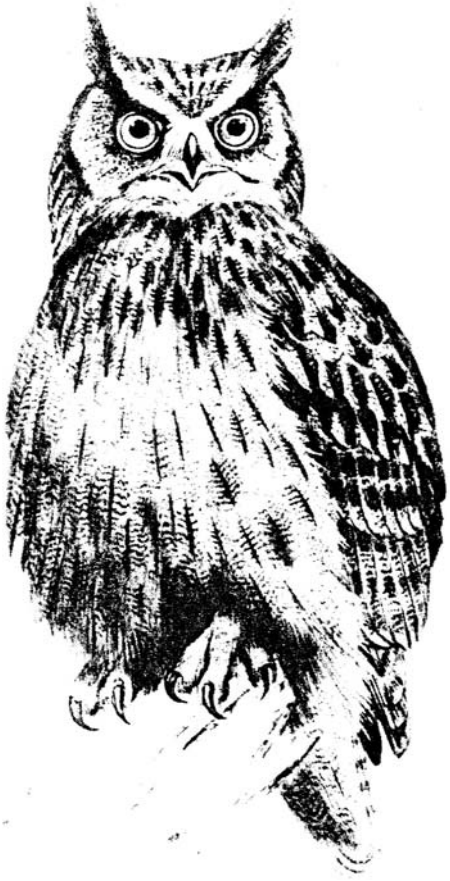
ALAM

Newsletter

Spring 2006



The Association of
Lecturers in Agricultural Machinery

www.alam.org.uk

Contents

ALAM Newsletter Spring 2006

2006 Conference

Plans are under way for the 2006 conference at Sparsholt College, Hampshire. The dates are confirmed as Monday 17th July to Thursday 20th July 2006. Nigel Macpherson is putting together a programme, at an anticipated cost of around £200-250. Expect anything from Hondas to Helicopters! Put the dates in your diary, and keep in touch for full details nearer the time.

2005 Conference

The “Italian Job” tour of Northern Italy has now been and gone, and what a week it was! There’s some of the reports from this trip in this Newsletter, and there’ll be more in the next issue.

Committee Members

The list of contact details for your committee members is in this newsletter, and will be a regular page in every newsletter. There are a number of changes, updates and corrections this time, so please make sure you use the latest information.

ALAM Committee 2004-05

Any changes since the last Newsletter are in **bold type**.

Position	Name	Work			Home	
		Place	Tel	Email	Tel	Email
Chairman	Graham Higginson				01691 671817	graham.higginson @ntlworld.com
Secretary	Peter Walley	Warwickshire College	01926 318269	pwalley @warkscol.ac.uk	01926 640883	
Treasurer	David Heminsley	JCB Training	01889 591300	david.heminsley @jcb.com	01889 566882	
Conference Organiser 2005	John Gough	Walford College	01939 262100 ext 2158	j.gough @wnsc.ac.uk	01630 685942	gough.j @btinternet.com
Committee	Nigel Macpherson	Sparsholt College	01962 776441	nmacpherson @sparsholt.ac.uk	01980 862102	
	Duncan Wilson	Duchy College	01209 722100	duncan.wilson @cornwall.ac.uk	01326 376710	
	Brian Kessell	Duchy College	01209 722100	brian.kessell @cornwall.ac.uk		
	Ryan Roberts	Retired				mail@ ariel1965.freeserve.co.uk

ALAM Accounts 2004-05

These accounts are as presented at the AGM at Same Deutz Fahr.

At the end of the last ALAM year we had 117 members, of which 104 pay by standing order - a big thanks to all of you!

As our financial year ends on 31st March each year, this year's accounts will be distorted by the Conference in Italy. Most of the income for this event was received in 2004-05, but only half of the bills have been paid in this year. This means that these accounts look very healthy, but be warned, next years will not look as good.

THE ASSOCIATION OF LECTURERS IN AGRICULTURAL MACHINERY

Income and Expenditure - Year Ending 31st March 2005

		2003-2004			2004-2005	
		Income	Expenditure		Income	Expenditure
Subscriptions		1117.00			1107.00	
Committee Expenses			473.55			577.80
Newsletter			172.60			139.17
Courses	Welding	320.00		Claas	205.00	49.95
				0	0.00	0.00
				0	0.00	0.00
Conference	Walford	2805.00	2033.46	Warwick	2400.00	1998.34
				Italy	7400.00	5862.09
Interest		22.45			15.68	
Miscellaneous		577.50	460.00		55.00	325.70
Surplus/Deficit			1702.34			2229.63
TOTAL		**4841.95**	**4841.95**		**11182.68**	**11182.68**

Statement of Affairs as of 31st March 2005

Bank Account as on 1 April 2004		4746.44	Bank Account as on 31 March 2005		6935.99
Building Society as on 1 April 2004		1315.26	Building Society as on 31 March 2005		1330.94
Plus uncleared incoming cheques	1/4/04		Plus uncleared incoming cheques	29/3/05	0.00
Less uncashed outgoing cheques	1/4/04	34.40	Less uncashed outgoing cheques	29/3/05	10.00
Plus Surplus		2229.63			
		8256.93			**8256.93**

In my opinion the above is a true and fair view of the financial state of the Association of Lecturers in Agricultural Machinery for the year ending 31st March 2005

Signed Treasurer ------------------------ Signed ------------------------ Signed ------------------------

Classified Advertisements

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 - **note this is a new email address**

Phone - **01630 685 942 - evenings 7 to 10pm**, please.

PROFI magazines

September 1996 to present,

approx 100 magazines.

Good condition

Cover price now £3.50 each.

Will sell whole set for £100.

Ideal for the college library??

Contact David Heminsley

01889 566882 or 07971 273725

ALAM ANNUAL TECHNICAL CONFERENCE 2005

Graziano Transmissioni - Heat Treatment Plant

Following a hearty continental breakfast we set off in the Merlo bus for the bevel gear foundry plant. Highlight of the coach tour was seeing the factory, turning off the main road and swinging right through a small village and an smaller right angle turn- lucky we had a small bus and the wing mirrors stayed intact. Not being a 'real' engineer I have to thank colleagues for their help in putting together these notes, in particular Colin for all the useful 'stories' that went with these facts.

The factory was in a surprisingly rural area but apparently it had originally been sited here for gas and water originally. Once we had been around the factory it was easy to understand why.

After being greeted we started the tour. It quickly became evident that this was a hot place to work; what it must be like in summer, who knows. Apparently in summer they open the doors! Thanks to Ms. Paola Gattii and Mrs Stella Roagna for the arrangements. We were followed through out the tour by one of these ladies, who helped occasionally: apparently she was the sales manager and frequently visited England.

This was only a heat treatment plant, producing 150 tonnes/day of forged part and 55 tonnes/day of carbonising/hardening.

They work 7 days per week/ 24 hr per day and shutdown 1 wk per yr. The workforce were 40% Italian, 60% European. The trend being to employ more Europeans(as everywhere). Three shifts were worked 4-12, 12-8, 8-4 on a 5 week rotation. Different pay rates for 4 different work areas.

The factory used 7.5 million cubic metre of natural gas/yr and 11m kw/yr electricity. It also used3 million cubic metre of quenching water annually ; this goes to local farmers for irrigation to promote early production- the water goes in at 12 degree C and come out at out at 20 degree C.

The turnover of the plant is 17m euro and they put 0.8 m euro back into reinvestment.

It was a big factory employing 100-150 people with continuous processing- goes up to 900 degree C- heat treated, quenched, and polished. Shot peening alters surface quality – increases life, uses 0.4/0.7 mm shot dust. Everywhere there were pallet boxes of 4 wheel drive bits. Colin told me 'these were used in German watches'.

The atmosphere was Endo gas CO 20%, N2 40%, H2 40%. There were two processes- oil or pressed to avoid distortion in quenching and takes 8-15 hr dependent on request.

Colin was again helping by telling me it was like a giant pizza factory.

We were informed by the guide that 100,000 euros wasted in cutting and checking and wasting.

Parts were either quenched in oil or cooled slowly, different gases including methanol were used. Colin was saying that apparently the process is not like sex-the items go in soft and come out hard.

Also some specialist oils were used for the quenching-every six months a sample of quenching oil sent for checking.

Their quality control was overall very impressive.

They were proud of' bits' for the Land Rover Freelander; the parts that we saw with burrs were finished before being sent out. It was noticeable that there was a lot of old kit and manual work. In one section girls were painting parts of components with a special pink paint to stop carbon going into steel.

The next area we saw had an automatic stacking system and two railway tracks to feed 120 degree C and 48degree C to quench, then washed and cooled and maybe secondary heat treatment. Colin said here that apparently they had a contract with local pizza firm and used stale pizzas to fire the burners.

There was a separate and obviously more sterile quality control section. Here they looked at sections to see treatment success- teeth hardened. Samples were Disc cut the samples, sanded and then polished and all punched with a unique identification code. They were mirror finished then set in clear plastic and then examined by microscope and computer.

Also every time a machine is set up, one item minimum is checked: also if heat code changed then checked. Additionally the customer themselves will have quality control systems and might reject something, and then they also cut to check. In some production they control profile distortion of teeth.

There were a lot of women working there- nicer than robots.

Many machines had a flame at top plus water injection to burn off impurities. Not just hot- how clean the air? The emissions might still be quite interesting was my thought here.

Obviously their product was primarily dependent on the quality of steel coming into the factory. They compared all steel coming in with the suppliers grading- spectrometer analysis. They can check 100% of the steel.

They also controlled the atmosphere of every furnace. Once per week put piece of weighed steel into furnace and then reweighed it- this gave the carbon content to nano accuracy.

At the end, on request they gave the group round resin sample test blocks. They would apparently have willingly given us about two tonnes of these.

Finally there were very welcome cold drinks and thanks to the hosts were given.

David Hinchcliffe

Vee shall see, Association of Lectures my voot, more like Alhainian Liberation Army Members.

ALAM ANNUAL TECHNICAL CONFERENCE 2005

Graziano Transmissioni - Gear Machining Plant

We were entertained to an excellent lunch that followed a PowerPoint presentation to the group. Following this we toured the next factory. The main product bevel gears; again part of the Saurer group: (a Swiss group).

- textile machinery, transmissions, gears;
- One factory in England;
- 335 workers, 30 employees (not sure of difference between workers and employees, maybe the latter were more 'management')
- 3" to 20": feasible to 30" outside diameter
- ½ million parts per year of which auto 80% tractor 20%
- CHN- Case New Holland Steyr were a major purchaser, although they supplied a huge number of well known names.

Their newest technique - power cutting dry technology. This was possible because of-

- 1. newest carbide blades;
- 2. high stiffness and good dynamic behaviour of newest machines;
- 3. stiffer cutter bodies.

It was good for big batches.

Quality control in the factory consisted of four stages-

- - Checking during production;
- - Subjective analysis Gleeson 17 analyser;
- - Objective analysis frequency analyser;
- - Objective analysis single flask tester in the quality room.

Our guide definitely knew his subject, being questioned exhaustingly by the group. The factory had new generation automated equipment; the new generation robots were much more flexible. The factory produced over 100 different products. As it ever seems to be the case in life, 20% of products cover 75% of production so automation not easy- 80% cover the other types.

All tool sharpening was carried out on site and we saw this during the visit. Most machines were Gleesons of one kind or another eg. the Gleeson Phoenix/116/.

The Gleeson175HC- CNC- Hypoid cutting machine and dry cutter was quite remarkable to watch- not only dry cutting but much faster than other machines. Quite amazingly, as Colin found out, the heat produced (which must be considerable) goes with swarf! Tolerance was 0.02 mm.

Here we began to learn Italian, over and beyond what Colin had told us was useful for the nights out- 'scarto'- Italian for scrap.

Other machines-

- Gleeson 275 grinding machine 'a top machine' apparently;
- Gleeson 400PG;
- Gleeson 800 HG- CNC hypoid grinder;
- Klingelnberg Oerlikon WNC 50;
- 3rd generation robots produced1 item/min. as to 3-4 min/item of the older machines and were incredibly fast to watch.
- Gleeson 500HCT – CNC gear testing machine.

Again the visit ended with cold drinks, thanks to the guides and mangers and the presentation of the wise owl; the Italian for which I forget.

David Hinchcliffe

ALAM ANNUAL TECHNICAL CONFERENCE 2005

Visit to CNH tractor plant, Jesi

Factory built by FIAT in 1977. In 1986 tractor assembly transferred from Modena, Modena becoming the supplier of transmissions/hydraulics to Jesi. Today the plant has just over 1000 employees working in two shifts 5am -1pm and 1pm -9pm. making 145 units a day. The average age of the worker is 36 and our guide Claudio Sorci was eager to emphasise how highly skilled the workforce was. Our guide was an enthusiastic lady who soon realised that we wanted to get right up to some of the action. When she did not know the answer to a question she would ask the person on the job, you can tell we were impressed.

Unlike Same at Treviglio the CNH operation was assembly on a grand scale, no machining here I doubt if they even had a tap and die set! Engines come from IVECO from a new factory near Turin. The range is called NEF New Engine Family a joint Cummins venture, 104 mm bore,1 litre per cyl, structural crankcase for tractors with 2 valves per cylinder.

We were all in awe at the ease at which the engine and transmission were put together, no messing with jacks, turning the pto plus a few utterances!! The plant operated a "just in time" or "nearly late" indeed one cab was late so the chassis was sent through the painting department again. The robots in the paint shop seemed to be on strike, how do they know if it's a Case or a New Holland or a Steyr?

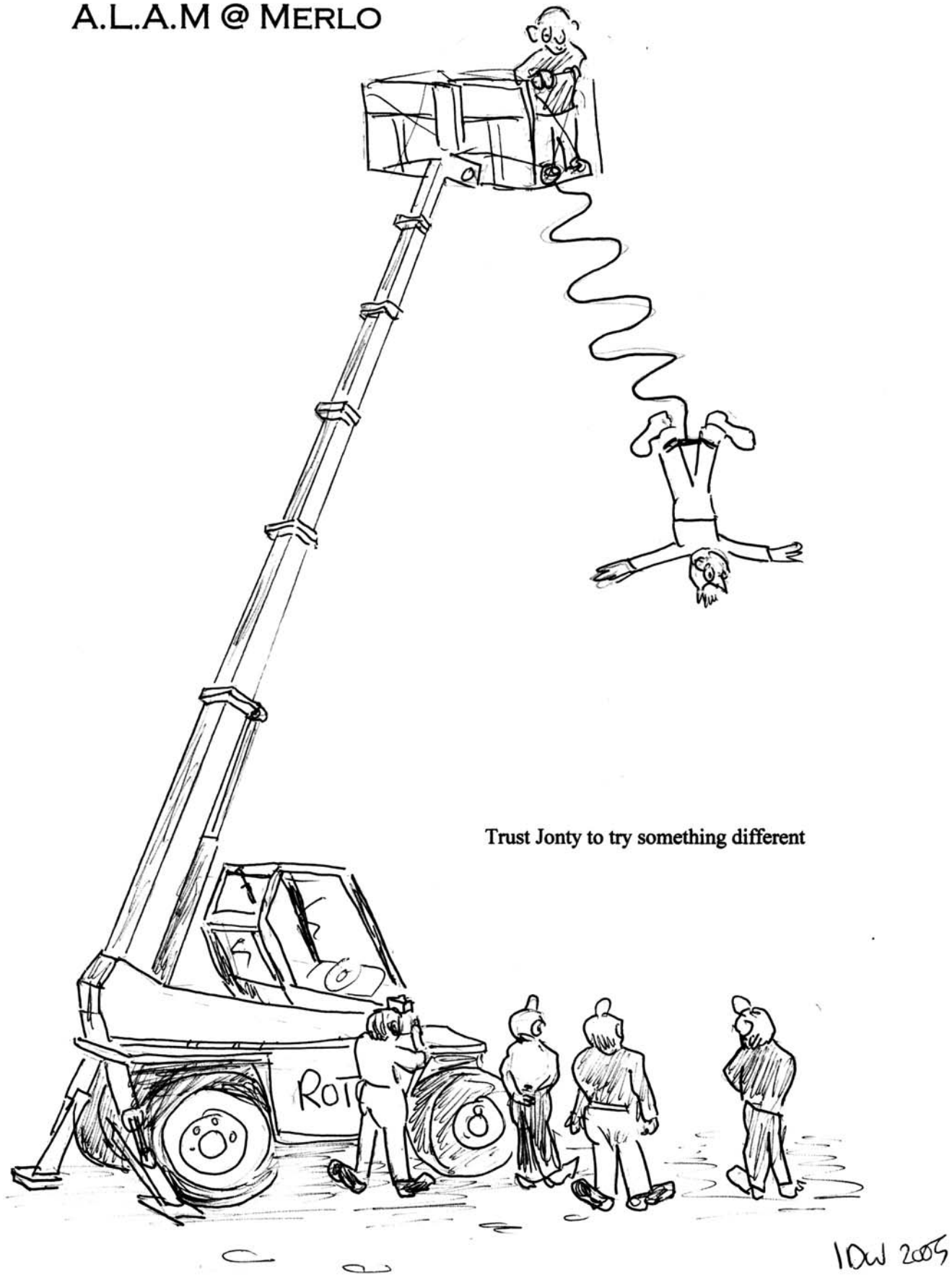
Overall this was an excellent visit, outside we were able to view some other CNH products, the gigantic maize harvester from Clayes in Zedelgem, a Case from Racine U.S.A and our own Basildon built New Holland.

Strange to think that McCormick at Doncaster and what was Ford at Basildon are both to a large extent run by our hosts!

The visit was chaired by Duncan Wilson and vote of thanks and presentation of "gofoo" A.L.A.M owl to Claudia given by Emlyn Thomas.

Gwynfor Williams

A.L.A.M @ MERLO



Trust Jonty to try something different

ALAM AGM AND MINI-CONFERENCE 2005

Intellitec Ltd

Presented by Mr.Chris Marley

This was the concluding presentation of our Summer Conference held at the premises of Same Deutz Fahr at Barby.

I had only spoken to Chris a couple of times on the phone and sent him an email in the process of setting up this final presentation session, so when I met him in the reception area of the Same U.K.headquarters neither of us knew quite what to expect!

He had come armed with, or should I say fully prepared for us, with the sort of visual aids which most of us only dream about. Having helped him unload and given him some lunch to sustain him, he was duly introduced to the assembled throng. Chris gamely tapped away at the keys of his laptop while giving a brief introduction and background to his company……. but nothing seemed to be happening on the screen behind him ,was he aware of this blank void? I needn't have been concerned for here was a man who was master of both his equipment and his subject as we were to witness over the forthcoming hour and a half . With a few muttered words to the computer about its laggardly behaviour and the click of a few more buttons we had both pictures and sound.

The serious business of educating us about really modern technology had begun.

First we were given a brief review of the training rigs which his company produce for manufacturers and colleges, we were then introduced to the vehicle electrical system rig which he had brought along. It was explained that this unit had the full length vehicle wiring harness fitted to give realistic readings for any tests which were carried out by trainee technicians to prevent any misunderstandings later. The only items not fitted to the board were the headlights. All systems on the board were operational but each circuit was wired through a " magic box " which allowed the trainer to switch in faults on circuits as required to give the trainee experience on diagnostics and fault tracing. A laminated sheet accompanied this magic box to keep the trainer ahead of the game by providing a key to the switch layout and circuit controlled. It was during this session that wiring diagrams were discussed together with the wish that standardisation of layout was mandatory . The importance of an accurate "wiring map" was also emphasised together with the ability to accurately read and interpret it!

We were then introduced to a brief history of vehicle electrical system standards which then flowed into the on board diagnostics systems and the communications systems which have been used. O.B.D. 1 was introduced to vehicles in the 1980s. The system capability was expanded and O.B.D. 2 arrived in1996. These systems originate from America and as you have probably guessed there is an O.B.D. 3 under development, apparently there is some concern among some sectors of the administration about its acceptance to the general population due to its ability to act not only as a vehicle control and monitoring system but also as a law enforcement system. So in the future we will not only have all the usual cameras, radar unmarked cars and the like to deal with but we will be obliged to transport our very own silicon chip policeman around who will ring up big brother and report our various misdemeanours to them! I have a feeling that they are going to need a lot more policemen if this ever gets the go ahead.

Next subject area to reveal was CAN or Control Area Network to give it it's full title. This system was invented by Phillips Holland for another industry sector but in passing it was discussed with Bosch who thought that they may be able to put it to good use so it was developed and first used in 1988 in the automotive field. This system allows coded signals to be sent and returned along two wires from various vehicle sensors and controllers; the wires are twisted together as this minimises the effects of external interference. The twisted pair, as they are known are often grouped together with a live and earth which provide the power to operate any component which has received a signal to work. The two can wires carry voltage, one known as can high which is up to approx 5 volts and the other can low which is up to 3 volts. Both voltages are controlled by computer, producing high frequency wave

signals with unique codes that are only recognised by individual components. In this way all signals can be passed up and down the two wires and still be individually identifiable.

Other useful facts to be aware of include, both of the can wires should be the same length and twisted at 1 ½ twists per 25 mm, and the system will still operate if only one signal wire is working; however the quality of service will be reduced! Inevitably there is a limit to the number of ECU's that can be run on this communications system, 8 from memory which has necessitated the development of L. I. N. Local Interconnect Network.

L.I.N. has two power wires, one control wire and a separate wire which gives a "clean" earth. This allows an increase in the number of E.C.U.'s which can be linked into the system. Moving on from that we have MOST, Media Oriented System Transfer , which uses fibre optic medium to transfer signals. This gives the advantage of no radio interference and it will take a wider band width of data. This is starting to be used as a communications system on some executive marque vehicles.

That brings us up to date with the communications systems used on vehicles; I felt that I must have been on another planet in recent times as I had only just come to terms with CAN, but then I have not been closely involved with modern motor vehicles recently….still it gives me something to look forward to.

The ECU's control the different systems on the vehicle, they are usually dedicated to one particular system but in some instances one ECU will control two smaller systems. There is a necessity to prioritise the signals going to the ECUs which control the most safety critical systems so you will be relieved to know that the ABS has top priority. Signal rates on the most important systems are considerably greater than those on other systems, for example 500,000signals/sec. for safety critical systems compared to 100,000 signals/sec for the comfort and convenience system. There is a component called a gateway in the communications line between ECU's which controls the order of signals and can translate different signal codes. It will also control the level of external access into the system by customer, independent garage, main line dealer and manufacturer, which is why we will never know exactly how much they will be able to find out about the operational history of the vehicle. Now there's a thought to ponder, bearing in mind what I mentioned about OBD3!

It became apparent during the presentation that Chris had worked as a trainer for the vehicle manufacturers in years gone by and was involved in manufacturing exhaust gas analysers in the late 1980s. Since then he has remained in very close touch with the developments in vehicle control and communications systems both in Europe and further afield. His business building and developing specialist training rigs is well worth contacting if your college has money available for high quality rigs.

As you can probably imagine there was a lot of material covered during the afternoon, all delivered in an effective and humorous way in a language which we could all understand. A thoroughly good session on which to end our 2005 conference.

Many thanks to Chris.

If you wish to contact Intellitec ring 07887 623 656 email sales@intellitec.co.uk

Website www.intellitec.co.uk

John Gough
Walford College

20th July 2005

ALAM ANNUAL TECHNICAL CONFERENCE 2005

Vineyard

A wine accompanied meal of meats, pasta, pork loin and black olives, fruit salad and ice cream followed by coffee, courtesy of CNH, left us in relaxed mode – but time to move on!

The coach ride through beautiful hill-top villages stopped at one where there was a vineyard typical of the region. Our host and an able translator were on hand to guide us through this modern facility. Amidst stainless steel tanks, pipes and equipment the host spoke, through the occasional compressor noise and excited delegates, of the field and 'factory' processes.

Vines are pruned in February to leave the one vertical stalk turning to one side on the support wirework. The horizontal section offers 8 to 10 stalks, at 100 mm separation producing the flowers. The plants are pruned again in August to improve quality in the remaining fruit. Overall grape quality depends upon soil, weather, vine type and husbandry, including planting regimes of 2000 altering slowly to 3 000 plants per ha, to selective hand harvesting on three occasions. The 25 ha operation had 2 red and one white grape variety with stock typically to 25 years old as the production doesn't really get going until year eight years post planting.

Cultivation is a process of controlling weeds and mulching in the root area. Production is 70t of grape from the 25 ha with a yield of between 600 and 650 l of juice per tonne of grape. The white grape variety is harvested and placed in sealed containers to minimise oxidation whilst absorbing the flavours from the skin, which is soon to be rejected, over the next 25 days. The crushing of the grapes is followed by juice separation in a rotary press. The scum from this process is occasionally used for a 'very sweet cake' (not a favourite with our translator).

Some hand picked white grape, is selectively crushed and the juice fermented. This better quality wine is racked off and bottled early the year following gathering. To produce a spirit the pulp and pip from all processes is collected and boxed for a month, prior to heating to 80ºC in a double skin vessel using water at 112ºC. The vapours are further distilled in a second unit to produce Grappa. The Grappa is fractioned at two different levels to produce two different qualities of liquid with specific flavours of the grape. Passing through a 'taxation' meter the 42% proof spirit is bottled ready for sale.

Red grape varieties are hand picked, like the white one, and processed to two qualities of wine. Crushed grape juice is left to be fermented with the pip and skin using yeast suited to the inherent sugar content. The whole stainless steel vat of the juice is re-circulated to homogenise the contents and equalise quality as heat exchangers maintain temperature for the yeasts to work. First pressing is used for better quality wine, but the second is used as well. The subsequent pip and pulp contribute to the Grappa yield.

Brandy is a new venture for the site with distilled wine entered into new oak barrels and half barrels. Current stock was commenced in 1997 with extra maturity years needed before the product may be marketed.

Black olive groves produce 600 to 650 l per tonne of olive which, as with grapes, are hand picked to reduce damage and waste. The olive enterprise compliments the grape as the operations occur at different times of the year. 15% of the crushed olive is oil, 50% water and the rest pulped and the stones. The oil separation after the pulping unit, a paddle machine, is by several passes through a centrifuge. One ha of olive grove produces 6 to 13 tonne of olives depending on the season. The first pressing is the most valuable but even the stones are pressed, at another facility, yielding the lowest quality oil.

With the facility tour over the group were encouraged to a newly refurbished upper room, with balcony, where a range of wines and eats were available to sample. The olive oil drizzled bread was used with a sweet flan, biscuits and bread to refresh the palates as the delegates moved from wine to wine and on to Grappa and on to the purchase section. Sales were brisk but limited as soon the delegates were flight overweight.

Bottled oil, some 3 600 l to 7 500 l per an. is marketed for 13.00 euro a litre. White wine sells for 3.30 euro, 6.90 euro red and a sweeter desert red at 9.00 euro. Grappa is sold for 13.50 euro and 15.00 euro [2005 values].

Before leaving for the evening meal there was opportunity to thank the host and the translator. As the group were likely to not be together 'socially' again on this trip the chance was taken to practically thank John G. for all his hard work in arranging and managing so well, the visit and the prior organisation.

Richard Heath