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Applied Control Technology Consortium

Improving Performance through Understanding and Application of
Control Technologies

E-News December 2006 Edition

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Holiday Best Wishes and A Review of ACTC Activities

by
**Professor
Mike
Grimble**



I am very pleased to say that the ACTC has progressed well within the last year. We hosted a major event on [Nonlinear Control Systems](#) where a new nonlinear control design toolbox was presented. This has been complemented by the development and delivery of a new training course on nonlinear control, given for the first time at Ford in Dearborn, USA.

We are also becoming even more responsive to companies' needs and for example, we organised a very successful meeting on [Managing Alarms and Abnormal Situations in the Process Industries](#) held in Grimsby where there is a cluster of ACTC members. You will be pleased to know we are currently putting together a one-day event on condition monitoring that will first presented in the Aberdeen area to the offshore oil and gas companies, and then may be modified for other industrial sectors. Since companies are increasingly pressed for time, the aim is to provide a comprehensive state of the art overview in just one-day.

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Forthcoming ACTC Events

- 6-8 Feb 2007: [ACTC/Emerson Process Control Academy 2007](#), Stockport
- Late-March 2007: Automotive SIG, Detroit, USA
- 3 May 2007: Automotive Control SIG Meeting, Newbury
- June 2007: Advances in Condition Monitoring in the Offshore Oil Industry, Aberdeen

Other Events of Interest

- 31 Jan 2007: [Management and Monitoring of Process Assets](#), London
- 24-25 April 2007: [The IET Water Event 2007](#), Coventry

The ACTC management has recognised the success of the training courses held on ISC premises. This seems to reduce the effort required by companies and the topics seem appealing. We are therefore to increase the frequency of these courses. Another success we had last year was the Process Control Academy which was a mixture of basic training and state of the art awareness, that was hosted by Emerson Process Management in Leicester. We are pleased to announce that [Process Control Academy 2007](#) will be held in Stockport 6-8 February 2007, and following delegate feedback we will be including computer-based exercises to reinforce the learning. ACTC members will receive two free places. Related to this is the Rolling Mill Academy which was held in Amsterdam this year and we are working with Convertteam in Rugby on the next one planned for Glasgow late next year.

The number of in-house training courses we provide seems to be increasing, particularly for the automotive industry both in the UK and in the USA. Our co-operation with National Instruments, Austin, Texas also seems to be progressing well and we have a number of meetings where they jointly sponsor the event. The next Automotive Control SIG meeting in the UK is now scheduled for the 3 May 2007. We are particularly enthused about the NI design and simulation tools which have similar features to Matlab but which enables a full real time control capability to be introduced using the same product line.

There are also a wide variety of consultancy and case study projects keeping us busy as well, notably with Yorkshire Water, Millennium Chemicals, GSK, Caledonian Paper, Lloyd's Register, Corus and Selex-SAS.

There are also several initiatives for funding academic projects linked to the ACTC. For example, there is a ten million pounds research centre proposal on autonomous systems. Such techniques are used in unmanned aerial vehicles to control missions, but the idea is to apply similar philosophies to engineering plant in general to minimise the effect of failures and reduce downtime. There have also been several companies involved with one of the EPSRC funded RAIS 12-month secondments where a researcher is placed in a company at the end of their studies. There are moves to extend this to cover more researchers, but with it being limited to a six-month placements. The University of Strathclyde / EPSRC are currently considering the proposal. ACTC member companies are at the core of both of these initiatives and I will keep you informed of progress.

I think the ACTC is very healthy and I thank all our member companies' contributions to this success. It is rather more than a training and technology transfer organisation, since it provides an excellent link to the University of Strathclyde's Industrial Control Centre and it works so well because of the good personal relationships. Thank you all for your contribution.

My best wishes for the holiday period.

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What is Control Engineering and Why is it Critically Important

One of the long standing objectives of the ACTC is to raise the awareness of Control Engineering. With guidance and input from several of our member companies, the ACTC has produced a new Educational Note entitled "What is Control Engineering and Why is it Critically Important". This is a very basic introduction to control, why it can be difficult and why it is important for business success. It is not really intended for people who deal with control issues on a regular basis, but it is for people who need to appreciate its importance in the overall scheme of things. It is written in an easily accessible and informal manner, so that anybody from school pupil to board member can read and get something from it.

This Educational Note is available for ACTC members via download from the members-only area of our web-site, just follow [this link](#). However, due to the nature of this article we are also making it available to people from outside the ACTC. Just [send us an email](#) requesting EN13 "What is Control Engineering and Why is it Critically Important" with your contact details and telling us why you would like to receive it.

We hope you enjoy this note and please let us know your comments about it.

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ACTC New Web Address

After a recommendation by the ACTC Steering Group, the ACTC now has a new web address which is <http://www.actc-control.com>. The old web address will redirect to the new one, however, please update anything where you keep our web-address, such as items on your company intranet or bookmarks. Also if you spot anything which is still using the old web address then please let us know.

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New ACTC Members

ACTC would like to welcome our new members, [BAE Systems Land Systems](#) (land-based military vehicles, formerly Vickers Defence) and [Axeon Technologies Ltd.](#) (neural network hardware and application developers) and [Boeing](#) in Seattle, USA (aircraft design and manufacturers).

A full list of ACTC members can be found [here](#). If you would like to know more about the benefits of ACTC membership, please just [contact us](#).

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ACTC Member Training Courses

Since the Autumn we have been increasingly busy delivering training courses for our members:



- **Boeing, Seattle, USA - "Control Fundamentals for Aerospace Applications"** - this was the first course for Boeing under their new membership and was attended by 23 trainees.
- **Ford Motor Company, Detroit, USA - "Nonlinear Control for Automotive Applications"** - this newly developed course was requested by Ford to continue their now regular sequence of advanced control courses that we have delivered at their offices in Dearborn over the past three years.
- **SELEX-SAS, Edinburgh - "Introduction to Kalman Filtering"** - this one-day course ranged from introductory material to the application of Extended Kalman Filtering for offline friction estimation, which was the subject of a case study that they requested. Attended by 10 delegates.
- **ACTC Scheduled Training, Glasgow - "Control Fundamentals 1 - Theory"** - our standard training course was full subscribed with 10

delegates. We hope to schedule these courses more frequently given the increased demand.

- **Jaguar, Coventry - "Overview of Advanced Control for Automotive Applications"** - this was our third course delivered for Jaguar, which were all well attended and very well received. Bob Williams, Principal Engineer from Jaguar said "I think that we have moved control engineering up a notch within the company".
- **Lyondell, Stallingborough, Grimsby - "Introduction to Process Control"** - another instance of this well proven course. This course is will be being revised in 2007 based on feedback from trainees.

If you would like to know more about the above and other ACTC training courses, then [get in touch](#).



Details of our [standard courses](#), including agendas



The list of [courses](#) delivered to ACTC members, as well as centrally held "scheduled" courses which all ACTC member companies can access



Download the [ACTC Training Brochure](#) which contains the same information that can be found on the [ACTC web-site](#)

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New Technical Report "Carbon Emission Control in Coal-Fired Power Plants"

The ACTC has just released a technical report titled "Carbon Emission Control in Coal-Fired Power Plants: Recent Developments".



Originally produced for RWE Npower, this report summarises a range of existing technologies published in the last five/six years for reducing CO2 emission in coal-fired power plants.

These include technologies for improving plant efficiency, such as combustion and boiler control, combustion monitoring and analysis, oxy-fuel combustion based CO2 emission control and new technologies for coal-fired power generation. The report also contains a list of relevant organisations and references in a wider context but of relevance to power plant emission control.

A full copy of this report is available for the ACTC members. [Download the full report](#).

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Meeting Report "Managing Alarms and Abnormal Situations in the Process Industries"

A very successful meeting was held in Grimsby on the topical subject of [Managing Alarms and Abnormal Situations in the Process Industries](#). There was an excellent attendance from the chemical and petrochemical companies in the Lincolnshire and Yorkshire areas and from much wider a field. Peter Andow from Honeywell gave the first presentation on Alarms and Abnormal Situation Management which helped to set the scene for the meeting and point to the importance for safe and reliable operation and for continuity of operation. The second talk was by Don Boylen of Total in Grimsby who discussed alarm management The Total Approach. Don was able to speak with some authority about the company's strategies and procedures for dealing with this area. They clearly treat the subject very seriously and have an effective forum to discuss the mechanisms that should be adopted and to then ensure that these are implemented and reviewed regularly. This was followed by Alan Mason of AJM Consulting with a talk entitled Why Does this Happen. Alan described one of the tools that has been developed for the analysis

of large amounts of data based on work at Prof Julia Morris's group at the University of Newcastle. Relik Shafir of 4DM-Technologies travelled all the way from Israel to give a presentation dealing with Routine Operational Management & Crisis Containment Systems. He was able to provide an excellent perspective on the problem of Crisis Management for very large process systems.



After lunch Nick Taylor of Emerson Process Management discussed the Emerson systems for handling Abnormal Situation Prevention. One of the key new developments in Emerson systems is the health monitoring features which are now provided and Nick was able to introduce the range of their capabilities. A presentation by Jonas Balderud of the University of Strathclyde's Industrial

Control Centre was entitled Safety and Performance Assessment of Automatic Controls. Jonas has had recent experience at working in the nuclear industry that was very appropriate for this presentation. The final talk was given by Alan Jackson of HSE Hazardous Installations Directorate who discussed Human Factors in Alarm Management. It was very appropriate that by the end of the day the subject should move away from advances in the technology back to one of the key components in the system which is of course the human operator.

This meeting was so successful and the topic was deemed to be so important for the future that it will be repeated in different forms in the future. The venue on the Humber Bank was also found to be very suitable and most of the attendees were very happy with both the enthusiastic presentations and the discussion sessions at the various breaks.

As usual, ACTC members can download the PowerPoint presentations from the [members download area](#) of the ACTC website.

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Last updated: 01/08/2007

17:02:30

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