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Achieving the Benefits of Improved Control in Australian Process and Manufacturing Industries

Process and Manufacturing Industries Survey 2004 - 2005

The National Committee on Automation Control and Instrumentation (NCACI) is part of the Electrical College of Engineers Australia. The National Committee's mission is to contribute to the growth of the Australian economy, protection of the natural environment, and improvement in the quality of life in Australia by advancing effectiveness and technical excellence in the theory and practice of Automation, Control and Instrumentation.

As part of its charter, the NCACI has initiated the attached benchmarking surveys of the current use of control technology by the process and the manufacturing industries in Australia, with particular focus on the extent to which these industries are, or are not, achieving the economic benefits which the effective use of control can provide.

The whole study includes both the process and manufacturing industries, acknowledging that the distinction between control applications in process and manufacturing industries has blurred as the technology has developed, particularly at the higher levels of integration of control with information systems.

A particular feature of the survey is an attempt to estimate the economic value of current control applications, and the potential benefits remaining to be tapped. These data should provide enlightening comparisons with the estimates made in the 1987 University of Sydney Warren Centre for Advanced Engineering study on Advanced Process Control, and the 1992 Advanced Process Control Trends Survey carried out by the Process Control Society of Engineers Australia. However, this new survey is not restricted to advanced process control, addressing in addition trends in the application and performance of basic controls. Hence it will provide a picture of the current status of control utilisation in the process industries, as well as what progress has been achieved in more than a decade.

The surveys also ask about industries' education and training needs in the field of control. These will be compared with the nature of current college level technical and further education, and university level undergraduate and postgraduate education in control. These will be identified in a companion educational institutions survey.

The Process and Manufacturing Industries surveys are divided into two parts.

Part 1 seeks background information about you and your organization, and then covers the key issues of

- control system metrics, leading to performance benchmarks;
- benefits achieved and potential benefits of improved control;
- issues which are limiting the achievement of optimal control performance;
- your organization's control education and training requirements.

Part 2 is optional, and requests information about the nature of your current and likely future use of control technology and related aspects. We would be very grateful if you are able to complete part 2 as well as part 1.

A glossary of control terminology and acronyms is provided at the end of the questionnaire.

Why should you respond?

- Because you will receive full access to the final analysed results, providing benchmarks you can use to assess your own use of control technology.
- Your response to this survey will therefore be valuable to you, as well as to the Australian industrial community.

If you believe you are not the appropriate person in your organization to answer the questions in the survey, please pass the survey on to someone else who may be better placed to respond.

Responses

Please be as accurate as possible in your responses related to your **current** applications of control technology. Some questions also ask for your prediction of issues in the **mid-term future** (next three to five years). A result of key importance will be the prediction of **trends and changes** over this time span, arising from both planned introduction of new features/technology and the phasing out of older technology.

To assist us in the timely processing of responses and presentation of results, please respond no later than 31st March 2005.

Privacy

The survey results will be published and presented by the NCACI in various public media and venues. However, at no stage will any individual respondent or respondent organization be identified. You may be assured that your individual responses will be

kept entirely confidential and used only to compile statistics related to industry sectors, and to Australian industry in general.

We value very much your assistance in contributing to this survey.

**Please post responses for Process Industries survey to
Professor M Brisk
Department of Chemical Engineering
Monash University, VIC 3800
or email to mike.brisk@eng.monash.edu.au**

**Please post responses for manufacturing Industries survey to
Dr John Edwards
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PO Box 3100, Teralba, NSW 2284
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AUSTRALIAN RESEARCH COUNCIL FEDERATION FELLOWSHIPS, 2004

Established under the Australian Government's 2001 innovation action plan, *Backing Australia's Ability*, the Australian Research Council's *Federation Fellowships* are designed to attract and retain outstanding researchers of international renown, and build and strengthen world-class research capability in Australia.

NCACI congratulates Professor Hill and Associate Professor Wiseman as two of the recipients of 2004 ARC Federation Fellowships for control related initiatives.

Professor David Hill

Host institution: The Australian National University

Project title: *Complex networks: Dynamics, optimisation and control*

Complex networks, such as large power grids, the Internet, transportation networks and co-operation networks of all kinds, provide challenges for frontier technologies such as computing, communication and control. Advanced societies have become dependent on large infrastructure networks to an extent beyond our capability to plan and control them. The recent spate of collapses in power grids and virus attacks on the Internet illustrate the need for research on modelling, analysis of behaviour, planning and control in such networks. This Federation Fellowship project will establish research in this area for Australia's benefit.

Associate Professor Howard Wiseman

Host institution: Griffith University Primary

Project title: *Quantum measurement, control and information: Forging links to underpin quantum technology*

The 21st century is seeing the birth of the first truly quantum technologies—devices the operation of which can be explained only by using quantum physics—which can

outperform any conventional technology. The Federation Fellowship project will advance new theoretical foundations for designing quantum technologies by forging links between the three key areas of quantum measurement, control, and information. As the miniaturization of technology continues, quantum design principles will be required for more and more devices. The discoveries made will help keep Australian science at the forefront of this revolution.

AWARD OF CHEMECA MEDAL

CHEMECA medal is the most prestigious award in the chemical engineering profession in Australia and New Zealand. It is awarded to a prominent Australian or New Zealand Chemical Engineer who has made an outstanding contribution, through achievement or service, to the practice of Chemical Engineering in its widest sense and who continues to serve the profession.

The recipient for 2004 CHEMECA medal was Emeritus Professor Michael Brisk (BE, PhD, FTSE, CPEng, F1EAust, FIChemE) due to his outstanding contribution to the chemical engineering profession.

The citation reads:

“Mike Brisk's contribution to the chemical engineering profession has been outstanding.

Throughout a career, which saw him take a leading international role in the application of advanced process control in the chemical industry and culminated in his leading one of Australia's largest and most diverse Engineering faculties at Monash University, Mike has maintained a significant contribution to the activities of the Institution of Chemical Engineers and Engineers Australia.



Mike Brisk's many achievements have been made without fanfare, his efforts on behalf of the profession have been selfless and he has never sought public acclaim.”

REPORT ON THE 3rd IFAC SYMPOSIUM ON MECHATRONIC SYSTEMS

The 3rd IFAC Symposium on Mechatronic Systems was held in Sydney on 6-8 September, 2004. The goal of the symposium was to bring together experts on mechatronic systems from different areas to present new research results and perspectives on the future of the field.

The conference program consisted of technical sessions organised in four parallel tracks as well as six plenary lectures, six semiplenary lectures, and a poster session. A total of 132 papers were accepted after the completion of a full review process.

A highlight of the symposium was the calibre of the six plenary presentations given by leading researchers from industry and academia. This year's symposium also marked the establishment of awards to recognise the authors of the best paper and the best student paper.

THE 14th IFAC SYMPOSIUM ON SYSTEM IDENTIFICATION, SYS-ID 2006

14th IFAC Symposium on System Identification, SYSID-2006 to be held in Newcastle, Australia, March 29-31, 2006 under the auspices of IFAC, the International Federation of Automatic Control and sponsored by the IFAC Technical Committee on Modeling, Identification and Signal Processing, the IFAC Technical Committee on Adaptive Control and Tuning and the IEEE Control Systems Society. SYSID2006 is also sponsored by Engineers Australia via the National Committee on Automation, Control and Instrumentation (NCACI) and co-sponsored by the Institute of Electrical and Electronics Engineers (IEEE) via the Control Systems Society (CSS).

SYSID is organised every three years, with the previous SYSID-2003 being held in Rotterdam, The Netherlands. This will be the first SYSID symposium to take place in the Southern Hemisphere.

The symposium covers all major aspects of system identification, experimental modelling, signal processing and adaptive control from theoretical and methodological developments to practical applications in a wide range of application areas. The aim of the meeting is to promote the research activities and the cooperation between researchers in these areas.

To enhance the applications and industrial perspective of the symposium, participation from industrial authors is particularly encouraged.

Further details are available at <http://sysid2006.org>

NCACI AWARDS

Applications have been received for the Automation, Control and Instrumentation National Project Excellence Award and the NCACI Undergraduate Thesis prize. The review of the applications is currently under way and the results of the assessments will be announced in the next issue of the newsletter.

The Editors:

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