Contents:

Renewal of Affiliate Membership, Newsletter Survey

Informal Meeting
Austria

New National Member Organization of IFAC
The Automatic Control Society of Slovenia

Automatic Control in Aerospace
IFAC/IEA Symposium
Germany

Sydney Congress for the
Accompanying Persons

EPAC Dinner Invitation

Forthcoming Events

Control Engineering Practice
Volume 1, No 3, Preview

Papers from the Next Issue of Automatica

Low Cost Automation - LCA '92
IFAC Symposium, Austria

A Cost Effective Use of Computer Aided Technologies and Integration Methods in Small and Medium Sized Companies - CIM'92
IFAC Workshop, Austria

Renewal of Affiliate Membership
Newsletter Survey
Deadline 30 June, 1993

The Survey published in the last issue of the IFAC newsletter has already brought back many replies and a host of useful information as well as suggestions which the Newsletter Editor is happy to take up.

Many Newsletter readers have for instance suggested that the list of Forthcoming Events, published in every second issue of the Newsletter should contain also fax- and/or e-mail addresses together with the contact addresses. Already this Newsletter has got its way in, and we hope it will be thus able to serve the IFAC community better.

Some queries concerned the benefits derived from Affiliate membership. Becoming an Affiliate of IFAC is free of charge and among the benefits are e.g. a reduced subscription rate to the IFAC Journals Automatica and Control Engineering Practice. Another advantage of being included into the Affiliate database is that, upon organizers’ request, IFAC provides disks and/or labels of Affiliates who have indicated their interest in the subject area by marking the respective title on the Affiliate Registration Card. Thus, Affiliates have several possibilities of getting more information on events, i.e. by receiving Calls for Papers directly from organizers or by using the contact addresses and fax- and e-mail numbers given in the IFAC Newsletter. In due course, IFAC also plans to put its list of forthcoming events into an e-mail letter box, accessible to our subscribers.

Please be reminded that your Affiliate membership must be confirmed by June 30. Non-reply by that date will be considered discontinuation of membership.

Dr. Gustav Hengsley
Editor-in-Chief

Informal Meeting
of the IFAC Officers
Laxenburg, Austria
6 - 8 May, 1993

As is by now a longstanding tradition, the Informal Meeting of the IFAC Officers took place on the premises of the IFAC Secretariat in Laxenburg. The meeting was chaired by the President of IFAC, Professor Brian D.O. Anderson. The other participants were: M. Mansour, the IFAC Treasurer, S. Kaine, President Elect, L. Liung, Vice-President (Technical Board), Y.Z. Lu, Vice-President (Executive Board), B. Tamm, Past President, G. Hengsley, Secretary and W. Schaufelberger. Considerable time at this meeting was devoted to issues relating to the Sydney Congress, the forthcoming General Assembly and all other administrative meetings of our Federation.

Publications were again subject of discussion at this meeting. Mr. Michael Dowes of Pergamon and Professor Manfred Thomae, Chairman of the Publications Managing Board joined the meeting for an informal discussion on publications-related matters.

The IFAC Officers also had the opportunity to participate in an anniversary colloquy, organized by the IFAC Beirut in Austria (IFAC Advisory Board in Austria), on the occasion of its 10th anniversary. One highlight of this meeting was the establishment of a Fred Margulis Award, commemorating IFAC’s Honorary Secretary from 1978 - 1984. At the traditional annual dinner, the President was pleased to welcome representatives of the Ministry of Science and Research, the Academy of Sciences, the Austrian NMO, the IFAC Beirut as well as representatives from university and industry.

This time also, the Officers were invited to make a technical visit to the Austrian Research Centre in Seibersdorf. Originally established as a nuclear research centre, Seibersdorf meanwhile specializes in developing low cost applications custom-made for industry.

The Automatic Control Society of Slovenia

The Automatic Control Society of Slovenia was founded in Ljubljana on 12 January, 1989. Its headquarters is at the Faculty of Electrical and Computer Engineering, University of Ljubljana, Tržaška 25, 61111 Ljubljana, Slovenia.

The aims and objectives of the Society are to contribute to the development and progress of automatic control, to further the scientific standard of its members, to encourage the education in the fields of automatic control, to promote the cooperation between scientific institutes, universities and experts, to research in the area of automation, and to support the edition of professional and scientific literature in this field.

The Society has organized several lectures with prominent Slovenian and international scientists. It co-organized the First Slovenian Electrotechnical and Computer Conference in 1992, presented itself at two international fairs in Ljubljana and organized three round table discussions. The subjects discussed there were: How to bridge the gap between automatic control education; and The perspectives of research work in Slovenia. The main discussion points were published in technical reviews.

This Newsletter may be reproduced in whole or in part. We encourage reprinting in national and local automatic control periodicals. Acknowledgement to IFAC would be appreciated.
Automatic Control in Aerospace  
IFAC/IEA Symposium  
Munich, Germany, 7 - 11 September, 1992

Discussions on new concepts and ideas during Story Board Sessions

The 12th IFAC Symposium on Automatic Control in Aerospace continued chronologically the series which started in 1965 in Stavanger, Norway. The Symposium was organized jointly by the IFAC Technical Committees for 'Aerospace Control' and 'Manufacturing Technology'. The co-sponsors were the 'Deutsche Gesellschaft für Luft- und Raumfahrt' (DGLR) and the 'American Institute of Aeronautics and Astronautics' (AIAA). The Symposium was organized by VDI/DE-GMA with support of DASA-MBB. Dr. E. Gottzein and Prof. D. Debra were responsible for the technical program.

The 11 main sessions of the Symposium, each of which was introduced by a general overview, dealt with the subjects guidance, control and navigation of vehicles in the atmospheric and extra-atmospheric range, orbit and attitude control of spacecraft and space vehicles, guidance and navigation of intelligent autonomous vehicles, control of astronomical telescopes in space, orbit optimization and guidance of conventional and advanced carriers in ascent and re-entry as well as new methods and technologies in the area of components. Additional to the formal 70 technical presentations, another 58 contributions were presented, explained and discussed by the authors in so-called 'Story Board' sessions during two of the evenings. By this scheduling it was possible to avoid parallel sessions despite the variety of contributions, though a long working day was required. Here it turned out to be an 'adroit tactical organization aid' to serve an excellent buffet at each of the 'story-board' sessions. The working program was rounded off with technical visits at the resident space industry (IABG, MBB) and institutions (DLR, GSOC). The 170 experts participating in the congress came from more than 16 countries, mainly from Germany, the USA, France, Great Britain and Japan but also from China and Russia.

The essential results can be summarized as follows:

For complex structures and precision control, uncertainty still exists concerning the modelization and the real dynamic behaviour in orbit. Therefore it is recommended to plan operational in-orbit test and calibration phases in critical cases.

To resist against serious failures (like unexpected loss of components, serious model failures, etc.) already the design should foresee the possibility of in-orbit code changes (e.g. by a corresponding structure of the operational system, modular structure of the operational system, modular structure of the operational modes, preparation of sufficient memory, efficiency of the TM/TCS system, etc.). This statement was substantiated by a ROSAT presentation which illustrated the power of these techniques.

Test- and verification methods are still the central topic of an integrated development 'life cycle' including well adapted earth- and in-orbit verification methods for each development step. Corresponding test philosophies and a number of test installations were presented and discussed.

Modern methods, like adaptive control, knowledge based approaches, fuzzy logic, etc. are more and more on their way into aerospace development bringing out promising results in simulation and test; but an in-orbit realization is still the exception.

Robot- and manipulator applications cover a wide field of control activities: A series of laboratory based test procedures show good results in the application of modern procedures (adaptive and knowledge based control, autonomy augmentation by 'task planning' and 'path planning', etc.). However, until now the well known 'Shuttle Remote Manipulator System' has only been used in manual operation - despite a possibility of automatic control - because of the elasticity caused by lightweight construction.

In the range of trajectory optimization new methods were presented which could be successfully applied on horizontal launching carriers with airbreathing propulsion systems. For this kind of carrier systems modern guidance concepts bring out promising approaches under special consideration of generic optimization aspects.

Commercial and tested development tools for control system analysis and simulation including software development are widely available. Their successful application increases in aerospace development.

An interesting development was observed in the field of 'Smart Structures': It refers to small, intelligent structures which combine sensors, intelligent data processing and actuators. They are decentrally placed at appropriate points to damp or control elasto-mechanical qualities, e.g. of large structures and of telescopes.

The 'Hemispherical Resonator Gyro' seems to be another interesting new development in the sphere of components. It concerns a gyro without any rotating parts, in which the special phase shifting of a standing acoustical wave is analyzed during the rotation of a hemispherical resonance body. High resolution, low noise, high bandwidth and large mechanical stress capability at a long life time are presented as special advantages, but no flight experiences have been reported yet.

All in all, the participants can look back on a successful Symposium. Selected technical contributions will be published in the Symposium Proceedings, Automatica and Control Engineering Practice.

The 13th IFAC Symposium on Automatic Control in Aerospace, Aerospace Control '94 will be held in Palo Alto, CA, 12-16 September, 1994.

Sydney Congress for the Accompanying Persons

Australia is a land of great contrasts and you will be able to discover this in its wonderful coastline and beaches, its coral reefs, its rain forests, its mountains and its deserts before or after attending the IFAC Congress in Sydney in July.

As the wife of the President of IFAC, I have enjoyed working with the organizing committee to put together a program full of interest for the Accompanying Persons, and I would urge you all to plan your travel arrangements so that you arrive in time to attend the Opening Ceremony in our world famous Opera House on Sunday 18 July, at 2.00 p.m.

On Monday 19th July, the Accompanying Persons will be especially welcomed over coffee at the Darling Harbour Convention Centre. You will have a chance to get to know each other at the start of the Congress, before setting out on the daily tours. An Aboriginal will be our Special Guest and he will give a demonstration on how to play the didgeridoo and throw the boomerang. This should be very interesting.

I look forward to meeting you all on this splendid occasion.

(Mrs) Dianne Anderson

EPAC Dinner Invitation

At the 1984 IFAC Congress, the Western European Professors of Automatic Control (WEPC), a sub-committee of EDCOM, started the tradition of an annual Dinner. Those who attended the meeting of WEPC at Zurich last September, which included professors from Eastern Europe so that the name of the group has now been changed to EPAC, agreed to continue the tradition.

Arrangements are being made to hold the dinner on the evening of Friday, July 23rd, and the approximate cost is expected to be around 50 Australian dollars per person. As in past years, both members and the guests invited; those wishing to attend should register and pay at the Congress registration desk, where full details will be available, no later than Tuesday July 20th

To assist in the planning, it would be extremely helpful if those intending to attend would inform:

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# FORTHCOMING EVENTS (ctd.)

<table>
<thead>
<tr>
<th>Title</th>
<th>1995</th>
<th>Place</th>
<th>Deadline</th>
<th>Further Information</th>
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<tbody>
<tr>
<td>1995 American Control Conference (in cooperation with IFAC)</td>
<td>June</td>
<td>Seattle, WA</td>
<td>15 Sept.</td>
<td>Prof.M. Tomizuka, Dept. of ME, Univ. of Calif. Berkeley, CA 94720, USA FAX: 510/642-6163 email: <a href="mailto:tomizuka@euler.berkeley.edu">tomizuka@euler.berkeley.edu</a></td>
</tr>
<tr>
<td>FAC Conference System Structure and Control</td>
<td>July</td>
<td>Nantes, France</td>
<td>1 Aug.</td>
<td>M. J.J. Loiseau, CNRS LAN-ECN 1, rue de la Noe F-44072 Nantes Cedex 03 France FAX: +33/40/72522 e-mail: <a href="mailto:loiseau@lan1.ensm-nantes.fr">loiseau@lan1.ensm-nantes.fr</a></td>
</tr>
<tr>
<td>1995 European Control Conference (in cooperation with IFAC)</td>
<td>Sept.</td>
<td>Rome, Italy</td>
<td>1 Oct.</td>
<td>ECC ’95 Secr., Prof. A. de Luca D’15, Unie. degli Studi di Roma Via Eudossiana 18 I-00184 Rome, Italy FAX 39/644 585367 e-mail: <a href="mailto:ecc95@immunisa.ing.uniroma1.it">ecc95@immunisa.ing.uniroma1.it</a></td>
</tr>
</tbody>
</table>

* Deadline not yet known
  – Deadline past

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## Control Engineering Practice

**Volume 1 Number 3 June 1993**

### Preview

- **Papers from the IFAC Workshop on Distributed Computer Control Systems, August 1992**
- **Papers from the IFAC Workshop on Motion Control for Intelligent Automation, October 1992**
  - Guest Editor: A. De Carli
  - Preface to the Papers from the IFAC Workshop on Motion Control for Intelligent Automation (A. De Carli)

### Motion Control: An Emergent Technology (A. De Carli)

- Active Position Control of a Dynamic Platform in the Presence of Disturbances (K. Bouazza-Marouf and J.R. Hewit)
- High Performance Applications: Robot Motions in Complex Environments (G. Schweizer)
- Model-Based Nonlinear Adaptive Control of a Pneumatic Actuator (H. Keller and R. Isertmann)
- Microcomputer Systems for Motion Control (T. Ohnue and W. Watanae) Variable Structure Controllers in Motion Control Systems (A. Sabanovic)
- High Performance Control of Robot Manipulators without Using Inverse Dynamics (Y. Hori)
- Identification and Digital Control of Electrical Devices (I.D. Landau and F. Rolland)

### Abstracts

- **IFAC Symposium: On-Line Fault Detection and Supervision in the Chemical Process Industries, April 1992**
- **IFAC Symposium: Control of Power Plants and Power Systems, March 1992**
- **IFAC Symposium: Dynamics and Control of Chemical Reactors, Distillation Columns and Batch Processes, (DYCORS92), April 1992**
- **IFAC Workshop: Distributed Computer Control Systems (DCCS’92), August 1992**

### Index of Abstracts

#### Book Review

- Conference Calendar

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## Meeting Schedule

### General Assembly

**Council- and Related Meetings**

**Sydney, Australia, 15 - 24 July, 1993**

In the framework of this year’s World Congress, the General Assembly and all other bodies of IFAC will hold their administrative meetings. Below, find a survey over the most important meetings scheduled within that period

<table>
<thead>
<tr>
<th>Date</th>
<th>Meeting</th>
<th>Time</th>
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<tbody>
<tr>
<td>16 July</td>
<td>Executive Board</td>
<td>14.00 - 18.00</td>
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<td></td>
<td>(Outgoing)</td>
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<tr>
<td>Friday</td>
<td>Technical Board</td>
<td>14.00 - 18.00</td>
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<tr>
<td></td>
<td>(Outgoing)</td>
<td></td>
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<tr>
<td>17 July</td>
<td>Technical Board</td>
<td>09.00 - 12.00</td>
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<td></td>
<td>(Outgoing) ctd.</td>
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<tr>
<td>Saturday</td>
<td>Council (Outgoing)</td>
<td>14.00 - 17.00</td>
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<tr>
<td></td>
<td>(Inaugural meeting)</td>
<td></td>
</tr>
<tr>
<td>18 July</td>
<td>Council (Outgoing)</td>
<td>09.00 - 12.00</td>
</tr>
<tr>
<td>Sunday</td>
<td>Congress Opening</td>
<td>14.00</td>
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<tr>
<td>20 July</td>
<td>General Assembly</td>
<td>14.30 - 17.30</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Council (Inaugural)</td>
<td>17.30 - 18.00</td>
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<tr>
<td>24 July</td>
<td>Executive Board</td>
<td>09.00 - 12.00</td>
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<td></td>
<td>(Incoming)</td>
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<tr>
<td>Saturday</td>
<td>Technical Board</td>
<td>09.00 - 12.00</td>
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<tr>
<td></td>
<td>(Incoming)</td>
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</tr>
<tr>
<td>Council (Incoming)</td>
<td>14.00 - 18.00</td>
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</tbody>
</table>

In this period also all Executive Committees and Technical Committees as well as most Working Groups and some IFAC will hold meetings. For a detailed schedule, please write, fax or e-mail your request to the IFAC Secretariat.
Bounded-Error Estimation (L. Jalulin, E. Walter)
System Identifiability from Finite Time Series (C. Heij)
Uncertainty in the Weighted Gap Metric: A Geometric Approach (J.A. Sefton, R.J. Ober)

Brief Papers

Implementation of a Knowledge-Based PID Auto-Tuner (T.H. Lee, C.C. Hang, W.K. Ho, P.K. Yue)
Performance Monitoring and Fault Prediction Using Linear Predictive Coding Algorithm (R. Doraiswami)
On the Finite Transmission Zero Assignment Problem (V.L. Syrmos)
Parametrization of Multivariable Systems Using Output Injections: Alpha Canonical Forms (V. Eldem, A. Dayar)
Robust Control of Discrete Time Uncertain Dynamical Systems (L. Xie, C.E. de Souza, Y. Wang)
General Analytical Structure of Typical Fuzzy Controllers and Their Limiting Structure Theorems (H. Ying)

Book Reviews

The H∞Control Problem, A StateSpace Approach, by A. Stoorvogel (J. Stoustrup)
Applied Robotic Analysis, by R.E. Parkin (P. Kopacek)
Fundamentals of Manipulator Calibration, by B.W. Moore, Z.S. Roth and M.R. Driels (D. Stanton)

Low Cost Automation

LCA '92

IFAC Symposium (3rd)

Vienna, Austria, 9 - 11 September, 1992

After Valencia and Milan, this third symposium was organized by the Austrian NMO, i.e. the Austrian Centre for Productivity and Efficiency, in cooperation with the Institute of 'Handling Devices and Robotics' at the Technical University of Vienna. The International Program Committee, chaired by P. Albertos (Spain) had the difficult task to select 94 papers from the 155 submitted abstracts. These 94 technical papers were arranged in 21 sessions. In addition, five plenary papers were given and one round table session was held.

According to the scope, the main reason of the Symposium was to bring together end-users and control system specialists to evaluate the possibilities of technique, design procedures, components and instruments to get easy-to-apply Low Cost Automation not only considering all economic aspects but also improvements in productivity, reliability, flexibility. Special emphasis should be placed on small and medium sized enterprises. Therefore the plenary papers should give an overview over this field. They were:

New Techniques to Improve Performance of Simple Control Loops, by R. Ortega (France)
Low Cost PLC Design and Applications, by H.P. Jörgl and G. Höld (Austria)
Neuro-Fuzzy Controllers, by F. Gomide, A. Rocha (Brazil) and P. Albertos (Spain)
Using Low Cost PLC Electric Ultrasonic Sensors for 3-D Measurement in Robots, by G. Lindstedt and G. Olson (Sweden)

The technical session dealt with topics from process automation as well as from manufacturing automation. From the side of the automation of continuous processes, two sessions were given on other adaptive controllers, two sessions on process control applications, two sessions on drives and one session on power engineering application and signal processing. In the field of the automation of discontinuous processes, manufacturing automation, two sessions dealt with modelling and CAD, robotics, computer systems and one session with intelligent control. A round table discussion organized by P. Albertos (Spain) concerned itself with problems of Low Cost Automation in former Eastern European countries.

The Symposium was attended by 135 participants. All accepted papers were published in a preprints volume. As the Symposium met with great interest and the papers were of excellent quality, it was decided to continue the Symposium series in the next three years, i.e. in Buenos Aires, Argentina from 13-15 September, 1995 (cf. list of forthcoming events).

P. Kopacek, NOC Chairman
P. Albertos, IPC Chairman

A Cost Effective Use of Computer Aided Technologies and Integration Methods in Small and Medium Sized Companies CIM '92

IFAC Workshop

Vienna, Austria, September 7 - 8, 1992

Approximately two years ago, the MANTECH committee discussed the possibility to hold a symposium with the main emphasis on Computer Integrated Manufacturing for small and medium sized companies in the framework of IFAC. As a result of these discussions, this first Workshop was held at the Technical University of Vienna, organized by the Austrian Centre for Productivity and Efficiency (the Austrian NMO of IFAC) as well as by the Institute of Robotics of the Technical University of Vienna. 57 abstracts were submitted and reviewed by a small International Program Committee with the result that forty full papers were accepted and included in the final program. In addition, two plenary papers were given and one panel discussion was held.

The Workshop was held just before the IFAC Symposium on Low Cost Automation. The reason was that, according to the substitute - small and medium sized companies - special emphasis of the contributions should be on low cost approaches or solutions appropriate for small and medium sized companies. Therefore, this Workshop can be seen as a subset of the Low Cost Automation Symposium.

Most of the technical papers dealt with low cost approaches for the classical CIM components like Computer Aided Design (CAD), Computer Aided Manufacturing (CAM) and Computer Aided Quality Control (CAQ). Other topics of interest were robotics, software design, network and CIM management. Approximately 50% of the papers were real application papers. From these some described a new approach for low cost CIM systems, based on low cost PCs connected by a network and supervised by a network server.

The plenary papers were:

- CIM for Small and Medium Sized Companies, by P. Kopacek (Austria)

The panel discussion dealt with problems of low cost Computer Integrated Manufacturing mainly in former Eastern European countries.

P. Kopacek, IPC Chairman
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Location</th>
<th>Type of Event</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>IFAC/IFIP/IFORS Workshop (2nd)</td>
<td>June 22 - 24</td>
<td>Vienna, Austria</td>
<td>IFAC Workshop</td>
<td>Intelligent Manufacturing Systems</td>
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<tr>
<td>IFAC Workshop</td>
<td>June 27 - 28</td>
<td>Baltimore, MD, USA</td>
<td>IFAC Workshop</td>
<td>Integration of Process Design and Control</td>
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<tr>
<td>1994 American Control Conference</td>
<td>June 29 - July 1</td>
<td>Baltimore, MD, USA</td>
<td>Conference</td>
<td>(in cooperation with IFAC)</td>
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<tr>
<td>IFAC/IFORS Symposium (10th)</td>
<td>July 4 - 6</td>
<td>Copenhagen, Denmark</td>
<td>Symposium</td>
<td>Identification &amp; System Parameters Estimation</td>
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<tr>
<td>IFAC/IFIP/IFORS Symposium</td>
<td>July 23 - 25</td>
<td>Tianjin, PRC</td>
<td>Symposium</td>
<td>Transportation Systems: Theory and Application of Advanced Technology</td>
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<tr>
<td>Asian Control Conference</td>
<td>July 27 - 30</td>
<td>Tokyo, Japan</td>
<td>Conference</td>
<td>(in cooperation with IFAC)</td>
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<tr>
<td>IFAC Symposium (3rd)</td>
<td>Aug. 1 - 2</td>
<td>Tokyo, Japan</td>
<td>Symposium</td>
<td>Advances in Control Education</td>
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<tr>
<td>IFAC Workshop</td>
<td>Aug. 10 - 12</td>
<td>Lund, Sweden</td>
<td>Workshop</td>
<td>Computer Software Structures Integrating AI/RBS</td>
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<tr>
<td>IFAC/SHS Workshop (2nd)</td>
<td>Sept. 12 - 16</td>
<td>Silsoe, UK</td>
<td>Workshop</td>
<td>Mathematical and Control Applications in Agriculture and Horticulture</td>
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<tr>
<td>IFAC Symposium (13th)</td>
<td>Sept. 12 - 16</td>
<td>Palo Alto, CA, USA</td>
<td>Symposium</td>
<td>Automatic Control in Aerospace</td>
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<tr>
<td>IFAC Symposium</td>
<td>Sept. 14 - 16</td>
<td>Rio de Janeiro, Brazil</td>
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<td>Robust Control Design</td>
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<td>IFAC Symposium</td>
<td>Sept. 19 - 21</td>
<td>Capi, Italy</td>
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<td>Robot Control - SYRCCO</td>
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<td>Sept. 27 - 29</td>
<td>Baden-Baden, Germany</td>
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<td>IFAC Workshop</td>
<td>Sept. 28 - 30</td>
<td>Madrid, Spain</td>
<td>Workshop</td>
<td>Distributed Computer Control Systems - DCCS 94</td>
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  - ETSI Telecommunicacion Universidad Politecnica de Madrid
  - E-28040 Madrid, Spain, FAX +34/1/543 2077
  - e-mail: jpuent@geo.tat.upm.es
<table>
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<tr>
<th>Title</th>
<th>Year</th>
<th>Place</th>
<th>Deadline</th>
<th>Further Information</th>
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<tr>
<td>IFAC WORLD CONGRESS</td>
<td>1993</td>
<td>SYDNEY AUSTRALIA</td>
<td></td>
<td>The General Manager, IFAC CONGRESS AE Conventions Pty Ltd, Engineering House, 11 National Circuit Barton, ACT 2600, Australia FAX +61 6 273 2012</td>
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<tr>
<td>IFAC/IFIP/IFORS/IEEE/ACM/AAAI Workshop</td>
<td>August</td>
<td>Portland, OR USA</td>
<td></td>
<td>AIEEM3, Att. Prof, Kuan-Pin Lim, Portland State University, POB 751 Portland, OR 97207-0751, USA FAX 503/725-5850 e-mail: <a href="mailto:aiem3@psuorvm.binet">aiem3@psuorvm.binet</a></td>
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<tr>
<td>IFAC/IFIP/EWICS Conference</td>
<td>October</td>
<td>Gdansk Poland</td>
<td></td>
<td>Dr. Janusz Gorski Technical University of Gdansk PL-80952 Gdansk, Poland FAX +48/58 471971</td>
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<tr>
<td>IFIP/IFAC Workshop</td>
<td>Nov.</td>
<td>Tokyo Japan</td>
<td>1 June 1993</td>
<td>DIISM 93, c/o Yoshikawa Lab., The University of Tokyo, Dept. of Proc. Machinery Engineering 7-3-1 Hongo, Bunkyo-ku, Tokyo 113, Japan FAX +81-3-3812-8849 e-mail: <a href="mailto:jago@e2.zze.pe-u.tokyo.ac.jp">jago@e2.zze.pe-u.tokyo.ac.jp</a></td>
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<tr>
<td>IMACS/IFAC Symposium</td>
<td>1994</td>
<td>Vienna Austria</td>
<td></td>
<td>Prof. Dr. Inge Troch Wiedner Hauptstrasse 8 - 10 A-1040 Vienna, Austria, Fax: +43/222/568093 e-mail: <a href="mailto:troch@email.tuwien.ac.at">troch@email.tuwien.ac.at</a></td>
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<tr>
<td>IMACS/IFAC Symposium Mathematical Modelling</td>
<td>Feb.</td>
<td>Lisbon Portugal</td>
<td>15 Sep 1993</td>
<td>Secco de Urbanizacao e Sistemas Instituto Superior Tecnico Edificio de Engenharia Civil, Av. Rovisco Pais P-1096 Lisboa Codex, Portugal FAX 2189884</td>
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<tr>
<td>IFAC/IFORS Workshop Man-Environment Integration</td>
<td>Feb.</td>
<td>Tampere Finland</td>
<td></td>
<td>ICMA’94 Secretary, Ms. Siekkinen Edutech, POB 527, SF-33101 Tampere, Finland FAX +358/31/3162 164</td>
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<td>TEKES/MET/IFAC Conference Machine Automation ‘Mechatronics Spells Profitability’</td>
<td>Feb.</td>
<td>Tucson, AZ USA</td>
<td></td>
<td>Eng. Professional Development Dept of Chem. Engineering Kyoto University, Kyoto 606-01, Japan FAX +81/75-752-9639 e-mail: <a href="mailto:A52165@jpnkupde.bitnet">A52165@jpnkupde.bitnet</a></td>
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<tr>
<td>Joint IEEE/IFAC Symposium Computer-Aided Control System</td>
<td>March</td>
<td>Galveston, TX USA</td>
<td>1 Sept. 1993</td>
<td>IFAC Biomedical Symposium U.T. Medical Branch, Box 55176 Galveston, TX 77555-5176, USA FAX 409/770-6825</td>
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<tr>
<td>IFAC/IMEKO Symposium (2nd) Modelling and Control in Biomedical Systems</td>
<td>March</td>
<td>Kyoto Japan</td>
<td>1 July 1993</td>
<td>Dr. Shinji Hasebe Dept of Chem. Engineering Kyoto University, Kyoto 606-01, Japan FAX +81/75-752-9639 e-mail: <a href="mailto:A52165@jpnkupde.bitnet">A52165@jpnkupde.bitnet</a></td>
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<td>IFAC Symposium Advanced Control of Chemical Processes - ADCHEM ’94</td>
<td>May</td>
<td>Budapest Hungary</td>
<td>31 July 1993</td>
<td>SICICA ’94 Secretariat Computer and Automation Research Institute HAS, POB 63, H-1518 Budapest, Hungary FAX +36/1/1869378, e-mail: <a href="mailto:h103hen@ella.hu">h103hen@ella.hu</a></td>
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<td>IFAC Symposium Intelligent Components and Instr. for Control Applications - SICICA ’94</td>
<td>June</td>
<td>Amsterdam Netherlands</td>
<td>31 Jan. 1994</td>
<td>Mr. Hans M. Amman Dept of Macroeconomics, Rm E1-911 Univ. of Amsterdam, Roeterstraat 11 NL-1018 WB Amsterdam, Netherlands FAX +31/20/5255528, e-mail: <a href="mailto:amman@sara.nl">amman@sara.nl</a></td>
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<tr>
<td>IFAC Symposium Fault Detection, Supervision and Security for Industrial Processes</td>
<td>June</td>
<td>Espoo Finland</td>
<td></td>
<td>Finnish Society of Automation Asemäppäällikkökatu 12C SF-00520 Helsinki, Finland FAX +358/0/146 1650</td>
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**June 1993**

**No.3**