Fachhochschule Köln
Cologne University of Applied Sciences

Faculty of Plant, Energy and Machine Systems
Institute for Plant Design and Process Engineering

Prof. Dr. Robert Haber (Ed.)

Control and Monitoring Algorithms in Process Automation Applications

Extended Proceedings of the Process Automation Workshop 2008 at the Cologne University of Applied Sciences

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Berichte aus der Automatisierungstechnik

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Preface

The Laboratory of Process Automation is a training and research facility located in the Institute of Process Engineering and Plant Design of the Faculty of Process Engineering, Energy and Mechanical Systems at the Cologne University of Applied Sciences. It serves as a teaching support laboratory in the areas of Mechanical, Chemical Process and Rescue Engineering for students of electrical engineering, measurement technology and process automation. The research undertaken at the laboratory focuses on the areas of control engineering and process data analysis.

The Department of Process Automation was formally established with the appointment of a head of laboratory in 1988. Modules in logic control, electric drives and process control systems were introduced at this point to complement the existing lectures in electrical and traditional control engineering. In 2007, a masters program was established, which saw the addition of modules in the areas of "Process data evaluation, APC (Advanced Process Control)" and "Process identification and predictive control".

In celebration of the 20th anniversary of the foundation of the Laboratory of Process Automation a Workshop on Process Automation was held. Colleagues and friends of the head of laboratory presented lectures in their respective areas of research and applications. In the past months the presentations (numbers 1 to 5, 8 to 10 and 12 to 15 in the content list) were extended with new ideas and results, and organised in paper form. The workshop papers were extended last year by three further papers (numbers 6, 7 and 11). This volume contains the following topics (the paper numbers are in brackets):

- PID control (1, 2, 7)
- predictive control (2 to 8)
- application of identification methods (9, 4)
- application of fuzzy logic control (11)
- industrial applications (10 to 12)
- fault detection (13, 15)
- control performance monitoring (14)

The authors of the papers 3, 10, 14 and 15 gratefully acknowledge the financial support by the Ministry for Innovation, Science, Research and Technology of North Rhine-Westphalia (Germany) and the Cologne University of Applied Science in the framework of the competence platform "Sustainable Technologies and Computational Services for Environmental and Production Processes" (STEPS).

The editor wishes to extend his gratitude to all the contributors (colleagues and friends) for the high standard of their contributions and hopes that the reader will find some topics of interest for his or her own research. He would also like to thank Prof. Dr. R. Bars for her help in editing this volume. The editor acknowledges the financial support of the Cologne University of Applied Sciences for the publication of these proceedings.

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