



## Operating Plant and Systems Professionals

Inc.

'Your Increased Profitability is Our Bottom Line'

**Thomas E. Marlin**  
**Professor, Chemical Engineering**  
**McMaster University, Hamilton, Canada**

### **Career Profile**

Dr. Marlin has been involved in developing and applying advanced control, simulation, and optimization in the process industries. He began his career in the 1970's in Esso Research and Engineering, where he worked in dynamic simulation, operator training, advanced process control and plant optimization. He moved to an E&C firm, Stone and Webster, to gain external consulting experience, leading the advanced control efforts for several new ethylene plant projects. Then, he assumed a Research Chair at McMaster University in Industrial Process Control, where he led the McMaster Advanced Control Consortium, a group of four professors, twenty graduate students, and 10-15 industrial collaborators.

While involved in technology development, Dr. Marlin has also contributed to teaching and technology transfer. While at EXXON, he managed and taught one of their company-wide process control training courses. He continued providing training for customers at Stone and Webster. While at the university, he has taught undergraduate and graduate courses, published a textbook, and developed an award-winning WEB site. In addition, he has presented over 50 courses to industrial companies on Process Control, Control System Benefits analysis, and Real-time Optimization of Process Operations.

In the short time between industrial and academic positions, Dr. Marlin led a year-long study on the benefits of process control for the Warren Centre in Sydney, Australia. A forty-person team investigated country-wide impediments to industrial applications of control, performed seven in-depth case studies, and reported to industry through a series of seminars and reports. As a result, a new professional society was established, a number of industrial projects were performed, and several training programs were initiated, one by ICI Australia.

### **Professional Experience**

**January 1988 – Present**

**Professor, Chemical Engineering, McMaster University**

**Director, McMaster Advanced Control Consortium (1988-2007)** MACC is recognized as one of the top centers for research and technology transfer in the world. Projects are performed with industrial members, who gain leading positions in technologies like real-time optimization, plant scheduling, non-linear MPC, and multivariate statistics. A study by sponsored by the US NIST found that MACC was at least as productive as centers with ten times the annual funding. Member companies have included the following (the list is not complete).

EXXON  
Mobil  
Shell

Sunoco Canada  
Petro-Canada  
Dow  
Dupont  
Praxair  
Arcelor-Doafasco  
Rohm and Haas  
Procter and Gamble  
Aspen Technology  
Honeywell  
Noranda  
Polysar

**Consulting (1988-present)** Much of Dr. Marlin's consulting has concentrated on technology selection and application and on industrial training. He has taught nearly one thousand industrial engineers, mostly in tailored courses presented at company sites. The courses cover the following topics.

Advanced Process Control  
Benefits of Process Control (Based on Australian study and subsequent research)  
Real-time Operations Optimization

He has taught courses in Canada, the USA, Europe, Brazil and Thailand.

**Research (1988-present)** Dr. Marlin's research with his graduate students has concentrated on Advanced Process Control, Real-time Optimization and short-term plant scheduling. His teams have completed a number of collaborative studies with companies on the application of these new technologies.

**April 1985-Oct 1987 Stone and Webster Engineering Company (SWEC), Boston, MA**

**Senior Consulting Engineer** Dr. Marlin was the lead technologist for control and optimization for the ethylene business at SWEC. Several new plants were designed with advanced controls during this time.

Dr. Marlin also training SWEC and client engineers on process control.

**July 1972-March 1985 EXXON Research and Engineering, Florham Park, NJ**

**Project applications** Dr. Marlin worked on and lead a number of projects in dynamic simulation and operator training, including one of the largest undertaken for the Venezuelan government. His work resulted in significant cost reductions in the (at that time) new Flexicoker design. He applied advanced controls in a number of plants, including refineries and chemical plants in the USA and Europe.

**Research** Dr. Marlin led the development of Real-time Operations Optimization for EXXON Chemicals.

**Training** Dr. Marlin managed, trained instructors, and taught one of EXXON's in-house 8-day courses on process control. This course was required for all engineers performing advanced process control.

## Education

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|------|----------------------|------|
| B.S. | SUNY Buffalo         | 1966 |
| PhD. | Un. Of Massachusetts | 1972 |

## Military

US Army          Lieutenant in Ordnance Corp

## Publications

Marlin, T., Process Control, *Designing Processes and Control Systems for Dynamic Performance*, McGraw-Hill, New York, 1995 Second Edition released January 2000 (1017 pages, ISBN 0-07-039362-1)

Marlin, T., J. Perkins, G. Barton, and M. Brisk, *Advanced Control Benefits - Report on Industrial Case Studies*, ISA Publications, Research Triangle Park, 1988 (I participated in all projects reported in the book.) (380 pages, ISBN 1-55617-121-8)

Numerous academic and Industrial presentations

## WEB

Educational site: <http://pc-education.mcmaster.ca/>