

Richard Skeirik (Sky' rick)
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Chemical Process Consultant
Litigation Consultant/
Expert Witness

PROCESS CONTROL SPECIALIST contributing over \$5 million savings over 22 years at DuPont, with consulting experience on 6 sigma teams in a wide range of large, continuous chemical/polymer production plants and computer/control systems. I work effectively with plant technical and production staff to quickly assess process situations and needs. I develop innovative control designs using advanced process control technology. I also worked in manufacturing support, process R&D, control software development, and on obtaining, licensing, and litigating patents.

Inventor: 17 patents integrating artificial intelligence (AI) into process control;

Developer: Two real-time software systems - PACE and ASPECT - for AI in process control.

Key Technology Experience:

Control Design	Process Historians	Six Sigma
Dynamic Simulation	Steady State Simulation	Statistical Process Control
Training Simulators	Web Site Development	Real-time Estimators

Key Systems Experience:

Bailey DCS	Honeywell DCS	Aspen IP21	HYSYS
Matlab	Aspen Multivariate	Excel	SQL
VB	Visual Studio	Access	ASP.NET
Vantage*	TMODS*	PACE*	ASPECT*

(*DuPont proprietary historian, simulation, and control software)

Selected Project Accomplishments

Dehydration Column Controls - Saved \$0.5 million/yr, increased plant throughput 5% and stabilized entire plant by designing and implementing model-based controls for a large acetic acid dehydration column with multiple feeds, multiple heat inputs, and ongoing significant load changes. Implemented lower levels on Bailey DCS; flood detection and optimization in expert systems on Vax. Designed using dynamic simulation in HYSYS and Speedup.

Optimizing Oxidation Controls – Saved \$0.6 million/yr by optimizing cost-sensitive oxidation step in a TPA process. Implemented expert systems and SPC controls on Vax with DCS faceplate operator interface. Developed optimization criteria in collaboration with plant technical and production experts.

Batch Nylon Simulators – Validated new Honeywell DCS controls by building/updating plant simulators and interfacing to TDC 3000 staging systems in Amsterdam. Simulators provided over 2500 I/O points in five process areas, and included complex batch sequence and interlock logic.

Product Trail for Engineering Polymer Business –Produced a complete global material flow diagram of over 100 flows through 5 steps from raw materials to end user in a worldwide specialty polymer business. Analyzed and combined business sales data with product recipe definitions; combining chemistry, engineering, business and data processing skills, against a tight 4 week timeline.

Monomer Column Feed Controls – Delivered new cascaded controls to stabilize the flow controls of an oscillating feed flow control system for a distillation column. Analyzed historian data, ran plants tests, and developed a dynamic simulation in DuPont's TMODES to create and validate the control design.

Inferential Model for Monomer Composition – Delivered an on-line, real-time inferential model on Bailey DCS predicting composition of monomer exiting monomer prep plant. Mined Aspen IP 21 historian data using Aspen Multivariate, Excel, and Matlab PLS toolbox. Developed the model using the System Identification toolbox in Matlab.

Expert Witness/Litigation Consultant – Gave expert analysis, prepared expert court reports, and gave expert testimony in support of two infringement suits in Federal court asserting my inventions (patent rights now owned by Pavilion/Rockwell)

Other Projects: Condenser Balance Optimizing Controls – TPA oxidation area;
Molecular Weight Distribution Model – Terathane Oligomer process;
Catalyst Composition Controls – TPA solvent recycle system;
MeOAc Stripper Column model-based controls – TPA Solvent Recovery Area;
Catalyst/Promoter Ratio Controls – TPA feed prep area;
Reactor Water Composition Control – TPA reactor overheads system;
Real-time catalyst/promoter composition estimator - TPA solvent recycle system.

Professional Experience

President/Publisher/Consultant		Dalkeith Press, Inc.	2004-Pres
Litigation Consultant/Expert Witness		Independent Consultant	2004-2008
Consultant	Process Control	DuPont Engineering	1996-2004
Sr. Consulting Engineer	Process Control	DuPont Engineering	1994-96
Sr. Specialist	Manuf Software Support	DuPont Info Systems	1993-94
Sr. Engineer	Process Control Support	DuPont Chemicals	1991-93
Specialist	Artificial Intelligence	DuPont AI Task Force	1987-91
Sr. Area Engineer	Manufacturing Support	DuPont Petrochemicals	1984-87
Engineer	Process R&D	DuPont Petrochemicals	1982-84

Education

MS Chemical Engineering, Michigan State U, 1981
BS Biochemistry, Michigan State U, 1978
Graduate Certificate Sport Psychology, Capella U, 2004

Professional Development

Registered Engineering Intern, State of Delaware - 2007
Six Sigma Green Belt Training - 2004
Using Process Surveyor (Control Monitoring) - 2003
Conceptual Design of Chemical Processes - 2001
25 years experience programming in a wide range of languages and systems, building on a wide range of operating systems and database programs.

Publications:

12 Formal DuPont Technical Reports
8 Technical Presentations/Journal Articles
17 US Patents
6 Psychology-related books