Richard Skeirik, PE (Sky' rick)
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Process Control Engineer

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PROCESS DYNAMICS & ADVANCED CONTROL ENGINEER solving difficult/ multivariable control problems in world-scale, continuous monomer plants. I contributed over $5 million savings over 22 years at DuPont, with consulting experience on 6 sigma teams. I develop innovative control designs using historian data analysis, dynamic/SS simulation, inferential modeling, knowledge engineering, human interface design and SPC; implementing on DCS, historian platform, supervisory and AI software. I also served a range of continuous/batch chemical/polymer production plants, running various computer/control systems. My work includes historian data mining, inferential model building, and multivariable control problems – experience that well prepares me for DMC+ and RMPCT problems.

I seek a position solving challenging control problems in a manufacturing environment.

I work effectively with plant technical and operations staff and management to assess process situations and business/operation needs. I routinely collaborate with DCS owners/configurers. I consider the operator both a customer and an important player in defining control needs.

Inventor: 17 US patents on AI in process control. Developer: two real-time software systems for artificial intelligence in process control, used in plants across DuPont.

Key Technology Experience:

Multivariable Control Design	Inferential Modeling	Process Historians
Dynamic Simulation	Steady State Simulation	Statistical Process Control
Training Simulators	Data Mining/Analysis	Six Sigma

Key Systems Experience:

HYSYS	Bailey DCS	Aspen IP21	Honeywell DCS
Matlab	Aspen Multivariate	MS Excel	SQL
Visual Basic	Visual Studio	Bailey DCS	ASP.NET
Vantage Historian*	TMODS Dynamic Simulator*	(*DuPont proprietary software)	

Selected Project Accomplishments

Dehydration Column Controls - Saved $0.5 million/yr, increased plant throughput 5% and stabilized entire plant by designing and implementing multivariable, model-based controls for a large acetic acid dehydration column with multiple feeds, multiple heat inputs, and ongoing significant load changes. Implemented multivariable material/energy balance controls 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.

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 System Identification toolbox. Developed the model using the System Identification toolbox in Matlab.

Neural Inferential Models – Invented technical concepts and wrote software to easily mine historian data and build online neural estimators. Developed dynamic online estimators for process variables with infrequent measurements and long measurement delays.

Dynamic PTMEG Reactor Model (Independent) - Reproduced experimental data and produced the full dynamic molecular weight distribution for the acid-initiated polymerization of PTMEG (spandex/elastomer segments.) Preparing for submission to Macromolecular Reaction Engr.

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.

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

Reactor/Kinetic Research Study		Independent Researcher	2012-Pres
Founder/President/Author/Consultant		Dalkeith Press, Inc.	2004-Pres
Litigation Consultant/Expert Witness		Independent Consultant	2004-2008
Consultant	Process Control	DuPont Engineering	1994-2004
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
BS Biochemistry, Michigan State U
Graduate Certificate Sport Psychology, Capella U

Professional Development

Licensed Prof Engineer, State of Delaware, Jan 2016
30+ Professional Development Hours: 2012-15
AIChE Process Development Symposium: 2012
Registered Engineering Intern, DE: 2007
Six Sigma Green Belt Training: 2004
DuPont Control Monitoring: 2003
Design of Chemical Processes: 2001
Programming experience in multiple languages on multiple systems

Publications:

12 Formal DuPont Technical Reports
8 Technical Presentations/Journal Articles (plus one to be submitted)
17 US Patents; 7 Psychology-related books