

Richard Skeirik (Sky' rick)
873 E Baltimore Pike #742
Kennett Square, PA 19348
877-780-0945
richardskeirik@richardskeirik.com
<http://richardskeirik.com/>

**Chemical Process Engineer
Consultant**

<http://lnkd.in/v3UYgV>

PROCESS ENGINEER contributing over \$5 million savings over 22 years at DuPont, with experience in process development research, pilot plant, process economic evaluation, technical support to manufacturing, chemical reaction engineering, and process dynamics and control consulting. I have extensive experience in process simulation: flowsheet, distillation, and reactor. In process development, I worked with organometallic chemists, assessing their preliminary reaction tests. I designed and started up a 1 liter high pressure batch synthesis pilot unit. Later I scoped a full process and evaluated the process economics. In later years, I worked as process dynamics and control consultant on 6 sigma teams in a wide range of large continuous/batch chemical/polymer production plants. In addition, I have extensive patent experience, working from invention through drafting, prosecution, and infringement litigation as inventor of 17 US patents, sold by DuPont for \$3 million. My recent work is a dynamic reactor model predicting the full molecular weight distribution in a commercial synthesis of PTMEG (spandex component).

Key Technology Experience:

Process Development Research	Pilot Plant	Steady State Flowsheet Simulation
Dynamic Process Simulation	Six Sigma	Economic Evaluation
Dynamic Reactor Modeling	Polymer Kinetics	Statistical Process Control
Technical/Litigation Analysis	Process Control Design	

Key Systems Experience:

HYSYS	PROCESS (simulator)	CPES(SS Flowsheet)*	TMODS(Dyn Flowsheet)*
Speedup	Aspen IP21	Honeywell DCS	Bailey DCS
Matlab	Aspen Multivariate	MS Excel	SQL
Visual Basic	Visual Studio	MS Access	ASP.NET

Selected Project Accomplishments

Adipic Acid Process Development – Worked with organometallic chemists developing reaction chemistry for adipic acid synthesis from butadiene. Offered process concepts and design guidance for creation of a continuous process.

Pilot Plant Design/Startup – Designed, reviewed process hazards, oversaw construction, and started up 1 liter high pressure semiworks reactor for the homogeneous catalyzed synthesis of adipic acid.

Process Economic Evaluation – Designed a greenfield process for adipic acid synthesis. Developed process flows by steady state simulation, sized and costed equipment, and evaluated overall process economics.

Dynamic Reactor Model (Independent) - Reproduced experimental data and produced the full dynamic molecular weight distribution for the acid-initiated polymerization of PTMEG (spandex/elastomer segments.) Manuscript in preparation.

Topping Column Design Guidance – Simulated a topping column expansion for TPA dehy column using HYSYS steady state. Recommended process and reflux configuration.

2002 Optimizing Controls for Oxidation – Expert system-based controls saved \$400,000/yr and increased plant capacity by adaptively moving oxidation state variables along the optimal edge of the operating space in TPA synthesis (polyester intermediate).

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.

Expert Witness/Litigation Consultant – Gave expert analysis, prepared expert court reports, and gave expert testimony in support of two infringement lawsuits asserting my inventions.

Other Projects: Oxidation Severity Optimization; \$0.6 million/yr, TPA Oxidation area;
Condenser Balance Optimizing Controls – TPA oxidation area;
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;
Real-time catalyst/promoter composition estimator - TPA solvent recycle system.

Professional Experience

2012-Pr	Reactor/Kinetic Research Study	Independent Researcher
2004-Pr	Founder/President/Author/Consultant	Dalkeith Press, Inc.
2004-08	Litigation Consultant/Expert Witness	Independent Consultant
1994-04	Consultant	DuPont Engineering
1993-94	Sr. Specialist	DuPont Info Systems
1991-93	Sr. Engineer	DuPont Chemicals
1987-91	Specialist	DuPont AI Task Force
1984-87	Sr. Area Engr	DuPont Petrochemicals
1982-84	Engineer	DuPont Petrochemicals

Education

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

Professional Development

26 Professional Development Hours: 2012-13	DuPont Control Monitoring - 2003
AIChE Process Development Symp - 2012	Design of Chemical Processes - 2001
Registered Engineering Intern, DE - 2007	30 years programming experience in multiple languages and systems
Six Sigma Green Belt Training - 2004	

Publications:

12 Formal DuPont Technical Reports
8 Technical Presentations/Journal Articles
(plus one to be submitted soon)
17 US Patents; 6 Psychology-related books