

49th Annual Fall Technical Conference

**STATISTICS:
THE GATEWAY TO IMPROVED QUALITY**



St. Louis, Missouri

October 20-21, 2005

Hilton St. Louis Airport

Co-sponsored by:

American Society for Quality:

Chemical and Process Industry Division
Statistics Division

American Statistical Association:

Section on Physical and Engineering Sciences
Quality & Productivity Section



Hosted by: St. Louis Section, ASQ

49th Annual Fall Technical Conference

STATISTICS: THE GATEWAY TO IMPROVED QUALITY

PROGRAM

We invite you to attend to the 49th Fall Technical Conference held this year in St. Louis, Missouri. This conference is the premier forum to discuss topics at the interface of statistics and quality. The theme of this year's conference is the "Statistics: The Gateway to Quality." The goal is to engage researchers and practitioners in a dialogue that leads to more effective use of statistics to improve quality. The conference will serve to bring innovations in statistical methodologies and quality tools to the forefront.

You will have the opportunity to meet informally and exchange views with speakers and colleagues during breaks and the always-friendly hospitality suite. Four awards sponsored by ASQ divisions will be presented at the conference. On Thursday afternoon, at the W.J. Youden Memorial Address, the Hunter Award will be presented to a person who demonstrated creative development and application of statistical techniques to problem solving in the quality field.

PRE & POST CONFERENCE SHORT COURSES

Two short courses will be offered on Wednesday, October 15th and two on Saturday, October 22nd from 8:30 a.m. to 5:30 p.m. The fee for each course includes coffee breaks and lunch. Registration is limited.

Better Industrial and Scientific Experiments by James M. Lucas (\$250) - Wednesday, October 19th

You will learn how to run better industrial experiments for quality and process improvement or scientific experiments to answer important questions (hypotheses) from a world-class experimenter. We emphasize experiments using industrial or scientific equipment such as production machinery. We show how to carry out the best experiments when there are hard-to-change and easy-to-change factors. We use the fact that many experiments using equipment are inherently split-plot experiments in our examples; we tell how to design and analyze split-plot experiments. Because resources are always limited we also discuss how to run the lowest cost experiment. This course is designed for people who have run an experiment or who have taken a previous course on Experimental Design. All course participants should e-mail a description of a current experimental design problem to JamesM.Lucas@worldnet.att.net; the course examples will be built on the problems of the participants.

Statistical Engineering by Stefan Steiner (\$250) - Wednesday, October 19th

Statistical Engineering (SE) is an algorithm and a collection of data-based strategies and tools designed to improve the performance of high to medium volume manufacturing processes. The key step of the algorithm is the appropriate selection and efficient application of one of seven variation reduction approaches: fix the obvious using knowledge of a dominant cause of variation; desensitize the process to variation in a dominant cause; feedforward control based on a dominant cause; feedback control; make the process robust; 100% automated inspection; move the process center closer to target.

In most applications of SE we recommend searching for a dominant cause of variation. SE promotes an efficient search for this cause using the method of elimination and special statistical tools. SE is widely used in the automotive sector by both OEMs and their suppliers. Because of its algorithmic structure and specialized purpose, it is easy to fit SE into Six Sigma and other Continuous Improvement systems. This course will change how you think about process improvement.

Generalized Linear Models in Industry by Timothy J. Robinson and Christine Anderson-Cook (\$250) - Saturday, October 22nd CANCELLED

Non-normal data is common in industrial experiments. Popular examples include success/failure responses, responses involving time to failure, responses resulting in counts, and many others. Generalized linear models offer a powerful tool for the modeling of such data and advances in software have made the utilization of generalized linear models tangible for the practitioner. The purpose of this course is to provide instruction on the use of generalized linear models and to illustrate their use via examples from industry. Specific topics include the connection of generalized linear models to approaches utilized in linear regression analyses, logistic regression, Poisson regression and over dispersion. Emphasis will be on the application of generalized linear models. The attendees should be at least somewhat familiar with regression analysis and matrix algebra as it is used in the underpinnings of linear models. The text Generalized Linear Models with Applications in Engineering and the Sciences by Myers, Montgomery, and

Vining (2002) will serve as the reference for the course and the text will be available for purchase on the day of the course. Examples will be illustrated using SAS and SAS JMP. The notes, examples, and SAS code utilized in the course will be provided to all participants.

Optimal Design of Industrial Experiments by Peter Goos (\$250) - Saturday, October 22nd CANCELLED

Experimenters are often faced with practical difficulties when running standard experimental designs like factorial designs or central composite designs. These difficulties – which include, for example, the limited availability of time, restrictions on the levels of the experimental variables and the simultaneous presence of qualitative, quantitative and/or mixture variables in the study – make it hard to design the experiment. However, a tailor-made experimental design for these situations can be constructed using the optimal design approach. This course will give an example-based overview of the basic concepts in optimal design theory and of the ways in which optimal experimental designs can be constructed. In addition to the strengths of the approach, weaknesses, dangers and pitfalls will be discussed and solutions for them will be given. Finally, an overview of available software will be provided and recent developments in the area such as the construction of variance dispersion graphs and the design of experiments involving hard-to-change factors will receive attention.

COUNCIL MEETINGS

On Wednesday, October 19th, the Chemical & Process Industries Division and the Statistics Division of ASQ, will hold a council meeting from 7:30 to 9:30 p.m. These open meetings are an opportunity for those who wish to become involved in the activities of the societies to become better informed.

HOSPITALITY SUITE

The Fall Technical Conference and the officers of the sponsoring organizations host a hospitality suite every year. We welcome new faces and new perspectives on division operations as well as share technical insights with colleagues, in a friendly, informal atmosphere. Please come to meet us in St. Louis!

AREA ATTRACTIONS

St. Louis is the gateway to the west. Here are a few of the attractions near by:

- > Anheuser-Busch Brewery
- > Gateway Arch & Museum of Westward Expansion
- > Grants Farm
- > Missouri Botanical Gardens
- > St. Louis Science Center
- > St. Louis Zoo (free)
- > Six Flags over Mid-America
- > Bowling Hall of Fame & Museum
- > Cahokia Mounds
- > The Museum of Transportation
- > Old Cathedral

Please see the concierge desk or the front desk for directions and information on local attractions.

ACCOMMODATIONS

A block of rooms has been made available at the Hilton St. Louis Airport. Conference rates are \$99 plus tax for a Single Room. These rates apply for October 18 through 21 based on availability. The guest room block will be held until October 5. Reservations can be made directly at 314-426-5500 or 1-800-HILTONS. Be sure to mention the ASQ Fall Technical Conference to receive the special conference rate. Check-in time is 3:00 p.m. and check out time is 12 noon. There is a \$3 per day parking fee in the hotel lot.

CANCELLATIONS AND REFUNDS

We encourage attendees to enroll by September 16 to ensure availability. To encourage early registrations, we will promptly refund the entire registration fee minus meal costs if you cancel after September 25.

TRAVEL INFORMATION

Located conveniently at the St. Louis International Airport, the Hilton is perfectly accessible to any part of our city. Take the Metrolink from the Airport to Downtown for Shopping, Dining and Sight Seeing. Complimentary Transportation is available to Riverboat Casinos.

Thursday, October 20, 2005

Friday, October 21, 2005

7:30	Registration Desk Opens		
8:00-9:00	WELCOME / PLENARY SESSION Speaker: Roger Hoerl, <i>General Electric Global Research</i> Welcome: Statistics and Quality: What's After Six Sigma?		
Session 1	A. LOGARITHMIC SPC	B. ROBUST PARAMETER DESIGN	C. BUSINESS PROCESS MODELING
9:15-10:00	An SPC Control Chart Procedure Based on Censored Lognormal Observations Uwe Koehn <i>Koehn Statistical Consulting LLC</i>	Process Optimization through Robust Parameter Design in the Presence of Categorical Noise Variables Timothy J. Robinson, <i>University of Wyoming</i> W. A. Brenneman W. R. Myers, <i>The Procter & Gamble Company</i>	Business Process Characterization Using Categorical Data Models Cathy Lawsom <i>General Dynamics</i> Douglas Montgomery <i>Arizona State University</i>
	Moderator: Daksha Chokshi <i>Pratt and Whitney</i>	Moderator: Douglas Hlavacek <i>Ecolab</i>	Moderator: Mark Kiel <i>United States Steel</i>
10:00-10:30	BREAK		
Session 2	A. MULTIVARIATE SPC	B. TOPICS IN DOE	C. SIX SIGMA
10:30-12:00	Using Nonparametric Methods to Lower False Alarm Rates in Multivariate Statistical Process Control Luis A Beltran Linda Malone <i>University of Central Florida</i>	Bayesian Analysis of Data from Split-Plot Designs Steven G. Gilmour <i>University of London</i> Peter Goos <i>Universiteit Antwerpen</i>	Six Sigma beyond the Factory Floor Ron Snee <i>Tunnell Consulting</i>
	Statistical Monitoring of Dose-Response Quality Profiles from High-Throughput Screening James D. Williams <i>General Electric</i> Jeffrey B. Birch, William H. Woodall, <i>Virginia Tech</i>	Adapting Second Order Designs for Specific Needs: A Case Study James R. Simpson, <i>FAMU-FSU</i> Drew Landman <i>Old Dominion University</i> Rupert Giroux <i>FAMU-FSU</i>	Some Trends in Six Sigma Education Douglas Montgomery <i>Arizona State University</i>
	Moderator: Julia O'Neill <i>Merck & Co., Inc.</i>	Moderator: Jonathan Andell <i>Andell Associates</i>	Moderator: Roger Hoerl, Martha <i>General Electric Global Research</i>
12:15-1:45	LUNCHEON Speaker: Bob Moore of the National Park Service Topic: "The Gateway Arch: An Architectural Dream" Presiding: Julia O'Neill, Merck & Co., Inc., ASQ-CPID Chair		
Session 3	A. TECHNOMETRICS	B. DOE FOR COMPUTER SIMULATION	C. COMMON MISTAKES IN STATISTICAL APPLICATIONS
2:00-3:30	Control Charts and the Efficient Allocation of Sampling Resources Marion R Reynolds, Jr. <i>Virginia Tech</i> Zachary G. Stoumbos <i>Rutgers University</i>	Application of Design of Experiments in Computer Simulation Studies Shu Yamada Hiroe Tsubaki <i>University of Tsukuba</i>	Common Mistakes When Using SPC (and What to do About Them) Douglas Fair <i>InfinityQS International, Inc.</i>
	The Inertial Properties of Quality Control Charts William H. Woodall <i>Virginia Tech</i> Mahmoud A. Mahmoud <i>Cairo University</i>	Computer Experimental Designs to Achieve Multiple Objectives Leslie M. Moore <i>Los Alamos National Laboratory</i>	Common Practitioner Mistakes in Data Analysis Scott M. Kowalski <i>Minitab, Inc.</i>
	Moderator: William Notz <i>The Ohio State University</i>	Moderator: Dennis Lin <i>Penn State University</i>	Moderator: Joseph Pigeon <i>Villanova University</i>
4:00-5:00	Presentation of WILLIAM G. HUNTER AWARD W. J. YODEN MEMORIAL ADDRESS Speaker: Soren Bisgaard, University of Massachusetts Topic: "The Future of Quality Technology" Presiding: Mark Kiel, United States Steel, ASQ-STAT Past Chair		

ASA Q&P Chair: Christina Mastrangelo, <i>University of Washington</i> Chair-Elect: Christine Anderson-Cook, <i>Los Alamos National Laboratory</i> Secretary - Heidi Goldfarb, <i>Dial Corp.</i> Treasurer - Timothy Robinson, <i>University of Wyoming</i>	ASA - SPES Chair: Joanne Wendelberger, <i>Los Alamos National Laboratory</i> Chair-Elect: Robert Wilkinson, <i>Lubrizol</i> Secretary & Treasurer: Derek Bingham, <i>Simon Fraser University</i>	ASQ - CPID Chair: Julia O'Neill, <i>Merck & Co., Inc.</i> Chair-Elect: Lori B. Pfahler, <i>Merck & Co., Inc.</i> Secretary: Connie Borror, <i>Arizona State University - West</i> Treasurer: Jim Simpson, <i>Florida State University</i>	ASQ - STAT Chair: Geoffrey Vining, <i>Virginia Tech</i> Chair-Elect: Gordon Clark, <i>Ohio State University</i> Secretary: Douglas Hlavacek, <i>Ecolab Research Center</i> Treasurer: Daksha Chokshi, <i>Pratt & Whitney</i>
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7:30	Registration Desk Opens		
Session 4	A. JOURNAL OF QUALITY TECHNOLOGY	B. RESPONSE SURFACE METHODOLOGY	C. GRAPHICAL METHODS
8:00-9:30	A Dual-Response Approach to Robust Parameter Design for a Generalized Linear Model William R. Myers William A. Brenneman <i>The Procter & Gamble Company</i> Raymond H. Myers, <i>Virginia Tech</i>	Comparison of Global Characterization Techniques in Response Surfaces Francisco Ortiz Jr. Simpson, James R. <i>FAMU-FSU</i> Drew Landman <i>Old Dominion University</i>	Using a Pareto Chart to Select Effects for a Two-Level Factorial DOE Pat Whitcomb <i>Stat-Ease, Inc.</i>
	Analysis of Performance Measures in Experimental Designs Using the Jackknife Asokan Mulayath Variyath Bovas Abraham Jiahua Chen <i>University of Waterloo</i>	Response Surface Design Evaluation Using Mean Square Error Criteria Christine Anderson-Cook <i>Los Alamos National Lab</i> Connie M. Borror <i>University of Illinois</i>	Extreme Makeover: Data Edition Julia C. O'Neill Lori B. Pfahler <i>Merck & Co., Inc.</i>
	Moderator: Joe Sullivan <i>Mississippi State University</i>	Moderator: Malcolm Hazel <i>Consumers Union</i>	Moderator: Martha Gardner <i>General Electric Global Research</i>
9:30-10:00	BREAK		
Session 5	A. MEASUREMENT SYSTEMS	B. RELIABILITY	C. PROCESS ANALYTICAL TECHNOLOGY
10:00-11:30	Two-Dimensional Guidelines for Measurement System Indices T. Kevin White <i>Voridian</i>	The Analysis and Comparison of Start-up Demonstration Tests Michelle L. Depoy Smith William S. Griffith <i>University of Kentucky</i>	Engineering a Proactive Decision System for Pharm. Quality Ajaz S. Hussain <i>Food and Drug Administration</i>
	On the Comparison of Two Measurement Devices Joseph G. Voelkel <i>Rochester Institute of Technology</i> Bruce E. Siskowski, <i>Reichert Inc</i>	An Early Detection Test for the Compatibility of Two Software Environments Daniel R. Jeske Qi Zhang <i>University of California, Riverside</i>	Multivariate Calibration for Analysis of Content and Coating Uniformity in Pharm. Tablets John F. Kauffman John A. Spencer <i>Food and Drug Administration</i>
	Generalizing Gage R&R Summaries Beyond Two-Way Crossed Models Annie Dudley Zangi Nicole Hill Jones <i>SAS Institute, Inc.</i>	Meeting Challenges in New Product Development Phases Using Accelerated Life Testing Sarath Jayatilaka <i>Maytag Appliances</i> O. Geoffrey Okogbaa <i>University of South Florida</i>	Application of PAT for Development of a Pharmaceutical Unit Operation Steven M. Short Carl A. Anderson James K. Drennen III Robert P. Cogdill Zhenqi Shj, <i>Duquesne University</i>
	Moderator: Will Guthrie, <i>National Institute of Standards and Technology</i>	Moderator: Leslie M. Moore <i>Los Alamos National Laboratory</i>	Moderator: Huiquan Wu <i>Food and Drug Administration</i>
11:45-1:15	LUNCHEON Speaker: Sallie Keller-McNulty, Dean of the School of Engineering at Rice University, ASA President-Elect Topic: "Reliability Reloaded" Presiding: Joanne Wendelberger, Los Alamos National Laboratory, ASA-SPES Chair		
Session 6	A. SCREENING DOE	B. MULTIVARIATE REGRESSION	C. MEASUREMENT SYSTEM ANALYSIS
1:30-3:00	Using Fractional Factorial Split-Plots: Minimum Aberration or Optimum Blocking James M. Lucas J. M. Lucas and Associates Frank Anbari <i>George Washington University</i>	Evolutionary Algorithms in Multicollinearity Situations: A Case Study with Stabilizing Transformations Flor A Castillo Carlos M. Villa, <i>The Dow Chemical Company</i>	Bayesian Models for the Characterization of Reference Materials Will Guthrie <i>National Institute of Standards and Technology</i>
	Sequential Supersaturated Designs for Efficient Screening Angela M. Jugan David Drain <i>University of Missouri - Rolla</i>	Hierarchical Monitoring of Defect Rates Using Process Data David R. Forrest <i>Virginia Inst. of Marine Science</i> Christina M. Mastrangelo <i>University of Washington</i>	Open Source Excel Tools for Statistical Analysis for Complex Measurements Hung-kung Liu Will Guthrie John Lu Juan Soto <i>National Institute of Standards and Technology</i>
	Moderator: Geoffrey Vining <i>Virginia Tech</i>	Moderator: Alex Georgiev <i>Kautex Textron, Inc.</i>	Moderator: Erika Abbas <i>E Ink Corporation</i>

PROGRAM COMMITTEE ASQ/STAT: Gordon Clark-Chair-Elect, <i>Ohio State University</i> ASA/SPES: Joseph Pigeon, <i>Villanova University</i> ASQ/CPID: Erika Abbas, <i>E Ink Corporation</i> ASA/Q&P: Martha Gardner, <i>General Electric Global Research</i> Short Course: Tom Davan, <i>Pratt & Whitney</i>	HOST COMMITTEE General Conference Chair: Lori Pfahler, <i>Merck & Co., Inc.</i> Local Conference Chair: Brenda Bishop, <i>Anheuser-Busch</i> Brochure: Cheryl Ferguson Publicity: Tom Heusler, <i>Innovations in Art</i> Treasurer: Jeff Lunar, <i>The Boeing Company</i> Registrar: Holly Hickman, <i>Anheuser-Busch</i>
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CONFERENCE REGISTRATION FORM

49th Annual Fall Technical Conference
 Conference Code: FTC05
 Conference website:
<http://www.asq.org/cpi/conferences/>
 Mail forms to Attention: ASQ
 P.O. Box 3066 • Milwaukee, WI 53201-3066
 To register by Phone: ASQ Customer Care:
800-248-1946
 To Fax your Registration: ASQ Customer Care:
414-272-1734

Name: _____
 Badge Name: _____
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 Please check all membership categories that apply:
 I am a: Member Senior Fellow of ASQ
 I belong to: C&PID STAT
 I am a: Member Senior Fellow of ASA
 I belong to: SPES Q&P
 I am NOT a member of ASQ or ASA

REGISTRATION FEES

Please submit one form for each person attending.
 Two Days \$285
 Thursday, October 20 only \$240
 Friday, October 21 only \$240
 Student (ID Required) \$100
Pre-conference Short Courses, Wednesday, October 19:
 Better Industrial and Scientific Experiments (Course Code COU01) . . \$250
 Statistical Engineering (Course Code COU02) \$250
Post-conference Short Courses, Saturday, October 22:
 Generalized Linear Models in Industry (Course Code COU03) \$250
 Optimal Design of Industrial Experiments (Course Code COU04) . . \$250
 Late Registration Fee (after September 16) \$ 25
 TOTAL DUE (All in U.S. currency please) \$ _____

PAYMENT OPTIONS

Company/Personal Check payable to ASQ FTC 2005
 Check one: AMEX MasterCard VISA
 Other (specify): _____
 Credit Card # _____ Expires: ____ / ____
 Print Name: _____
 Authorization Signature _____
 For other registration questions, contact the Registrar:
 Holly Hickman
 E-mail: Holly.Hickman@Anheuser-Busch.com
 Phone: (314) 957-0766

HOTEL REGISTRATION INFORMATION

Hilton St. Louis Airport
 10330 Natural Bridge Road, St. Louis, Missouri,
 United States 63134-3303
 Phone: 1-800-Hiltons or 314-426-5500
 FAX: 314-426-3429
 Please visit hotel information page on the internet at:
www.hilton.com/hotels/STLHIHF and check out the virtual tours on their home page, St. Louis attractions, restaurants, and much more!

MAKE HOTEL RESERVATIONS BY OCTOBER 5TH OR BEFORE TO ENSURE AVAILABILITY!!!