

# JOURNAL OF QUALITY TECHNOLOGY

A Quarterly Journal of Methods, Applications, and Related Topics

**DANIEL W. APLEY**

*Northwestern University*  
**EDITOR**

**BRADLEY JONES**

*JMP division of SAS Institute*  
**EDITOR ELECT**

**VALERIE FUNK**

*Manuscript Coordinator, ASQ*  
**EDITORIAL ASSISTANT**

**PATRICK D. SPAGON**

*Hill Country Quantitative Solutions*  
**CASE STUDIES**  
**DEPARTMENT EDITOR**

**CHRISTOPHER J. NACHTSHEIM**

*University of Minnesota*  
**DATA & KNOWLEDGE**  
**ENGINEERING FOR QUALITY**  
**DEPARTMENT EDITOR**

**CHRISTINA M. MASTRANGELO**

*University of Washington*  
**BOOK REVIEWS EDITOR**

## **EDITORIAL REVIEW BOARD**

### **Chair**

**DANIEL W. APLEY**

*Northwestern University*

### **Members**

**CHRISTINE M. ANDERSON-COOK**

*Los Alamos National Laboratory*

**BRUCE ANKENMAN**

*Northwestern University*

**DANIEL W. APLEY**

*Northwestern University*

**JOHN J. BORKOWSKI**

*Montana State University*

**CONNIE M. BORROR**

*Arizona State University West*

**YONG CHEN**

*University of Iowa*

**BIANCA M. COLOSIMO**

*Politecnico di Milano, Italy*

**ENRIQUE DEL CASTILLO**

*Pennsylvania State University*

**RAINER GÖB**

*University of Würzburg, Germany*

**PETER GOOS**

*University of Antwerp, Belgium*

**DOUGLAS M. HAWKINS**

*University of Minnesota*

**NORMA F. HUBELE**

*Arizona State University*

**L. ALLISON JONES-FARMER**

*Auburn University*

**BRADLEY JONES**

*JMP division of SAS Institute*

**V. ROSHAN JOSEPH**

*Georgia Institute of Technology*

**SCOTT M. KOWALSKI**

*Minitab, Inc.*

**PAUL KVAM**

*Georgia Institute of Technology*

**DENNIS K. J. LIN**

*Pennsylvania State University*

**JYE-CHYI LU**

*Georgia Institute of Technology*

**JAMES M. LUCAS**

*Consultant*

**ROBERT L. MASON**

*Southwest Research Institute*

**CHRISTINA M. MASTRANGELO**

*University of Washington*

**ROBERT W. MEE**

*University of Tennessee*

**DOUGLAS C. MONTGOMERY**

*Arizona State University*

**CHRISTOPHER J. NACHTSHEIM**

*University of Minnesota*

**RONG PAN**

*Arizona State University*

**JOHN J. PETERSON**

*GlaxoSmithKline Pharmaceuticals*

**JOHN S. RAMBERG**

*University of Arizona*

**MARION R. REYNOLDS, JR.**

*Virginia Polytechnic Institute and State University*

**GEORGE C. RUNGER**

*Arizona State University*

**PATRICK D. SPAGON**

*Hill Country Quantitative Solutions*

**STEFAN STEINER**

*University of Waterloo*

**JOE H. SULLIVAN**

*Mississippi State University*

**LOON CHING TANG**

*National University of Singapore*

**FUGEE TSUNG**

*Hong Kong University of Science and Technology*

**O. ARDA VANLI**

*Florida State University*

*Florida A&M University*

**WILLIAM H. WOODALL**

*Virginia Polytechnic Institute and State University*

**SHIYU ZHOU**

*University of Wisconsin*

## **FOUNDING EDITOR**

**LLOYD S. NELSON**

## **PAST EDITORS**

**Lloyd S. Nelson 1969–1970**

**H. Alan Lasater 1971–1973**

**Lawrence D. Romboski 1974–1976**

**John S. Ramberg 1977–1979**

**Harrison Wadsworth 1980–1982**

**Peter R. Nelson 1983–1985**

**Samuel S. Shapiro 1986–1988**

**John A. Cornell 1989–1991**

**Peter R. Nelson 1992–1994**

**Douglas C. Montgomery 1995–1997**

**G. Geoffrey Vining 1998–2000**

**William H. Woodall 2001–2003**

**Joe H. Sullivan 2004–2006**

**Enrique del Castillo 2007–2009**

JOURNAL OF QUALITY TECHNOLOGY (ISSN 0022-4065) is published quarterly in January, April, July, and October by ASQ, 600 N. Plankinton Ave., P.O. Box 3005, Milwaukee, Wisconsin 53201-3005. (Canadian GST #128717618). Editorial Office: MS 9582, Mississippi State University, Starkville, MS 39762. Periodicals postage paid at Milwaukee, WI, and at additional mailing offices. POSTMASTER: Send address changes to ASQ Journal of Quality Technology, P.O. Box 3005, Milwaukee, WI 53201-3005.