

## BIOGRAPHICAL SKETCH

### Dr. K. E. Rouch

Professor of Mechanical Engineering  
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### EDUCATION

Marquette University, Milwaukee, WI	PhD	1977	Systems Engineering
Purdue University, West Lafayette, IN	MS	1967	Agricultural Engineering
Purdue University, West Lafayette, IN	BS	1965	Agricultural Engineering

### APPOINTMENTS

1997 – 2009 Chair of Department of Mechanical Engineering, University of Kentucky, Lexington, KY.  
1993 – present: Professor of Mechanical Engineering, University of Kentucky  
1996-1996 Interim Director, Center for Robotics and Manuf. Systems, Interim Associate Dean for Research, University of Kentucky.  
1985 – 1993: Associate Professor of Mechanical Engineering, Univ. of Kentucky, Lexington, KY.  
1966 – 1985: Allis-Chalmers Corporation, Milwaukee, WI.

### PROFESSIONAL AFFILIATIONS

Registered Professional Engineer, Kentucky, 1992 to present (PE # 17403)  
Registered Professional Engineer, Wisconsin, 1971 to present (E-12298)

### SELECTED PUBLICATIONS

#### (a) Five Most Closely Related Papers

- [1] “Transitioning To a Two-Semester Capstone Design Sequence in Mechanical Engineering”, Keith E. Rouch, William E. Murphy, Vincent R. Capece, 2007 Capstone Design Conference, June 2007.
- [2] “Multi-University and Industrial Collaboration for Research-Oriented Capstone Experience”, Suzanne Weaver Smith, Keith E. Rouch, William T. Smith, Jamey D. Jacob, 2007 Capstone Design Conference, June 2007.
- [3] Hamade, R.H., S.P. Manthri, F. Pusavec, K.A. Zacny, L.A. Taylor, O.W. Dillon, Jr., **K.E. Rouch** and I.S. Jawahir, “Compact Core Drilling in Basalt Rock using Rectangular PCD Tool Inserts: Wear Characteristics and Cutting Forces”, *J. Materials Processing Technology*, Vol. 210, 2010, pp. 1326-1339.
- [4] Hamade, R.H., S.P. Manthri, F. Pusavec, K.A. Zacny, L.A. Taylor, **K.E. Rouch**, O.W. Dillon, Jr., and I.S. Jawahir, “Developing a Methodology towards Sustainable PCD Compact Core Drilling on Planet Mars”, 2009 ASME-IMECE, Orlando, FL, November 2009.
- [5] Jawahir, I.S., **K.E. Rouch**, O.W. Dillon, Jr., L. Holloway and A. Hall, “Design for Sustainability (DFS): New Challenges in Developing and Implementing a Curriculum for Next Generation Design and Manufacturing Engineers”, *Int. J. Engineering Education*, Vol. 23(6), 2007, pp. 1053-1064.

#### (b) Five Other Significant Papers

- [1] Jawahir, I.S., **K.E. Rouch**, O.W. Dillon, Jr., K.J. Joshi, A. Venkatachalam and I.H. Jaafar, “Total Life-cycle Considerations in Product Design for Manufacture: A Framework for Comprehensive Evaluation”, (Keynote Paper), *Proc. TMT 2006*, Lloret de Mar, Barcelona, Spain, September 2006, pp. 1-10.
- [2] Jawahir, I.S., A.K. Balaji, **K.E. Rouch** and J.E. Baker, “Towards Integration of Hybrid Models for Optimized Machining Performance in Intelligent Machining Systems”, *J. Materials Processing Technology*, Vol. 139(1-3), 2003, pp. 488-498.

- [3] Liew, J., O.W. Dillon, Jr., **K.E. Rouch**, S. Das and I.S. Jawahir, “Innovative Product Design Concepts and a New Methodology for Sustainability Enhancement in Aluminum Beverage Cans”, *Proc. 4<sup>th</sup> International Conference on Design and Manufacture for Sustainable Development*, New Castle Upon Tyne, United Kingdom, July 2005.
- [4] Baker, J.R., and **K.E. Rouch** ,“Stability Analysis of Boring Bars with Asymmetry”, *Machining Science and Technology*, Volume 6, No. 2, pp. 81-95 (2002).
- [5] Baker, J.R., and **K.E. Rouch** ,“Use of Finite Element Structural Models in Analyzing Machine Tool Chatter”, *Finite Elements in Analysis and Design.*, Vol. 38, no. 11, pp. 1029-1046 (2002).

**(c) U.S. Patents (total of five)**

- [1] **Rouch, K.E.**, Tewani, S., Walcott, B., Massa, T., Stephenson, R.W., Stephens, S. (1992), Active Vibration Control Device, United States Patent 5,170,103, December 8, 1992. (also foreign patents applied for in Australia, Canada, Japan, South Korea, EPC [Germany, Great Britain, France, Italy, Sweden, and Belgium])
- [2] Ball, J.H., Sheth, P.N., and **Rouch, K.E.** (1986), Damped Dynamic Vibration Absorber, United States Patent 4,583,912.

**RESEARCH COLLABORATORS**

All Collaborators are Graduate Students Listed below

**GRADUATE STUDENTS (Total of 18 MS graduates, 9 PhD graduates)**

**Students Advised Over the Last Five Years**

Saruhan, Hamit, PhD 2002, *Design Optimization of Rotor-Bearing Systems using Genetic Algorithms* (currently faculty member, the Abant Izzet Baysal University, Turkey)

David Spears, MS 2002, *Stepper Motor Dynamics* (currently engineer Deere & Co.)

Milos Milacic, PhD May 2000, (co-advisor), *Neuro-Fuzzy Control of Weld Penetration in Laser Welding by Monitoring Diverse Signals*

John R. Baker, PhD, May 1999, *Stability Analysis of Machining Systems with Emphasis on Structural Effects* (Currently Associate Professor University of Kentucky).

Ruhe, Thomas R., MS 1999, *Reduction of Paper Picking Force Using Robust Design Methods* (Currently engineer with Hewlett-Packard)

Kulkarni, Vijay, MS 1999, (currently PhD student University of Kentucky)

Heather Beardsley, PhD 1998 (Co advisor), *Controlling Heat and Mass Transfer for Droplet-Based Rapid Prototyping*

Carlo Roso, PhD, December 1997, *Design Optimization of Rotor-Bearing Systems for Industrial Turbomachinery Applications* (Currently President Mechcon, Inc.)

McIntyre, James, MS, 1997, *Finite Element Analysis and Control Simulations In A Machine Tool*, (currently engineer with Lexmark, Inc., Lexington, KY)

**GRADUATE ADVISOR**

PhD Advisor: J.S. Kao, Marquette University

MS Advisor: J.B. Liljedahl, Purdue University

**CURRENT FUNDING**

- (a) *Development of Metrics, Metrology and a Framework for Product-Process Ontology for Interoperability in Model-Based Sustainable Manufacturing*, NIST, \$1,499,935, 2010-12 (Co-PI).