

Curriculum Vitae

Robert L. Hoekstra
Department of Industrial Engineering and Management Systems
College of Engineering
University of Central Florida
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I Background

Education

- Ph.D. College of Engineering, University of Cincinnati, 1992
Dissertation: *Design for Assembly*
- M.Des. Master of Design, School of Design, Art, Architecture, and Planning,
University of Cincinnati, 1988
- A.B. General, Major: English, Calvin College, 1969

Employment History

Academic Positions

University of Central Florida

- 2014 – Present Associate Professor, School of Visual Arts and Design
Teaching, research and service
- 1998 - Present Associate Professor, Industrial Engineering & Management Systems
Teaching, research and service as detailed below
- 1995- 2010 Laboratory Director, Engine Research Laboratory
Designed the facility, directed equipment installation, manage operating budget and direct laboratory personnel
- 1993 - 1997 Assistant Professor, Industrial Engineering & Management Systems
Teaching, research and service as detailed below
- 1993 - 1994 Program Director, Transportation Systems, Florida Solar Energy Center
Prepared research grant proposals, directed research initiatives, prepared reports and managed the fiscal operation of the program

University of Cincinnati

- 1988 - 1993 Assistant Director, Center for Robotics Research
Prepared research grant proposals, directed research and prepared reports
- 1989 - 1993 Research Associate, Material Handling Research Center, Institute for
Advanced Manufacturing Science
Prepared research grant proposals, directed research and prepared reports
- 1988 - 1990 Visiting Instructor, Department of Mechanical, Industrial, & Nuclear Eng.
Teaching in Statistics and Manufacturing
- 1990 -1992 Adjunct Associate Professor, School of Design, Art, Architecture &
Planning
Teaching in manufacturing, design, and technology

Interactive Learning Centers, Atlanta

- 1986 - 1988 Vice President Technical Studies
Developed curriculum, managed faculty, managed budget, and developed laboratories

Southern Ohio College, Cincinnati

- 1983 - 1986 Department Chairman, Robotics
Developed curriculum, managed \$2.3 million budget, directed 16 faculty,
promoted the program and recruited students, and directed regional and
national accreditation

Industrial Positions

Hoekstra Design Group, LLC, Orlando, FL

2010 – Present

Commercial, Hospitality and Residential Interior Design Services
Expert Witness Product Liability and Intellectual Property

Automation Controls Inc., Cincinnati

- 1982 - 1992 President
Consulted on automation of material handling applications

Industrial Training Inc., Grand Rapids MI

- 1982 - 1983 Vice President, Product Development
Market studies, new product concept evaluation, budgeting, and personnel

Industrial Media Inc., Grand Rapids MI

1971 - 1982 President

Contract negotiations and management, Consulting revenues in excess of 2 million dollars per year, Responsibilities included personnel, finance, product development, United States Security and Exchange Commission registration for a public stock offering.

Awards, Honors and Exhibitions

National Association of Inventors (NAI) Inducted December, 2017

UCF TIP Teaching Award March, 2014

Industrial Engineering Departmental Teaching award 2006

Sigma XI

Certificate of Appreciation, SME, William E. Weisel Scholarship Review Committee, 1997

Certificate of Appreciation Conference Vice Chair World Conference on Robotics Research ,1994

Robotics International/SME Chairman's Award, 1991

Outstanding Achievement in Public Service Films,
Film: "Pigopolis"; Client: Consumers Power
Producer, Emmy, 1979

Industrial Training Film Awards for outstanding achievement in three dimensional animation
Film: "Geometric Tolerancing"; Client: Caterpillar Tractor Co.

Moscow Film Festival, 1980

Paris International, 1980

Cine Golden Eagle, US Congressional Selected for International representation, 1979

New York International Film Festival, 1979

Chicago International Film Festival, 1979

Industrial Training Film for Outstanding achievement in Safety Films

Film: "The Great Betrayal" (Forklift Operator training); Client: Clark Equipment Co.

Cine Golden Eagle, US Congressional Selected for International representation, 1976

New York International Film Festival, 1976

San Francisco International Film Festival, 1976

Exhibitions

SVAD Faculty Show Oct 14 – Oct 30 2015

First Thursday UCF Faculty and Alumni Exhibition, Orlando Museum of Art,

Best of Show 10/15

SVAD Faculty Show Oct 9 – Nov 7 2014

First Thursday UCF Faculty and Alumni Exhibition, Orlando Museum of Art,
Best of Show 10/14

First Thursday UCF Faculty and Alumni Exhibition, Orlando Museum of Art,
10/13

First Thursday Sculpture Orlando Museum of Art,
1/12

II Research

Grants Awarded

Co-PI Build America Grant 2006 \$140,000

Co-PI NSF Center for e-Design 2005 \$300,000

Co-PI: "Application of Concurrent Engineering and Lean Production Methods to Manufactured Housing" 2005

Co-PI: Manufactured Housing Research Alliance 2004 \$20,000

Co-PI: "Developing a Model for Infill", NSF and MIT Jan2003 – Dec. 2004, \$150,000

PI: "Dodge Motorsports Preliminary Research, Damieler Chrysler, Jan – Dec, 2003, \$50,000

PI: " High Torque Density Electric Traction Motor", SBIR - Phase II Subcontract, J. Vidja Primary contractor, TACOM, 1997 - 1998 \$35,000

PI: "An Integrated Hydrogen Energy System for "Niche" Markets in Florida, 5/1/97 - 2/1/98, United States Department of Energy, \$10,000

PI: "Demonstration of Alternative Fuels, U.S. Department of Energy, 1997, \$32,000

PI: "A Demonstration of Hydrogen-Methane Mixed Gas Vehicles", Florida Energy Office, 9/1/94 - 6/1/96, \$210,000

PI: " High Performance IC Engine Analysis Using Non-linear Dynamics, EIES/UCF, 9/1/93 - 9/1/94, \$10,000.

Co-PI: "Crown Victoria High Hydrogen Ratio Evaluation", NASA Kennedy Space Center, 8/1/94 - 8/1/95, \$40,000

PI: "Comparative Evaluation of Driveability of Vehicle Fuels on Gasoline and HY-TEST", EG&G, 8/1/94 - 12/31/95 \$55,000

PI: "Evaluation of Hydrogen-Methane Blends", UCF, Department of Sponsored Research, 9/1/94 - 6/1/95 \$6,300

Support for Engine Research Laboratory

PI: "Smoke Yunick Foundation, 2003, \$3,000

PI: "Sprintron", Diamond Racing, 2002, \$65,000 (In kind)

PI: "Motoring Dynamometer (Smoketron)", Smokey Yunick, 2001, \$500,000(In Kind)

PI: "Advanced Engine Modeling", Harley Davidson, 2000, \$25,000

PI: "Engine Modeling Using RSM", Harley Davidson, 1999, \$12,500

PI: "Evaluation of Supersonic Pulses in High Performance Engines", Penske Racing South, 1998, 25,000.00

PI: "Evaluation of In-cylinder Pressures in High Performance Engines", Penske Racing South, 1997, \$10,000.00

PI: "Investigation of Cam and Cylinder Head Designs", Harley Davidson, 1997, \$17,000

PI: "In-cylinder Pressure Measurements for Ignition Timing Optimization", Penske Racing, 1997, \$10,000

Co-PI: "A Study of Emissions from Hydrogen Methane Blends", Ford Motor CO. 1994, \$1,000,000. (In kind)

PI: "High Performance Engine Research" Oliver Racing Co., 1994, \$10,000

PI: "Comparative Study of High Performance Engines", Holley Inc., 1994, \$5,000

Journal Refereed Publications

Sola, E, Hoekstra, R, Fiore, S, McCauley, P. An Investigation of the State of Creativity and Critical Thinking in Engineering Undergraduates Creative Education, 2017

Kotnour, T., **Hoekstra, R.**, Reilly, C., Knight, R., Selter, J. Infusing Leadership Education in the Undergraduate Engineering Experience: A Framework From UCF's eli². Journal of Leadership Studies, Vol 7, Number 4, 2014

Mullens, M., Armacost, R., **Hoekstra, R.**, Arif, M., Gawlik, T. Axiomatic Based Decomposition For Conceptual Design, Production and Operations Management Fall 2005

Hoekstra, R., Van Blarigan, P., Mulligan, N. (May 1996) *Nox Emissions and Efficiency of Hydrogen, Natural Gas, and Hydrogen/Natural Gas Blended Fuels*, Society of Automotive Engineers (SAE #961103) (Accepted for SAE Transactions)

Hoekstra, R., Collier, K., Mulligan, N., Chew, L. (May 1995) *Experimental Study of a Clean Burning Fuel* International Journal of Hydrogen Energy

Hoekstra, R., Shell, R., Hall, E. *A Comparative Study of Axiomatic and Analytical Methods of Design for Assembly*. SME Transactions on Robotics Research, 1993

Archived Refereed Publications

Dvorak, T., Malone, L., **Hoekstra, R.** (2003) *Statistical Process Control and design of Experiment Process Improvement Methods for the Powertrain Laboratory* (SAE 2003-01-3208)

Dvorak, T., Rohrer, R., Lamb, P., **Hoekstra, R.**, Meyer, R. (2003) *Non-Constant Variance-Emission Modeling Methods for Offline Optimization and Calibration of Engine Management Systems* (SAE 2002-32-0010) (Society of Automotive Engines of Japan 20034310)

Dvorak, T., **Hoekstra, R.**, Pet-Armacost, J. (December 2003) *Improving Exhaust Header Performance with Multiple Response Surface Methods*, Society of Automotive Engineers (SAE#2003-01-1389)

Newman, C., **Hoekstra, R.** (December 2000) *Optimization of the Air-Fuel Distribution In a NACAR Winston Cup Restrictor Plate Engine*, Society Of Automotive Engineers SAE

Towers, J., **Hoekstra, R.** (December 1998) *Engine Knock, A Renewed Concern in Motorsports - A Literature Review*, Society of Automotive Engineers (SAE #983026)

Dvorak, T., **Hoekstra, R.** (December 1996) *Optimizing Internal Combustion Engine Performance using Response Surface Methodologies*, Society of Automotive Engineers (SAE #962525)

Collier, K., **Hoekstra, R.**, Mulligan, N., Jones, C., Hahn, D. (February 1996) *Untreated Exhaust Emissions of a Hydrogen-Enriched CNG Production Engine Conversions*, Society of Automotive Engineers (SAE #960858)

Chew, L., **Hoekstra, R.**, Nayfeh, J., Navedo, J. (December, 1994) *Chaos Analysis of In-Cylinder Pressure Measurements*, Society of Automotive Engineers (SAE #942486)

Books and Book Chapters

Hoekstra, R. (1986) Robotics and Automated Systems Cincinnati, OH: South-Western

Nnaji, B., **Hoekstra, R.** (Eds.).(1992) Transactions of Robotics International/SME Dearborn, MI: Society of Manufacturing Engineers

Hoekstra, R. (1986) *Robotics technician training in two-year colleges*. In T.M. Husband (Ed.), Education and Training in Robotics (pp. 139 - 144) .IFS Publications Ltd, UK

Proceedings and Technical Reports

Refereed Proceedings

Meza, K.I., Crumpton-Young, L.L., Geiger, C.D., **Hoekstra, R.L.**, Schubert, D.T., Babb, D.T., *The Development of a Conceptual Design Environment to Support User Centered Design Considerations*, Proceedings of the International Conference on Design Principles and Practices, Imperial College London University, London, England, Jan. 4-7, 2007

Dvorak, T., Rohrer, R., Malone, M., **Hoekstra, R.** Deploying Quality Methods in the Powertrain Laboratory, ASQ First Annual Quality Paper Symposium, Livonia Michigan, February, 2003

Hoekstra, R. Cooper, D. Collier, K. Mulligan, N. Keely, D., *Vehicle Emissions of a Hydrogen-Enriched Compressed Natural Gas* Air & Waste Management Association, 88th Annual Meeting & Exhibition, June 18-23, 1995

Hoekstra, R., Shell, R., Hall, E. *A Comparative Study of Axiomatic and Analytical Methods of Design for Assembly*. 5th World Conference on Robotics Research, Cambridge. September 1994

Hoekstra, R., Collier, K., Mulligan, N. *Demonstration of Hydrogen Mixed Gas Vehicles*. 10th World Hydrogen Conference, Cocoa Beach, June 1994

Non-Refereed Proceeding

Mullens, M., **Hoekstra, R.**, Armacost, R., *Using a Service Learning Strategy to Enhance a Course in Concurrent Engineering*, Proceedings of the 2000 ASEE Annual Conference and Exposition, St. Louis, MO, June 2000. Accepted for publication

Arif, M., Mullens, M., Armacost, R., **Hoekstra, R.**, *Sequencing Partitioned Functional Requirements in New Product Design*, Industrial Engineering Research '99 Conference Proceedings, Phoenix, May, 1999.

Collier, R., Mulligan, N., **Hoekstra, R.** *Florida Solar Energy Center's Hy-Test Vehicle Program*. 6th Annual U.S. Hydrogen Meeting, Alexandria. March 1995

Hoekstra, R. Mulligan, N. *Demonstration of Hydrogen Methane Gas Vehicle* Engineering Society of Detroit, Environmental Vehicles Conference & Exposition, January 23 - 25, 1995

Hoekstra, R. Collier, K. Mulligan, N. Chew, L., *Experimental Study of a Clean Burning Vehicle Fuel* 1994 Annual International Conference on Industry, Engineering, and Management Systems, Proceedings of the First International IEMS Conference, March 14 - 16, 1994

Hoekstra, R., Shell, R., Hall, E., Slutzky, G. *Evaluation and Enhancement of Fragile and Perishable Product Handling, Transport and Storage*. Material Handling Research Center, January 1994

Collier, K., **Hoekstra, R.**, Mulligan, N. *Demonstration of Hydrogen Mixed Gas Vehicles*, Brevard Technical Journal, 1994

Hoekstra, R., Collier, K., Mulligan, *Demonstration of Hydrogen Mixed Gas Vehicles*, 10th World Hydrogen Conference, Cocoa Beach, June 1994

Hoekstra, R., Collier, K., Mulligan, N. *System Development for Alternative Fuel to Reduce Automotive Emissions.* IEMS '94, Cocoa Beach, March 1994

Hoekstra, R., *Design for Assembly; An Automated and Analytical Method,* SME, 1989

Technical Reports

Mullens, M., **Hoekstra, R.,** Nahmens, I., and Martinez, F., *Water Intrusion in Central Florida Homes During Hurricane Jeanne in September 2004,* Report to U.S. DOE, University of Central Florida Housing Constructability Lab, August 2006

Hoekstra, R., Cooper, D. "Evaluation of Effects on Fuel type in City Busses" LYNX, December 2000

Hoekstra, R., Collier, K., Mulligan, N. *Demonstration of Hydrogen Mixed Gas Vehicle"* Florida Energy Office/Department of Energy Report, January 1, 1994

Hoekstra, R. *Competitive Analysis of the Stock Ford 302, the GT40 and the Edelbrock High Performance Package,* Holley Replacement Parts Division Report, 1994

Hoekstra, R. *Competitive Analysis of Torco Oil, Pennzoil, Mobil One and Various Oil Additives,* Torco Oil Co. 1994

Conference Presentations

Dvorak, T., **Hoekstra, R.** *Optimizing Internal Combustion Engine Performance using Response Surface Methodologies,* 1996 Motorsports Engineering Conference, Society of Automotive Engineers, Dec. 1996

Hoekstra, R., Cooper, D., Collier, K., Mulligan, N. Keely, D., *Vehicle Emissions of a Hydrogen-Enriched Compressed Natural Gas Air & Waste Management Association, 88th Annual Meeting & Exhibition,* June 18-23, 1995

Collier, R., Mulligan, N., **Hoekstra, R.** *Florida Solar Energy Center's Hy-Test Vehicle Program.* 6th Annual U.S. Hydrogen Meeting, Alexandria. March 1995

Hoekstra R., Collier K., *Demonstration of Hydrogen Gas Vehicles.* Environmental Vehicles 95 Conference of the Engineering Society of Detroit, January 1995

Hoekstra, R., Shell, R., Hall, E. *A Comparative Study of Axiomatic and Analytical Methods of Design for Assembly.* 5th World Conference on Robotics Research, Cambridge. September 1994

Hoekstra, R., Collier, K., Mulligan, N. *Demonstration of Hydrogen Mixed Gas Vehicles.* 10th World Hydrogen Conference, Cocoa Beach, June 1994,

Hoekstra, R., Collier, K., Mulligan, N. *System Development for Alternative Fuel to Reduce Automotive Emissions.* IEMS '94, Cocoa Beach, March 1994

Hoekstra, R., *Alternative Fuels Research* Industrial Engineering Conference, Cocoa Beach, March 1994

Invited Lectures and Seminars

Harris Corp Engineering Creativity 2014

NASA Kennedy Space Center Exploring Creativity for Scientists and Engineers 2012

"Rotodyne, A Constant Volume Burn Combustion Engine", TARDEC Warren MI
Nov, 2006

"Extracting Information from Dyno Data" 2001 Circle Track Exposition, Daytona Beach, Feb. 2001

"Applications of RSM to Engine Development" Advanced Engine Research Conference, Colorado Springs, 1997

"Recent Developments In Alternative Fuels", IEMS Research Colloquium, 1996

"Alternative Automotive Fuel", SAE International, North Florida Section, Orlando, October 1995

" Technical Writing for Dissertations and Theses", Mechanical Engineering Graduate Seminar, 1995

"Design for Assembly", Asia-Pacific Research Centre, Singapore, 1992 & 1993

"Axiomatic Design for Assembly", Eastec Conference, 1990

"Applications of Axiomatic Design", Westec Conference, 1990

"Axiomatic Product Design", International Manufacturing Conference, 1990

"Axiomatic and Analytical Design Techniques", International Machine Tool Conference, 1990

"Robotics Education in Technical Schools", Illinois Association of Industrial Arts Teachers, 1986

III Patents

Wheelchair table with ergonomic aid, **Robert L. Hoekstra**, Michael Mullens. May 25, 2004 Patent No. 6,739,653

Wheelchair table with ergonomic aid, **Robert L. Hoekstra**, Michael Mullens. September 17, 2002 Patent No. 6,450,570

Garden table, **Robert L. Hoekstra**, Michael Mullens. May 28, 2006 Patent No. 6,394,006

Hydrogen Enriched Natural Gas as a Clean Motor Fuel, Robert K. Collier, **Robert L. Hoekstra**, Neal Mulligan, Douglas Hahn, Patent Issued August 26, 1997. US Patent # 5,660,602 and Foreign related patents

Hydrogen enriched natural gas as a motor fuel with variable air fuel ratio and fuel mixture ratio control, Robert K. Collier, **Robert L. Hoekstra**, Neal Mulligan, Douglas Hahn, Patent Issued August 4, 1998. US Patent # 5,787,864 and Foreign related patents

Hydrogen enriched natural gas as a motor fuel with variable air fuel ratio and fuel mixture ratio control, Robert K. Collier, **Robert L. Hoekstra**, Neal Mulligan, Douglas Hahn, Patent Issued September 16, 1997. US Patent # 5,666,923 and Foreign related patents

IV Teaching

Dissertations, Theses and Research Reports Supervised

Sola, E *An Experimental Investigation of the Effects of Short- versus Long-Term Creativity Training on the Innovation Potential of Undergraduate Students*, Ph.D. Dissertation, December 2016

Dollhopf M. *NASCAR Restrictor Plate Exhaust Manifold Design Strategies* Thesis 2004

Gross, J. *WAVE Modeling of a NASCAR Restrictor Plate Engine* Thesis 2004

Gau, S. *Optimization of a High Speed Valve Train Using Response Surface Methodology*, Research Report March 2004

Verte, L. *Designing a High-Speed, Lightweight Racing Connecting Rod for a NASCAR Winston Cup Engine Using FEA*, Research Report, Dec 2003

Thimatariga, R. *Effects of Fuel temperature on Racing Engine Performance*, Nov. 2002

Todd Dvorak, *Robust Parameter Design and Multiple Objective Search Techniques for Robust Surface Methods*, Ph.D. Dissertation, Dec. 2000

Brian Brace, *An Optimized Design and Manufacturing Analysis of a High Performance Automotive Rocker Arm*, Master's Thesis defense July, 1997, Graduation Dec. 1997

Jorge Calderon, *An Evaluation of a Communication Model, Access Control, Topology and Protocol for the Development of an Asynchronous Host Communication Interface*, Master's Thesis, April, 1995

Committee Member

Mohammed Arif, *The Impact of the Objective Function on Product Design Problem Decomposition When Using Network Partitioning*, Master's Thesis, December, 1998

Purnima Panathula, *A Risk Analysis of a Customer-Supplier Partnership in a "Ship - On - Demand" JIT System*, Master's Thesis, April, 1997

Ravindran Sundaram, *Investment Casting Using Stereolithography: Case of Complex Objects*, Master's Thesis, July, 1996

Thomas Gawlik, *A Methodology for Facilitating Axiomatic Design Using Network Partitioning*, Ph.D. Dissertation, April, 1996

Kumaraguruparan Singarajan, *Markovian Approach to Cost Benefit Analysis in the Allocation of Resources for Process Improvement in a TQM Environment*, Master's Thesis, August 1994

Raghavender Nippani, *A Two Phase Methodology for Evaluating Conceptual Designs*, Master's Thesis, August, 1994

Courses Taught

University of Central Florida

Graduate Courses

Innovation in Engineering Design (Sp 2012, 2013,2014)
Vehicle Dynamics(Sp 01, Su 03)
Manufacturing Systems Engineering (Sp 03, Fall 02, Sp 00, Sp 99, Sp 98, Sp 97, Sp 96)
Precision Engineering (Fall 02)
Vehicle Dynamics (Sp 01, SU 03)
Concurrent Engineering (Sp 00,Sp 99, Sp 98, Sp 97, Sp 96)
Robotics and Automated Systems (Fall 96, Su 95)
Computer Numerical Control (Su 94)
Internal Combustion Engine Analysis and Optimization (Fall 99,Fall 98, Su 96, Su 97, Fall 97)
Metrology (Fall 98, Fall 97)
Advanced and Nontraditional Manufacturing (Sp 00)
Experimental Methods for IC Engines (Su 99, 00, 01,02,03)
Computer Control of Manufacturing Systems (Su 99)

Undergraduate Courses

Manufacturing Processes (Fall 99, Fall 98, Fall 96, Sp 96, Fall 95, Fall 94)
Computer-Aided-Manufacturing (Su 98, Su 95)
Concurrent Engineering (Sp 97, Sp 96)
Statistics (Sp 98)
Engr. Administration (Su 99)

University of Cincinnati

Undergraduate Courses

Manufacturing Processes

Technical Physics
Statistics I
Statistics II

Southern Ohio College

DC Electricity
AC Electricity
Transistor Theory and Circuit Design
Digital Logic
Microprocessor Interfacing
Robotics
Programmable Controllers

V Service Activities

Committees and Affiliations

Committees at UCF

Engineering Leadership Institute 2009 - Present

Undergraduate Curriculum 2000 - Present

R&D Shop Committee Chair, 2000 – Present

IE Personnel Committee 2001 - 2003

IE Faculty Search Committee, 1999

External Relations, College Engineering, 1995 - 2009

Manufacturing Program Development, 1995 - 2009

Industrial Engineering Research Committee, 1995 - Present

PEW Foundation for Higher Education, 1997

External Committees

Journal of Design and Manufacturing, Referee, 1994-1996

Universita' Degli Studi Di Cassino, Department of Di Ingegneria Industriale, HYPOTESYS
Conference, Referee, 1995

Board of Directors, Robotics International of the Society of Manufacturing Engineers, 1989 - 1991

William Weisel Scholarship Committee, 1986 - Present

Robotics International, Vice Chairman, Fourth World Conference on Robotics Research, 1991

Motion Control Magazine, Editorial Advisory Board, 1989- 1991

Robotics International, Robots 14 Conference, Chairman of the Refereed Paper Review Board, 1990

Control Expo, Conference Chairman, 1990

Motion Control-West, Conference Chairman, 1990

Robotics International Conference Planning Committee, 1984 - 1990

Robotics International Education and Training Division, Chairman, 1990

Robotics International Education and Training Division, Vice Chairman, 1987 - 1989

Robotics International Education and Training Division, Member, 1985 -1987

Robotics International Conference Academic Session, Chairman, 1984 -1989

Eastern Quality Conference, Chairman, 1989

Robotics International Robotics Round Table Chairman, 1987 - 1988

Robotics International Paper review committee, 1985 - 1990

International Robotics Educators Conference, Chairman, 1984-1986

Robotics International Education and Training Division, Long Range Planning Committee, 1984 - 1986

14th International Symposium on Industrial Robots, Education Forum Co-chairman, 1984

Consulting

Harley Davidson, Emissions Modeling Using RSM, 1999

ORCA/Johnson Controls/Delaware North/Kennedy Space Center, Alternative Fuel Recommendations for the Visitor Center Transit System, 1997

Orlando Sentinel, Investigation of the Rodney Orr fatal racing accident in a Dayton 500 practice session, 1994. with Dr. Desai, Mechanical Engineering.

Torco Oil Company , Analysis of Synthetic Lubricants", December 1993 - March 1994.

Proctor and Gamble; Order picking systems analysis; 1993

Chiquita Brands, Expert witness, Statistical analysis of fruit damage in ocean transport; 1993

Eagle Products, Manufacturing and management system design; 1990 - present

Champion, Welding and fabrication system design; 1983

Cincinnati Milicron, Robot installation and maintenance procedures; 1980-1983

Consumers Power, Management systems for rapid disaster response; 1979

Chrysler Corp, Blow hole analysis of casting and heat treatment line; 1978

American Motors, Preventive maintenance program; 1977

General Motors, Preventive maintenance system design; 1979

Clark Equipment Company, Fork lift safety,; 1976

Hayworth Manufacturing, Manufacturing systems design; 1976-1980

Amway Corp. Warehouse order picking analysis; 1979-1980

Caterpillar Tractor Co. Press forging line efficiency analysis; 1979

Society Membership and Licenses

ASID