GEORG F. MAUER

Professor
Department of Mechanical Engineering
University of Nevada, Las Vegas, NV

Education

Ph.D. Eng., Mechanical Engineering, Technical University of
Berlin, West Germany June 1977. Grade: Excellent with honors.

Diplom-Ingenieur (roughly equivalent to M. Sc.), Mechanical
Engineering, Technical University of Berlin, June 1970.
Professional Registration (EIT) in Washington State, 1984.

Professional Experience

Since Jan. 1986	Department of Mechanical Engineering at UNLV Promotion to Professor rank in 1995 Research areas: Intelligent Sensors incl. micro-processor-based sensors, Computer-based imaging, Robotics design and applications, Dynamic Systems Simulation and Analysis, Interactive Instruction. Distance Education	
1982 - 1985	Assistant Professor, Dept. of Mechanical Engineering, University of Washington.	
1981 - 1982	Visiting Assistant Professor, Dept. of Mechanical and Aerospace Engineering Oklahoma State University.	
1977 - 1981	Lecturer and Head of Measurements and Controls Section, Department of Electrical Engineering, University of Dar es Salaam, Tanzania.	
1971 – 1977	Research and Teaching Assistant, Institute for Measurements and Control, Technical University of Berlin, West Germany.	

Professional Societies

Member, ASME (American Society of Mechanical Engineers)
Member, ASEE (American Society of Engineering Education)
Member, ANS   (American Nuclear Society)

Consulting Experience

1. Flow Industries, Kent, WA: Development of capacitive pressure and flow transducers, May 1983 through 1986.
2. Stellartech , Cupertino, CA, 1990
3. Premier Rides Inc. 1995 – 2003
4. Phoenix International Corp. Fargo, ND, 1995 to 1996: Design and controls analysis of agricultural irrigation systems.
5. Intel Corp., Beaverton, OR, 2005 to 2007 Sensor Technologies and networking for

in-home monitoring.
6. Philips Medical Systems, Milpitas CA, 2007: Capacitive sensing and gantry robot controller design.

Research Contracts

Current Funded Research Projects:

Date	Title/ Sponsor	Amount
Dec. 2002 to Dec. 2004	Mobile Platform for Remote Hydraulic Demolition, DOE/NTS	$240,000
June 2001 to June 2004	Automatic Target Recognition DoD EPSCoR	$138,879
Project ongoing since Aug. 2001	Design and Evaluation of Processes for Fuel Fabrication, DOE/ UNLV AAA project	Annual funding at approx. $83,000 p.a. $700,000 to date
Project ongoing since June 2003	Design and Evaluation of Multi-Axis Shaker Concepts, Army Research Lab	$440,000
Jan. 2004 to May 2007	Design and Evaluation of a Remote Home Monitoring System	$160,000

Completed Research Projects

G. Mauer, PI: Mobile robot R&D for spot remediation in open terrain.
Funded by: DOE Nevada Operations Office Las Vegas, NV, $120,000 (1996 to 1998). DOE.

G. Mauer, PI: Design and Testing of Remote Imaging Apparatus for a High Temperature Environment: Implementation Funded by: CRWMS M&O Contractor (TRW, Yucca Mountain Project), $50,000, October 1997. .

G. Mauer, PI: Design and Testing of Remote Imaging Apparatus for a High Temperature Environment. Funded by: CRWMS M&O Contractor (TRW, Yucca Mountain Project),$113,600. funded in Jan. '97. .

G. Mauer, PI: "Design of pavement trimmer control and safety systems for contaminated soil removal", continuation of project funded by DOE - Nevada Operations Office, Las Vegas. $8,000 continuation funding, 6/95 to 9/95. DOE .

G. Mauer, PI: "Design of pavement trimmer control and safety systems for contaminated soil removal", continuation of ongoing project funded by DOE - Nevada Operations Office, Las Vegas. $74,000 continuation funding, 1/94 to 9/94. DOE .

G. Mauer, PI: Design of pavement trimmer control and safety systems for contaminated soil removal", funded by DOE - Nevada Operations Office, Las Vegas. Amount: $50,000. 4/93 to 12/93. DOE .

G. Mauer, PI: "Interactive Control System Design Laboratory" The project comprises the design and installation of eight computerized data acquisition and control experiments covering a variety of typical control engineering problems. Funded by NSF and UNLV matching funds, Total award: $69,764, July 1991. Peer reviewed at NSF.

G. Mauer, PI: "Equipment for pavement trimmer control and safety systems for contaminated soil removal." April 1993. Amount awarded: $25,000. DOE .

G. Mauer, PI: "Equipment for pavement trimmer control and safety systems for contaminated soil removal." Amount awarded: $50,000. DOE .

"Modeling, Simulation and Time Optimal Control of Robotic Mechanisms Containing Multiple Elastic Linkages," Research Contract awarded by the US Army Research Office in Nov. 1986. $1.35million. Earmark funding.
Research area in the project: Sensors and real-time digital robot control.

"Development of a Low-Cost, Non-Intrusive Torque Transducer" SBIR Phase I contract awarded by the US Army, Tank-Automotive Command, $62,000, July 1986 - Jan. 1987, PI: Georg Mauer.

"A Transducer for the Measurement of Rapid High Pressure and Temperature Transients in an Underwater Bubble." Awarded to Stellartech, Inc., Cupertino, CA. Funded by the US Navy, SBIR Program, $50,000. March to July 1990.

"An Imaging Proximity Sensor and a Transducer for Rapid Automated Determination of Surface Quality and Surface Defects", SBIR Phase I contract awarded by NSF, February to June 1987, $40,000. PI: Georg Mauer.

"Development of a Low-Cost, Non-Intrusive Torque Transducer" SBIR Phase II contract awarded by the US Army, Tank-Automotive Command, Aug. 1987 to Sept. 1991, $206,000, PI: Georg Mauer.

Development of a Pressure Transducer for Usage in High Vibration Environments, Funded by the US Air Force through the SBIR-program, Amount $59,960, in cooperation with Flow Industries, Kent, WA. Duration from 9/83 to 3/84.

Development of a Differential Pressure Transducer for Usage in High-Temperature and Vibration Environments (Continuation of SBIR research listed above). In cooperation with Flow

Industries, Kent, WA. Amount: $234,562, from 10/84 to 9/86.

Development of a Dynamic Pressure Probe for Flow Measurements at Combustion Temperatures. Funded by Dept. of Energy, SBIR program. In cooperation with Flow Industries, Kent, WA. Amount of Grant: $49,987. Duration: Oct. 84 to March 85.

Development of a Pressure and Temperature Transducer for 700 MPa explosive Environments, funded by the US Army, SBIR Program, in cooperation with Flow Industries, Kent, WA. Amount: $50,000. Oct. 1986 to March 1987.

Sensor Development for Automated Inspection, Funded by Boeing Commercial Airplane Co., Co-Investigator, Amount $29,593, Duration 1/1/83 to 12/31/83.

Development of a Surface Finish and Diameter Probe System for the Automated Inspection of Drilled Holes, Funded by Boeing Commercial Airplane Co., Co-Principal Investigator, Amount $79,527, Duration from 1/84 to 3/85.

A Study on the Improvement of the Electromagnetic Riveting Process, Funded by Boeing Commercial Airplane Co., Principal Investigator, Amount $58,664, Duration from 1/84 to 12/84.

Composite Layer Gap Measurement using a Capacitive Surface Image Array. Funded by Boeing Commercial Airplane Co., Seattle. Amount: $29,563. Duration: Nov. 15, 1984 to June 15, 1985. PI's: J. L. Garbini, G. F. Mauer, J. E. Jorgensen.
Development of a Low Voltage Electromagnetic Riveter, funded by Boeing Commercial Airplane Co., Seattle WA, Investigators: J. E. Jorgensen, G. F. Mauer, J. L. Garbini. Amount of Grant: $69,831. Duration: Jan. 1, 1985 to Sept. 31, 1985.

Professional Service

      Reviewer, Nevada DOE EPSCoR, in October 1999
      Reviewer, NSF Panel review session, June 2000
      Reviewer, IEEE Journal of Fuzzy Logic
      Reviewer, ASEE Proceedings
      Book reviewer: John Wiley Publishers.
      SAE (Soc. Of Automotive Engineers) Speaker
      Invited Speaker at local societies (Las Vegas Exchange club, Lions club, Colorado River Commission et al.
      Conference Organizer, ANS 2007 ANS Topical Meeting on Decommissioning, Decontamination, & Reutilization.

University and Community Service

Faculty senate committees
Member, Graduate School Curriculum Committee
Chair, Faculty Senate Budget committee
Chair, Faculty Senate Leadership Assessment committee
Member, Academic Standards Committee.
Member, VP Research Search Committee.

College of Engineering:
Chair, College Computing Committee
Chair, Academic Affairs committee
Nasa Space grant representative for the engineering college

Department of Mechanical Engineering: Member or chair of several committees
Creation of innovative laboratory upgrades: MEG 421L (Automatic controls lab) and of the new MEG100L (Undergraduate robotics lab). The undergraduate robotics lab together with the new introduction to mechanical and Aerospace engineering course (MEG100), designed for distance education, course enrollment has approximately tripled in comparison to enrollments before 2002.

Theses Directed

M.Sc. graduations completed

Yasoda Krishna Prasad Dhulipalla (2007) "Design And Spectral Analysis Of A Six-Axis Shaker System," advisor, RA (Research Assistant) support from funded grant.

Brinda Holur Venkatesh (2006) "Modeling Concepts and Validation for Electrodynamic Shaker Design"), advisor, RA (Research Assistant) support from funded grant.

Kofi Cobbinah (2005) "LV Senior Lifeline Project: In-Home monitoring Technology" , advisor, RA support from funded grant

Jamil Renno (2005) "Three Dimensional Modeling and Simulation of Manufacturing Processes for Transmuter Fuel Fabrication" advisor, RA support from funded grant

Bharata Viswanadha "Multiple Object recognition and retrieval using Puma Robot" (2000), advisor, RA support from funded grant

Richard Silva (2004) "3D Modeling and Simulation of Manufacturing Processes for Transmuter Fuel Fabrication", advisor.

Chanaka Fernando "Remote Imaging of Environmental Conditions in an Underground Storage Tunnel for High-Level Waste," (1998), advisor, RA support from funded grant

Kalyan Pattisam "Navigation of a Mobile Robot Incorporating Trinocular Vision for Range Imaging " (1998) , advisor, RA support from funded grant

Kumar Devarajan "Object Identification For Robotic Applications
Using Expert Systems "(1996) , advisor, RA support from funded grant

Raveen Abhishetty "On-line tracking of Moving objects form Moving Platforms" (1994) , advisor, RA, support from funded grant

James Porrazzo "Pavement trimmer for Contaminated Soil Removal" (1994) , advisor, RA, support from funded grant

Dr. Mauer was a committee member or grad. college representative on approximately 30 additional Master's and Ph.D. examinations.

Ph.D. graduation completed

Jae-Kyu Lee	3-D Object recognition (2003) ,advisor, RA support from funded grant, advisor, RA, support from funded grant

Refereed Journal Publications

G. Mauer "Combining interactive Modeling with Experiments in a Control Laboratory," Computers in Education Journal, ASEE, p. 40-45, 1996.

G. Mauer "A Fuzzy logic controller for an ABS braking system," IEEE Trans. on Fuzzy Systems, pp. 381-388, November 1995.

G. F. Mauer "On-Line Determination of Available Torque in Internal Combustion Engines," SAE Transactions, J. of Engines, pp. 177-182, 1991.

G. F. Mauer: "On-line Cylinder Fault Diagnostics for Internal Combustion Engines," IEEE Trans. on Industrial Electronics, Vol. 37, No. 3, pp. 221-226, June 1990.

G. F. Mauer and R. J. Watts: "Combustion Engine Performance Diagnostics by Kinetic Energy

Measurement," ASME Transactions, Journal for Gas Turbines and Power, Vol. 112, pp. 301-307, July 1990.

G. F. Mauer: "An End Effector Based Imaging Proximity Sensor" J. of Robotic Systems, Vol. 6 No. 3, pp. 301 - 316, June 1989.

G. F. Mauer and R.F. Watts: "On-Line Cylinder Diagnostics on Combustion Engines by Non-Contact Torque and Speed Measurement", 1989 SAE Transactions, pp. 123-130 (SAE paper No. 890 485).

G. F. Mauer, J. L. Garbini and J. E. Jorgensen: "A Sensor for the On-Line Measurement of Drilled Hole Dimensional Parameters," Int. J. Prod. Res. 1986, Vol 24, No. 4, 859-868.

G. F. Mauer: "A Transducer for the Measurement of Pulsatile Air Flow in High Vibration Environments," SAE Transactions 1985, (SAE Paper No. 840139).

J. L. Garbini, L. J. Albrecht, J. E. Jorgensen, G. F. Mauer "In-Process Surface Profilometry Based on Fringing Capacitance Measurement", ASME Transactions, Journal of Dynamic Systems, Measurement and Control, Vol. 107, pp. 192 - 199, September 1985.

Mauer, G.F. and Th. Gast: "Ein gravimetrischer Vorabscheider für die Ermittlung der lungengängigen Staubfraktion," Staub, Reinhaltung der Luft, 38 (1978) No. 5, pp. 177 - 179.

Book Articles
G. F. Mauer: "Remote Controlled Mobile Imaging in a High Temperature Tunnel Environment)," in: Instrumentation and Control, C. L. Nachtigal Ed., J. Wiley and Sons, New York, 2001 ed.

G. F. Mauer: "Capacitive Transducers (Displacement, Force, Acceleration and Pressure)," in: Instrumentation and Control, C. L. Nachtigal Ed., J. Wiley and Sons, New York, 1990.

Refereed Conference Proceedings

Georg F. Mauer (2007) "Mobile Robot Design in an Introductory Engineering Course," Proc. ASME Congress, Seattle, WA, Nov. 2007

Georg F. Mauer (2007) "Design and Evaluation of Multi-axis Vibration Shaker Concepts," Proc. ASME Congress, Seattle, WA, Nov. 2007

Georg F. Mauer (2007) "Accuracy Analysis of a Robotic Mapping System," Proc. ANS 2007

ANS Topical Meeting on Decommissioning, Decontamination, & Reutilization, Chattanooga, TN.

Georg F. Mauer and Chris Kawa (2007) "Accuracy Analysis of a Robotic Radionuclide Inspection and Mapping System for Surface Contamination," Proc. Waste Management 2007 conference, Februry, Tucson, AZ.

Georg F. Mauer (2006) "Equipment Redundancy and Plant Reliability in Robotic Hot Cells for Fuel Fabrication," Proc. ANS Winter Annual Meeting, Albuquerque, NM.

Georg F. Mauer, Ph. D. and Yasoda Krishna Dhulipalla (Grad. Student) "Finite Element Modeling and Validation for a Six-Axis High-Frequency Vibration Shaker System," Proc. Saviac Conference, Nov. 2006, Monterey, CA

Georg F. Mauer and Chris Kawa (2005) "Automated Inspection And Mapping Of Radionuclide Contamination On Building Surfaces" Proc. Waste Management '05 Conference, February 27-March 3, 2004, Tucson, AZ

Costa Michael ,   Cobbinah Kofi, Dishongh Terry,   Mauer Georg (2005) "SENSORS PACKAGING, APPLICATIONS IN UNCONTROLLED ENVIROMENT OF AN ELDERLY HOME" Proc. Of The ASME/Pacific Rim Technical Conference and Exhibition on Integration and Packaging of MEMS, NEMS, and Electronic Systems", July , San Francisco, CA, USA

Costa Michael ,   Cobbinah, Dishongh Terry,   Mauer Georg (2005) "SENSOR NETWORK TRANSMISSION AND RELIABILITY IN UNCONTROLLED ENVIROMENT OF AN ELDERLY HOME" Proc. Of The ASME/Pacific Rim Technical Conference and Exhibition on Integration and Packaging of MEMS, NEMS, and Electronic Systems", July , San Francisco, CA, USA

Georg F. Mauer and Brinda Venkatesh (2005) "Design and Evaluation of Multi-Axis High-Frequency Vibration Shaker Systems", Proc. 2005 SAVIAC Conf. Nov, Sandestin, FL

Georg F. Mauer and Jamil Renno (2004) "Virtual Testing of Robotic Assembly Processes for Hot Cells," Proc. Of 10th International Conference on Robotics & Remote Systems for Hazardous Environments, March.

Georg F. Mauer and Jamil Renno (2004) "Conceptual Workcell Design and Throughput Analysis for Robotic Transmuter Fuel Fabrication," Proc. American Nuclear Society Winter Annual Meeting, November.

Georg F. Mauer: (2004) "Design Concepts and Process Analysis for Transmuter Fuel Manufacturing," Proc. 8th Partitionin an Transmutation Information Exchange Meeting,organized by the OECD Nuclear Energy Agency, November.

Georg F. Mauer and Jamil Renno (2003) "Design and Analysis of Robotic Manufacturing Processes," Proc. American Nuclear Society Winter Annual Meeting, November.

Georg F. Mauer: "Hands-On Robot Design in an Introductory Engineering Course," Proc. ASEE 2003 Annual Conference, Nashville.

Georg F. Mauer (2002) "Design and Evaluation of Processes for Transmuter Fuel Fabrication," Proc. American Nuclear Society Winter Annual Meeting, November.

Georg F. Mauer (2002) "Object Recognition Over An Expanded Range Of Viewing Angles Using Indexing Methods," Proc. CAINE 2002 conference, San Diego, November.

Georg F. Mauer: "An Interactive Control System Laboratory Using Visual Basic And Vissim," ASEE 2002 Annual Conference, Montreal.

Georg F. Mauer: An Interactive Visual Environment for Scientific Problem Solving, Proc. ASEE 2001 Annual Conference, paper#572, Albuquerque.

J.K. Lee and G. Mauer "Transmuter Fuel Fabrication Processes," Presentation at ANS Student conference in Reno, NV, Nov. 2001.

G. Mauer (2001) "An Interactive Visual Environment for Scientific Problem Solving", Proc. 2001 ASEE Annual Meeting, June.

G. Mauer (2000) Non-Contact Target Acquisition and Object Identification for Robotic Grasping, Proc. 13th annual ISCA Conf. on Parallel and Distributed Computing, p. 592 - 597

G. Mauer (2000) " Versatile Instrumentation and Data Acquisition using Visual Basic," Proc. ASEE Southwest Regional Conference, April.

G. Mauer and C. Fernando (1999) **"**Remote Controlled Mobile Imaging in a High Temperature Tunnel Environment," Proc. IEEE Symp. on Real Time Systems, p. 212-213.

G. Mauer (1999) "Web Based Computer Skills Training for Freshmen Engineering Students", Proc. ASEE Western Regional Conference.

Chanaka Fernando, Georg F. Mauer (1998) "Remote Imaging of Environmental Conditions in an Underground Storage Tunnel for High-Level Waste," ANS Transactions, p. 63-66.

Mauer, G. (1997) " Pavement trimmer technology for removal of contaminated soil," Proc. of the 7th topical Meeting on Robotics and Remote Systems, April. P. 523-528.

G. Mauer and P. Chael (1996) "Automatic Target Acquisition and Real Time Motion Control for

Robots," Proceedings of the 11th ICSE Conference, Las Vegas., p. 757-762.

G. Mauer (1995) "Design of fuzzy logic compensators for complex nonlinear systems," Proceedings of the 12th ICSE (Systems Engineering) Conference, Wroclaw, Poland, September .
G. Mauer (1995) "Combining interactive Modeling with Experiments in a Control Laboratory," Proc. 1995 ASEE Annual Meeting, p. 145-151, June.

G. Mauer (1994) "Combining experiments with guided learning and problem solving: an interactive undergraduate control systems laboratory," Proc. 1994 ASEE Annual Meeting in NSF-Delos Session, p. 697-701.

G. Mauer, G. Gissinger, and Y. Chamaillard (1994) "Fuzzy Logic Continuous and Quantizing Control of an ABS Braking System," SAE Paper #940630, presented at the 1994 SAE Winter annual meeting.

G. Mauer (1994) "Modeling and Experimental Validation of Torsional Crankshaft Dynamics," SAE Paper #940830, presented at the 1994 SAE Winter annual meeting.

G. F. Mauer "Computer-Supported Controller Design with Model-Based and Fuzzy-Logic Methods," Proc. of the 1992 Colloquium on Automation and Robotics, Duisburg, October, p. 151-162.

G. F. Mauer "On-Line Performance Diagnostics for Internal Combustion Engines," Proc. of the IECON '92 IEEE Conference, San Diego, CA, November, p. 1460-1465.

A. Benhidjeb, G. F. Mauer, and G. Gissinger "Optimal Control of a Loading Crane," Proceedings of the 9th Int. Conference on Systems Engineering, Las Vegas, July 1993, p. 510-514.

G. F. Mauer "An Interactive Laboratory for Rapid Design and Testing of Control Systems," presented at the 11th ICSE (Systems Engineering) Conference, Wroclaw, Poland, September 1992.

G. F. Mauer: " Noncontact Profilometry of Manufactured Surfaces Based on Capacitive Field Measurements," Proc. 10th Int. Conf. on Systems Engineering (Sept. 1991).

G. F. Mauer: "Optimization of Fuel Consumption by Control of Individual Fuel Injectors in Internal Combustion Engines," Proc. 7th Int. Conf. on Systems Engineering (July 1990).

G. F. Mauer: "A Single Board Computer for On-Line Monitoring of Engine Condition," Proc. of the 1990 ASME conference on Computers in Mechanical Engineering.

G. F. Mauer: "On-Line Diagnostics of Cylinder Faults, Available Power, and Front Damper Condition for Internal Combustion Engines," published in the book "1989 Army Research Accomplishments," US Army.

G. F. Mauer: "Parallax-Free Pattern recognition for End Effectors," Proc. of the IAR Colloquium on Automation and Robotics, Duisburg, Germany, June 1990.

G. F. Mauer and R. J. Watts: "A Method for Cylinder-Specific Engine Fault Diagnostics," Proc. First IMMDC Conf., September 1989.

G. F. Mauer, R. J. Turner and J. Skaggs: "A PC-Based Robot Controller," SME Technical Paper MS89-313, May 1989.

G. F. Mauer and R. J. Watts: "On-Line Detection of Vibration Damper Failure in Combustion Engines," SAE paper 900487, February 1990.

G. F. Mauer: "An Imaging Sensor for Robotic Inspection and Assembly", Proc. of 3rd Int. Conf. on CAD/CAM, Robotics and Factories, August 1988.

G. F. Mauer: "Sensors and Control Strategies for Elastic Manipulator Control in Unstructured Environments", Invited Paper, 11th Colloquium on Control, Duisburg, West Germany, July 1987.

Mauer, G.F., and H.T. Liu: "A Dynamic Pressure Probe for High-Temperature Flow Measurement," Proc. of the 1987 ASME/JSME Thermal Engineering Joint Conference, 1987.

J. L. Garbini, J.E. Jorgensen, G. F. Mauer and T. O'Neill: "Use of Fringe-Field Capacitive Sensors for Surface Profilometry and Dimensional Measurement," SME Technical Paper M585-1007, 1985.

G. F. Mauer and H.-T. Liu: "High-Frequency Dynamic Pressure Measurement in the Presence of Large Temperature Variations and Vibrations," Proceedings of the 29th Heat Transfer and Fluid Mechanics Institute Conference, Sacramento, June 1985.

Patents

J.L. Garbini, L. Albrecht, J. Jorgensen, and G.F. Mauer: "Fringe Field Capacitive Sensor", US Patent Serial Number 4,814,691, March 21, 1989, and European Patent Number 0221638, January 23, 1991.

J.L. Garbini, L. Albrecht, J. Jorgensen, and G.F. Mauer: "Fringe Field Capacitive Sensor for

Measuring the Size of an Opening", US Patent Serial Number 4,935,700, June 19, 1990.