

## DERALD HERLING, PH.D., P.E.

Derald Herling, Ph.D., P.E.  
President, Herling Engineering Services, Inc.  
AFI Associates  
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### EDUCATION

<u>Degree</u>	<u>Major</u>	<u>Institution</u>	<u>Year</u>
Ph.D.	Mechanical Engineering	Oregon State University	1997
M.S.	Mechanical Engineering (minor – Material Science)	Oregon State University	1993
B.S.	Mechanical Engineering	Oregon State University	1973
B.S.	Metallurgical Engineering	Oregon State University	1973

### ENGINEERING SERVICES and CONSULTING

Accident Reconstruction and Failure Analysis, **HERLING ENGINEERING SERVICES, INC.**  
November 2004 - present  
Engineering Consultant for international oil company, **SAUDI ARAMCO.**  
July 2001 - March 2004  
Failure Analysis and consulting services in support of legal cases for Hayes and Associates.  
September 1999 - July 2001  
Assistant Professor, Department of Mechanical Engineering, Oregon State University.  
September 1997 - July 2001  
Engineering for Shedgum Gas Plant, **SAUDI ARAMCO**, operations/maintenance/engineering.  
July 1979 - September 1990  
Chief Engineer, Harris Thermal Transfer Products Inc., heat transfer and ASME pressure vessels.  
September 1973 - July 1979  
Designer/Draftsman, Blount Inc., Oregon Cutting Systems Division.  
June 1966 - September 1969

## FUNDED PROJECTS and RESEARCH

Skid Characteristics of Single Wheel braking – AFI privately funded project in collaboration with Dr. Dan Metz of Metz Engineering and Racing, December 2004 – present

Title of Project - Saudi Aramco ES Technology Innovation – Programming and commercialization of Saudi Aramco Process Automation Obsolescence Program. Started January, 2004, \$285,000. US Copyright registered pending.

Title of Project - Arthrometric Evaluation of Glenohumeral Joint Laxity and Stiffness in Patients with Documented Shoulder Instability - JOHN C. ERKKILA, M.D. ENDOWMENT FOR HEALTH AND HUMAN PERFORMANCE. Primary Investigator. Completion December, 2000.

Title of Project - Arthrometric Evaluation of Shoulder Laxity Using a 3-D Spatial Tracking System - JOHN C. ERKKILA, M.D. ENDOWMENT FOR HEALTH AND HUMAN PERFORMANCE. Co-Primary Investigator. Herling/Borsa/Sausers United States Patent #6,551,258



Completion March, 2000.

## ACADEMIC POSITIONS

Assistant Professor, Department of Mechanical Engineering, College of Engineering, Oregon State University

BIOE 499/599: Biomechanics (new course for Fall 2000)

ME 413/513: Computer-Aided Design (Pro/Engineer ver. 18 and SmartCam)

ME 412/512: Kinematic Design of Linkages (ADAMS ver. 9.0)

ME 383: Mechanical Component Design

ME 382: Mechanical Design Process

ME 306: Projects/Introduction to Pro/E

ENGR 248: Graphics and 3D Modeling (Pro/Engineer ver. 2000i)

ENGR 213: Engineering Mechanics, Strength of Materials

ENGR 212: Engineering Mechanics, Dynamics

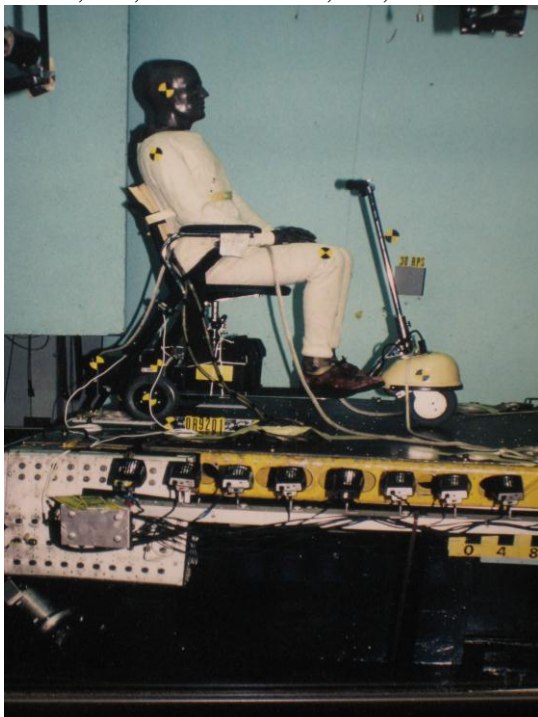
ENGR 211: Engineering Mechanics, Statics  
September, 1997 – July, 2001

Adjunct

Assistant Professor, Department of Exercise and Sports Science,  
College of Health and Human Performance, Oregon State University  
January, 2000 – July, 2001

Graduate Teaching Assistant, Oregon State University  
ENGR 213: Engineering Mechanics, Strength of Materials.  
September, 1996 - 1997

Graduate Research Assistant, Oregon State University  
Doctorate research work funded under National Science Foundation Grant: "Engineering Decision Support System".  
Design engineering experience: Mobility Aid Securement System for transit vehicles, Patents US#5,344,265/Canada#2,077,879.



September, 1990 - September, 1996

SPECIAL ACADEMICS

International Degree Advisor – Jerrod Peterson, Mechanical Engineering Thesis, expected graduation 2001 (<http://osu.orst.edu/international/oie/idp/profiles/jerrodpeterson.html>)

## CONSULTING ENGINEERING

Biomechanics for Hayes and Associates, Wilson C. 'Toby' Hayes, Ph.D. Principal – Expert Witness and Consulting Services in Biomechanics. (<http://www.hayesassoc.com>)  
September, 1999 – July 2001

## NON-ACADEMIC POSITIONS

Engineering Consultant, Process Control Division/P&CSDept., Engineering Services (ES) SAUDI ARAMCO, Dhahran, Saudi Arabia  
Responsibilities include Process Automation Focus Team Leader and leadership for ES Technology under the Research and Development Center Dept., Department Technology Coordinator, Engineering Computing Resource Center, and Company wide Innovation leadership.  
July 2001- March 2004

Special Project Engineer, Oregon State University  
Data gathering for Ink Jet Business Unit of Hewlett Packard, Corvallis plant, for newest assembly line equipment.  
Summer 1994

Specialist Unit Supervisor (executive engineering management position)  
SAUDI ARAMCO, Shedgum Gas Plant Department, Dhahran, Saudi Arabia  
Management experience: Maintenance Division supervisory, Engineering Division Inspection-Corrosion Unit supervisor, Engineering Division Specialist Unit supervisor.  
Design engineering experience: Present at Shedgum (one of the world's largest gas plants) during the last stages of construction, through start-up, and operation. Engineering specialist responsible for mechanical/piping/rotating equipment.  
([http://www.saudiaramco.com/frm\\_Operation.html](http://www.saudiaramco.com/frm_Operation.html))  
July 1979 - September 1990.

Chief Engineer, Harris Thermal Transfer Products Inc., Newberg, Oregon  
Management experience: Chief Engineer and supervisor of graduate engineers.  
Design engineering experience: Designed heat exchangers and pressure vessels to ASME and TEMA codes. Design of pressure vessels, mechanical components of heat exchangers, and thermal design of heat transfer equipment. Designed waste heat recovery equipment. Sales engineering work included some in-plant waste heat recovery analysis and heat exchanger trouble shooting. (<http://www.harristhermal.com/gallery.htm>)  
September 1973 - July 1979.

Designer/Draftsman, Blount Inc., Oregon Cutting Systems Division, Portland, Oregon  
Design engineering experience: Worked in Equipment Design Section of Plant Engineering.  
Design work on small-part, high-volume production, assembly machines.

(<http://www.teleport.com/~ocsdchn/>)

June 1966 - September 1969.

## PROFESSIONAL ACTIVITIES

### Registration

Registered Professional Engineer (Mechanical), State of Oregon #9800

### Professional Societies

American Society of Mechanical Engineers (ASME)

Society of Automotive Engineers (SAE)

Forensic Accident Reconstructionists of Oregon (FARO)

National Fire Protection Association (NFPA)

American Society for Testing and Materials (ASTM)

### Professional Recognition

ASME International – Region VIII & Oregon State University Awards Certificate, April 2001  
Regional Student Conference.

Top Prof OSU Mortar Board 1999-2000 (<http://osu.orst.edu/groups/mortarboard/TopProf.htm>)

Engineering Judge -1999 & 2000 Best Product of the Year for *Design News* magazine.

( <http://www.manufacturing.net/magazine/dn/archives/1999/dn1206.99/products.html> )

Sam Graf Scholarship from the Department of Mechanical Engineering, Oregon State University, amount \$1,000. 1997

First Place Paper Presentation in the field of Engineering at the Graduate Conference awarded from the College of Engineering, Engineering Decision Support System (EDSS), Oregon State University, Corvallis, Oregon April 28, 1995

Best Session Paper - Using a Structured Design Methodology for Designing a Securement System for Mobility Aids on Public Buses: Proceedings of Graduate Congress 93, Oregon State University, Corvallis, Oregon, April 25, 1993.

Project Action Scholarship from the Easter Seals Foundation via the Oregon State University Transportation Research Institute, amount \$1,000. 1992

### Committees, Commissions, and Boards

- Board of Directors and Corporate Secretary - Mission Builders International: part of YWAM (Youth with a mission), Colorado Springs, CO. 1997 - 2000
- Represent the department as a Graduate Student Senator 1995/96
- School year 1994/95 Oregon State University Department of Mechanical Engineering Graduate student representative to the mechanical engineering department.
- ARAMCO school board member 1986-88

### Text Book reviews

- Review Pro/ENGINEER tutorial books from various publishers (1998,1999,2000,2001)

## PUBLICATIONS

### Books

Analysing Design Activity, edited by N. Cross, H. Christiaans, K. Dorst. John Wiley & Sons, 1996. Chapter 8 - Analysis of Protocol Data to Identify Product Information Evolution and Decision Making Process by D. Ullman, D. Herling, A. Sinton.

### Articles

Realistic Rear Axle Hydroplaning during Forward Motion – SAE publication 2006-01-1560, L.D. Metz, J.R. Kinney, D. Herling

Integrating Engineering and Global Competencies: A Case Study Illustrating Oregon State University's International Degree Program, Derald Herling, Andrea Herling, Jerrod Peterson, October 10 - 13, 2001 Reno, NV 31<sup>th</sup> ASEE/IEEE Frontiers in Education Conference.

Patterns of Glenohumeral Joint Laxity and Stiffness in Healthy Males and Females. Med Sci Sports Exerc. (accepted for publication - in press expected in October 2000) Borsa PA, Sauers EL, Herling DE. (<http://www.ms-se.com>)

In Vivo Assessment of AP Laxity in Healthy Shoulders, Journal of Sports Rehabilitation vol. 8 num. 3, 157-170: 1999. Borsa PA, Sauers EL, Herling DE. (<http://www.humankinetics.com/products/journals/showarticle.cfm?articleid=8239&journalid=JSR>)

Instrumented Arthrometry Reveals Increased Sagittal Plane Glenohumeral Joint Laxity in Females. J Athl Train. 1999;34(2):S-82. Sauers EL, Borsa PA, Herling DE.

What to Do Next: Using Problem Status to Determine the Course of Action, Research in Engineering Design (1997) 9: 214-227. David G. Ullman, Derald Herling, Bruce D'Ambrosio, Oregon State University.

### Conference Proceedings

1995 American Society of Mechanical Engineers (ASME) Design Engineering Technical Conferences, September 17-21, 1995 Boston Massachusetts, USA. Engineering Decision

Support System (EDSS). Vol 2. 1995 pp 619-626. Derald Herling, David G. Ullman, Bruce D'Ambrosio, Oregon State

### Reports and Others

Poster presentation Gender differences in AP laxity and stiffness of the glenohumeral joint. American Academy of Orthopaedic Surgeons 67th Annual Meeting, March 15-19, 2000. Sauers EL, Borsa PA, Herling DE, Stanley R.

([http://www.aaos.org:80/cgi-bin/print\\_hit\\_bold.pl/wordhtml/anmt2000/poster/pe261.htm?gender#first\\_hit](http://www.aaos.org:80/cgi-bin/print_hit_bold.pl/wordhtml/anmt2000/poster/pe261.htm?gender#first_hit))

ICED Engineering Decision Support System, David G. Ullman and Derald Herling  
WDK23 Proceedings of 10th International Conference on Engineering Design (ICED) August 22-24, 1995 Praha, Czech Republic, Edition HEURISTA 1995, Volume 2, page 714

Analyzing Design Activity - The Delft Protocols Workshop Analysis of Protocol Data to Identify Product Information Evolution and Decision Making Process, Delft Workshop on Protocol Analysis, September 1994, Delft, The Netherlands. David G. Ullman, Derald Herling, Alex Sinton, Oregon State University.

Paper presentation: Pen Based Computing in the Engineering Office of the Future: The American Society of Mechanical Engineers (ASME) 5th Northwest International Region VIII Graduate Student Technical Conference May 13-14, University of British Columbia, Vancouver, BC Canada.

### OTHER PROFESSIONAL

- Attended Design Theory and Methodology Conference, The American Society of Mechanical Engineers (ASME), Las Vegas, Nevada, September, 1999
- Professional Engineering Exam Proctor, October, 1994 Salem Oregon
- Attended 5th International Conference on Design Theory and Methodology, The American Society of Mechanical Engineers (ASME) Albuquerque, New Mexico September 19-22, 1993
- Attended 2nd Annual Pen Expo Conference, San Francisco, CA January 25-29, 1993

### Presentations

- Process Automation Technical Exchange (PATEM) 2002 – Knowledge Capture During MVC Installation, Basim Shahrani, Derald Herling, Hussain Busaleh, Abdallah Hazani. October 27-29, 2002, Saudi Aramco EXPEC Auditorium, Dhahran, Saudi Arabia.
- Process Automation Technical Exchange (PATEM) 2001 – Roundtable Panelist for Advanced Process Control. November 11-13, 2001, Saudi Aramco EXPEC Auditorium, Dhahran, Saudi Arabia
- Engineering Design System Support (EDSS) Computer Science Colloquium: April 26th, 1995 Department of Computer Science, Oregon State University, Corvallis, Oregon
- National Science Foundation Design and Manufacturing Grantees Conference, University of California at San Diego, The Instituted for Mechanics and Materials, La Jolla, California

January 4-6, 1995: Engineering decision Support System (EDSS) presentation of our work-in progress via a poster presentation

### Professional Growth

- Lehigh Microscopy School – Lehigh Univ. Whitaker Lab Bethlehem, PA, Scanning Electron Microscopy (SEM) and X-Ray Microanalysis, June 2011, 6 CEU
- English XL Variable Incident Tribometer Program, LAX, June 2010 (6 hrs)
- NFPA Seminar, 921 Guide for Fire and Explosion Investigation, Quincy, Massachusetts, April 2010, 1.4 CEU
- SAE 2010 World Congress, Detroit, Michigan, April 2010 (14 hours)
- TEAM Oregon motorcycle training, July 15-21<sup>st</sup> 2009, Salem OR (16 hrs)



- SAE Professional Development Program, Commercial Vehicle Braking Systems, Detroit, MI, December 3-5th, 2008 (18 hrs – 1.80 CEU)
- Current Aspects and Reconstruction Application Techniques of CDR Data and Current ECM Retrieval Guidelines and Data Information, FARO Hillsboro, OR October 23, 2008 (6hrs)
- Accident Reconstruction at Traffic Signal Intersections and Forensic Analysis of Seat Belts & Occupant Kinematics, FARO Hillsboro, OR May 8-9, 2008 (8 hrs)
- SAE 2008 World Congress, Detroit, Michigan, April 2008 (24 hours)
- Crash Data Retrieval (CDR) Data Analyst Course, Collision Safety Institute, Seattle, WA., November 2007, (40 hours)
- Arc Flash Protection and Electrical Safety, American Trainco, Portland, OR., September 2007, (16 hours)
- SAE 2007 World Congress, Detroit, Michigan, April 2007 (24 hours)
- Spring 2006 FARO 3D Diagramming Software for Collision Investigators, Seminar, April 21, 2006 (6hours)
- SAE 2006 World Congress, Detroit, Michigan, April 2006 (24 hours)
- Summer 2006 FARO Validation of Pedestrian-Bicyclist/Vehicle Crash Scene Formulas, August 1/2, 2006 Salem, Oregon (14 hours)
- Fall 2005 WATAI Conference, Crash Testing, Seattle, Washington, October 10th & 11th, 2005 (16 hours)
- FARO Annual Summer Conference, Drag Factor & Coefficient of Friction Validation Testing, Hillsboro, Oregon, August 26th, 2005 (6 hours)
- SAE World Congress, Detroit, Michigan, April 11-14th, 2005

- SAE Professional Development Program, The Tire as a Vehicle Component, April 13th, 2005, Detroit, Michigan (1.3 CEU)
- BioMechanics in Vehicle Collisions: Developing a model of injury based on human tolerances, FARO 2005 Spring Conference, Eugene, Oregon April 8th&9th, 2005 (14 hours)
- Vehicle Accident Reconstruction Methods, SAE Professional Development Center, Detroit, Michigan, December, 2004 (1.3 CEU = 18 hours)
- Core Competencies Course - Society for Organizational Learning (SoL). Boston, Massachusetts, September 22-26, 2003. (40 hours)
- Managing for Innovation – Saudi Aramco Career Development Dept. Dhahran, Saudi Arabia, August 4<sup>th</sup>, 2003 (7 hours).
- Team Alignment Process Facilitators training – Saudi Aramco Leadership Center. Dhahran, Saudi Arabia, May 13<sup>th</sup>, and June 3<sup>rd</sup>, 2003. (16 hours)
- ARC Advisory Group – Driving Operational Excellence Forum – Collaborative Manufacturing and Supply Chain Strategies. Boston, Massachusetts, September 17-18, 2002. (12 hours)
- Process Design and Implementation – Reengineering and Change Management, Michael Hammer and Company. Cambridge, Massachusetts, October 22-25, 2001 (24 hours).
- ADAMS Basic software training course for use in kinematics course (ME412/512), Ann Arbor MI, August 1997 (34 hours)
- ProE Basic software training course for use in CADD course (ME413/513), Portland OR, July 1997 (36 hours)
- American Society of Mechanical Engineers, 1995 ASME Design Engineering Technical Conference, Boston, Massachusetts, September 17-21, 1995 (21 hours)
- 10th International Conference on Engineering Design, ICED95, Praha, Czech Technical University, Praha, Czech Republic, August 22-24, 1995 (21 hours)
- Graduate Congress 93, Oregon State University, Corvallis, Oregon April 25, 1993 : Paper 'Using a Structured Design Methodology for Designing a Securement System for Mobility Aids on Public Buses'. Best Paper Award for Session V
- 4th ASME NORTHWEST International Region VIII Graduate Student Technical Conference: Oregon State University, Corvallis, Oregon April 24, 1993 : Paper 'Using a Structured Design Methodology for Designing a Securement System for Mobility Aids on Public Buses'.
- Pen Expo for pen based computers: San Francisco, California February, 1993 (24 hours)
- American Society of Mechanical Engineers (ASME), Design Technical Conference, Albuquerque, New Mexico September 1993 (16 hours)
- ASME Computers in Engineering Conference and Exhibit, New York City, August, 1987 (30 hours).
- Chemshare CAE DESIGN II program for chemical engineering simulation, Abqaiq, Saudi Arabia, February, 1987 (21 hours).
- 3COM Local Area Network software training, Abqaiq, Saudi Arabia, August, 1986 (21 hours).
- Simulation Science, Inc. "PROCESS" Chemical Engineering Computer Course, Abqaiq, Saudi Arabia, January, 1985 (36 hours).

- AAA Technology TRIFLEX - piping design and analysis computer program and seminar, Abqaiq, Saudi Arabia, January, 1984 (30 hours).
- Gas Conditioning and Processing, from John M. Campbell, Abqaiq, Saudi Arabia, October, 1984 (70 hours).
- Gas and Liquid Sweetening course from John M. Campbell, Abqaiq, Saudi Arabia, October, 1979 (35 hours).
- American Society of Metals (ASM) Metals Engineering Institute - Principles of Failure Analysis, Abqaiq, Saudi Arabia, August, 1983 (35 hours).
- National Association of Corrosion Engineers (NACE) - Corrosion Prevention by Cathodic Protection course, Abqaiq, Saudi Arabia, November, 1982 (35 hours)
- NACE Corrosion Prevention by Coatings course, Abqaiq, Saudi Arabia, February, 1982 (35 hours)
- NACE Basic Corrosion Course, June, Abqaiq, Saudi Arabia, 1981 (35 hours)
- Oil field Water Injection Systems course from C. C. Patton and Associates, Abqaiq, Saudi Arabia, October, 1981 (35 hours)
- Elliott Compressor Refresher Course, Abqaiq, Saudi Arabia, January, 1980 (30 hours)
- Borg-Warner Mechanical Seal Course, Abqaiq, Saudi Arabia, October, 1979 (20 hours)
- Heat Exchanger Design with Computers course, given by B-JAC Computer Services, Inc., Midlothian, Virginia, February, 1977 (24 hours)
- An Introduction to Nondestructive Testing course, conducted by Portland section, American Welding Society, Portland, Oregon, November, 1976 (8 hours)
- 16th National Heat Transfer Conference of ASME, AIChE, CSME, CSCE, St. Louis, Missouri, August, 1976 (10 hours)
- Heat Transfer Research, Inc. Semiannual meeting, St. Louis, Missouri, August, 1976 (10 hours)
- Welding Techniques and Safety forum, conducted by Portland section, American Welding Society, Portland, Oregon, November, 1974 (4 hours)
- Arabian American Oil Company (ARAMCO) management courses:
  - Effective ARAMCO Supervisor (30 hours)
  - Time Management (21 hours)
  - Writing Workshop (21 hours)
  - Decision Making and Problem Analysis (21 hours)
  - Project Economics and Investment Evaluation (18 hours)
  - Coaching and Counseling (14 hours)
- Small Business Administration seminar, Abqaiq, Saudi Arabia, 1984 (20 hours)
- Management Seminar, conducted by Dale Carnegie and Associates, Portland, Oregon, December, 1976 (60 hours)

## Service

2001

- ASME Student Section Advisor – Regional Student Conference hosted here in April 2001
- Fundamental Engineering exam lecture for Strength of Materials section – February, Corvallis, Oregon
- Student advisor
- ASME student chapter faculty advisor
- Faculty advisor for senior design team within the ME department for Exercise and Sports Science projects in H&HP college

2000

- ASME Regional Student Conference, RSC 2000, Spokane Washington March 7,8,9; Faculty Advisor
- Fundamental Engineering exam lecture for Strength of Materials section – February, Corvallis, Oregon
- Freshman student advisor
- ASME student chapter faculty advisor
- Faculty advisor for senior design team within the ME department for Exercise and Sports Science projects in H&HP college
- DiVinci days Kinetic sculptor race Head Engineering judge, Corvallis, Oregon

1999

- Co-major advisor for doctoral candidate in Exercise and Sports Science
- Faculty advisor for senior design teams within the department
- Mechanical Engineering International Degree (second BA degree) Student Advisor
- Fundamental Engineering exam lecture for Strength of Materials - Corvallis, Oregon
- Mechanical Engineering Department representation at Beaver Open House
- SAE Portland visit, ASME Corvallis Hewlett Packard plant visit
- Freshman student advisor
- ASME student chapter faculty advisor
- DiVinci days Kinetic sculptor race judge, Corvallis, Oregon

1998

- Faculty advisor for senior design teams within the department
- DiVinci days Kinetic sculptor race judge, Corvallis, Oregon
- Society of Automotive Engineers, SAE, Mini Baja race faculty advisor, El Paso, Texas