Steffen Peuker

CONTACT INFORMATION

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CITIZENSHIP

Germany, Permanent Resident of the USA

RESEARCH INTERESTS

HVAC&R applications/research, active learning pedagogy, first-year student success

EDUCATION

University of Illinois at Urbana-Champaign, Urbana, Illinois USA

Ph.D., Department of Mechanical Science and Engineering **December 2010**

- Thesis Title: EXPERIMENTAL AND ANALYTICAL INVESTIGATION OF REFRIGERANT AND OIL MIGRATION
- Advisor: Professor Predrag S. Hrnjak
- Area of Study: Refrigeration

M.S., Department of Mechanical Science and Engineering **December 2006**

- Thesis Title: EXPERIMENTAL AND MODELING INVESTIGATION OF TWO EVAPORATOR AUTOMOTIVE AIR CONDITIONING SYSTEMS
- Advisor: Professor Predrag S. Hrnjak
- Area of Study: Refrigeration

Hochschule Mannheim - University of Applied Sciences, Mannheim, Germany

Dipl.-Ing. (FH), Department of Mechanical Engineering **September 2002**

- Thesis Title: TRANSIENT SIMULATION OF HEAT PUMP PROCESSES WITH THE ALTERNATIVE REFRIGERANT CARBON DIOXIDE (R744)

CURRENT EXPERIENCE

California Polytechnic State University, San Luis Obispo, California USA

Associate Professor, Mechanical Engineering **since January 2014**

Courses Taught at Cal Poly

- ME 460/Lab – HVAC Senior Design Project II
- ME 459/Lab – HVAC Senior Design Project I
- ME 457/Lab – Refrigeration Principles and Design
- ME 455/Lab – Introduction to Building Energy Modeling
- ME 453 – Trends and Opportunities in HVAC&R
- ME 359/Lab – Fundamentals of HVAC Systems
- ME 302 – Thermodynamics I
- ME 163 – Freshmen Orientation to Mechanical Engineering
- ME 128 – Introduction to Mechanical Engineering I

Current Research

- Atmospheric Water Harvesting
- Building Energy Modeling and Analysis
- Enhancement of Freshman Engineering Student Success, Retention and Time to Graduation
- Implementing the Design Your Process to Become a World Class Engineering Student project in Freshmen Engineering Courses

Service

- HVAC&R Director, since 2018
- Member, Cal Poly's Re-Imagining the First Year of College Initiative Team, since 2016
- Member-At-Large, Executive Committee – SLO Chapter of the California Faculty Association, 2014-2018
- Mechanical Engineering Department Diversity and Inclusivity Committee, since 2018
- Mechanical Engineering Department Curriculum Committee, 2015-2017
- Mechanical Engineering Department Chair Selection Committee, 2015-2016
- Mechanical Engineering Department HVAC&R Committee, since 2014
- Mechanical Engineering Department Course Coordinator for ME163, ME359, ME453, ME455, ME457, ME459, ME460
- Student Club Advisor – 7x24 Exchange Student Club at Cal Poly, since 2016
- Student Club Co-Advisor – Air Conditioning& Refrigeration Student Club at Cal Poly, since 2017

International Experience

Hochschule München, München, Germany

Professor Exchange **September 2017 to July 2018**

Courses Taught at Hochschule München

- F 2050 Thermodynamik und Wärmeübertragung I
- L 2050 Thermodynamik und Wärmeübertragung I

Previous Experience

University of Alaska Anchorage, Anchorage, Alaska USA

Assistant Professor, Mechanical Engineering **January 2011 to December 2013**

Courses taught

- ENGR A151 Introduction to Engineering
- ENGR A161 Engineering Practices II
- ME A414 Thermal System Design
- ME A414L Thermal System Design Laboratory
- ME A455/655 HVAC Systems Optimization
- ME A497 Modular Heat Exchanger Design (Independent Study)

Service

- Director of the Thermal System Design Laboratory
- ASHRAE Student Chapter Advisor
- Academic Integrity Committee member
- Center for Advancing Faculty Excellence (CAFE) Advisory Council member
- UAA School of Engineering faculty liaison for Project Lead the Way and the Engineering Academies of the Anchorage School District
- School of Engineering Design Competition Ad-hoc Committee
- Senior design advisor for five projects related to HVAC&R

University of Illinois at Urbana-Champaign, Urbana, Illinois USA

Graduate Research Assistant **January 2003 to August 2010**

Instructor **Fall 2009, Fall 2010**

- Taught the undergraduate thermodynamics course (ME300)

Teaching Assistant **September 2008 to May 2009**

- Head teaching assistant for laboratory fluid mechanics class
- Taught and graded fluid mechanics laboratory class

Mentoring **2007 to 2010**

- Invited and mentored several international undergraduate students
- Trained graduate and undergraduate students on scientific research and methodology

Grader **September 2008 to May 2009**

- Graded homework, midterm and final exams of fluid mechanics course

Completed Research

Research completed and published

- Experimental Study of the Influence of Orientation on Water Condensation of a Thermoelectric Cooling Heatsink
- Improving Student Success and Retention Rates in Engineering: A Four-Year Longitudinal Assessment of the DYP Program
- Using Team-based Learning to Ensure Student Accountability and Engagement in Flipped Classrooms
- Achieving High Functioning Teams Using Team Based Learning in Flipped Classrooms
- Implementing Team Based Learning in first-year engineering courses
- Student industry cooperation for the development of thermal system design teaching laboratory equipment
- Incorporating active learning into thermal system design lecture
- Effect of multiple choice testing on student performance in an introductory engineering course
- Cool-down (Start-up) Transients in A/C Systems
- Experimental and Modeling Investigation of Two Evaporator Systems
- R134a/R744 HMMWV Dual Evaporator System Phase II
- R134a/R744 HMMWV Dual Evaporator System Phase I
- SAE Enhanced R744 Pilot 2002

Professional Development

Since January 2014

- Developed and facilitated Cal Poly CTLT *Rethinking the Lecture Learning Community* with Solina Lindahl, 12 two-hour meetings during AY 2018-2019
- ASHRAE Webinar *The Future of Refrigerants: Unitary and VRF Systems*, April 18, 2019
- Chancellor's Office Grant Proposal Development Pilot Program, April 9, Fresno, CA, 2019
- CSU Symposium *Educating our Golden State - Reaching the Next Generation of Californians*, March 9, Fresno, CA, 2019
- CSU Supplemental Instruction Symposium, webinar, March 1, 2019
- ASHRAE Winter Conference, Jan 12-16, Atlanta, GA 2019
- ASHRAE Winter Conference, Jan 20-24, Chicago, IL 2018
- Developed and facilitated Cal Poly CTLT *Reinventing the Larger Lecture Learning Community* with Solina Lindahl, 12 two-hour meetings during AY 2016-2017
- Organized and presented with Raymond B. Landis Chautauqua Short Course *Enhancing Student Success through a Model Introduction to Engineering Course* at Cal Poly, May 17-19, 2017
- ASHRAE Winter Conference, Jan 28- Feb 1, Las Vegas, 2017
- 19th Annual California State University Teaching and Learning Symposium, October 21-22, 2016, San Jose, CA

- 8th Annual First Year Engineering Experience Conference (FYEE), July 31-August 2, Columbus, OH, 2016
- CSU ITL 2016 Summer Institute, July 12-14, Office of the Chancellor, Long Beach, CA, 2016
- CSU Course Redesign with Technology Summer Institute, June 20th, San Diego, CA, 2016
- 123rd Annual ASEE conference in New Orleans, LA, June 26-29, 2016
- Completed 5-635 – APOGEE Programming for Efficient Building Operations, San Luis Obispo, CA, May 10-13, 2016
- CSU Course Redesign with Technology Professional - Learning Community, 2015-2016
- Basics of High-Performance Building Design Course, ASHRAE Learning Institute, San Luis Obispo, CA, Oct. 17, 2015
- NZEB-C2: Net Zero Energy Building Conference, Los Angeles, CA, August 8th, 2015
- 7th Annual First Year Engineering Experience Conference (FYEE), August 2-4, Roanoke, VA, 2015
- 122nd Annual ASEE conference in Seattle, WA, June 14-17, 2015
- Completed 5-630 – APOGEE PPCL Programming, May 5-8, San Luis Obispo, CA, 2015
- LEED: Green Building Core Concepts and Strategy Course, April 22, 2015
- ASHRAE Winter Conference, Jan. 24-28, Chicago, 2015
- Innovations in Engineering Education initiative, since Jan. 12, 2015
- Consortium to Promote Reflection in Engineering Education (CPREE), since Fall 2014
- Completed 5-625 – APOGEE Advanced Operations, August 12-15, San Luis Obispo, CA, 2014
- 6th Annual First Year Engineering Experience Conference (FYEE), August 7-8, College Station, TX, 2014
- Completed 5-615 – APOGEE Field Panel and FLN Operations, June 24-27, San Luis Obispo, CA, 2014
- Completed 5-620 – APOGEE Workstation Operations, June 3-6, San Luis Obispo, CA, 2014
- ASHRAE's High Performance Buildings Conference, April 7-8, San Francisco, CA, 2014
- 33rd Annual Conference on The First-Year Experience (FYE), San Diego, CA, USA, February 15-18, 2014

On Campus seminars/workshops attended at Cal Poly:

- Grants Academy Cohort, Cal Poly, 2015-2016
- CTLT Reinventing the Large Lecture - Learning Community, 2015-2016
- Workshop on International Opportunities for Faculty, April 14th, 2015
- Affordable Learning Solutions, CTLT Workshop, March 10, 2015
- CTLT Camp Course Design Workshop, on December 17-18, 2014
- CENG Sustainable Energy and Infrastructure - Final Stakeholder Meeting, July 30, 2014
- CENG Sustainable Energy and Infrastructure workshop, May 17, 2014
- PolyPlanner Demos for Faculty/Staff, February 28, 2014

Before January 2014

- Fifth Annual First Year Engineering Experience Conference (FYEE), Pittsburgh, PA, USA, August 8-9, 2013
- 120th Annual ASEE conference in Atlanta, GA, June 23-26, 2013

- Building Student Capacity for High Performance Teamwork, workshop at 120th Annual ASEE conference in Atlanta, GA, June 23, 2013
- Student Conduct Workshop, May 23, 2013
- ASHRAE Webcast, Assessing Building Energy Performance, from Principles to Practice, April18, 2013
- Online RosEvaluation Conference, April 1-2, 2013
- Banner Navigation Training, January 29, 2013
- Banner Basic Student Information and Academic History Training, January 31, 2013
- ASME webinar, Looking for Better Energy Storage: Think Thermal, March 5, 2013
- NAFSA's Webinar: International Student Adjustment: Patterns & Tips for Student Success, July 11, 2012
- Enhancing Student Success Through a Model Introduction to Engineering Course, Raymond B. Landis, held at the California State University, Dominguez Hills, Los Angeles, May 23-25, 2012
- 2012 Tech Summit, Anchorage, AK, GEA PHE Systems Plate Heat Exchanger Seminar and Industrial Turbine Applications, May 8 2012

Industry Experience

Daimler AG, Stuttgart, Germany

Research student **April 2002 to September 2002**

- Analyzed experimental data and improved model for transient simulation of R744 automotive A/C system

R&D Internship **September 2000 to February 2001**

- Built test stand for automotive prototype R744 A/C system; Implemented test stand experiments; Technical report included evaluation of experiments and theoretical views of R744 refrigerant cycle

Feinmechanik Joos GmbH, Mannheim, Germany

Mechanical Engineering Internship **September 1998 to February 1999**

- Operated and programmed CNC milling machine; Received training and worked on all standard machine tools

Energy Consulting Heidelberg GmbH, Heidelberg, Germany

Mechanical Engineering Internship **May 1997 to September 1997**

- Assisted project manager in a power plant project

Honors, Awards, Certificates, Grants

CP Connect Grant - Producing Solar Ice in Ghana - $3,000 **November 2018**
ASHRAE Undergraduate Program Equipment Grant - $3,660 **February 2018**
ASHRAE Faculty Advisor – 1st Place Applied Engineering Challenge **January 2018**
Distinguished Speaker - Texas A&M IEEI Distinguished Lecture Series **April 2017**
CSU Sustaining Success Grant - $4,576 **July 2016**
NAE Frontiers of Engineering Education Symposium Attendee **October 2015**
Learn by Doing Scholar Award - Planned and In-Progress Research **May 2015**
CSU Promising Practices Course Redesign Grant - $4,364 **March 2015**
ASHRAE Faculty Advisor – 1st Place Applied Engineering Challenge **January 2015**
ASHRAE Faculty Advisor – 3rd Place System Selection Challenge **January 2015**
Fall 2014 Service Learning Faculty Fellow **November 2014**
APOGEE Master Operator **August 2014**
ASHRAE E.K. Campbell Award Nominee **2014**

The James L. Bartlett, Jr. Asst. Prof.	**since January 2014**
Secretary of ASHRAE Alaska Chapter	**July 2013 to December 2013**
UAA Faculty Development Grant	**April 2013**
UNAC Travel Award	**October 2012**
FERPA Training Certificate	**Fall 2011, 2012**
Treasurer of ASHRAE Alaska Chapter	**July 2012 to July 2013**
ASHRAE Senior Undergraduate Project Grant	**February 2012**
EPA Section 608 Type I Certification	**October 2011**
IRB Training Certificate	**September 2011**
Fundamentals of Arctic Engineering Certificate	**June 2011**
Teacher Scholar Certificate	**April 2010**
Ranked as excellent instructor by students	**Fall 2009, 2010**
Graduate Teacher Certificate	**October 2009**
Departmental Teaching Fellowship Award	**Fall 2009, 2010**
Outstanding (top 10%) teaching assistant based on student feedback	**Spring 2009**
SAE Recognition Award - SAE 2009 World Congress	**April 2009**
Outstanding (top 10%) teaching assistant based on student feedback	**Fall 2008**
SAE Recognition Award - SAE 2008 World Congress	**April 2008**
SAE Recognition Award - VTMS Conference	**May 2005**
FY05 Secretary of the Army Environmental Award	**2005**

Computer Skills

EES, EnergyPlus, DesignBuilder, APOGEE, MatLab–Simulink, Dymola–Modelica, FLUENT, ANSYS, PRO–E, AutoCAD, Agilent VEE Pro, LabVIEW, Mathcad, RefWorks, Adobe Acrobat Professional, Adobe Premiere Elements, TEX, LATEX, BIBTEX
Microsoft: Excel, Outlook, Powerpoint, Project, Visio, Windows, Word

Professional Memberships

American Society for Engineering Education
American Society of Heating, Refrigerating and Air-Conditioning Engineers
American Society of Mechanical Engineers
Society of Automotive Engineers

Reviewer

Editorial Review Board Member

- Journal of The First-Year Experience and Students in Transition

Journal and Conference Proceedings

- Applied Thermal Engineering
- ASHRAE HVAC&R Research
- ASEE 2019 Annual Conference - The First-Year Programs Division
- ASEE 2017 Annual Conference - The First-Year Programs Division
- ASEE 2016 Annual Conference - The First-Year Programs Division
- Eight Annual First Year Engineering Experience (FYEE) Conference 2016
- ASEE 2015 Annual Conference - The First-Year Programs Division
- Sixth Annual First Year Engineering Experience (FYEE) Conference 2014
- ASEE 2014 Annual Conference - The First-Year Programs Division
- Fifth Annual First Year Engineering Experience (FYEE) Conference 2013
- ASEE 2013 Annual Conference - Mechanical Engineering Division
- ASME 2011 International Mechanical Engineering Congress & Exposition - Heat Pump, CHP & CCHP Technology

Program Reviews

- Texas A&M, Cockrell School of Engineering, April 1-2, 2019

Selected Peer-Reviewed Publications

Peuker, S., Hand, C., An Experimental Study of the Influence of Orientation on Water Condensation of a Thermoelectric Cooling Heatsink, Heliyon 4 (2019) e02752. https://doi.org/10.1016/j.heliyon.2019.e02752

Peuker, S., Improving Student Success and Retention Rates in Engineering: A Four-Year Longitudinal Assessment of the DYP Program, 124th ASEE Annual Conference and Exposition, June 25-28, Columbus, OH, USA, 2017

T. S. Harding et al., The role of collaborative inquiry in transforming faculty perspectives on use of reflection in engineering education, Frontiers in Education Conference (FIE), 2015. 32614 2015. IEEE, El Paso, TX, 2015, pp. 1-7

Peuker, S., Schauss, N.A.G., Improving Student Success and Retention Rates in Engineering: An Innovative Approach for First-year Courses, 122nd ASEE Annual Conference and Exposition, June 14-17, Seattle, Washington, USA, 2015

Peuker, J.M., Peuker, S., Using Team-based Learning to Ensure Student Accountability and Engagement in Flipped Classrooms, 122nd ASEE Annual Conference and Exposition, June 14-17, Seattle, Washington, USA, 2015

Peuker, J.M., Peuker, S., Achieving High Functioning Teams Using Team Based Learning in Flipped Classrooms, 122nd ASEE Annual Conference and Exposition, June 14-17, Seattle, Washington, USA, 2015

Peuker, J.M., Peuker, S., Implementing Team Based Learning in Freshmen Engineering Courses, Sixth Annual First Year Engineering Experience Conference (FYEE), College Station, TX, USA, August 7-8, 2014

Peuker, S., Student Industry Cooperation for the Development of Thermal System Design Teaching Laboratory Equipment, Conference Proceedings of the 120th ASEE Annual Conference and Exposition, June 23-26, Atlanta, Georgia, USA, 2013

Peuker, J.M., Peuker, S., Incorporating Active Learning into a Thermal System Design Lecture, Conference Proceedings of the 120th ASEE Annual Conference and Exposition, June 23-26, Atlanta, Georgia, USA, 2013

Peuker, J.M., Brock, J.M., Peuker, S., Effect of Multiple Choice Testing on Student Performance in an Introductory Engineering Course, Conference Proceedings of the 120th ASEE Annual Conference and Exposition, June 23-26, Atlanta, Georgia, USA, 2013

Li, B., Peuker, S., Hrnjak, P. S., Alleyne, A. G., Refrigerant Mass Migration Modeling and Simulation for Air Conditioning Systems, Applied Thermal Engineering, Vol. 31, no. 10: 1770-1779, 2011

Li, B., Peuker, S., Hrnjak, P. S., Alleyne, A. G., Evaluation of Transient Refrigerant Migration Modeling Approach on Automotive Air Conditioning Systems, SAE Int. J. Mater. Manuf., vol. 4 no. 1: 864-874, 2011

Selected Workshops & Presentations

Peuker, S., Lindahl, S., O'Sullivan, P., GI 2025: Affecting Graduation Rates through Faculty Learning Communities, CSU Symposium 2019, Fresno State, March 9, 2019

Peuker, S., Landis, R., Chautauqua Short Course – Enhancing Student Success through a Model Introduction to Engineering Course, Cal Poly, May 17-19, San Luis Obispo, California, USA, 2017

Peuker, S., Landis, R., Ermer, G., Pakala, K., Improve Student Academic Performance and Retention – The 'Design Your Process to Become a World-Class Engineering Student' Project, 123rd ASEE Annual Conference and Exposition, June 26-29, New Orleans, Louisiana, USA, 2016

Peuker, S., Landis, R., Design Your Process of Becoming a World-Class Engineering Student—A Powerful Project for Enhancing Student Success, presented at the Eigth Annual First Year Engineering Experience Conference (FYEE), Columbus, Ohio, USA, July 31-August 2, 2016

Peuker, S., Increasing First-Year Students Success through Self-Regulation, ASEE Pacific Southwest Conference, April 21-23, Pomona, California, USA, 2016

Books

Landis, Peuker, Mott, Studying Engineering: A Road Map to a Rewarding Career, Discovery Press, 5th edition, 2019

ePortfolios

Sustaining Success-Thermodynamics, http://bit.ly/THERMOePortfolio

Improving Student Success and Retention Rates in Engineering: An Innovative Approach for First-year Courses, http://bit.ly/DYPePortfolio