

Kelly O. Homan

Associate Professor of Mechanical Engineering

Department of Mechanical and Aerospace Engineering
Missouri University of Science and Technology
329 Toomey Hall
400 West 13th street
Rolla, MO 65409-0050
(573) 341-6622 (voice)
(573) 341-4607 (fax)
khoman@mst.edu

Research Interests:

- Fluid dynamics, heat transfer, and thermodynamics of energy systems.
- Heat and mass transfer in buoyant flows, second-law and exergy analysis, numerical simulation of transport phenomena and experimental methods.

Education:

- Ph.D. in Mechanical Engineering, University of Illinois at Urbana-Champaign, 1996.
- M.S. in Mechanical Engineering, University of Illinois at Urbana-Champaign, 1992.
- B.S. in Mechanical Engineering, Dordt College, Sioux Center, Iowa, 1990.

Academic Positions:

- Assistant Professor of Mechanical Engineering, University of Missouri-Rolla, since 2001.
- Assistant Professor of Mechanical Engineering, University of Nebraska-Lincoln, 1997-2001.
- Post-doctoral Research Associate in Mechanical Engineering, University of Illinois at Urbana-Champaign, Advisor: John S. Walker, 1996-97.
- Graduate Research Assistant in Mechanical Engineering, University of Illinois at Urbana-Champaign, Advisor: S. L. Soo, 1991-96.
- Graduate Teaching Assistant in Mechanical Engineering, University of Illinois at Urbana-Champaign, Fall 1990.

Honors and Awards:

- New Investigator Award, American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), 1999.
- Pi Tau Sigma Silver Slide Rule Award, University of Missouri-Rolla, 2004.
- School of Engineering Teaching Excellence Award, University of Missouri-Rolla, 2004.

Professional Societies:

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

Selected Journal Publications:

- K. O. Homan and S. L. Soo. Model of the transient stratified flow into a chilled water storage tank. Int. J. Heat Mass Transfer, 40:4367-4377, 1997.

-K.O. Homan. Integral solutions for transient temperature profiles in stably-stratified open enclosures. ASME J. Heat Transfer, 125:273-281, 2003.

-J.W. McMenemy and K.O. Homan. Transient and rate-dependent performance of conventional electric storage water heating systems. ASME J. Solar Energy Engineering, accepted, 2005.

-G.G. Gardner and K.O. Homan. Partial cycling of stratified thermal storage devices: uniform initial condition (RP-1147). Int. J. HVAC&R Research, submitted, 2005.

-K.O. Homan. Measures of local thermal mixing during filling of stratified thermal storage. In 33rd National Heat Transfer Conference. ASME, 1999. Paper NHTC99-212.

-A.M. Boies and K.O. Homan. Improving discharge characteristics of indirect integral collector storage systems with multi-element storage. In International Solar Energy Conference, ASME, 2004. Paper ISEC2004-65188.

-A.M. Boies, K.O. Homan, Jane H. Davidson, and Wei Liu. A variable effectiveness model for indirect thermal storage devices. In 2005 summer Heat Transfer Conference, ASME, Paper HT2005-72711, 2005.