Kamran Fouladi, Ph.D., P.E.
Department of Mechanical Engineering
Widener University
Chester, PA 19013
(610) 499-1292 kfouladi@widener.edu

Education

Florida International University, Mechanical Engineering, BS 1982

Old Dominion University, Mechanical Engineering, ME, 1986

Old Dominion University, Mechanical Engineering, Ph.D., 1990

Professional Experience

Academic

2021-Present: Associate Professor and Chair of Mechanical Engineering, Widener University

2015-2021: Assistant Professor, Widener University

2014-2015: Visiting Assistant Professor, Widener University

2001-2014: Research and Adjunct professor, Villanova University

Non-Academic

2000-2014: Engineering consultant, InfoMec Consulting - Notable Clients: Orbital Sciences (Dulles, VA), NASA Langley Research Center (Hampton, VA), Eagle Engineering (Hampton, VA), American Aerospace Advisors (Radnor, PA), Kullicke & Soffa (Ft. Washington, PA), NAFEMS (US, UK), ATK (Washington, D.C.)

1997-2000: Project Engineer, Pratt & Whitney, United technologies

1991-1997: Senior Engineer, Lockheed Martin (NASA Langley Research Center)

Professional Society Membership

American Institute of Aeronautics and Astronautics; American Society of Mechanical Engineers;

American Society for Heating, Refrigeration, and Air conditioning; 7x24 Exchange; NAFEMS

Certifications or professional registrations

Professional Engineer license (Pennsylvania)
Professional Simulation Engineer certification (NAFEMS)

Service Activities (Selected)

Served as Technical Officer for American Institute of Aeronautics and Astronautics, Greater Philadelphia Section (2004-2005)

Served as President of American Institute of Aeronautics and Astronautics, Greater Philadelphia Section (2005-2006)

Serving on American Society for Heating, Refrigeration, and Air conditioning, Technical Committee 9.9, (2010-2020)

Serving on NAFEMS (the International Association for the Engineering Modelling, Analysis and Simulation Community) CFD Working Group (2013-Present)

Serving on NAFEMS (the International Association for the Engineering Modelling, Analysis and Simulation Community) Education and Training Working Group (2013-2020)

Serving on American Institute of Aeronautics and Astronautics Fluid Dynamics Technical Committee (FDTC), Education/Professional Development Lead (2019-present)

Publications

1. Livolsi, F., May, T., Caputo, D., **Fouladi, K.,** and Eslami, B. (2020). "*Multiscale Study on Effect of Humidity on Shape Memory Polymers Used in 3D Printing*," Journal of Manufacturing Science and Engineering, 143.9 (2021): 091010
2. **Fouladi, K.** (2019) (in press). "*FSI and Exergy-based Assessment of Flexible Flapping Foil Propulsion,*" International Journal of CFD Case Studies, Accepted for publication.
3. Petrongolo, J., Nemati, K., and **Fouladi, K.** (2020). "*Simulation-Based Assessment of Performance Indicator for Data Center Cooling Optimization*," ASME Journal of Thermal Science and Engineering Applications, 12(5).
4. **Fouladi, K.**, Schaadt, J. (2020). "*A Simulation-Based Approach to Data Center Thermal Efficiency Optimization*," ASME Journal of Engineering for Sustainable Buildings and Cities, 1(1).
5. **Fouladi, K**., Czupryna, J. (2018). "*CFD-Based Optimization of Micro Vortex Diodes*," Journal of Applied Fluid Mechanics, 11 (5), pp.1231-1237.
6. Silva-Llanca, L., Ortega, A., **Fouladi, K.**, del Valle, M., & Sundaralingame, V. (2017). *"Determining Wasted Energy in the Airside of a Perimeter-Cooled Data Center via Direct Computation of the Exergy Destruction,"* Applied Energy on 213, pp. 235-246.
7. **Fouladi, K**., Wemhoff, A. P., Silva-Llanca, L., Abbasi, K., & Ortega, A. (2017). *"Optimization of Data Center Cooling Efficiency Using Reduced Order Flow Modeling Within a Flow Network Modeling Approach,"* Applied Thermal Engineering, 124 (2017) 929–939.
8. **Fouladi, K.**, Schaadt, J., & Wemhoff, A. P. (2017). "*A novel approach to the data center hybrid cooling design with containment*," Numerical Heat Transfer, Part A: Applications, 71(5), 477-487.
9. Bhalerao, A., **Fouladi, K.**, Silva-Llanca, L., and Wemhoff, A. P. (2016). "*Rapid Predictions of Exergy Destruction in Data Centers Due to Airflow Mixing,*" Numerical Heat Transf. Part A: Applications, Vol 70 (1).

Papers in Conference Proceedings

1. **Fouladi, K**. *FSI and Exergetic Analyses of Flexible vs. Rigid Pitching Airfoil*. CAASE20: The Conference on Advancing Analysis & Simulation in Engineering, NAFEMS, Virtual, June 2020.
2. Petrongolo, J., Nemati, K., and **Fouladi, K.** *Simulation-Based Assessment of Performance Indicator for Data Center Cooling Optimization*. 33rd Thermal Measurement, Modeling & Management Symposium (SEMI-THERM) San Jose, CA, 2019.

3. **Fouladi, K**., Czupryna, J. *Design Optimization of a Micro Vortex Diode*. CAASE18: The Conference on Advancing Analysis & Simulation in Engineering, NAFEMS, Cleveland, OH, 2018.

4. Schaadt, J, **Fouladi, K**, Wemhoff, AP, Pigeon, JG. *Load Capacity and Thermal Efficiency Optimization of a Research Data Center Using Computational Modeling,* Proceedings of the ASME 2015 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems and ASME 2015, 12th International Conference on Nanochannels, Microchannels, and Minichannels (InterPACKICNMM2015), San Francisco, California, USA, 2015.

5. **Fouladi, K**, Wemhoff, AP, Silva-Llanca, L, Ortega, L. *Optimization of data center cooling efficiency using reduced-order flow modeling within a flow network modeling approach*, ASME International Mechanical Engineering Congress and Exposition (IMECE 2014) Montreal, Canada, 2014.

6. Silva-Llanca, L., Ortega, A, **Fouladi, K**, del Valle, M, Sundaralingam, V. *Investigation of Exergy Destruction in CFD Modeling for a Legacy Air-Cooled Data Center*, *Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITHERM 2014)*, Lake Buena Vista, FL, 2014.

7. Schaadt, J, **Fouladi, K**, Wemhoff, AP, Wu, T. *Load Capacity and Thermal Efficiency Optimization of a Research Data Center Using Computational Modeling,* Poster presentation at ASME International Mechanical Engineering Congress and Exposition (IMECE 2014) Montreal, Canada, 2014. (1st place in student research competition).

Reviewer for: ASME Journal of Thermal Sciences and Applications, International Journal of Heat and Fluid Flow, AIAA Journal of Aircraft, International Journal of Computational Fluid Dynamics, Journal of Applied Fluid Mechanics, Journal of Ceramics International Sustainable Cities and Society Journal, Journal of Thermal Science, ASME 2017 International Technical Conference and Exhibition, Applied Sciences Climate Journal, IEEE Access

SPONSORED PROJECTS

1. *Multi-scale Characterization of Additive Manufacturing Polymers: Simulation and Experimental Study* (P.I. Prof. Eslami and Prof. Fouladi), PA Manufacturing Fellows Initiative, $50,545 (awarded; completed).
2. *Design and Development of Environmentally Controlled Enclosure for 3D Printers* (P.I. Prof. Eslami and Prof. Fouladi), PA Manufacturing Fellows Initiative, $61,347 (awarded).

CONTRIBUTIONS TO ACADEMIC PROGRAMS

Taught following university courses:

Widener University
ENGR 214 – Dynamics
ENGR 320 – Fluid Mechanics (undergraduate)
ENGR 325 – Thermodynamics I
ENGR 328 – Computational Methods in Engineering
ME 304 – Mechanical Measurements II
ME 455 – Heat Transfer
ME 488 – Compressible Flow (undergraduate)
ME 681 – Fluid Mechanics (graduate)
ME 682 – Computational Fluid Mechanics / Heat Transfer

ME 694 – Compressible Flow (graduate)
ME 685 - Aerodynamics

Villanova University
ME 3600 – Fluids and Fluids Systems
ME 5102 - Compressible Fluid Flow
ME 5110 - Elements of Computational Fluid Dynamics
ME 7103 - *Advanced Fluid Mechanics (graduate)*
ME 7038 - Introduction to Computational Fluid Mechanics (graduate)

Arcadia University
MA 145 - Quantitative Models for Decision Making (Finite Math)

Old Dominion University
MAE 311 - Thermodynamics I
MAE 312 - Thermodynamics 2