

KHOSROW EBRAHIMI, PH.D.

<https://www.linkedin.com/in/khosrow-ebrahimi-ph-d-45765832/>

<https://www.researchgate.net/profile/Khosrow-Ebrahimi>

<https://scholar.google.com/citations?user=azM-rpgAAAAJ&hl=en>

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| CONTACT INFORMATION | Khosrow Ebrahimi, Ph.D. Ingram School of Engineering Texas State University San Marcos, TX 78666 | |
| | CELL: (610)710-6778 EMAIL: khosrow.ebrahimi@txst.edu | |
| RESEARCH INTERESTS | <ul style="list-style-type: none">• Conducting applied research in computational and experimental fluid mechanics and heat transfer.• Simulating and modeling air quality by studying particle dispersion and gas diffusion.• Utilizing AI for developing multidisciplinary models to analyze virus contamination risks in wide-body aircraft cabins.• Advancing sustainability by enhancing highly efficient renewable and conventional energy conversion systems and thermal energy storage technologies.• Innovating sustainable cooling technologies for electronics and implementing waste heat recovery methods in data centers.• Creating computational tools to design and optimize HVAC systems for healthcare facilities and clean rooms.• Exploring biofluids: Utilizing CFD to study Cerebrospinal Fluid motion. | |
| TEACHING INTERESTS | <ul style="list-style-type: none">• Instructing lecture and laboratory courses in Thermal and Fluid Sciences within the Mechanical Engineering Curriculum.• Incorporating Industry 4.0 tools and technologies into the development of thermal-fluids laboratory course.• Designing problem/project-based teaching curricula to encourage practical application of concepts.• Developing new senior elective and graduate courses focused on Electronics Thermal Management and Sustainable Design in Thermo-fluid Engineering.• Teaching senior Elective courses covering topics such as Computational Fluid Dynamics (CFD), Thermal System Design, and HVAC&R (Heating, Ventilation, Air Conditioning, and Refrigeration).• Instructing Graduate courses tailored to advanced studies in relevant fields | |
| EDUCATION | KANSAS STATE UNIVERSITY, MANHATTAN, KANSAS USA | |
| | PH.D. IN MECHANICAL ENGINEERING | MAY 2012 |
| | <ul style="list-style-type: none">• Dissertation Topic: "<i>Numerical simulation of turbulent airflow, tracer gas diffusion, and particle dispersion in a mockup aircraft cabin</i>" | |
| | K. N. TOOSI UNIVERSITY OF TECHNOLOGY, TEHRAN, IRAN | |
| | M.S. IN MECHANICAL-ENERGY CONVERSION ENGINEERING | AUGUST 2003 |
| | <ul style="list-style-type: none">• Thesis Topic: "<i>Numerical study of forced convective heat transfer to turbulent pipe flow of supercritical water</i>" | |
| | UNIVERSITY OF TEHRAN, TEHRAN, IRAN | |
| | B.S. IN MECHANICAL-SOLID MECHANICS & DESIGN ENGINEERING | SEPTEMBER 2000 |
| | <ul style="list-style-type: none">• Capstone Project Topic: "<i>Study of design and manufacturing procedure for thermoplastic and Bakelite molds</i>" | |
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| PROFESSIONAL EXPERIENCE | ASSISTANT PROFESSOR OF PRACTICE | |
| | MECHANICAL ENGINEERING, INGRAM SCHOOL OF ENGINEERING, TEXAS STATE UNIVERSITY, SAN MARCOS, TX | |
| | AUGUST 2022- PRESENT | |
| | FIXED-TERM ASSISTANT PROFESSOR | AUGUST 2018 – JULY 2022 |

**PROFESSIONAL
EXPERIENCE
(CONTINUED)**

MECHANICAL AND CIVIL ENGINEERING DEPARTMENT, MINNESOTA STATE UNIVERSITY, MANKATO, MN

PART-TIME CFD CONSULTANT

AUGUST 2020- JULY 2022

[CONDUX INTERNATIONAL](#), MANKATO, MN

ADJUNCT PROFESSOR

AUGUST 2019- DECEMBER 2019

ENGINEERING SCIENCES DEPARTMENT, BETHANY LUTHERAN COLLEGE, MANKATO, MN

LECTURER

AUGUST 2017 – AUGUST 2018

MECHANICAL AND BIOMEDICAL ENGINEERING DEPARTMENT, BOISE STATE UNIVERSITY, BOISE, ID

¾-TIME VISITING INSTRUCTOR

SEPTEMBER 2016 – AUGUST 2017

MECHANICAL ENGINEERING DEPARTMENT, ROWAN UNIVERSITY, GLASSBORO, NJ

ADJUNCT PROFESSOR

JANUARY 2017 –MAY 2017

MECHANICAL ENGINEERING DEPARTMENT, VILLANOVA UNIVERSITY, VILLANOVA, PA

POST-DOCTORAL RESEARCH FELLOW

MARCH 2012 – MAY 2016

[CENTER FOR ENERGY-SMART ELECTRONIC SYSTEMS](#), VILLANOVA UNIVERSITY, VILLANOVA, PA

CFD CONSULTANT

AUGUST 2014 – MAY 2015

THE LABORATORY FOR ADVANCED THERMAL AND FLUID SYSTEMS, VILLANOVA UNIVERSITY, VILLANOVA, PA

- Clients: [Schiff Hardin, LLP.](#), [Borg Warner, Inc.](#), and [the University of Saskatchewan's Prairie Swine Centre](#)

THERMAL AND FLUIDS LABORATORY INSTRUCTOR

AUGUST 2013 – MAY 2014

MECHANICAL ENGINEERING DEPARTMENT, VILLANOVA UNIVERSITY, VILLANOVA, PA

GRADUATE RESEARCH AND TEACHING ASSISTANT

AUGUST 2008 – MARCH 2012

MECHANICAL AND NUCLEAR ENGINEERING DEPARTMENT, KANSAS STATE UNIVERSITY, MANHATTAN, KS

DEPARTMENT HEAD

JANUARY 2006 - MAY 2008

FUEL ECONOMY STANDARDS IN TRANSPORTATION SECTOR, IRANIAN FUEL CONSERVATION COMPANY (IFCO), TEHRAN, IRAN

RESEARCH AND PROJECT ENGINEER

OCTOBER 2003 - DECEMBER 2005

IRANIAN FUEL CONSERVATION COMPANY (IFCO), TEHRAN, IRAN

ENGINEERING INTERN

SUMMERS OF 1998 & 1999

SAIPA (SOCIÉTÉ ANONYME IRANIENNE DE PRODUCTION AUTOMOBILE) AUTOMOTIVE INDUSTRIES, TEHRAN, IRAN

**PEER-REVIEWED
PUBLICATIONS**

[1] Ebrahimi, K., Jones, G.F., Fleischer, A.S., 2017, " The viability of ultra-low temperature waste heat recovery using organic Rankine cycle in dual loop data center applications", Applied Thermal Engineering, Vol. 126, pp. 393-406.

[2] Ebrahimi, K., Jones, G.F., Fleischer, A.S., 2015, " Thermo-economic analysis of steady-state waste heat recovery in data centers using absorption refrigeration", Applied Energy, Vol. 139, pp. 384-397.

[3] Ebrahimi, K., Jones, G.F., Fleischer, A.S., 2014, " A review of data center cooling technology, operating conditions, and the corresponding low-grade waste heat recovery opportunities", Journal of Renewable and Sustainable Energy Reviews, Vol. 31, pp. 622-638.

[4] Ebrahimi, K., Zheng Z., and Hosni, M.H., 2013, " A computational study of turbulent airflow and tracer gas diffusion in a generic aircraft cabin model", ASME Journal of Fluids Engineering, Vol.135, pp. 111105:1-15.

**PEER-REVIEWED
CONFERENCE
PROCEEDINGS
ARTICLES**

**PEER-REVIEWED
CONFERENCE
PROCEEDINGS
ARTICLES
(CONTINUED)**

- [1] Yamin, M., **Ebrahimi, K.**, & Schull, K. (2022). Multiple interactive hands-on applications in Statics (best in 5 min demonstration session). Paper presented at the ASEE 2022 Annual Conference, June 25th-29th, 2022, Minneapolis, MN. Paper ID#37597.
- [2] Ebrahimi, K., Ebrahimi, S., & **Ebrahimi, K.** (2020). Fractal Pattern Effects on Natural Convection Heat Transfer and Flow Characteristics. In 19th IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm) (pp. 357-365). Orlando, FL, USA. doi: 10.1109/ITherm45881.2020.9190161.
- [3] **Ebrahimi, K.**, Ortega, A., Li, C., Yazawa, K., & James, S. (2018). Waste Heat Recovery From Distributed Rack-based Fuel Cells Using Thermoelectric Generators. In 17th IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm) (pp. 795-814). San Diego, CA, USA. doi: 10.1109/ITHERM.2018.8419483.
- [4] **Ebrahimi, K.**, Jones, G., & Fleischer, A. (2014). A review of challenging issues in the integration of absorption refrigeration and organic Rankine Cycle into a data center cooling system. In Fourteenth Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm) (pp. 1047-1054). Orlando, FL, USA. doi: 10.1109/ITHERM.2014.6892397.
- [5] **Ebrahimi, K.**, Hosni, M. H., & Zheng, Z. C. (2013). Computational Study of Turbulent Airflow in a Full-Scale Aircraft Cabin Mockup: Part 1 — Determination of Boundary Conditions at the Outlet of Air Diffusers. In ASME 2013 Fluids Engineering Division Summer Meeting (Paper No: FEDSM2013-16564, V01AT03A023; pp. 9). July 7–11, 2013, Incline Village, Nevada, USA.
- [6] **Ebrahimi, K.**, Zheng, Z. C., & Hosni, M. H. (2012). Computational Study of the Effects of Particle Size, Particle Injection Configuration, and Operating Pressure Gradient on Turbulent Dispersion of Spherical Micron-Sized Particles in a Generic Mockup Aircraft Cabin. In ASME 2012 International Mechanical Engineering Congress and Exposition (Paper No: IMECE2012-88504, pp. 221-236). doi: 10.1115/IMECE2012-88504. November 9–15, 2012, Houston, Texas, USA.
- [7] **Ebrahimi, K.**, Zheng, Z. C., & Hosni, M. H. (2011). Simulation of the Turbulent Dispersion of 10 Micron Particles in a Generic Half-Cabin Model. In ASME 2011 International Mechanical Engineering Congress and Exposition (Paper No: IMECE2011-64183, pp. 907-917). doi: 10.1115/IMECE2011-64183. November 11–17, 2011, Denver, Colorado, USA.
- [8] **Ebrahimi, K.**, Zheng, Z. C., & Hosni, M. H. (2010). LES and RANS Simulation of Turbulent Airflow and Tracer Gas Injection in a Generic Aircraft Cabin Model. In ASME 2010 3rd Joint US-European Fluids Engineering Summer Meeting collocated with 8th International Conference on Nanochannels, Microchannels, and Minichannels (Paper No: FEDSM-ICNMM2010-30552, pp. 227-240). doi: 10.1115/FEDSM-ICNMM2010-30552. August 1–5, 2010, Montreal, Quebec, Canada.
- [9] **Ebrahimi, K.**, & Bazargan, M. (2004). Numerical investigation of the radial variation of heat flux and shear stress on heat transfer to turbulent flow of supercritical water. Proceedings of ISME2004, 8th International Conference of Mechanical Engineering, Tehran, Iran.
- [10] **Ebrahimi, K.**, & Bazargan, M. (2003). Analytical study of forced convection heat transfer to turbulent flow of supercritical water. Proceedings of the 8th National Conference on Fluid Dynamics, Tabriz, Iran.

**PUBLICATION
CITATION
STATISTICS**

As of Jan. 3, 2025

- H-index: 6 (Google Scholar), 5 (ResearchGate), 5 (Scopus)
- Total Citations: 1107 (Google Scholar), 846 (ResearchGate), 797 (Scopus)
- Average Citations per Publication:
- Journal Papers: 267.25 (Google Scholar), 206 (ResearchGate), 195.5 (Scopus)
- Conference Papers: 3.73 (Google Scholar), 2.9 (ResearchGate), 1.36 (Scopus)
- Most Cited Publication: "A review of data center cooling technology, operating conditions, and the corresponding low-grade waste heat recovery opportunities", 805 (Google Scholar), 610 (ResearchGate), 563 (Scopus)

INVITED TALKS

- Energy Materials Nanotechnology (EMN) Europe Meetings: EMN Meeting on Smart Grid Technology, September 2017, Barcelona, Spain.
- International Conference & Expo on Aerospace & Aeronautical Engineering, February 26-27, 2018, Abu Dhabi, UAE.

SELECTED**MEETINGS/****CONFERENCE TALKS**

- ITherm conference, San Diego, CA (2018)
- Center for Energy-Smart Electronic Systems (ES2) IAB Meeting, Villanova, PA (2013)
- Center for Energy-Smart Electronic Systems (ES2) IAB Meeting, Arlington, TX (2012)
- IMECE Conference, Denver, CO (2011)

POSTER**PRESENTATIONS**

- [1] **Ebrahimi, K.**, Fleischer, A.S., Jones, G.F., "A Comprehensive Assessment of Technologies Utilizing Waste Heat and their Impact on Improving Energy Efficiency in Data Centers", NSF-IUCRC/ IAB Meeting, Villanova, PA, USA, June 2012.
- [2] **Ebrahimi, K.**, Fleischer, A.S., Jones, G.F., "Approaches for Recovery of Waste Energy from Data Centers", IUCRC IAB Meeting, National Science Foundation (NSF), Arlington, TX, USA, October 2012.
- [3] **Ebrahimi, K.**, Fleischer, A.S., Jones, G.F., "Waste heat recovery and reuse from Data Centers", NSF-IUCRC/ IAB Meeting, Atlanta, GA, USA, April 2013.
- [4] **Ebrahimi, K.**, Bakhshi, R., Fleischer, A.S., Jones, G.F., "Waste energy recovery and reuse from Data Centers-Absorption Refrigeration Cycle", NSF- IUCRC/ IAB Meeting, Villanova, PA, USA, September 2013.
- [5] **Ebrahimi, K.**, Bakhshi, R., Fleischer, A.S., Jones, G.F., "Waste energy recovery and reuse from Data Centers-Organic Rankine Cycle", NSF-IUCRC/ IAB Meeting, Villanova, PA, USA, September 2013.

**APPLIED RESEARCH
EXPERIENCE**

- Participated in developing an automated ANSYS-based software for simulating fiber optic cable installation using an air blower.
- National Science Foundation-sponsored research: Recovering and reusing waste heat from large data centers.
- Microsoft-sponsored project: Exploring fuel cell and thermo-electric generator coupled technologies for waste heat recovery in server racks.
- Conducted a thermo-economic analysis of novel data center waste heat recovery systems integrating absorption refrigeration and organic Rankine cycle into server cooling.
- Participated in developing thermodynamic holistic analysis tools and energy optimization strategies for data centers.
- Conducted 3D CFD simulations investigating turbulent airflow in an 11-row Boeing 767 aircraft cabin mockup.
- Conducted comprehensive 3D CFD simulations studying turbulent airflow, tracer gas diffusion, and particle dispersion in a generic aircraft cabin model using Large Eddy Simulation (LES), Reynolds-Averaged Navier-Stokes (RANS), species transport, Discrete Phase Model, and Drift Flux Model.
- Performed experimental data collection and analysis investigating particle dispersion and gas diffusion in an 11-row aircraft cabin mockup.
- Analyzed the performance of thermal management systems in LED lamps through computational simulations and experimental measurements.
- Conducted 3D CFD simulation and design optimization of non-moving-part orifice valves.
- Studied interior and exterior turbulent airflow and temperature distribution in a full-scale animal trailer using 3D CFD simulation.
- Conducted a literature review on CFD simulation of turbulent fluid flow and heat transfer in enhanced helically ridged tubes.
- Explored the application of supercritical fluids in thermal management systems and the development of renewable energy technologies.
- Developed mathematical models to simulate forced convection heat transfer to turbulent flow of supercritical fluids.
- Completed a study on metal formation methods in automotive industries, focusing on roll-forging.
- Completed a study on design and manufacturing procedures for thermoplastic and Bakelite molds.

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| TEACHING EXPERIENCE | Texas State University, San Marcos, TX (August 2022-Present) | |
| | • ENGR 1304: Engineering Graphics | Fall 2022/2023/2024, Summer 2023/2024, Spring 2023/2024 |
| TEACHING EXPERIENCE (CONTINUED) | • ENGR 2301: Statics | Summer 2023 |
| | • ME 1101: Introduction to Digital Mechanical Engineering Laboratory | Spring 2023/2024 |
| | • ME 1201: Introduction to Digital Mechanical Engineering | Fall 2022/2023/2024 Spring 2024/2025 |
| | • ME 3335: Engineering Fluid Mechanics | Fall 2024 Spring 2025 |
| | Minnesota State University, Mankato, MN (August 2018- July 2022) | |
| | 1. ME 212: Statics | Summer 2019 and Fall 2020/2021 |
| | 2. ME 213: Statics & Dynamics for EE Students | Fall 2021 |
| | 3. ME 214: Dynamics | Spring 2020 and Spring 2021 |
| | 4. ME 291: Engineering Analysis | Spring 2020 |
| | 5. ME 299: Thermal Analysis for EE & CE Students | Spring & Summer 2019 and Fall 2021 |
| | 6. ME 321: Fluid Mechanics | Fall 2018 and Spring 2021 |
| | 7. ME 324: Heat Transfer | Spring 2019 and Summer 2022 |
| | 8. ME 329: Applied Thermodynamics | Spring 2020 and Summer 2022 |
| | 9. ME 416: Thermal/Fluids Systems Design | Spring 2019 |
| | 10. ME 428: Design Project 1 | Fall 2018/2019 |
| | 11. ME 436W: Thermal/Fluids Laboratory | Fall 2018/2019/2020/2021 |
| | 12. ME 438W: Design Project 2 | Spring 2019/2020 |
| | 13. ME 439: HVAC Design | Fall 2019 |
| | 14. ME 603: Computational Fluid Mechanics and Heat Transfer | Fall 2020 |
| | Bethany Lutheran College, Mankato, MN (August 2019 – December 2019) | |
| | • ENSC 381: Engineering Thermodynamics | Fall 2019 |
| | Boise State University, Boise, ID (August 2017- August 2018) | |
| | 1. ENGR 220: Dynamics | Fall 2017 and Spring 2018 |
| | 2. ME 320: Heat Transfer | Summer 2018 |
| | 3. ME 380: Kinematics & Machine Dynamics | Spring 2018 |
| | Rowan University, Glassboro, NJ (September 2016- August 2017) | |
| | 1. ME 10301: Machine Design | Fall 2016 |
| | 2. ME 10322: Thermal/Fluid Sciences II (practicum course) | Spring 2017 |
| | 3. ME 10343: System Dynamics and Control I | Fall 2016 |
| | 4. ME 10344: System Dynamics and Control II | Spring 2017 |
| | Villanova University, Villanova, PA (March 2012- May 2017) | |
| | 1. ME 3900: Thermo-Fluid Laboratory | Fall 2013 and Spring 2014 |
| | 2. ME 7038: Computational Fluid Mechanics and Heat Transfer | Spring 2017 |
| ADVISORY AND COMMITTEE ROLES | <ul style="list-style-type: none"> • Senior Design Advisor, Minnesota State University: • Water-cooled single-server rack system (Fall single-server 2019 & Spring 2020) • Gander Towers HVAC&R Design (Fall 2018 & Spring 2019) • Co-advisor and Advisory Committee Member for the following Master's theses, Mechanical Engineering Program, Minnesota State University: • "Optimized placement of vertical axis wind turbines (VAWTs)" by Joshua Dickinson (2021) • "Indoor navigation for visually impaired person using inertial and geomagnetic information" by Jayanth Ammanabrolu (2020) | |
| REVIEW AND EDITORIAL EXPERIENCE | <ul style="list-style-type: none"> • Evaluated multiple NSF SBIR/STTR proposals (May-August 2021). • Reviewed articles for the following journals: • ASME Journal of Engineering and Science in Medical Diagnostics and Therapy | |

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| REVIEW AND EDITORIAL EXPERIENCE (CONTINUED) | <ul style="list-style-type: none"> • ASME Journal of Electronic Packaging • ASME Journal of Thermal Science and Engineering Applications • Energy • Energy and Buildings • Journal of Applied Fluid Mechanics • Entropy (MDPI - Open Access Journal) • International Journal of Electrical Power and Energy Systems • Science of the Total Environment |
| OTHER ACADEMIC SERVICES | <ul style="list-style-type: none"> • Lead the development and implementation of the ME 4131 Thermal-Fluids Laboratory at Texas State University. • Actively contribute to ABET accreditation processes and program development for the Mechanical Engineering program at Texas State University. • Actively participate in the Nontenure Track Career Advancement Taskforce at Texas State University. • Serve on the Scholarship Committee at Texas State University. • Contribute as a Faculty Search Committee Member at Texas State University. • Co-chaired the Student Poster Session at the 19th ITherm Conference (2020). • Reviewed conference papers for various ASME and ITherm (IEEE) conferences. • Represented the Mechanical and Civil Engineering Department for lab safety at Minnesota State University (2020-2022). • Contributed as a member of the "Program Operations Committee" and "Curriculum Alignment Team" for the Mechanical and Biomedical Engineering Department at Boise State University (AY 2017-2018). • Represented the Mechanical Engineering Department for undergraduate scholarships at Rowan University (AY 2016-2017). |
| PROFESSIONAL DEVELOPMENT | <ul style="list-style-type: none"> • Completed a postgraduate program in Artificial Intelligence and Machine Learning (AI-ML) at the University of Texas-Austin through the Great Learning platform (January–August 2022). • Completed a Ph.D. course on "Teaching Engineering in Higher Education" at Villanova University's College of Engineering (2014). • Gained expertise in Project Management Fundamentals through courses with PrimeLearning Group (2006–2007). • Received training in Project Cost Estimation at the Industrial Research and Training Center of Iran. • Completed an Energy Management and Energy Auditing program at the Iranian Institute for International Energy Studies (2005). |
| PROFESSIONAL MEMBERSHIPS | <ul style="list-style-type: none"> • American Society of Mechanical Engineers (ASME) • Institute of Electrical and Electronics Engineers (IEEE) • American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) |
| PROJECT MANAGEMENT EXPERIENCE | <p>At the Iranian Fuel Conservation Company, IFCO (2006-2008), I managed the following projects:</p> <ul style="list-style-type: none"> • Developed standard driving cycles specifically tailored for the city of Tehran. • Orchestrated the design and establishment of the Motorcycle emission/fuel consumption measurement laboratory in collaboration with CP Engineering (UK) and AVL (Austria) at the Energy Research Center of the Research Institute of Petroleum Industry (RIPI). • Conducted a comprehensive techno-economic assessment of technical proposals aimed at enhancing the fuel efficiency of M1 and N1 light-duty vehicles for IFCO. • Oversaw the standard measurement of fuel consumption and emissions of retrofitted bi-fuel vehicles (operating on both gasoline and CNG) within Iran's light-duty vehicle segment, forming part of a feasibility study to establish fuel economy standards for these vehicles. • Spearheaded the creation and publication of the first edition of ISIRI 8361, the national standard for fuel consumption and energy labeling for Heavy-Duty Vehicle Diesel Engines. |

DISTINCTIONS

- My postdoctoral research was recognized and featured in the 2014 Breakthroughs of NSF Industry/University Cooperative Research Centers, showcased to members of Congress, the White House, and congressional staffers.
- Ranked 3rd among 40 graduate students who were admitted in 2000 by the Faculty of Mechanical and Aerospace Engineering K.N. Toosi University of Technology.

REFERENCES

1. **Ruben Rathnasingham, Ph.D.**, Assistant Dean for Health Product Innovation, Associate Professor, Medical Education Managing Director, Texas Health CoLab Dell Medical School. The University of Texas at Austin,
Austin, TX
Tel: 512-495-5045
Email: rubenr@austin.utexas.edu
2. **Shahram Shafie**, Founding Team at TEXGHS Innovation Consortium.
Austin, TX
Tel: 202-361-7520
Email: shahram@texasairind.com
3. **Byron Jones, Ph.D., P.E.**, Professor Emeritus, Department of Mechanical and Nuclear Engineering, Kansas State University,
Manhattan, KS
Tel: 785-532-5462
Email: jones@ksu.edu