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ACADEMIC APPOINTMENTS:

Associate Professor, Department of Mechanical Engineering Middle East Technical University (METU), Ankara, Turkey	2011-Present
Assistant Professor, Department of Mechanical Engineering Middle East Technical University (METU), Ankara, Turkey	2003-2009
Assistant Professor, Department of Environmental Resources Engineering Humboldt State University, Arcata, California	2000-2002

DEGREES:

Ph.D.	Mechanical Engineering	The University of Texas – Austin	August 2000
M.S.	Mechanical Engineering	The University of Texas – Austin	May 1996
B.S.	Mechanical Engineering	Virginia Tech	May 1992

RESEARCH:

Solar Thermal Powered Adsorption Heat Pumps (TUBITAK Project 105M244, 2006-2009)

- Theoretical and experimental investigations into thermal powered adsorption heat pumps.
- Established outdoor solar thermal collector test facility and performed long-term collector tests.
- Established solar radiation monitoring station and collected long term data.

Fuel Cells (TUBITAK 108T099 Project, 2009-Present)

- Development of proton exchange membrane (PEM) fuel cells.

Parabolic Trough Collectors (PTC) for Concentrating Solar Thermal Power:

- Modeling and simulations of large scale PTC systems located in Turkey.
- Monitoring and modeling of small scale PTC system for electricity, cooling and heating at METU NCC.

Thermodynamic Based Sustainability Indicators for Electricity Sector:

- Development of national level sustainability indicators for the electricity sector and application to Turkey.

Coincidence of Solar Resources and Electricity Demand in Turkey (TUBITAK Project 108M001, 2008-Present)

- Quantification of the potential for solar conversion technologies in combination with energy storage and smart grid technologies to meet peak electricity demand in different regions of Turkey.

General Clean Energy Conversion Technologies and Other:

- Building energy simulations (BES) of a high-performance buildings.
- Hydrogen production and infrastructure.
- Optimized path planning for solar-powered unmanned aerial vehicles.
- Design and optimization of an underwater piezoelectric acoustical transducer.
- Large scale compressed air energy storage for wind energy.

INDUSTRY EXPERIENCE:

Xenergy, Burlington, MA (1993-1994). Consultant to New England Electric System. Developed demonstration programs for emerging residential heating and cooling technologies. Evaluated residential and industrial Demand Side Management (DSM) programs.

Siv. Ing. Gaute Flatheim, Stavanger, Norway (2 Months, 1992). Exchange Engineering Position. Thermal modeling of solar heated house.

ABB: Gas Turbine Manufacturing, Chester, VA (3 Months, 1992). Summer Engineering Position. Gas turbine manufacturing support

Duke Power Company, Mt. Holly, NC, (1988-1990). Co-op Engineer. Support for fossil fuel power plant maintenance.

EDUCATIONAL ACTIVITIES:

International Summer Engineering Program (ISEP): Development and running of a 7-week summer program at METU for undergraduate engineering students from METU, The University of Texas-Austin, and The Pennsylvania State University. 2009-Present.

Twice Named METU Educator of the Year (2003-2004 and 2005-2006 Academic Years): Awarded to ~1% of the METU faculty each year.

Thermodynamics: An Integrated Learning System: Co-authored integrated learning system for undergraduate engineering thermodynamic courses: Textbook (512 pages); Website (490 interactive pages); Solution Manual (450 Problems); Classroom Slides (381 Slides); Interactive Educational Graphics (29); Educational Video Clips (5). Used as the primary textbook at The University of California-Berkeley, The University of Texas-Austin, North Carolina State University, The University of Massachusetts-Amherst, Florida State University, and The University of Nevada-Las Vegas, and translated into Korean.

Fuel Cell Fundamentals: Developed 4th year technical elective fuel cell course. Adapted course to include global competency content for 2009 International Summer Program.

Courses Given at Middle East Technical University (METU)

Graduate:	ME 537 Advanced Thermodynamics I	ME 538 Advanced Thermodynamics II
4th Yr Elective:	ME 492 Fuel Cell Fundamentals	ME 478 Intro to Solar Energy Utilization
	ME 476 2 nd Law Analysis of Engr Systems	ME 405 Energy Conversion Systems
3rd Yr:	ME 311 Heat Transfer	ME 351 Thermo. of Heat Power
2nd Yr:	ME 203 Thermodynamics I (for ME's)	ME 204 Thermodynamics II

Courses Given at Humboldt State University

4th Yr Electives:	Engr 475 Renewable Energy Power Systems	Engr 477 Solar Thermal Engineering
3rd Yr:	Engr 331 Thermodynamics I	
2nd Yr:	Engr 215 Introduction to Design	
1st Yr:	Engr 115 Labs: Introduction to Environmental Resources Engineering	

SERVICE:

Associate Editor-in-Chief, International Journal of Thermodynamics (March 2008-Present): Editor-in-Chief Michael von Spakovsky, Virginia Tech, USA. Published by The International Centre for Applied Thermodynamics.

Vice Chairperson of Executive Committee, International Center for Applied Thermodynamics (January 2009-Present):

Member of Scientific Council, International Centre for Heat and Mass Transfer (ICHMT) (January 2011-Present).

Member of Organizing Committee: First Turkish Solar Energy Conference and Exhibition (Solar TR-1), Middle East Technical University, April 29-30, Ankara, Turkey.

Member of International Scientific Advisory Board: 10th International Conference on Clean Energy (ICCE-2010), September 15-17, 2010, Famagusta, Northern Cyprus.

Member of International Program Committee: IASTED International Conference on Power and Energy Systems (AfricaPES 2010), Sept. 6-8, 2010, Gaborone, Botswana.

PROFESSIONAL MEMBERSHIPS:

American Society of Mechanical Engineers

International Centre for Applied Thermodynamics

International Centre for Heat and Mass Transfer

International Solar Energy Society

Mechanical Design and Production Society (MATIM: Makina Tasarim ve Imalat Derneği)

PUBLICATIONS:

EDUCATIONAL

- Korean translation of Thermodynamics: An Integrated Learning System. 김동섭, 김무근, 김영일, 서정세, 신지영 공역 (Schmidt, Ezekoye, Howell, Baker), 2008, 열역학 (Thermodynamics: An Integrated Learning System). Translated and Published by Sigma Publishers, Seoul, Korea; Under Agreement with Wiley, New York.
- Schmidt, P. S., O. A. Ezekoye, J. H. Howell and D. K. Baker, 2006, "Thermodynamics: An Integrated Learning System", Wiley, New York (See Educational Activities above for details).
- Schmidt, P. S., O. A. Ezekoye, J. Howell, D. K. Baker, 2001, "ThermoNet V1 ", Wiley, New York. 11 chapter online supplement to the following textbooks: Fundamentals of Engineering Thermodynamics, M. Moran and H. Shapiro; Fundamentals of Thermodynamics, R. Sonntag, C. Borgnakke, and G. Van Wylen; Introduction to Engineering Thermodynamics, R. Sonntag and C. Borgnakke .

JOURNAL ARTICLES

- Solmuş, İ, Yamalı, C., Kaftanoğlu, B., Baker, D. (In-press). *Experimental Investigation of a Natural Zeolite-Water Adsorption Cooling Unit*. Applied Energy. Accepted April 6, 2011.
- Taylan, O, Baker, D., Kaftanoğlu, B. (In-press). *Normalized Thermodynamic Model for Intermittent Energy Systems and Application to Solar-Powered Adsorption Cooling Systems*. International Journal of Thermodynamics. Accepted Dec. 25, 2010.
- Taylan, O., Baker, D. K., Kaftanoğlu, B. (In-press). *COP Trends for Ideal Thermal Wave Adsorption Cooling Cycles with Enhancements*. International Journal of Refrigeration. doi: 10.1016/j.ijrefrig.2010.07.008. Accepted Jul. 20, 2010.
- Baker, D, Açar, E. (2011). *International Summer Engineering Program on Fuel Cells for Undergraduate Engineering Students*. International Journal of Hydrogen Energy. 36(5) 3712-3725. doi: 10.1016/j.ijhydene.2010.12.106.
- Solmuş, İ, Yamalı, C., Kaftanoğlu, B., Baker, D., Çağlar, A. (2010). *Adsorption Properties of a Natural Zeolite-Water Pair for use in Adsorption Cooling Cycles*, Applied Energy. 87, 2062-2067.
- Baker, D. K. (2008). *Thermodynamic Limits to Thermal Regeneration in Adsorption Cooling Cycles*. International Journal of Refrigeration. 31(1) 55-64.
- Baker, D. K., Kaftanoğlu, B. (2007). "Predicted Impact of Collector and Zeolite Choice on the Thermodynamic and Economic Performance of a Solar Powered Adsorption Cooling System", Experimental Heat Transfer journal. 20(2) 103-122.
- Baker, D. K., Vliet, G. C., (2003). *Identifying and Reducing Scaling Problems in Solar Hot Water Systems*. Journal of Solar Energy Engineering. 125(1) 61-66.
- Baker, D. K. and G. C. Vliet (2001). *Designing Solar Hot Water Systems for Scaling Environments*. Journal of Solar Energy Engineering. 123(1) 43-47.

CONFERENCE PAPERS

- Efe Y., M. Sankır, D. Baker (2010). "PEM Fuel Cell Modeling With 3-D Serpentine Channel Geometry Optimization Algorithm Using Matlab, Fluent And Comsol Multiphysics," Proceedings of 10th International Conference on Clean Energy (ICCE-2010), September 15-17, 2010, Famagusta, N. Cyprus.
- Taylan O., Baker D. K., Kaftanoğlu B. (2010). "Adsorbent-Refrigerant Comparison for a Solar Powered Adsorption Cooling System using Seasonal Simulations," Proceedings of Clima 2010, 10th REHVA World Congress, Antalya, Turkey.
- Güray B. S., Baker D. (2010). "Energy and Exergy Analysis for the Electricity Sector of Turkey," Proceedings of 23rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2010), Lausanne, Switzerland.

- Çağlar A., Yamalı C., Baker D. and Kaftanoğlu B. (2010). "Testing the Thermal Performance of Solar Collectors," Proceedings of 7th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT 2010), Antalya, Turkey.
- Girep P., Bilgiç M., Aydınalp Köksal M. and Baker D. (2010) "Türkiye'nin Uzun Dönem Tepe Yük Talebinin Tahmin Edilmesi" (Long Term Peak Load Demand Forecast of Turkey), Proceedings of 16th Int'l Energy and Env. Fair and Conf. (ICCI 2010), May 2010, Istanbul, Turkey.
- Yeralan S., Baker D. (2009). "Sustainable Systems Engineering," Proceedings of Frontiers in Education (FIE) 2009 Conference, San Antonio, USA.
- Taylan O., Baker D. K., Kaftanoğlu B. (2009). "Parametric Study and Seasonal Simulations of a Solar Powered Adsorption Cooling System," Proceedings of 22nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS), Parana, Brazil.
- Baker, D. K. and Kaftanoğlu, B. (2008). "Trends In COP for Adsorption Cooling Cycles with Thermal Regeneration and Finite Number Of Beds," Proceedings of ASME Energy Sustainability 2008, Jacksonville, Florida, 10-14 August.
- Baker, D. K. and Kaftanoğlu, B. (2007). "Limits to the Thermodynamic Performance of a Thermal Wave Adsorption Cooling Cycle," Proceedings of 5th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics (HEFAT07) Sun City, South Africa.
- Baker D.K. and B. Kaftanoğlu (2006). Güneş enerjisi ile çalışan adsorblanmalı bir soğutma sisteminde zeolit ve silika jel kullanımında termodinamik ve ekonomik başarımın karşılaştırılması. Proceedings of Türkiye 10. Enerji Kongresi ve Uluslararası 5. Enerji Fuarı, November 27-30; Istanbul, Turkey.
- Baker, D. K. and B. Kaftanoğlu (2006). "Güneş Enerjisi ile Çalışan Adsorplanma Soğutma Sisteminden Maksimum Teorik Başarım Sağlanması", Proceedings of VI. Ulusal Temiz Enerji Sempozyumu (UTES), Isparta, Turkey.
- Baker, D. K. and B. Kaftanoğlu (2005). "Comparing the Performance of Natural and Synthetic Zeolites in a Solar-Powered Adsorption Cooling System", Proceedings of 4th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics (HEFAT05) Cairo, Egypt.
- Baker, D. K. and B. Kaftanoğlu (2005). "Thermoeconomic Model for a Solar-Powered Zeolite Cooling System", Proceedings of 2005 Solar World Congress, ASME, Orlando, Florida, USA.
- Ateş, M. and D. K. Baker (2005). "The Potential for Evaporative Cooling in Turkey", Proceedings of International Conference: Passive and Low Energy Cooling for the Built Environment, Santorini, Greece.
- Cashman, E. M, E. A. Eschenbach and D. K. Baker (2005). "Adding Energy and Power to Environmental Engineering Curriculum with Just-in-time Teaching", Proceedings of Frontiers in Education Conference, Indianapolis, Indiana, USA.
- Baker, D. K., and A. Canlıdınç (2004). "ThermoNet: Part of an Integrated Website-Textbook System", Conference Proceedings of Education and Information Systems: Technologies and Applications, Orlando, Florida, USA.
- Baker, D. K. and G. C. Vliet (2002). "Identifying and Reducing Scaling Problems in Solar Hot Water Systems", Solar 2002 Proceedings, ASME, Reno, Nevada, USA.
- Baker, D.K, O. A. Ezekoye, P. S. Schmidt, C. M. Jones and Min Liu (2000). "ThermoNet: A Web-Based Learning Resource for Engineering Thermodynamics", Proceedings of American Society for Engineering Education Annual Meeting, St. Louis, Missouri, USA.
- Baker, D. K., G. C. Vliet and D. F. Lawler (1999). "Comparison of Calcium Carbonate Scaling Rate Models", Proceedings of 1999 National Heat Transfer Conference, ASME, Albuquerque, New Mexico, USA.
- Baker, D. K., G. C. Vliet and D. F. Lawler (1999). "Experimental Apparatus to Investigate Calcium Carbonate Scale Growth Rates", Proceedings of Mitigation of Heat Exchanger Fouling and Its Economic and Environmental Implications, United Engineering Foundation, Banff, Canada.
- Vliet, G. C. and Baker, D. K. (1998). "Designing Solar Hot Water Systems for Scaling Environments", Proceedings of American Solar Energy Society Annual Conference, Albuquerque, New Mexico, USA.