

Curriculum Vitae

Omar Abdelaziz

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RESEARCH EXPERTISE

- Technology characterization and prioritization.
- Low global warming potential refrigerants, life cycle climate performance modeling.
- Energy systems with application to combined heat and power (thermally activated technologies).
- Energy efficiency and sustainable energy production and utilization.
- Multi-scale and multi-physics heat exchangers' simulation and optimization (CFD/ ε -NTU/refrigerant headers/structural analysis).
- Approximation techniques: Design of Experiment, Metamodeling.
- Multi-objective multi-disciplinary optimization.
- CFD simulations of heat exchangers.
- Transient and steady state modeling of vapor compression systems and components including transcritical CO₂ systems.
- Two-phase flow: Experimental/Analytical Techniques.
- Indoor air quality.
- CFD simulations of room air flow.

PROFFESIONAL EXPERIENCE

Group Leader, October 2014 – Present

Oak Ridge National Laboratory, Oak Ridge, TN

- Manage and lead a research portfolio of more than 6 million USD annually
 - Established Corporate Research and Development Agreements (CRADA) with major US manufacturers for different projects, executed Non-Disclosure Agreements (NDA) and Material Transfer Agreements (MTA) with various collaborators
 - Manage subcontracts with government contractors, small businesses and academia
- Support other researchers within the Building Technology Research and Integration Center (BTRIC).
- Mentor post-doctoral researchers, graduate interns, and undergraduate students.
- Pursue international research collaboration.
- Attended relevant international conferences to present current research.

Senior Fellow, August 2012 – August 2014

U.S. Department of Energy, Washington D.C.

- Assess various technologies with strong potential for energy savings in the US buildings' sector
 - Investigated advanced non-solid-state lighting technologies
 - Investigated the use of carbon fiber in innovative building fabric
- Develop new programs for BTO

- Investigated Building Integrated Solar Technologies (BIST)
- Coordinated the development of BIST roadmap with Navigant Consulting, Inc.
- Developed new Small Business Innovation Research topics and supported BTO personnel in award selection
- Responsible for the development and updates of the Building Technologies Office (BTO) Technology Prioritization Tool
 - Review technology database
 - Moderate peer-review webinars with experts in different building related fields
 - Coordinate with Navigant Consulting Inc. on technology scenarios and measure updates
- Develop minimum building energy use metrics based on thermodynamic limits

R&D Staff, October 2009 – September 2014

Oak Ridge National Laboratory, Oak Ridge, TN

- Manage and lead a research portfolio of more than 3.5 million USD annually
 - Established Corporate Research and Development Agreements (CRADA) with major US manufacturers for different projects, executed Non-Disclosure Agreements (NDA) and Material Transfer Agreements (MTA) with various collaborators
 - Advanced water heater development (transcritical CO₂, thermally activated heat pump water heaters) – CRADA with General Electric
 - Advanced appliance development incorporating energy storage and retrieval – CRADA with Whirlpool
 - High performance cold climate heat pump development – CRADA with Emerson Climate Technologies and Johnson Controls Inc.
 - Low global warming potential refrigerant solutions for commercial refrigeration – CRADA with Honeywell
 - Magnetocaloric refrigeration system development for commercial air conditioning applications
 - Manage subcontracts with government contractors, small businesses and academia
- Support other researchers within the building technology research and integration center.
- Mentor post-doctoral researchers, graduate interns, and undergraduate students.
- Pursue international research collaboration.
- Attended relevant international conferences to present current research.
- Wrote local, national, and international proposals.
- Participated in several research projects within the whole building and community integration and the building equipment research groups.
 - US-China Clean Energy Research Center – Building Energy Efficiency: participated in proposal writing, developed working group for solar building integration
 - Scoping studies: commercial refrigeration, appliances, not-in-kind technologies
 - Road map efforts: worked with ORNL teams on developing water heaters, heating ventilation and air conditioning, working fluids, appliances road maps for the US Department of Energy
 - Technical support for the Commercial Building Energy Alliance (CBEA)

Research Associate, August – October 2009

Center for Environmental Energy Engineering (CEEE), University of Maryland, College Park, MD

- Mentored and trained graduate students in the areas of CFD simulations, approximation assisted optimization, object oriented programming, vapor compression cycle simulations, and heat exchanger simulations.

- Provided customer support for CEEE consortium members
- Assisted in the CEEE consortium meeting organization
- Developed approximation assisted multi-scale simulation capabilities for a new research project.

EDUCATION

Ph.D. Mechanical Engineering, August 2009

University of Maryland, College Park, MD

GPA: 4.0

Focus: Thermal Fluid Sciences, Energy Systems

Dissertation:

“Development of Multi-Scale, Multi-Physics, Analysis Capability and its Application to Novel Heat Exchanger Design and Optimization”

Faculty Advisor: Dr. Reinhard Radermacher (raderm@umd.edu)

M.Sc. Mechanical Power Engineering, October 2005

Cairo University, Giza, Egypt

Grade: 91% – Ranked first in a class of 30 students

Focus: Thermal Fluid Sciences, CFD simulations

Thesis:

“Flow Regimes, Thermal and Humidity Patterns in Ventilated Archaeological Tombs, Valley of the Kings, Luxor”

Faculty Advisor: Dr. Essam E. Khalil (khalile1@asme.org)

B.Sc. Mechanical Power Engineering, July 2003

Cairo University, Giza, Egypt

Grade: 94% – Ranked second in a class of 280 students

Graduation Project: Heat Exchanger Design and Control

Faculty Advisor: Dr. Essam E. Khalil (khalile1@asme.org)

ADDITIONAL EXPERIENCE

Graduate Research Assistant, 2006 – August 2009

Center for Environmental Energy Engineering, University of Maryland, College Park, MD

- Developed a modeling framework for Next Generation Heat Exchanger (NGHX) as part of Ph.D. Dissertation and fabricated and evaluated a prototype design
- Continued to improve and provide technical support to TransRef (transient refrigeration systems simulation tool)
- Researched refrigerant charge inventory in household refrigerators with multiple evaporators
- Develop workshop material and conduct short courses for heat exchanger design
- Write winning proposals and attract research funding
- Mentoring graduate and undergraduate students
- Taught a graduate course as a teaching practicum in partial fulfillment of the Future Faculty Program (ENME 808D: “Sustainable Energy Production and Utilization”; Spring 2008).

Teaching and Research Assistant, 2003 - 2005

Department of Mechanical Power Engineering, Cairo University, Giza, Egypt

- Conducted weekly classes and held consistent office hours, graded weekly homework assignments, held oral examinations, and graded mid-term examination for: Refrigeration and

Air Conditioning, Thermodynamics, Conventional Power Plants, and Engineering Economy courses and Measurement Laboratory.

- Improved lab performance and fixed experiments.
- Participated in video production to demonstrate experiments.
- Provided innovative designs for the ventilation of the historical tombs of the kings in Luxor to minimize mold growth and extend artifacts preservation through CFD simulations.
- Developed educational materials for the electronics cooling course developed through the HEEP program and Engineering economy course (VISION project) granted by TEMPUS.

Research Engineer, 2003 - 2004

Dr. Ezz Mechanical Engineering Consultancy, Giza, Egypt

- Designed and implemented a PLC based controller for AMADA CNC resulting in a replacement part cost savings of \$10,000.
- Installed PLC and Motor controllers, sensors and actuators.
- Developed a Ladder diagram model for the CNC control and developed a graphical user interface wrapper using .Net framework.

Summer Intern, August 2002

Commercial Buildings Mechanical System Design Dept., **Dar-Alhandasha**, Cairo, Egypt

Summer Intern, July 2002

Mechanical Design Dept., Consulting Engineering Bureau, Cairo, Egypt

Team Leader -Automated Guided Vehicle, May 2002

RoboCon Contest, Cairo, Egypt

Property Operation Intern/HVAC/BMS/Domestic Water System Maintenance, Summer 2001

Conrad International Cairo, Cairo, Egypt

Building Management System Design Summer Intern, August 2000

Petrokima Co., Giza, Egypt

Automotive Maintenance Summer Intern, June 2000

Peugeot Service Center, Ghamrah, Cairo Egypt

Electric Battery Management, Test Data Analysis Summer Intern, July 1999

New Generation Motors Corporation, Ashburn, Virginia

LEADERSHIP EXPERIENCE AND PROFESSIONAL ACTIVITIES

- Reviewer: International Journal of Refrigeration, Applied Thermal Engineering, International Journal of Energy Technology and Policy, HVAC&R, ASME Journal of Thermal Science and Engineering Applications.
- American Society of Heating, Refrigerating and Air-Conditioning Engineers, March 2006 – Present.
 - Established a multi-disciplinary task group for low GWP research (2012) – founding Chair
 - Started a new task group within ASHRAE for Optimization in the HVAC&R industry (2008).
 - Vice Chair for ASHRAE TC1.1.
 - Voting Member for TC1.1 and SPC25.
 - Corresponding member for ASHRAE Technical committees TG1.Optimization, TC1.3, TC8.4, and TC8.5.
 - Serving on various project evaluation and monitoring subcommittees.
- Association of Energy Engineers; February 2007 – 2009.
 - Founder of student chapter for Association of Energy Engineers at the University of Maryland.

- First president elect for AEE UMD student chapter.
 - Hosted a lecture series in energy production and utilization.
 - Hosted group discussions and field trips to solar PV manufacturing plant.
 - Participated in the production of a video submitted to Xprize for “Crazy Green Idea” contest.
- Monitor for GlobalCon 2007 and WEC 2008.
- **Sigma Xi, The Scientific Research Society**, October 2010 – Present; Judge for Student competition 2015.
- American Society of Mechanical Engineers, August 2008 – Present.
- Egyptian Syndicate of Engineers, August 2003 – Present.
 - Session Vice-Chair, 2008 Purdue International Refrigeration and Air Conditioning Conference.
 - University of Maryland Leadership Network, Fall 2007 – 2009.
 - University of Maryland Sustainability Group, Spring 2008 – 2009.

HONORS AND AWARDS

- A. James Clark School of Engineering Future Faculty Fellowship; 2007 - 2009
- A. James Clark School of Engineering Fellowship; 2006 - 2009
- **Best Paper Award in Terrestrial Energy, AIAA; January 2005**
- Cairo University Excellence Assistantship Award; 1998 - 2003
- Schlumberger Sponsorship; 2001 - 2002, 2002 - 2003

JOURNAL ARTICLES, BOOKS AND EDITORIAL

1. Beshr, M., Aute, V., Sharma, V., Abdelaziz, O., Fricke, B., and Radermacher, R., “A comparative study on the environmental impact of supermarket refrigeration systems using low GWP refrigerants”, *International Journal of Refrigeration*, Volume 56, August 2015, Pages 154-164, ISSN: 0140-7007.
2. Qu, M., Abdelaziz, O., Yin, H., “New configurations of a heat recovery absorption heat pump integrated with a natural gas boiler for boiler efficiency improvement”, *Energy Conversion and Management*, Volume 87, Pages 175-184, June 2014.
3. Saleh, K., Abdelaziz, O., Aute, V., Radermacher, R., Shapour, A., “Approximation assisted optimization of headers for new generation of air-cooled heat exchangers”, *Applied Thermal Engineering* Volume 61, Number 2, Pages 817-824, 2013.
4. Aute, V., Saleh, K., Abdelaziz, O., Azarm, S., and Radermacher, R., “Cross-validation based single response adaptive design of experiments for Kriging metamodeling of deterministic computer simulations”. *Structural and Multidisciplinary Optimization*, Volume 48, Number 3, Pages 581-605, 2013.
5. Mallow, A., O. Abdelaziz, K. Kalaitzidou, and S. Graham, “Investigation of the Stability of Paraffin/Exfoliated Graphite Nanoplatelet Composites for Latent Heat Thermal Storage Systems”, *Journal of Materials Chemistry*, Volume 22, Number 46, Pages 24469-24476, 2012.
6. Shen, B., Abdelaziz, O., Rice, C. K., “Auto-Calibration and Control Strategy Determination for a Variable-Speed Heat Pump Water Heater Using Optimization” *HVAC&R Research*, Volume 18, Number 5, October 2012, Pages 904-914, 2012.
7. Saleh, K., Abdelaziz, O., Aute, V., Radermacher, R., Azarm, S., “Approximation assisted optimization of headers for new generation of air-cooled heat exchangers”, *Applied Thermal Engineering*, In Press, Corrected Proof, Available online 12 June 2012.
8. Bansal, P., Abdelaziz, O., Vineyard, E. A., “Status of Not-in-Kind Refrigeration Technologies for Household Space Conditioning, Water Heating and Food Refrigeration”, *International Journal of Sustainable Built Environment*, Volume 1, Number 1, June 2012, Pages 85-101, 2012.

9. Bansal, P. K., Vineyard, E. A., Abdelaziz, O., “Advances in household appliances- A review”, Applied Thermal Engineering, Volume 31, Issues 17-18, December 2011, Pages 3748-3760, 2011.
10. Singh, V, Abdelaziz, O., Aute, V., Radermacher, R., “Simulation of air-to-refrigerant fin-and-tube heat exchanger with CFD-based air propagation”, International Journal of Refrigeration, Volume 34, Issue 8, Pages 1883-1897, December 2011.
11. Wang, K., Abdelaziz, O., Kisari, P., Vineyard, E. A., “State-of-the-art review on crystallization control technologies for water/LiBr absorption heat pumps”, International Journal of Refrigeration, Volume 34, Issue 6, September 2011, Pages 1325-1337, 2011.
12. Wang, K., Abdelaziz, O., Vineyard, E. A., “The impact of water flow configuration on crystallisation in LiBr/H₂O absorption water heater”, International Journal of Energy Technology and Policy, Volume 7; Issue 4, Pages 393 - 404, 2011.
13. Abdelaziz, O., Aute, V., Azarm, S., Radermacher, R., “Approximation Assisted Optimization for Novel Compact Heat Exchanger Designs”, HVAC&R Research, Volume 16, Number 5, September 2010, Pages 707-728, 2010.
14. Abdelaziz, O., Radermacher, R., “Modeling Heat Exchangers Under Consideration of Manufacturing Tolerances and Uncertain Flow Distribution” International Journal of Refrigeration, Volume 33, Issue 4, June 2010, Pages 815-828.
15. Radermacher, R., Abdelaziz, O., “Optimization” and HVAC&R.”, HVAC and R Research, v 14, Number 6, November 2008, Pages 817-818.
16. Abdelaziz, O., “FLOW REGIMES, THERMAL AND HUMIDITY PATTERNS IN ARCHAEOLOGICAL TOMBS - Preserving an International Heritage” LAP Lambert Academic Publishing, ISBN 978-3-8433-7022-6, Paperback, 172 pages.

REFEREED CONFERENCE PROCEEDINGS

1. Ayyoub M. Momen, Omar Abdelaziz, and Keith Rice, “Novel Frost Handling Techniques Using Air Bearing Heat Exchangers for Household Refrigerators”, ASHRAE summer Conference 2015, Atlanta, GA, June 2015.
2. Brandon J. Johnson, Michael R. Starke, Omar Abdelaziz, Roderick Jackson, Leon M. Tolbert, “A Dynamic Simulation Tool for Estimating Demand Response Potential from Residential Loads”, Innovative Smart Grid Technologies Conference (ISGT), 2015 IEEE Power & Energy Society , vol., no., pp.1,5, 18-20 Feb. 2015, doi: 10.1109/ISGT.2015.7131867
3. Vikrant Aute, Omar Abdelaziz, Daniel Bacellar, “Novel Heat Exchanger Design Using Computational Fluid Dynamics and Approximation-Assisted Optimizations”, paper no. CH-15-C040, ASHRAE winter Conference 2015, Chicago, IL, January 2015.
4. Ayyoub M. Momen, Omar Abdelaziz, Kyle Gluesenkamp, Edward Vineyard, Michael Benedict “Thermofluid analysis of magnetocaloric refrigeration”, the ASME International Mechanical Engineering Congress and Exposition, Montreal, QC, Canada, November 14-20, 2014.
5. Beshr, M., Aute, V., Sharma, V., Abdelaziz, O., Fricke, B.A., Radermacher, R., “A Comparative Study on the Environmental Impact of CO₂ Supermarket Refrigeration Systems”, 11th IIR Gustav Lorentzen Conference on Natural Refrigerants, Hangzhou, China, August 31st – September 2nd, 2014.
6. Bacellar, D., Ling, J., Aute, V., Radermacher, R., Abdelaziz, O., “Multi-Scale Modeling and Approximation Assisted Optimization Assisted Optimization of Bare Tube Heat Exchangers”, 15th International Heat Transfer Conference, Kyoto, Japan, August 10-15, 2014.
7. Phelan, P., Abdelaziz, O., Otanicar, T., Phelan, B., Prasher, R., Taylor, R., Tyagi, H., “The Impact of Thermal Engineering Research on Global Climate Change”, 15th International Heat Transfer Conference, Kyoto, Japan, August 10-15, 2014.

8. Beshr, M., Aute, V., Abdelaziz, O., Fricke, B.A., Radermacher, R., “Impact of Charge Degradation on the Life Cycle Climate Performance of a Residential Air- Conditioning System”, 15th International Refrigeration and Air Conditioning Conference, West Lafayette Indiana, July 14-17, 2014.
9. Beshr, M., Aute, V., Abdelaziz, O., Fricke, B.A., Radermacher, R., “An Evaluation of the Environmental Impact of Different Commercial Supermarket Refrigeration Systems Using Low Global Warming Potential Refrigerants”, 15th International Refrigeration and Air Conditioning Conference, West Lafayette Indiana, July 14-17, 2014.
10. Beshr, M., Aute, V., Abdelaziz, O., Fricke, B.A., Radermacher, R., “Impact of Charge Degradation on the Life Cycle Climate Performance of a Residential Air-Conditioning System”, 15th International Refrigeration and Air Conditioning Conference, West Lafayette Indiana, July 14-17, 2014.
11. Beshr, M., Aute, V., Abdelaziz, O., Fricke, B.A., Radermacher, R., “An Evaluation of the Environmental Impact of Different Commercial Supermarket Refrigeration Systems Using Low Global Warming Potential Refrigerants”, 15th International Refrigeration and Air Conditioning Conference, West Lafayette Indiana, July 14-17, 2014.
12. Shen, B., Abdelaziz, O., Rice, C.K., “Compressor Selection and Equipment Sizing for Cold Climate Heat Pumps”, 11th International Energy Agency Heat Pump Conference, Quebec, Montreal, Canada, May 12-16, 2014.
13. Beshr, M., Aute, V., Abdelaziz, O., Fricke, B.A., Radermacher, R., “A Tool for Life Cycle Climate Performance (LCCP) Based Design of Residential Air Source Heat Pumps”, 11th International Energy Agency Heat Pump Conference, Quebec, Montreal, Canada, May 12-16, 2014.
14. Johnson, B., Jackson, R., Tolbert, L.M., Starke, M.R., Abdelaziz, O., “A MATLAB Based Occupant Driven Dynamic Model for Predicting Residential Power Demand”, IEEE PES T&D, Chicago, Illinois, April 14th 2014.
15. Maerzke, K., Mozurkewich, G., Abdelaziz, O., Gluesenkamp, K.R., Schneider, W., Morrison, D., Maginn, E., “Ionic Liquid Development for Absorption Heat Pump Applications”, International Sorption Heat Pump Conference, Washington, District of Columbia, March 31st – April 3rd, 2014.
16. Chugh, D., Gluesenkamp, K.R., Abdelaziz, O., Moghaddam, S., “A Novel Absorption Cycle for Combined Water Heating, Dehumidification, and Evaporative Cooling”, International Sorption Heat Pump Conference, Washington, District of Columbia, March 31st – April 3rd, 2014.
17. Yang, Z., Tang, X., Qu, M., Abdelaziz, O., Gluesenkamp, K.R., “Development of Updated ABSorption SIMulation Software (ABSIM)”, International Sorption Heat Pump Conference, Washington, District of Columbia, March 31st – April 3rd, 2014.
18. Johnson, B.J., Starke, M.R., Abdelaziz, O., Jackson, R.K., Tolbert, L.M., “A Method for Modeling Household Occupant Behavior to Simulate Residential Energy Consumption”, Innovative Smart Grid Technologies 2014, Washington, District of Columbia, IEEE Power Energy Society, February 19-22, 2014.
19. Abdelaziz, O., Shrestha, S.S., “Development of Versatile Compressor Modeling using Approximation Techniques for Alternative Refrigerants Evaluation”, ASHRAE 2014 Winter Conference, New York, New York, January 18-22, 2014.
20. Shrestha, S.S., Sharma, V., Abdelaziz, O., “Comprehensive Compressor Calorimeter Testing of Lower-GWP Alternative Refrigerants for Heat Pump and Medium Temperature Refrigeration Applications”, ASHRAE 2014 Winter Conference, New York, New York, January 18-22, 2014.
21. Abdelaziz, O., Farese, P., Abramson, A., and Phelan, Patrick , “Technology Prioritization: Transforming the U.S. Building Stock to Embrace Energy Efficiency”, , TechConnect World 2013 Joint Conferences, Expo and Innovation Showcase, Volume 3, Page 732 - 735 , Washington D.C., May 12 - 16, 2013.

22. Fricke, B. A., Abdelaziz, O., and Vineyard, E. A., Reducing the Carbon Footprint of Commercial Refrigeration Systems Using Life Cycle Climate Performance Analysis: From System Design to Refrigerant Options, 2nd IIR International Conference on Sustainability and the Cold Chain, Paris, France, April 02-04, 2013.
23. Mallow, A., O. Abdelaziz, K. Kalaitzidou, and S. Graham, "Investigation of the Stability of Paraffin/Exfoliated Graphite Nanoplatelet Composites for Latent Heat Thermal Storage Systems", 2012 International Mechanical Engineering Congress and Exposition, November 9-15, 2012, Houston, TX. Presented at the Micro Nano Forum Poster Presentation Session on Tuesday, November 13th.
24. Evans III, B., West, D., Mallow, A., Abdelaziz, O., "Scaling and Optimization of Magnetic Refrigeration for Commercial Building HVAC Systems Greater than 175 kW in Capacity", THERMAG V, 5th IIR/IIF International Conference on Magnetic Refrigeration at Room Temperature, Grenoble, France, September 17-20, 2012.
25. Shassere, B., Abdelaziz, O., Evans III, B., West D., "Thermal Imaging of Active Magnetic Regenerator MCE Materials During Operation", THERMAG V, 5th IIR/IIF International Conference on Magnetic Refrigeration at Room Temperature, Grenoble, France, September 17-20, 2012.
26. Abdelaziz, O., Wang, K., Vineyard, E.A., Roetker, J., "Development of Environmentally Benign Heat Pump Water Heaters for the US Market", 2012 ACEEE Summer Study on Energy Efficiency in Buildings, Pacific Grove, CA, August 12-17, 2012.
27. Abdelaziz, O., Wang, K., Vineyard, E.A., "Development of Environmentally Benign Heat Pump Water Heaters for the US Market", 2012 ACEEE Summer Study on Energy Efficiency in Buildings, August 12-17, 2012 Pacific Grove, CA.
28. Abdelaziz, O., Fricke, B., Vineyard, E. A., "Development of Low Global Warming Potential Refrigerant Solutions for Commercial Refrigeration Systems using a Life Cycle Climate Performance Design Tool", 14th International Refrigeration and Air Conditioning Conference, July 16-15, 2012, Purdue University, West Lafayette, IN.
29. Wang, K., Abdelaziz, O., Vineyard, E. A., "Thermophysical Properties of Lithium Bromide + 1, 2-Propanediol Aqueous Solutions - Solubility, Density and Viscosity", 14th International Refrigeration and Air Conditioning Conference, July 16-15, 2012, Purdue University, West Lafayette, IN.
30. Karber, K. Abdelaziz, O., Vineyard, E. A., "Experimental Performance of R-1234yf as a Drop-in Replacement for R-134a in Domestic Refrigerators", 14th International Refrigeration and Air Conditioning Conference, July 16-15, 2012, Purdue University, West Lafayette, IN.
31. Saleh, K., Adelaziz, O., Aute, V., Radermacher, R., Azarm, S., "New Generation of Air Cooled Heat Exchanger 1 kW Module Design Optimization", 14th International Refrigeration and Air Conditioning Conference, July 16-15, 2012, Purdue University, West Lafayette, IN.
32. Abdelaziz, O., and Shen, B., Cold Climates Heat Pump Design Optimization, 2012 ASHRAE Winter conference, Chicago, IL, January 21-25, 2012.
33. Abdelaziz, O., Shen, B., Zhiming, G., Baxter, V., Iu, I., "Development of a High Performance Air Source Heat Pump for the US Market", 10th IEA Heat Pump Conference 2011, 16 - 19 May 2011,, Tokyo, Japan, 20110627, 20110831.
34. Wang, K., Kisari, P., Abdelaziz, O., Vineyard, E., 2010, "Testing of Crystallization Temperature of a New Working Fluid for Absorption Heat Pump Systems", International Conference on Road to Climate Friendly Chillers, September 30th - October 1st, 2010, Cairo, Egypt, <http://www.rcfc2010.org/>, paper # 1005, pp. 1-6.
35. Kisari, P., Wang, K., Abdelaziz, O., Vineyard, E., 2010, "Crystallization Temperature of Aqueous Lithium Bromide Solutions at Low Evaporation Temperature", International Conference on Road

- to Climate Friendly Chillers, September 30th - October 1st, 2010, Cairo, Egypt, <http://www.rcfc2010.org/>, paper # 1006, pp. 1-7.
36. Saleh, K., Abdelaziz, O., Aute, V., Radermacher, R., and Azarm, S., 2010, "Microchannel Approximation Assisted Design Optimization and CFD Verification", 13th International Refrigeration and Air Conditioning Conference, July 10-15, 2010, Purdue University, West Lafayette, IN, 2010, R2312, pp.1-8.
 37. Abdelaziz, O., Aute, V., Azarm, S., Radermacher, R., "Approximation Assisted Optimization for Novel Compact Heat Exchanger Designs" – Keynote Lecture, Seventh International Conference on Enhanced, Compact and Ultra-Compact Heat Exchangers: From Microscale Phenomena to Industrial Applications, September 13-18, 2009, Heredia, Costa Rica.
 38. Aute, V., Abdelaziz, O., Azarm, S., and Radermacher, R., 2008, Cross-validation Based Single Response Adaptive Design of Experiments, *Proc. 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, September 10-12 2008, AIAA, Victoria, British Columbia, Canada, AIAA-2008-6067, pp.1-23.
 39. Singh, V., Abdelaziz, O., Aute, V., and Radermacher, R., 2008, "A-Type Heat Exchanger Simulation using 2-D CFD for Airside Heat Transfer and Pressure Drop", *Proc. 12th International Refrigeration and Air Conditioning Conference at Purdue*, July 12-17, 2008, Purdue University, West Lafayette, IN, 2008, R2200, pp.1-8.
 40. Abdelaziz, O., Aute, V., and Radermacher, R., 2008, "Effect of Void Fraction Model on the Dynamic Performance of Moving Boundary Heat Exchanger", *Proc. 12th International Refrigeration and Air Conditioning Conference at Purdue*, Purdue University, West Lafayette, IN, July 12-17, 2008, R2198, pp.1-8.
 41. Abdelaziz, O., Winkler, J., Aute, V., and Radermacher, R., 2006, "Transient Simulation of a Transcritical Carbon Dioxide Refrigeration System", *Proc. 11th International Refrigeration and Air Conditioning Conference at Purdue*, Purdue University, West Lafayette, IN, July 15-20, 2006, R093, pp.1-8.
 42. Abdelaziz, O., Khalil, E.E., and Ramadan, M., 2006, "Fluid flow regimes and thermal patterns in air conditioned transformers room", *Proc. 4th International Energy Conversion Engineering Conference*, AIAA, Vol. 1, San Diego, CA, Jun 26-29, 2006, AIAA-2006-4093, pp.702-710.
 43. Abdelaziz, O., El-Hariry, G., and Khalil, E.E., 2006, "Relative Humidity Control inside Archaeological Facilities Using Fresh Air in Hot and Dry Areas", *Proc. Healthy Buildings 2006 conference*, June 4 – 8, 2006, International Society of Indoor Air Quality and Climate, Lisbon, Portugal, VEN4.6, pp.1-5.
 44. Abdelaziz, O. and Khalil, E.E., 2006, "Proposed Preservation Index For Ventilation System Assessment In Archaeological Facilities", *Proc. Healthy Buildings 2006 Conference*, June 4 – 8, 2006, International Society of Indoor Air Quality and Climate, Lisbon, Portugal, VEN3.8, pp.1-6.
 45. Abdelaziz, O. and Khalil, E.E., 2006, "Air Outlets locations Effect on Thermal and Humidity Patterns inside the Archaeological Tombs of the Kings", *Proc. Healthy Buildings 2006 Conference*, June 4 – 8, 2006, International Society of Indoor Air Quality and Climate, Lisbon, Portugal, VEN1.15, pp.1-6.
 46. Abdelaziz, O. and Khalil, E.E., 2006, "LES versus k- ϵ turbulence modelling of large underground archaeological facilities", *Proc. 44th AIAA Aerospace Sciences Meeting*, January 9-12, 2006, AIAA, Reno, NV, Vol. 18, pp.13371-13380.
 47. Abdelaziz, O. and Khalil, E.E., 2005, "Understanding Air Flow Patterns and Thermal Behaviour in king Tutankhamen tomb", *Proc. 2005 ASME International Mechanical Engineering Congress and Exposition, IMECE 2005*, November 5-11, 2005, IMECE2005-80465, ASME, Orlando, FL, pp.115-121.

48. Abdelaziz, O. and Khalil, E.E., 2005, "Predictions of Air Flow Patterns and Heat Transfer in the Tombs of the Valley of the Kings", *Proc. 8th REHVA World Congress, CLIMA 2005*, October 9-12, 2005, Paper 358.
49. Abdelaziz, O. and Khalil, E.E., 2005, "Mathematical Modeling of Air Flow and Heat Transfer- Predictions of Archaeological Tombs of the Valley of the Kings", *Proc. 10th International Conference on Indoor Air Quality and Climate: Indoor Air 2005*, September 4-9, 2005, International Society of Indoor Air Quality and Climate, Beijing, China, Paper 185.
50. Abdelaziz, O. and Khalil, E.E., 2005, "Modeling of Indoor Air Quality and Comfort in the Tombs of Valley of Kings", 2005 ASME Summer Heat Transfer Conference, Paper HT2005-72005, July 17-22, 2005, ASME, San Francisco, CA, pp. 513-519.
51. Abdelaziz, O. and Khalil, E.E., 2005, "CFD-Controlled Climate Design of the Archeological Tombs of Valley of Kings" *Proc. 2nd Mediterranean Congress of Climatization, CLIMAMED 2005*, February 24-25, 2005, Madrid, Spain, Paper 86, pp.1-8.
52. Khalil, E.E. and Abdelaziz, O., 2005, "CFD-controlled climate design of the archeological tombs of valley of kings", 11th International Air Conditioning, Heating, Ventilation and Refrigeration Exhibition, Madrid, Spain, February 23-26, 2005.
53. Abdelaziz, O. and Khalil, E.E., 2005, "Air Flow Regimes and Thermal Patterns in Climatized Tombs in Valley of Kings", 43rd AIAA Aerospace Sciences Meeting and Exhibit - Meeting Papers, 43rd AIAA Aerospace Sciences Meeting and Exhibit - Meeting Papers, January 10-13, 2005, pp.1209-1216 – **BEST TERRESTRIAL ENERGY SYSTEMS PAPER AWARD**.
54. Abdelaziz, O. and Khalil, E.E., 2004, "CFD-Controlled Climate Design of the Archeological Tombs of "Valley of Kings"", *Proc. International Conference Indoor Climate of Buildings 2004*, November 21-24, 2004, Slovakia, High Tatras, Štrbské Pleso.

ADDITIONAL CONFERENCE PROCEEDINGS AND ARTICLES

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