

## **HANY A. AL-ANSARY**

Associate Professor, Mechanical Engineering Department, King Saud University

### **EDUCATION**

- Ph.D. Mechanical Engineering, Georgia Institute of Technology, 2004.
- M.Sc. Mechanical Engineering, Georgia Institute of Technology, 1997.
- B.Sc. Mechanical Engineering, King Saud University, Riyadh, Saudi Arabia, 1993

### **EMPLOYMENT HISTORY**

- Chair, Mechanical Engineering Department, King Saud University, 2011-2013.
- Associate Professor, Mechanical Engineering Department, King Saud University, 2012-present.
- Assistant Professor, Mechanical Engineering Department, King Saud University, 2004-2012.
- Student Intern, General Electric Company, Atlanta, Georgia, 2000-2002
- Graduate Research Assistant, GWW School of Mechanical Engineering, Georgia Institute of Technology, 1997.
- Teaching Assistant, Mechanical Engineering Department, King Saud University, 1993-1994.

### **RESEARCH INTERESTS**

- Solar thermal energy conversion
- Energy conservation
- Refrigeration and air conditioning
- Desalination technologies

### **PROFESSIONAL ACTIVITIES**

- Consultant for the Ministry of Higher Education on HVAC issues in new university campuses in Saudi Arabia, 2006-2010.
- Consultant for Ministry of Higher Education on HVAC design in the Holy Mosque, 2008-2010.
- Director of the Intellectual Property and Technology Licensing Program at King Saud University, 2007-2008.
- Member of the board of directors of the Center of Research Excellence in Renewable Energy, 2007-2011.

### **HONORS AND AWARDS**

- Bronze medal, Malaysia Technology Expo, Kuala Lumpur, 2011.
- Best invention in desalination award at Ibtikar 2010, Jeddah, Saudi Arabia, 2010.
- ME Department's best teacher award, King Saud University, 2009.
- ASHRAE grant-in-aid research fellowship, 2001.
- Ambassador Prince Bandar Bin Sultan award of academic achievement, 1999.
- College of Engineering student of the year award, King Saud University, 1993.
- ME Department student of the year award, King Saud University, 1992-1993.

### **PATENTS**

- "Systems and Methods for Solar Water Purification", US Patent No. 8,551,343, granted on October 8, 2013.
- "Systems and Methods for Solar Water Purification", US Patent No. 8,419,904, granted on April 16, 2013

### **PATENT APPLICATIONS**

- "Ceramic Foam Solid Particle Receiver", US Provisional Patent Application No. 61/537,568, Filed on September 21, 2011
- "Fluid Friction-Based Distillation Apparatus", US Patent Application No.: 13/172,600, Filed on June 29, 2011
- "Solar Heating Apparatus and Methods", US Patent Application No.: 13/088,301, Filed on April 15, 2011.
- "High Temperature Solar Thermal Systems and Methods", US Patent Application No.: 13/008,888, Filed on January 18, 2011.
- "System for Purifying Liquids", US Patent Application No.: 12/871,823, Filed on August 30<sup>th</sup>, 2010.
- "Method and System for Managing Heat Energy in a Fluid Purification System", US Patent Application No.: 12/786,858, Filed on May 25, 2010.
- "Method and System for Purifying Liquid Using Waste Heat", US Patent Application No.: 12/763,784, Filed on April 20, 2010.

- “Glass Receiver with Bifurcated Annulus Responsive to Thermal Dimensional Changes”, US Patent Application No.: 12/718,960, Filed on March 6, 2010.
- “Vortex Generating Nozzle-End Ring”, US Patent Application No.: 12/432,574, Filed on April 29, 2009

## PUBLICATIONS

1. Ali, M., Zeitoun, O., **Al-Ansary, H.**, Nuhait, A., “Humidification technique using new modified MiniModule membrane contactors for air cooling”, *Advances in Mechanical Engineering*, *In press*.
2. **Al-Ansary, H.**, Orfi, J., and Ali, M., 2013, “Impact of the use of a hybrid turbine inlet air cooling system in arid climates”, *Energy Conversion and Management*, Vol. 75, pp. 214-223.
3. **Al-Ansary, H.** and Zeitoun, O., 2013, “Heat Loss Experiments on a Non-Evacuated Parabolic Trough Receiver Employing a Thermally Insulating Layer in the Annular Gap”, *Proceedings of ASME 2013 7th International Conference on Energy Sustainability & 11th Fuel Cell Science, Engineering and Technology Conference*, Minneapolis, Minnesota, Paper # ES-FuelCell2013-18078.
4. Al Zahrani, A., Orfi, J., **Al-Ansary, H.**, Salim, B., and Al Suhaibani, Z., 2013, “Thermodynamic analysis of a cogeneration gas turbine and desalination plant”, *Desalination and Water Treatment*, Vol. 51, pp. 1908-1914.
5. Zeitoun, O., Ali, M., and **Al-Ansary, H.**, 2013, “The Effect of Particle Concentration on Cooling of a Circular Horizontal Surface Using Nanofluid Jets”, *Nanoscale and Microscale Thermophysical Engineering*, Vol. 17, No. 2, pp. 154-171.
6. Ali, M., Zeitoun, O., Almotairi, S., and **Al-Ansary, H.**, 2013, “The Effect of Alumina–Water Nanofluid on Natural Convection Heat Transfer Inside Vertical Circular Enclosures Heated from Above”, *Heat Transfer Engineering*, Vol. 34, No. 15, pp. 1289-1299.
7. Amin, Z., Maswood, A., Hawlader, M., Al-Ammar, E., Orfi, J., and **Al-Ansary, H.**, 2013, “Desalination with a Solar-Assisted Heat Pump: An Economic Optimization”, *IEEE Transactions: Systems Journal*, Vol. 7, No. 4, pp. 732-741.
8. Hassan, H., Mohamad, A., and **Al-Ansary, H.**, 2012, “Development of a continuously operating solar-driven adsorption cooling system: Thermodynamic analysis and parametric study”, *Applied Thermal Engineering*, Vol. 48, pp. 332-341.
9. Al-Zahrani, A., Orfi, J., Al-Suhaibani, Z., Salim, B., and **Al-Ansary, H.**, 2012, “Thermodynamic Analysis of a Reverse Osmosis Desalination Unit with Energy Recovery System”, *Procedia Engineering*, 33, pp. 404-414.
10. **Al-Ansary, H.**, El-Leathy, A., Al-Suhaibani, Z., Jeter, S., Sadowski, D., Alrished, A., and Golob, M., “Experimental Study of a Sand-Air Heat Exchanger for Use with a High-Temperature Solar Gas Turbine System”, *Transactions of the ASME: Journal of Solar Energy Engineering*, Vol. 134, No. 4.
11. El-Leathy, A., Jeter, S., **Al-Ansary, H.**, Abdel-Khalik, S., Roop, J., Golob, M., Alrished A., Al-Suhaibani, Z., 2012, “Study of Heat Loss Characteristics from a High-Temperature Thermal Energy Storage System”, *Proceedings of the Solar Power and Chemical Energy Systems Conference (SolarPACES 2012)*, Marrakech, Morocco.
12. **Al-Ansary, H.**, Jeter, S., Sadowski, D., Alrished, A., Golob, M., El-Leathy, A., Al-Suhaibani, Z., 2011, “Experimental Study of a Sand-Air Heat Exchanger for Use with a High Temperature Solar Gas Turbine System”, *Proceedings of the Solar Power and Chemical Energy Systems Conference (SolarPACES 2011)*, Granada, Spain.
13. Schramek, P., **Al-Ansary, H.**, Jeter, S., Abdel-Khalik, S., Al-Suhaibani, Z., El-Leathy, A., Herzig, S., Gaines, G., 2011, “High Temperature Solar Gas Turbine Project – Design of Heliostat Field and Particle Receiver”, *Proceedings of the Solar Power and Chemical Energy Systems Conference (SolarPACES 2011)*, Granada, Spain.
14. Djajadiwinata, E., **Al-Ansary, H.**, Al-Dakkan, K., Bagabas, A., Al-Jariwi, A., and Zedan, M., 2011, “Turbulent convective heat transfer and pressure drop of dilute CuO (copper oxide)-water nanofluid Inside a circular tube”, 3rd Micro and Nano Flows Conference, Thessaloniki, Greece, 22-24 August 2011.
15. **Al-Ansary, H.** and Zeitoun, O., 2011, “Numerical Study of Conduction and Convection Heat Losses from a Half-Insulated Air-Filled Annulus of the Receiver of a Parabolic Trough Collector”, *Solar Energy*, Vol. 85, No. 11, pp. 3036-3045.
16. **Al-Ansary, H.** and Zeitoun, O., 2011, “Experimental Tests on Parabolic Trough Receivers Employing Bifurcated Air-Filled Annuli”, *Proceeding of the 5<sup>th</sup> International Conference on Energy Sustainability*, Washington, DC, Paper # ESFuelCell2011-54187.
17. **Al-Ansary, H.**, Golob, M., Dieter, R., Alrished, A., Sadowski, D., Jeter, S., Schramek, P., 2011, “Development of a High-Temperature Solar Gas Cycle System with Thermal Energy Storage”, *Proceedings of the National Solar Conference*, Raleigh, North Carolina, USA.
18. Ali, M. and **Al-Ansary, H.**, 2011, “General Correlations for Laminar and Transition Natural Convection Heat Transfer from Vertical Triangular Cylinders in Air”, *Journal of Experimental Heat Transfer*, Vol. 24, No. 2, pp. 133-150.
19. Jeter, S., **Al-Ansary, H.**, Turk, M., Melsert, R., 2010, “Development of a Chemical Heat Engine for Modular Solar Thermal Power”, *Proceedings of the National Solar Conference*, Phoenix, Arizona, USA.
20. Ali, M. and **Al-Ansary, H.**, 2010, “Experimental Investigations on Natural Convection Heat Transfer Around Horizontal Triangular Ducts”, *Journal of Heat Transfer Engineering*, Vol. 31, No. 5, pp. 350-361.

21. Ali, M. and **Al-Ansary, H.**, 2009, "Natural Convection Heat Transfer from Vertical Triangular Ducts", Proceedings of 2009 ASME Summer Heat Transfer Conference, San Francisco, California, Paper # HT2009-88607.
22. **Al-Ansary, H.**, Zeitoun, O., and Ali, M., 2007, "Numerical Study of Natural Convection Around Uniformly Heated Horizontal Triangular Ducts", Proceedings of the 7<sup>th</sup> Saudi Engineering Conference, King Saud University, Riyadh, Saudi Arabia.
23. Ali, M. and **Al-Ansary, H.**, 2007, "Natural Convection Heat Transfer from Horizontal Triangular Ducts", Proceedings of the 7<sup>th</sup> Saudi Engineering Conference, King Saud University, Riyadh, Saudi Arabia.
24. **Al-Ansary, H.**, 2007, "The Use of Ejector Refrigeration Systems for Turbine Inlet Air Cooling – A Thermodynamic and CFD Study". Proceedings of Energy Sustainability 2007, Long Beach, California. Paper ES2007-36044.
25. **Al-Ansary, H.**, 2006, "A Semi-Empirical One-Dimensional Model for Flow in Ejectors Used for Gas Evacuation". Proceedings of the 2006 ASME Joint U.S.-European Fluids Engineering Summer Meeting, Miami, Florida. Paper FEDSM2006-98138.
26. **Al-Ansary, H.** and Jeter, S., 2004, "Numerical and Experimental Analysis of Single-Phase and Two-Phase Flow in Ejectors", *International Journal of Heating Ventilating, Air-conditioning and Refrigerating Research*, Vol. 10, No. 4, pp. 521-538.
27. **Al-Ansary, H.** and Jeter, S., 1999, "Development of a Simple Homogeneous Flow Model of a Two-Phase Ejector". Proceedings of the 34<sup>th</sup> Intersociety Energy Conversion Engineering Conference, Vancouver, British Columbia, Paper 1999-01-2698

#### **PROFESSIONAL MEMBERSHIPS**

- Associate member of the American Society of Heating, Refrigerating, and Air Conditioning Engineers
- Member of the American Society of Mechanical Engineers