Associate Professor, Ph.D
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Ali Jawarneh

Country of Citizenship: Canada
Date of Birth: March 1, 1970.
Marital Status: Married (Four Childs).

EDUCATION

2004 **Ph.D.**, Mechanical Engineering, Concordia University, Montreal, QC, Canada
1996 **M.Sc.**, Mechanical Engineering, Jordan University of Science and Technology, Irbid, Jordan.
1993 **B.Sc.**, Mechanical Engineering, Jordan University of Science and Technology, Irbid, Jordan.

AREA OF RESEARCH

Thermal-Fluids

THESIS DESCRIPTION

Ph.D: "The Flow Development in Jet-Driven Vortex Chambers"

This thesis is associated with practical and technological applications such as gas turbine combustors, vortex separators, pumps, furnaces, spray dryers, liquid atomizers and gas-core nuclear rockets. Experimental and theoretical study of the flow in a jet-driven vortex chamber over a wide range of Reynolds numbers and geometrical parameters are introduced. Confined vortex flow properties such as static pressure drop, radial pressure profile, vortex core size, energy loss, and swirl velocity are determined and compared with the experimental data.

M.Sc: "Effect of fuel metering on cyclic variations in SI engines"

This thesis experimentally investigates how gaseous fuel affects the angular velocity fluctuations of the engine crank shaft.

PROFESSIONAL EXPERIENCE

08/2013 – present, King Faisal University, Al-Ahsa, Saudi Arabia

Chair and Associate Professor, Department of Mechanical Engineering

Research:

- Swirl flows
- Heat Transfer
- Renewable energy

11/2012 – 08/2013, King Faisal University, Al-Ahsa, Saudi Arabia

Associate Professor, Department of Mechanical Engineering

Research:

- Swirl flows
- Heat Transfer
- Renewable energy

4/2011 – 9/2012, The Hashemite University, Zarqa, Jordan

Associate Professor, Department of Mechanical Engineering

Research:

- Swirl flows
- Heat Transfer
- Renewable energy potential & Characteristics in Zarqa Region-Jordan
- Green Energy Incubator

9/2005 – 4/2011, The Hashemite University, Zarqa, Jordan

Assistant Professor, Department of Mechanical Engineering

Research:

- Heat Transfer Enhancement in a Narrow Concentric Annulus in Decaying Swirl Flow
- The Effects of the Secondary Fluid Temperature on the Energy Transfer in an Unsteady Ejector with a Radial-Flow Diffuser
- Experimental and Analytical Study of the Pressure Drop Across a Double-Outlet Vortex Chamber
- Enhancement of a cylindrical separator efficiency by using double vortex generators
- Reynolds Stress Model in the Prediction of Confined Turbulent Swirling Flows
- Analytical Approximate Solution for Decaying laminar Swirling Flows within a Narrow Annulus
- Solar Energy Utilization

7/2004 – 7/2005, Concordia University, Montreal, QC, Canada
Post-Doctoral Research, Department of Mechanical & Industrial Engineering
Research:

- The pressure drop across various aspect-ratio vortex chambers
- The Effect of Inlet Conditions on the Pressure Drop in a Confined Vortex Chamber
- Sink-Swirl flows

9/2000 – 6/2004, Concordia University, Montreal, QC, Canada
Teaching Assistant, Department of Mechanical & Industrial Engineering
Courses:
Fluid Mechanics, Heat Transfer, Thermodynamics, Control Systems, Microprocessors, partial differential equations

HONORS AND AWARDS

- The most deserving graduate of the doctoral prize in Engineering and Computer Science, Concordia University, 2004.
- Concordia University Partial Tuition Scholarship for International Students, 2000

TEACHING EXPERIENCE

- Fluid Mechanics
- Engineering Numerical Methods
- Introduction to Engineering
- Heat Transfer-I
- Thermodynamics-I
- Thermodynamics-II
- Fluid Mechanics for Biomedical Engineering
- Renewable Energy
- Internal Combustion Engines
- HVAC
- Applied Mathematics
- Manufacturing Processes
- Systems Fluid Power
- Heat Transfer Lab
- Fluid Mechanics Lab
- Internal Combustion Engines Lab
- Renewable Energy Lab
- Strength of Material Lab
- Thermodynamics Lab

TEACHING GOALS

- Complementing the existing expertise with the new technologies and novel areas.
- Having graduates with solid understanding of engineering concepts.
- Increase the graduate's confidence in what they have learned and practice applying it.
- Enhance the graduate communication, conceptual thinking and reporting skills.
- Contributing in improvement the learning skills of the teaching assistants.
- Meet the social objectives of the continuing education and industrial training programs.

GRADUATE STUDENT ADVISING

Committee Member:

- Hosam Authman, M.Sc., Jordan University of science & Technology, 2008.
- Mohammad Ababneh, M.Sc., Jordan University of science & Technology, 2007.

INDUSTRIAL EXPERIENCE

1997 – 2000 ***Jordan Petroleum Refinery Company- Jordan***

- Responsible for preparing and following up programme for preventive maintenance on rotating equipment (i.e. gas turbines, steam turbines, compressors, pumps) and stationary equipment (i.e. heat exchangers, heaters, columns, vessels, pipes, tanks), including online and offline condition control
- Diagnosing and troubleshooting
- Performance evaluation
- Maintaining contact with and following up suppliers
- Participating in operational improvements and modification projects
- Providing technical assistance in the daily operation and maintenance work
- Responsible for planning and performing jobs, preparing documents for modifications and participating in projects

RESEARCH INTERESTS

- Swirl Flows
- Heat Transfer
- Renewable Energy

RESEARCH PROJECTS

- " Green Energy Incubator at the Hashemite University", Hashemite University, JOD 96400, Nov. 2011
- "Tempus, A New Jordanian MSc in Water Management and Desalination Engineering (JoMDE), 2008". The program will be held at Al-Balqa' applied University, €535, 000, Jan. 1, 2009 – Jan. 1, 2011.
- "Reynolds stress model in the prediction of confined turbulent swirling flows", the Hashemite University, JOD1000, Jan 4, 2006 – Jan. 4, 2007.

RESEARCH GOALS

- Attracting external funds in order to activate practical and industrial oriented researches
- Serving the local industries with innovative solutions through collaborative research programs
- Developing multidisciplinary (Mechanical - Electrical - Fluid - Thermal) system-leveled researches

PROFESSIONAL MEMBERSHIPS

- Member, of the American Society of Mechanical Engineers, ASME.
- Member, of the American Institute of Aeronautics and Astronauts, AIAA.
- Member of Jordan Engineering Association.

PROFESSIONAL SERVICE

- Chairman, Department of Mechanical Engineering, King Faisal University, 2013-Present. ***The ME program is ABET accredited on the accreditation cycle 2014-2015 to September 2021.***
- Representative of the Department of Mechanical Engineering at the College of Engineering Council, the Hashemite University, 2007–2008.
- Committee head of the graduation projects, Mechanical Engineering Department the Hashemite University, 2009 – 2010, 2010 –2011.
- Member of the Scientific Research Committee, Mechanical Engineering Department the Hashemite University, 2005 – 2006, 2009 – 2012.
- Committee head of the examination committee, Mechanical Engineering Department the Hashemite University, 2006 – 2007, 2008-2009.
- Member, of the Library Committee, Mechanical Engineering Department the Hashemite University, 2005 – 2006.

- Member, of the curriculum Committee, Mechanical Engineering Department the Hashemite University, 2008 – 2009, 2010-2011.
- Member of ABET Committee, Mechanical Engineering Department the Hashemite University, 2007 – 2008, 2008-2009.
- Member of scientific incubator committee in Engineering College, 2008-2009.

CONFERENCES ORGANIZED

- Member of the organization committee of the "3rd International Conference on Thermal Engineering: Theory and Applications," Amman, Jordan, May 21 – 23, 2007.
- Member of the scientific committee of the "International Conference and Exhibition on Green Energy & Sustainability for Arid Regions & Mediterranean Countries (ICEGES 2009)", Royal Hotel Amman, Jordan November, 10-12, 2009

REVIEWER

- ASME, Journal of Fluids Engineering
- AIAA, Journal of Propulsion and Power
- Jordan Journal of Mechanical and Industrial Engineering
- Minerals Engineering
- Energy Conversion and Management

TRAINING COURSES

- Heat Exchanger Design, Performance & Operation, Abu Dhabi Gas Liquefaction Company (ADGAS), Abu-Dhabi, May 19-23, 2011.
- Lube Oil System, Design & Troubleshooting, Abu Dhabi Gas Liquefaction Company (ADGAS) Abu-Dhabi, June 2-6, 2011.

PUBLICATIONS: JOURNAL PAPERS

1- Tarawneh M., Alshiqirate A.S., **Jawarneh A.M**, " Effect of Darcy, Reynolds, and Prandtl Numbers on the Performance of Two-Phase Flow Heat Exchanger Filled with Porous Media", *Heat Transfer- Asian Research*, vol.43, no.8, 2014, pp. 749-758.

2- **Jawarneh** A.M, "Investigation of the Flow Characteristics in a Sink-Swirl Flow within Two Disks", *International Review of Mechanical Engineering*, vol. **7**, no. 6, 2013, pp. 1031-1036.

3- **Jawarneh** A.M, Al-Tarawneh *M,* Ababneh A.K, Tlilan H, "Solar Energy Availability on Horizontal and Tilted Surfaces: a Case Study", *International Review of Mechanical Engineering*, vol. **6**, no. 4, 2012, pp. 901-917.

4- **Jawarneh** A.M, "Heat Transfer Enhancement in a Narrow Concentric Annulus in Decaying Swirl Flow", *Heat Transfer Research*, vol. **42**, no. 3, 2011, pp. 199-216.

5- Ababneh A.K, **Jawarneh** A.M, Tlilan H, Ababneh M.K, "The Effects of the Secondary Fluid Temperature on the Energy Transfer in an Unsteady Ejector with a Radial-Flow Diffuser", *Heat and Mass Transfer*, vol. **46**, no.1, 2009, pp. 95-105.

6- Al-shyyab A, Alwidyan K., **Jawarneh** A.M, Tlilan H, "Non-linear Dynamic Behaviour of Compound Planetary Gear Trains: Model Formulation and Semi-Analytical Solution", *Proc. IMechE, Part K: Journal of Multi-body Dynamics*, vol. **223**, no.3, 2009, pp. 199-210.

7- **Jawarneh** A.M., Al-Shyyab A, Tlilan H, Ababneh A, "Enhancement of a cylindrical separator efficiency by using double vortex generators", *Energy Conversion and Management*, vol. **50**, issue 6, 2009, pp.1625-1633.

8- Ababneh A.K., Garris C.A., **Jawarneh** A.M, Tlilan H.," Investigation of the Mach number effects on fluid-to fluid interaction in an unsteady ejector with a radial-flow diffuser", *Jordan Journal of Mechanical and Industrial Engineering*, vol. **3**, no. 2, 2009, pp. 131-140.

9- Tlilan H.M, **Jawarneh** A.M, Al-Shyyab A.S," Strain-concentration factor of cylindrical bars with double circumferential U-notches under static tension", *Jordan Journal of Mechanical and Industrial Engineering*, vol. **3**, no. 2, 2009, pp. 97-104.

10- **Jawarneh** A.M., Tlilan H., Al-Shyyab A., Ababneh A., " Strongly Swirling Flows in a Cylindrical Separator ," *Minerals Engineering*, vol. **21**, issue 5, 2008, pp. 366-372.

11- **Jawarneh** A.M, Vatistas G.H, Ababneh A., " Analytical Approximate Solution for Decaying laminar Swirling Flows within a Narrow Annulus", *Jordan Journal of Mechanical and Industrial Engineering (JJMIE)*, vol. **2**, no. 2, 2008, pp. 101-109.

12- Tlilan H.M, Al-Shyyab A.S, **Jawarneh** A.M, Ababneh A.K," Strain-Concentration Factor of Circumferentially V-Notched Cylindrical Bars under Static Tension", *Journal of Mechanics*, vol. **24**, no.4, 2008, pp. 419-427.

13- **Jawarneh** A.M., Sakaris P., and Vatistas G.H, "Experimental and Analytical Study of the Pressure Drop Across a Double-Outlet Vortex Chamber", *Transaction of the ASME, Journal of Fluids Engineering*, vol. **129**, issue 1, 2007, pp. 100-105.

14- **Jawarneh** A.M. and Vatistas G.H "Reynolds Stress Model in the Prediction of Confined Turbulent Swirling Flows", *Transaction of the ASME, Journal of Fluids Engineering*, vol. **128**, issue 6, 2006, pp.1377-1382.

15- **Jawarneh** A.M., Vatistas G.H., Aboelkassem Y.," Experimental Investigation of the Pressure Drop in a Sink-Swirl Flow within Two Disks", *AIAA, Journal of Propulsion and Power*, vol. **21**, no. 4, 2005, pp. 759-760.

16- **Jawarneh** A.M., and Vatistas G.H.," The Effect of Inlet Conditions on the Pressure Drop in a Confined Vortex Chamber", *AIAA, Journal of Propulsion and Power*, vol. **21**, no.6, 2005, pp. 1128-1133.

17- **Jawarneh** A. M., Vatistas G.H. and Hong H., "On the Flow Development in Jet-Driven Vortex Chambers", *AIAA, Journal of Propulsion and Power*, vol. **21**, no. 3, 2005, pp. 564-570.

18- Vatistas G.H., **Jawarneh** A.M., and Hong H., "Flow Characteristics in a Vortex Chamber", *The Canadian Journal of Chemical Engineering*, vol. **83**, no. 3, 2005, pp. 425-436.

PUBLICATIONS: CONFERENCE PAPERS

1- **Jawarneh** A.M, Beam and Diffuse Solar Energy in Zarqa City, International Conference on Thermal Engineering, World Academy of Science, Engineering and Technology (WASET) 64, 2012, Paris, France, April 25-26, 2012.

2- **Jawarneh** A.M and Al-Shyyab A.S, "Potential of Solar Energy in Zarqa Region", International Conference on Energy and Environment, World Academy of Science, Engineering and Technology (WASET) 76, 2011, Venice, Italy, April 27-29, 2011.

3- **Jawarneh** A.M, Issa Etier, and Salem Nijmeh, "Availability of Solar Energy in Hashemite University", International Conference and Exhibition on Green Energy & Sustainability for Arid Regions & Mediterranean Countries (ICEGES 2009), Le Royal Hotel Amman, Jordan, November10-12, 2009.

4- Tlilan H.M, Al-shyyab A.S, and **Jawarneh** A.M., " Interference Effect on Strain-Concentration Factor of Cylindrical Bars with Double Circumferential U-notches under Static Tension", 6th International Conference on Mechanics of Time-Dependent Materials, Hall, R.B., Lu, H. and Qi, H. J., eds., Mar 30 - Apr 4, 2008, Monterey, CA.

5- **Jawarneh** A.M., "Heat Transfer Enhancement in Swirl Annulus Flows", Proceedings of 5th WSEAS International Conference on Environment, Ecosystems and Development (EED' 07), Tenerife, Spain, December 14-16, 2007.

6- **Jawarneh** A.M., and Al-Sarkhi A., "Design and Simulation of Vortex Cylinder Separator", Proceedings of the Third International Conference on Thermal Engineering: Theory and Applications (ICTEA), May 21-23. 2007, Amman, Jordan.

7- **Jawarneh** A.M., and Vatistas G.," Experimental and Numerical Study of Turbulent Confined Swirling Flow", Proceeding of the Second International Exergy, Energy and Environment Symposium (IEEES2) conference, paper no. IEEES2-197, 3-7 July 2005, Kos, Greece.

8- **Jawarneh** A.M., Vatistas G., and Aboelkassem Y.,"Effect of Vortex Generators in Confined Swirl Flow". AIAA, 35th AIAA Fluid Dynamics Conference and Exhibit, Toronto, Ontario, paper no. AIAA-2005-4651, Jun. 6-9, 2005.
9- Aboelkassem Y., Vatistas G. and **Jawarneh** A.M."Viscous Dissipation Model for Monopolar- Like Vortices", Euromech 448 conference, Vortex dynamics and fields interactions, Paris, France, Sep. 6 -10, 2004.
10- **Jawarneh** A.M., and Vatistas G., "Vortex Chamber Flows", AIAA 2nd International Energy Conversion Engineering Conference, Providence, Rhode Island, paper no. AIAA-2004-5620, Aug. 16 -19, 2004.