

CURRICULUM VITAE

August 2008



PERSONAL DATA

Name: Abolghasem Mekanik

Home Address: 98 Ostadan Ave., Hamedan, Iran, Postal Code 65168

Business Address: Department of Mechanical Engineering, Bu-Ali Sina University,
Mahdiah Ave., Postal Code 65174

Internet URL: [Http://profs.basu.ac.ir/mekanik/index.php?L=en&pc](http://profs.basu.ac.ir/mekanik/index.php?L=en&pc)

E-Mail Address: Meka47ir@Yahoo.com

Date and place of birth: 02 November 1947; Hamedan Iran

MARITAL STATUS

Married, No. of Children: 3

EDUCATION

Ibne Sina High School, Hamedan, Iran (1963-1966)

Shiraz University, Dept Mech. Engineering; Shiraz, Iran (1969-1974), 5 years program

Shiraz University, Dept Mech. Engineering; Shiraz, Iran (1977-1980)

McGill University, Dept Mech. Engineering;
Montreal, P.Q., Canada (1990-1994)

DEGREES

Diploma in Mathematics, 1966

B.Sc. (Mech. Engineering), 1974

M.Sc. (Mech Engineering), 1980

Ph.D. (Mech. Engineering), 1994

Thesis: "General Solution for Unsteady Annular Flows Between Concentric
Cylinders and Annular Flow-Induced Instabilities"

Supervisors: D. Mateescu and M.P. Paidoussis

Iranian Government scholar

ACADEMIC POSITION

Associate Professor of Mechanical Engineering Department, School of Engineering

Bu-Ali-Sina University, Mehdieh Blvd., Hamedan, Iran

RESEARCH INTERESTS

Fluid Mechanics, Heat Transfer, Mechanical Vibration, Solar Energy Utilization, Flow-Induced
Vibration and Fluid-Structure Interaction.

COURSES TAUGHT FOR UNDERGRADUATE STUDENTS

1- Fluid Mechanics 2- Static 3- Dynamics 4- Technical English 5- Mechanical
Vibration 6- Air Conditioning and Refrigeration 7- Water Supply and
Distribution 8- Computer Programming 9- Numerical Analysis

COURSES TAUGHT FOR GRADUATE STUDENTS

1- Vibration of Continuous Systems 2- Flow-Induced Vibration

BOOKS TRANSLATED OR PUBLISHED

- 1- Vibration of Mechanical and Structural Systems, Translation, Publication of Bu-Ali Sina University, Vol. 1, 2002.
- 2- Vibration of Mechanical and Structural Systems, Translation, Publication of Bu-Ali Sina University, Vol. 2, 2003.
- 3- Vibration in Engineering and Its Solution, Publication of Bu-Ali Sina University, Vol. 1, 2007.

PAPERS IN REFEREED JOURNALS

- 1- D. Mateescu, A. Mekanik and M.P. Paidoussis, 1996 “Analysis of 2-D and 3-D unsteady annular flows with oscillating boundaries based on a time-dependent coordinate transformation”, *Journal of Fluids and Structures*, Vol. 10, No. 1, pp. 57-78.
- 2- A. Mekanik and M.P. Paidoussis, 2007, “Stability analysis of uniform and non-uniform annular passages conducting incompressible laminar flows for small and large amplitude oscillatory motions of the outer cylinder”, *Journal of Sound and Vibration*, Vol. 303, pp. 78-108.
- 3- A. Mekanik and M.P. Paidoussis, 2007, “Unsteady pressure in the annular flow between two concentric cylinders; Experiment and theory”, *Journal of Fluids and Structures*, Vol. 23, pp. 1029-1046.

PAPERS IN FULL REFEREED CONFERENCE PROCEEDINGS

- 2- A. Mekanik, D. Mateescu and M.P. Paidoussis, 1993, “Computational 3D solution of Navier-Stokes equations for annular flows with moving boundaries”, Proceeding of CANSAM1993, Kingston, Ontario, Canada.

- 2- D. Mateescu, A. Mekanik and M.P. Païdoussis, 1994, “Computational solutions for unsteady annular flows with oscillating boundaries based on time-dependent coordinate transformations”, *Computational Fluid Dynamics 94 Conference*, Toronto, Ontario, pp. 51-58.
- 3- A. Mekanik, M.P. Païdoussis and D. Mateescu, 1994, “Pressure measurements in unsteady flows between concentric cylinders in translation and rotation. *12th Symposium on Engineering Applications of Mechanics: Interactions of Fluids, Structures and Mechanisms*, Montreal, Quebec, pp. 345-353.
- 4- D. Mateescu, M. P. Païdoussis and A. Mekanik, 1995, “Analysis of 3-D unsteady annular flows based on time-dependent coordinate transformations”, *Applied Mechanics in the Americas*, Editors L.A. Godoy, S.R. Idelsohn, P.A.A. Laura and D.T. Mook, *American Academy of Mechanics*, Vol. 2, pp. 340-345.
- 5- A. Mekanik, 2004, “3-D Computational Solutions of the Full Nonlinear Navier-Stokes Equations in Different Annular Geometries with Moving Boundaries”, *Proceeding of IMEC2004 Conference*, Kuwait City, Kuwait.
- 6- A. Mekanik, “Simultaneous Integration of the Navier-Stokes and Structural Equations in Annular Flows with Different Geometries and Stability Analysis”, *Proceeding of IMEC2004 Conference*, Kuwait City, Kuwait.
- 7- A. Mekanik, 2005, “Analysis of the stability of concentric pipe structures with annular flow”, *Proceeding of ISME13 Conference*, Isfahan, Iran.
- 8- A.Mekanik, 2005, Flutter motion of the cylinders conducting annular laminar flows”, *Proceeding of CANCAM2005 Conference*, Montreal, Canada.
- 9- A. Mekanik, 2005, “Experimental verification of the theoretical results for annular flow with moving boundaries”, *ASME Conference, PVP2005*, Denver, Colorado, USA.

- 10- A. Mekanik, 2006, "Solution of Navier-Stokes equations in annular unsteady flow between concentric cylinders based on vibration of the outer cylinder; Uniform, backward step and diffuser geometries", Proceeding of FD10 Conference, Yazd, Iran.
- 11- A. Mekanik, 2006, "The effects of fixing the computational domain on unsteady pressure and velocities for moving boundaries in laminar annular flows; 2D analysis", Proceeding of FD10 Conference, Yazd, Iran.
- 12- A. Mekanik, 2007, "Complete investigation of primary costs and energy consumption for heating and cooling of a complex dwelling; Saving in energy and money", 1st Iranian Conference on Optimization of Energy Consumption, Mashad, Iran.
- 13- A. Mekanik, 2007, "The effects of different parameters on the unsteady pressure in the annular flows between two concentric cylinders one of which is oscillating", Proceeding of CITICOM2007 Conference, Coimbatore, India.
- 14- A. Mekanik and M. Soleimany, 2008, "The effects of environmental temperature change and wind on the performance of dry cooling towers of the Heller type in power plants", Proceeding of ISME2008 Conference, Kerman, Iran.
- 15- A. Mekanik and H. Zeinalian, 2008, "Investigation of the effects of more parameters on the unsteady pressure and velocities between two concentric cylinders due to the oscillation of the outer cylinder", Proceeding of FD11 Conference, Tehran, Iran.
- 16- A. Mekanik and H. Yarjiabadi, 2008, "Stability analysis of uniform annular incompressible flows under small amplitude transverse or rotational oscillation of the outer cylinder", Proceeding of FD11 Conference, Tehran, Iran.

SOME TITLES OF GRADUATE PROJECTS SUPERVISED

- 1- Aerodynamic Design of Para-Glider Vehicle.
- 2- Design of Compact Heat Exchanger (Radiator) for Automobile Industry.

- 3- Investigation of the Factors Affecting the Flow-Induced Vibration in Heat Exchangers with Annular Flows.
- 4- Analysis of Heat Transfer in the Fuel Rods of PWR Reactors and Determination of the Percentages of Fission Gases Released in the Core.
- 5- Analysis of the Stability of Concentric Cylinders Due to the Flow between Them Under Rotational Boundary Conditions.
- 6- Investigation of the Working Conditions of Power Plant's Cooling Towers (Heller Type) in Warm Weather and Under The Mutual Effects of Towers During Windy Conditions.
- 7- Flow-Induced Vibration of the Marine Platforms as a Result of Wave Movements and Their Effects on the Piers.

SOME TITLES OF UNDERGRADUATE PROJECTS SUPERVISED

- 1- Design and Construction of Absorption Refrigerator.
- 2- Design of 1 MW Solar Power Plant (Central Receiver) and Construction of Small Prototype.
- 3- Solution of the Navier-Stokes Equations Between Oscillating Concentric Cylinders.
- 4- Investigation of the Wind Conductors (BAADGIR) in Hot Regions and Construction of a Small Prototype.
- 5- Design and Construction of a Small Ice Cream Maker Device.
- 6- Design of Heating, Cooling and Electricity Producing Systems for a House Using Solar Energy.
- 7- Design and Construction of a Refrigeration System Using Water Jet Pump.
- 8- Design, Construction and Optimization of Solar Collectors.
- 9- Design and Construction of Chicken Producing Machine.

- 10- Investigation of the Theoretical and Experimental Distribution of Temperature in a Sheet Metal in One and Two Directions.
- 11- A new Model for the Numerical Analysis of the Temperature in Nuclear Reactor Fuel Rod.
- 12- Economical Design and Investigation of the Effects of Heat Insulating Materials in Storing Energy in a Typical Dwelling and Comparison with Non-Insulating One.
- 13- Design of a Solar Water Pumping System.
- 14- Design and Construction of Two Types Solar Distillation: (a) Two Tanks; (b) Gravity Type and Comparison of the Results.
- 15- Design of the Truck Backdoor as a Lifting Device.
- 16- Mechanical Design of the Movements of a Dinosaur.
- 17- Design of a Water Heater Using Heat Pump.
- 18- Design, Construction and Optimization of a Furnace Using Electrical Resistance.
- 19- Design of a Machine for Production of the Laminated and Sekurit Glass Panes.
- 20- Usage of Kah-Gel (Mixture of Soil and Chips of Wood) as Insulation for the Buildings and Saving of the Energy.
- 21- Design of Solar Chiller.
- 22- Design of a Boat with Water Jet Propulsion, Model Construction and Comparison of the Theoretical Results with Model Results.
- 23- Investigation of the Cavitation Phenomenon in Different Structures and the Methods of Preventing its Destructive Effects.
- 24- Design of a Hydraulic Ram Pump.
- 25- An Investigation for Comparison Between Old and New Methods of Sewage Piping Works; Advantages and Disadvantages.
- 26- An Investigation for Reinforcing the Asbestos Pipes against the Water Hammer.

SCIENTIFIC AND PRACTICAL TRAINING

- 1- Calibration and Instrumentation, Hughes Aircraft Company, L.A., U.S.A, 1974.
- 2- Structural Vibration in Nuclear Reactor's Mechanical Components, Saclay, Paris, France, 1976.

WORKING EXPERIENCES

- 1- Production and Support Manager and Head of Calibration Laboratory, Iran Electronic Industries (I.E.I) , Shiraz, Iran, 1974-1975.
- 2- Head of Technical Bureau and HVAC Designer, Government of Hamadan, Iran, 1981-1982.
- 3- Academic Staff Member of Mechanical Engineering Department, Bu-Ali University, Hamadan, Iran, since 1983.

LANGUAGE FLUENCY

- 1- English; Good
- 2- French; Moderate

