CURRICULUM VITAE

Personal Data:

Name : **Dr. Mohsen Sayed Mohamed Soliman**.

Position : **Associate Professor** at Cairo University, Faculty of

Engineering, Mechanical Power Engineering Depart., Egypt,

Tel.:37421575, Mob.01002861989, E-mail:**profmohsen@yahoo.com**

Acting Director of the ACC lab at FECU (www.acc-vlab.cu.edu.eg)

Acting Director of the Automatic Control Post Graduate Diploma of ACC

Head of the Quality Assurance and Accreditation Unit at MEP dept. at FECU

Date of Birth: September, 2, 1954. Nationality: Egyptian.

Education and University Positions:

July 1978

B. Sc. Degree in Mechanical Power Engineering (Very Good with Honor Degree, excellent in Design project for Large Water tube boiler, GPA=3.84), Cairo University, Faculty of Engineering, Mechanical Power Engineering Department, Egypt.

Sept.1978 - June 1982 :

Demonstrator, Cairo University, Faculty of Engineering, Mechanical Power Engineering Department, Egypt.

June 1982 :

M. Sc. Degree in Mechanical Power Engineering, Cairo University, Faculty of Engineering, Mech. Power Engineering Department, Egypt.

June 1982 - Sept. 1983:

Assistant Lecturer, Cairo University, Faculty of Engineering, Mechanical Power Engineering Department, Egypt.

Sept. 1983 - Sept. 1984:

Research Assistant (Ph. D. Student), Thayer School of Engineering, Dartmouth College, New Hampshire, Hanover, U.S.A.

Sept.1984 - March 1989 :

Research & Teaching Assistant (Ph. D. Student), University of California, School of Engineering, Irvine, CA, U.S.A.

March 1989 :

Ph. D. Degree in Mechanical Power Engineering , University of California, School of Engineering, Irvine (UCI), CA, U.S.A.

Dissertation: "Experimental Investigation of The Near and Far Fields of The Turbulent Velocity and Thermal mixing Layer in Nearly Homogeneous Turbulence".

March 1989 - Sept. 1989 :

Post Doctoral Research and Teaching Assistant at UCI, Irvine, CA, U.S.A.,

Subject of Research: "Experimentation & Computations in Turbulence".

Sept. 1989 - Sept. 1995 :

Lecturer (**Assistant Professor**), Cairo University, Faculty of Engineering, Mech. Power Engineering Department, Egypt.

Sept.1995 - June 1996 :

Associate Professor, Cairo University, Faculty of Engineering, Mechanical Power Engineering Department, Egypt.

June 1996 - Sept. 1999 :

Consultant and Mechanical Expert, Design Department, Electricity Corporation, Ministry of Industry and Electricity, Riyadh, Kingdom of Saudi Arabia.

Sept.1999 - Current Date:

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Associate Professor, Cairo University, Faculty of Engineering, Mechanical Power Engineering Department, Egypt. Also Coordinator of Virtual, Automatic Control and E-learning lab at FECU.

Sept.2007 - Current Date :

Member of the Quality Assurance Unit at FECU and Member of 5 of QAU-internal committees. Also Member of the External Reviewers Team of Higher Education of the National Authority for Quality Assurance and Accreditation of Education, NAQAAE.

<u>Sept.2012–Current Date</u>: Head of Quality Assurance & Accreditation Unit at MEP dept. at FECU Acting Director of the ACC lab at FECU (<u>www.acc-vlab.cu.edu.eg</u>) and Acting Director of the Automatic Control Post Graduate Diploma of ACC at MEP dept. at FECU.

Current Scientific and Research Interests:

- Fluid dynamics, Aerodynamics and Experimental Measurements of Velocity and Temperature Fluctuations by Hot & Cold Wire Anemometers.
- Enhancement of Momentum and Heat Transfer in Turbulent Shear Flows by Internal or External Acoustic Excitations.
- Enhancement of Gas Turbine and Electric Power Plants Performance by Waste Heat Recovery Systems, Fuel Cells, Hybrid Cycles, and Heat Pipe Systems.
- Design and Specification of Fire Fighting and Fire Control Systems.
- Practical Applications of Various Automatic Control Systems Using PLC's, Hydraulics, Pneumatics and Micro-controllers.

Research Experience:

(1) <u>June 1996 – Current Date:</u>

- * Experimental Studies on Turbulence Structure and Pressure Recovery in 2-D Plane Diffuser Without and With Internal Guide Vanes.
- * Analytical & Computational Studies on Energy Transfer & Co-generation Efficiency of Fuel Cells.
- * Analytical and Computational Studies on a New Hybrid Power-Cycle for Better Efficiency and Less Pollution Levels.
- * Analytical&Computational work on Performance of Heat Pipe System for Waste Energy Recovery.
- * Studies on Using Clean-Agent Substitutes for Halongenated-Compounds Used in Fire Fighting Systems.

(2) <u>September 1989 – June 1996 :</u>

Position:

Assistant & Associate Professor / Supervisor of Turbo-machine Fluid Labs For Graduate Research/ *Also Coordinator of Virtual, Automatic Control and E-learning lab at FECU*, Mech. Power Engg. Dept., Faculty of Engg., Cairo University, Egypt.

Expedience:

- 1- Designing/Installing/Running new How-Wire Anemometer Lab. by the following:
- * Constructing electrically-insulated-earthen air-conditioned room.
- *Selecting / installing / testing 8-chs./12-bit Analogue / Digital converter for computer-controlled Hot-Wire and Traversing Data Acquisition System.
- *Installing an AC and DC calibration set for the A/D converter unit.
- *Installing welding / calibration facilities for the Hot-Wire System.
- *Writing data acquisition / analysis programs for turbulence measurements.
- 2- Installing pressure-temperature testing facilities using the A/D converter & computer data acquisition/analysis programs.
- 3- Conducted extensive experimental & numerical research on measuring errors & effects of samplingrates, electric noise, resonance &-time-lag on computing higher order moments and correlation's of single& multiple frequency & random signals simulate turbulent analogue signals.

- 4- Conducted experiments: turbulent momentum-heat transfer in confined coaxial jet in axial pressure gradient and variable momentum ratio.
- 5- Conducted experimental research: the turbulent structure of the interaction region of duct-flow plane jet at high Reynolds number.
- 6- Conducted Hot-wire measurements in near field of co-flowing adjacent parallel duct-flow plane jets with equal/non-equal mean velocities.
- 7- Conducting experiments for the interaction of multiple turbulent plane-jets co-flowing with equal momentum and at different angles.
- 8- Conducting Hot-wire measurements for effect of internal & upstream acoustic excitation on turbulence structure in a 3-D plane jet.
- 9- Conducting measurements for suppression and amplification of turbulence in 2-D plane jet by external and downstream acoustic excitation.
- 10- Co-supervising on-going experimental / computational M.Sc. and Ph.D. studies in turbulent measurements, momentum, heat transfer and acoustics.

(3) March 1989 - September 1989 :

Position:

Post Doctoral Research, Mech. Engg. Dept., Faculty of Engg., University of California, Irvine, U.S.A.

Expedience:

Conducting Further Hot/Cold-wires measurements and analysis of velocity and temperature variance dissipation rates in turbulent thermal mixing layer and kinetic energy decay in nearly homogeneous turbulence.

(4) **September 1984 - March 1989 :**

Position:

Research Scholar, Ph.D. student, Mech. Engg. Dept., Faculty of Engg., University of California, Irvine, U.S.A.

Expedience:

- 1-Conducting research in simultaneous resolved measurements in turbulent temperature and velocity components in turbulent thermal mixing layer and grid turbulence. Gained experience in building & calibrating cold-wire & hot-wire techniques. Gained familiarization with many computer interfacing & CAD tools. Have experience with many data acquisition /analysis instrumentation & many wind tunnel equipment.
- 2-Studied advanced courses at UCI in Computational Fluid Dynamics, Numerical codes and closure models used for turbulent flows.

(5) **September 1983 - September 1984** :

Position:

Research Scholar, Ph.D. student, Thayer School of Engg., Dartmouth College, Hanover, New Hampshire, U.S.A.

Expedience:

Studying and doing research in the areas of Two-Phase Flow, Finite Elements and Finite Differences Techniques in Heat Transfer and Fluid Mechanics applications.

(6) **September 1978 - September 1983** :

Position:

Research Assistant, Demonstrator, Mech. Power Dept., Flaculty of Engg., Cairo University, Egypt.

Expedience:

Designing building am experimental facility and conducting experimental study of combined free and forced convection in inclined rectangular channels as applied to solar collectors. Gained experience in building/calibrating thermocouple probes. Gained a familiarization with pumps, data-loggers & many flow / temperature measurement tools.

University Teaching and Instructional Experience:

(1) September 1999 – Current Date:

Position:

Associate Professor, Cairo University, Faculty of Engineering, Mech. Power Engg Dept., Egypt.

Expedience:

- 1-Teaching several undergraduate courses in Thermo-Fluid Mechanics and Gas Dynamics, Heat and Mass Transfer and several graduate courses in advanced Fluid Mechanics, Pipe-lines, Turbulence and Measurement Methods.
- 2- Supervising several B. Sc. Projects on Practical Applications of Automatic Control Systems Using PLC's and Micro-controllers and Also Projects on Automatic Control Virtual Labs.
- 3- Supervising several B. Sc. Projects in Fire-Control and Fire-Fighting Systems which included studying all types of fire hazards in strategic areas such as electric power plants and substations. The projects included specifying and designing the appropriate fire control and fire fighting systems as per the international standards for fire fighting. The projects included also experimental measurements for fires in enclosures and smoke-flow models.

(2) September 2008 – present time :

Position:

Visiting Associate Professor, Institute of Technology and Aeronautical Engineering, Mechanical Power Engineering Department, Embaba, Giza.

Expedience:

- -Teaching undergraduate courses in Thermo-Fluid Mechanics and Gas Dynamics.
- Supervising several B. Sc. Projects on Automatic Control systems and Virtual Labs.

(3) **September 1989 – June 1996**:

Position:

Assistant & Associate Professor / Co-supervisor of Measurements Labs. for undergraduates, Mech. Power Dept., Faculty of Engg., Cairo University.

Expedience:

- 1-Designing, installing, preparing text materials and training the lab. Staff for an experimental course in instrumentation and measurements for undergraduates. The course included 14 labs on signal generation / conditioning, dynamic response of oscilloscopes, calibrating pressure transducers & Bourdon tube gages & many types of flow meters, calibrating thermocouples / resistance thermometers, flow visualization, lift / drag & pressure on objects in wind-tunnel, forced convection, viscosity, flashing & distillation.
- 2-Teaching experimental course involving testing performance of both small scales and full-sizes of water and gas turbines and_different types of pumps and flow visualization and modeling supersonic flows by water table analogy.
- 3-Teaching under graduate courses in Fluid Mechanics and Gas Dynamics.
- 4-Supervising B. Sc. Graduation project: "Electric Power Plant by Pumping Storage Method".
- 5-Teaching graduate courses in Two-Phase Flow, Turbulence & Hot-Wire Measurements, Boundary Layer, Advanced Fluid Mechanics, Air-Pollution and Instrumentation and Measurement Techniques for graduate students.
- 6-Co-supervising graduate students in their M. Sc. And Ph.D. studies.

(4) September 1985 - March 1989 :

Position :

Teaching Assistant, Ph.D. student, Mech. Engg. Dept, Faculty of Engg., University of California, Irvine, U.S.A.

Expedience:

Teaching several mechanical engineering laboratory and experimental classes in Basic Electronic Instrumentation, Heat Transfer, Thermodynamics and Fluid Mechanics. Gained experience with different types of transducers, computer hard / soft wares and laboratory instrumentation. Coincident with duties was required to carry full program of study toward the Ph.D. degree.

(5) Summer 1986 and Summer 1987 :

Position:

Instructor, Mech. Engg. Dept., Faculty of Engg., Univ. of California, Irvine, U.S.A.

Expedience:

Teaching Two Undergraduate Courses in Dynamics and Fluid Mechanics. The position required good communication skills as well as thorough understanding of various basic engineering concepts.

(6) September 1982 – September 1983 :

Position:

Assistant Lecturer, Mech. Power Engg. Dept., Faculty of Engg., Cairo University.

Expedience:

Teaching basic engineering concepts in the areas of Fluid Mechanics, Heat/ Mass Transfer and Solar Energy. Also duties involved guiding students in all laboratory works and B. Sc. Graduation projects.

(7) September 1978 – September 1982 :

Position:

Demonstrator, Mech. Power Engg. Dept., Faculty of Engg., Cairo University.

Expedience:

Teaching basic engineering concepts in the areas of Refrigeration and Air Conditioning, Steam Engineering and Power Plants, Heat/ Mass Transfer and Solar Energy. Teaching included conducting Thermodynamics & Steam Laboratory classes. Coincident with duties was required to carry a full program of study toward the M. Sc. Degree.

Practical / Industrial Experience and Professional Teaching:

(1) **Sept.** 2007 – present time :

Position :

Member of 5 internal committees & the Official Representative of the Quality Assurance Unit at the Faculty of Engineering, Cairo University (QAAU-FECU) at the Mech. Power Eng. Dept. Also Member of the External Reviewers Team of Higher Education of the National Authority for Quality Assurance and Accreditation of Education, NAQAAE

Expedience:

Member of several QAU internal sub-committees. Preparing scope of works and all types of QAU documentation, course matrix, program/courses specifications and reports for Mech. Power Engg dept. as per the requirements of (QAAU-FECU). Doing all related NAQAAE activities.

(2) June 2004 – present time :

Position:

Visiting Ass. Professor and Co-instructor/Coordinator of several short/intensive professional courses at the American University at Cairo, AUC.

Expedience:

Teaching & training Engineers in areas of instrumentation, pipe-lines, Valves, Pumps and Turbo-machines, fluid flow measurements, signal-conditioning and processing, data-acquisition, calibration and performance tests for various mech. equipment.

(3) June 1996 – Sept. 1999:

Position:

Mechanical Expert & Consultant, Design Department, Electricity Corporation of KSA, Riyadh, Kingdom of Saudi Arabia.

Expedience:

- 1-Preparing scope of works and all technical specifications for the mechanical parts and auxiliaries and all ventilation, air-conditioning and fire fighting systems for the tenders documents for building or extending any part of existing electric generation power plants using combustion gas turbines or diesel engines or electric substations.
- 2-Technical analysis of the mechanical parts and auxiliaries and all ventilation, air-conditioning and fire fighting systems of all bidder's technical offers submitted for tenders and projects for building or extending any part of electric generation power plants using combustion gas turbines or diesel engines or electric substations.
- 3-Upgrading the current specifications for all parts of fire fighting systems for the different parts of steam, gas turbine and diesel electric power stations.
- 4-Sharing in many areas related to electric generation such as: seminars, presentations, translation of technical materials, etc...

(4) September 1999- Current Date:

Position:

Member of the Faculty Technical Committee for Labs and experimental instruments, Mech. Power Engg. Dept., Faculty of Engg., Cairo University.

Expedience:

Selecting and preparation of technical specifications of instruments, scientific equipment and supplies for the undergraduate labs.

(5) September 1989- June 1996:

Position:

Co-instructor of short/ intensive professional courses at the Faculty of Engg., Cairo University and in a private technical training center.

Expedience:

- 1-Teaching & training mech. Engineers in areas of instrumentation, pipe-lines, flow measurements, signal-conditioning and processing, data-acquisition, calibration and performance tests for various mech. equipment.
- 2-Teaching & training mech. Engineers in the areas of 'Modern Control technology.- From The Basics To Practical Applications for both Hydraulics and Pneumatics, the courses cover conventional & computer based automatic control technologies.

Position:

Member in Exams and Control Committees in Faculty of Engg., Faculty of Literature and faculty of Law at Cairo University.

Expedience:

All works related to supervising exams and university control matters.

(6) June 1995- June 1996:

Position:

Member & Consultant in several Egyptian National Committee for Specification and Standardization, Ministry of Industry, Egypt.

Expedience:

Preparing Egyptian National Specifications for many subjects such as:Volume Gas Meters, Portable Fire Extinguishers, Direct Mass Flow Measuring Systems For Quantities of Liquids, Fixed Storage Tanks, Road and Rail Tankers.

(7) March 1994 - June-1996:

Position:

Member of many Organization Committees for International Conferences, Cairo University, Egypt

Expedience:

Works related to executive Local Organization committee for ASME 6 th International Congress on Fluid Dynamics & Propulsion, 1996, and 5th International Conference of Fluid Mechanics, Cairo, Jan.1995.

(8) 1983-1989:

Attended many International Conferences & Meetings at Oregon, New York, and California State in U.S.A.

(9) Summer 1982 & Summer 1981:

Practical Training Fellowship at Al-Sherif Plastic Factory, Egypt.

Practical Training Fellowship at Iron & Steel Mills & air Factory, Helwan, Egypt.

Professional Affiliations:

2007-Now: Member of QAU at FECU and Member of the External Reviewers Team of Higher Education of the National Authority for Quality Assurance and Accreditation of Education, NAQAAE

1978-Current date: Member of the Cairo University Staff Club, Cairo, Egypt.

1978-Current date: Member of The General Union for Engineers, Cairo, Egypt.

1995-Current data: Member in the Egyptian National Committee for Specifications and Standardization, Ministry of Industry, Cairo, Egypt.

1983-current date: Member of The American Society of Mechanical Engineers, U.S.A.

: Member of The Arab Students Association of Irvine, CA, U.S.A.

Publications:

- (1) Mohsen S. Mohamed, "Free & Forced Convection In Inclined Rectangular channels", M. Sc. thesis, Faculty Of Engg.", Cairo University, Egypt, 1982.
- (2) S.M. Morcos, M. M. Hilal, M. M. Kamel and M. S. Mohamed," Experimental Investigation of Mixed Laminar Convection in the Entrance Region of Inclined Rectangular Channels", Trans. ASME, Vol.108, pp.574-579, Aug-1986.
- (3) Mohsen S. Mohamed and J.C. LaRue, "Diffusion of Heat In The Initial and Developing Regions of Turbulent Thermal Mixing Layer", 40th Meeting of Division of Fluid Dynamics of the American physical Society, University of Oregon, USA, Published in the Bulletin of The American Physical Society, Vol. 32, 1987.
- (4) Mohsen S. Mohamed and J.C. LaRue, "Physical and Mathematical Models For a Normalized Decay Power-Law For Grid Turbulence", 41st Meeting of Division of Fluid Dynamics of !he American Physical Society, University of Buffalo, NY, USA, Published in The Bulletin of The American Physical Society, Vol. 33, 1988.
- (5) Mohsen S. Mohamed, "Experimental Investigation of The Near and Far Fields of The Turbulent Velocity and Thermal Mixing Layer in Nearly Homogeneous Turbulence", Ph.D. Dissertation, University of California, Irvine, USA., 1989.
- (6) Mohsen S. Mohamed and J.C. LaRue, "The Energy Decay-law and Similarity of 'Scales in Grid Turbulence, Procs. 7th Symposium on Turbulent Shear Flows", Stanford University, California, USA, August 21-23,1989.
- (7) Mohsen S. Mohamed and J.C. LaRue, "The Decay Power-Law Grid-Generated Turbulence", J.F.M., Vol. 219, pp.195-214, 1990.
- (8) MohsenS. Mohamed, "Similarity of Spectra and Scales in Homogeneous and Isotropic Turbulence", Procs. 8th international confer. for mech. Power Fngg., Vol.2, pp.297-308, Alexandria, Egypt, Apr. 1993.

- (9) MohsenS. Mohamed, ""Transport of Passive Scaler Fluctuations in Homogeneous and Isotropic Turbulence", Proce. 8th international Confer. for Mech. Power Engg., Alexandria, Egypt Vol.3, pp.45-58, Apr. 1993.
- (10) Mohsen S. Mohamed, "Numerical and Experimental Investigation of the Effect of Sampling, Noise and Response on Measuring Higher Moments of Single and Multiple Frequency Signals", Procs. 5th Inter. Confer of Fluid Mech., Cairo, Egypt, Vol. 1, pp.171-186, Jan. 1995.
- (11) Mohsen S. Mohamed, A. A.Mostafa & M. El-Sallak, "Momentum and Heat Transport in Confined Coaxial Jets Under Axial Pressure Gradient and at Variable Momentum Ratios", Procs. 5th Inter. Confer of Fluid Mech., Cairo, Egypt, Vol. 3, pp.803-815, Jan. 1995.
- (12) Mohsen S. Mohamed, "Errors In Computing Higher Order Moments of Single And Multiple Frequency Signals Due To Tiune-Lag In Sampling", Engg. Res. Journal, Univ. of Helwan, Faculty of Engg.& Tech., Mataria, Vol.1, pp.79-93, Jan. 1995.
- (13) Mohsen S. Mohamed, 'The Turbulent Structure of The Interaction Region of A Duct-Flow Plane Free Jet at High Reynolds Number", ", Engg. Res. Journal, Univ. of Helwan, Faculty of Engg.& Tech., Mataria, Vol.1, pp.61-78, Jan. 1995.
- (14) Mohsen S. Mohamed, A. A. Mostafa & M. M. Khalifa,"Hot-Wire Measurements in The Near Field of Coflowing Adjacent Jets, Part 1: Three Parallel Jets With Equal Mean Velocities", Engg. Res. Journal, Univ. of Helwan, Faculty of Engg. & Tech., Mataria, Vol.1, Jan.1995.
- (15) A. A. Mostafa, M. S. Mohamed and M. M. Khalifa, 'Hot-Wire Measurements in The Near Field of Coflowing Adiacent Jets, Part 2:Three Parallel Jets With non-Equal Mean Velocities', Engg. Res. Journal, Univ. of Helwan, Faculty of Engg.& Tech., Mataria, Vol.2, Feb.1995.
- (16) Mohsen S. Mohamed, "Using Halongenated-Compounds Substitutes in Fire Fighting Systems in Power Generating Plants", Submitted for the 11th Industrial Security Symposium, Kingdom of Saudi Arabia, Ministry of Interior, High Commission for Industrial Security,22-25 November 1998.
- (17) Mohsen S. Mohamed, A. A. Mostafa, M.M.Khalifa, E.A. Shabana, "Turbulence Structure in a Rectangular Diffuser With and Without Internal Guide Vanes", J. of Engg. & Appl. Science, Vol.46, No.2, April 1999, pp.287-306, Faculty of Eng., Cairo University, 1999.
- (18) Mohsen S. Mohamed, "Energy Transfer and Co-generation Efficiency of Fuel Cells", J. of Engg. & Appl. Science, Vol.46, No.6, Dec. 1999, pp. 1055-1074, Faculty of Engineering, Cairo University, 1999.
- (19) Mohsen S. Mohamed, "Modified Hybrid Power Cycle for Better Efficiency and Less Pollution Levels", J. of Engg. & Appl. Science, Vol. 48, No.2, April 2001, pp. 309-328, Faculty of Engineering, Cairo University, 2001.
- (20) Mohsen S. Mohamed, "Performance of Heat Pipe System for Waste Energy Recovery", J. of Engg. & Appl. Science, Vol. 48, June 2001, Faculty of Eng., Cairo University, 2001.
- (21) A. S. Sabry, Y. M. Zeyada, Mohsen S. Sloiman, A. Aboul-Magd, "Control System Mathematical Model of Straight Expansion Steam Turbines", Proceedings of ICFD 10:Tenth International Congress of Fluid Dynamics December 16-19, 2010, Cairo, Egypt, ICFD10-EG-3XX.
- (22) A. S. Sabry, Y. M. Zeyada, Mohsen S. Sloiman, A. Aboul-Magd, "Control System Mathematical Model of **Single Extraction** Steam Turbines", Proceedings of ICFD 10:Tenth International Congress of Fluid Dynamics December 16-19, 2010, Cairo, Egypt, ICFD10-EG-3XX.
- (23) Large set of university notes/courses and practical-teaching and training materials in the fields of Fluid Mechanics, Measurements and Instrumentation, signal-conditioning and Processing, Data Acquisition and Calibration, Modern Control Technology using PLC's and Micro-controllers. Notes for Clean Agents Total Flooding Fire Fighting Systems and Fire Protection Systems for Steam and Gas Turbine Power Plants &Substations, Computer Applications of Automatic Control Virtual Labs in Mech. Power Systems.
- (24) Several Practical Notes on "Valves: design, installation and maintenance", and "Design and Analysis of Fluid Flow and Water Hammer in Pipelines", "Pumps: design, selection, testing and maintenance" (short practical & industrial courses at AUC, 2006, 2007, 2008 and 2009).
- (25) Practical Notes on Flow and Practical Viscosity Measurements (for short course at The Egyptian Training Center, Cairo, 2007).

Certificates from Training workshops in Quality Assurance and Accreditation Area:



