

**CURRICULUM VITAE
FOR
Dr. MUSTAFA TUTAR**

SURNAME, FORNAME/S AND TITLE

Tutar, Mustafa / Associate Professor

NATIONALITY

Turkish

DATE AND PLACE OF BIRTH

22 July 1970, Turkey

MARITAL STATUS

Married with a son

LANGUAGES

English, Turkish

EMPLOYEMENT & POSITION CURRENTLY HELD

Mondragon University, Professor Research in Fluids Mechanics

MEMBERSHIP OF INSTITUTIONS

Member of American Society of Mechanical Engineers (ASME)

Member of Turkish Society of Mechanical Engineers (TMMOB)

CORRESPONDENCE ADDRESS:

Mondragon Unibertsitatea

Department de Mecánica y Producción Industrial

Loramendi, 4, 20500 Mondragon-Arrasate

Tel: +34 943 79 47 00 Ext: 6444

Gsm: 0544 3845840

E-mail: mtutar@eps.mondragon.edu

SUMMARY

I have had a considerable experience in fluid mechanics based engineering applications using computational methods. Upon completion of a full time undergraduate programme from Middle East Technical University (METU), Turkey with a Bachelor of Science Degree in Mechanical Engineering in 1993, I was awarded a fulltime graduate scholarship following a nationwide exam to do Doctor of Philosophy (Ph. D) in the UK for a period of 1994 to 1998. I joined CFD research group as a research assistant at the University of Hertfordshire in 1994. I completed my Ph.D. study with a thesis entitled "Computational Modelling of Vortex Shedding from Offshore Risers" at the University of Hertfordshire, UK in 1998. The project was broadly based on determining the correct numerical forcing function models to treat fluid-structure interactions in an ocean environment and on improving large eddy simulation (LES) techniques with new near wall modelling approaches for moving boundaries to accurately simulate the oscillation of cylindrical bluff bodies. During this time I had also explored various aspects of teaching as well as doing intensive research resulting in several international journal and conference papers published. Following the completion of my Ph. D in 1998, I was assigned to an assistant professorship position in Mechanical Engineering at Mersin University in 1999.

For a time period of 1999 to 2005, I had conducted research in turbulence theory, simulation and modeling of turbulence for different flow scenarios resulted in more than 30 international and conference publications cited. I had been involved in international and national research collaborations with several research groups in UK, Poland, USA and Turkey as a research associate and/or fellow to participate in research projects approved for funding mostly by foreign entities. These projects were international scientific endeavors in computational modeling of turbulent phenomena for different flow scenarios and enabled me to benefit from increased internationalization and to work with strong international research groups to further improve my publishing profile and experience in writing and submitting international research proposals. During this period, I had also supervised a few research projects funded by National Research Councils of Turkey and taught fluid mechanics and thermodynamics related undergraduate and graduate courses within the Department of Mechanical Engineering at Mersin University, Turkey. Since 2005, I have been appointed as an associate professor in fluid mechanics at Mersin University and held research grants from both industry and research councils as summarized in my curriculum vitae. I have supervised several post graduate students in the field of fluid dynamics and heat transfer with specific CFD based engineering applications relevant to optimization of designing of fluid engineering systems and have been an invited lecturer for meetings and seminars at number of universities. I have been also an external consultant to a number of companies in Mersin Technological Development center since 2007.

PROFESSIONAL OBJECTIVE

A challenging academic and/or research engineering position in fluid mechanics/heat transfer and Computational Fluid Dynamics (CFD) with various research applications and teaching

EDUCATION

UNIVERSITY OF HERTFORDSHIRE, Hatfield, United Kingdom

Doctor of Philosophy (Ph.D.) in Computational Fluid Dynamics (CFD), 1998

Ph.D. Thesis entitled "Computational Modelling of Vortex Shedding from Offshore Risers"
M. Phil. To Ph. D. Transfer Report entitled "Computational Modelling of Vortex Shedding Flow around Oscillating Bluff Bodies Relevant to Offshore Structures"

UNIVERSITY OF HERTFORDSHIRE, Hatfield, United Kingdom

Postgraduate Certificate in Applied CFD, 1996

A variety of Fluid Dynamics issues in the context of CFD, including governing equations and dimensional analysis, turbulence modelling as well as numerical computing aspects such as optimization and finite arithmetic covered

MIDDLE EAST TECHNICAL UNIVERSITY (M.E.T.U.), Ankara, Turkey

Bachelor of Science in Mechanical Engineering, 1993

Course broadly-based on taught courses in fluid mechanics, thermodynamics, heat transfer, and other aspects of mechanical engineering such as structural mechanics, materials & manufacturing and electronics in the first three years and became more fluid mechanics and heat transfer based elective courses such as gas dynamics, pipeline design, nuclear engineering in the final year. The degree also included two summer training programs and a major scientific project spanning the final year Mechanical Engineering Design Course

PROFESSIONAL EXPERIENCE

2010 - Present MONDRAGON UNIVERSITY, Arrasate, Basque country, Spain

Research Professor in Fluid Mechanics

Modelling of turbulence for different flow scenarios in the context of complex flows
2007- 2010 GRADYAN ENGINEERING AND SOFTWARE LIMITED COMPANY, Mersin, Turkey

Founding partner, Research Engineer

Designed new engineering products in the field of mechanical engineering using methods of virtual engineering. Currently involved with computational modeling of polymer fluid flow for optimization of design of insert-metal fittings.

2005- 2010 MERSIN UNIVERSITY, Mersin, Turkey

Associate Professor in Mechanical Engineering

Directed a CFD research group in the department. Thought undergraduate and graduate courses in the field of fluid mechanics and heat transfer. Currently involved with a research project for optimization of design of polymer pipe fittings with an emphasis on computational modeling of polymer melt flow.

1999-2005 MERSIN UNIVERSITY, Mersin, Turkey

Assistant Professor in Mechanical Engineering

Thought fluid mechanics, heat transfer, thermodynamics and turbo machinery courses at undergraduate level and computational fluid dynamics, boundary layer theory and turbulence modelling at graduate level. Involved with many research projects in the field of fluid dynamics and heat transfer as project participant and/or project director. Held research grants of over \$50.000 from several research councils in Turkey. Supervised several graduate and undergraduate students on CFD based research studies for the optimization of design of turbomachines, heat exchangers and offshore structures.

1994-1998 UNIVERSITY OF HERTFORDSHIRE, Hatfield, United Kingdom

Research Assistant in Mechanical and Aerospace Engineering

Investigated the fluid-bluff body interactions and the modelling of turbulence for the bluff body flow by developing new near wall boundary conditions within large eddy simulation (LES) method. Developing new near wall modelling techniques within LES to accurately resolve the non-steady turbulent boundary layers and analysing non-linear interactions between the body and the fluid flow. Explored various aspects of teaching as well as doing intensive research in computational fluid dynamics and heat transfer.

1993-1994 NURIŞ ELECTRIC ARC WELDING MACHINES INC., Ankara, Turkey

Research Engineer

Undertaken a significant role to adopt a new quality control monitoring systems as a primary policy of the company for the production of electric arc welding machines.

VISITING RESEARCH POSITIONS

2004-2005 MIDDLE EAST TECHNICAL UNIVERSITY, Ankara, Turkey

Visiting Research Associate in Aerospace Engineering

Research project entitled "Unmanned Air Vehicle Design"

2003-2004 WEST VIRGINIA UNIVERSITY, Morgantown, WV, USA

Visiting Research Fellow in CFD

Research project entitled "Large Eddy Simulation of Bubbly Turbulent Wake Flows using CFD on parallel platforms such as Beowulf Clusters"

2002 INSTITUTE OF FLUID-FLOW MACHINERY, POLISH, ACADEMY OF SCIENCES, Gdansk, Poland

Visiting Research Fellow in Fluid Flow Machinery

Research project entitled "Computational Modelling of Turbomachinery Flow/heat Transfer with

various Industrial Applications"

1999 UNIVERSITY OF HERTFORDSHIRE, Hatfield, UK

Visiting Research Fellow in CFD

Research project entitled "Large Eddy Simulation of Turbulence for Different Flow Scenarios"

RESEARCH INTERESTS

◆ Flow in Turbo machines/Heat Exchangers

Determination of the efficiency of a transonic linear turbine.

Rotor stator interactions in centrifugal compressors.

Flow prediction in centrifugal pumps.

Optimization of plate fin-and tube heat exchanger design.

◆ Wind and Solar Engineering

Pollutant dispersion.

Wind loads on building structures.

LES modelling of turbulent atmospheric boundary layer flow,

Radiation Modelling

- ◆ Turbulent Flow and Heat Transfer
 - Modelling of turbulent flow around bluff bodies.
 - Modelling of turbulent shear layers.
 - Turbulent flow analysis during combustion in a chamber.
 - Turbulent heat transfer analysis in closed conduits.
 - Modelling of Bubbly turbulent wake flows
- ◆ CFD Methods:
 - CFD methodology and LES applications.
 - Mathematical modelling and stability analysis.
 - Body-Fluid interactions: Arbitrary Lagrangian and Eulerian (ALE) Formulation.
 - Hydrodynamics of bluff bodies.
 - Aerodynamics of bluff bodies.
 - Modelling inflow turbulence data

MAJOR RESEARCH PROJECTS INVOLVED

- ◆ A Design Project of an Ideal Metal-Insert Leakproof Fitting Operating Under Very High Pressures
 - Principal supervisor**, Engineering Research Committee, The Scientific and Technical Research Council of Turkey, \$88.850 Project No: 106M465, to be completed in July, 2009.
- ◆ Aero-thermal investigation of a highly loaded transonic linear turbine guide vane cascade
 - Principal supervisor**, M. Sc. Project, U. Sönmez, completed in June, 2005
- ◆ Design and construction of two unmanned air vehicles and technological developments
 - Project participant**, sponsored by DPT-YUUP, \$ 1.500.000 Middle East Technical University in Ankara, completed in October, 2005.
- ◆ Computational modelling of air flow and particle dispersion around a group of building
 - Principal supervisor**, sponsored by The Scientific Research Committee, Mersin University, \$14.000
 - Project No: BAP-MÜH-. FAK. MM(MT) 2003-2, completed in December, 2005.
- ◆ Computational modelling of turbulent heat transfer in plate and fin tube heat exchangers used in greenhouses operated by geothermal energy
 - Principal supervisor**, sponsored by Mechanical Engineering, Chemical Technologies, Material Sciences and Manufacturing Research Committee, The Scientific and Technical Research Council of Turkey, \$20.850 Project No: MISAG-147, completed in July, 2003.
- ◆ Numerical modelling of air flow around a group of buildings
 - Principal supervisor**, M. Sc. Project, G. Oğuz, completed in October, 2002
- ◆ Computational modelling of heat convection in using waste heat
 - Principal supervisor**, sponsored by The Scientific Research Committee, Mersin University, \$5.500,
 - Project No: BAP-MÜH. FAK. MM(MT)2001-1, completed in December, 2002.
- ◆ Large eddy simulation of bubbly turbulent wake flows using CFD on parallel platforms such as our Beawulf clusters
 - Project participant** as a visiting scientist, sponsored by The Scientific and Technical Research Council of Turkey, \$7.000, NATO Science Fellowship Programme (NATO-B2) February 2003-September 2003.
- ◆ Computational modelling of turbo machinery/heat transfer with various industrial applications
 - Project participant** as a visiting scientist, partially sponsored by Institute of Fluid-Flow Machinery Polish Academy of Sciences, Gdansk, Poland, July 2002-September 2002.
- ◆ Large eddy simulation of turbulence for different flow scenarios
 - Project participant** as a visiting scientist, sponsored by CFD Research Group, University of Hertfordshire, Hatfield, UK, July 1999-September 1999

MAJOR INDUSTRIAL PROJECTS INVOLVED

- ◆ A Design Project: Modelling and Construction of a Wind Turbines

External Consultant, sponsored by AltunOrak Makine İmalat Sanayi ve İnş. Ltd. Şti., Mersin

Technological Development Zone, to be completed in January, 2010.

◆ A Design Project of a Solar Energy System: Modelling Radiation Heat Transfer

External Consultant, sponsored by Bomak Makine İmalat Sanayi ve İnş. Ltd. Şti., Sanayi Sitesi,

Adana, Kobi Ar-Ge 1507 Projesi, to be completed in January, 2010

TECHNICAL SKILLS AND SOFTWARE EXPERTISE

Computers Sun workstations, PC compatibles

CFD Codes FIDAP, FLUENT, PHOENICS, GAMBIT, TGRID

Operating Environments Unix, Dos, Windows NT 4, Windows XP, Internet

Programming Languages Fortran 77/90

Office Automation Microsoft Environment (Word, Excel, Office XP, Power Point, Tecplot etc)

PUBLICATIONS

Refereed Science Citation Index (SCI) Journal Publications

◆ **Tutar, M.**, and Holdo, A. E., 1999, "Application of Differing Forcing Function Models on the Flow Past

an Oscillating Cylinder in a Uniform Low Reynolds Number Flow," *International Journal of Computational Fluid Dynamics*, Vol: 11, No: 3-4, pp: 223-235

◆ **Tutar, M.** and Holdo, A. E., 2000, "Large Eddy Simulation of a Smooth Circular Cylinder Oscillating

Normal to a Uniform Flow" *Transactions of the ASME: Journal of Fluids Engineering*, Vol. 122, pp: 694-

702

◆ **Tutar, M.** and Holdo, A. E., 2001, "Computational Modelling of Flow around a Circular Cylinder in Subcritical

Flow Regime With Various Turbulence Models", *International Journal for Numerical Methods in Fluids*, Vol. 35, pp: 763-784.

◆ **Tutar, M.**, Oguz, G., 2002, "Large Eddy Simulation of Wind Flow Around Parallel Buildings with Varying

Configurations", *Fluid Dynamics Research*, Vol:31, pp:289-315

◆ **Tutar, M.**, Oguz, G., 2004, "Computational Modelling of Wind Effects Around a Group of Buildings",

International Journal of Computational Fluid Dynamics, Vol:18(8), pp: 651-670.

◆ **Tutar, M.**, Akkoca, A., 2004, "Numerical Analysis of Fluid Flow and Heat Transfer Characteristics in a

Three- Dimensional Plate Fin- and Tube Heat Exchanger", *Numerical Heat Transfer: Part A*, Vol:46, pp:

301-321.

◆ **Tutar, M.**, Celik, I., and Yavuz, I., 2007, "The Effect of Inflow Turbulence for Large Eddy Simulation of

Circular Cylinder Flows" *Transactions of the ASME: Journal of Fluids Engineering*, Vol. 129(6), pp:780-

790.

◆ **Tutar, M.**, Celik, I., 2007, "Large Eddy Simulation of a Square Cylinder Flow: Modelling of Inflow

Turbulence" *International Journal of Winds and Structures*, Vol. 10(6).

◆ **Tutar, M.**, Erdogdu, F, I., Toka B., 2009, "Computational Modeling of Airflow Patterns and Heat Transfer

Prediction through Stacked Layers Products in a Vented Box during Cooling", *International Journal of*

Refrigeration, Vol. 32, pp:295-306

◆ **Tutar, M.**, Karakus, A., 2009, "3-D Computational Modeling of Process Condition Effects on Polymer

Injection Molding", *International Polymer Processing*, Vol. 24(5), pp. 384-398

◆ **Tutar, M.**, Sonmez U, 2010, "Computational Modelling of Turbulent Flow in a Highly Loaded Transonic

Turbine: Comparative Performance of Various Turbulence Models" *International Journal of Thermal*

Engineering, under review.

Refereed International Journal Publications

♦ **Tutar, M.**, Celik, I., and Yavuz, I. 2007, "Modelling of Effect of Inflow Turbulence on large Eddy Simulation of Bluff Body Flows" *Mathematical and Computational Applications*, Vol. 11(3), pp:225-234.

Refereed International Conference Publications

♦ **Tutar, M.**, and Holdo, A. E., 1997, "Application of Differing Forcing Function Models on the Flow Past

An Oscillating Cylinder in a Uniform Low Reynolds Number Flow," in *Proc. International Symposium on*

Advanced Heat and Mass Transfer, Ceşme, Turkey

♦ **Tutar, M.** and Holdo, A. E., 1998, Lewis A.P. "Simulation of Vortex Shedding From an Oscillating

Circular Cylinder," in *Proc. 29th AIAA Fluid Dynamics Conference, June 15-18, New Mexico, USA*

♦ **Tutar, M.**, Holdo, A. E., and Lewis, A. P., 1998, "Comparative Performance of Various Two-Equation

Turbulence Models and LES on Simulated Flow Past a Circular Cylinder in Subcritical Flow Regime," in

Proc. ASME Fluids Eng. Division Summer Meeting, FEDSM98-4935, June 21-25, Washington D. C., USA

♦ Wakes, S. J., Holdo, A.E. and **Tutar, M.**, 1999, "The Role of Wall Function in Large Eddy Simulation of

Bluff Bodies" in *Proc. ASME Fluids Eng. Conference, July 18-22, 1999, San Francisco, California.*

♦ Holdo, A. E., **Tutar, M.**, 1999, "Large Eddy Simulation of Single Offshore Risers Oscillating Normal a

Uniform Flow: Comparison between Two Dimensional and Three Dimensional Results", in *Proc. ASME*

PVP Conference, August 1-5, 1999, Boston, USA

♦ Holdo, A.E., **Tutar, M.**, de With, G., 2000, "Large Eddy Simulation of Single Offshore Riser Oscillating

Normal Uniform Flow: Comparison between Two Dimensional and Three Dimensional Results", *ASME*

2000 PVP Conference, Vol. 414-2, pp. 7-16, Seattle, USA

♦ **Tutar, M.**, Akkoca, A., Öztekin, S., 2001, "A Numerical Study of Heat Transfer And Fluid Flow In A

Plate Fin- and- Tube Heat Exchanger" in *Proc. of Symposium on Emerging Technologies For Fluids, Structures, and Fluid/Structure Interactions: 2001 ASME PVP Conference July 22-26, Vol. 431, pp. 77-*

84, Atlanta, Georgia, USA

♦ **Tutar, M.**, Akkoca, A., 2002, "A Computational Study of Effect of Different Geometrical parameters on

Heat Transfer and Fluid Flow in a Wavy and Plain Fin Tube Heat Exchanger", in *Proc. of ESDA 2002- 6*

Biennial Conference on Engineering Systems Design and Analysis, July 8-11, 2002, Istanbul, Turkey,

♦ **Tutar, M.**, 2003, "Turbulent Inflow Data for Large Eddy Simulation on Modelling of Bluff Bodies", *Proc*

of 2003 Southeastern Europe Fluent User's Group Meeting, 15-17 October, 2003, Istanbul

♦ **Tutar, M.**, Celik I., & Yavuz I., 2004, "The Role of Inflow Turbulence For Large Eddy Simulation on

Modelling of Bluff Body Flows", in *Proceedings of ASME HT-FED2004 2004 ASME Heat Transfer/Fluids*

Engineering Summer Conference, July 11-15, 2004, Charlotte, North Carolina

♦ Sönmez, Ü., **Tutar, M.**, 2005, "Computational Modelling of Turbulent Flow in a Transonic Linear

Turbine", in *Proc. of SouthEastern Europe Fluent Event 2005, May 11-13, 2005, Halkidiki, Greece*

♦ **Tutar, M.**, Karakus, A., 2008, "Computational Modelling of Three-dimensional Compressible Filling

Process", in *Proc. of ICHMT International Symposium on Advances in Computational Heat Transfer, May 11-16, 2008, Marrakech, Morocco*

♦ **Tutar, M.**, Karakus, A., 2008, "3-D Computational Modelling of Effects of Geometric Conditions on

Injection Molding", in *Proc. Of Twelfth International Materials Symposium, October 15-18, 2008, Denizli, Turkey*

♦ **Tutar, M.**, Karakus, A., 2008, "3-D Numerical Simulation of Polymer Injection Molding", accepted in *Proc. of 6th ICCHMT-International Conference on Computational Heat and Mass Transfer, May 18-21 2009, Guangzhou, China*

Refereed National Conference Publications

♦ **Tutar, M.**, Akkoca, A., Öztekin, S., 2001, "A Numerical Study for Comparison of Laminar and Turbulent Flow Regimes in a Plate Fin-and-Tube Heat Exchangers" in *Proc. of 13. Ulusal Isı Bilimi ve Tekniği Kongresi, September 5-7, 2001, Konya, Turkey*
♦ **Taner F.**, Halisdemir B., **Tutar M.**, Yılmaz F.B., Mutlu H., and Kurtulus F., 2007, "Sera İklimlendirmede Faz Değişim Maddesinin (PCM) Kullanımı" in *Proc. of II. Ulusal İklimlendirme Kongresi, Kasım 15-18, 2007, Antalya, Turkey*

Technical Reports

♦ **Tutar, M.**, Akkoca, A., Öztekin, S., Holdo A. E., 2003, "Computational Modelling of Turbulent Heat Transfer in Design of Heat Exchangers used in Greenhouses heated by Geothermal Energy", Project No: MISAG-147
♦ **Tutar, M.**, Akkoca, A., Oğuz, G., Mutlu, H., Çavuş, E., 2002, "Computational Modelling Heat transfer for Reusing of waste Heat", Project No: BAP-MÜH. FAK. MM(MT)2001-1
♦ **Tutar, M.**, Calay, R., Mutlu, H., Oguz, G., Sonmez, U., 2005, "Computational Modelling Particle Dispersion Around Buildings", Project No: BAP-MÜH. FAK. MM(MT)2003-2

Other Publications

♦ **Tutar, M.**, 1996, "The modelling of Vortex Shedding Flow around Oscillating Bluff Bodies Relevant to Offshore Structures", M. Phil to Ph.D. Transfer Report, University of Hertfordshire,
♦ **Tutar, M.**, 1998, "Computational Modelling of Vortex Shedding from Offshore Risers", Ph.D. Thesis, University of Hertfordshire, UK
♦ **Tutar, M.** and Akkoca, A., 2001, "CFD Modelling of Heat Transfer and Corresponding Turbulent Flow Characteristics of Finned Tube Heat Exchangers Used in Greenhouses", *Proc. of 6th FIGES Groups Meeting, 8-10 November, Uludağ, Bursa, Turkey*
♦ **Tutar, M.**, Oğuz, G., 2002, "Large Eddy Simulation modelling of Turbulent Atmospheric Boundary Layer Flow around Buildings", *Proc. of 7th FIGES Groups Meeting, 31 October-1 November 2002, Mudanya*

HONOURS AND AWARDS

♦ **Full time graduate scholarship** from The Higher Educational Council of Turkey to conduct Ph. D. in the UK for a period of 4 years from 1994 to 1998
♦ **A research grant awarded** in scope of the NATO Science Fellowship Programme from The Scientific and Technical Research Council of Turkey to conduct a study visit at West Virginia University in Morgantown (USA) for a period of 6 months from February 2002 to September 2003
♦ **A travel grant awarded** in scope of the Directorate of Human Resources Development (BAYG) Programme to participate an international conference in Atlanta, Georgia, 2001
♦ **Journal Publication Support Awards** from The Scientific and Technical Research Council of Turkey, 1999-2004
♦ **Best Technical Paper Presentation Award**, ASME Fluids Engineering Division, 1999
♦ **Secretary General** of International Youth Club at Middle East Technical University from 1989 to 1990

◆ **President** of Turkish Society and committee member of the International Students Society at the University of Hertfordshire, UK for a period of 2 years from 1995 to 1997.