

# Reza Maddahian

## Contact information

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## Education

- PhD (Doctor of Philosophy) in Mechanical Engineering - Energy Conversion, Sharif University of Technology (SUT), Iran, 2012  
Dissertation Title: Numerical Investigation of Two-Fluid Flow inside Deoiling Hydrocyclones
- MSc, Mechanical Engineering, Sharif University of Technology (SUT), Iran, 2007  
Dissertation Title: Numerical Investigation of Thermo Fluid Dynamics of Self-Induced Flow in Rotating Tubes
- BSc, Mechanical Engineering, Isfahan University of Technology (IUT), Iran, 2005  
Dissertation Title: Developing New Software to Predict Thermo Physical Properties of Gases Mixture

## Professional Experience

- Assistant Professor, Tarbiat Modares University, 2015-present
- Assistant Professor, University of Kashan, 2013-2015
- PhD Research Experience, Sharif University of Technology, 2007-2012
- Master's Research Experience, Sharif University of Technology, 2005-2007
- Industrial and working Experiences,
  - Director of CFD Department in Monenco Consulting Engineers, Research and Development Office, 2011 - 2016
  - Manager of underground ventilation department in AFRA Co., 2011 - 2014
  - Manager of project entitled: feasibility study of ventilation system for Niayesh tunnel in AFRA Co., 2011-2012
  - Scientific Project Manager in Test Rig Project for MONENCO Consulting Engineers, (Designing a Test Bed for Mechanical and Performance Test of Centrifugal Compressors), 2010 - 2016
  - Director of CFD Department in SIVDT (Sharif Industrial Ventilation Team), Designing Ventilation system for Tunnels and Subways, 2010 - 2013
  - Director of CFD Department in TUGA Project for MONENCO Consulting Engineers, Analyzing Air Intake and Exhaust System for V94.2 Gas Turbine, 2009 - 2010
  - Director of Fire Department in SSED (Sharif Subway Environmental Design Team), Designing HVAC and Emergency Ventilation (EV) for line 4 of Tehran subway, 2007 - 2013
  - Director of CFD Department in SSED (Sharif Subway Environmental Design Team), Simulation of Fire, Heating, Ventilation and Emergency Ventilation (EV) for line 4 of Tehran subway, 2007 -2013

## Research Conducted or Underway

- Crude oil fouling in pre-heat trains, Tarbiat Modares University (2015 - ...)
- Unsteady swirling flow in hydraulic turbines, Tarbiat Modares University (2015 - ...)
- Application of inverse heat transfer for image reconstruction of Electrical Capacitance Tomography (ECT), Tarbiat Modares University (2015 - ...)
- Pressure surge during rapid filling of water pipes, Tarbiat Modares University (2015 - ...)

- Bubble Dynamics and Pool Boiling on Inclined Surfaces, Tarbiat Modares University (2015 - ...)
- Fully Coupled Algorithm for Multiphase Flows, Tarbiat Modares University (2015 - ...)
- Crude oil desalination using hydrocyclones, University of Kashan, (2013 – 2016)
- Improving separation efficiency of De-Oiling hydrocyclones using air injection, University of Kashan, (2013 – 2016)
- Design and Optimizing of De-Oiling Hydrocyclones Using Computational Fluid Dynamics, SUT, (2007-2012)
- Developing a multiphase code based on two-fluid Finite Volume Method, SUT, (2007-2012)
- Developing mixture approach of Reynolds Stress Model (RSM) for two-fluid model, SUT, (2007-2012)
- Design and manufacturing a system for measuring void fraction in multiphase flow based on Electrical Resistance Tomography (ERT) , SUT, (2007-2012)
- Successfully developed the Large Eddy Simulation turbulence model for CALC-BFC code, SUT, (2007-2012)
- Numerical Investigation of Thermo Fluid Dynamic of Turbulent Flow in Rotating Tubes, SUT, (2005-2007)

### **Scholarly Work**

#### **Journal Publications**

- M.B. Haddadi, **R. Maddahian**, A New Algorithm for Image Reconstruction of Electrical Capacitance Tomography Based on Inverse Heat Conduction Problems, IEEE Sensor Journal, Vol. 16 (6), pp. 1786-1794 (2016)
- M. Saidi, **R. Maddahian**, B. Farhanieh, Numerical Investigation of Cone Angle Effect on the Flow Field and Separation Efficiency of Deoiling Hydrocyclones, Heat and Mass Transfer, Vol. 49 (2), pp. 247-260 (2013)
- A. Salari, M. Karmozdi, **R. Maddahian**, B. Firoozabadi, Analytical Study of Single Particle Tracking in both Free and Forced Vortices, Scientia Iranica, Vol. 20 (2), pp. 351-358 (2013)
- M. Saidi, **R. Maddahian**, B. Farhanieh, H. Afshin, Modeling of Flow Field and Separation Efficiency of a Deoiling Hydrocyclone Using Large Eddy Simulation, Int. J. of Mineral Processing, Vol. 112-113, pp. 84-93 (2012)
- **R. Maddahian**, M. Asadi, B. Farhanieh, Numerical Investigation of Velocity Filed and Separation Efficiency of Deoiling Hydrocyclones, Petroleum Science, Vol. 9 (4), pp. 511-520 (2012)
- **R. Maddahian**, B. Farhanieh, B. Firoozabadi, Turbulent Flow in Converging Nozzles, Part One: Boundary Layer Solution, Applied Mathematics and Mechanics, Vol. 32 (5), pp. 645-662 (2011)
- E. Faghani, S. D. Saemi, **R. Maddahian**, B. Farhanieh, On the effect of inflow conditions in simulation of a turbulent round jet, Archive of Applied Mechanics, Vol. 81 (10), pp. 1439-1453 (2011)
- **R. Maddahian**, A. Kebriaee, B. Farhanieh, B. Firoozabadi, Analytical Investigation of Boundary Layer Growth and Swirl Intensity Decay Rate in a Pipe, Archive of Applied Mechanics, Vol. 81 (4), pp. 489-501 (2011)
- **R. Maddahian**, B. Farhanieh, Numerical Investigation of Thermo Fluid Mechanics of a Differentially Heated Rotating Tubes, Heat Transfer Engineering, Vol. 31 (3), pp. 201–211 (2010)
- E. Faghani, **R. Maddahian**, P. Faghani, B. Farhanieh, Numerical Investigation of Turbulent Free Jet Flows Issuing from Rectangular Nozzles: the Influence of Small Aspect Ratio, Archive of Applied Mechanics, Vol. 80 (7), pp. 727-745 (2010)
- E. Faghani, S. D. Saemi, **R. Maddahian**, B. Farhanieh, Numerical Investigation of Corner Angle and Wing Number Effects on Fluid Flow Characteristics of a Turbulent Stellar Jet, Heat and Mass Transfer, Vol. 46 (1), pp. 25-37 (2009)

### **Selected Honors and Awards**

- Outstanding Lecturer and Assistant Professor, University of Kashan, 2015
- 2nd Rank among Mechanical Engineering (Energy Conversion) PhD students, 2007-2012

### **Academic and Teaching Experiences**

- Lecturer of following MSc and PhD Courses (Tarbiat Modares University, 2015-present)
  - Advanced Fluid Mechanics
  - Computational Fluid Dynamics
  - Computational Multiphase Fluid Dynamics
  - Advanced HVAC
- Lecturer of following MSc and PhD Courses (University of Kashan, 2013-2015)
  - Multiphase Flow
  - Viscous Flow
  - Advanced Fluid Mechanics
  - Computational Fluid Dynamics
- Lecturer of following BSc Courses (University of Kashan, 2013-2015)
  - Fluid Mechanics I and II
  - Computational Fluid Dynamic
  - Heat Transfer
  - HVAC
- Tutor of Fluid Mechanics Laboratory, Sharif University of Technology, Sep. 2007 – Jul. 2012
- Tutor of Heat Transfer Laboratory, Sharif University of Technology, Sep. 2007 – Sep. 2010

### **International and National Cooperation**

- University Politehnica of Bucharest, Romania: pressure surge and unsteady phenomena during rapid filling of water pipes
- Lulea University of Technology, Sweden: Unsteady swirling flow in draft tube of hydraulic turbines