

## **MAJID SAFFAR - AVVAL**

**Professor**

**Mechanical Engineering**

**Educational Records**



Ph.D. in Mechanical Engineering, Ecole Nationale des Arts et Metiers (ENSAM), Paris, 1985,

M.Sc. in Mechanical Engineering, Sharif University of Technology, Tehran, 1980,

B.Sc. in Mechanical Engineering, Sharif University of Technology, Tehran, 1978.

### **Employment and Teaching**

Full Professor of Mechanical Engineering Department at Amikabir University of Technology ,  
Scientific Societies

Iranian Society of Mechanical Engineers,

Iranian Society of Energy .

### **Conference Activities**

#### **Publications in French and English**

1 -M. Saffar-Avval, R. Rey, "Conception, Réalisation et Essai d'une Chaudière à Déchèts de Bois," 12th Canadian Congress of Applied Mechanics, CANCAM' 98, May 28- June, Carleton University, Ottawa, vol. 2, 1989.

2-M. Saffar-Avval, E. Damagir, N. S. Mehadizadeh, "Optimum Selection of Inter-Baffle Spacing in Shell and Tube Heat Exchanger," CSME Mechanical Engineering Forum, University of Toronto, Vol. 1, 1990.

3-M. Saffar-Avval, E. Damangir, A. A. Sorousheh, "An Easy To Use Guideline for Determining Optimum Baffle Spacing for all Types of Shell and Tube Heat Exchangers," 13th Canadian Congress of Applied Mechanics, CANCAM' 91, June 2-6, Canada, Vol. 2, 1991.

4-M. Saffar-Avval, S. A. Behzadi, "Exergy Analysis of Combined Cycle Power Plants Using a Flexible Computer Program," 14th Canadian Congress of Applied Mechanics, CANCAM' 93, May 30- June 4, Canada, 1993.

5-M. Saffar-Avval, S. A. Behzadi, "Flexible Computer Code for Combined Cycle Calculation," Intersectional Congress on Computation Method in Engineering, May 2-6, Shiraz University, 1993.

6- E. Damangir, M. Saffar-Avval, M. R. Eslami, A. A. Sorousheh, "Finite Element Formulation of Artery of Blood in Bifurcation of Femoral Artery to Predict Atherosclerosis Plaque Formation," Second European Joint Conference of Engineering System Design and Analysis, ESDA-ASME, University of London, July 4-7, 1994.

7 -M. Sakhaei, E. Damangir, M. Saffar-Avval, "Combined Mode Heat Transfer in Cylindrical Radioactively Participating," 15th Canadian Congress of Applied Mechanics, CANCAM' 95, 1995.

- 8 -E. Damangir, M. R. Eslami, M. Saffar-Avval, V. Mehdinejad, M. Marivani, "Numerical Solution of Pulsatile Blood Flow in a Bifurcation with Elastic Walls," European Joint Conference of Engineering System Design and Analysis, ESDA-ASME, Montpellier France, July 1-4, 1996.
- 9 -H. Basirat Tabrizi, M. Saffar-Avval and M. Bahrami, "Flow Pattern of Gas-Solid in Circulating Fluidized Bed," European Joint Conference of Engineering System Design and Analysis, ESDA-ASME, Montpellier, France, July 1-4, 1996 .
- 10 -Z. Mansoori, M. Saffar-Avval, H. Basirat-Tabrizi, "Modeling of Heat Transfer in a Gas-Solid Bed," 2nd Trabozan International Energy and Environment Symposium, TIEES-98, Turkey, 1998.
- 11-H. Basirat-Tabrizi, M. Saffar-Avval, M. R. Assarie, "Two Dimensional Mathematical Modeling of a Fluidized Bed Drying," 2nd Trabozan International Energy and Environment Symposium. , TIEES-98, Turkey, 1998.
- 12 -Z. Mansoori, Saffar-Avval, H. Basirat-Tabrizi, "Inter-particle Heat Transfer in Gas-Solid Fluidized Bed," ECOS'98, France, 1998.
- 13 -Y. Morady, M. Saffar-Avval, H. Basirat-Tabrizi, "Heat Recovery and Mathematical Modeling of Glass Furnaces," ECOS'98, France, 1998.
- 14 -H. Basirat-Tabrizi, M. Saffar-Avval, M. R. Assarie, "The Design of Experimental Set up and Theoretical Investigation of Fluidized Dryers," ASME-ESDA, 3rd Biannual World Conference on Integrated Design and Process Technology Proceeding, Germany, 1998.
- 15 -S. Porkial, B. Khastoo, M. Saffar-Avval, "Exergy in a Small Scale Refrigeration System," Proceeding Conference on Energy Research and Development, 1998, Kuwait.
- 16 -Z. Mansoori, M. Saffar-Avval, H. Bassirat-Tabrizi, "The Effects of Particle Interaction on the Heat Transfer in a Horizontal Turbulent Gas-Soild Channel Flow," 15th National and 14th ISHMT-ASME Heat and Mass Transfer Conference, India, Jan. 2000.
- 17 -M. Saffar-Avval, H. Basirat-Tabrizi, Z. Mansoori, "The Interparticle Effect on Turbulent Heat Transfer in a Gas-Solid Flow," Conference of ASME-ESDA 2000, Switzerland, July 10-13, 2000 .
- 18 -H. Basirat-Tabrizi, M. Saffar-Avval, M. R. Assarie, "Two Dimensional Model of Fluidized Bed with Drying in a Riser," 12th International Symposium on Transport Phenomenas, ISTP-12, 2000 .
- 19 -H. Basirat-Tabrizi, M. Saffar-Avval, M. R. Assarie, "Two Dimensional Model of Heat and Mass Transfer in Packed Bed Drying," Conference of ASME-ESDA, Switzerland, July 10-13, 2000.
- 20 - K.Khoshmanesh, M. Saffar-Avval, H.Basirat Tabrizi , "Mathematical Modeling and Experimental Investigation of a Glass Melting Furnace, Some Recommendations for Reduction in Fuel Consumption" Proceeding of ECOS 2001 , July 2001 , Istanbul, Turkey .
- 21 -M. Saffar-Avval , H.Basirat – Tabrizi, L.S.Mayboudi , " Thermal Effect on the Human Eye at the Intense Conditions", Proceeding of the IASTED International Conference, Applied Simulation and Modeling, Sept.2001, Spain
- 22 -L.S.Mayboudi, F.Rahmani, R.Eshghi , " Performance Evaluation and Energy Efficiency in steam power plants, Progress in Transport Phenomena", The 13th International Symposium on Transport Phenomena, 2002 . Canada.

- 23 -M.Saffar-Avval, L.S.Mayboudi, F.Rahmani, R.Eshghi, " Performance Evaluation and Energy Efficiency in Combined steam and Gas Turbines", Proceeding of ECOS 2002 , July 2002 Berlin, Germany.
- 24 -S. Farhad, M. Younessi, M. Saffar-Avval, "Effect of Rotary Air Preheater Leakage on Steam Power Plants Performance", Proceeding of ECOS 2005, Trondheim, Norway, June 2005.
- 25- M. Younessi, S. Farhad, M. Saffar-Avval, "Dynamic Modeling of Steam Power Plant", Proceeding of ECOS 2005, Trondheim, Norway, June 2005.
- 26- S. Farhad, M. Saffar-Avval, M. Younessi, "Energy Saving in Operating Steam Power Plants Based on ASME Performance Test Code", Proceeding of PWR2005, ASME Power Chicago, USA, 2005.
- 27-M.J. Kermani, M. Zayernouri, M. Saffar-Avval, "Development of a New Thermodynamic Chart for Isentropic Expansion of Condensing Steam Flow" 14th Annual (International) Mechanical Engineering Conference, Isfahan University of Technology, Isfahan, Iran, May 2006.
- 28- Z. Mansoori, M. Saffar-Avval, H. Basirat Tabrizi, P. Ramezani, "Effect of Particles on the Dynamics and Thermal Turbulent Fields in Gas-Solid Flows", The Second International Green Energy Conference, Oshawa, Canada, June 2006.
- 29- Z. Mansoori, M. Saffar-Avval, H. Basirat Tabrizi, G. Ahmadi, P. Ramezani, "Study The effect of particle collision on turbulent Prandtl number in gas-solid flow using Turbulent thermo-mechanical Modeling", ASME, FED, Florida, 2006 .
- 30- Z. Mansoori, P. Ramezani, M. Saffar-Avval, H. Basirat Tabrizi, " Thermal Turbulent Simulation of Gas-Solid Flow in a Riser" Proceedings of the International Conference on Modeling and Simulation, Konya, Turkey, August 2006.
- 31- M. Bidi, M. Saffar-Avval, M. Heyrani Nobari, " A Two Dimensional Study of Combustion in Porous Media", Eurotherm N. 81, Ecole des Mines d'Albi, France, June 4-6, 2007 .
- 32- Z. Mansoori, F. Behzad, M. Saffar-Avval, P. Ramezani, G. Ahmadi, "Turbulent Field Simulation in Two Phase Flow Using Statistical Particle Collision Model", 6th International Conference on Multiphase Flow , Icmf 2007, Leipzig, Germany, July 9-13, 2007 .

### **Publications in Persian**

- 1 -M. Saffar-Avval, M. Panah, "Computer Aided Design of Fire and Tube Boilers," 2nd Iranian Conference of Boiler Technology", Azarab Co., 1989.
- 2 -M. Saffar-Avval, S. A. Sadat-Sakak, "Two Dimensional Mathematical Modeling of Cylindrical Furnaces of the Boiler Based on Zonal Method", 2nd Iranian Conference of Boiler Technology, Azarab Co., 1989.
- 3 -M. Saffar-Avval, S. A. Behzadi, "Thermodynamics Software for Steam Power Plant," Annual Conference of Boiler and Pressure Vessels, Azarab Co., 1992 .
- 4 -M. Saffar-Avval, M. Ahsan, A. Sadat, "Experimental Investigation of Low Temperature Heat Recovery Based on Circulating Fluidized Bed," Annual Conference of Boiler and Pressure Vessels, 1992 .

- 5 -M. Saffar-Avval, E. Damangir, M. Mehdizadeh-Fard, "Optimum Design of Power Plant Cooling Systems Consisting of Condenser and Wet Cooling Tower," 1st Annual Iranian Society of Mechanical Engineering Conference, Tehran University, 1992.
- 6 -M. Saffar-Avval, M. Haghi, "Thermal Optimum Design of Multi-Stages Flash Desalination," 1st Annual Iranian Society of Mechanical Engineering Conference, Tehran University, 1992.
- 7 -M. Sakhaie, E. Damangir, M. Saffar-Avval, "Combined heat Transfer in Cylindrical Pipe Using Zonal Method," 3rd Annual Conference of Iranian Society of Mechanical Engineering, Amirkabir University of Technology, vol. 2, 1995.
- 8 -M. Saffar-Avval, M. E. S. Farahani, "Experimental Investigation of Circulating Fluidized Bed Heat Exchanger, Effect of Particles Rate and Particles Material," 3rd Annual Conference of Iranian Society of Engineering, Amirkabir University of Technology, Vol. 2, 1995.
- 9 -M. Ahsan, M. Saffar-Avval, "Study of Particle Behavior in Laminar Gas Flow of Vertical Riser," 4th Annual Conference of Iranian Society of Mechanical Engineering, Shiraz University, 1996.
- 10 -M. A. Sadeghi, M. Saffar-Avval, H. Basirat-Tabrizi, A. Arjomand, "Mathematical and Experimental Modeling of Gas Fired Couple Kiln," 4th Annual Conference of Iranian Society of Mechanical Engineering, Shiraz University, 1996.
- 11 -M. R. Assarie, M. Saffar-Avval, H. Basirat-Tabrizi, "Theoretical and Experimental Investigations of Fluidized Bed Dryers," 2nd National Congress of Chemical Engineering, 1996.
- 12 -B. Mehmandoost, H. Khaleghi, M. Saffar-Avval, "Numerical Modeling of Turbulent Flow due to Free Convection in Two Dimensional Cavity Using ASM and k- $\epsilon$  Models," 5th Annual Conference of Iranian Society of Mechanical Engineering, Tabriz University, 1997.
- 13- A. Nasrolahi, M. Saffar-Avval, "Simulation and Exergy Analysis of Package Units," 5th Annual Conference of Iranian Society of Mechanical Engineering, Tabriz University, 1997 .
- 14-A. Jokar, M. Saffar-Avval, M. R. Neyrani-Nobssi, "Mathematical and Experimental Modeling of Co-current Rotary Spray Dryers," 6th Annual Conference of Iranian Society of Mechanical Engineering, University of Science and Technology, 1998 .
- 15-H. Basirat-Tabrizi, M. Saffar-Avval, M. R. Assarie, "Mathematical Modeling of Particle Drying in Fluidized Bed Dryer Using Two Fluid Model," 8th Annual Conference of Iranian Society of Mechanical Engineering, Mechanic 2000, Sharif University of Technology, 2000.
- 16-M.Saffar-Avval,S. Farhad, M. Younessi-Sinaki, "Using Performance Tests Codes on Iran's Gas Turbines", 12th Annual (International) Conference of Mechanical Engineering, Iran, May 2004.
- 17-M.Saffar-Avval, S. Farhad, M. Younessi-Sinaki, "Reduction in Fuel Consumption Using Performance Tests Codes on Boilers, Part A; Preparing the Plants", 12th Annual (International) Conference of Mechanical Engineering, Iran, May 2004.
- 18-M.Saffar-Avval, S. Farhad, M. Younessi-Sinaki, "Reduction in Fuel Consumption Using Performance Tests Codes on Boilers, Part B; Results and Discussion", 12th Annual (International) Conference of Mechanical Engineering, Iran, May 2004.

19 -M.Saffar-Avval, M. Younessi-Sinaki, S. Farhad, "Reduction in Fuel Consumption Using Performance Tests Codes on Steam Turbines", 12th Annual (International) Conference of Mechanical Engineering, Iran, May 2004.

20 -M. Bidi, M.R. Heyrani Nobari, M. Saffar-Avval, " A Two Dimensional Numerical Simulation of Combustion in Porous Media Using Detailed Kinetics", !5th Annual International Conference on Mechanical Engineering, Amirkabir University of Technology, Iran, May 2007.

21 -S. Mirmasomi Zkey, A. Behzadmehr, M. Saffar-Avval, "Numerical Investigation of Mixed Convection in Horizontal Tube at Constant Heat Flux Using Two Phase Approach", !5th Annual International Conference on Mechanical Engineering, Amirkabir University of Technology, Iran, May 2007.

22 -A. Mokmeli, M. Saffar-Avval, A. Behzadmehr, "Numerical Modelling of Nanofluid Heat Transfer",15th Annual International Conference on Mechanical Engineering, Amirkabir University of Technology, Iran, May 2007.

## **Journal Papers**

### **Publications in journals**

1 -M. Saffar-Avval, M. Ahsan, "Experimental Investigation of Circulating Fluidized Bed Heat Exchanger for Heat Recovery," Amirkabir, Journal of Science and Technology, No. 22, 1993.

2 -M. Saffar-Avval, E. Damangir, "A General Correlation of Determining of Optimum Baffle Spacing for all Types of Shell and Tube Exchangers," International Journal of Heat and Mass Transfer, Vol. 39, No.13, 1995.

3-G.R.Ashrafie, H.Basirat-Tabrizi, M.Saffar-Avval,"Transient Heat Transfer through the Superficial Tissue,"Iranian Journal of Mechanical Engineering, No.2, 1998.

4 -H. Basirat-Tabrizi, M.R. Assari, M. Saffar-Avval, B. Dabir, "Numerical Simulation of Fluidized Bed Drying with a Two-Fluid Model," International Journal of Engineering Science, vol. 12, No.53, 2001.

5 -H. Basirat-Tabrizi, M.R. Assari, M. Saffar-Avval, B. Dabir, "Numerical Simulation of Fluidized Bed Dryer by Using a Two-Fluid Model and Applying to Packed Bed Dryer," Amirkabir Journal of Science & Technology, Vol. 13, No.52, 2002

6 -M.R. Assari, H. Basirat-Tabrizi, M. Saffar-Avval, "Heat and Moisture Simulation of a Drying Process with a Two-Fluid Model in a Fluidized Bed ," Sharif Journal of Science & Technology, No.22, 2002.

7 -A. Abbasi, M. Saffar-Avval, M. Shah-Nazari, "Determination of Energy Consumption Criterion and Ranking of Compression water Chillers in Iran," Iranian Journal of Energy, Vol.7, No.14, 2002.

8 -Z. .Mansoori, M. Saffar-Avval, H. Basirat-Tabrizi , G.Ahmadi and S.Lain, " Thermo-Mechanical Modeling of Turbulent Heat Transfer in Gas-Solid Including Particle Collisions , International J of Heat and fluid flow, vol. 23/6, Dec 2002, pp.792-806.

9-H. Basirat-Tabrizi, M. Saffar-Avval and M.R. Assariae, "Two-Dimensional Mathematical Model of a Packed Bed Dryer and Experimentation" Proceeding. I. Mech. Engineers, vol. 216 part A, Journal of Power and Energy, 2002, pp. 161-168.

10 -Z.Mansoori, M. Saffar-Avval, H. Basirat-Tabrizi, G.Ahmadi, " Modeling of Heat Transfer in Turbulent Gas- Solid Flow", International J of Heat and Mass Transfer, vol. 45, 2002 , pp.1173 –1184.

11 -S. Porkhial, B. Khastoo, M. Saffar-Avval, "Transient Response of Dry Expansion Evaporator in Household Refrigerators", Applied Thermal Engineering, vol. 24, 2004, pp. 1465-1480.

12- Z. Mansoori, M. Saffar-Avval, H. Basirat Tabrizi, G. Ahmadi, "Experimental Study of Turbulent Gas-Solid Heat Transfer at Different Particles Temperature", International Journal of Experimental Thermal and Fluid Science, vol. 28/6, 2004, pp. 655-665.

13- B. Khalifeh-Soltan, M. Saffar-Avval, E. Damangir, "Minimizing Capital and Operating Costs of Shell and Tube Condensers Using Optimum Baffle Spacing", Applied Thermal Engineering, vol. 24, 2004, pp. 2801-2810.

14 -Z.Mansoori, M. Saffar-Avval, H. Basirat-Tabrizi, G.Ahmadi, "Inter-particle heat transfer in a riser of gas-solid turbulent flows", Powder Technology, vol. 159, 2005, pp. 35-45.

15 -M. Saffar-Avval, H. Basirat Tabrizi, Z. Mansoori, P. Ramezani, G. Ahmadi, "Particle collision effect in a vertical pipe developing turbulent gas- solid flow", Int. Journal of Thermal Science ,

16-A. Behzadmehr, M. Saffar-Avval, N. Galanis, "Prediction of Turbulent Forced of a nanofluid in a Tube with Uniforme Heat Flux Using a Two Phase Flow Approach", International Journal of Heat and Fluid Flow, 28, 2007, pp.211-219.

17- M.R. Assariae, H. Basirat-Tabrizi and M. Saffar-Avval, "Numerical simulation of fluid bed drying based on two-fluid model and experimental validation" Applied Thermal Engineering, 46, 2007, pp. 67-75.

18 -Kermani, M. J., Zayernouri, M., and Saffar-Avval, M., "Generalization of an Analytical Two-Phase Steam Flow Calculator to High-Pressure Cases", Canadian Journal of Mechanical Engineering: Transaction of the CSME, 06-CSME-47, vol. 30 (4), 2007 pp. 581-595 .

19 -R.K. Kamali, A. Abassi, S.A. Sadough Vanini, M. Saffar-Avval, "Thermodynamics Design and Parametric Study of MED-TVC", Desalination, In Press.

20 -Siamak Farhad, Majid Saffar-Avval and Maryam Younessi-Sinaki, "Efficient Design of Feedwater Heaters Network in Steam Power Plants Using Pinch

Technology and Exergy Analysis", International Journal of Energy

#### **Research, In Press.**

21 -M. Bidi, M.R. Heyrani Nobari, M. Saffar-Avval, "A Numerical Investigation of Turbulent Premixed Methane-Air Combustion in a Cylindrical Chamber", Combustion Science & Technology, 179, 2007, pp. 1841-1865.

22 -M. Saffar-Avval, M. Rohani, A.H. Gasemi, F. Ghanbari, V. Fakhari, F. Behzad and V. Nazari, " A Comparative Study of Undergraduate Mechanical Engineering Education Program", Iranian Journal of Engineering Education", vol. 8/33, 2007, pp. 125-158.

## **Co-operation With Industry**

### **INDUSTRIAL PROJECTS**

1 -Reduction in heat consumption in steam power plants, National Research Project,1999-2003.

2 -Reduction in heat consumption in Gas Turbine Power Plants, National Research Project, 1999-2003.

3 -Reduction in Heat Consumption in Combined Power Plants, National research Project, 1999-2003.

4 -Determination of Energy Consumption Criterion and Ranking of Compression Water Chillers in Iran, Collaborating with collaboration of Dr. Abbasi, 1999-2001 .

### **Awards**

Ph.D. and M.Sc. project awarded by Iranian Society of Mechanical Engineers,

Theoretical and Experimental Investigation of Heat Transfer in Gas-Solid Risers, 2002, Awarded by Iranian Society of Mechanical Engineers.

Comparing the Theoretical and Experimental Results of Glass Furnaces, Suggestions for Reducing of Fuel Consumption, 2000, Awarded by Iranian Society of Mechanical Engineers.

Efficiency Improvement in Steam Power Plant Using Pinch Technology based on Exergy Analysis, 2002,Awarded by Iranian Society of Mechanical Engineers.

### **Management/Administration Jobs**

1 -Chairman of Center of Excellence, Energy and Control, May 2007 to Present, Amirkabir University of Technology.

2-Scientific Chair of 15th Annual International Conference of Mechanical Engineering, June 2006 to May 2007, Amirkabir University of Technology.

3-One Year Sabbatical Leave in Mechanical Engineering Department of Sherbrooke University, Canada, 2004-2005

4 -Head of Mechanical Engineering Department, June 2000 to June 2002

5 -Chairman of the Third Annual Conference of Iranian Society of Mechanical Engineering, 1995

6 -Head of Graduate Studies (2 Years)

7-Head of Undergraduate Studies (2 Years)

8 -Head of Applied Energy Group (6 Years)

## **Graduate Students Projects**

### **Ph.D. Thesis Supervising and Advising**

- 1-Mathematical Modeling of Fluidized Bed Drying and Comparing with the Experimental Results, 2002 .
- 2-Theoretical and Experimental Investigation of Heat Transfer in Gas-Solid Risers, 2002, Awarded by Iranian Society of Mechanical Engineers .
- 3-Numerical and Experimental Analysis of the Motion of Flexible Fibers, 2002, (Co- Advisor)
- 4-Experimental and Mathematical Modeling of Transient Behavior of a Domestic Refrigerators, 2003, (Co-Advisor)
- 5 -Combustion in Porous Media, In Progress.

### **Graduate Projects Advising**

- 1- Design of Fire Tube Boilers, 1986.
- 2 -Computer Aided Design of Pneumatic Dryers, 1987.
- 3 -Optimization of the Thermal Power Plants, 1988.
- 4 -Mathematical and Experimental Modeling of the Cylindrical Furnace of Fire Tube Boiler, 1989.
- 5 -Thermal Design, Optimization and Experimental Investigation of shell and Tube Heat Exchangers, 1989.
- 6 -Low Temperature Heat Recovery Based on Circulating Fluidized Bed, 1991.
- 7- Mathematical Modeling of Blood Flow Using  $\psi$ - $\omega$  Equations to Predict Atherosclerosis Plaque Formation, 1991.
- 8 -Simulation and Optimization of Combined Power Plant, 1991.
- 9 -Design and Optimization of Cooling Systems Consisting of Condenser and Wet Cooling Tower in Steam Power Plant, 1991.
- 10 -Numerical Solution of Pulsate Blood Flow in Artery Bifurcation, 1992
- 11 -Numerical Solution of Blood Flow in Elastic Artery Bifurcation, 1993
- 12 -Combined Convective and Radiative Heat Transfer in Radiatively Participating Media in Cylinder, 1993.
- 13 -Theoretical Modeling for Performance Improvement of Circulating Fluidized Bed Heat Exchanger, 1998
- 14 -Simulation and Optimization of Combined Power Plant. Guideline for Optimum Design, 1994.
- 15- Dynamic Simulation of Solar Steam Plant, 1995 .
- 16 -Heat Transport Mechanisms in Vascular Tissues, Modeling of Heat Transfer in Esophagus Tissues, 1998.

- 17 -Transient Heat Transfer through the Superficial Tissue, 1998.
- 18 -Simulation of Abguineh Glass Furnace for Energy Saving, 1996.
- 19 -Experimental and Mathematical Modeling of Spray Dryers, 1996.
- 20 -Simulation and Optimization of Shell and Tube Condenser, 1995.
- 21 -Regulating of Drum Water Level Using Fuzzy Logic.
- 22 -Hydrodynamics Modeling of Circulating Fluidized Bed in Presence of Distributors, 1994.
- 23 -Theoretical and Experimental Modeling of Gas Fired Couple Kiln, 1996.
- 24 -Numerical Modeling of Incompressible Flow Using ASM and K- $\epsilon$  Methods, 1996.
- 25 -Steam Plant Cycle Calculation Based on Pinch and Exergy Methods, 1997.
- 26-Heat Transfer in the Eyeball, 1998.
- 27 -Theoretical Investigation Gas–Sub micron Particles in Two Dimensional Channel for Predicting of Settling Zone, 1999.
- 28 -Comparing the Theoretical and Experimental Results of Glass Furnaces, Suggestions for Reducing of Fuel Consumption, 2000, Awarded by Iranian Society of Mechanical Engineers.
- 29- Design and Optimization Cyclone Separators for Separating of Gas–Solid Flow from Spray Dryers, 2000.
- 30 -Numerical Investigation of Gas Exchange in Inlet and Exhaust Manifold of Internal Combustion Engine, 2000.
- 31 -Mathematical Modeling of Power Plant Steam Generators for Efficiency Improvement, 2001 .
- 32 -Theoretical and Experimental Simulation of Site Conditions Effects on Steam Power Plant performance Equipped with Dry Cooling Tower, 2002.
- 33 -Optimization of Load Dispatch in Steam Power Plant Units for Reducing the Fuel Consumption, 2002.
- 34 -Performance Prediction of Co-generation system in Gas Turbine units using Modular Programming, 2002.
- 35 -Efficiency Improvement in Steam Power Plant Using Pinch Technology based on Exergy Analysis, 2002,Awarded by Iranian Society of Mechanical Engineers .
- 36- Dynamic Behavior of Steam Power Plant, 2003.
- 37 -Numerical Simulation of Particle Collision Effect on Heat Transfer in Gas-Solid Flow, 2004.