

## Abolghassem Zabihollah, Ph.D, P.Eng

Assistant professor  
School of Science and Engineering  
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### **EDUCATIONAL BACKGROUND**

<b>Degree</b>	<b>Year</b>	<b>University</b>	<b>Field</b>
Ph.D.	2007	Concordia University, Canada	Mechanical Eng. (Solid Mechanics)
M.Sc.	2003	Concordia University, Canada	Mechanical Eng. (Solid Mechanics)
B.Sc.	1990	Sharif University of Tech. Iran	Mechanical Eng. (Thermo-Fluid)

### **PROFESSIONAL HISTORY**

<b>Title</b>	<b>Organization</b>	<b>Years</b>
Director of R&D	Sharif University of Technology, Kish, Iran	2015-date
Vice Chancellor of Financial & Administrative	Sharif University of Technology, Kish, Iran	2013-2015
Dean, School of Science and Engineering	Sharif University of Technology, Kish, Iran	2011- 2016
Assistant Professor	Sharif University of Technology, Kish, Iran	2007-date
Post-doc Fellow	Concordia University-Bombardier Inc.	2007-2007
Research Assistant	Concordia University, Canada	2003-2007
Project manager	GhodsNiroo, Consulting Engineers, Iran	1998-1999
Field Engineer	GhodsNiroo, Consulting Engineers, Iran	1992-1998
Maintenance Engineer	Iranian Steel Company, Iran	1991-1992

### **MEMBERSHIPS**

- American Society of mechanical engineers, ASME since 2003
- Canadian Society of Professional Engineers, Ontario, since 2005
- Iranian Construction Engineers Organization, since 1992

### **RESEARCH INTERESTS**

- Smart Materials and Structures
- Micro-Electro Mechanical Systems (MEMS)
- Solid mechanics (Stress analysis, Machine design)
- Structural Dynamics and Vibration
- Composite Materials and Structures
- Finite Element Method (FEM)
- Design Optimization

## I. RESEARCH

### A. Theses

- *Analysis, Design Optimization and Vibration Suppression of Laminated Smart Beams*, Ph.D. dissertation, Concordia University, Montreal, Canada, 2007.
- *Vibration and Buckling Analyses of Tapered Composite Beams using Conventional and Advanced Finite Element Formulations*, M.A.Sc thesis, 2003, Concordia University, Montreal, Canada, 2003.

### B. Selected Journal Publications

1. J. Naji, **A. Zabihollah**, M. Behzad, Vibration characteristics of laminated composite beams with magnetorheological layer using layerwise theory, **Mechanics of Advanced Materials and Structures**, 2016, accepted for publication, in press.
2. J. Naji, **A. Zabihollah**, M. Behzad, Layerwise theory in modeling of magnetorheological laminated beams and characteristics identification of magnetorheological fluid, **Mechanics Research Communications**, 2016, pp.50-59,.
3. J. Naji, M. Behzad, **A. Zabihollah**, Vibration behavior of laminated beams integrated with MR fluid segments, **Journal of Mechanics**, **20 July, 2016**, accepted for publication, in press
4. Saman Momeni, **A. Zabihollah**, A.Selk Ghafari, Exprimental works on the effects of nano-particles on improvement of dynamic response of non-uniform thickness laminated beam, **Journal of Mechanical Science and Technology**, 2016, Vol. 30 (1), pp 121-125.
5. M. Hossein Pol, **A. Zabihollah**, S. Zareie, G. Liaghat, Effects of nano-particles concentration on dynamic response of laminated nanocomposite beam“, **Meccanica**, 2013,Vol. 19(1), pp.53-57.
6. Seyed Javad Fattahi, **A. Zabihollah**, Multidisciplinary Constrained Optimization of Power Quality in Doubly Fed Wind Turbine Induction Generator, **Modern Mechanical Engineering**, 2013, 3,pp. 90-97
7. M. Kolbadi Nejad, A. Selk Ghafari, **A. Zabihollah**, Fault Detection in a Cracked Pipeline Embedded with Piezoelectric Sensors/Actuators Employing Bond Graph Approach, **Advanced Materials Research**, 2012, Volumes 476 – 478, pp.1015-1019
8. Reza Jalil Mozhdzhi, Ali SelkGhafari, **A. Zabihollah**, and Ali Meghdari, “Active Vibration Control of a CMOS-MEMS Nano-Newton Capacitive Force Sensor for Bio Application Using PZT“, **Advanced Materials Research**, 2013 Volume 628 pp 317-323.
9. Farid Parvari Rad, **A. Zabihollah** Monitoring Pipeline Vibration due to Cavitation through an Orifice by Piezoelectric Sensor, **Advanced Materials Research**, 2011,Volumes 403 – 408, pp.3418-3423
10. Nozarian, Mohammad Mehdi; Adldoost, Hamed; **Zabihollah, A.**, "Crack Detection in Underground Pipelines Using Piezoelectric Sensors“, **Advanced Science Letters**, Volume 19, Number 3, March 2013 , pp. 770-774.
11. Masih O. Mahmoudpour, **A. Zabihollah**, Mohammad A. Vesaghi, “ A Finite Element Model of Coupled Multi-physics Fields for Opto-electromechanical Actuators“, **International Journal of Mechanic Systems Engineering**, 2012, Volume 2(1), , PP. 15-21.

12. M. Kolbadinejad, **A. Zabihollah**, A. A. Akbar Khayyat, and M. Mahmoudpour, “An equivalent electrical circuit design for pipeline corrosion monitoring based on piezoelectric elements”, **Journal of Mechanical Science and Technology**, 27 (3) (2013) 799~804.
13. S. H. Zareh, A. Sarrafan, A. A. A. Khayyat and **A. Zabihollah**, “Intelligent semi-active vibration control of eleven degree of freedom suspension system using magnetorheological dampers”, **Journal of Mechanical Science and Technology**, 26 (2) (2012) 323~334.
14. A. Sarrafan, S. H. Zareh, Amir Ali Akbar Khayyat and **A. Zabihollah**, Neuro-fuzzy control strategy for an offshore steel jacket platform subjected to wave-induced forces using magnetorheological dampers, **Journal of Mechanical Science and Technology** 26 (4) (2012) 1179~1196.
15. Gh. Ilkhani Sarkandi, **A. Zabihollah**, “A Real-Time Corrosion Monitoring System for Fuel Tanks using Fiber Bragg Grating”, **Journal of Civil Structural Health Monitoring**, DOI 10.1007/s13349-011-0010-z, Aug. 2011.
16. Shahin Zareie, **A. Zabihollah**, A Failure control method for smart morphing airfoil by piezoelectric actuator”, **Transaction of Canadian Society of Mechanical Engineers**, Vol. 35, No. 3, 2011
17. **Zabihollah**, A. and Zareie, S., “Optimal design of adaptive laminated beam using layerwise finite element”, **Journal of Sensors**, Vol. 2011, ID 240341.
18. S. J. Fattahi, **A. Zabihollah** and S. Zareie, Vibration Monitoring of Wind Turbine Blade using Fiber Bragg Grating, **Wind Engineering**, 34(6), 2010, 721–732.
19. **Zabihollah**, A., Effects of structural configuration on vibration control of smart laminated beams under random excitations, **Journal of Mechanical Science and Technology** 24 (5) (2010) 1~6.
20. **Zabihollah**, A. and Ganesan, R., “Buckling Analysis of Tapered Composite Beams using a Higher-order Finite Element Formulation”, **Journal of Reinforced Plastics and Composites**, 29(17), 2010, 2663-2683.
21. **Zabihollah**, A., R. Sedaghati, R. Ganesan, “Active vibration suppression of smart laminated beams using layerwise theory and optimal control strategies”, **Journal of Smart Materials and Structures**, 2007, 16(6), 2190-2201
22. Sokhanvar, S., **Zabihollah**, A. Sedaghati, R., “Investigating the Effect of the Orthotropic Property of Piezoelectric PVDF on its Sensing and Actuating Capabilities and Response of the System”, **Transactions of Canadian Society of Mechanical Engineers, Special edition, Advances in Smart Structures**, 2007, 31(1), 111-125.
23. **Zabihollah**, A., Ganesan, R. and Sedaghati, R., “Sensitivity Analysis and Design Optimization of Smart Laminated Beams Using Layerwise Theory”, **Journal of Smart Materials and Structures**, 2006, 15(6), 1775-1784.
24. Sedaghati, R., **Zabihollah**, A. and Ahari, M. “Sensitivity Analysis and Optimal Design of Smart Piezolaminated Composite Beam”, **AIAA Journal**, 2006, 44 (12), 2987-2996.

25. Ganesan, R. and **Zabihollah, A.**, “Vibration Analysis of Tapered Composite Beams using a Higher-order Finite Element; Part I: Formulation”, **Composite Structures**, 2005, 77, 306-318.
26. Ganesan, R. and **Zabihollah, A.**, “Vibration Analysis of Tapered Composite Beams using a Higher-order Finite Element; Part II: Parametric Study”, **Composite Structures**, 2005, 77, 319-330.
27. A. Zabihollah, M.H.Pol, A. S.Ghafari, S. Momeni, Dynamic behavior of laminated composite beam reinforced with high percentage of nano particles, **Modares Mechanical Engineering**, 2013, Vol. 13(6).
28. Z.S.Fattahi, A. Zabihollah, Vibration behavior of composite plates filled with MR fluids, **Modares Mechanical Engineering**, 2013, Vol. 13(6).
29. M. Mahmoudpour A. Zabihollah, M. Vesaghi, M. Kolbadinejad, Design and analysis of an innovative light tracking device based on opto-thermo-electro-mechanical actuators, **Microelectronic Engineering** Volume 119, 1 May 2014, Pages 37–43
30. Nozarian, M. M.; Adldoost, H.; **Zabihollah, A.**, Crack Detection in Underground Pipelines Using Piezoelectric Sensors, **Advanced Science Letters**, Volume 19, Number 3, March 2013, pp. 770-774(5)
31. Zareh, S. H.; Fellahjahromi, A.; Hayeri, Reza; Khayyat, A. A. A.; **Zabihollah, A.**, LQR and Fuzzy Controller Application with Bingham Modified Model in Semi Active Vibration Control of 11-DOFs Full Car Suspension System., **GSTF Journal on Computing** . Aug2011, Vol. 1 Issue 3, preceding p1-1. 6p

### C. Selected Conference Papers

1. A. Sarrafan, S. H. Zareh, **A. Zabihollah**, A. A. Khayyat “Intelligent Vibration Control of Micro-Cantilever Beam in MEMS”, **Proceedings of the 2011 IEEE International Conference on Mechatronics April 13-15, 2011**, Istanbul, Turkey.
2. Adldoost, H. ; Jouibary, B.R. ; **Zabihollah, A.**, Design of SMA micro-gripper for minimally invasive surgery, Biomedical Engineering (ICBME), 2012 19th Iranian Conference of 20-21 Dec. 2012 Page(s): 97 – 100 Print ISBN: 978-1-4673-3128-9 Tehran
3. F. ParvariRad, **A. Zabihollah**,” Monitoring Pipeline Vibration Due to Cavitation Through an Orifice by Piezoelectric Sensor”, **proceeding of the 6<sup>th</sup> International Conference on MEMS, NANO, and Smart Systems ,ICMENS 2010**,14-15 Dec.2010, Changsha, China
4. Zareie, S., **Zabihollah, A.**, Azizi, A. “Buckling control of morphing composite airfoil structure using multi-stable laminate by piezoelectric sensors/actuators”, **Proceedings of SPIE - The International Society for Optical Engineering** 7978, art. no. 79781Z, doi:10.1117/12.880409

5. Ali Fellah Jahromi, **A. Zabihollah**, “Linear Quadratic Regulator and Fuzzy controller Application in Full-car Model of Suspension System with Magnetorheological Shock Absorber”, **Proceedings of 2010 IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications, MESA 2010** , art. no. 5552010, pp. 522-528.
6. Shahriari, M. ; Zabihollah, A., Analytical modeling of a Minimally Invasive Surgery grasper actuated by shape memory alloy wires, **International Conference Robotics and Mechatronics (ICRoM), 2013 First RSI/ISM** ,13-15 Feb. 2013,Page(s):147 – 151,978-1-4673-5809-5, Tehran, Publisher: IEEE
7. Fattahi, S.J, Zabihollah, A. ; Adldoost, H. Multi sensing grasper for minimally invasive surgery, **International Conference Advanced Intelligent Mechatronics (AIM), 2011 IEEE/ASME**, 3-7 July 2011 Page(s): 344 – 349 Budapest, Publisher: IEEE
8. H Adldoost, A Zabihollah, SJ Fattahi, Measurement of wall loss in pressure vessels using FBG sensors, 2011 - journaltool.asme.org
9. Ali Fellah Jahromi, **A. Zabihollah**, “Semi active vibration control of a passenger car using magnetorheological shock absorber”, **ASME 2010 10th Biennial Conference on Engineering Systems Design and Analysis, ESDA2010** 3, pp. 21-27
10. Siavash Dezfouli, and **A. Zabihollah**, “Structural Health Monitoring of Buried Pipelines under Static Dislocation and Vibration”, **Proceedings of 2010 IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications, MESA 2010**, art. no. 5552052, pp. 325-329.
11. Ganesan, R. and **Zabihollah**, A., 2004, “Higher-order Finite Element Formulation for Dynamic Analysis of Laminated Composite Beams,” Proceeding of **American Society for Composites 19<sup>th</sup> Annual Technical Conference**, Atlanta, Georgia, October, 2004.
12. Ganesan, R. and **Zabihollah**, A., 2005, “Parametric Study of the Dynamic Response of Composite Beams with Uniform-Thickness and Tapered Laminates”, Proceeding of **International Conference on Advances in Structural Dynamics and Its Applications**, Visakhapatnam, India, December 2005.
13. Ahari M., **Zabihollah**, A. and Sedaghati R., 2005, “Optimal Design of Shape Control of Smart Laminated Beams with Embedded Piezoelectric Sensors and Actuators”, Proceeding of **The 6<sup>th</sup> World Congress on Structural and Multidisciplinary Optimization**, Rio de Janeiro, Brazil, 30 may-3 June 2005.
14. Sedaghati, R. **Zabihollah**, A. M.Ahari, Esmailzadeh, E., “Sensitivity analysis and optimum design of adaptive piezo-laminated composite beam”, Proceeding of **14<sup>th</sup> Annual (International) Mechanical Engineering Conference** – May 2006, Isfahan University of Technology, Isfahan, Iran.
15. **Zabihollah**, A., Sedaghati, R. Ganesan, R., 2005, “Optimal Design Of Smart Laminated Beams Using Layerwise Theory”, Proceeding of **8<sup>th</sup> Cansmart Meeting International Workshop on Smart Materials and Structures**, October 13-14, 2005, Toronto, Ontario, Canada.

- 16. Zabihollah, A.** Sedaghati, R., Ganesan, R., 2006, “Design Optimization of Smart Laminated Composite Beams using Layerwise Theory”, Proceeding of **III European Conference on Computational Mechanics Solids, Structures and Coupled Problems in Engineering** C.A. Mota Soares et.al. (eds.) Lisbon, Portugal, 5–8 June 2006.
- 17. Zabihollah, A.**, Sedaghati, R., Ganesan, R., “Sensitivity Analysis and Optimization of Smart Laminated Beams by Layerwise Theory”, Proceeding of **The Eighth International Conference on Computational Structures Technology**, Las Palmas de Gran Canaria, Spain, 12-15 September 2006.
- 18. Zabihollah, A.** and Ganesan, R. “Buckling Analysis of Variable-thickness Composite Beams using a Higher-order Finite Element”, Proceeding of **6<sup>th</sup> Joint Canada Japan Workshop on Composites**, Toronto, Canada, August 24<sup>th</sup> – 26<sup>th</sup>, 2006.
- 19. Zabihollah, A.**, Ganesan, R., Sedaghati, R., “Optimal vibration control of active laminated beam using unimorphic piezoceramic elements and LQR controller”, Proceeding of **9<sup>th</sup> Cansmart Meeting International Workshop on Smart Materials and Structures**, October 12-13, 2006, Toronto, Ontario, Canada.
- 20. Zabihollah, A.**, Ganesan, R., Sedaghati, “Optimal vibration control of smart laminated beams using layerwise theory”, Proceeding of **21st Canadian Congress of Applied Mechanics CANSAM 2007**, June 3-7, Toronto, Canada,
- 21. Zabihollah, A.**, Latifi-Navid, M., Zareie, S., “Comparison of classical and optimal control strategies applied for active vibration suppression of adaptive laminated beams”, Proceeding of the **Third International Conference on Modeling, Simulation and Applied Optimization**, Sharjah, U.A.E. January 20-22, 2009.
- 22. Zabihollah, A.**, Ghaffari, H., “Effects of Ply-drop off on Forced Vibration Response of Non-uniform Thickness Laminated Composite Beams”, proceeding of the **1st International Conference on Composites: Characterization, Fabrication, and Application**, Kish, 14-16 December 2008.
- 23. Hortamani, R., Zabihollah, A.**, “Modeling and Simulation of Graspers Force in Minimally Invasive Surgery”, **2009 International Association of Computer Science and Information Technology - Spring Conference, IACSIT-SC 2009**, art. no. 5169398, pp. 475-479
- 24. Ghaffari, H., Zabihollah, A.**, “Application of Vibration Based Technique in Health Monitoring of Multi-stable Laminated Composites”, **TIC-STH'09: 2009 IEEE Toronto International Conference - Science and Technology for Humanity**, art. no. 5444511, pp. 170-175
- 25. Ghaffari, H., Zabihollah, A.**,” Vibration Based Damage Detection in Smart Non-uniform Thickness Laminated Composite Beams”, **TIC-STH'09: 2009 IEEE Toronto International Conference - Science and Technology for Humanity**, art. no. 5444511, pp. 170-175.

#### **D. Internal Conference Presentations**

- **Zabihollah, A.**, “Vibration Suppression and Design Optimization of Laminated Smart Composite Structures”, Lecture in Research Day, 31 March 2006, Concordia University, Montreal, Canada.

- **Zabihollah, A.**, “Sensitivity analysis and design optimization of smart laminated beams using layerwise theory”, Presented in Centre for Applied Research on Polymers and Composites, CREPEC, 2005, University of Montreal, Montreal, Canada.
- **Zabihollah, A.**, “Vibration control of laminated smart structures: Experimental approaches”, Presented in Centre for Applied Research on Polymers and Composites, CREPEC, 2006, Ecole de Technologie Superiore, Montreal, Canada.

**E. Other publications (Manual, Book Chapters,...)**

- Theory of Machines, Laboratory manual, published by Concordia University, 2005, Montreal Canada.
- Finite Element Methods, Laboratory manual, published by Concordia University, 2005, Montreal Canada.
- Condition Monitoring systems, operation manual for Machine Fault Simulator, published by Concordia University, 2004, Montreal Canada.

**F. Selected Journal Review**

1. Modelling of the buckling of a diaphragm-spine structure for a wave energy converter, **Materials and Designs**, JMAD-D-16-05221, 2016.
2. A modified pin force model for beams with active material bonded, **Materials and Designs**, JMAD-D-15-04576R1, 2015.
3. Weng W. Chooi and S. Olutunde O yadiji, Design, “Modeling and Testing of Magnetorheological (MR) Dampers”, **Journal of Smart Structures and Materials**, 2005, Special Issue.
4. Investigation of the high velocity impact behavior of nanocomposites, **Polymer Composites**, ID ,PC 14-0608, 2014
5. C. M. A. Vasques and J.D. Rodrigues, A. Preumont, B. de, “Simulation of Combined Feedback/Feedforward Active Control of Vibration of Beams with ACLD Treatments”, **Journal of Smart Structures and Materials**,2005, Special Issue.
6. A. Preumont, B.de Marneffe, A. Deraemaker and F. Bossens, “On Damping Structures with Piezoelectric Transducers”, **Journal of Smart Structures and Materials**, 2005, Special Issue.
7. Przybylski, J., “The vibration and stability of an articulated column with two collocated piezoelectric actuators”, **Journal of Sound and Vibration**, Jan. 2007.
8. Saman Ashrafzadeh Ali Najafi, Buckling response of circular hole in different application of laminated composite plate using finite element method”, **Proceeding of the Third International Conference on Modeling, Simulation and Applied Optimization**, Sharjah, U.A.E. January 20-22, 2009.

**II. TEACHING**

**II.** Course Instructor, Sharif University of Technology, Kish, Iran

	<b>Course</b>	<b>Code</b>	<b>Year</b>
1	Design Optimization (Graduate)	58025	2008-2017
2	Finite Element Method (Graduate)	53149	Spring 2009, Fall 2008
3	Modeling with Finite Elements	58042	Spring 2009, Fall 2009

4	Smart Materials and Structures (Graduate)	58030	2008-2016
5	Applied Finite Element	58234	Fall 2008, Fall 2010
6	Advanced Technical English and Seminar (Graduate)	50621	2009-2017
7	Continuous Vibrations (Graduate)	58053	Spring 2009
8	Micro-Electro-Mechanical Systems (MEMS) (Graduate)	58083	2010-2017
9	Mechanical Vibrations		Spring 2011
10	Modal Analysis	58556	Fall 2016

#### E. Graduate Students (MSc)

	Student name	Thesis Title	Status
1	Ramin Hortamani	The modeling of graspers force-behavior in minimally invasive surgery	Grad., 2009
2	HamidReza Ghaffari	Vibration based health monitoring for damage detection of composite laminates	Grad., 2009
3	Siavash Dezfouli	Structural health monitoring of buried pipelines	Grad., 2009
4	Shahin Zariaei	Active vibration control of Morphing composite structures	Grad., 2010
5	Sajad Danesh Fard	Vibration control and Structural health mentoring of marine structures	Grad., 2010
6	Ali Fellah Jahromi	Active vibration control of passenger cars using Magneto-rheological fluids	Grad. , 2010
7	Kholamreza Ilkhani	Corrosion detection of storage tanks using fiber optics sensors	Grad., 2010
8	Farid Parvari Rad	Leakage detection of pipelines off-line structural monitoring of pipelines	Grad., 2011
9	Hamed Adldost	Multi-sensing in health monitoring of pipelines	Grad., 2012
10	Frashid Entesari	Structural health monitoring of turbine blades	Grad., 2012
11	Reza Jamaei	Structural health monitoring of turbine blades	Grad., 2011
12	Mohadese Kolbadi nejad	Structural health monitoring of turbine blades	Grad., 2011
13	Seiyd Mohsen Mostafavi	Vibration analysis in oil pipelines due to fluid structure interaction	Grad., 2011
14	Massiollah Mahmoudpour	MEMS device for solar tracking systems	Grad., 2011
15	Hamed Naemi	Vibration control of nonlinear plates with MR segments	Grad., 2015
16	Mortezstafa Mortazavi	Structural Health monitoring of underground pipelines with FBG	Grad., 2015
17	Farshid Minaeian	Dynamic response of plates integrated with MR fluid	Grad., 2015
18	Morteza Raki	Crack monitoring of gas turbine blades using modal analysis	Grad.-2016
19	Hedari	Reliability and age assessment of gas turbine blades using modal analysis	2016-date



## F. Graduate Students (PhDs)

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	<b>Student name</b>	<b>Thesis Title</b>	<b>Status</b>
1	Jalil Najj	Vibration control of composite structures integrated with MR fluids segments	Grad.,- 2016
2	Mehdi Nozarian	Fracture monitoring of Human knee	2012- date
3	Saman Momeni	Vibration control of non-linear thickness composite plates integrated with MR fluids segments	2013- date

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## III. EXECUTIVE

Sharif University of Technology, International Campus, Kish Island

- |   |           |
|---|-----------|
| A. Head of Mechatronics Group,                              | 2008-2009 |
| B. Director of Graduate Studies,                            | 2009-2011 |
| C. Dean of School of Science and Engineering                | 2011-2016 |
| D. Vice Chancellor of Financial and administrative affairs, | 2014-2015 |
| E. Vice Chancellor of Research and Development              | 2015-date |

## IV. INDUSTRIAL EXPERIENCES

**A. Project Manager**, Consulting Engineers Ghods Niroo, Tehran 1998-1999

- Managed mechanical works of installation and start-up of two units of thermal power plants with total capacity of 630 MW.
- Technical inspection for installation of the mechanical equipment of wastewater treatment plant, boilers, turbines, fans, lubrication system, high pressure and low pipelines.
- Managed the start-up engineering group in the processes of commissioning and starting-up of the power plant.
- Trained the technical groups for daily operation of the equipment.
- Compensated for all delays in the project schedule and succeed in starting up the project ahead of the schedule.

**B. Field Engineer**, Ghods Niroo Consulting Engineers, Iran 1993-1998

- Provided technical support for installation of mechanical equipment of boilers, turbines, wastewater plant and cooling towers.
- Designed and modified the steam pipelines and lubricating system of the steam turbines.
- Designed the mechanical equipment of the auxiliary systems of thermal power plant, including chemical water treatment, lubrication pump-house and cooling air system.
- Designed and actively involved in the execution of the start-up procedures of the mechanical system.

- Technical reported of the progressions of the project.

**C. Maintenance Engineer**, National Iranian Steel Company.

1992-1993

- Provided technical support for maintaining the equipment of the manufacturing line of seamless pipes, such as rollers, transmission line, and gearboxes, seizing system bearings.
- Prepared maintenance programs for mechanical equipment.
- Inspected and reported the maintenance works done in order to have the minimum required shutdowns that caused saving expenses.