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## ***Amir Farhang Sotoodeh***

***Dean of Energy and Environment Faculty - Member of Scientific Board of  
Energy and Environment Faculty of Niroo Research Centre (NRI)***

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### Educational background

**2009-2014** **PhD** in Mechanical Engineering , Fluid Mechanics (Systems of Energy) , Khaje Nasire Toosi University of Technology (**K.N.T.U**), Tehran , Iran ,Current GA = 19.34/20

**Thesis:** Development of constructal theory to Multi Stream Heat Exchangers Design

**2005-2009** MSc in Mechanical Engineering, Systems of energy, Khaje Nasire Toosi University of Technology (Joint with Manchester University), Tehran , Iran , GA=18.02/20

**Thesis:** Modeling and Simulation of Distillation Columns Based on Entropy Generation and Exergy Analysis

**1999-2005** **BS** in Mechanical Engineering ,**Solid Design** in Khaje Nasire Toosi University of Technology (**K.N.T.U**), Tehran, Iran

**Thesis:** Nuclear Power Plants and Their Safety

**1998-1999** Pre-university in **Shahid Mottahari** , Tehran, Iran , GA=19.12/20

**1995-1998** High school in **Alborz High School**, Tehran,Iran , GA =19/20

## Scientific Projects

- 1-“Heat Exchanger Networks”, Project-2005
- 2-“Energy conservation in Distillation columns”, 2006
- 3- “Optimization of distillation columns”, 2007
- 4-“Cogeneration and Integration of utility system of a plant”, 2007
- 5-“Thermal and thermodynamic modeling of distillation columns”, 2008
- 6-“Thermodynamic and Hydraulic Modeling, Simulation and Analysis of distillation columns Based on Entropy Generation and Exergy Loss”, 2009
- 7-“Dynamic Modeling and Optimization of Solar Absorption Refrigeration Cycle Based on Exergy and Exergoeconomic Analysis”, 2010
- 8-“Energy Consumption Improvement of Bandar Abbas and Ramin Power Plant Boilers, 2012
- 9-“Energy Exergetic and thermoeconomic modeling and optimization of steam generation system utilizing heat recovery steam generation system in combined cycle power plant with genetic algorithm,2012
- 10- “Modeling and Optimization of Multi Generation Organic Rankine Cycle Systems”, 2013
- 11- “ Modeling and Optimization of Plate-Fin Heat Exchangers”, 2014
- 12-“Constructal Modeling and Design of Multi Stream Heat Exchangers”, 2014
13. “ Plate Fin Multi Stream Heat Exchanger Stacking Optimization”, 2015

## Papers

- 1-“ Developing of Constructal Theory Concept for Plate – Fin Heat Exchanger Modeling, Design and Optimization ”, *International Journal of Exergy*, 2014.
- 2-“Modeling and thermo-economic optimization of heat recovery heat exchangers using a multimodal genetic algorithm”, *Energy Conversion and Management*, 58 (2012) 149–156.

**3-“Modeling and Optimization of a Water-Ethanol distillation column Based on Exergoeconomic Analysis”**, *Int. J. Exergy*, Vol. 11, No. 2, 2012.

**4-“Design and Optimization of Multi Stream Plate-Fin Heat Exchangers with Off-Strip Fins Using Genetic Algorithm”**, *Energy Journal*, In Press

**5-“Modeling and Design of Tubular Three Stream Heat Exchangers”**, *Int Journal of Heat and Mass Transfer*, In Press

6- مدل سازی، طراحی و تحلیل مبدل های حرارتی صفحه ای- فین دار با حجم ثابت به منظور حصول بیشترین بازیافت حرارتی با افت فشار و مساحت انتقال حرارت ثابت، مجله علمی پژوهشی مهندسی مکانیک مدرس، 1393.

7- مدل سازی، طراحی و تحلیل مبدل های حرارتی چندجریانی صفحه ای- فین دار با فین های مستطیلی با استفاده از الگوریتم ژنتیک، مجله علمی پژوهشی مهندسی مکانیک مدرس، 1394.

**8-“Constructal modeling of cogeneration heat and power system”**, *8th International Constructal Law Conference*, 2013, Nanjing, China.

**9-“Constructal modeling and design of Plate – Fin Heat Exchangers”**, *8th International Constructal Law Conference*, 2013, Nanjing, China.

**10-“Modeling and Optimization of a Water-Ethanol distillation column Based on Exergoeconomic Analysis”**, *6th International Green Energy Conference*, June-2011, Eskisehir, Turkey

**11-“Instability Analysis of Miscible Displacements in Porous Media”**, *The 7th International Chemical Engineering Congress & Exhibition (IChEC 2011)*, November-2011 Kish, Iran.

**12-“Exergoeconomic modeling and genetic algorithm optimization of a domestic hybrid solar Lithium bromide-water absorption chiller”**, *Third International Conference on Heating, Ventilation and Air-Conditioning*, May-2011, Tehran, Iran

**13-“Transient Exergy Modeling, Simulation and Analysis of Hybrid Single effect Solar Absorption Chiller”**, *First Conference of National Mechanical Engineering*, November-2011, Abhar, Iran.

14- "مدل سازی و تحلیل انواع آنتروپی تولیدی و آگزرژی تلف شده در برج های تقطیر با سینی های مشبک"، بیست و یکمین همایش سالانه بین المللی مهندسی مکانیک ایران، دانشکده مهندسی مکانیک، دانشگاه صنعتی خواجه نصیرالدین طوسی، تهران، 1392، تهران- ایران.

15- "مدل سازی، شبیه سازی و تحلیل ترمودینامیکی و هیدرولیکی برج های تقطیر با سینی های کلاهدک دار بر مبنای آنتروپی تولیدی و تحلیل آگزرژی"، اولین همایش ملی مهندسی مکانیک، 1390، اهر- ایران.

16- "روشی نو در مدل سازی و تحلیل ترمودینامیکی و هیدرولیکی برج های تقطیر با سینی های مشبک بر مبنای آنتروپی تولیدی و تحلیل انرژی"، اولین کنفرانس علوم حرارتی، 1389، مشهد - ایران.

### Books

1. Heat Exchanger Network Optimization Based on Pinch (In Press)
2. Advanced Heat Exchanger Design (In Press)

### Language

Excellent in speaking, writing, listening, reading in English (11 years studying English in SIMIN Educational Association)

### Software

Aspen Plus (design chemical processes),

Aspen B-jack and all Subdivisions (design of heat exchanger)

Aspen Muse(Multi Stream Heat Exchanger Design)

Aspen HEX (Heat exchanger optimization),

Aspen Pinch (Optimization of utility of processes),

Aspen Split (optimization of distillation columns),

Aspen HYSYS (design & optimization of chemical processes),

Auto Cad (2 & 3 dimensional design),

Matlab

GAMS

EES

Transys

## Other Educational Duration And Conferences

1-6<sup>th</sup> Duration of International Green Energy Conference (IGEC) - June 5-9, 2011, Skisehir, Turkey

2- 3<sup>th</sup> International Conference on Heating, Ventilation and Air-Conditioning, May 24-26, 2011, Olympic Hotel, Tehran, Iran

3- The First Conference of Thermal Science, September 2011, Mashhad, Iran

4-The First conference of Integration and Optimization of Energy Usage in Petrochemical

Industries, Dec 5-6 , 2007 , Tehran ,Iran

5-The 11<sup>th</sup> Fluid Dynamics Conference, May 27-29, 2008, KNTU, Tehran, Iran

6-FMEA&DFMEA, Iran Khodro Education Center

7-Iso 17025, Iran Khodro Education Center

8-Iso 9001, Iran Khodro Education Center

9-Sound Level, Itrac Education Center

10-Mass&Dimension, Itrac Education Center

11-Uncertainty Principles, TKCC Education Center

## Work experiences

1-Member of Scientific Board, Energy & Mechanical Expert, Mechanical Department, Power Research Center, Tehran, Iran, since 2011

2- Engineering Manager. Pishgamane Energy Rasha (Gas, Oil, Petrochemical and Energy EPCC Company), Tehran, Iran, since 2010

3- Mechanical Expert, IDISCO (Gas, Oil, Petrochemical and Energy EPCC Company) 2008 to 2010, Tehran, Iran

4- Mechanical & Test Expert, TKC Test & Approval Dep. Iran Khodro Diesel, Tehran, Iran, 2007 to 2008

5- Mechanical Expert, Mega Motor (Automobile Engine Manufacture), Training Duration, 2001 to 2002

## Teaching experiences

1-Teaching CHP (Cogeneration Heat and Power) and Pinch Technology (Heat Exchanger Network Energy Optimization) as TA in Khaje Nasire Toosi University of technology, Tehran University and Sharif University of Technology, Tehran, Iran, 2007 up now

2-Teaching Fluid Mechanics, Thermodynamics, Heat Transfer, Heat Exchangers, Refrigeration Systems, Ventilation Systems and Machine design by Computer as Master in Takestan Azad University, Takestan, Iran, 2009 up now

3-Teaching Fluid Mechanics, Thermodynamics as Master in Abhar Azad University, Abhar, Iran, 2010 to 2011

4-Teaching Aspen Plus, Aspen HYSYS, Aspen Muse, Aspen B-Jac (Heat Exchanger Design and Rating), Aspen Split and Aspen Energy Analyzer

5- Teaching Energy Courses such as: Energy Saving in industries, Energy Consumption Optimization in Industries, Energy Audit Courses and etc for many Industrial Sections such as Mahshahr Petrochemical Industries, Power Plants and Small Scaled Industries.

## Awards

1- Best mark and first ranked in the PhD entrance Examination, 2010

2- First Ranked Student in PhD Course

## Favorite Topic Search

Pinch Technology and Heat Exchanger Network Design

Constructal Theory

Heat Exhcnager Design

Multi Steam Heat Exchanger Design

Exergy and Thermoeconimc (Exergeoeconomic)

Renewable energies

Solar system (Power Plant, CCHP and etc)

CHP & CCHP systems

Energy Conservation

Systems of Energy

Distillation and Solar Distillation Systems

Power Plant

### **Other Activities**

1- Executive Manager, 2<sup>nd</sup> Hydrogen and Fuel cell Conference (HFCC), May-2012, Tehran, Iran

2- Head of Energy Section and Member of Scientific Committee, 2<sup>nd</sup> National Mechanical Engineering Conference, 2012, Abhar, Iran

3- Member of Scientific Committee, First National Mechanical Engineering Conference, 2011, Abhar, Iran

4- Member of Iranian Society of Mechanical Engineering.