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# Hamidreza Shahbazian

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## PERSONAL INFORMATION

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  - <https://scholar.google.com/>
  - <https://www.linkedin.com/in/hamidreza-shahbazian-0184294b/>
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## EDUCATION

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- 2013-2018 ➤ [Iran University of Science and Technology \(IUST\)](#), Tehran, Iran  
**Ph.D. Degree in Thermal/Fluid Mechanics-Energy Conversion**
- Dissertation Title: "Investigation of Rotation and Centrifugal Buoyancy Effect on Gas Turbine Blade Internal Cooling". Supervisor: Prof. S.M. HosseinaliPoor
  - GPA: 18.5/20
- 
- 2004-2007 ➤ [Isfahan University of Technology \(IUT\)](#), Isfahan, Iran  
**M. Sc. in Thermal/Fluid Mechanics-Mechanical Engineering**
- Dissertation Title: "Numerical Simulation of NOx Formation/ Emission in an Industrial Gas Turbine 3D Combustors". Supervisor: Prof. M. D.Emami
  - GPA: 16/20
- 
- 2000- 2004 ➤ [Shahid Beheshti University, Faculty of Engineering \(SBU\)](#), Tehran, Iran  
**B. Sc. in Mechanical Engineering**
- Dissertation Title: "Comparison of Evaporative Inlet Air Cooling Systems to Enhance the Gas Turbine Power Output and Efficiency". Supervisor: Prof. M. Ameri
  - GPA: 17.3/20
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## RESEARCH INTERESTS

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- Heat Transfer Enhancement & Heat Exchangers Design
  - Gas Turbine & Blade Cooling Technology
  - Renewable Energy, Solar Energy
  - Applied Thermodynamic, CCHP & Power Plant
  - Combustion & Environment
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## ACADEMIC PROFESSIONAL EXPERIENCES

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- 2021-Now ➤ [University of Kashan](#), Kashan, Iran  
**Assistant Professor, Mechanical & Energy Department**
- Lecture of Mechanical Courses and Energy Course
  - Water, Energy and Environment Research Institute Council
- 2022-2024 **Director of Technology Transfer and Intellectual Property Office**
- Intellectual Property Committee
  - Innovation and Commercialization Council
- 
- 2019-2020 ➤ [Iran University of Science and Technology \(IUST\)](#), Tehran, Iran  
**Post-doctoral Research in Thermal Science**
- Project: "Investigation of Rotation on Film Cooling Performance", Supervisor: Prof. S.M. HosseinaliPoor
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- 2017-2018 ➤ [Lund University \(LTH\), Department of Energy Science](#), Lund, Sweden  
**Visiting Researcher in Heat Transfer Division**
- Project: "Impact of Vortex Generators on Rotational Heat Transfer Enhancement". Supervisor: Prof. Bengt Sunden
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## RESEARCH & PROFESSIONAL EXPERIENCE

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- 2020-Now
- [Electrical and Energy Industrial Engineering and Technology Co. \(FASBA\)](#)  
**Project Manager**
    - Design, engineering, consulting, supervision of the good implementation of the CHP system in the central building of Mapna, (Employer: Mapna- 2022)
    - Basic & Detail Design for DG & CHP for “Bamdad Badakhshan-CHP”, “Pad-Alvan Pak-DG”, “Babol Steel Company”, “Hashgerd-DG”.
    - The basic and detailed design of the test stand for the evaluation of the cooling system of the gas turbine blade for GT20 (Employer: Mapna- 2021~2022)
    - Fire extinguishing sys., sprinkler, spray, firebox Design for “Dafine-Museum”, “Hamila Commercial Complex”, “Behdash Chemical Co.”, “Atiye-2 Hospital” (Employer: Modamkar Co- 2020~2023)
    - Transient response of Hamila’s Fire Fighting piping system due to water hammer (Employer: Modamkar Co- 2022)
    - Design and modeling of the heating system for concrete curing process using the arrangement of hot water pipes (Employer: TozinElectric Industrial Group, Fard Iran- 2023~2024)
    - Detail Design for Heating, Cooling and air Ventilation for a Modern Greenhouse (Employer: Shaghayegh Sepid KASIAN Co-2021)
    - CFD Modeling for a Semi-Closed Greenhouse (Employer: Shaghayegh Sepid KASIAN Co-2022)

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- 2016-2020
- [Parto Energy Persia Co.](#) Tehran, Iran  
**Head of Mechanical Division & Project Manager**
    - Basic & Detail Design, Purchase, Supervision on construction for 2×MWM-TCG2032-Gas Engines (4.3 MW) and 2×MWM-TVG2020-Gas Engines (1 MW)
    - Operation and maintenance for 2×MWM-TCG2032 and 3×MWM-TVG2020
    - Basic & Detail Design for 2×CATERPILLAR-G3616-Gas Engines (3.7 MW)
    - CHP and CCHP Basic Design for 2×GE Jenbacher-J616-Gas Engines (2 MW)

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- 2014-2016  
(Part Time)
- [Middle East Turbo Compressor Co. TurboTec. \(OTC GROUP\)](#), Tehran, Iran  
**Gas Turbine Expert at Turbomachinery department**
    - Research on new technologies of GT blade internal cooling numerically and experimentally, which leads to gas turbine hot section upgrading.
    - Conceptual & Detail Design and Manufacturing of a Rotating Internal Cooling Test Stand (with IR Camera technology).

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- 2009-2014
- [Monenco Iran Consulting Engineers Co. \(MAPNA GROUP\)](#), the oldest consulting engineering company in the middle east, Tehran  
**Research Assistant at R&D department**
    - Cooperation in Basic & Detail Design of a Test station for 25 MW Industrial Gas Turbine and preparing its technical documents. (A joint with ZORYA Co, Ukraine).
    - Design and review of technical documents for Yazd Integrated Solar Combined Cycle Power Plant (A joint with ARIES company, Spain).
    - Feasibility Studies On Methane Collecting Equipment.
    - Verification of Ventilation Air Flux and Pressure Drops in Underground Subway Systems for Shiraz Subway.
    - Energy, Exergy and Economical analysis for repowering of Besat Power Plant (82.5 MW Steam turbine).
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- 2007-2009     **Rotary & Process Expert at Mechanical Department** and involved with:
- Hydraulic & Thermal Calculation of the Auxiliary Cooling System in Power Plant.
  - Design of Sea Water Main Cooling System for Pareh-Sar CCPP.
  - Design Review of Main & Aux. Cooling Sys. Doc. for Damavand & Shirvan, CCPP.
  - Utilities system Design (Steam and Cooling) in Isfahan Refinery Upgrading.
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- 2006-2007  
(Part Time)     ➤ [Barin Energy Sepahan Consulting Engineers Co.](#), Isfahan, Iran  
**Energy Specialist** and involved with:
- Energy Saving & Energy Conservation for “Isfahan steel factory”, “Zanjan Plumb & Zinc factory” and “an official Building”
- 
- 2004-2005  
(Part Time)     ➤ [Niroo Research Institute \(NRI\)](#), major research organization affiliated to the Ministry of Energy, Tehran, Iran  
**Research Fellow in Energy** and involved with:
- Cooperation in the “Augmentation of gas turbine power output” project with Tavanir & Matn Co.
  - Test Supervision for “Media & Fog” systems, which have been, installed in the Montazerghaem, Shahidrajaei and Shiraz power plants on behalf of Tavanir Co.

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## COURSE-WORK EXPERIENCE

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- 2020-Now     ➤ [University of Kashan, Mechanical and Energy Department](#), Kashan, Iran  
**Lecture of Mechanical and Energy Courses**
- Advanced Mathematical Programming and Optimization.
  - Adv Mathematic for MSc students
  - Process Engineering Design
  - Heat Exchangers Design
  - CHP & Thermal Power Plant Technology
  - Heat Transfer (Cond., Conv., Rad.)
- 
- 2008-2014     ➤ [Azad University, Engineering department](#), Iran  
**Lecture of Mechanical Courses**
- |                              |                                      |
|------------------------------|--------------------------------------|
| ▪ Heat Transfer (I) & (II)   | ▪ Thermal Power Plant                |
| ▪ Fluid Mechanics (I) & (II) | ▪ Water Transportation System        |
| ▪ Classical Thermodynamic    | ▪ Air Conditioning and Refrigeration |
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- 2006-2008     ➤ [PayameNoor University](#), Kashan, Iran  
**Lecture of Academic Courses:**
- |                                    |                          |
|------------------------------------|--------------------------|
| ▪ Mechanics Physics (I)            | ▪ Physics Laboratory (I) |
| ▪ Magnetic & Electric Physics (II) |                          |
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- 2011-Now     ➤ [Novinparsian Institute of Technology](#), Tehran, Iran  
➤ [Sorbon Academy Institute](#), Tehran, Iran  
➤ [Pardad Petrodanesh Institute \(PTEC\)](#), Tehran, Iran  
➤ [Falat Ghareh Institute of Technology](#), Tehran, Iran
- Lecture of Engineering Courses and Engineering Software:**
- Fundamental rules and Preliminary concept of piping engineering
  - Hydraulic Calculation in piping system
  - PIPENET (Standard, Spray/Sprinkler & Transient module)
  - PIPENET (Stand., Spray & Transient) held at Fajr Petrochemical Company (2014).
  - PIPENET (Stand., Spray & Transient) held at Machine Sazi Arak Company (2015).
  - PIPENET (Stand., Spray & Transient) held for TurboTec Company (2016).
  - PIPENET (Stand., Sprinkler & Transient) held at Behran Oil Co. (2016).

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- Pipenet (Stand., Sprinkler & Transient) held at Mapna MD1 Co. (2017, 2021)
  - Pipenet (Standard, Sprinkler & Transient) held at Mapna MD2 Co. (2018, 2022)
  - Pipenet (Stand., Sprinkler & Transient) held at Tehran CanyMes Co. (2019)
  - Pipenet (Stand., Sprinkler & Transient) held at Zagros Petrochemical Co. (2021)
  - Pipenet (Stand., Sprinkler & Transient) held at Pars Oil&Gas Co. (POGC) (2022)
  - PFD & PID Training Course held at PTEC (2011).
  - PFD & PID Training Course held at Farab Company (2012).
  - PFD & PID Training Course held at Pasargad Taban Energy Company (2009).
  - Power Plant Equipments Training Course held at Mapna MD2 Company (2023)

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## SELECTED PUBLICATION

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### Journal Papers

- 1) T. Moradi; **H.R. Shahbazian**; S.M. HosseinaliPoor; B. Sunden, "Effects of wavy ribs on vortex generation and thermal-hydraulic performance in a rotating rectangular channel", *Applied Thermal Engineering*, 2023, Vol. 222, (DOI: [10.1016/j.applthermaleng.2022.119952](https://doi.org/10.1016/j.applthermaleng.2022.119952)).
- 2) **H.R. Shahbazian**; S.M. HosseinaliPoor; Z. Jamshidi, "Thermo-Fluid Investigation on the Effect of Rotation on Film Cooling Performance at Pressure & Suction Side of the Leading-Edge of a Gas Turbine Blade", *Journal of Solid and Fluid mechanics*, 2022, Vol. 11, Iss. 5, PP. 133-148 (DOI:[10.22044/jsfm.2021.9787.3204](https://doi.org/10.22044/jsfm.2021.9787.3204)).
- 3) M. HosseinaliPoor; **H.R. Shahbazian**; B. Sunden, "Coriolis and Buoyancy Effects on Heat Transfer in Viewpoint of Field Synergy Principle and Secondary Flow Intensity for Maximization of Internal Cooling", *Journal of Heat and Mass Transfer*, 2021, (DOI:[10.1007/s00231-020-02949-z](https://doi.org/10.1007/s00231-020-02949-z)).
- 4) S.M. HosseinaliPoor; P. Afkari; **H.R. Shahbazian**; B. Sunden, "A Numerical Framework for Heat Transfer and Pressure Loss Estimation of Matrix Cooling Geometry in Stationary and Rotational States", *Journal of Numerical Heat Transfer. Part A: Applications*, Taylor & Francis, 2019, VOL. 76, NO. 5, 348–368 (DOI:[10.1080/10407782.2019.1630236](https://doi.org/10.1080/10407782.2019.1630236)).
- 5) S.M. HosseinaliPoor; **H.R. Shahbazian**; B. Sunden, "Experimental Investigations and Correlation Development of Convective Heat Transfer in a Rotating Smooth Channel", *Experimental Thermal and Fluid Science*, 94, 2018, PP. 316–328. (DOI: [10.1016/j.expthermflusci.2018.02.020](https://doi.org/10.1016/j.expthermflusci.2018.02.020)).
- 6) S.M. HosseinaliPoor; **H.R. Shahbazian**; B. Sunden, "Influences of Secondary Flow Induced by Coriolis Forces and Angled Ribs on Heat Transfer in A Rotating Channel", *International Journal of Numerical Methods for Heat and Fluid Flow*, 2018, Vol. 29 Iss. 1, PP.388-417. (DOI: [10.1108/HFF-02-2018-0081](https://doi.org/10.1108/HFF-02-2018-0081)).
- 7) S.M. HosseinaliPoor; **H.R. Shahbazian**; M. Ghobadi; S. Norouzi, "Aero-Thermal Analysis of Rotation and Rotational Buoyancy Effect on Internal Cooling of Gas Turbine Blade- An Experimental Study", *Journal of Solid and Fluid mechanics*, 2017, Vol. 8, Iss. 3, PP. 277-288. (DOI: [10.22044/JSFM.2018.7234.2664](https://doi.org/10.22044/JSFM.2018.7234.2664)).
- 8) S.M. HosseinaliPoor; P. Afkari; **H.R. Shahbazian**, "Comparison of Various Arrangement Effects of V-Shape Rib Technologies on Turbulence and Heat Transfer Enhancement in Gas Turbine Blade Cooling", *Modares Mechanical Eng. Journal*, 2016, Vol. 16, No 5, PP 316-326. (DOR: [20.1001.1.10275940.1396.17.5.24.2](https://doi.org/20.1001.1.10275940.1396.17.5.24.2))
- 9) M. D.Emami; **H.R. Shahbazian**; B. Sunden, "Effect of Operational Parameters on Combustion and Emissions in an Industrial Gas Turbine Combustor", *ASME Journal of Energy Resources Technology*, 2019, Vol. 141/012202-1. (DOI: [10.1115/1.4040532](https://doi.org/10.1115/1.4040532)).
- 10) M. Ameri; **H.R. Shahbazian**; M. Nabizaded, "Comparison of Evaporative Inlet Air Cooling Systems to Enhance the Gas Turbine Generated Power" *Int. Journal of Energy Research*, 2007, Vol. 31, PP. 1483-1503. (DOI: [10.1002/er.1315](https://doi.org/10.1002/er.1315)).

- 11) M. Ameri; **H.R. Shahbazian**; H. Hosseinzadeh; M. Nabizaded, "Power Augmentation: A Fars Better Option", Middle East Energy Journal, MEE June 2006, PP 12-13, 2006.

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### **Conference Papers**

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- 12) **H.R. Shahbazian**, "Correlation Development of The Internal Heat Transfer Nusselt Number under the Influence of Angular Ribs in Rotational Conditions for A Gas Turbine Blades", *32<sup>nd</sup> Annual (International) Conference on Mechanical Engineering-ISME2024*, 2024, Arak University, Arak, Iran (in Farsi).
- 13) A.H. Izadi; M. Nazififard; **H.R. Shahbazian**, "Experimental and numerical study of the energy performance for CCHP of Kashan University, *31<sup>st</sup> Annual (International) Conference on Mechanical Engineering-ISME2023*, 2023, Shahid Beheshti University, Tehran, Iran (in Farsi).
- 14) **H.R. Shahbazian**; S.M. HosseinaliPoor, "Synergy analysis of the effect of 45, 60, 75 & 90 deg. ribs in increasing the heat transfer of gas turbine blades", *21<sup>st</sup> International Conference of Iranian Aerospace*, 2023, Iran University of Science & Technology, Iran (in Farsi)
- 15) T. Moradi; **H.R. Shahbazian**; M. Ghobadi; S.M. HosseinaliPoor, "Experimental study of the effects of various channel orientations on the heat transfer of a smooth rectangular rotating channel", *7<sup>th</sup> National Gas Turbine Conference*, 2022, Iran University of Science & Technology, Iran (in Farsi).
- 16) Z Jamshidi; S.M. HosseinaliPoor; **H.R. Shahbazian**, "Influence of Reynolds number on the cooling efficiency of the film on the gas turbine blade film Cooling in rotation mode", *7<sup>th</sup> National Gas Turbine Conference*, 2022, Iran University of Science & Technology, Tehran, Iran (in Farsi).
- 17) R. Khoshkhoo; **H.R. Shahbazian**; H. behroozi, "Feasibility study of using a compressor to prevent methane emissions in the Tie-in process and repairs (in point of view of economic & sustainable development)", *Proceeding of PSC 2018, 33<sup>rd</sup> International Power System Conference*, 2018, Tehran, Iran (in Farsi)
- 18) S. M. HosseinaliPoor; **H.R. Shahbazian**; P. Afkari, "Conceptual and Computational Analysis of Rotating Effect on Fluid Mechanics in Gas Turbine Blade Internal Cooling", *7<sup>th</sup> Conference on Rotating Equipment in Oil & Power Industries*, 2016, Tehran, Iran (in Farsi).
- 19) S.M. HosseinaliPoor; P. Afkari; **H.R. Shahbazian**, "Thermal Performance Comparison of Pin-Fin, Extended Fin & Rib Technologies with the Equivalent Surface on Internal Cooling", *5<sup>th</sup> National Gas Turbine Conference*, 2016, Iran University of Science & Technology, Tehran, Iran (in Farsi).
- 20) S.M. HosseinaliPoor; **H.R. Shahbazian**; E. Saadati, "Thermodynamic Simulation and Energy/Exergy Analysis of Repowering of Besat Thermal Power Plant", *Proceeding of 1<sup>st</sup> conference of sustainable development in energy, Water and Environment*, 2015, Iran University of science & Technology, Thern, Iran (in Farsi).
- 21) M.R. Hosseini; **H.R. Shahbazian**; M. Najmi, "Design of a Test rig for a 25 MW Gas Turbine in order to mechanical & performance test, submission of Experimental Results and Uncertainty Analysis", *Proceeding of IPG5, 5<sup>th</sup> conference of Thermal Power Plant (Mapna)*, June 2014, Shahid Beheshti University, Tehran, Iran (in Farsi).
- 22) S. Amini; R. Khoshkhoo; **H.R. Shahbazian**, "Technical-Economical study on emitted methane collection during pipeline repairs on Boshehr province", *Proceeding of IPG5, 5<sup>th</sup> conference of Thermal Power Plant (Mapna)*, June 2014, Shahid Beheshti University, Tehran, Iran (in Farsi).
- 23) M. D.Emami; **H.R. Shahbazian**, "Numerical Simulation of Combustion and NOx Formation/Emission in a 3D Combustor of Industrial Gas Turbine" ,*Proceedings of The U.S.-Iran Symposium On Air Pollution In Megacities*, The Beckman Center of the National Academy of Sciences and Engineering Irvine, California, September 3-5, 2013, California, USA.



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- 24) **H.R. Shahbazian**; H. PahlavanZadeh; H.R. Razavi, "Energy and Exergy analysis of a Combined Cold, Heat & power system for a typical residential complex", proceeding of CCHP2013, Iranian conference on power generation and hybrid system, Energy Research Institute, University of Kashan, August 2013, Kashan, Iran (in Farsi).
  - 25) **H.R. Shahbazian**, "Comparison of air flow swirly angle effect on an engine combustion product" *Proceeding of EPGC4 2012, 4<sup>th</sup> Electric Power Generation Conference*, January 2012, Tehran, Iran (in Farsi).
  - 26) M. D.Emami; **H.R. Shahbazian**, "Comparison Between the Performance of Different Thermal-Nox Mechanisms in a turbulent jet", *Proceeding of ICC2008, 2nd Combustion Conference of Iran*, 2008, Mashhad, Iran (in Farsi) .
  - 27) M. D.Emami; **H.R. Shahbazian**, "Numerical Simulation of NO<sub>x</sub> Formation and Emission in A Turbulent Non-Premixed CH<sub>4</sub>/N<sub>2</sub>/H<sub>2</sub> Diffusion Flame", *5th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT2007*, Sun City, South Africa.
  - 28) M. D.Emami; **H.R. Shahbazian**; N. Farahmand, "Prediction of Thermochemical Quantities in Laminar Flamelet Models", *Proceeding of ISME 2007, 15<sup>th</sup> Annual (International) Conference on Mechanical Engineering-ISME2007*, May 2007, Amirkabir University of Technology, Tehran, Iran (in Farsi).
  - 29) M. D.Emami; **H.R. Shahbazian**, "Investigation on Excess Air effect in NO<sub>x</sub> Generation inside a Gas Turbine Combustor" *Proceeding of PSC 2007, 22<sup>nd</sup> International Power System Conference*, 2007, Tehran, Iran (in Farsi).
  - 30) M. D.Emami; **H.R. Shahbazian**; H. Afshin, "Nitrogen Dioxide Simulation in a simple combustion chamber", *Proceeding of ICHECLL11 2006*, 11th Congress of Iranian Chemical Engineering, 2006, Tarbiat Modares University, Iran, Tehran, Iran (in Farsi).
  - 31) A. Sedaghat; **H.R. Shahbazian**, "CFD Simulation of baffle effect on instability combustion", *Proceeding of FD2006, 10th Fluid dynamic Conference*, 2006, Yazd university, Iran, (in Farsi).
  - 32) M. Ameri; **H.R. Shahbazian**; H. HoseinZadeh, "The Study of Media Evaporating Coolers for Fars Combined Cycle Power Plant and Presentation of Performance Test Results", *Proceedings of the International Conference on Recent Advances in Mechanical & Materials Engineering*, May 2005, Kuala Lumpur, Malaysia.
  - 33) M. Ameri; H. Nabati; A. Keshtgar; M. Nabizadeh, **H.R. Shahbazian**, "The Installation & Testing of The Fog Inlet Air Cooling System for the Shahid Rajaei Combined Cycle Power Plant", *Proceedings of Thermo2005*, 2005, Hungary.
  - 34) M. Ameri; **H.R. Shahbazian**; H. HoseinZadeh; M. Nabizaded, "Thermodynamic simulation, Technical and Economic Analysis of Evaporating Coolers for Fars CCPP" *Proceeding of PSC 2004, 19<sup>nd</sup> International Power System Conference*, 2004, Tehran, Iran (in Farsi).
  - 35) M. Ameri; **H.R. Shahbazian**; H. HoseinZadeh, "The Study of Effect of Gas Turbine Inlet Air Cooling on the Heat Recovery Boiler Performance" *Proceedings of ESDA04, 7th Biennial Conference on Engineering Systems Design and Analysis*, July 2004, Manchester, UK.
  - 36) M.Ameri; **H.R. Shahbazian**; M. Nabizaded; H. HoseinZadeh, "Application of the Advanced Tubes for Steam Power Heaters & Condensers", *Proceedings of IMEC2004, International Mechanical Engineering Conference*, December 2004, Kuwait.
  - 37) M. Ameri; M.R. Taghipour; Y. Yusefi; **H.R. Shahbazian**; S.R. Shamshegarian, "The Study of Effective Factors on the Critical States in Steam Power Plant Boilers", *Proceedings of International Mechanical Engineering Conference (imece2004)*, Dec. 2004, Kuwait.
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## **PATENT**

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- Patent No: 103945 (06.Mar. 2021), "Gas turbine blade film cooling test stand in rotation state".  
Iranian patent and trademark office.  
**H.R. Shahbazian**, S.M. HosseinaliPour, Zohre Jamshaidi

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## **INTERNATIONAL COLLABORATION**

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- Since 2017
- Professor, Bengt Sundén  
Lund University (LTH), Department of Energy Science, Lund, Sweden
-