

# BAYINDIR H. SARACOGLU

AVENUE DU VOSSEGAT 39 / 8  
1180 UCCLE BELGIUM

PHONE: +32 484 57 26 00 / +90 (535) 200 04 02

E-MAIL: BAYINDIR@SARACOGLU.CO.UK

## JANUARY 2013

### EDUCATION

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- 09/2010 – 08/2012 Wright State University–Mechanical & Materials Engineering Department**  
*Ph.D in Engineering (GPA: 4.00/4.00)*  
*Research Topic: Turbine Base Pressure Active Control through Trailing Edge Blowing*
- 08/2008 – 08/2012 von Karman Institute for Fluid Dynamics – Turbomachinery Department**  
*Ph.D in Fluid Dynamics*  
*Research Topic: Turbine Base Pressure Active Control through Trailing Edge Blowing*
- 09/2007 – 07/2008 von Karman Institute for Fluid Dynamics – Turbomachinery Department**  
*Post Graduate Diploma Program: von Karman Institute Diploma Course (with Honors)*  
*Research Topic: Pulsating Base Pressure in High Pressure Turbines*
- 09/2005 – 07/2008 Bogazici University**  
*Master of Science in Mechanical Engineering*  
*Research Topic: Modeling of Rectangular Counter Flow Heat-Recirculating Combustor*
- 09/1998 – 07/2004 Bogazici University**  
*Bachelor of Science in Mechanical Engineering*
- 09/1995 – 06/1998 Halit Armay High School**  
*Major in Mathematics & Sciences*

### EXPERIENCE

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- 09/2012 – Present von Karman Institute for Fluid Dynamics, Rhode-Saint-Genese, Belgium**  
*Post-Doctoral researcher in Turbomachinery and Propulsion Department*  
*- Research interests: Experimental fluid mechanics, super and transonic turbomachinery, shock control, turbine cooling, high frequency instrumentation, optical methods, numerical modeling of confined flows*
- 09/2007 – 09/2012 von Karman Institute for Fluid Dynamics, Rhode-Saint-Genese, Belgium**  
*Graduate researcher in Turbomachinery and Propulsion Department*  
*- Research interests: Experimental fluid mechanics, supersonic and transonic turbine flows, shock control*
- 09/2005 – 09/2007 Bogazici University, Istanbul, Turkey**  
*Research & Teaching Assistant of Assoc. Prof. Dr. Hasan Bedir*  
*- Working on the research and teaching in the field of fluid mechanics and heat transfer*
- 01/2005 – 09/2005 Ford Motor Company, Izmit, Turkey**  
*Supply Chain Engineer*  
*- Managing logistics of critical parts from the supplier to the plant for commercial vehicle production*  
*- Regular production readiness inspection of the authorized Ford suppliers*  
*- Operating Six Sigma Projects on supply chain problems*
- 08/2004 – 10/2004 von Karman Institute for Fluid Dynamics, Rhode-Saint-Genese, Belgium**  
*Trainee in the Department of Turbomachinery (under supervision of Prof. Dénos in TATEF2 project)*  
*- Processing the high frequency pressure data of experiments performed in a 1½ stage HP Turbine*
- 02/2004 – 06/2004 Arges Energy Systems Co. Inc., Istanbul, Turkey**  
*Consultant for Municipality of Greater Istanbul on Renewable Energy and Landfill Management*  
*Contracting Engineer for 24 MW Nilit Power Plant, of Zorlu Energy, in Israel*

## PUBLICATIONS

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### Archival Journal Papers:

- **Saracoglu B.H.**, Paniagua G., Salvadori S., Tomasoni F., Duni S., Yasa T., Miranda A., “Trailing edge shock modulation by pulsating coolant ejection”, *Applied Thermal Engineering* 48 (2012) 1-10. DOI: 10.1016/j.applthermaleng.2012.04.036
- Bernardini C., Salvadori S., Martelli F., Paniagua G., **Saracoglu B.**, “Pulsating Coolant Ejection Effects Downstream of a Supersonic Trailing Edge” (accepted for publication on **Engineering Applications of Computational Fluid Mechanics Journal**)
- **Saracoglu B.H.**, Paniagua G., Serrano J., Rambaud P., “Effects of blunt trailing edge flow discharge in supersonic regime” (submitted to **Computers and Fluids** and under review)
- **Saracoglu B.H.**, Tomasoni F., Paniagua G., “A novel shock wave detection method in Schlieren Imaging” (In preparation)
- **Saracoglu B.H.**, Paniagua G., Tomasoni F., “Parametric analysis of trailing edge shock control through unsteady purge” (In preparation)

### Conference Papers:

- Paniagua G., **Saracoglu B.**, “Tunnel design, testing and experience on shock control using pulsating blowing”. Presented at the 118th Semi-Annual Meeting of the Supersonic Tunnel Association International. Brussels, Belgium. October 2012.
- **Saracoglu B.H.**, Paniagua G., “Heat Transfer Investigation on a Transonic Turbine Cascade with Pulsating Trailing Edge Cooling”, 48th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Atlanta, USA, August 2012.
- Tomasoni F., **Saracoglu B.H.**, Paniagua G., “A Decision Making Algorithm for Automatic Shock Waves Detection in Shlieren Imaging”, 21st Biannual Symposium on “Measuring Techniques in Turbomachinery”, Valencia, Spain, March 2012.
- **Saracoglu B. H.**, Paniagua G., Yasa T., Duni S., Salvadori S., Martelli F., “Pulsating Trailing Edge Coolant Blowing in a High-Pressure Supersonic Turbine to Control Shock Waves”, 20th International Society of Air Breathing Engines Conference, Gothenburg, Sweden, September 2011
- Paniagua G., **Saracoglu B. H.**, Duni S., Yasa T., Salvadori S., Bernardini C., Martelli F., “Modulation of Vane Shocks with Pulsating Coolant Flows”, 47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, San Diego, USA, August 2011
- Bernardini C., Salvadori S., Martelli F., Paniagua G., **Saracoglu B. H.**, “Pulsating coolant ejection effects downstream of a transonic rounded trailing edge”, 47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, San Diego, USA, August 2011
- **Saracoglu B. H.**, Huang G. P., Paniagua G., “Numerical Study of a Transonic Linear Cascade for Pulsating Trailing Edge Cooling Research”, 10th International Symposium on Experimental and Computational Aerothermodynamics of Internal Flows, Brussels, Belgium, July 2011
- Gonzalez M., Paniagua G., **Saracoglu B.H.**, Tiseira A. O., “Pulsating Cooling Systems for High Pressure Turbine Blades”, 5th Flow Control Conference, Chicago, USA, June 2010.
- Bernardini C., Salvadori S., Martelli F., Paniagua G., **Saracoglu B.**, “Time-resolved analysis of the base region in cooled transonic turbine airfoils”, 5th ECCOMAS, Lisbon, Portugal, June 2010
- **Saracoglu B.H.**, Paniagua G., Rambaud P., “Blunt Trailing Edge Cooling Effects at Supersonic Flow”, 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Denver, USA, August 2009.
- Ozgul E., **Saracoglu B.H.**, Bedir H., “Modeling of spiral counterflow heat recirculating combustors for MEMS application”, 4th European Combustion Meeting 2009, Vienna, Austria, April 2009.

## PATENTS

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- PCT/EP2010/057864 - “Pulsating trailing edge jet for shockwave alleviation”: G. Paniagua and **B. Saracoglu**

## HONORS, AWARDS & FELLOWSHIPS

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- Fonds de la Recherche Scientifique (FNRS) – Travel fellowship for conference, September 2011
- von Karman Institute Doctoral Fellowship (2008 – present)
- von Karman Institute Post-Graduate Diploma Program Fellowship (2007 – 2008)
- Turkish Educational Foundation Merit Based Fellowship (1998 – 2001)
- Ranked in the top 0.01% in the Turkish National University Placement and Selection Examinations, 1998
- Ranked 1st in the Graduating Class, Halit Armay High-School, 1998

## SERVICES TO SOCIETY

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- Reviewer to journals: “Measurement Science and Technology”, “Engineering Applications of Computational Fluid Mechanics”, “Journal of Mechanical Engineering Research”, “American Journal of Engineering and Applied Sciences”,
- Reviewer to conferences: “AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit”, “ASME International Gas Turbine Institute Turbo-Expo Conference”, “European Turbomachinery Conference”

## TEACHING EXPERIENCE

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- Courses assisted at Bogazici University (Problem sessions and evaluation of deliverables):
  - Heat Engines, Thermodynamics, Fluid Mechanics, Design of Thermal Systems, Materials Engineering
- Advisor of Research Master (Diploma Course) Students at von Karman Institute:
  - Simone Duni, “Shock control with a pulsating trailing edge coolant jet in a HP supersonic turbine blade”
  - Marcos Gonzales, “Pulsating Turbine Cooling System: Experimental Characterization”
- Advisor of Master Students at von Karman Institute:
  - Manuel Algarra, “Unsteady heat transfer in a turbine with modulated shock waves”
  - Michele Lozzi, “Numerical analysis of trailing edge cooling in a transonic cascade”
  - Dominick Christoffels, “Etude des ondes de chocs dans un distributeur supersonique”
  - Pedro Meireles, “Design of a 2D Cascade to Investigate Pulsating Coolant”

## ACTIVITIES & MEMBERSHIPS

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- Board Member of Bogazici University Interclub Administration Council (2002-2003), Mountaineering Club (2002-2003), Photography Club (2000-2002) Arts Festival Organization Committee (2000-2003)
- Bogazici University Alumni Organization, von Karman Institute Alumni Organization
- Hobbies: Cycling, mountaineering, SCUBA diving, rock climbing, photography, latin dances, traveling

## COMPUTER SKILLS

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- **Software:** MS Office, MS Project, Matlab, FLUENT, GAMBIT, TRAF, Cradle SC/Tetra, GasTurb, AutoCAD, SolidWorks, iWork
- **Operating Systems:** Windows, Unix, Linux, MacOS X, MS-DOS
- **Programming Languages:** Fortran

## LANGUAGES

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- Turkish (Native Language)
- English (Advanced reading, writing and speaking – “TOEFL - IBT Score: 101”)
- French (Intermediate – A2)

## REFERENCES

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- Assoc. Prof. Guillermo Paniagua (von Karman Institute for Fluid Dynamics)
- Prof. P. George Huang (Wright State University, Mechanical and Materials Engineering Department)
- Assoc. Prof. Hasan Bedir (Bogazici University Mechanical Engineering Department)
- Assoc. Prof. Kunt Atalik (Bogazici University Mechanical Engineering Department)
- Dr. Tolga Yasa (TEI, Tusas Engine Industries)
- Prof. Fazil Onder Sonmez (Bogazici University Mechanical Engineering Department)