

**BAYINDIR H. SARA COĞLU****Nationality:** Turkish, Belgian | **Gender:** Male | **Phone number:** (+32) 484572600 (Mobile) |**Email address:** bayindir.saracoglu@vki.ac.be**ABOUT ME**

Aerospace propulsion engineer (PhD, Mechanical & Fluid Dynamics) with 15+ years' experience at the von Kármán Institute, leading experimental and numerical research on high-speed aviation, pressure-gain combustion, and rotating/pulsed detonation engines. Proven track record as senior researcher and project coordinator for ESA, NATO and EU programmes, guiding multidisciplinary teams and securing competitive funding. Author of 20+ journal papers, 60+ conference contributions and two international patents; AIAA Associate Fellow and NATO AVT committee member. Expertise spans design and testing of ramjet/scramjet inlets, turbomachinery cooling, advanced flow-control and additively-manufactured propulsion components.

WORK EXPERIENCE**VON KARMAN INSTITUTE FOR FLUID DYNAMICS – RHODE-SAINT-GENESE, BELGIUM****SENIOR RESEARCHER – 01/2022 – CURRENT**

Key responsibilities: Leading the experimental and numerical propulsion research especially for high-speed aviation, ramjet/scramjet engines, novel propulsion system thermodynamic design, as well as a team of engineers and grad students.

VON KARMAN INSTITUTE FOR FLUID DYNAMICS – RHODE-SAINT-GENESE, BELGIUM**RESEARCH MANAGER – 12/2018 – 12/2021**

Key responsibilities: Management the research portfolio related to Turbomachinery and Propulsion as well as a team of project managers and engineers

VON KARMAN INSTITUTE FOR FLUID DYNAMICS – RHODE-SAINT-GENESE, BELGIUM**HEAD OF HIGH-SPEED PROPULSION RESEARCH UNIT – 10/2014 – 11/2018**

Key responsibilities: Managing the research portfolio on hypersonic propulsion and detonation

VON KARMAN INSTITUTE FOR FLUID DYNAMICS – RHODE-SAINT-GENESE, BELGIUM**RESEARCHER ENGINEER IN AERONAUTICS AND AEROSPACE / TURBOMACHINERY DEPARTMENTS – 07/2013 – 11/2018**

Key responsibilities: Initializing and conducting research projects, search funding sources, founding project consortia, writing proposals for external grants, supervising Master students.

VON KARMAN INSTITUTE FOR FLUID DYNAMICS – RHODE-SAINT-GENESE, BELGIUM**POST-DOCTORAL RESEARCHER IN TURBOMACHINERY AND PROPULSION DEPT. / AERONAUTIC AND AEROSPACE DEPT. – 10/2012 – 06/2013**

Research interests: Experimental fluid mechanics, super and transonic turbomachinery, shock control, turbine cooling, high frequency instrumentation, optical methods, numerical modeling of confined flows

VON KARMAN INSTITUTE FOR FLUID DYNAMICS – RHODE-SAINT-GENESE, BELGIUM**GRADUATE RESEARCHER IN TURBOMACHINERY AND PROPULSION DEPARTMENT – 10/2007 – 09/2012**

Research interests: Experimental fluid mechanics, supersonic and transonic turbine flows, shock control

BOGAZICI UNIVERSITY – ISTANBUL, TÜRKİYE**RESEARCH & TEACHING ASSISTANT OF ASSOC. PROF. DR. HASAN BEDİR – 09/2005 – 09/2007**

Working on the research and teaching on fluid mechanics, heat transfer and combustion modelling

 **FORD MOTOR COMPANY** – IZMIT, TÜRKİYE

SUPPLY CHAIN ENGINEER – 01/2005 – 09/2005

Managing logistics of critical parts from the supplier to the plant for commercial vehicle production, regular production readiness inspection of the authorized Ford suppliers, as well as-executing Six Sigma Projects on supply chain problems

● **EDUCATION AND TRAINING**

09/2010 – 08/2012 Dayton, Ohio, United States

PH.D IN ENGINEERING Wright State University

Website <https://engineering-computer-science.wright.edu/mechanical-and-materials-engineering> | **Final grade** GPA: 4.00/4.00 |

Thesis Turbine Base Pressure Active Control through Trailing Edge Blowing

08/2008 – 09/2012 Rhode-Saint-Genese, Belgium

PH.D IN FLUID DYNAMICS von Karman Institute for Fluid Dynamics - Turbomachinery & Propulsion Department

Website <https://www.vki.ac.be/index.php/vkidepartments/tu-department-other-menu-93> |

Thesis Turbine Base Pressure Active Control through Trailing Edge Blowing

10/2007 – 06/2008 Rhode-Saint-Genese, Belgium

POST GRADUATE DIPLOMA PROGRAM: VON KARMAN INSTITUTE DIPLOMA COURSE von Karman Institute for Fluid Dynamics - Turbomachinery & Propulsion Department

Website <https://www.vki.ac.be/index.php/vkidepartments/tu-department-other-menu-93> |

Thesis Pulsating Base Pressure in High Pressure Turbines

09/2005 – 07/2008 Istanbul, Türkiye

MASTER OF SCIENCE IN MECHANICAL ENGINEERING Bogazici University

Website <https://bogazici.edu.tr/> | **Thesis** Modeling of Rectangular Counter Flow Heat-Recirculating Combustor

09/1998 – 07/2004 Istanbul, Türkiye

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING Bogazici University

Website <https://bogazici.edu.tr/>

● **PROJECTS**

2022 – CURRENT

Feasibility and Assessment of Rotating Detonation Engines (ESA-RDE)

European Space Agency – Feasibility and Assessment of Rotating Detonation Engines (ESA-RDE) – ESAEXPRO+ Project – Principle Investigator - Project Coordinator, Work Package Leader

2021 – 2025

MDO and Regulations for Low-boom and Environmentally Sustainable Supersonic aviation (MORE&LESS)

MDO and Regulations for Low-boom and Environmentally Sustainable Supersonic aviation (MORE&LESS) – EC H2020 Project – Co-Principle Investigator, Work Package Leader and Task Leader.

2020 – CURRENT

Pulse Detonation Thrusters (ESA-PDT)

European Space Agency – Pulse Detonation Thrusters (ESA-PDT) – ESA-EXPRO+ Project – Principle Investigator - Project Coordinator, Work Package Leader

2018 – 2021

Stratospheric Flying Opportunities for High-Speed Propulsions Concepts (STRATOFly)

Stratospheric Flying Opportunities for High-Speed Propulsions Concepts (STRATOFly) – EC H2020 Project – Project Technical Coordinator, Work Package Leader and Task Leader

2014 – CURRENT

High-speed Experimental Fly Vehicles – International (HEXAFLY-INT)

High-speed Experimental Fly Vehicles – International (HEXAFLY-INT) – EC FP7 Project – Co-PI, VKI Project Manager and Work package leader (2014-Present):

2013 – 2016

Tangential Impulse Detonation Engine (TIDE)

Tangential Impulse Detonation Engine (TIDE) – EC FP7 Project – Co-PI, VKI Project Manager and Work package leader

2013 – 2015

Distributed Open-Rotor Aircraft (SOAR)

Distributed Open-Rotor Aircraft (SOAR) – EC FP7 Project – Co-PI, VKI Project Manager.

2009 – 2013

Thermal instrumentation, test and modeling of surface coolers in representative aerodynamic conditions (ACOC-TH)

Thermal instrumentation, test and modeling of surface coolers in representative aerodynamic conditions (ACOC-TH) – EC FP7 Project, CleanSky Program

2008 – 2016

Long-Term Advanced Propulsion Concepts and Technologies II (LAPCAT II)

Long-Term Advanced Propulsion Concepts and Technologies II (LAPCAT II) – EC FP7 Project – Flow control methods for boundary layer transition for inlets at supersonic regimes

● **NETWORKS AND MEMBERSHIPS**

HONORS, AWARDS & FELLOWSHIPS

- AIAA Associate fellow since October 2019
- In 2012 second position in the EREA Best Paper Award on Evolutionary Research
- United States Air Force – Window of Science Fellowship, 2018
- Fonds Wetenschappelijk Onderzoek (FWO) – Travel fellowship for conference- SciTech 2020, Florida; SciTech 2019, San Diego; SciTech 2018, Florida; SciTech 2016, San Diego; FEDSM 2014, Chicago;
- Fonds de la Recherche Scientifique (FNRS) – Travel fellowship for conference-SciTech 2015, Florida; ICPCD 2014, St. Petersburg; ISABE 2011, Gothenburg
- von Karman Institute Doctoral Fellowship (2008 – 2012)
- 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

● **TEACHING EXPERIENCE**

Teaching at von Karman Institute for Fluid Dynamics

- Air breathing propulsion, Measurement techniques lab (force measurements, oil and Schlieren/Shadowgraph flow visualizations)
- Data Acquisition and Processing
- Advisor of 3 Doctoral candidates at von Karman Institute and 1 external Doctoral candidate
- Advisor of 23 Research Master (formerly Diploma Course) Students at von Karman Institute
- Advisor of 22 Master Students at von Karman Institute with domestic or foreign universities
- Advisor of 1 Bachelor Students at von Karman Institute in collaboration with a foreign university
- Advisor of 29 Short Training Program Students at von Karman Institute

Courses assisted at Bogazici University

- Heat Engines, Thermodynamics, Fluid Mechanics, Design of Thermal Systems, Materials Engineering

SERVICES TO SOCIETY

Memberships and Reviews

- Honorary member of Scientific Council of INCDT COMOTI (Romanian Research&Development Institute for Gas Turbines) since June 2024
- PhD thesis jury duties: D. Ferretto, Polito (2020), Valeria Vercella, Polito (2022).
- Topic Editor for MDPI Sustainability Journal (IF:2.576, 5-year IF:2.798) (2020-2021)
- Technical Discipline Chair – High Speed Air-Breathing Propulsion for AIAA-SciTech Forum (2019-2021)
- Coordinator for Propulsion Work Group on High Speed Aviation Student Initiative (CERN, ESA, EASN)
- Member of EUREKA – EUROGIA2020 Cluster's Technical Committee since 2015
- Member of "CEAS 2017 Meeting" Scientific Board
- Project evaluator for US Department of Energy, US-Israel Binational Science Foundation (BSF), Israeli Science Foundation (ISF), L'Agence Nationale de la Recherche (ANR), EUROGIA2020 cluster of EUREKA
- Associate Fellow of American Institute of Aeronautics and Astronautics (AIAA) since 2019
- Senior Member of American Institute of Aeronautics and Astronautics (AIAA) 2017-2019
- Member of AIAA International Activities Group (Since 2020)
- Member of AIAA- Committee on "SciTech Organization" (since 2018), Pressure Gain Combustion Technical Committee (since 2016), Gas Turbine Engine Technical Committee (since 2016), and High Speed Air-Breathing Propulsion Technical Committee (since 2015)
- Member of ASME Fluid Mechanics Technical Committee since 2014
- Review organizer for AIAA SciTech (2016 – 2021)
- Reviewer to journals: "International Journal of Hydrogen Energy", "Applied Thermal Engineering", "ASME Journal of Turbomachinery", "International Journal of Heat and Fluid Flow", "International Journal of Thermal Sciences", "AIAA Journal", "Journal of Turbo and Jet Engines", "Advances in Mechanical Engineering", "Energies", "Entropy", "Measurement Science and Technology", "Engineering Applications of Computational Fluid Mechanics", "Journal of Mechanical Engineering Research", "American Journal of Engineering and Applied Sciences", "Journal of Mechanics Engineering and Automation"
- Session chair in "AIAA SciTech" since 2016 for "HSABP Technical Committee", "Pressure Gain Combustion Technical Committee" and "Gas Turbine Engine Technical Committee"
- Session chair in "Symposium of VKI PhD Research 2016"
- Session co-chair in "ASME International Gas Turbine Institute Turbo-Expo Conference 2014"
- Reviewer to conferences: "6th CEAS Air & Space Conference Aerospace Europe 2017" "ASME International Design Engineering Technical Conferences, 2015", "AIAA SciTech Conference (since 2014)", "AIAA Propulsion & Energy Forum (Formerly known as Joint Propulsion Conference) (since 2012)", "ASME International Gas Turbine Institute Turbo-Expo Conference (since 2013)", "European Turbomachinery Conference (Since 2013)"

HONOURS AND AWARDS

AIAA Associate fellow – AIAA

2nd position in the EREA Best Paper Award on Evolutionary Research – EREA

Travel fellowship for conference – Fonds Wetenschappelijk Onderzoek (FWO)

Travel fellowship for conference- SciTech 2020, Florida; SciTech 2019, San Diego; SciTech 2018, Florida; SciTech 2016, San Diego; FEDSM 2014, Chicago;

von Karman Institute Doctoral Fellowship – von Karman Institute for Fluid Dynamics

Post-Graduate Diploma Program Fellowship – von Karman Institute for Fluid Dynamics

Turkish Educational Foundation Merit Based Fellowship

Ranked in the top 0.01% in the Turkish National University Placement and Selection Examinations – Turkish National University Placement and Selection Examinations

Ranked 1st in the Graduating Class – Halit Armay High-School

● PUBLICATIONS

2024

[Physics of Fluids](#)

Cakir, B. O., Grossir, G., Saracoglu, B. H., Fureby, C., Numerical and experimental investigations of flow features over a wedge exposed to supersonic flow at high Reynolds numbers. *Physics of Fluids*, 2024, DOI: 10.1063/5.0216479

2023

[Experiments in Fluids](#)

Cakir, B. O., Lavagnoli, S., Saracoglu, B. H., Fureby, C., Assessment and application of optical flow in background-oriented schlieren for compressible flows. *Experiments in Fluids*, 2023, DOI: 10.1007/s00348-022-03553-z

2022

[Acta Astronautica](#)

Cakir B.O., Ispir A.C., Saracoglu B.H., Reduced order design and investigation of intakes for high speed propulsion systems, *Acta Astronautica*, DOI: 10.1016/j.actaastro.2022.07.037

2022

[Aircr. Eng. Aerosp. Technol.](#)

Saccone G., Ispir A.C., Saracoglu B.H., Cutrone L., Marini M. "Computational evaluations of emissions indexes released by the STRATOFly airbreathing combined propulsive system" *Aircr. Eng. Aerosp. Technol.*, 2022, DOI: 10.1108/AEAT-01-2022-0024

2019

[Journal of Thermal Science](#)

Bottini H., Saracoglu B.H., Paniagua G., "Experimental Characterization of the Supersonic Transitional Wake Downstream of a Single Roughness Element", *J. Therm. Sci.*, 2019, DOI: 10.1007/s11630-019-1198-1

2016

[AIAA JOURNAL OF PROPULSION AND POWER](#)

Braun J., Saracoglu B.H., Paniagua G., "Unsteady performance of rotating detonation engines with different exhaust nozzles", *AIAA Journal of Propulsion and Power* (2016) DOI: 10.2514/1.B36164

2016

[AIAA Journal](#)

Braun J., Saracoglu B.H., Magin T., Paniagua G., "One-dimensional analysis of the MagnetoHydrodynamic effect in Rotating Detonation Combustors", *AIAA Journal* (2016) DOI: 10.2514/1.J054989

2015

[AIP Physics of Fluids 27](#)

Bianchi G., Saracoglu B.H., Paniagua G., Reger, T., "Experimental analysis on the effects of DC arc discharges in various flow regimes" *AIP Physics of Fluids 27* (2015) 036102; DOI: 10.1063/1.4914868

2014

[Expert Systems with Applications](#)

Tomasoni F., Saracoglu B.H., Paniagua G., "A decision-making algorithm for automatic flow pattern identification in high-speed imaging", *Expert Systems with Applications* 41 (2014) 3935–3943, DOI: 10.1016/j.eswa.2013.12.015

2013

[Computers & Fluids](#)

Saracoglu B.H., Paniagua G., Sanchez J., Rambaud P., "Effects of blunt trailing edge flow discharge in supersonic regime", Computers and Fluids 88 (2013) 200 – 209 DOI: 10.1016/j.compfluid.2013.09.013

2012

[**Applied Thermal Engineering**](#)

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

2017

[**VKI Press**](#)

Saracoglu B.H., "Turbine trailing edge shock modulation by pulsating coolant ejection", Active Flow Control: Techniques and Applications, VKI Press, 2017, Rhode-Saint-Genese, ISBN 978-2-87516-116-1.

2022

[**HiSST: 2nd International Conference on High-Speed Vehicle Science & Technology**](#)

Cakir B.O., Grossir G., Paris S., Saracoglu B.H., "On the design of a Mach 5 axisymmetric contoured nozzle for the VKI H3 hypersonic tunnel", (HiSST), Bruges, Belgium, September 11-15, 2022

2022

[**ASME Turbo Expo 2022: Turbomachinery Technical Conference and Exposition**](#)

Governo A., Saracoglu B.H., "Multidisciplinary optimization of radial outflow turbines with highly deformable blades", ASME TurboExpo 2022, GT2022-84333, Rotterdam, The Netherlands, June 2022

2020

[**AIAA Propulsion & Energy 2020 Forum**](#)

Cakir B.O., Saracoglu B.H., "Numerical Assessment of Ramjet Intake Flow Topology Optimization for Off-Design Operation via Bypass Boundary Layer Bleed", AIAA Propulsion & Energy 2020 Forum, Virtual Event, August 2020 DOI: 10.2514/6.2020-3710

2019

[**AIAA Propulsion & Energy 2019 Forum**](#)

Ispir A.C., Saracoglu B.H., "Development of a 1D dual mode scramjet model for a hypersonic civil aircraft", AIAA Propulsion & Energy 2019 Forum, Indianapolis, IN, USA, August 2019 DOI: 10.2514/6.2019-3842

2016

[**AIAA SciTech**](#)

Saracoglu B.H., Paniagua G., "Compressor integration study for a pulse detonation engine", AIAA SciTech 2016, San Diego, CA, USA, January 2016

2015

[**AIAA Propulsion & Energy**](#)

Kutlu B.F., Saracoglu B.H., Paniagua G., Kapat J., "Aeroacoustics of Flow over Rectangular Cavities", AIAA Propulsion & Energy 2015, Orlando, FL, USA, July 2015.

2015

[**AIAA SciTech**](#)

Saracoglu B.H., Paniagua G., "Analysis of the flow field around the wing section of a Fan Wing aircraft under various flow conditions", AIAA SciTech 2015, Kissimmee, FL, DOI: 10.2514/6.2015-1936

2014

ASME Summer Meetings

Bottini H., Saracoglu B.H., Paniagua G., "Experimental investigation of single roughness element effects on supersonic boundary layer transition", ASME Summer Meetings 2014, FEDSM2014-21673, Chicago

2011

20th International Society of Air Breathing Engines Conference

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, 2011

2010

5th Flow Control Conference

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.

● **PATENTS**

Patents

- WO 2011/150979 - "Transonic gas turbine stage and method": G. Paniagua and B. Saracoglu
- WO 2015/063343-"Axial fluid machine & method for power extraction": Vinha, Paniagua, Sousa, Saracoglu

● **LANGUAGE SKILLS**

Mother tongue(s): **TURKISH**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1
FRENCH	B2	B2	B2	B2	B2
DUTCH	A1	A1	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● **SKILLS**

Computer Skills

Ansys FLUENT | Gambit | NUMECA FineTurbo | MS Office (MS Word, MS Powerpoint, MS Excel, MS) | C++ | Fortran - Advanced level | Windows/macOS/Linux | OpenFoam, | MATLAB