

## Ioannis Nikiforakis, Ph.D.

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Mechanical engineer with a strong background in combustion engines, wind turbines and energy-efficient buildings. I am skilled in computer-aided engineering, applied thermodynamics, computational fluid dynamics, heat transfer analysis, combustion kinetics and fatigue damage determination. I want to perform novel work.

## Experience

- 01/2025 - Present      *Visiting Scholar-Stony Brook University (SBU)*  
Developing multi-dimensional, transient, computational fluid dynamics (CFD) models of internal combustion engines (ICEs) and steady-state schemes for wind turbines at SBU's Advanced Combustion and Energy Systems (ACES) Lab, under Professor Dimitris Assanis.
- 05/2022-12/2024  
&  
05/2021-08/2021  
&  
05/2018-12/2020      *Research Assistant-SUNY Research Foundation*  
Worked in projects between SBU, corporations, and the US Government. I investigated the wake field of Sunrise Wind (wind farm) and the on-site hydrogen production through PEM electrolyzers, with WindFLO (Ørsted). Additionally, I thermodynamically optimized the design of a diesel-fed, compression-ignition (CI), rotary engine with a pre-chamber (UAV) to improve performance under various loads, through 3-D CFD simulations in CONVERGE CFD (LiquidPiston, Inc. and US Air Force). I also examined the viability of hybridized solid oxide fuel cells with ICEs. By developing 0-D and 1-D models in ANSYS Chemkin and CONVERGE Chemistry, I examined the combustion kinetics. I processed a spark-ignition, in-house ICE geometry in ANSYS SpaceClaim and CONVERGE Studio before implementing 3-D CFD model simulations in CONVERGE CFD (ARPA-E's INTEGRATE, Czero, Inc.).
- 08/2021-05/2022  
&  
01/2021-05/2021  
&  
08/2017-05/2018      *Teaching Assistant-SBU*  
Assisted in SBU's Mechanical Engineering Undergraduate Program Courses: MEC 301 Thermodynamics, MEC 305 Heat & Mass Transfer, MEC 325 Manufacturing Processes, MEC 364 Introduction to Fluid Mechanics, MEC 393 Engineering Fluid Mechanics, and MEC 398 Thermodynamics II (lectures, recitations, lab work, projects, exams, homework)
- 06/2013-08/2013  
&  
06/2012-08/2012      *Intern-HARAMIS BROS S.A.*  
Procured and sized equipment according to the customers' needs, as well as handled the installation and repairs at a Greek water-pump company, for two consecutive summers.

## Education

- Ph.D. in Mechanical Engineering*, Stony Brook University (SBU), 2024  
Dissertation: [Understanding the Role of the Internal Combustion Engine for a Hybrid Solid Oxide Fuel Cell Power Generation System](#) – Modeling & Simulations of Combusting H<sub>2</sub>/CO blends, diluted with H<sub>2</sub>O and CO<sub>2</sub> in ICEs
- M.Sc. in Sustainable Energy Technology*, Delft University of Technology (TU Delft), 2017  
Thesis: [Determination of Fatigue Assessment of Monopile-Based Offshore Wind Turbines through Fidelity Quantification](#) – Modeling (AutoCAD) & Simulations (NREL's FAST v8, Bladed, in-house, MATLAB codes of TU Delft)
- Diploma in Mechanical Engineering*, National Technical University of Athens (NTUA), 2014  
Thesis: Net Zero-Energy Buildings: A Full Review

## Skills

Expert in CONVERGE CFD, Tecplot, ANSYS Chemkin, Fluent, SpaceClaim, EnSight, ParaView, Autodesk AutoCAD, FAST v8 (NREL), Bladed, Aspen Plus, SolidWorks, Microsoft 365, LaTeX, MATLAB, Python, C++, Linux, Bash, MPI  
Fluent in English, Greek and French | Conversational in Dutch and Chinese (Mandarin)

## Publications in Refereed Journals, Conference Proceedings and Awards

Lead author in [3 publications](#). Awarded the Institute for Advanced Computational Science Young Writer's Award (2024) and the Gerondelis Foundation Graduate Study Scholarship (2023). Ranked 2<sup>nd</sup> in the nationwide exams for the National Technical University's of Athens Mechanical Engineering joint B.Eng. and M.Eng. Program (2007).