Atdhe Kycyku

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EDUCATION

10/2016 – 06/2020 **Imperial College London** *MEng, Mechanical Engineering*

- Graduated with Highest Honours (*First Class*)
- *Renishaw Prize* (2019) awarded for Best Third Year Project in Mechanical Engineering
- Courses include: Advanced Control, Aircraft Engine Technology, Computational Continuum Mechanics, Embedded C for Microcontrollers, Heat Transfer, Mathematics, Optimisation, Stress Analysis, Thermodynamics

09/2013 – 08/2015 **Tiffin School**

- *The Tiffinian Lodge Prize for Engineering* (2015) awarded to the student who shows the greatest future promise in engineering out of graduating class of 120
- *Tiffinian Prize for Outstanding Achievement* (2015) for top performing students in graduating class of 120

PROFESSIONAL EXPERIENCE

10/2023 – present **The Exploration Company** *Space Vehicle Thermal Engineer*

- Part of the Vehicle Design Team responsible for delivery of *Mission Possible* and *Nyx Earth* spacecraft
- Responsible for thermal qualification of *Mission Possible*, subscale capsule demonstrator launched on SpaceX Falcon 9 *Transporter-14* mission in June 2025
  - Defined requirements and planning for spacecraft-level thermal test
  - Built Thermal Desktop model to support test predictions and model correlation
  - Organised and chaired test milestones including Test Readiness Review and Post-test Review
  - Led team of 8 to successful campaign execution at Airbus D&S EVT facilities in Toulouse, France
  - Provided inputs to Product Assurance and Systems teams for closure of NCRs and IVVs
  - Delivered test results to SpaceX as part of Launch Readiness Review datapack
  - Flight Instrumentation definition, interface management, and integration support
  - Thermal Desktop analysis and design justification of attitude control thruster valves
- Responsible Engineer for various design and test deliverables for *Nyx Earth*, full-scale LEO cargo spacecraft scheduled to dock with International Space Station in 2028 under ESA LCRS contract
- Responsible Engineer for *Nyx Earth* multilayer insulation
  - Led discussions with prospective suppliers during RFI/RFP stage
  - Ownership of requirements related to MLI design, performance, and interfaces
  - Drove selection of final supplier and drafted statement of work for contract signature
  - Coordinated successful, on-schedule design and delivery of engineering model MLI
  - Chairing weekly co-engineering sessions focusing on flight model MLI design
- Responsible Engineer for *Nyx Earth* TCS flight instrumentation
  - Defined preliminary temperature sensor architecture across capsule and service module
  - Proposed appropriate PT100 and NTC thermistor models for EM/FM procurement
- Responsible Engineer for *Nyx Earth* heater architecture
  - Defined preliminary heater architecture across capsule and service module
  - Performed component-level design and sizing of heater elements, as well as supplier selection
- Responsible Engineer for *Nyx Earth* active thermal control system (ATCS) piping, junctions & fittings
  - In charge of tubing and fitting design and supplier selection
  - Collaborating with AIT team on welding qualification campaign of Swagelok VCR® fittings
  - Managing development of quick disconnect interface between capsule and service module
- Responsible Engineer for *Nyx Earth* active thermal control system development test bench
  - Defined high-level test logic, objectives, operational procedures, and set-up design
  - Designing and building all relevant GSE including Swagelok® tube fittings, loop fill-drain system, data acquisition chain, control system, power supply network, electrical harnesses, and more
  - Supported EM centrifugal pump test campaign at supplier facilities in Turin, Italy
  - Constructed thermohydraulic mathematical model in MATLAB/Simulink to inform test predictions

09/2021 – 08/2023 **European Space Agency** *Graduate Trainee for Thermal Engineering*

- Selected for two-year traineeship in the Thermal Division at ESA's centre of competence for engineering and R&D at ESTEC, the Netherlands
- Lead Thermal Engineer for *YPSat*, small satellite launched on maiden flight of Ariane 6 in July 2024
  - Responsible for all thermal analysis, design, integration, and test activities

- Developed spacecraft thermal models in ESATAN-TMS to assure operation in worst hot/cold cases
- Delivered model package to launch provider ArianeSpace for coupled launcher analysis
- Design, manufacture, and integration of prototype and flight-model MLI blankets for spacecraft and critical payloads
- First ever ESA flight of a European-heritage phase change material heat capacitor
- Planned and executed multiple unit-level TVAC qualification test campaigns
- Planned and executed spacecraft protoflight model TVAC qualification test campaign
- Led a team of 6 in planning and execution of spacecraft flight model TVAC acceptance test campaign as a final milestone before delivery
- Supported other activities including spacecraft integration for mechanical qualification campaign
- Mentored young trainees in activities ranging from thermal model correlation to MLI manufacture
- Presented project at ESTEW 2022 (*YPSat Thermal Analysis, Design, Integration & Testing*. A. Kycyku. *European Space Thermal Engineering Workshop*, October 2022)
- Received ESA *Teamwork Excellence Award* for 2022

- Thermal Engineer in pre-phase A mission study in ESA's Concurrent Design Facility (CDF) for *ARRAKIHS*, multi-band space observatory scheduled for launch in 2031
  - Developed primary instrument thermal design in ESATAN-TMS and Thermica, including passive control of VIS/NIR detectors and FPA at 140 K
  - Subsequently selected to support post-CDF working group, performing sensitivity analyses and thermal design studies in preparation for call for industry proposals
- Thermal Engineer in CDF mission study for *ARMADILLO* drilling platform, designed to search for signs of life within subsurface ice deposits on Mars, as well as to demonstrate novel H_2O-based ISRU technologies
  - Collaborated with other subject matter experts to define interfaces and establish system requirements
  - Defined full thermal subsystem architecture. Specified and sized thermal hardware, including insulation, heaters, loop heat pipes, and radioisotope heater units. Rapidly iterated design in response to new information during 8-week study
- Lead Test Engineer in heat pipe failure investigation for *BepiColombo*, ESA's first mission to Mercury
  - Designed, built, and operated three separate test rigs for non-condensable gas measurement and performance testing of spare flight-model heat pipes in the Mechanical Systems Laboratory (MSL)
  - Experimentally reproduced loss-of-performance effects as observed in-flight, establishing root cause as heat pipe stall due to generation of vapor-slug in microchannels
  - Constructed Pulsed Phase Thermography set-up and post-processing pipeline for heat pipe NDT&E
  - Delivered results to investigation committee including representatives of Airbus (spacecraft prime), European Space Operations Centre (spacecraft operator), and IberEspacio (heat pipe manufacturer)
  - Informed procedures for in-flight performance recovery test whilst in Mercury orbit
- Lead Test Engineer in instrument characterization TVAC test campaign for ESA's *EnVision* mission to Venus
  - Designed and built representative test set-up for *VenSpec-H* high-resolution spectrometer
  - Constructed thermal model in ESATAN-TMS to inform test procedures & predictions
  - Planned and executed TVAC test campaign, assessing performance of multiple design configurations over 4 weeks

06/2021 – 09/2021 **West London Aero Club** *Aviation Ground Crew*

- Member of Rescue and Fire Fighting Services (RFFS) team at White Waltham Airfield, Berkshire
- Responsibilities include airfield operations (aircraft refuelling, rotors-running helicopter refuelling), hazard mitigation (runway foreign object inspection, fuel contamination checks) and incident response (evacuation and rescue of passengers and crew in an aircraft emergency)

09/2020 – 12/2020 **Reaction Engines** *Applied Technologies Intern*

- Applied in-house expertise in high-performance heat exchangers for hypersonic *SKYLON* spaceplane to solve challenging thermal problems in the automotive domain
- Created system-level design methodologies for novel electric vehicle battery thermal management technology, as part of the *hxLIFE Foils* project under Dr Yura Sevcenco
- Constructed thermal management system modelling framework in MATLAB/Simulink as a design tool for specification and sizing of pump, radiator, and other components

09/2018 – 06/2020 **Imperial Racing Green** Quad 2020 Project *Co-founder & Project Manager*

- Initiated a comprehensive study into the feasibility of a project to build the Worlds' most powerful electric quad bike, under the universities' zero-emissions racing team: Imperial Racing Green
- Successfully led the proposal of the project, in which the concept was presented to a committee of academics, securing departmental backing and the equivalent of over £9,000 of support
- Subsequently appointed as Project Manager, responsible for overall management of all project activities

- Organised and chaired a series of Concept and Design Readiness Reviews involving leaders of major research groups at Imperial as well as senior engineers from the automotive industry
- Built a team of 20+ motivated engineering students in a range of technical and non-technical roles
- Negotiated further £10,000 of financial and in-kind support from industrial and academic sponsors
- Technical role as Systems Engineer, managing over 20 critical system interfaces (functional, electrical, and physical) between the Battery Team and Powertrain Team
- Awarded *Renishaw Prize* for Best Third Year Project for design, manufacture, and testing of 10.1 kWh, 470 V Li-ion battery pack under the supervision of Prof. Greg Offer

08/2014 **Jacobs Engineering Group** *Bridges & Structures Intern*

- Undertook a feasibility study into a bridge reconstruction project in St. Helens
- Presented findings at SATROClub Award Ceremony
- Received *Gold CREST Award* for original contribution to a STEM field of study

07/2014 **Worley Parsons Limited** *Engineering Intern*

- Attended lectures and activities as part of a week-long introduction to the Oil & Gas Industry

RESEARCH EXPERIENCE

09/2019 – 06/2020 **Electrochemical Science and Engineering Group, Imperial College London** *Research Assistant*
"Phase Change Materials as Thermal Management for Satellite Batteries"

- Self-proposed study into feasibility of organic solid-liquid phase change materials as compact and lightweight Li-ion battery thermal management for small satellites, with Profs. Greg Offer & Fred Marquis
- Developed lumped parameter thermal model of the *INSPIRESat-1* CubeSat, in conjunction with a finite element thermal model of the battery pack to resolve individual cell temperatures
- Formulated analytical model of solar, albedo and planetary radiation contributions
- Incorporated semi-empirical model of cell heat generation using drive cycle test data
- Validated the feasibility of solid-liquid 'thermal battery' for reduction of pack temperature fluctuations and cell-to-cell temperature differences during orbital operations
- Performed parametric study to inform optimal design of phase change material
- Submitted work as Master's thesis, receiving Highest Honours (*First Class*)

06/2019 – 09/2019 **The Faraday Institution & Imperial College London** *Research Supervisor*

- Proposed three research projects to The Faraday Institution and Imperial College London, securing £4,000 of funding as part of the Faraday Undergraduate Summer Experiences (FUSE) programme and the Imperial Undergraduate Research Opportunities Programme (UROP)
- Supervised two undergraduate students in conducting dynamometer testing of electric motor, inverter, and integrated cooling system as part of the Quad 2020 project
- Advised one undergraduate student in the design and implementation of an Arduino-based temperature sensor network for a Li-ion battery pack as part of the Quad 2020 project

07/2018 – 09/2018 **Thermofluids Division, Imperial College London** *Research Assistant*
"Numerical Solutions to the Reaction-Diffusion Equations"

- Worked with Prof. Emile Touber to investigate the dynamics of grass patterns in arid climates
- Performed frequency analysis of grass patterns taken from terrestrial satellite image data

06/2017 – 09/2017 **Materials Modelling Group, Imperial College London** *Research Assistant*
"Modelling Curved Cracks using Distributed Dislocations"

- Worked with Prof. Daniel Balint to apply linear elastic fracture mechanics – in conjunction with select graduate-level mathematical techniques – to the problem of curved cracks in structural components
- Developed MATLAB script to model the stress and strain fields around a dislocation

OTHER

Software	SolidWorks, AutoCAD, MATLAB, Python, C, Simulink, Thermal Desktop, Thermica, ESATAN-TMS, LaTeX
Hardware	Manual machining, additive manufacture, wiring, soldering, spot-welding, auto repair
Affiliations	Member, American Institute of Aeronautics and Astronautics
Sports	Muay Thai, BJJ, Mixed Martial Arts, Football, Swimming, Olympic Weightlifting
Languages	(*Fluent*) English, Albanian (*Elementary working proficiency*) Spanish, German

REFERENCES AVAILABLE ON REQUEST