I. PERSONAL

Hossein Balaghi Enalou, PhD

Birth:	August 30, 1988, Shiraz, Iran
Contact Information:	Department of Mechanical Engineering, Isfahan University of Technology, Iran h.balaghi@iut.ac.ir H.BalaghiEnalou@gmail.com Phone: (98) 9056058879

II. CURRENT POSITION

Assistant professor (2024-Present)

Department of Mechanical Engineering, Isfahan university of Technology, Iran

- Novel technologies and integrated solutions for electrified propulsion systems
- Novel gas turbine engine configurations and cycles
- High-speed electric motor mechanical design

III. EDUCATION

Ph.D.: Mechanical Engineering (2015-2019)

University of Nottingham, UK
Dissertation: *Electric Power Transfer Concept for Improved Performance of Multi spool Turbofan Jet Engine*, Supervisors: Prof S. Bozhko, Dr M. Rashed
Clean Sky Best PhD Award 2020

M.Sc.: Mechanical Engineering (GPA: 17.38/20) (2009-2011)

Sharif University of Technology, Iran
Dissertation: *Design and Prototyping of Fast-Acting Anti Rollover System for SUV's,*
Supervisors: Prof M. Durali

B.Sc.: Mechanical Engineering (GPA: 17.82/20) (2005-2009)

Amirkabir University of Technology, Iran
Dissertation: *Free Vibration Analysis of Functionally Graded Beams with Integrated Surface Piezoelectric Layers*, Supervisors: Prof M. Shakeri

IV. EMPLOYMENT/APPOINTMENTS

- Senior research fellow in high-speed electric motor design (2023-2024)

University of Nottingham, UK

- Research fellow in hybrid electric aircraft propulsion system (2020-2023)

Cranfield University, UK

- Research Fellow in More Electric Engine (2019-Oct 2020)

University of Nottingham, UK

- Steam Turbine Component Engineer (2011-2015)

MAPNA Turbine Engineering and Manufacturing Company (TUGA), Iran

- Turbine Control system consultant (2009-2011)

NIROO Research Institute (NRI), Iran

Senior research fellow in hybrid electric propulsion system (2023-2024)

University of Nottingham, UK

- High speed electric motor mechanical design

Research Fellow in Hybrid Electric Propulsion Architectures (2020-2023)

School of Aerospace, Transport and Manufacturing,
Cranfield University, UK

- Novel technologies and integrated solutions for electrified propulsion systems
- Novel engine configurations and cycles
- Thermal management system design and simulation for hybrid electric propulsion systems
- Development of novel turbofan cycles by integration of Electric Power Transfer (EPT), variable geometry, steam injection and resized engine core
- Contribution to Futprint50 Academy (an initiative from Futprint50 including research by European Universities for sustainable aviation https://futprint50.eu/)
- Guest editor of special issue in Aerospace on "Gas Turbine and the Environment: Towards Net Zero CO2 Propulsion Systems"
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Research Engineer in Coventry Aerospace (part-time)

- Application of evaporative spray cooling on axial flux motor thermal management system for an all-electric aircraft

Research Fellow (2019-2020)

Power Electronics and Machine Control (PEMC) Group
University of Nottingham, UK
Laboratory: Aerospace Technology Building (ATC)
Project 1: Development of novel turbofan cycles by integration of Electric Power Transfer (EPT)
Project 2: Development of a test rig for high-performance electric power generation for aerospace applications
Project 3: Development of 0-D multi-spool engine simulation tool

Doctoral Research (2015-2019)

Power Electronics and Machine Control (PEMC) Group
University of Nottingham, UK
Laboratory: Aerospace Technology Building
Project 1: Development of a nonlinear engine model for the more electric engine studies
Project 2: Investigation of the impact of Electric Power Transfer (EPT) on the engine performance

Project 3: Development of an engine emulator with hardware-in-the-loop (HIL) technique to study the impact of power offtake on engine performance

Project 4: Supervision of lubrication, pneumatic and vibration systems for high-speed electrical machines testing

Industrial Research (2011-2015)

Department of Turbine Engineering
MAPNA Turbine Engineering and Manufacturing Company (TUGA), Iran
Laboratory: Turbine Design and Test Lab

Project 1: Development of a performance model for gas turbines at off-design condition

Project 2: 9-MW Steam turbine mechanical design (blades and casings)

Project 3: Defining test procedure for parameter identification of 6 steam and gas turbine plants including GE and V94.2 units

V. HONORS AND AWARDS

- **Clean Sky Best PhD Award 2020**
- Received full scholarship from University of Nottingham
- Being a member of Iran's National Elites Foundation
- Ranked 12 in Mechanical Engineering Olympiad in Iran (2009).
- Ranked 127 among more than 500000 national undergraduate applicants in 2005
- Received full scholarship from Sharif University of Technology
- Received full scholarship from Amirkabir University of Technology
- Being a member of elite student in Amirkabir university of technology

VI. SUPERVISORY EXPERIENCE

Supervisor on PhD Project (2021-present)

- Towards Net Zero - Electrification Strategies for Advanced Turbofan Engines

Cranfield University, UK

Supervisor on MSc Projects (2020-2022)

- Thermal management system design tool for 50 PAX aircraft, Cranfield University, UK
- Evaluation of electrification on turbomachinery design of a twin spool turbofan, Cranfield University, UK
- Initial sizing and configuration development of a hybrid electric turboprop, Cranfield University, UK
- Thermal management system for hydrogen fuel cell aircraft propulsion application, Cranfield University, UK
- Aero-thermal modelling and analysis of the GT-26 industrial gas turbine, Cranfield University, UK
- Preliminary analysis on the impact of electric power transfer on jet engine sub-idle performance, University of Nottingham, UK
- Development of advanced integrated power centre for the More Electric Aircraft Application, University of Nottingham, UK

VII.PROFESSIONAL SERVICE AND ACTIVITIES

Research Grant Proposal (Contributed)

- Clean Sky-funded project: IGNITE: On-ground, high-power high-speed testing system for electric aircraft, University of Nottingham, UK
- Horizon Europe: FASTRAC: Fuel-cell and stylised thermal engine reciprocity through architectural coupling, Cranfield University

VIII. SKILLS

SOLIDWORKS, PTC Creo, CATIA, ABAQUS, EES, ANSYS
CFD, Matlab, Simulink, Simpower, Hydraulic and Pneumatic system design