

## Victor M. Mwangera

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### Personal Statement

I have a Doctorate in engineering and currently hold the positions of National Chairman of the Kenya Youth Enterprise Development Fund and Head of Mechanical Engineering at Kenyatta university.

I have extensive experience in leadership, problem solving, governance, research, collaboration and project management; I have initiated and managed programs to empower young people and had the opportunity to lead diverse teams, develop and streamline management processes, managed complex tasks that involved multiple stakeholders with varying interests and managed departmental budgets.

I am also a published researcher in various international journals, facilitator and speaker in various global and national conferences

### Education and Training

**University of Bristol, UK** 2014  
PhD in Aerospace Engineering

**University of Bristol, UK** 2009  
MEng(Hons) in Aerospace Engineering - 2.1. Key modules include:

- Computational aerodynamics: involved the understanding of the mathematical and physical properties underlining fluid flow in order to develop valid and accurate models using C++
- Advanced techniques in Multi-Disciplinary design: examination of the use of numerical search and optimisation tools to produce optimised designs
- Industrial project: third year research project with Rolls-Royce investigating the feasibility of using heat exchangers on small gas turbines
- Design project: Team leader for a group-based design of a large rotary-wing transport aircraft in conjunction with AgustaWestland

**Hillcrest Secondary School, Nairobi, Kenya** 2005  
A-levels in Mathematics (A), Physics (A), Chemistry (A), Business Studies (B)

### Institutional & Board Memberships

- I am the Chairperson of the board of directors of the Youth Enterprise Development Fund; a State Corporation formed under the government of Kenya that targets at providing economic empowerment to the youth of Kenya through the provision of low cost loans and otherwise unattainable resources.
- I am an editorial board member of a US published journal entitled *The International Journal of Aeronautical Science and Aerospace Research*; the position requires regular self-publication along with assessment of research and work of candidates wishing to publicise their work.
- I am also a member of the Royal Aeronautical Society (RAEs) & American Institute of Aeronautics & Astronautics (AIAA); two of the top Aerospace Engineering associations in the UK & USA respectively. I have published several papers and journals through AIAA and I am working with the RAEs to gain chartered accreditation from the Royal Academy of Engineering; a globally recognised and respected accreditation body.
- I am a graduate member of the Engineers Board of Kenya (EBK) & the Institute of Engineers Kenya (IEK); Kenya's engineering bodies for registration & engineer development respectively. I have worked with the EBK in my capacity as Aerospace programme coordinator to gain programme accreditation and maintained an active

presence by attending IEK organised conferences and working with the institution to provide opportunities and mentorship where possible.

## Employment Experience

### ***Kenyatta University: Department of Mechanical Engineering***

*July 2016 - Present*

#### Main responsibilities

- Chairperson of the Department of Mechanical Engineering
- Aerospace Engineering Programme development lead; organisation and development of the new Aerospace Engineering department within Kenyatta University. This includes development syllabus for the new department, organisation for application of accreditation with the Engineer's Board of Kenya (EBK), recruitment of lecturers & support staff and aerospace research development.
- Champion of the department for the Chandarana institute, which analyses research project & proposals and provides funding & research knowledge and experience.
- Mediator and liaison between the university and the industry in order to improve the university's agenda and help the students to grow in the field and develop a pre-career relationship, which involves curriculum development and programme enhancement.
- Department representative within the aerospace university's aerospace engineer's student union; helping to build relationships between the students and the institution
- Organisation of departmental seminars & workshops for students and staff
- Teaching and assessment of lectures, labs, coursework and examinations.
- Organisation of departmental documents for accreditation process.

#### Key achievements

- Establishment & growth of partnerships between the department and industry for various programmes within the department
- Implementation of quality management processes & procedures in compliance with University's ISO 9001:2015 certification
- Application for and maintenance of accreditation of the department's programmes by the Engineers Board of Kenya.
- Day to day management of the operations of the department including finance, staff recruitment & welfare, research funding and management of department procurement processes.

### ***Centum Investments: Investment Analyst***

*Feb - June 2016*

#### Main responsibilities

- Analysis of potential investments and their suitability to company goals & objectives
- Review, research and development of greenfield sectors within Centum
- Involved in the development of the strategy of land purchase and development of crops in Uganda; this led to Centum's farm in Uganda.
- Developed a culture of research and analysis within the finance organisation, in line with Centum's aims and goals, developed towards the agricultural business and increased efficiency.
- Developed an maintained contact with players in various sectors to keep abreast with information useful to the development of investment plans.

#### Key achievements

- Participated in the Centum Foundation mentor ship initiative: in the initial stage with kitchensoko, a very encouraging business in the agricultural sector
- Attended capital allowance training & used information in the development of fixed asset schedule for the Greenblade business

- Identified a strong player in the aquaculture industry & liaised with them to gather information and insight to further Centums investment case. This included preparing pitches and briefs for external meetings with consultants

**University of Bristol: Research Collaborator**

July 2014 - Present

Main responsibilities

- Research and creation of publications in collaboration with the University of Bristol.
- Develop collaborative efforts between myself and the University on research projects.

Key achievements

- Continued publications in recognised international journals & attendance of conferences.
- International research collaboration between myself and University of Bristol staff that continues to examine possibilities in engineering.

**University of Bristol: Teaching support assistant**

Jan 2010 - July 2012

Main responsibilities

- Supervision of undergraduate labs; monitoring and assisting undergraduates with queries and helping relate the experiments to the theory
- Assessment of undergraduate work and providing relevant feedback
- Exam invigilation

Key Achievements

- I developed curriculum for lab sessions in order to train students and demonstrate knowledge they had already learned theoretically.
- I worked with the university in examination processing and procedures.

**Rolls-Royce PLC: Engineer**

June 2007 - August 2008

Main responsibilities

- One of 4 students selected for a partnered research project with Rolls-Royce to assess the feasibility of recuperated gas turbines with a power rating of less than 300 kW to compete with reciprocating engines
- Worked in the Reliability and Services department and was involved with inter-departmental communication, data acquisition and analysis
- Worked in 'Shadow Works' the company's research division, designing and amending components according to problems generated in design and manufacture

Key Achievements

- Developed test procedures and operational guidelines in manufacture and testing using new equipment
- Tested and implemented a safety and reliability model to be used within the company to schedule maintenance of the product.

## Publications

- Mwangera, V. M., Patel, N. N., Shaw, A. D. and Steele, O. B. A Study Into Small Recuperated Gas Turbines for Aviation Applications. *Masters Thesis, University of Bristol* **2008**
- Mwangera, V. M. and Lowenberg, M. H. Non-linear flight dynamics analysis of flapping wing Micro Air Vehicles. *Proceedings of International Conference on Non-linear Problems in Aviation and Aerospace (ICNPAA)* **2010**
- Mwangera, V. M. and Lowenberg, M. H. Modelling of the Dynamics of a flapping wing Micro Air vehicle for Stability Analysis. *Mathematics in Engineering, Science and Aerospace (MESA) Journal* **2012**
- Mwangera, V. M. and Lowenberg, M. H. Bifurcation behaviour of a flapping wing MAV in longitudinal flight. *AIAA Atmospheric Flight Mechanics Conference* **2012**

- Mwongera, V. M. Stability Analysis of a Flapping Wing MAV in Hover and Forward Flight using Bifurcation Analysis and Continuation Methods. *PhD Thesis, University of Bristol* **2014**
- Mwongera, V. M. A Review of Flapping Wing MAV Modelling. *International Journal of Aeronautical Science and Aerospace Research* **2015**
- Mwongera, V. M. and Lowenberg, M. H. Design and Operational Parameter Effects on Longitudinal Stability of Flapping Wing Flight. *In the process of publishing*

## References

References are available upon request.