Dr. David Wafula Wekesa
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## *CURRENT AFFILIATION*

- *Senior Lecturer and Researcher, Department of Physics, Multimedia University of Kenya*
- *Certified Energy Auditor (Class A)–Energy and Petroleum Regulatory Authority (EPRA)*
- *Postgraduate External Examiner–Institute of Energy & Environmental Technology, JKUAT, Kenya*
- *Postgraduate External Examiner–Department of Physics, University of Nairobi (UoN), Kenya*
- *Adjunct Lecturer–Department of Physics, University of Embu (UoE), Kenya*

## *PERSONAL EXPERTISE AND EXPERIENCE*

- Senior Lecturer Renewable Energy: Energy Auditing; Wind Energy; Solar PV Systems; Bioenergy
- Director Renewable Energy Research Consortium (RERC): Renewable Energy Trainings, Research & Consultancy
- Postgraduate Supervision: Applied Physics & Energy Technology: Energy Modeling & Renewable Energy Systems
- Researcher and Project Development: National Research Fund (NRF) project on Hybrid Wind-Solar PV Systems
- Energy System Policy Development and Formulation: Chairman Energy Management Committee, MMU
- Journal Articles Reviewer: Elsevier; Springer; IEEE; African Academy of Sciences (AESA); JAGST; KIPPRA
- Director & Lead Energy Auditor: Greenmount Energy Consultancy Ltd, Nairobi - (EPRA/EAF/00058)

## *EDUCATION*

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| Certified Energy Manager (CEM®) | Association of Energy Engineers (AEE), USA | Awarded in 30th March, 2021 |
| Certified Energy Auditor (Kenya) | Energy & Petroleum Regulatory Authority (EPRA), Kenya | Awarded 11th July, 2017 |
| Doctor of Philosophy **(Ph.D.)** in Renewable Energy | Harbin Institute of Technology (HIT), Harbin City, PRC | Awarded in 16thApril, 2016 |
| Masters of Science **(MSc.)** in Physics (Renewable Energy and Environment) | Jomo Kenyatta University of Agriculture & Technology (JKUAT) | Awarded in 30th November, 2012 |
| Bachelor of Science Education (Physics Major) | Masinde Muliro University of Technology & Science (MMUST) | Awarded in 30th November, 2009 [2nd Class Honors Upper Division] |

## *PROFESSIONAL SHORT COURSES TRAINING/WORKSHOP*

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|---|---|
| • German Training Week (GTW) – Energy Efficiency, Park Inn by Radisson, • Nairobi, Kenya | 3rd–7th October, 2022 |
| • Level 3 Solar PV Training: Planning, Construction and Operation of • battery-buffered PV Systems, MMU-RERC, Nairobi, Kenya. | 15th – 19th August, 2022 |
| • Workshop on Implementation of Guidelines for Education for Sustainable Development (ESD) and Global Citizenship Education (GCED) in | 10th – 12th May, 2022 |

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| Universities, Juja, Kenya | |
| • Climate Compatible Growth (CCG) Annual Workshop 2022, Lake Naivasha Resort Conference Centre, Naivasha, Kenya. | 14th – 15th March, 2022 |
| • Level 2 Solar PV Training: Planning, Construction and Operation of battery-buffered PV Systems, Wildpoldsried, Germany. | 25th Feb – 12th March, 2022 |
| • Energy and Petroleum Regulatory Authority 2021 Energy and Petroleum Statistics Ministerial Briefing, Sarova Stanley Hotel, Nairobi, Kenya | 24th Feb, 2022 |
| • Training on the success in operations of Energy Service Companies (ESCOs) and benefits to Industry, Nairobi, Kenya | 17th Feb, 2022 |
| • Validation Workshop for Assessment of Skills and Knowledge Gap in Energy Efficiency Professionals in Kenya – Movenpick Hotel, Nairobi, Kenya | 20th – 21st Dec, 2021 |
| • Kenya 2050 Energy Calculator for Business, Energy, and Industrial Strategy (BEIS), Strathmore University, Nairobi | 16th Nov, 2021 |
| • The 6th Alexander Von Humboldt Fellows Conference, Kirinyaga University, Kirinyaga, Kenya | 19th – 21th Oct, 2021 |
| • Ecologically and Socially Sustainable Energy Production Online Seminar, Bavaria, Germany | 27th – 30th Sept, 2021 |
| • Kenya Off-grid Solar Access Project (KOSAP) T1/T2 Solar PV Training, Multimedia University of Kenya, Nairobi, Kenya | 13th – 24th Sept, 2021 |
| • ToT-Training (as a Master Trainer) on Renewable Energy Technology - Construction of a Modular PV Training System, Multimedia University of Kenya, Renewable Energy Research Consortium, Nairobi, Kenya | 15th – 26th March, 2021 |
| • Photovoltaic Measurement Laboratory I by VET4Africa Senior Master Trainers (GIZ/BBW Germany program). | 13th Feb – 6th March, 2021 |
| • Solar PV (T1/T2) Training (as a Trainer), Multimedia University of Kenya, Renewable Energy Research Consortium, Nairobi, Kenya | 18th – 22nd Jan, 2021 |
| • Solar PV Grid Tie (T3) Training (as a trainer), Multimedia University of Kenya, Renewable Energy Research Consortium, Nairobi, Kenya | 14th – 18th Dec, 2020 |
| • Online Bridge Course for Master Trainers on Solar PV Training System by VET4Africa Senior Master Trainers (GIZ/BBW Germany program) | 12th – 13th Dec, 2020 |
| • Solar PV (T1/T2) Training (as a Trainer), Multimedia University of Kenya, Renewable Energy Research Consortium, Nairobi, Kenya | 31st Nov – 4th Dec, 2020 |
| • The 2nd Strathmore University Research and Innovation Conference on Clean Energy with a presentation entitled '*Investigating the influence of geomagnetic on fill factor on the performance of pc-Silicon photovoltaic solar cells*' Strathmore University, Nairobi, Kenya | 2nd – 6th Nov, 2020 |
| • The 19th MRSK/CTheP Materials Science Webinar Series with a presentation entitled '*Geomagnetic Field Effect on Silicon Solar Cell Conversion Efficiency*' | 22nd July, 2020 |
| • The 6th Global Off-Grid Solar Forum and Expo organized by GOGLA and World Bank Group from 18th-20th February 2020 at Safari Park Hotel, Nairobi, Kenya | July 18th – 20th Feb, 2020 |
| • The 2nd Research and Innovation Symposium on Clean Energy with a presentation entitled '*Simultaneous Wind and Solar Energy-harvesting Flags for Portable Applications*' at Strathmore University, Nairobi, Kenya | 4th – 8th Nov, 2019 |

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| • Water-Energy-Food Nexus Project Inception, Co-design and Co-production workshop sponsored by Swedish International Development Cooperation Agency (SIDA), Kampala, Uganda | 11th – 12th Sept, 2019 |
| • Water-Energy-Food Nexus Project Inception, Co-design and Co-production workshop sponsored by Swedish International Development Cooperation Agency (SIDA), Accra, Ghana | 15th – 31st July, 2019 |
| • Solar PV (T3) Grid Tie Training (as a Trainer), Machakos University Centre for Renewable Energy, Machakos, Kenya | 24th – 28th June, 2019 |
| • Solar PV (T3) Grid Tie Training (as a Trainer), Machakos University Centre for Renewable Energy, Machakos, Kenya | 14th – 18th April, 2019 |
| • The 2nd Annual International Machakos Conference on at Machakos University, Machakos, Kenya. | 24th – 26th April, 2019 |
| • Solar PV (T3) Grid Tie Training, Strathmore University Energy Research Centre, Nairobi, Kenya | 10th – 15th Dec, 2018 |
| • Training of the Trainers Wind/Solar PV-Installers & Hybrid Systems course Sponsored by the USAID, Institute of Energy Studies and Research (IESR), Nairobi, Kenya | 19th – 30th Nov, 2018 |
| • DAAD International Conference on Science, Technology, and Innovation for Sustainable Development in Dryland Environments, Umma University, Kajiado, Kenya | 21st –23rd Nov, 2018 |
| • Resource Mobilization and Grant Writing Course organized by the Training Centre in Communication Africa, Nairobi, Kenya | 17th – 19th Oct, 2018 |
| • Joint MSSEESA and DAAD International Conference Materials Science Research for Sustainable Energy, University of Nairobi, Kenya. | 26th – 27th Sept, 2018 |
| • Transdisciplinary Research Training (Training of Trainers) Workshop sponsored by International Science Council, Abidjan, Ivory Coast | 1st – 8th Sept, 2018 |
| • Training of Trainers Solar PV-Installers (Level I) course sponsored by the Federal Ministry of Economic Cooperation and Development, Wildpoldsried, Bavaria, Germany | 24th June – 7th July, 2018 |
| • The 5th Alexander Von Humboldt Fellows Conference, Sportsman Arm's Hotel, Nanyuki, Kenya | 19th – 21st June, 2018 |
| • Workshop on Grant Proposal Writing organized by Division of Research Innovation and Linkages, Machakos University, Machakos, Kenya | 26th April, 2018 |
| • The 1st Annual International Machakos Conference on Tuesday at Machakos University, Machakos, Kenya | 22nd – 24th April, 2018 |
| • Workshop by German Academic Exchange Service (DAAD) organized by Division of Research Innovation and Linkages, Machakos University, Machakos, Kenya | 26th April, 2017 |
| • Research, Innovation and Technology Workshop organized by Machakos University, Machakos University, Kenya | 15th – 16th Sept, 2016 |
| • The 4th International Symposium on Fundamental and Applied Sciences, Kyoto, Japan | 29th – 31st March, 2016 |
| • The 15th International Workshop on Research and Education in Mechatronics, El Gouna, Red Sea, Egypt. | 9th – 11th Sept, 2014 |
| • The 5th International Conference on Energy, Environment & Materials Engineering, Shenzhen, P.R. C. | 22nd – 23rd Feb, 2014 |
| • Mechanical Engineering Conference on Sustainable research and Innovation | 26th –24th April, 2013 |

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| conference, JKUAT, Juja, Kenya | |
| • Eskom Expo for Young Scientist workshop, Intel Educator Academy in Johannesburg, South Africa | 4th – 6th Oct, 2012 |
| • Research Proposal Writing Training Workshop organized by Kenya DAAD Scholars Association, JKUAT, Juja, Kenya | 25th –27thJuly, 2012 |
| • Faculty of Science 6th annual scientific conference, JKUAT, Juja, Kenya | 3rd July, 2011 |
| • Faculty of Science 5th annual scientific conference, JKUAT, Juja, Kenya | 22nd June, 2010 |

| ***TEACHING EXPERIENCE*** | |
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| **Senior Lecturer, Multimedia University of Kenya (MMU) October 2019 – Present** | |
| Courses taught: | • Renewable Energy Technology<br>• Fundamentals of Solar Photovoltaics<br>• Solar Radiation<br>• Solar Thermal Technology<br>• Wind Energy Technology<br>• Bioenergy Technology<br>• Solar PV Systems<br>• Research Methodology |
| Curriculum Development | Spearheaded the development of the following syllabi at the Faculty of Science and Technology:<br>• Bachelor of Science in Renewable Energy and Technology<br>• Master of Science in Renewable Energy and Technology |
| **Lecturer, Machakos University (MksU) – September 2016 to October 2019** | |
| Courses Taught | • Renewable Energy Technology<br>• Fundamentals of Solar Photovoltaics<br>• Solar Radiation<br>• Solar Thermal Technology<br>• Wind Energy Technology<br>• Bioenergy Technology<br>• Solar PV Systems<br>• Research Methodology |
| Other Responsibilities | • Founding Director Centre for Renewable Energy (2018-2019)<br>• Chairman Department of Physical Sciences (2017-2018)<br>• Department of Physical Sciences Examination Officer/Coordinator (2016) |
| **Research Assistant–School of Energy Science & Engineering, Harbin Institute of Technology – 2013 to 2016** | |
| Research Assistant | • Renewable Energy Laboratory – ANSYS; HOMER; OSeMOSYS; SAM; FLEXTOOL; MATLAB<br>• Energy Modeling Research and Teaching: Supervisor/Advisor Prof. Alan Wang |
| **Teaching Assistant– Department of Physics, JKUAT, Kenya – 2010 to 2013** | |
| Teaching Assistant | • Administration of practicals and invigilation of continuous assessment tests for undergraduate students |

| ***ADMINISTRATION / COMMITTEES/PROFESSIONAL AFILIATIONS*** | |
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| **Chairman Department of Physics, Multimedia University of Kenya (MMU)** | May 2021–to date |
| Achievements | • Coordination of academic activities at the Department of Physics.<br>• Ensuring proper and acceptable standards of teaching and research are maintained at the Department of Physics.<br>• Ensuring proper and acceptable standards of teaching and research |

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| | are maintained at the Department of Physics.<br>• Chairperson of Departmental Board meetings and responsible for allocation of duties.<br>• Preparation of the annual work plan, budget, procurement plan, performance contracts, staff appraisal reports and annual reports on work and research of the Department.<br>• Establishment and development of undergraduate and postgraduate programmed relevant to the mandate of the University. |
| **Director MMU-Renewable Energy Research Consortium (MMU-RERC)** | October 2019–to date |
| Achievements | • MoU between MMU and Strathmore University in Collaboration with Supergen Energy Network in UK.<br>• MoU between MMU and VET4Africa (Germany) to undertake ToT-Trainings on Renewable Energy Technology.<br>• Coordinating Trainings of Professional short courses in Renewable Energy.<br>• Conducting research as both contract research and academic research projects.<br>• Installation of a 10 kW Solar PV Plant for Learning and Training at Research and Innovation Building.<br>• Specialist Energy Audit Consultancy, e.g. feasibility studies, general and investment grade energy audits. |
| **Chairman Energy Management Committee, Multimedia University of Kenya (MMU)** | Feb. 2022 – to date |
| Achievements | • Setting up framework for documentation of energy audits and implementation renewable energy projects.<br>• Coordination of development of an energy management policy to guide implementation of ECMs.<br>• Evaluation of energy management status against compliance requirements.<br>• Establishment of the progress of the energy audit or implementation report.<br>• Development of the activity planning toward achievement of the compliance certificate.<br>• Energy monitoring and data collection: Manual and automated options. |
| **Committee member, Kenya Off-grid Solar Access Project (KOSAP)** | Jan. 2020 – to date |
| Achievements | • Conducted Solar PV T1/T2 Trainings in MMU targeting technicians from 24 counties.<br>• Implementing Regional and National Capacity Building in Solar PV Technology. |
| **Acting Director Academic Quality Assurance (DAQA)** | Jan. – Feb. 2022<br>June –July 2022 |
| **Other Professional Affiliations** | |
| • Association of Energy Engineers (AEE) – Membership ID No. 147338 | *2021 – to date* |
| • Member Certified Energy Auditors (Kenya) – Membership No. EPRA/EA/000116 | *2017 – to date* |
| • Member Association of Energy Professionals Eastern Africa – Membership No. A229 | *2016 – to date* |
| • Member Kenya Renewable Energy Association (KEREA)- Corporate full Member | *2015 – to date* |
| • Member Kenyan Academy of Sciences | *2014 – to date* |

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| • Member African Astronomical Society (AfAS): Instrumentation (INS)-ID No. AfS50319 | *2013 – to date* |

| **Scientific Review & Appraisal Committees** |
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| • Reviewer Elsevier and Springer Scientific publishers: Energy, Renewable Energy, Solar Energy and Journal of Wind Engineering & Industrial Aerodynamics.<br>• Editor/reviewer: Journal of Agriculture Science and Technology (JAGST).<br>• Working Paper reviewer and discussant: Kenya Institute for Public Policy Research and Analysis (KIPPRA). |

| ***RESEARCH EXPERIENCE AND GRANTS ADMINISTRATION*** | |
|---|---|
| • **2021:** 10 kW Flexible Solar PV Plant for Training and Research | The GIZ and MMU funded project-VET4Africa (Germany) Program: Kshs. 4,485, 000.00 |
| • **2019:** Enhancing Sustainability and Resilience of African Cities through a Water-Energy-Food Nexus (WEF) Approach | International Science Council Research Fund: Euros 90,000. |
| • **2018:** Development of Hybrid Renewable Energy Digesters in Machakos County | Machakos University (MksU) Research Fund: Kshs. 450,000. |
| • **2017:** Development of Small Wind-Solar Hybrid System for Electrification of Rural Households in Kenya | National Research Fund (NRF) grant for the year 2016/2017 (Multidisciplinary Research Grant No. NRF/1/MMC/450 of Kshs.18, 475,000) |
| • **2013:** Doctorate Research Fellowship | Harbin Institute of Technology (HIT), Harbin, PRC. |
| • **2012:** Microcontroller-based Data Logging Instrumentation System for Wind Speed and Direction Measurements | National Council for Science and Technology, Kenya: MSc. Research Grant: Kshs. 200,000. |

| ***RESEARCH STUDENT SUPERVISION*** | |
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| MSc. 2019 | Mwanzia Nzioka Justus, MSc. (Physics, JKUAT), "Wind potential assessment for a small-scale wind turbine at Kiseveni in Kitui County, Kenya." [**Graduated]** |
| MSc. 2020 | Lodenyi Lwanga Kelvin, MSc. (Physics, JKUAT) "Experimental Investigation into the Influence of Turbulence on the Performance of a Small-Scale Vertical Axis Wind Turbine in a Wind Tunnel Environment." [**Graduated]** |
| MSc. 2020 | Nzioka Mulei David, MSc. (Energy Technology, JKUAT) "Energy Efficiency, Adequacy of Ventilation and Sustainability Testing of Selected Green and non-green Buildings in Learning Institutions in Nairobi County." **[Graduated]** |
| Ph.D. 2021 | Josephat Machoka Bundi, Ph.D. (Physics, HIT) Title "Pitch Control of Small H-Type Darrieus Vertical Axis Wind Turbines using Advanced Gain Scheduling Techniques." **[Graduated]** |
| MSc. 2022 | Odhiambo Otieno Barrack, MSc. (Energy Technology, JKUAT) "Performance Assessment and Economic Viability of Standalone Photovoltaic Systems for Rural Households in Machakos County." [**Graduated]** |
| Ph.D. 2023 | Muchiri Kennedy, Ph.D. (Physics, JKUAT) 'A small-scale Wind-Solar Embedded Hybrid System for Power Electrification in Machakos County." [**To Graduate 2023]** |
| Ph.D. 2023 | Martin Ndeto, PhD. (Energy Technology, JKUAT) "Multifaceted Analysis of the Performance of Silicon Mono-crystalline, Amorphous and Thin Films Solar Cells Under the Influence of Static Magnetic Field." [**To Graduate 2023]** |

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| Ongoing | Nkooyio Veronica Terenoi, MSc. (Renewable Energy and Technology, MMU) "Evaluation of young coconut husk for industrial scale bioethanol production." |
| Ongoing | Benjamin Elmard Ogweno, MSc. (Renewable Energy and Technology, MMU) "A Predictive Numerical Model for Performance Analysis of Off-grid Solar PV systems." |
| Ongoing | Lydiah Kagure Muriuki, MSc. (Renewable Energy and Technology, MMU) "Modeling, Simulation and Techno-economic Evaluation of a Micro-grid System Based on Gasification of Municipal Solid Waste." |
| ***EXTERNAL THESIS EXAMINATION*** | |
| PhD. | Study of Solar Photovoltaic and Thermoelectric Generator Hybrid Power Systems for Energy Production in the Kenyan Lakeside **(Graduated 2021)–**By Gideon Guyo Kidegho, Jomo Kenyatta University of Agriculture and Technology (JKUAT). PhD. (Energy Technology) thesis. |
| PhD. | Life cycle analysis of bioethanol production from sugarcane molasses and sweet sorghum stalk juice in Kenya **(Graduated 2021)**–By Joseph Mbothu Machandi, Jomo Kenyatta University of Agriculture and Technology (JKUAT). Ph.D. (Energy Technology) thesis. |
| PhD. | Modeling, simulation and optimization of internal heat recovery using process integration technique of pinch analysis **(Graduated 2021)**–By Fenwicks Shombe Musonye, Jomo Kenyatta University of Agriculture and Technology (JKUAT). Ph.D. (Energy Technology) thesis. |
| MSc. | Underwater solar photovoltaic (PV) system performance analysis and modeling **(Graduated 2021)**–By Yobes Munala Oganga, University of Nairobi (UoN). M.Sc. (Physics) thesis. |
| MSc. | Analysis of endocrine disrupting pesticides in river Mbagathi, Machakos County using sold phase extraction and liquid chromatography tandem mass spectrometry **(Graduated 2020)**–By George Owour Okonji, Multimedia University of Kenya (MMU). M.Sc. (Analytical Chemistry) thesis. |
| MSc. | Determination and human health risk assessment of antibiotics residues in poultry m eat in Nairobi city **(Graduated 2020)**–By Fredrick Omondi Odundo, Multimedia University of Kenya (MMU). M.Sc. (Analytical Chemistry) thesis. |
| MSc. | On the existence and uniqueness of the solution of one-dimensional coupled system of Burgers' equation using energy method **(Graduated 2020)**–By Rochna Chako, Multimedia University of Kenya (MMU). M.Sc. (Applied Mathematics) thesis. |
| MSc. | Factors affecting sustainability of Mini-grid energy in Kenyan areas: A case study of Kisii County **(Graduated 2020)**–By Odhiambo Ponde George, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| MSc. | Technical-economic evaluation and modelling of a small wind turbine system in Kenya **(Graduated 2020)**–By Hannah Wanjiru Muroki, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| MSc. | Performance evaluation of off-grid power supply for rural electrification in Kenya **(Graduated 2019)**–By Isaac Nzue Kiva, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| MSc. | Evaluation of technical and economic performance of a commercial scale solar PV system in a Kenyan agro-industry **(Graduated 2019)**–By Jackson Bukachi Ongeri, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| MSc. | Evaluating the Performance of Solar Water Heaters in Nairobi County, Kenya **(Graduated 2019)**–By Serem Gilbert Kiplimo, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| MSc. | Development of Optimization Strategies for a Wind-Solar Hybrid System: A Case Study of S.t Francis Girls Secondary School in Naivasha, Kenya **(Graduated 2019)**–By Laban Thimo Kamau, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| MSc. | Hybrid Power Systems Optimization for Commercial Application in Kenya: A Case Study of East African School of Aviation **(Graduated 2019)**–By Leonard Kipyegon Rotich, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| MSc. | Effect of Static Magnetic effect on Power Output in Silicon Poly Crystalline Solar cells **(Graduated 2018)**–By Martin Ndeto Paul, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |

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| MSc. | Assessment of Ngong Wind Farm Performance in Kenya **(Graduated 2018)**–By John Keru Mwangi, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| MSc. | Design of PV Solar Energy system for Wajir town, Wajir county, Kenya **(Graduated 2018)**–By Mohamed Diyad Elmi, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| MSc. | Design, fabrication and testing of a Savonius wind turbine rotor blade for low wind speed applications **(Graduated 2017)**–By Kasera Alice Achieng, Jomo Kenyatta University of Agriculture and Technology (JKUAT). M.Sc. (Energy Technology) thesis. |
| ***PUBLICATIONS*** | |
| Books | **Baum C. and Wekesa D.W. (Author)** Title: '*Basics in Solar Photovoltaics,* Publisher: DBTA, **2019.** ISBN: 978-9966-1972-0-7 |
| | **Wekesa D. W. (Author)** Title: **'***New Advances in Wind Energy Technologies, (1st Ed.),* Publisher: *Academic Press,* **2012.** ISBN: *978-620-0-10048-1* |
| 2022 | Ndeto M.P., **Wekesa D.W.**, Kinyua R., Njoka F. Correlating dust deposits with wind speeds and relative humidity to overall performance of crystalline silicon solar cells: An experimental study of Machakos County, Kenya. Renewable Energy, Vol. 246, 2022 (Elsevier). |
| 2022 | Muchiri K., Kamau J.N., **Wekesa D.W.** Design and Optimization of a Wind Turbine for Rural Household Electrification in Machakos, Kenya. Journal of Renewable Energy. Vol. 10, No. 2022, 2022, Pages 101-109 (Hindawi). |
| 2022 | D. Mulei, P. Njogu, **D. Wekesa**. Air Change Rate Variation and Indoor Air Quality in Green Buildings Using Metabolic Carbon Dioxide as the Tracer Gas, Proceedings of the Sustainable Research and Innovation Conference, 2022, Pages 61-67. |
| 2021 | Muchiri K., Kamau J.N., **Wekesa D.W.** Energy Demand and Its Implication on Wind/PV System Sizing in Machakos, Kenya. International Journal of Sustainable and Green Energy. Vol. 10, No. 3, 2021, Pages 92-98 (IJSGE). |
| 2020 | **Wekesa D.W.** and Saoke C.O. An experimental investigation into performance characteristics of H-shaped and Savonius-type VAWT rotors. Scientific African, Vol. 10, 2020, Pages 1-11 (Elsevier). |
| | Ndeto M.P., **Wekesa D.W.**, Kinyua R. Investigation into the Effects of the Earth's Magnetic Field on the Conversion Efficiency of Solar Cells. Renewable Energy, Vol. 159, 2020 (Elsevier). |
| | Bundi J.M., Ban X., **Wekesa D.W.** Pitch Control of Small H-Type Darrieus Vertical Axis Wind Turbines using Advanced Gain Scheduling Techniques. Renewable Energy, Vol. 157, 2020 (Elsevier). |
| | Bundi J.M., Ban X., **Wekesa D.W.** Advanced Gain Scheduled Control of A DFIG based on a H-Darrieus Wind Turbine for Maximum Power Tracking and Frequency Support. Control Engineering & Applied Informatics Journal, Vol. 20, 2020 (Elsevier). |
| | Odhiambo O.B., **Wekesa D.W.**, Saoke C.O. Assessment of the Economic Viability of Standalone Photovoltaic Systems for Rural Households in Kathiani, Machakos County, Kenya. International Journal of Green Technology, Vol. 6, 2020, Pages 1-6 (IJGT) |
| | Lodenyi K., Kamau J.N., **Wekesa D.W.** Experimental Investigation into the Influence of Turbulence Intensity on Aerodynamic Performance of a Small-Scale Vertical Axis Wind Turbine, International Journal of Innovative Science and Research Technology, Vol. 4 (6), 2019 (IJISRT). |

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| 2019 | Mulei D.Z., Njogu P.M., **Wekesa D.W.** Post Occupancy Energy Efficiency and Indoor Environment Performance in Selected Commercial Buildings in Nairobi, Kenya. International Journal of Green Technology, Vol. 5, 2019, Pages 68-75 (IJGT). |
| | Mwanzia J., **Wekesa D.W.,** Kamau J.N. Analysis of Wind Resource Potential for Small-Scale Wind Turbine Performance in Kiseveni, Kenya. International Journal of High Energy Physics, Volume. 6 (1), 2019, Pages 17-29 (IJHEP). |
| | Binama M., Su W., **Wekesa D.W.** Investigation on reversible pump turbine flow structures and associated pressure field characteristics under different guide vane openings. Science China Technological Sciences, Vol. 62 (11), Pages 2052-2074 (Elsevier). |
| 2018 | Muchiri K., Mutuku J.N., **Wekesa D.W.** Digital to Analog TV decoder design and fabrication, Journal of Electronics and Communication Engineering, Vol. 13, 2018, Pages 23-31 (JECE). |
| 2017 | **Wekesa D.W.,** Wang C., Danao L.A. Analytical and numerical investigation of unsteady wind for enhanced energy capture within a fluctuating free-stream, Energy Vol. 121, 2017, Pages 122-132 (Elsevier). |
| | Zhang X., Wang C., **Wekesa D.W.** Numerical and Experimental Study of Pressure-wave Formation around an Under-water Ventilated Vehicle, European Journal of Mechanics B/Fluids Vol. 92, 2017 (Elsevier). |
| | **Wekesa D.W.,** Wang C., Zhu W. Experimental and numerical study of turbulence effect on aerodynamic performance of a small-scale vertical axis wind turbine. Journal of Wind Engineering and Industrial Aerodynamics Vol. 157, 2017, Pages 1-14 (Elsevier). |
| 2016 | **Wekesa D.W.,** Wang C., Wei Y. Empirical and computational analysis of small-scale wind turbine aerodynamic performance at a plateau terrain in Kenya. Renewable Energy, Vol. 90, 2016, Pages 377-385 (Elsevier). |
| 2015 | **Wekesa D.W.,** Wang C., Wei Y., Kamau J.N. A numerical analysis of unsteady inflow wind for site specific vertical axis wind turbine: A case study for Marsabit and Garissa in Kenya. Renewable Energy, Vol. 76, 2015, Pages 648-661 (Elsevier). |
| 2014 | **Wekesa D.W.,** Wang C., Danao L.A. Influence of operating conditions on unsteady wind Performance of vertical axis wind turbines operating within a fluctuating free-stream. Journal of Wind Engineering and Industrial Aerodynamics, Vol. 135, 2014, Pages 76-89 (Elsevier). |
| 2013 | **Wekesa D.W.,** Kamau J.N., Mutuku J.N. Calibrated data logging instrumentation system for wind speed and direction measurements. Basic Research Journal of Engineering Innovation. Vol. 1(3), 2013, Pages 53-57 (BRJEI). |
| 2012 | **Wekesa D.W.,** Mutuku J.N., Kamau J.N. Microcontroller-based data logging instrumentation system for wind speed and direction measurements. Journal of Agriculture Science and Technology, Volume. 14(1), 2012, Pages 176-189 (JAGST). |
| ***PRESENTATIONS/CONFERENCES*** | |
| Juja, Kenya | D. Mulei, P. Njogu, **D. Wekesa**. Air Change Rate Variation and Indoor Air Quality in Green Buildings Using Metabolic Carbon Dioxide as the Tracer Gas, Proceedings of the Sustainable Research and Innovation Conference, June 2022, Pages 61-67. |
| Juja, Kenya | K. Muchiri, J.N. Kamau, **D.W. Wekesa**. Development of a wind-solar hybrid system optimized for small-scale power generation in Machakos, Book of Abstracts of the Sustainable Research and Innovation Conference, 24$^{th}$ -25$^{th}$, March 2022, Pages 42-43. |
| Kirinyaga, Kenya | **D.W. Wekesa**. Thin Film Solar-Powered Flexible Pumping System for Irrigation Application, 6$^{th}$ Alexander Von Humboldt Fellows Conference, 19$^{th}$ -21$^{st}$ October 2021, Kirinyaga University, Kirinyaga, Kenya. |

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| Juja, Kenya | D. Mulei, P. Njogu, **D.W. Wekesa**. Air Change Rate Variation and Indoor Air Quality in Green Buildings using Metabolic Carbon Dioxide as the Tracer Gas, Proceedings of the Sustainable Research and Innovation Conference, March 2021, Pages 61-67. |
| Strathmore, Kenya | **D.W. Wekesa.** Investigating the influence of geomagnetic on fill factor on the performance of pc-Silicon photovoltaic solar cells, 2nd Strathmore University Research and Innovation Conference on Clean Energy, 2nd-6th November 2020, Strathmore University, Nairobi, Kenya. |
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***ADDITIONAL COMPETENCIES***

1. Certified Energy Auditor by Energy and Petroleum Regulatory Authority (EPRA/EA/000116)
2. Certified Energy Manager (CEM®) by Association of Energy Engineers (ID No. 97525)
3. Certified VET4Africa Solar PV Master Trainer (GIZ GmbH, Germany)
4. Trained T3 Grid-Tied Solar PV installer (Strathmore University)
5. Trained by IERC/USAID (Germany) on Solar PV (T3) and Hybrid Systems
6. Trained by IERC/USAID (Germany) on Wind and Hybrid Systems
7. Trained by BFZ GmbH (Germany) as a PV installer (License No. EU2009/28/EC)
8. Trained by Training Centre in Communication Africa on Grant & Resource Mobilization
9. Trained by DAAD on Research Proposal Writing
10. Proficiency with MATLAB and TeX/LaTeX
11. Trained by USAID on HIV, TB and Malaria Prevention
12. Trained Scout by the Kenya Scouts Association on Preliminary scouting skills
13. Trained by Gate-Tech Computer College, Nairobi, on Computer software and programming
14. Trained by Centre for Disaster Management and Humanitarian Assistance on Fire Modules
15. Trained by GIZ (Germany) on Energy Efficiency

| *REFEREES* | |
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