

Curriculum Vitae

Dr Eng. Hiram Muriithi Ndiritu

Email: hndiritu@eng.jkuat.ac.ke, Tel +254722 421672

Jomo Kenyatta University of Agriculture and Technology

Career Objective

To identify skills gaps and address the gaps by providing high quality training and research that follows standards and professional regulations in order to build competence among graduates to enable them carry out engineering practice that contribute to industrialization of Kenya and the region.

Personal Information

DATE OF BIRTH : 1971
NATIONAL ID. NO. : 11630051
NATIONALITY : Kenyan
ADDRESS : P.O. Box 62000, 00200 Nairobi, Kenya

CV Summary

- I am a Registered Professional Engineer of Engineers Board of Kenya (EBK) No. A2905 and Corporate Member of Institution of Engineers of Kenya (IEK) Membership No – M4007. I have mentored 4 engineers to full registration.
- I am an External Examiner for two public Universities; DeKUT and JOOUST
- I have steered accreditation of Marine Engineering and Mining Engineering programs by Engineers Board of Kenya (EBK) making JKUAT the only University in Kenya with such unique programs
- I have published more than 49 articles that include 16 Journal papers, 5 books and 18 conference papers.
- I am a Resource Person for curriculums quality assurance for Commission for University Education (CUE)
- I have undertaken over 10 projects funded by European Union, JICA, Canada's International Development Research Centre (IDRC) through NACOSTI, research division of JKUAT, among others worth over KShs 800 million.
- I have been a visiting Professor at Warsaw University of Technology, Poland and I am an Examiner of MSc and PhD student's thesis for local and international universities.
- Supervised 14 completed post graduate research and currently supervising 11 other post graduate students in Engineering as well as supervising undergraduate projects.
- I am a founder and inspiration to development of Journal of Sustainable Research in Engineering (JSRE).
- I initiated and inspired creation of two departments (Mining Department and Marine Department).
- I steered over 11 collaboration with local and international institutions that have brought benefits to JKUAT and participated in community based activities.
- I developed JKUAT Energy Policy and I am chairman of the JKUAT University Energy Advisory board
- I have developed and reviewed curriculums for undergraduate, post graduate and short courses

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1.0 Higher Education Training

- 2007-2011: **PhD. Mechanical Engineering** at Jomo Kenyatta University of Agriculture & Technology. Title of Thesis: *‘Control of Industrial Carbon Dioxide Emission by Wet Scrubbing’*.
- 2002-2006: **M.Sc. Mechanical Engineering** at Jomo Kenyatta University of Agriculture & Technology, Specialization: Advanced Thermodynamics and fluids Engineering consisting of course work and research. Research project title: *Cylindrical Fuel Droplets: Mesh generation and reactive flows modeling*
- 1993-1997: **B.Sc (Hons) Mechanical Engineering** at Jomo Kenyatta University of Agriculture & Technology

2.0 Professional Experience

2.1 Administrative Responsibilities

1. 2018-to date: **Ag. Principal, College of Engineering and Technology, JKUAT**

Responsibilities

- Day to day running of the College.
- Oversight of activities of the five (5) Deans running the five (5) Schools under the College.
- Implementation of University policies at College level through the Deans regarding curriculum, teaching, examination, planning and formulation of expenditures as well as students’ progress.
- Coordinating research within the College and initiating policies for academic development, appointing internal and external examiners.
- A member of the top management organ of JKUAT - University Management Board (UMB).

2. 2016-to 2018: **Dean, School of Mechanical, Manufacturing and Materials Engineering, JKUAT**

Responsibilities

- Day to day running of the School of Mechanical, Manufacturing and Materials Engineering.
- Implementation of senate policies at School level regarding curriculum, teaching, examination, planning and formulation of expenditures as well as students’ progress.
- Coordinating research within the School and initiating policies for academic development, organizing for appointment of internal and external examiners.
- A Chair of the School board and a member of College management board, a member of Committee of Deans and a member of Board of Post Graduate Studies.

3. 2012-2016: **Chairman of Department of Mechanical Engineering in JKUAT.**

Responsibilities

- Executive officer of the departmental board who was responsible for the day to day running of the department of Mechanical Engineering.

- These included among others coordination of teaching and research, evaluation and implementation of Quality and Environmental Management Systems (QMS and EMS) within the department.
- Serving within university committees such as: Past Chairman – University Crowd Management Graduation subcommittee,
- Past Chairman - Energy Policy Committee of JKUAT.

2.2 Training/Lecturing Responsibilities

2015 to Date:

Senior Lecturer in JKUAT Mechanical Engineering department teaching;

- **PhD Students:** Supervision of PhD students' research.
- **MSc Students:** I teach Advanced Thermodynamics, Combustion and Pollution Control, Advanced Heat and Mass Transfer, Thermal Power Plant Engineering and Modeling and Computation of Turbulent Flows, Combustion Systems Modeling and Design. I also supervise post graduate students research,
- **BSc Students:** I teach Fluid Mechanics, Thermodynamics, Heat transfer, Refrigeration and Air conditioning, Programming for Engineers, Computational Fluids Dynamics and Research Methodology and Proposal Writing.

2011–2015

Lecturer in JKUAT Mechanical Engineering teaching the following;

- **MSc Students:** I taught Advanced Thermodynamics, Combustion and Pollution Control, Advanced Heat and Mass Transfer, Thermal Power Plant Engineering and Modeling and Computation of Turbulent Flows. I also supervised post graduate students research.
- **BSc Students:** I teach Thermodynamics, Heat transfer, Refrigeration and Air conditioning, Programming for Engineers, Computational Fluids Dynamics and Research Methodology and Proposal Writing.

2006–2011

Assistant Lecturer in JKUAT Mechanical Engineering with the following responsibilities;

- **Teaching and examining students:** I have taught and examined fluid mechanics, thermodynamics, heat transfer, refrigeration and air conditioning, programming for engineers, advanced thermodynamics.
- **Course Coordinator:** I have been class advisor for BSc in Mechanical Engineering

2001 – 2006

Teaching assistant in JKUAT Mechanical Engineering I lectured and examined undergraduate students in thermodynamics.

1999 – 2001

Part time lecturer in JKUAT Mechanical Engineering I lectured and examined diploma students in the area of production technology and metrology

2.3 Coordination Responsibilities

1. 2016-to date: **Chairman – Energy Use Advisory Board of JKUAT:** Chairing the board that is charged with facilitating implementation of University Energy policy, lobbying for policies that enhance energy efficiency and conservation as well as oversight of activities of Energy Manager including training and sensitization on energy conservation.
2. 2011-2012 - **Chairman Conference Organizing Committee:** I have been the convener of the conference organizing committee. Responsibilities include sourcing for conference funding, coordinating external participants, liaising with local and international advisory board.
3. 2011 - **Chairman Effective Teaching Committee:** I have been the convener of the effective teaching committee in the department of Mechanical Engineering department charged with training new members of staff on effective delivery of lectures to students.
4. 2011 - **Examination Officer:** I was an examination officer in the department of Mechanical Engineering. I coordinated all the examinations offered in the department including those of BSc Mechanical program and Marine Engineering program as well as MSc Mechanical Engineering programs
5. 2011 - **Convener, College Committee:** In 2011 December I chaired a college committee investigating the performance of mathematics subjects by first year engineering students.
6. 2009 – 2011 **Conference Committee Member:** A member of the School of Mechanical, Materials and Manufacturing Engineering conference committee.
7. 2007 **Timetable Coordinator:** Scheduling all subjects taught in the BSc programmes (Mechanical engineering, Mechatronics engineering and Mining and Mineral Processing engineering) and MSc programmes (Mechanical engineering and Mechatronics Engineering).

2.4 Quality Assurance and Curriculums Developed

1. 2017 to date: Evaluation of new Curriculums in Engineering areas on behalf of Commission for University Education (CUE)
2. 2017: Coordinated the development of MSc Mechanical Engineering and PhD Mechanical Engineering for Pan African University Institute for Science, Technology and Innovation (PAUISTI) based at JKUAT
3. 2016: Coordinated as Dean the development of, MSc, Petroleum Engineering, MSc Mining Engineering, PhD Mining Engineering all of which have been approved by JKUAT university senate
4. 2012 to 2013: Development of BSc Aerospace Engineering and currently following up accreditation by EBK
5. 2009: BSc, Mechanical Engineering - Review of curriculum that was approved by senate in 2009 and by EBK in 2013
6. 2012: Developed a Short Course in Aluminium Extrusion and Fabrication which is currently being taught as an evening program in the department of Mechanical Engineering

2.5 Key Achievements

S/No	Activity	Description
1.	New departments established	<ul style="list-style-type: none"> • Marine Engineering Department • Mining Engineering Department
2.	Master plan development	Master plan for School of Mechanical, Manufacturing and Materials Engineering
3.	New curriculums developed	<ul style="list-style-type: none"> • BSc Mechanical Engineering - Review • BSc Aerospace Engineering • MSc Petroleum Engineering • MSc Mining Engineering • PhD Mining Engineering • MSc and PhD Mechanical Engineering for PAUISTI
4.	Short courses developed	<ul style="list-style-type: none"> • Fabrication using aluminium frames • Lubrication technology
5.	Procurement of Facilities	<ul style="list-style-type: none"> • Test engine for study of Engine performance for engineering training – thermodynamics lab • Sieve analysis and temperature measurement facility for foundry lab • Ansys CFD simulation software for engineering training
6.	Policies developed	<ul style="list-style-type: none"> • Coordinated the development of Energy Policy
7.	Journals Founded	<ul style="list-style-type: none"> • Founder and editor Journal of Sustainable Research in Engineering (JSRE)
8.	Accreditation of Programs by Engineers Board of Kenya	<ul style="list-style-type: none"> • Marine Engineering • Mining and Mineral Processing Engineering
9.	Steered Scholarship funding	<ul style="list-style-type: none"> • Scholarships of over KShs 100 Millions from Africa Development Bank and Kenya Government • Secured 12 PhDs in Engineering training for 3 years by DAAD • Secured more than 27 Kenyan Scholarships through METEGA to other countries in Africa and 9 MSc Scholarship Training at JKUAT under EU Intra ACP Funding

10.	Professional mentorship	<ul style="list-style-type: none"> I have mentored and trained four people to register with the professional bodies
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3.0 Competitive Research/Resource Mobilization

1. 2019: A team member of the recently awarded **KShs 299 Million** grant by government of Japan through Japan Technical Corporation (JTC) for the project titled Science and Technology Research Partnership for Sustainable Development (SATREPS) involving *Comprehensive solutions for optimum development of geothermal systems in East African Rift Valley*.

- Expert visits between Kenya and Japan
- MSc and PhD training of Kenyans for Capacity development
- Procurement of State of art equipment and software

2. 2018 to 2021: Steered and Successfully won a DAAD program for 3 years of funding of PhD scholarship in Mechanical Engineering titled *Strengthening Higher Education in Eastern Africa*

Benefits

- JKUAT will have a chance for capacity building for not only JKUAT staff but also Kenya and also for the region
 - Four (4) PhD slots annually will be awarded to JKUAT for the next three (3) years
3. 2018 to 2021: Africa Development Bank and Ministry of Education funding of over KSh.143 Million for *ADB/GOK Support To Enhancement Of Quality And Relevance In Higher Education Science And Technology (Hest) Project*.

Benefits

- Training of MSc and PhD in Mechanical, Civil, Agriculture Processing Engineering and Geothermal Sciences for building capacity in other Universities in Kenya.
4. 2019 to 2020: Awarded **3.6 Million** for a project titled, *Strengthening Research and Innovation in the Potato Value Chain for enhanced Food and Nutrition Security and Health in Kenya* (Project Leader is Prof Daniel Sila). I am the team leader for coordinating development of all technologies and prototypes needed in the project.
5. 2018 to date: I am Chair of the Subtask force for the *Innovation Prototyping Integrated Centre (IPIC)* which is a subtask force of the Africa-ai-Japan project.

Key Achievements

- Linkage between JKUAT, Kyuchu University, KENGEN, GDC and JICA
- Successful application of Science and Technology Research Partnership for Sustainable Development (SATREPS)
- Successful Industry linkage: 4 industry players visited JKUAT in February 2019 to identify ways of collaborating with JKUAT. Presently JKUAT is visiting industry to identify partnership in research and students internships.

6. 2018 to date: Member of the University team consulting for Ndarugu Metropolis to set up the first private sector led Special Economic Zone (SEZ) that will have:
 - Students city
 - A fresh produce market
7. 2016 to date: Team leader in charge of Machinery and Tooling in the award of **KSh.70 million (Euros 700,000)**, *University Research chair for Manufacturing and innovation in the manufacturing sector (Project Leader is Prof B.W. Ikua)* funded by Canada International Development Research Centre (IDRC) through National Commission for Science Technology and Innovations (NaCOSTI) 2016 . The main goal is development of technologies for the coconut value Chain in Coastal Kenya.

Key Achievements

- Targeted training of nine (9) MScs and three (3) PhDs
 - Development of Decorticator for processing fibre from coconut husks
 - Development of a Stirrer and Soap mould for Hazina Wanjia Women group for improvement in detergent and soap making process
 - Adapting JKUAT technologies for use by SMEs in the coconut value chain
8. 2016 to date: Award by JKUAT as part of innovation fund of over **KSh.2.6 million (Euros 26,000)** for *Development of a gold crushing system for small scale miners in Western Kenya*, 2016

Key Achievements

- Development of 2 models of ball mills for use by small scale miners in Migori and Kakamega
 - Formalization training of Artisanal Small Scale gold miners in Migori and Kanamega sponsored by Ministry of Mining and IDRC
9. 2018 to date: Development of a pilot plant for processing of copper from copper ore using electrolysis for March Electrical Ltd, Thika

Key Achievements

- Development of a pilot plant for processing of Kitui copper from its ore
10. 2016: Awarded **KSh 600,000 (Euros 6,000)** for *Development of a materials for high speed marine vessels* funded by JICA through Africa-ai-Japan, 2016
 11. 2013 to date: Lead partner in the project called *Mobility to Enhance Training of Engineering Graduates in Africa* worth more than **KShs 250 million (more than 2.5 million Euros)** involving a consortium of 9 universities

Key Achievements

- Kenya benefited from 27 out of 56 Scholarships due to my aggressive marketing worth over KShs.112 Million.
- 12 scholarships of the 27 were PhD studies
- Eleven (11) scholarships were for JKUAT members of staff from Mechanical Engineering, Mechatronics Engineering, Biomechanical Engineering, and Institute of Computer Science among others.

- Twelve (12) scholarships went to former graduates of JKUAT.
- JKUAT has directly benefitted from over KShs.21 million disbursed for training of 9 MSc students from Uganda (2), Rwanda (5) and Ghana (2) studying MSc Mechanical Engineering and 1 Ugandan staff exchange
- The total value of scholarships so far is ***KShs.130 million Kenya shillings (more than 1.3 million Euros – exclusive of flight costs)***

12. 2015: Consultancy: Mechanical Design of the JKUAT 20th Anniversary monument

Summary of Funding

S/No	Project Name	Time	Role	Value
1.0	METEGA, EU funding	2013 to Date	Country Coordinator (Principal Investigator)	254 Million
2.0	AFDB, MOE	2018 to 2021	Coordinator	143 Million
3.0	SATREPS JTC Funding	2019 to 2023	Partner	299 Million
4.0	Potato Project, JICA Funded	2019 to 2020	Team leader Mechanization	3.6 Million
5.0	High Speed Marine Vessel, JICA	2016	Coordinator (Principal Investigator)	0.6 Million
6.0	MTCC Africa	2017	Partner	100 Million
7.0	Gold Ball Mill, Funded by JKUAT	2016	Coordinator(Principal Investigator)	2.6 Million
8.0	Research Chair, Funded by IDRC	2016 to 2019	Team Leader, Tooling and Machinery Stream	70 Million

2007 to 2011: PhD Research:

- Control of industrial gaseous emissions using a liquid absorber, Supervisors: Dr. Eng. Karanja Kibicho and Dr. B.B. Gathitu.
- Designed and fabricated a pilot plant for control of industrial gaseous emissions. The plant is situated in the thermodynamics laboratory of Jomo Kenyatta University. Pilot plant enabled the collection of data to tests influence of flow conditions including velocity, temperature and concentration of solvents on the rate of absorption of gaseous emissions.

2004-2006: MSc Research:

- Numerical simulation of flow behavior of liquid fuel droplets in air, Supervisor: Prof. P.N. Kioni

1997: BSc Project:

- I undertook a final year project with the title Estimation of Tool life using Acoustic Emission Technique.

4.0 Visiting Professor

- 2015: Awarded: EU sponsored Visiting Professorship under the scope, *Modern Power Graduate on 21st Century Graduate*, Warsaw University of Technology, Poland, **16,000 PLN (Euro 3,800)**. I Taught Fundamentals of combustion in Power Engineering to undergraduate and postgraduate students at the Institute of Heat and Power at the Faculty of Aerospace and Power.

5.0 Industrial Experience

- 2000 Mullard Electronics (Nairobi): Design of Argon gas fire suppression systems utilizing argon gas
- 1998 Castle Brewery (Thika): I installed, tested and commissioned systems such as boilers, air compressors, pumps, among others.
- 1998 Kapa Oil Refineries Ltd (Nairobi): As an engineer trainee I undertook service maintenance and operation of bar soap and glycerin processing plant
- 1997 Burns and Blanes Engineering (Nairobi): Machining, Heat treatment, fabrication among others.
- 1996 Kenya Brewery Ltd (Nairobi): Maintenance of boilers, compressors, conveyors, pumps Driers, etc.

6.0 Professional Affiliation and Mentorships

6.1 Registered with

- 2014: Engineers Board of Kenya (EBK) as a Professional Engineer (Registration No. A2905)
- 2013: Institution of Engineers of Kenya (IEK) as a Corporate Member (Registration number M – 4007)

6.2 Professional Mentorship

I have mentored and trained the following people to register with the professional bodies

S/No	Name	Professional Body and Date	Employer
1.	Eng Mathew Ndeto	IEK, 2019	JKUAT
2.	Eng. Dereck Mutungi	IEK, 2019	Bosch East Africa
3.	Eng. Asaria Ongesa Onsoti	EBK and IEK, 2016	KENGEN Ltd
4.	Eng. James Musewe Ouma	EBK and IEK 2014	Total Kenya

6.3 Program Accreditation

I have steered the accreditation of the following two (2) engineering programs by Engineers Board

of Kenya

- BSc Mining and Mineral Processing Engineering
- BSc Marine Engineering

7.0 Networks Membership and Competencies

1. 2018 to 2019: I am a member of the *East African Network of University of Applied Sciences*. I have represented JKUAT and the whole country in a series of workshops in Kenya and Germany to understand the concept of applied training research and technology transfer based on the model of German University of Applied Sciences
2. 2019: Participated in a workshop on *Science Communication Training* for University Research Chairs held at Egerton University
3. 2018 Formalization and inclusive governance in the artisanal and small scale gold mining (ASGM) sector in Migori Kenya
4. 2002 to 2006 : Participated in *Effective Teaching Workshops Series 1 to IV* held by the Faculty of Engineering
5. 2007, Mainstreaming HIV/AIDS in Engineering Programs, held at JKUAT
6. 2012: Management Training Workshop for JKUAT held at Mombasa Travelers Beach Hotel

8.0 Publications

8.1 Refereed Journal Papers

1. P. Muhayimana, J. Kimotho, M. Ndeto and **H.M. Ndiritu**, *Effects of Lifter Configuration on Power Consumption of Small Scale Ball Mill*, Journal of Sustainable Research in Engineering Vol 4(3) 171-183, 2019
2. J. Ngéthe, **H.M. Ndiritu** and S. Wanjii, *Investigation of a Partial Air Evacuated V-grooved Solar Water Heater in Kenya*, Journal of Sustainable Research in Engineering, Vol 4(3) 90-98, 2018
3. J. Aukah, M. Muvengi, **H.M. Ndiritu** and C. Onyango, *Prediction of Airflow and Temperature Distributioun in Hybrid Solar Biomass Dryer Using Computation Fluids Dynamics*, Journal of Sustainable Research in Engineering, Vol 4(3) 76-89, 2018
4. J. Byiringiro, J. Kimotho, M. Ndeto and **H.M. Ndiritu**, *Dynamic Structural Analysis of a Small Scale Ball Mill Using Ansys and EDEM*, Journal of Sustainable Research in Engineering, Vol 4(3) 99-110, 2018
5. E. Gatete, **H.M. Ndiritu**, R. Kiplimo, *Model Based Performance Improvement of a High Speed-Boat Running on an Outboard Engine*, Journal of Sustainable Research in Engineering, Vol 4(3) 111-124, 2018
6. Sara Ngure, Robert Kiplimo, **Hiram Ndiritu**, *Optimization of Direct Charge Compression Ignition Engine by Varying Injection Timing and Injection Pressure*, Journal of Sustainable Research in Engineering, Vol 4(1) 23-32, 2017
7. R.N. Mbiu, S.M. Maranga and **Hiram Ndiritu**, *Performance of Aluminium A356 Alloy based Buckets Towards Bending Forces on Pelton Turbines*. Journal of Sustainable Research in Engineering, Vol 2(2) 70-75, 2015

8. Obadiah Maswai, Robert Kiplimo, **Hiram Ndiritu**, *An Experimental Investigation on Engine Performanc and Emission of a Varied Injection Pressures Compression Ignition Croton Diesel Blend Engine*. Journal of Sustainable Research in Engineering Vol 2(4), pp 139-147, 2015
9. Meshack Hawi, Robert Kiplimo, **Hiram Ndiritu**, *Effect of Exhaust Gas Recirculation on Performance and Emission Characteristics of a Diesel-Piloted Biogas Engine*, Smart Grid and Renewable Energy, 2015, 6, 49-58
10. M. Hawi, R. Kiplimo and **H.M. Ndiritu**, *An Experimental Investigation on Engine Performance and Emission of a Diesel Piloted Biogas Engine*, Journal of Sustainable Research in Engineering 1 (4) pp 41-47, 2014
11. B.O. Owiti, **Hiram M. Ndiritu** and B.B. Gathitu, *Effect of Waste Lubrication Oil Fuel Flow Rate on Combustion Emissions*, Journal of Sustainable Research in Engineering 1 (4) pp 34-40, 2014
12. Haile Araya Nigusse, **Hiram M. Ndiritu**, Robert Kiplimo, *Performance Assessment of a Shell Tube Evaporator for a Model Organic Rankine Cycle for use in Geothermal Power Plant*, Journal of Power and Energy Engineering, 2014.
13. H. A. Nigusse, **Hiram M. Ndiritu** and Robert Kiplimo, *Performance Analysis of a Shell Tube Condenser for a Model Organic Rankine Cycle for Use in Geothermal Power Plant*, Journal of Engineering Research and Applications, Vol 4 (8)3, 2014, pp 141-147
14. Peter O. Oketch, **Hiram M. Ndiritu** and Benson B. Gathitu, *Experimental Study of Fuel Efficiency and Emissions Comparison from Bio-Ethanol Gel Stoves*, European International Journal of Science and Technology, Vol 3 (7), 2014, pp 328-339
15. **Ndiritu H.M.**, Kibicho K. and Gathitu B., *Absorption of Flue Gas Carbon Dioxide in a Wet Scrubber using Sodium and Calcium Hydroxide Solvents*, Journal of Sustainable Research in Engineering, Vol 1 (1), 2014, pp 17-23.
16. **Ndiritu H.M.**, Kibicho K. and Gathitu B., *Influence of Flow Parameters on Capture of Carbon Dioxide Gas by a Wet Scrubber*, Journal of Power Technologies, Vol 93 (1) (2013) pp 9–15.

8.2 University Level Books Published

17. Owiti B., **Ndiritu H.M.**, Gathitu B.B., *Performance of Waste Lubrication Oil Burner in Process Heating*, , LAP LAMBERT Academic Publishing, ISBN:978-3330059672, (2017)
18. **Ndiritu H.M.** K. Kibicho, B.B. Gathitu, *Post Combustion Capture of Carbon Dioxide Emissions Using Wet Scrubbing*, LAP LAMBERT Academic Publishing, ISBN:978-3-659-90646-6, (2017)
19. Oketch P. O., **Ndiritu H.M.**, Gathitu B.B., *Ethanol Gelled Stoves: Combustion and Indoor Air Pollution*, LAP LAMBERT Academic Publishing, ISBN:978-3-659-91245-0, (2016)

20. **Ndiritu H.M.** and Kioni P.N., *Modeling of Reactive Flows*, VDM Publishing House Ltd, ISBN: 978-3-639-30406-0, (2011).
21. **Ndiritu et al**, *Energy, Water and Global Climate Change as a Regional Agenda of the Americas*, A publication of National Sciences Foundation NSF,(USA), PASI (2010).

8.3 Refereed Conference Papers

22. **H.M. Ndiritu**, A. Muumbo, F. Mulei, H. Kabue, S. Sitati, A. Achisa, L. Abubakar, C, Lagat, S. Kiura, E. Ako, D. Githinji, H. Yatich, M. Muriuki, and J. Ngetyny, M. Mwangi, D. Mulwa and N. Abungu, *Bridging the gap between Industry and Academia: Lessons from German University of Applied Sciences*, KETRACO Conference, Intercontinental Hotel, Nairobi 2019.
23. N. Gatumu, **H.M. Ndiritu** and Benson Gathitu, *Use of Coal Syngas as an Alternative Fuel for Direct Injection Compression Ignition (DI CI) Engine*, Sustainable Research and Innovation Conference, JKUAT, 2019
24. P. Muhayimana, J. Kimotho, and **H.M. Ndiritu** A Review of Ball mill grinding process modeling using Discrete Element Method, Sustainable Research and Innovation Conference, JKUAT, 2018
25. J. Byiringiro, J. Kimotho, M. Ndeto and **H.M. Ndiritu**, Modal and Harmonic analysis of a small-scale ball mill based on ANSYS, Sustainable Research and Innovation Conference, JKUAT, 2018
26. Mbeni, **H.M. Ndiritu** and Benson Gathitu, *Development and Analysis of a Gas Turbine to Run on Syngas from a Mui-Basin Coal Gasifier Using CFD: A Review*, Sustainable Research and Innovation Conference, JKUAT, 2017
27. L. Wangui, **H.M. Ndiritu** and Benson Gathitu, *Design and Simulation of Performance of a Gas Turbine Compressor Running on Coal Syngas*, Sustainable Research and Innovation Conference, JKUAT, 2017
28. O. G. Oyugi, **H.M. Ndiritu** and Benson Gathitu, *A review on the effect of feed oxygen, water concentration, temperature and pressure on gasification process*, Sustainable Research and Innovation Conference, JKUAT, 2017
29. B. Owiti, **H.M. Ndiritu** and Benson Gathitu, *Influence of Waste Lubrication Oil Combustion on Emissions*, Sustainable Research and Innovation Conference, JKUAT, 2015
30. M. Hawi, **H.M. Ndiritu**, R. Kiplimo and E. Munyao, *Effect of Exhaust Gas Recirculation on Performance and Emission Characteristics of a Diesel Engine*, Sustainable Research and Innovation Conference, JKUAT, 2015

31. J. Aukah, M. Muvengei, **H.M. Ndiritu** and C. Onyango, *Simulation of Drying Uniformity inside Hybrid Solar Biomass Dryer using ANSYS CFX*, Sustainable Research and Innovation Conference, JKUAT, 2015
32. **H.M. Ndiritu**, P.O. Oketch and J.W. Kihia, *Status of Energy Production in Kenya and Power Optimization using Sugar Cane Waste and Waste Heat*, Turku, Finland, 2014
33. Abel N. Ogari, **H.M. Ndiritu** and Benson Gathitu, *Straight Vegetable Oil Use in Kerosene Lamps to Mitigate In-door Air Pollution: A Review*, Sustainable Research and Innovation Conference, 2013
34. David K. Chirchir, **R. Kiplimo** and **H. Ndiritu**, *Review of the Performance and Exhaust Emissions Characteristics of a Diesel Engine Running on Waste Vegetable Biodiesel Oil*, Sustainable Research and Innovation Conference, 2013.
35. L. A. Owino, G. N. Nyakoe, and **H. M. Ndiritu**, *Investigating the Effect of Incorporation of a Fuzzy Logic Controller on Fuel Consumption in a Wind-Gasoline System*, Sustainable Research and Innovation Conference, 2013.
36. N. Stelamaris Nduko and **Ndiritu H.M.**, *Clean Coal Utilization for Power Generation*, Sustainable Research and Innovation Conference, 2013
37. Nigusse H.A. and **Ndiritu H.M.**, *Utilization of Geothermal Steam for Power Generation: A Review*, Sustainable Research and Innovation Conference, 2013
38. P. O. Oketch, **H. M. Ndiritu** and Benson B. Gathitu, *Ethanol Gel as a Clean Renewable Cooking Fuel*, Sustainable Research and Innovation Conference, 2013.
39. Sarah W. Ngure, **R. Kiplimo** and **H. Ndiritu.**, *Review of Premixed Charge Compression Ignition (PCCI) Combustion*, Sustainable Research and Innovation Conference, 2013
40. B.O. Owiti and **H.M. Ndiritu**, *Waste Oil Utilization: Current Trends and Opportunities*, Sustainable Research and Innovation Conference, 2013
41. A. Nyakundi, **Ndiritu H.M.**, and Gathitu B., *Straight Vegetable Oil Use in Kerosene Lamps to Mitigate In-door Air Pollution: A Review*, Sustainable Research and Innovation Conference, 2013
42. Research on carbon capture to reduce global warming, **Hiram Ndiritu**, *Agritec News*, a publication of JKUAT, Vol 35, (2011).
43. **Ndiritu H.M.**, Kibicho K. and Gathitu B., *Effect of Heating on Absorption of CO₂ as a Greenhouse Gas in a Structured Packed Scrubber*, *Proceedings of the Mechanical Engineering Conference on Sustainable Research and Innovation conference*, (2011).

44. **Ndiritu H.M.**, Kibicho K. and Gathitu B.B, Wet Scrubbers: A gaseous emission control solution to climate change, *Interlink between energy, water and climate change as a regional agenda for the Americas*, San Diego (USA), (2010)
45. **Ndiritu H.M.**, Kibicho K. and Gathitu B.B., Influence of flow variables on absorption of carbon dioxide as a greenhouse gas, *Proceedings of the Mechanical Engineering Conference on Sustainable Research and Innovation conference – Series 12*, AICAD (Kenya), pp 122-124, (2010)
46. **Ndiritu H.M.** and Kibicho K., Role of a vertically inclined corrugated packing as column interior in pollution control, *Proceedings of the mechanical engineering seminar – series 11*, JKUAT(Kenya) pp 125-127 (2009),.
47. **Ndiritu H.M.** and Kibicho K., Effect of vehicle utility pattern on environmental pollution in Kenya, *Proceedings of the 2nd international civil engineering conference on civil engineering and sustainable development*, Mombasa (Kenya) pp 843-848, (2008)
48. **Ndiritu H.M.** and Kibicho K.K, Contribution of Traffic Generated Carbon dioxide to Air Pollution in Kenya, *Proceedings of the mechanical engineering seminar – series 10*, JKUAT(Kenya), pp 78-88, (2007)
49. **Ndiritu H.M.** and Kioni P.N. , An application of iterative techniques to generation of an orthogonal mesh for the study of flow round a single fuel droplet, *Proceedings of the mechanical engineering seminar – series 9*, JKUAT(Kenya), pp 110-128, (2006)

8.4 Theses

1. **Hiram Ndiritu**, *Capture of Industrial Carbon Dioxide Emission by Wet Scrubbing*, PhD Thesis, (2012).
2. **Ndiritu H.M.**, *Cylindrical Fuel Droplets: Mesh generation and reactive flows modeling*, MSc. Thesis , (2006)

9.0 Research and Project Supervision

9.1 Completed Postgraduate Research Thesis

1. Process Optimization Of A Small Scale Ball Mill Using Discrete Element Method by Philbert Muhayimana, (2019)
2. Structural Optimization of Small Scale Ball Mill for Gold Mining using Finite Element Method by Justin Byiringiro (2019)
3. Numerical Modeling of Water and Mooring Line Interaction for a Floating Barge at Lake Kivu using Computational Fluids Dynamics and Immersed Boundary Method by Ben Claude Uwihanganye (2019)
4. Optimization of Performance of Thermosyphon Flat Plate Solar Water Heaters, by John Ngethe (2019)

5. Modeling Performance Improvement of a High Speed Boats Running on an Outboard Engine, by Eugene Gatete (2019)
6. Optimization of Performnce of a Hybrid Solar Biomass Dryer for Drying Maize by Jackis Odhiambo Aukah (2019)
7. Optimization of Performance of Compression Charge Ignition Engine by Sarah Warigia Ngure (2018)
8. Optimization Of Performance Of A Compression Ignition Engine Running On Croton Esters-Diesel Blends by Obadiah Maswai (2017)
9. Waste oil combustion for process heating in small to medium enterprises by Bernard Owiti (2015)
10. Performance and emission characteristics of a diesel piloted biogas engine by Mishack Hawi (2015)
11. Retrofit of Pressure Lamp to Handle Vegetable Oil by Abel Nyagundi (2014)
12. Performance Assessment of a Model Organic Rankine Cycle Power Plant Components for Application at Olkaria I Geothermal Power Plant by Haile Nigusse (2014)
13. Optimization of Performance of a Bio-ethanol Gel Stove by Peter Oketch, (2013)
14. Optimization of Fuel Consumption in Hybrid Wind-Diesel System using a Fuzzy Logic Controller by Lina Owino (2013)

9.2 Ongoing Postgraduate Supervision

15. Optimization of ball milling using discrete element method and assessment of comminution characteristics of local gold, copper and iron ores by Mathew Ndeto
16. Numerical and Experimental Study for the Optimization and Design of a Fluidized Bed Reactor for Biomass Gasification by Fred Irungu
17. Numerical Analysis of the Optimum Transition from Auto-ignition to Premixed flame Propagation of a Propane-Air Mixture, Micheni Kennedy
18. Computational Code For Cfd Analysis Of An Oscillating Water Column Using Openfoam, Hillary Kiptoo
19. Numerical Modeling Of Emulsified Fuel Droplets Combustion For Improvement Of Performance Of Internal Combustion Engines. Confidence Cyizere
20. Thermal Optimization Of Parabolic Trough Concentrating Solar Power At Solar Field Using Numerical Simulation, Ali Omer
21. Development And Cfd Analysis Of A Gas Turbine To Run On Syngas From A Mui-Basin Coal Gasifier, Agatha Mbeni
22. Design And Simulation Of Performance Of A Gas Turbine Compressor Running On Coal Syngas, Liz Wangui
23. Improvement Of Performance Of A Mui Basin Coal Gasifier Based On Feed Oxygen, Water Concentration And Heat Regulation, Oyugi George
24. Experimental Data Validation Of Pyrolysis Chamber Models, Ezra Terer
25. Development And Optimization Of Performance Of A Bench Scale Gasifier For Lignite Coal, Stella Nduku

9.3 Postgraduate Proposals Reviewed

- Impact of Oxygenation Fuel on NO_x Formation in Flames:
- Optimization of cut parameters for the laser/Waterjet Machining of Different Thicknesses of Sodalime Glass.
- Utilization of magnetic force and dynamic flushing for the optimization of electrical discharge machining in the finishing regime.
- Optimization of Nd:Yag Laser Beam and Process Parameters for quality machining of silicon.
- Optimization of pocket milling tool path generation for improved tool life and machining
- Optimization of the modal frequency of a piezoelectric transducer for concurrent vibration suppression and energy harvesting

9.4 Undergraduate Projects Supervised

2018/19

- Performance Testing & Simulation Of A Motor Operated Valve In A Geothermal Power Plant

2017/18

- Design, Fabrication And Testing Of An Energy Efficient biomass Cookstove
- Design And Fabrication Of A Heat Recovery System For A Waste Oil Burner

2016

- Design And Fabrication Of Automated Biogas Compression System
- Design And Fabrication Of A Model Heat Exchanger For Waste Heat Recovery From Geothermal Brine
- Design, Fabrication And Testing Of A Ship Wind Turbine Power Plant

2015

- Design, Fabrication And Testing Of Tension Leg Platform Wind

2014

- Design And Fabrication Of A Multistage Steam Turbine For Power Generation
- Design And Development Of A Multistage Steam Turbine Control Unit
- Design, Fabrication And Testing Of A Solar Powered Combined Blender And Cooler

2013

- Improvement Of Efficiency Of Oil Fired Boiler
- Design And Fabrication Of A Steam Turbine For Power Generation Using A Waste Oil Fired Boiler
- Design And Fabrication Of A Modified Simple Vacuum Preservation System For Domestic Applications

2012

- Design And Construction Of A CO₂ Based Cold Room For Coca Cola Company

- Design And Fabrication Of A Vacuum Cleaned Automotive Repair Workbench.
- Design And Fabrication Of A Solar Compressorless Thermoelectric Cooler For Handling Medical Supplies.

2011

- Design And Fabrication Of A Small Scale Steam Boiler Fired Using Waste Oil
- Design And Fabrication Of A Hybrid Dust Filter System For Use In Cement Factory
- Design And Fabrication Of Vacuum Food Preserver For Domestic Applications

2001

- Design And Fabrication Of A Small Scale Sugar Processing Machine

10.0 Examiner

10.1 External Examiner

I am currently the external examiner of the following universities maintaining quality of their undergraduate and post graduate examinations;

1. Dedan Kimathi University of Technology (DeKUT) since 2018
2. Jaramogi Oginga Odinga University of Science & Technology since 2018

10.2 Examiner of PhD and MSc Thesis

1. MSc Mechanical Engineering **Thermal Performance Of The Retrofitted R404a Transport Refrigeration Unit Using Natural Propane**, Tshwane University of Technology, South Africa 2019
2. PhD Thesis titled, **Studies on performance combustion and emission characteristics of a diesel engine with shrouded inlet valve using pongamia methyl ester diesel ethanol blend as fuel**, Anna University, India. 2016
3. MSc Titled: **Thermal Performance and Performance Optimization of a Helical Coil Instantaneous Double Annular Water Heater**, Tshwane University of Technology, South Africa, 2015
4. PhD Thesis titled, **Modelling Of Energy Demand And Supply Patterns In Tanzania**, PhD Energy Science and Engineering, Nelson Mandela Africa Institute of Science and Technology, 2015
5. PhD Thesis titled, **Performance Analysis and Improvement of a water to water CO2 Heat Pump**, PhD Mechanical Engineering, Tshwane University of Technology, South Africa, 2015
6. MSc Thesis, **Scenario Analysis of the future electricity sector in Kenya**, JKUAT, 2016
7. MSc Thesis, **Maximum power point tracking of a photovoltaic system under partial shading conditions**, JKUAT, 2016

11.0 Reviewer of Journal Papers

- Journal of Sustainable Research in Engineering
- International Journal of Ambient Energy
- Energy Technology and Policy
- International Journal of Green Energy

12.0 Collaborations Initiated

1. JKUAT and ETH Zurich for development of staff exchange involving visiting professorship between JKUAT and ETH Zurich 2019
2. JKUAT and KTTC for development of curriculum targeting Technical Teachers to acquire degree training 2018
3. JKUAT and Hochschule Neu Ulm (HNU) and Technische Hochschule Ingolstadt (THI), Germany 2018
4. JKUAT and University of Gifu, Japan 2018
5. JKUAT and University of Sapienza, Italy – 2015
6. JKUAT and Warsaw University of Technology, Poland – 2014
7. JKUAT and University of Botswana – 2014
8. JKUAT and National Youth Service, Kenya - 2013
9. JKUAT and Korea Maritime University, Kenya - 2013
10. JKUAT and Kenya Aeronautical College (that will enhance sharing of facilities for training of Aerospace Engineers), 2013
11. JKUAT and Booth Extrusion Ltd in development of a short course for use of aluminium extrusion in construction of buildings, 2013

12.1 Benefits Arising from the MOUs

- JKUAT became a partner in formation of East Africa Network of University of Applied Sciences – HNU and THI
- Joint curriculum development, staff exchange and joint funding applications – Sapienza, WUT, Gifu
- Joint application of funding to host MTCC Africa Project - KMA
- Development of a short course on Aluminium Fabrication – Booth Extrusion
- A successful application of EU sponsored project worth over 2 million Euros – University of Botswana

13.0 Editor and Reviewer

- Journal of Sustainable Research in Engineering (JSRE)
- Sustainable Research and Innovation Conference (SRI)
- Geothermal Training Workshop and Forum

14.0 Community Activities

1. 2018 to date: Development of Technologies for SMEs in the coconut value chain at the coastal region. We are presently deploying a stirrer for use by Hazina Waja Women group in Kwale County
2. 2018: Formalization of Gold Mining and Processing at Migori and Kakamega counties. We are working to train and improve gold processing techniques for the Artisanal Gold Miners in the two counties
3. 2018 to date: Participating in development of the first private sector led Special Economic Zone (SEZ) at Ndarugu
4. Annually participating in the Nairobi International Stan Chart Marathon as a member of JKUAT staff sports club to raise funds for the use in improving eyesight for communities in western Kenya.
5. 2011 to 2012: Trainer of SMEs in the JITI HADA II Kenya National Business Plan Competition Organized by Ministry of Industrialization, Kenya Institute of Management, World Bank, Technoserve and JKUAT

15.0 Computer Literacy

Proficiency in MS Packages, Latex (Winedit), CFD using Ansys FLUENT, Fortran Powerstation, Matlab, C Programing, Autodesk Inventor, Mechanical Desktop and Autocad, among others.

16.0 Extracurricular

A founder and active member of JKUAT staff fitness club as well as an annual active participant in athletics (Nairobi Stan Chart International Marathon).

17.0 Hobbies

Traveling, swimming, running half marathon (21 km – Annual Nairobi International Marathon), reading inspiration books, hiking and participating in community based activities.

18.0 Referees

1. Prof. Eng. B.W. Ikua
+254722286264 Email: ikua_bw@eng.jkuat.ac.ke
Principal, College of Engineering and Technology (CoETEC),
JKUAT
BOX 62000 00200 Nairobi.
2. Prof F. Gatheri
+254722238082 Email: kgatheri@gmail.com
Executive Dean, School of Applied Sciences
P.O. Box 52428 - 00200
Technical University of Kenya.
3. Prof Peter Nganga Muchiri
+254717877044 Email: peter.muchiri@dkut.ac.ke
Director, Dedan Kimathi University of Technology
BOX 657 10100, Nyeri

