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## **EBENEZER NYARKO KUMI *PE-GhIE***

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### **Summary**

A dynamic Mechanical Engineer with over ten years experience in research and training in thermo-fluids engineering and energy systems modelling. I also have experience in employing modern tools in the design and assessment of renewable energy systems, energy policy & planning as well as competence in the use of Computer Aided Design (CAD) tools to solving engineering problems.

### **Work Experience**

1. Senior Lecturer, Mechanical and Manufacturing Eng. Dept., University of Energy and Natural Resources, Sunyani - Ghana (March 2022 – To Date)
  - Training Mechanical Engineering students to demonstrate competences in various subjects including Computer Aided Design (CAD), Thermodynamics, Fluid Mechanics and Renewable Energy Conversion Technologies
2. Lecturer, Mechanical and Manufacturing Eng. Dept., University of Energy and Natural Resources, Sunyani - Ghana (January 2017 – To March 2022)
  - Training Mechanical Engineering students to demonstrate competences in various subjects including Computer Aided Design (CAD), Thermodynamics, Fluid Mechanics and Renewable Energy Conversion Technologies
3. Consultant, GreenMAX Capital Advisors (April 2018 – December 2020)
  - WorldBank / ECREEE Regional Off-Grid Electrification Project (ROGEP) – Ghana
  - Regulatory Indicators for Sustainable Energy (RISE 2020) -- Ghana
4. Energy Solutions Specialist and R&D Relations for Africa, Stella Futura – Ghana (October 2018 – January 2020)
  - Design and Installation of Solar Energy Solutions to clients
5. Facilitator, Specialist Training in Solar PV Design and Installation, Dept. of Energy and Environment, University of Energy and Natural Resources, Sunyani – Ghana (November 2015 – To Date)
  - Training technicians to carryout electricity load assessment, design and install solar PV systems
6. Instructor, MSc. Renewable Energy Technologies, Mechanical Engineering Department, Kwame Nkrumah University of Science and Technology, Kumasi - Ghana (April 2013 - To December 2016)
  - Training postgraduate students in energy policy and planning, energy auditing as well as renewable energy project analysis
7. Assistant Lecturer, Mechanical and Manufacturing Eng. Dept., University of Energy and Natural Resources, Sunyani - Ghana (August 2014 – December 2016)
  - Training Mechanical Engineering students to demonstrate competences in various subjects including Computer Aided Design (CAD), Thermodynamics, Fluid Mechanics and Renewable Energy Conversion Technologies

8. Local Consultant, German Development Cooperation (GIZ), GIZ Office, P. O. Box KIA 9698, Accra-Ghana (December 2012 - January 2013)
  - Team member for a feasibility study on installation of a 1-2MW Photovoltaic System for Kwame Nkrumah University of Science and Technology (KNUST), Ghana

### Education

1. MSc. Mechanical Engineering (Thermo-fluids and Energy Systems), Kwame Nkrumah University of Science and Technology, Kumasi, Ghana (August 2010 – June 2013)
2. Postgraduate Certificate, Energy and Environmental Management for Developing Countries, University of Flensburg, Germany (February 2011- July 2011)
3. BSc. Mechanical Engineering (Second Class Upper Division), Kwame Nkrumah University of Science and Technology, Kumasi, Ghana (August 2004 – June 2008)

### Affiliations and Professional Memberships

1. Fellow, Institute of Economic Affairs, Ghana
2. Reviewer, Journal of Cleaner Production
3. Reviewer, Renewable and Sustainable Energy Reviews
4. Reviewer, Journal of Energy Policy
5. Reviewer, Scientific African
6. Professional Engineer (PE), Ghana Institution of Engineering (GhIE), Ghana

### Computer Skills

Microsoft Office, RETScreen Clean Energy Project Analysis, Hybrid Optimization Model for Electric Renewables (HOMER), Long-Range Energy Alternatives Planning (LEAP), Autodesk Inventor, Fusion 360 & AutoCAD, MATLAB, ANSYS Fluent

### Publications - Peer-Reviewed Journals, Special Research Publications

1. **Kumi E. N.** and Mahama M. (2023). Greenhouse gas (GHC) emissions reduction in the electricity sector: Implications of increasing renewable energy penetration in Ghana's electricity generation mix. *Scientific African*. Volume 21 pages e01843
2. **Kumi E. N.** (2022). Energy storage technologies in "Pumped Hydro Energy Storage for Hybrid Systems". Academic Press.
3. Adu-Poku, K. A., Appiah, D., Asosega, K. A., Derkyi, N. S. A., Uba, F., **Kumi, E. N.**, Akowuah, E., Akolgo, G. A., & Gyamfi, D. (2022). Characterization of fuel and mechanical properties of charred agricultural wastes: Experimental and statistical studies. *Energy Reports*, 8, 4319–4331. <https://doi.org/https://doi.org/10.1016/j.egy.2022.03.015>
4. Amo-Aidoo, A., **Kumi, E. N.**, Hensel, O., Korese, J. K., & Sturm, B. (2022). Solar Energy Policy Implementation in Ghana: A LEAP Model Analysis. *Scientific African*, e01162. <https://doi.org/10.1016/J.SCIAF.2022.E01162>
5. Essandoh, E. O., Akolgo, G. A., Kumi, E. N., & Atta-Darkwa, T. (2021). Review and Analysis of Ghana's Power Sector Policies, Programmes and Reforms. *Journal of Energy and Natural Resource Management (JENRM)*, 7(1). <https://doi.org/10.26796/jenrm.v7i1.168>
6. Akolgo, G. A., E. O. Essandoh, S. Gyamfi, T. Atta-Darkwa, **E. N. Kumi**, and C. Maia (2018). " The potential of Dual Purpose Improved Cookstove for Low Income Earners in Ghana - Improved Cooking Methods and Biochar Production" *Renewable and Sustainable Energy Reviews* - 2018 Vol. 82 No. 1 pp. 369-379

7. Gyamfi, S., F. Amankwah Diawuo, **E. N. Kumi**, F. Sika and M. Modjinou (2018). "The energy efficiency situation in Ghana." *Renewable and Sustainable Energy Reviews* - Vol. 82 No. 1 pp. 1415-1423
8. Obeng, G.Y. and **Kumi, E. N.** (2014), "Quantitative Impacts of Solar PV on Television Viewing and Radio Listening in Off-grid Rural Ghana", *Energy and Environment Research*, Vol. 4, No. 1, pp. 62 – 73
9. Brew-Hammond, A. and **Kumi, E.N.** (2009), "Analysis of a Grid-Connected Solar PV System in Ghana using RETScreen Software", *Journal of the Ghana Institution of Engineers*, Volumes 6 & 7, pp. 21 – 24
10. **Ebenezer Nyarko Kumi** (2017). "The Electricity Situation in Ghana: Challenges and Opportunities." CGD Policy Paper. Washington, DC: Center for Global Development. <https://www.cgdev.org/publication/electricity-situation-ghana-challenges-and-opportunities>
11. UNEP (2016), GE-TOP Ghana Strategy Proposal –Realizing Solar PV Projects in A Cross-Border Power Supply Context Geneva: UNEP.
12. UNEP (2015), Ghana Solar Export Potential Study. Geneva: UNEP
13. African Technology Policy Studies Network, ATPS 2013: "Design and Analysis of a 1MW Grid-Connected Solar PV System in Ghana" [**Ebenezer Nyarko Kumi**, Abeeku Brew-Hammond], ATPS RESEARCH PAPER No. 27

#### **Conferences, Workshops and Seminars**

1. Training on **ISO 50001 Energy Management System Implementation in Industries** held at the Institute of Environmental Studies, Environmental Protection Agency Training School, Amasaman, Accra from 16<sup>th</sup> June 2021 – To Date by The United Nations Industrial Development Organization (UNIDO) in partnership with the Ghana National Cleaner Production Centre (GNCPC)
2. **Sustainable Energy Management Professional (SEMP)** pilot training course held at Suncity Imperial Lodge, Sunyani from 1<sup>st</sup> to 5<sup>th</sup> February 2021 organised by UENR- Consortium Sustainable Energy Service Centre (SESC)
3. **Reaching Universal Energy Access in Ghana by 2020 and the 5th Mini Grid Action Learning Event** organized by the World Bank Energy Sector Management Assistance Program (ESMAP) at The Mövenpick Ambassador Hotel – Accra, Ghana from 24<sup>th</sup> – 28<sup>th</sup> of June 2019
4. **Solar Photovoltaic Training of Trainers** at The Centre for Renewable Energy and Industrial Maintenance (*CERMI*), Praia – Cabo Verde from 11<sup>th</sup> – 22<sup>nd</sup> March 2019
5. Seminar on "**Renewable Energy Utilization and Development for Developing Countries**" by Ministry of Commerce – China from 21<sup>st</sup> June to 11<sup>th</sup> July 2018 in Changsha, Hunan Province, P. R. China
6. Training Course in **Hybrid Optimization Model for Electric Renewables (HOMER)** by The Energy Center – KNUST and ECOWAS Centre for Renewable Energy and Energy Efficiency (ECEEE) for 13<sup>th</sup> – 14<sup>th</sup> August 2014 at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi – Ghana
7. ECEEE Regional Training workshop on **GIS Energy Access Planning and RETScreen Clean Energy Project Analysis** by The Energy Center – KNUST and ECOWAS Centre for Renewable Energy and Energy Efficiency (ECEEE) for 22<sup>nd</sup> – 26<sup>th</sup> August 2011 at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi – Ghana

8. Narh E. N., Anto E. K., **Kumi E. N.**, Akowuah E. K. (2014), “Potential of Distributed Grid-Connected Solar Photovoltaic Systems in Rural Electrification in Africa: Case Study of Walewale, Ghana”. International Conference on Solar Energy in Technology Development Cooperation (pp. 95-100). Frankfurt: Ostbayerisches Technologie-Transfer-Institut e.V. (OTTI)