

KOFI OWURA AMOABENG (PhD)

PERSONAL DETAILS

Address: C/o Dept. of Mechanical Eng., KNUST-Kumasi, PMD, Accra.

Date of Birth: September 7, 1984

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Telephone No: +233-246-803123

Nationality: Ghana

OBJECTIVE

To pursue a career in any organization that offers opportunities for utilizing my learning experience, educational qualifications, and skills in research and development towards the growth of the organization.

EDUCATION

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|---|------------------------|
| Doctor of Philosophy (Ph.D.) in Mechanical Engineering | Mar. 2015 – Aug. 2019 |
| Hanbat National University (HNU), Daejeon, South Korea | |
| Master of Science (MSc) in Mechanical Engineering | Aug. 2010 – Jun. 2012 |
| Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana | |
| Bachelor of Science (BSc) in Mechanical Engineering | Aug. 2004 – Jun. 2008 |
| Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana | |
| Senior High School Education | Aug., 2001 – Jul. 2003 |
| Konongo-Odumase Senior High School (KOSS), Konongo, Ghana | |

ACADEMIC EXPERIENCE

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|---|-------------------------|
| Lecturer | Aug. 2020– date |
| Department of Mechanical Eng., Kwame Nkrumah University of Science and Technology | |
| <ul style="list-style-type: none"> ▪ Lecturing in Air-Conditioning and Refrigeration, Basic Mechanics, Engineering Materials, Heat Transfer, Internal Combustion Engines, Technical Drawing, and Thermodynamics courses. | |
| Research Assistant | May 2015 – Jun. 2019 |
| Department of Mechanical Eng., Hanbat National University. | |
| <ul style="list-style-type: none"> ▪ Researching in design and analysis of novel technologies in heating, refrigeration, and air conditioning systems. ▪ Conference presentations on energy-efficient heat pumps, refrigeration, and air conditioning systems. ▪ Assist undergraduate students to undertake laboratory experiments in refrigeration and air conditioning technology. | |
| Demonstrator | Aug., 2010 – Jun., 2012 |
| Department of Mechanical Eng., Kwame Nkrumah University of Science and Technology | |
| <ul style="list-style-type: none"> ▪ Assisting lecturers in teaching Thermodynamics, Heat transfer, Renewable Energy Conversion, Internal Combustion Engines, Refrigeration, and Air-Conditioning courses. | |

ACADEMIC EXPERIENCE CONTD.

National Service Personnel

Sep., 2008 – Jul, 2009

Department of Mechanical Eng., Kwame Nkrumah University of Science and Technology

- Conduct tutorial lessons for undergraduate students in thermodynamics, heat transfer, refrigeration and air conditioning, internal combustion engines, renewable energy, and fluid mechanics courses.
- Supervising mechanical engineering students in laboratory experiments.
- Assisting the KNUST Energy Center to organize short courses in renewable energy.

TEACHING AREAS OF INTEREST

- | | |
|-------------------------------------|--------------------------------------|
| ▪ Thermal Systems Engineering | ▪ Air Conditioning and Refrigeration |
| ▪ Renewable Energy | ▪ Internal Combustion Engines |
| ▪ Mechanics of Solids and Materials | ▪ Engineering Drawing |

RESEARCH AREAS OF INTEREST

- | | |
|--|--|
| ▪ Refrigeration and Air Conditioning Systems | ▪ Heat Recovery Technologies |
| ▪ Thermal Energy Systems Design | ▪ Building Energy Performance Evaluation |
| ▪ Energy Management and Efficiency | ▪ Heat Pump Systems |
| ▪ Renewable Energy | ▪ Machine Learning |

RESEARCH EXPERIENCE

Academic Research

Aug. 2020 – date

Thermo-Fluids and Energy Systems Engineering

Department of Mechanical Eng., Kwame Nkrumah University of Science and Technology

Contribution to research in energy management and efficiency, heat pump technology, air-conditioning, renewable energy, etc.

Postgraduate (Ph.D.) Research

Mar. 2015 – Aug. 2019

Advanced Energy and Environmental Research Lab.

Department of Mechanical Eng., Hanbat National University

Contribution to multidisciplinary research projects on energy efficiency technologies for heating and cooling such as;

- Investigation of the performance characteristics of the heat pump calorimeter.
- Design and performance analysis of a novel calorimeter for testing heat pumps.
- Energy evaluation of existing cooling systems in data centers.
- Development of energy-efficient cooling technology for internet data centers.
- Performance evaluation methodology for geothermal heat pump systems.

Postgraduate (MSc) Research

Aug. 2010 – Jun. 2012

Thermal and Energy Systems Engineering

Department of Mechanical Eng., Kwame Nkrumah University of Science and Technology

- Research project on thermal and economic performance assessment of a solar water heating system.

PUBLICATIONS ARISING OUT OF RESEARCH

Boahen, S., Ofori-Amanfo, K. B., **Amoabeng, K. O.**, Ayetor, G. K. K., Obeng, G. Y., Opoku, R., Dzebre, D. E. K. *Fault detection model for a variable speed heat pump*. Journal of Engineering and Applied Science (2023), 70; 48. <https://doi.org/10.1186/s44147-023-00216-6>.

Amoabeng, K. O., Opoku, R., Boahen, S., Obeng, G. Y. *Analysis of indoor set-point temperature of split-type ACs on thermal comfort and energy savings for office buildings in hot-humid climates*. Energy and Built Environment (2023), 4; 368-376. <https://doi.org/10.1016/j.enbenv.2022.02.006>.

Boahen, S., Choi, J. M., **Amoabeng, K. O.**, Opoku, R., Obeng, G. Y. *Efficient control of cascade heat pumps using variable speed compressors*. Scientific African (2022); 18. <https://doi.org/10.1016/j.sciaf.2022.e01399>.

Adjei, E. A., **Amoabeng, K. O.**, Ayetor, G. K. K., Obeng, G. Y., Quansah, D. A., Adusei, J. S. *Assessing the impact of hydro energy project on poverty alleviation: The case of Bui Dam in Ghana*. Energy Policy (2022), <https://doi.org/10.1016/j.enpol.2022.113227>.

Ayetor, G. K. K., Dzebre, D. E. K., Mensah, L. D., Boahen, S., **Amoabeng, K. O.**, Tay, G. F. K. *Comparing the Cost per Mile of Electric Vehicles and Internal Combustion Engine Vehicles in Ghana*. Journal of the Transportation Research Board (2022), DOI: 10.1177/03611981221135804.

Andoh, P. Y., Sekyere, C. K. K., **Amoabeng, K. O.**, Dzebre, D. E. K. *Performance assessment of a solar-powered egg incubator with a backup heater*. Al-Qadisiyah Journal for Engineering Sciences (2022), 15; 113-121.

Andoh, P. Y., Dzebre, D. E. K., **Amoabeng, K. O.**, Mensah, L. D. *Characterisation of A Fibre Reinforced Material for Small Wind Turbine Applications*. Journal of Sustainable Energy (2022), 13 (1); 40-46.

Abdulhadi, A., Opoku, R., Sekyere, C. K. K., Boahen, S., **Amoabeng, K. O.**, Uba, F., Obeng, G. Y., Forson, F. K. *Experimental investigation of thermal management techniques for improving the efficiencies and levelized cost of energy of solar PV modules*. Case Studies in Thermal Engineering (2022), 35; 1-13.

Amoabeng, K. O., Lee, K. H., Choi, J. M. *Performance investigation of a novel calorimeter for a heat pump system according to flow loops*. Journal of Mechanical Science and Technology (2020), 34; 1749-1763. [Doi.org/10.3390/en12234589](https://doi.org/10.3390/en12234589).

Amoabeng, K. O., Lee, K. H., Choi, J. M. *Modeling and simulation performance evaluation of a proposed calorimeter for testing a heat pump system*. Energies (2019), Vol. 12, No. 4589, 23 pages. [Doi.org/10.3390/en12234589](https://doi.org/10.3390/en12234589).

Mensah, K., **Amoabeng, K. O.**, Apraku, D., Intsiful, J., Boahen, S. *Prospects of ground source heat pump for space cooling in Ghana*. International Journal of Recent Scientific Research (2019), Vol. 10, Issue (11), 36059-36067. [Doi: 10.24327/IJRSR](https://doi.org/10.24327/IJRSR).

Amoabeng, K. O., Choi, J. M. *Performance analysis on the optimum control of a calorimeter with a heat recovery unit for a heat pump*. Energies (2018), Vol. 11, No. 2210, 20 pages. [Doi.org/10.3390/en11092210](https://doi.org/10.3390/en11092210).

Amoabeng, K. O., Lee, K. H., Choi, J. M. *A study on the performance characteristics of a testing facility for a water-to-water heat pump*. International Journal of Refrigeration (2018) Vol. 86, 113-126. [Doi.org/10.1016/j.ijrefrig.2017.11.013](https://doi.org/10.1016/j.ijrefrig.2017.11.013).

Amoabeng, K. O., Choi, J. M. *A study on the performance of a newly designed heat pump calorimeter*. Applied Thermal Engineering (2017) Vol. 123, 216-225. [Doi.org/10.1016/j.applthermaleng.2017.05.029](https://doi.org/10.1016/j.applthermaleng.2017.05.029).

Amoabeng, K. O., Choi, J. M. *Review on cooling system energy consumption in internet data centers*. International Journal of Air Conditioning and Refrigeration (2016) Vol. 24, No. 4 (1630008), 17 pages. [Doi.org/10.1142/S2010132516300081](https://doi.org/10.1142/S2010132516300081).

CONFERENCE PAPERS

Amoabeng, O. K., Boahen, S., Choi, J. M., (November, 2018). *Energy performance investigation of a calorimeter for heat pump measurement*. Society of Air Conditioning and Refrigeration Engineers in Korea (SAREK) conference, Seoul, Korea. Paper No. W-116, 437-439.

Amoabeng, O. K., Mensah, K., Boahen, S., Lee, K. H., Choi, J. M., (June, 2018). *Calculation Method for Estimating the Performance of a Geothermal Heat Pump*. Society of Air Conditioning and Refrigeration Engineers in Korea (SAREK) conference, Yongpyong, Korea. Paper No. S-203, 797-798.

Amoabeng, O. K., Mensah, K., Boahen, S., (May, 2018). *A Study on the Energy Performance of a Variable Air Volume System Using Air-Cooled and Water-Cooled Chiller*. Proceedings of 2nd GHASKA Innovation Conference (GIC), Daejeon, Korea. Paper No. EAS-001, 29-32.

Amoabeng, O. K., Lee, K. H., Choi, J. M., (November, 2017). *Annual Performance Estimation for a Geothermal Heat Pump*. Proceedings of 7th Asia-Pacific Forum on Renewable Energy (AFORE), Busan, Korea. Paper No. GE-004, 43.

Amoabeng, O. K., Boahen, S., Lee, K. H., Choi, J. M., (June, 2017). *Improving the Energy Efficiency of Heat Pump Performance Evaluation System*. Society of Air Conditioning and Refrigeration Engineers in Korea (SAREK) conference, Yongpyong, Korea. 21-23.

Amoabeng, O. K., Choi, J. M., (May, 2017). *Development of an Efficient Cooling System for Data Centers*. Proceedings of 1st GHASKA Innovation Conference (GIC), Suwon, Korea. Paper No. EAS-004, 43-45.

Amoabeng, O. K., Boahen, S., Jang, H. B., Choi, J. M., (June, 2016). *An Energy Consumption Analysis of the Performance Test Facility for Heat Pump*. Society of Air Conditioning and Refrigeration Engineers in Korea (SAREK) conference, Yongpyong, Korea. 580-581.

SERVICES IN ACADEMIC/PROFESSIONAL ASSOCIATIONS

University Community Services

Aug. 2020 – date

- Examination Officer, Department of Mechanical Engineering, KNUST.
- Member of, the Committee to review entry requirements for programmes in Dept. of Mech Eng., KNUST.
- Member of, the College of Engineering Orientation Committee for the 2022/2023 Academic Year.
- Chairman of, the Committee to interview applicants for KNUST AND KBN Bursary Scholarships in the Faculty.
- Member of, the Accreditation Committee for the Automobile Engineering Programme.
- Member of, the Accreditation Committee for the Industrial Engineering Programme.
- Secretary of, the Accreditation Committee for the Marine Engineering Programme.
- Member of, the Tender Evaluation Committee for procurement of laboratory equipment and vehicles.
- Member of, the KNUST Electricity Management Team
- Member of, the Committee to consider entry requirements for programmes in Dept. of Mech Eng., KNUST.
- Member of, the Committee to consider entry requirements for programmes in Dept. of Mech Eng., KNUST.
- Member of, the Committee to formulate the use of resources in the Dept. of Mech Eng., after splitting.
- Member of, the Committee to interview applicants for KNUST AND KBN Bursary Scholarships in the Dept. of Mech. Eng.
- Member of, the Committee to design and supervise shed construction for machine parts in the Dept. of Mech Eng.

National Community Services

Aug. 2020 – date

- Reviewer, Journal of Energy and Built Environment. Paper: An assessment of the viability of recovering heat from a smoke extract system. Manuscript Number: ENBENV-D-22-00008.
- Reviewer, International Journal of Building Pathology and Adaptation. Paper: Investigation and Optimization of Forced Convective Heat Transfer around a Tall Building Using Experimental Results. Manuscript ID IJBPA-01-2022-0012.
- Reviewer, International Journal of Building Pathology and Adaptation. Paper: Optimization of Building Envelopes using Indigenous Materials to Achieve Thermal Comfort and Affordable Housing in Abuja, Nigeria. Manuscript ID IJBPA-01-2021-0009.
- Moderation of HND Programme examination questions for Takoradi Technical University.
- Moderation of HND Programme examination questions for Kumasi Technical University.
- Moderation of HND Programme examination questions for Bolgatanga Technical University

Conference Participation

Apr. 2016 – Jun. 2019

- African Development Forum on Innovation and Partnership
- Asian Conference on Refrigeration and Air-Conditioning (ACRA)
- Asian-Pacific Forum on Renewable Energy (AFORE)
- Ghanaian Students in Korea and Associates (GHASKA) Innovation Conference (GIC)
- International Conference of Saving Energy in Refrigeration and Air-Conditioning (ICSERA)
- Korea Society of Mechanical Engineers (KSME)
- Society of Air-Conditioning and Refrigeration Engineers of Korea (SAREK)