

MOHAMMED OKOE ALHASSAN (PE - GHIE)



PERSONAL DATA

Place of birth: Tema-Ghana
Languages spoken: English (Fluent), Local-dialect (Hausa, Ga, Fante & Twi).
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OBJECTIVE

To work or associate with an Organization/Institution that offer consistently positive environment to learn and implement new technologies for the enhancement of the Organization/Institution, as well enhance my personal development. Contribute towards the Mining, Oil and Gas ISO standards and the UN SDGs.

PERSONAL PROFILE

An incisive Engineer with the ability to work under pressure to meeting scheduled work deadlines. A certified Engineer of Ghana Institution of Engineering (PE-GhIE). Previously served as a Senior Laboratory Technician/Facilitator/Trainer/Assessor (2012-2017) at the AMATROL Laboratory in Takoradi Technical University (TTU), Ghana. Delivered strategic management and competent skills in the assessment and maintenance of AMATROL laboratory machines, equipment and tools, as well as laboratory personnel and students management. Areas of competence (Trainer/Assessor) includes Maintenance Planning but not limited to diagnosing and Troubleshooting performance of *Electro-Fluid Systems (Hydraulic and Pneumatic)*, *Pumps*, *Steam systems*, *Measurement Tools (Metrology)*, *Mechanical Drives*, *Laser Alignment*, *CNC*, *rigging systems (Lifting and Handling)*, and *Oil and Gas Process Control systems*. Also, I Lecture/train in modules which includes Maintenance Engineering, Instrumentation, Control Systems, Metrology, Jig and Tool Design, Industrial Engineering, Energy systems and Thermal Power Systems. Currently pursuing a Ph.D. in Sustainable Energy Engineering and Management at UENR, Ghana. I hold M.Phil. Mechanical Engineering (Thermo-Fluids and Energy Systems) from KNUST (2020-2022), Master of Technology (M. Tech) in Mechanical Technology from the University of Education Winneba, Kumasi (UEW-K), (2015-2016), and BSc in Mechanical Engineering, University of Mines and Technology (UMaT) (2007-2011). Contribute towards the Mining, Oil and Gas ISO standards for Maintenance planning and management, Energy utilization, Renewable Energy and Sustainable Energies Technologies design and optimization, Material handling and flammability management, and Engineering System Design. Also exhibit skills in leadership for excellent team building with the ability to inspire and motivate working team. These knowledge and skills are complemented with competences in Engineering Designs tools (AUTODESK), AI and Machine Learning modelling for maintenance optimization, Energy simulation and modelling tools (RETScreen, HOMER, LEAP), to solving engineering and research problems.

EDUCATIONAL/ACADEMIC QUALIFICATIONS

- [Jan..2023 – July.2026] University of Energy and Natural Resources (UENR), Sunyani, Ghana.

[Ph.D. Sustainable Energy Engineering and Management]

Thesis Topic: *Adopting Computational Intelligence Framework in Forecasting and optimization of In-situ Utility-scale Photovoltaic (PV) Systems in Ghana.*

Interest: *Advanced Energy Systems-Modelling, Analysis and Optimization; Advanced Research Methods; Advanced Statistics; Energy Efficiency and Management; Renewable Energy and Storage Designs; Application of GIS and Remote Sensing in Energy Systems; Artificial Intelligence (AI); Energy Monitoring and Assessment, Energy Seminar, Sustainable Energy Project (Thesis).*

- [Dec. 2020 – May.2022] Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

[M.Phil. Mechanical Engineering (Thermo-Fluids and Energy Systems)]

Thesis Topic: *Techno-Economic and Environmental Feasibility Analysis of Floating Solar PV – Hydropower Hybridized Plants Based on a Mathematical Model: The Case of Akosombo Hydro Dam in Ghana.*

Interest: *Renewable and Sustainable Energy Transitions, Energy Systems Design, Thermal Power, Solar Photovoltaic (PV), Floating Solar PV (FPV), RETScreen, Engineering Modeling and Simulation and Machine Learning Techniques for RE energy forecast, Literature Retrieval/ Research.*

- [May. 2015 – Aug. 2016] University of Education, Winneba – Kumasi Campus, Ghana

[M. Tech Education in Mechanical Technology]

Dissertation Topic: *Assessing the Impact of The AMATROL Training Programme on Teaching and Learning of Engineering in Polytechnics in Ghana: (A Case Study of Takoradi Polytechnic)*

Interest: *Mechatronics, Instrumentation System Design, Advanced CAD, Advanced Plastic Forming, Manufacturing Process, Research Methods, SPSS software.*

- [Aug. – Sept. 2012] AMATROL Inc.

[Trainer Certification - AMATROL Process and Manufacturing Equipment Specialist]

Interests: *Vibrational Testing and Laser Alignment Systems, Systems Troubleshooting, Pump Systems, Hydraulics and Pneumatics system, Mechanical Drives Systems, Process Control Systems, Steam Systems, Measurement Systems (Metrology), Rigging (Lifting and Hauling) Systems.*

- [Aug. 2007 – May 2011] University of Mines and Technology, Tarkwa, Ghana

[BSc. Mechanical Engineering]

Interest: *Hydraulic Machineries, Alternative Energy Sources, Industrial and Maintenance Engineering, Operations Research, Mine Machinery, Instrumentation and Control/Measurement.*

- [Oct. 2002 – Aug. 2005] Chemu Secondary School, Tema-Ghana

[Senior Secondary School Certificate] [Science-Technical]

EMPLOYMENT RECORDS/WORK EXPERIENCES

[Oct. 2017-Till Date] **Lecturer, Takoradi Technical University (TTU)**

- Delivering quality and technical lecturing/teaching to students
- Lecture in Maintenance Engineering, Industrial Engineering, Instrumentation and Control Systems, Energy Systems, Thermal Power Systems, Metrology, Jig and Tool Design, and Engineering Laboratory Work.
- Curriculum development
- Setting and marking of assignments and examination questions
- Supervision of students' project work, internships and industrial visits
- Offering academic counselling and coaching to students
- Research, Technology Adaptation and Innovation and publication

[Nov. 2012 – Oct. 2017] **Senior Laboratory Technician, TTU**

- Inventory Management, Troubleshooting, Servicing and Maintenance of AMATROL Laboratory Equipment's.
- Coordinated and Planned Students' industry-based AMATROL laboratory skill training: performed through scheduled, supervised and enforced works.
- "Assessed the Impact of the AMATROL Training Programme on Teaching and Learning of Engineering in Polytechnics in Ghana: The Case of Takoradi Polytechnic" **[published]**.
- **Trainer/Assessor on:** Process Control Systems, Pump Systems, Hydraulics and Pneumatics system, Mechanical Drives, Measurement Systems.
- Vibrational Testing, CNC, Rigging Systems, Steam System and Laser Alignment Systems, Testing and Commissioning Installed Eng. systems.
- **Courses tutored:** Control System, Industrial Engineering, Jig and Tool Design, Metrology, Mechanical Structural Analysis.

[Oct. 2011 – Aug. 2012] **Research and Teaching Assistant, Takoradi Polytechnic, (National Service).**

Courses Assisted:

- Mechanics of Machines, Mechanical Engineering Science, Instrumentation and Measurement/ Control.
- Assisted in the day-to-day department administrative works.

[Aug. 2011 – Oct. 2011] **Site Supervisor, Takoradi Steel Company Ltd, Takoradi-Ghana**

- Reported fuel and logistics usage at the construction site on monthly basis;
- Supervised daily site project routine construction works for task completion and reported to site Manager;
- Carried-out grounds preparations, foundation work (levelling), laying of underground pipes;
- Part of a team that replaced worn out parts and maintenance of machines.

[June. 2010 – Aug.2010] **Newmont Ghana Gold Limited (Ahafo), Sunyani-Ghana
Mine Maintenance Engineer, (Industrial Attachment)**

- Sorted Daily Checklists of Light Duty Vehicles and Mobile Equipment's, and generated Work Orders for servicing works based on checklist issues using SAP software;
- Created and assigned work orders for routine maintenance tasks and ensured the right resources are available (parts and inventory) to get the job done using SAP software.

- Assisted in maintenance scheduling process including weekly management meetings and maintenance team meetings;
- Worked on DVLA registration forms of the company's vehicles;
- Data entering for daily fuel and oil consumptions, and test results for on-site Drill Pump Performance
- Prepared monthly report on all the tasks and resources for assessment.

[June. 2008 – Aug.2008] **Ghana Manganese Company Ltd. Takoradi-Ghana
Maintenance Engineer, (Industrial Attachment)**

- Served on a team that repaired Heavy Duty Equipment and Machines in a workshop;
- Carried out Welding and Fabrication of conveyors, and other frameworks.
- Inspection and maintenance of the conveyor belts, rollers, compressors.

PROFESSIONAL BODIES AND AWARDS

- Ghana Institution of Engineering (GhIE), Professional Engineer (**PE-GhIE**), Mechanical Engineering. **Issued:** July, 2022. **Credential ID:** 09437. (**Certified**).
- The Combustion Institute, November, 2019-present.
- GNPC Foundation Scholarship, (PhD) (**Awarded: 2023**)

PROFESSIONAL CERTIFICATIONS/TRAININGS/WORKSHOPS/SEMINARS/CONFERENCES

1. Post Graduate Certificate (Pgc) in Maintenance Management and Reliability Engineering.
 - Applying quality and reliability engineering standards on the job
 - Employing fundamental of the systems required to manage maintenance resources productively
 - Practicing the latest concepts and techniques required for managing maintenance units.
 - Management position preparedness in the field of maintenance and reliability.
2. LinkedIn Software Training: (June, 2023).
 - **CMMS (Computerized Maintenance Management Systems):** Trained on using CMMS software for operators and maintenance planner or team to record, schedule and track all maintenance tasks (breakdown/reactive, corrective, preventive, upgrades).
 - **Materials Controls:** Material Purchasing, Materials Expediting, Inventory and Stocks Controls, Stock Analysis, Store Controls.
3. **Industrial Training (Bui Power Authority):** (1st July – 31st July, 2023).
Renewable Energy Department at Bui Generation Station (BGS)-Onsite.
Tasks:
 - Inspected panels, Inverters, Transformers, floating anchors: Land-based and Floating Solar PV Plants
 - Performed Firmware updates on the Huawei Inverters
 - Assisted in conducting performance test of Station Service Transformers (SST) and Smart Station Transformers (SST) on Bui 50MWp and 5MWp Land-based and Floating PV plants respectively, which includes:
 - i. Insulation Resistance (IR) test, Arrester test, and System grounding
 - ii. DC Winding Resistance test
 - iii. Current Transformer (CT) Ratio test, CT/PT test.

4. **(Certified): Training Workshop on Grant Writing: Centre for Professional Development (CePDev), ACU-UENR.** (24th May – 26th May, 2023).
Task:
 - Fundamentals and Elements of Grant Proposals
 - Development Project Budgets with Justification
 - Appreciating and Understanding the Funder Call/RFP
 - Beginning your Journey-Identifying of Problem using Problem Tree Analysis
 - Writing the Narratives, Developing Timelines and Milestone of the Grant Proposal
 - Basic Systematic Literature Review
 - Integrating Gender Responsiveness into the Grant Proposal
 - Identifying and Building Effective Partnerships & Networks in the Institution, National and International Arenas & Understanding UENR Grant calling Guidelines.
 - Enhancing Skills in Grant Writing, Submission Process-proofreading, Outline Submission.

5. **(Certified): Energy Management in Homes and Industry: RCEES, UENR and ACE-SPED.** (30th January – 3rd February, 2023). **(Certified).**
Task:
 - Energy Audit, Energy Conversion Techniques, Energy Efficiency Measures
 - Renewable Energy Technologies
 - Hands-On Skills in Energy Audit Practices (Practical/Demonstration)

6. **Industrial Training: TechnipFMC Company Ltd, Takoradi, GPHA Assembly Plant Yard (2018).**
Tasks:
Part of a working-team in Providing Technical Support for Onshore Operations:
 - Performing on-site installation of systems and equipment and on-going preventive maintenance and repair of tools after installation (XT trees, tubing hangers, drilling tools).
 - Production Equipment Tree Troubleshooting and Pressure Testing
 - Environment, Health and Safety (EHS) Practitioner.

7. **Second (2nd) Biennial Research Conference 2021 (Virtual Edition),** Takoradi Technical University. (8th and 9th July, 2021). Theme: *“Championing Research within the Technical University Space in the Covid-19 Era: The role of Technical Universities”*.

8. Council for Technical and Vocational Education & Training (COTVET), Facilitator/Trainer (**Reg. No: CT-FA02744/20**) in Competency Based Training (CBT), (October, 2020).

9. **HEEC Conference,** Higher Education Expo, China. November, 2019.

10. **First Biennial TTU Research Conference,** Takoradi Technical University. (22nd and 23rd November 2017). Theme: *“Technical/Vocational Training (TVET): A Key to Achieving the Sustainable Development Goals”*.

11. **Safety Seminar and Training** at Takoradi Polytechnic, (November, 2011) Theme: *“The Role of H.N.D and Technician Engineers in the Oil and Gas Industry”*.
12. Entrepreneurship Training, UMaT, Tarkwa (March, 2011). Theme: *“Entrepreneurship Drive”*.
13. Motivational Leadership Seminar, Hotel de Hilda Conference Hall, Tarkwa (September, 2007), Theme: *“Securing your Future”*.

COMMITTEE WORKS /PROJECTS/COMMUNITY SERVICES.

- Member, Tourism/Industrial Visit Committee, *GbIE 2023 Conference and 53rd AGM Local Organization Committee (Branch 7)*. July, 2022-2023.
- Member, *Committee that drafted and developed Master of Technology (M. Tech) in Mechanical Engineering proposal curriculum for Ghana Tertiary Education Council (GTEC) for Accreditation*. TTU (Mechanical Eng. Dept.), Dec, 2021-Dec.2022.
- National Trainer, *Ghana for 2021 Population and Housing Census (2021PHC)*. 2020/2021
- Project Work Coordinator, Takoradi Polytechnic (Mechanical Dept.). 2016-2018.
- End of 1st Sem. Examination Supervisor, Takoradi Technical University, 13th Dec. 2017.
- Member, *ADHOC committee that drafted the B. Tech Mechanical Engineering Syllabus (4 years and Top-up) and assessed N.C.T. E applications for the Mechanical Engineering Department*. Takoradi Technical University (Mechanical) 9th April, 2018.
- End of 2nd Sem. Examination Supervisor, Takoradi Technical University, 16th May 2018.

RESEARCH INTERESTS

- Artificial Intelligence Application in Polymer Engineering, Oil and Gas, & PV Energy
- Oil and Gas Production optimization analysis and ISO standards
- Polymer Materials Flammability and Characterisation Estimation
- Sustainable and Renewable Energy (Solar Technologies (Solar PV & Floating Solar), Thermal Energy Technologies, Energy policies & Environ. Sustainability Technologies.
- Control Engineering System Design and Analysis

PUBLICATIONS/RESEARCH WORKS

1. Eduku S., Sekyi-Ansah J., **Alhassan M.O.**, Odonkor E.N. (2024). Design Optimization and Comparative Performance Analysis of a Novel Five-Phase Fault-Tolerant Spoke-Type Flux-Switching Permanent Magnet Motor for EV/HEV Applications. *J. Electr. Eng. Technol.* 20, 1541–1556 (2025). <https://doi.org/10.1007/s42835-024-02081-6>.
2. **Alhassan, M. O.**, Opoku, R., Uba, F., Obeng, G. Y., Sekyere, C. K. K., & Nyanor, P. (2023). Techno-economic and environmental estimation assessment of floating solar PV power generation on Akosombo dam reservoir in Ghana. *Energy Reports*, 10, 2740–2755. <https://doi.org/10.1016/j.egy.2023.09.07>.
3. **Alhassan M.O.**, Eduku S., Amoah A. Doreen, Sekyi-Ansah J., Uba F. Performance of Radial Basis Function and Group Method of Data Handling-type Neural-Networks in Flammability Characteristics Prediction of PMMA. *International Journal of Engineering Trends and Technology* 2023, 71(5), pp.313-327, 2023; <https://doi.org/10.14445/22315381/IJETT-V71I5P233>.
4. Eduku S., Sekyi-Ansah J., **Alhassan M.O.**, Odonkor E.N. Design and Performance Analysis of Five-Phase Fault-Tolerant Spoke-Type PM Motor with Two Distinctive Rotor Topology for Electric Vehicle Traction Application. *International Journal of Engineering Trends and Technology* 2023, 71(1), 164-177. 2023; <https://doi.org/10.14445/22315381/IJETT-V71I1P215>.
5. Eduku S., Odonkor E.N, **Alhassan M.O.**, and Sekyi-Ansah J. Design and Performance Analysis of a Novel Hybrid PM Five-Phase Fault-Tolerant Switched-Flux Memory Motor. *Recent Advances in Electrical & Electronic Engineering* 2022, 15, 544-554; doi.org/10.2174/2352096515666220804150413.
6. Afriyie Mensah, R., Xiao, J., Das, O., Jiang, L., Xu, Q., **Alhassan, M.O.** Application of Adaptive Neuro-Fuzzy Inference System in Flammability Parameter Prediction. *Polymers* 2020, 12(1), 122; <https://doi.org/10.3390/polym12010122>.
7. **Alhassan, Okoe M.**, Jiang L, Afriyie Mensah R, Xu Q., & Boakye Osei, M. (2020). Novel Approaches to Modelling Flammability Characteristics of Polymethyl Methacrylate (PMMA) via Multivariate Adaptive Regression Splines and Random Forest Methods. *Asian Journal of Research in Computer Science*, 4(4), 1-14. <https://doi.org/10.9734/ajrcos/2019/v4i430121>.
8. Boakye Osei, M., Opanin Gyamfi, E., & **Alhassan, M.O.**, (2020). Keystroke Dynamics Algorithm for Securing Web-based Password Driven Systems. *Asian Journal of Research in Computer Science*, 4(4), 1-26. <https://doi.org/10.9734/ajrcos/2019/v4i430119>.

9. Sekyi-Ansah J., Quaisie J.Q., Eduyah I., **Alhassan MO.**, Quansah E., Andoh-Acquah E.K. Design Modification of Automated Power Window Circuit System for Automobiles Air-Condition. *International Journal of Scientific Research in Science and Technology (IJSRST)*, Vol. 7(4), July-Aug. 2020. pp. 264-270. <https://doi.org/10.32628/IJSRST207474>.
10. Sekyi-Ansah, J., Essoun, E.E., Agutey, S.M., Quaisie, J.K., Owusu, J.J., Quansah, E. Asamoah, E., **Alhassan, M.O.**, Quansah, B., Eduku, S. A study on the Steam Generation and its Utilization at Central Oil Mills Limited, Cape Coast - Ghana. *International Journal of Emerging Technology and Innovative Engineering (IJETIE)*, Vol.6 (8), Aug., 2020 pp.1-26, e-ISSN: 202068092.
11. Eduku S, **Alhassan M.O** and Ansah J.S: Design of Vehicle Accident Prevention System Using Wireless Technology, *Intern. Jour of Sci. and Resea. Publi. (IJSRP)*, Vol.7(10), Oct. 2017 pp.397- 403.
12. **Alhassan M.O**, Eduku S, and Sarpong G: Assessing the Impact of the AMATROL Training Programme on Teaching and Learning of Engineering in Polytechnics in Ghana: The Case of Takoradi Polytechnic, *International Journal of Emerging Technology and Innovative Engineering (IJETIE)*, Vol.3 (4), May, 2017 pp.10-29, e-ISSN: 201733006.
13. Eduku S, **Alhassan M.O** and Sarpong G: Design and Construction of Vehicle Accident Prevention System Using Eye Blink Sensor, *International Journal of Emerging Technology and Innovative Engineering (IJETIE)*, Vol.2 (12), Dec., 2016 pp.434-447, e-ISSN: 2016212001.

LEADERSHIP POSITIONS HELD

- Class Representative, Post Graduate Programme [PhD], University of Energy and Natural Resources, 2022/23 – 2025/26 Academic Years.
- Class Representative, Post Graduate Degree Programme [M. Tech], University of Education, Winneba, Kumasi – Campus, 2015/2016 academic years.
- Faculty of Engineering Students’ Representative (F.O.E Representative), Students Representative Council (SRC), University of Mines and Technology, 2010/2011 acad. year.
- Chairman, Ghana Muslim Students’ Association Week Celebration (GMSA-WEEK), University of Mines and Technology-Branch, 2010/2011 academic year.
- Member, Faculty of Engineering (F.O.E) constitutional review committee, University of Mines and Technology-Tarkwa, 2009/2010 academic year.
- Local Coordinator, Ghana Muslim Students’ Association, University of Mines and Technology-Branch, 2009/2010 academic year.
- Organizing Committee Chairman, Ghana Muslim Students’ Association, University of Mines and Technology-Branch, 2008/2009 academic year.
- Member, Organizing Committee, Ghana Muslim Students’ Association, University of Mines and Technology-Branch, 2007/2008 academic year.
- Member, Editorial Board, University of Mines and Technology, Tarkwa, 2007/2008 Academic-yr.

SKILLS/COMPETENCIES

- Time management, interpersonal, and leadership, organizational and planning skills
- Research and analytical skills, critical thinking, patience, tact and tolerance
- Good oral and written communication and a team player.
- Effective public speaking and mentoring, adaption to changing conditions,
- Mining ISO standards, SAP Software, RETScreen Expert, LEAP, HOMER, Minitab, Data Processing and Mining. Microsoft Word, Excel, PowerPoint, AutoCAD/Auto-desk and Good internet ability, SPSS Software, MATLAB, Origin-Pro, SPM, Python,
- Driving (**Driver’s license B**) – Ghana. `
- **Hobbies:** Research, Organizing, Supervising, Travelling, Driving, Football.

REFERENCES

- Prof. Anthony Simons,
Pro-Vice Chancellor, University of Mines and Technology (UMaT), Tarkwa-Ghana,
Faculty of Engineering (Mechanical Engineering), asimons@umat.edu.gh. Tel: +233 (0)208168329.

- Mr. Jonathan Kojo Adusu, Newmont Ghana Gold Limited (Ahafo Mines), Country Manager, LV and Drill Maintenance Planner. Tel: +233 (0)244334496.
- Dr. Richard Opoku, Senior Lecturer, Kwame Nkrumah University of Science and Technology, College of Engineering, Depart. of Mechanical Engineering, ropoku.coe@knust.edu.gh. Tel: +233 (0)240660955.