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JOB ADVERT

Job Title: Mechanical Engineer and Research Associate
Grade AD11
Africa Agriculture Knowledge Transfer Program (AAKTP)

Job Reference Number: KIBU/KTP/001/2023

Application closing Date/Deadline: 18/08/2023

Location: Carbon Footprint Limited, Kakamega, Kenya

Salary Scale: KES 150,000 – 200,000 per month Consolidated

Hours: Full time (approximately 40 hours per week)

Tenure: Two years of a fixed-term contract.

Accountable to: KTP Knowledge Base Supervisor

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Job Purpose

The Africa Agriculture Knowledge Transfer Program (AAKTP) – *Mechanical Engineer and Research Associate-Grade AD11 (KTP Associate)* will work in collaboration with Carbon Footprint Ltd, Kibabii University and the University of Huddersfield as part of an exciting African Agricultural Knowledge Transfer Partnership (AAKTP), funded by **Innovate UK**, for a fixed-term of two years.

The aim of the partnership is to develop appropriate specifications, design, construction and testing of a dryer for sugar cane waste (bagasse). Bagasse disposal is a serious problem in many parts of the world where sugar cane is grown, as it comprises over a quarter of the original mass of the cane produced. The company takes fresh bagasse from the sugar factory and processes it to create fuel briquettes which are used in place of charcoal in the traditional cooking stoves prevalent in the area. The bagasse needs to be dried in order to process it into briquettes. Bagasse is currently dried by spreading it out in the sun, however use of the proposed dryer would allow much more throughput, as the drying process is both time and labour consuming, and weather dependent. Removal of this bottleneck will increase the consumption of bagasse thus easing the bagasse disposal problems for sugar manufacturers, and also expanding briquette production whilst maintaining the existing workforce. Such dryers should be designed for local manufacture, maintenance and repair setup, as well as being affordable to operate. These constraints preclude most commercially available dryers, and a specific solution, appropriate for the local conditions is sought.

Main Duties and Responsibilities:

- i. Managing the KTP project, including maintenance of project plans, organisation of project-related meetings, and budget monitoring;
- ii. Liaising regularly with the academic and company staff, updating them on project progress and planning future direction;
- iii. Researching available bagasse dryers and provide suitable specifications for a system appropriate for use in the situation in Kenya;
- iv. Designing a bagasse dryer protocol to the required specification;
- v. Building and testing a prototype bagasse dryer in both laboratory and field conditions;
- vi. Developing a bagasse dryer design for further / large scale manufacturing;
- vii. Preparing and producing research reports, project progress reports and other documentation (including assisting in preparing joint publications from the findings);
- viii. Participating in team meetings, committees and conferences, as may be appropriate from time to time;
- ix. Delivering guest lectures and participating in seminars for University teaching;
- x. Proactively identifying personal and professional development needs and opportunities to enable effective project leadership and implementation; and

- xi. Undertaking other duties as may be assigned by the Academic and Industry Supervisors.

The Person

The successful candidate will be able to demonstrate the following attributes:

Attributes	Essential	Desirable	Evidenced by
Qualifications/ Training	<ul style="list-style-type: none"> A first Degree in Mechanical Engineering/Renewable Energy or a closely related technology discipline, or relevant industrial experience. 	<ul style="list-style-type: none"> Master's Degree in Mechanical Engineering/ Renewable Energy or any other similar subject with proven experience 	Application Form and CV
Experience	<ul style="list-style-type: none"> Demonstrable ability to use an industry standard solid modelling package(s) to aid the design and analysis of mechanical components. Experience of component / structural design 	<ul style="list-style-type: none"> Industrial experience in a manufacturing environment 	Application Form/ Interview
Knowledge	<ul style="list-style-type: none"> Knowledge of design methods Understanding of thermodynamics and fluid flow 	<ul style="list-style-type: none"> Knowledge of industrial drying methods Knowledge of DFM (Design for Manufacturing) methods 	Application Form/ Interview
Skills & Attributes	<ul style="list-style-type: none"> Ability to communicate concisely both verbally and in writing within a technical context Experience in communicating with a range of staff at different levels within an organisation Innovative and self-motivated 		Application Form/ Interview

	<ul style="list-style-type: none"> • Able to work effectively both independently and within a group setting • A commitment to work collaboratively with the project Partners • A structured approach to problem-solving • Attention to detail • Time management skills • Inquiring mind and willingness to learn • Able to travel 		
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Terms and Conditions

Hours of Work
The hours of work for this position are 40 per week.
Length of Appointment
Fixed term appointment for 24 months
Starting Salary
The salary for this post is KES 150,000.00-200,000 Consolidated per month (depending on qualifications and experience) plus approx. KES 365,000 per annum training allowance.
Closing Date
[CLOSING DATE AND TIME FOR APPLICATIONS: Friday 18th August, 2023 5.00pm EAT]
Each application shall be accompanied by detailed Curriculum Vitae, Copies of Relevant Academic and Professional Certificates, National Identity Card or Passport, Testimonials and other relevant supporting documents.

2023/08/18

All applications should be clearly marked with the referenced number of the advertised position and submitted as follows:

1. Six (6) hard copies; and
2. Electronic scanned copies in PDF format (as one running document) to be sent to the following e-mail: recruitment@kibu.ac.ke and copy to: [jabuya@kibu.ac.ke](mailto:jabuaya@kibu.ac.ke) | j.m.allport@hud.ac.uk by **5.00pm EAT Friday 18th August, 2023**

Applications must be done Online and in Hard on or before **5.00pm EAT Friday 18th August, 2023** and be addressed to:

**The Vice Chancellor, Kibabii University,
P.O. Box 1699 - 50200,
Bungoma**

Note:

ONLY Successful candidates will be invited for interviews which will be held at Kibabii University

Annual Leave

Annual leave entitlement is 30 days per year (including national/public holidays).

Pension

Gratuity Amounting to KES 660,000.00 to 900,000.00 at the end of 24 months contract

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PROJECT BACKGROUND AND COMPANY INFORMATION

Kibabii University (Kenya), in partnership with the University of Huddersfield (UK), has gained funding for a 2-year project with Carbon Footprint Limited, located along Webuye-Kakamega Road (Kenya). The KTP project aims to “*Optimise Sugarcane Supply Chain Through Sustainable Bagasse Drier Solution in Sugarcane Waste Management*” by developing a sustainable off-grid drying technology for processing a highly toxic agricultural food waste product (Bagasse) so as to improve the livelihoods of the local rural communities through provision of affordable clean energy (Charcoal Briquettes from Bagasse) and access to pollution-free land for crop growing. Kibabii University, in partnership with the University of Huddersfield, will build capacity of staff in prototype design, development, fabrication, installation and implementation of the bagasse drying technology. This will be used to help teach Renewable Energy students. Kibabii University, in partnership with the University of Huddersfield, will also enhance its linkages with industry and will gain hands-on-experience in such project management. This project will also demonstrate to industries in Africa the value of linking up with a university to revitalizing supply chain operation and systems. The desire to develop a new multi-disciplinary Sustainable Technology Implementation MSc Course at the University of Huddersfield will be enhanced by using this project as one of the case studies that will be fundamental in examining various challenges in developing and implementing new technologies in developing countries.

Bagasse is a toxic agricultural by-product derived from the sugarcane milling process. The current disposal method dumps bagasse-solid waste on to huge tracts of agricultural land, resulting into a toxic juice (leachate) which burns crops on farms and percolates into wells and streams, thus destroying the water sources.

The project aligns to the following Sustainable Development Goals: SDG 17: (Partnerships for Achieving Common Goals) where Kibabii University seeks to engage its partners locally and internationally to upscale the production of clean energy through eco-friendly processes; SDG 7 (Affordable and clean energy): Kibabii University seeks to generate affordable and clean energy for every household in Western Kenya and beyond; SDG 13: (Climate Action) through the promotion of alternative bio-energy sources (sugarcane bagasse for briquette production saving on felling of trees for wood fuel); and SDG 3: (Good health and Well-Being) through the promotion of clean energy that lowers the risk of respiratory diseases and health issues relating to environmental pollution.

Carbon Footprint Limited’s (Our partner) current efforts to process this agri-food waste product (Bagasse) into clean fuel source (Charcoal Briquettes) is through a manual drying process which is labour intensive and dry weather dependent. The project therefore seeks to mechanize this process and develop an innovative bagasse drying technology suitable for local application. This technology needs to be developed using design for sustainability

principles, enabling the company to power it through alternative energy sources ensuring that it can be maintained without skilled engineers.

This innovative technological solution, powered by sustainable energy, is expected to solve the problem of huge sugarcane production waste and mitigate its polluting effects on the local communities and the crop-growing land and water.

Our ambition is to design, test and operate then replicate to supply this technology to other Kenyan briquette producers to effectively tackle the ever-growing mountains of sugarcane waste.

KIBABII UNIVERSITY | www.kibu.ac.ke

Kibabii University (KIBU) is a Public University that was established in accordance with the Universities Act, 2012. The University College was Chartered to be a full-fledged Public University in 2015. The Vision of KIBU is to be a Global and Dynamic University of Excellence in Science, Technology and Innovation. The University has established itself as an emerging Centre of Excellence in Teaching and Learning, Multi-Disciplinary Research and Community Outreach through Strategic Partnerships. KIBU's ten years of existence has been marked with a remarkable growth in student enrolment (now standing at 8,000 and expected to grow to 20,000 by 2028) occasioned by its market/industry driven academic programmes and curricula.

CARBON FOOTPRINT LIMITED

Carbon Footprint is a Private Limited Company Registered under the Kenya Companies Act, 2015 on 6th June, 2014 Registration No. CPR/2014/145527. Carbon Footprint is located along Webuye – Kakamega Highway. The company is managed by a Board of Directors. The company deals in manufacturing of Charcoal Briquettes processed from Sugarcane Wastes (Bagasse). Carbon Footprint has its main target market for briquette sales approximated at one thousand five hundred (1,500) institutions in the Western part of Kenya including Schools, Technical Colleges, Universities, Hotels, Creameries, Brewers, Local Potters, Hospitals and Camping Sites, Domestic Consumption. Currently, Carbon Footprint currently has a framework agreement to supply ten (10) schools out of the possible 346 schools in Western Kenya, an indication of an expanded potential market.

KNOWLEDGE TRANSFER PARTNERSHIPS (KTP AND AAKTP)

A traditional Knowledge Transfer Partnership (KTP) is a three-way project between a Graduate, a UK-Based Business and a UK-Based University. A graduate is recruited as the 'KTP Associate' to deliver a strategic project for the business whilst being supported by academic experts from the partner University.

African Agricultural KTPs (AAKTP) follow the same model as a traditional KTP, however, the UK-Based University will support and guide a partnership between an African Business and an African University.

Participating in a KTP project can help graduates to enhance their career prospects by providing them with an opportunity to deliver and manage a challenging project, which allows them to use their degree, and is central to an organization's strategic development and long-term growth. The KTP Associate plays a key role in managing and implementing the project within the organisation and is the conduit to transferring knowledge from the University into the business.

Whilst the graduate owns and drives the KTP project, they are supported by experienced staff from the organisation and the University. They are also assigned a KTP Adviser, who will advise them on maintaining good working relationships across the Partnership how to plan their professional development in broad terms.

Further information can be found at <https://www.ktp-uk.org/graduates/>

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