UGANDA NATIONAL BUREAU OF STANDARDS

CERTIFICATE OF LABORATORY RECOGNITION

Certificate No: UNBS/LRS/0017

This certificate is valid as per the scope stated in the accompanying schedule of recognition, Annex "A" which is an integral part of the present certificate bearing the above recognition number for

TESTING OF COOK STOVES

In accordance with the recognised International Standard **ISO/IEC 17025:2017**

Being supplied to

CENTRE FOR RESEARCH IN ENERGY AND ENERGY CONSERVATION

College of Engineering, Design Art and Technology (CEDAT) Makerere University,
P. O. Box 7062, Kampala, Uganda.

The recognition demonstrates technical competence and the operation of a laboratory quality management system to perform the tests as described in the Annex. While this certificate remains valid, the recognised laboratory above is authorised to use the relevant UNBS recognition number to issue facility reports and /or certificates.

Recognition Decision Date: 2021-12-15
Date of original issue: 2019-05-06
Certificate Issue No:03

Effective Date: 2021-12-15
Expiry date: 2024-05-05
Certificate Issue date: 2021-12-15

Ag. Executive Director
UGANDA NATIONAL BUREAU OF STANDARDS

ANNEX A

SCHEDULE OF RECOGNITION – TESTING LABORATORIES

Facility Number	UNBS/LRS/0017	S/N	Technical Signatories	Method
Centre for Research in Energy and Energy Conservation **P.O Box 7062, Kampala Uganda** **College of Engineering, Design Art and Technology (CEDAT) Makerere University, Kampala Uganda**		1.	Agnes Naluwagga (Technical Signatory)	Water boiling test protocol – version 4.2.3, ICSEA rating test protocol for East Africa – version 2.0, US ISO 19867-1:2018, US 761:2019 and Emissions test and Durability test
		2.	Derrick Kiwana (Analyst)	Water boiling test protocol – version 4.2.3, ICSEA rating test protocol for East Africa – version 2.0, US ISO 19867-1:2018, US 761:2019 and Emissions test
		3.	Claire Turyahebwa (Analyst)	Water boiling test protocol – version 4.2.3, ICSEA rating test protocol for East Africa – version 2.0, US ISO 19867-1:2018, US 761:2019 and Durability test
		4.	Jimmy Agaba (Analyst)	Water boiling test protocol – version 4.2.3, ICSEA rating test protocol for East Africa – version 2.0, US ISO 19867-1:2018, US 761:2019

Material or products tested	**Type of tests/property measured, Range of Measurement**	**Standard specifications, Techniques/Equipment used**
TESTING FIELD - TESTING FIELD – HEAT AND TEMPERATURE		
Cook stoves	Thermal performance test (Efficiency, Fuel use, Time to boil)	Water boiling test protocol – version 4.2.3, ICSEA rating test protocol for East Africa version 2.0, US ISO 19867-1:2018, US 761:2019
	Emissions test • Carbon monoxide CO, • Carbon dioxide CO_2, • Particulate matter PM_{25}, • Black Carbon BC	Laboratory Emissions monitoring System(2029) LEMS, Flue gas analyzer (Testo 350), Gravimetric system with analytical scale, Transmissometer Aethalometer (sootscan) model OT21

	Safety test • sharp edges and points • Cook stove tipping • Containment of fuel • Obstruction near cooking surface • Surface temperature • Heat transfer to the environment • Handle temperature • Chimney shielding • Flames surrounding cookpot • Flames exiting fuel chamber, canister, or pipes	Biomass stove safety protocol version 1.0
	Controlled Cooking Test (CCT) • Specific fuel consumption • Cooking time	Controlled cooking test- version 2.0
	Kitchen performance test (KPT) • Daily fuel use • Fuel use per capita • Daily energy use • Energy use per capita	Kitchen performance test version 3.0
	Durability tests • Extended run test • External impact test • Internal impact • Corrosion testing • Coating	Cook stove durability protocol version 10

	adhesion • Quenching • Material failure temperature	

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