

UNIDO – ECREEE RECP/IEE Project

Industrial Energy Assessments – Nigeria

Advisory Note

Portable Measuring Equipment for Industrial Energy Assessments

July, 2023

1. THE SCOPE OF SUPPLY

1.1.1. LOT 1 - Equipment and instruments required for Steam Systems

No.	ECREEE REQUIREMENTS			TO BE COMPLETED BY THE SUPPLIER			
	Equipment Description	Technical Parameters/Requirements	Qty	Unit Price (US\$)	Total Item Price (US\$)	Compliance* Yes/No	Remarks**
1	Conductivity and TDS Meter RS Pro RS1410 or Amprobe WT-60 or	<ul style="list-style-type: none"> - Should be able to measure: Conductivity and TDS - Conductivity range: 0-1999μS/cm - TDS range: 0-199.9ppt 	2				
2	Flue Gas Analyser Bacharach P400 or Testo 340 or KANE 958	Flue gas analyser for industrial applications with: <ul style="list-style-type: none"> - 4 gas sensors (<i>O₂</i>, <i>CO</i>, <i>NO</i>, <i>NO₂</i> & <i>SO₂</i>) - Pre-calibrated gas sensors - 4 spare sets of filter tubes - Bluetooth and USB interface - Internal memory with min. 150 records 	2				
3	Infra-red Thermometer Amprobe IR-730 or Fluke 64Max or Fluke 62 Max or equivalent	Infra-red Thermometer for industrial applications with: <ul style="list-style-type: none"> - Laser pointer and backlit LCD Display - Measurement range: -30°C to 500°C - Min, Max and average readings - IP54 ingress protection 	2				

		- Minimum 10:1 Distance to spot ratio				
4	24" Stem thermometer	Stem (24") Thermometer with: - probe, thermocouple and digital readout - measurement range: -50°C to 330°C	2			
5	Digital Stopwatch Sportline 240 or equivalent	Digital Stopwatch with 1/100 th second accuracy	2			
6	Ultrasonic leak detector kit UE Systems model UP 100 scanner kit or equivalent	Ultrasonic leak detector kit with - Handheld ABS pistol type ultrasonic processor, stainless steel sensor enclosures - SMD/Solid State hybrid heterodyne receiver	2			
7	Steam trap tester TLV PT1 or equivalent	Pocket-size steam trap tester with - Internal memory with min. 100 records - Temp. measurement range: 0°C to 330°C - backlit LCD Display	2			
Cost of transportation (DPU – Incoterms 2020) [in Euro]						
Cost of insurance (110% value of the total costs) [in Euro]						

*) compliance must be confirmed in detail by the contractor's offer and technical documentation and will be verified by ECREEE during technical evaluation.

**) if not compliant with ECREEE's required parameters, the invitee must indicate his parameters in this column.

3.1.1 LOT 2 - Equipment and instruments required for Motor Systems and Compresses-air Systems

No.	ECREEE REQUIREMENTS			TO BE COMPLETED BY THE SUPPLIER			
	Equipment Description	Technical Parameters/Requirements	Qty	Unit Price (EUR)	Total Item Price (EUR)	Compliance* Yes/No	Remarks**
1	Power data logger/ power quality analyser Fluke 1734 (international) or Chauvin Arnoux PEL 103 or equivalent	Power data logger/ power quality analyser with: <ul style="list-style-type: none"> - Measured parameters: voltage, current, aux, frequency, THD V, THD A, power, power factor, fundamental power, DPF, energy (Wh, varh, VAh), PF, maximum demand - Connectivity: Wi-Fi, Bluetooth, USB - Colour LCD display Offer should include the following items: a) 9 nos. of Rogowski coil CTs with a rating of 2000A. b) 6 nos. of Rogowski coil CTs with a rating of 1000A.	3				
2	Magnetized measurement probes for voltage measurements Chauvin Arnoux P01103058Z or equivalent	Safety feature should be available to prevent touching any live connection	3				
3	Current data logger	Current data logger with: <ul style="list-style-type: none"> - one internal ambient temperature 	3				

	ACR Smart Reader 3 plus or equivalent	<ul style="list-style-type: none"> channel - Seven external channels that can accept up to 7 Amp clamps or 4 Amp clamps and one 3 phase Voltage Transducer <p>Offer should include the following items:</p> <p>a) 9 nos. of Rogowski coil CTs with a rating of 1000A.</p> <p>b) 6 nos. of Rogowski coil CTs with a rating of 250A.</p>					
4	Clamp-on meter Fluke 376 FC or equivalent	<p>Basic handheld current clamp meter (True RMS current) with:</p> <ul style="list-style-type: none"> - iflex probe - Voltage range up to 1000 V AC or DC - Resistance range up to 60 kΩ with continuity detection - Min, max, average, and inrush recording to capture variations automatically - 500 mV DC measurement range to interface with other accessories - 1000 μF capacitance measurement 	2				
5	Motor ON/OFF data Logger HOBO UX90-004M or equivalent	<p>Motor On/OFF data Logger with:</p> <ul style="list-style-type: none"> - Dual internal motor sensors - LCD display - At least 256 KB internal memory - 3V CR2032 lithium battery power source 	5				
6	Infrared camera Fluke Ti480 PRO or FLIR E86 or Hikmicro M30 or	<p>Infrared camera with</p> <ul style="list-style-type: none"> - LCD display with 640 x 480 resolution - Removable SD card storage 	1				

	equivalent	<ul style="list-style-type: none"> - Rechargeable Li-ion battery - Min. 4x digital zoom - USB Type-C interface - Min. 110,592 thermal pixel resolution - Min. temperature range -20 °C to 550 °C 					
7	Stroboscope Fluke 820-2 LED or SKF TKRS 11 or equivalent	Stroboscope with: <ul style="list-style-type: none"> - Measurement range of 30 to 300,000 FPM or 0.5 to 5000 Hz - LCD display 	1				
8	Multifunctional environmental meter Testo 440 or equivalent	<p>Multifunctional environmental meter With:</p> <ul style="list-style-type: none"> - colour graphic display - internal memory <p>The meter should be compatible with probes to measure: Air Velocity (m/s), Air Volume (m3/hr), Sound (dB), Temperature (°F/°C), RH (%) and Light level (Lux).</p> <p>Offer should include the following probes:</p> <ul style="list-style-type: none"> - lux meter - robust humidity/temperature probe - hot wire probe - 10mm vane head with temp and humidity and adjustable probe length. 	1				
Cost of transportation (DPU – Incoterms 2020) [in US\$]							
Cost of insurance (110% value of the total costs) [in US\$]							

	Total price [in US\$]	
--	-------------------------------	--

*) compliance must be confirmed in detail by the contractor's offer and technical documentation and will be verified by ECREEE during technical evaluation.

***) if not compliant with ECREEE's required parameters, the invitee must indicate his parameters in this colu

