UNIDO – ECREEE RECP/IEE Project

Industrial Energy Assessments – Nigeria

Advisory Note

Portable Measuring Equipment for Industrial Energy Assessments
1. **THE SCOPE OF SUPPLY**

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

<table>
<thead>
<tr>
<th>No.</th>
<th>Equipment Description</th>
<th>Technical Parameters/Requirements</th>
<th>Qty</th>
<th>Unit Price (US$)</th>
<th>Total Item Price (US$)</th>
<th>Compliance*</th>
<th>Remarks**</th>
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</thead>
</table>
| 1   | Conductivity and TDS Meter  
RS Pro RS1410 or Amprobe WT-60 or | - 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:  
- 4 gas sensors \(O_2, CO, NO, NO_2 & SO_2\)  
- 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:  
- Laser pointer and backlit LCD Display  
- Measurement range: -30°C to 500°C  
- Min, Max and average readings  
- IP54 ingress protection | 2 | | | | |
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</table>
| 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 1/100th 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

<table>
<thead>
<tr>
<th>No.</th>
<th>Equipment Description</th>
<th>Technical Parameters/Requirements</th>
<th>Qty</th>
<th>Unit Price (EUR)</th>
<th>Total Item Price (EUR)</th>
<th>Compliance*</th>
<th>Remarks**</th>
</tr>
</thead>
</table>
| 1   | Power data logger/ power quality analyser | Power data logger/ power quality analyser with:  
- 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:  
- one internal ambient temperature | 3 | | | | |
<table>
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<tr>
<th></th>
<th>Description</th>
<th>Specifications</th>
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</table>
| 4 | Clamp-on meter | Basic handheld current clamp meter (True RMS current) with:  
channel  
- Seven external channels that can accept up to 7 Amp clamps or 4 Amp clamps and one 3 phase Voltage Transducer  
Offer should include the following items:  
a) 9 nos. of Rogowski coil CTs with a rating of 1000A.  
b) 6 nos. of Rogowski coil CTs with a rating of 250A. |
|   | Fluke 376 FC or equivalent |  |
| 5 | Motor ON/OFF data Logger  
HOBO UX90-004M or equivalent | Motor On/Off data Logger with:  
- Dual internal motor sensors  
- LCD display  
- At least 256 KB internal memory  
- 3V CR2032 lithium battery power source |
| 6 | Infrared camera  
Fluke Ti480 PRO or FLIR E86 or Hikmicro M30 or equivalent | Infrared camera with  
- LCD display with 640 x 480 resolution  
- Removable SD card storage |
<table>
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<th>equivalent</th>
<th>Stroboscope</th>
<th>Multifunctional environmental meter</th>
<th>Cost of transportation (DPU – Incoterms 2020) [in US$]</th>
<th>Cost of insurance (110% value of the total costs) [in US$]</th>
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<tbody>
<tr>
<td>7</td>
<td>Stroboscopec Fluke 820-2 LED or SKF TKRS 11 or equivalent</td>
<td>Stroboscope with:</td>
<td>Multifunctional environmental meter With:</td>
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<td>- Measurement range of 30 to 300,000 FPM or 0.5 to 5000 Hz</td>
<td>- colour graphic display</td>
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<td></td>
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<td>- LCD display</td>
<td>- internal memory</td>
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<td>The meter should be compatible with probes to measure: Air Velocity (m/s), Air Volume (m3/hr), Sound (dB),</td>
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<td>8</td>
<td>Multifunctional environmental meter Testo 440 or equivalent</td>
<td></td>
<td>Temperature (°F/°C), RH (%) and Light Level (lux).</td>
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<td>Offer should include the following probes:</td>
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<td>- lux meter</td>
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<td></td>
<td></td>
<td></td>
<td>- robust humidity/temperature probe</td>
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<td>- hot wire probe</td>
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<td>- 10mm vane head with temp and humidity and adjustable probe length.</td>
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<td>Total price [in US$]</td>
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