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1. Introduction

Laboratory equipment requires regular service and maintenance to ensure it functions properly and safely. With properly working equipment, reliable data and accurate results can be generated, leading to no wasted effort, time, and money. Implementing preventative maintenance in laboratory settings serves as the cornerstone for enhancing the overall performance of critical equipment. Without the right spare parts on hand, you risk failing to achieve your operational, scientific, and financial goals. If your equipment is not operating properly, the years of effort contributing to this breakthrough are wasted and the resulting potential accomplishments can't come to fruition.

2. Supporting Clauses

2.1 Scope

The scope of work (SOW) covered in this contract is for Calibration, Service, Maintenance and Repair of Coal Laboratory Equipment with provision of Spares and Consumables at Hendrina Power Station. The contractor shall provide service and maintenance of laboratory equipment, calibrate laboratory equipment, repair laboratory equipment and provide spares and consumables for the equipment.

2.1.1 Purpose

The purpose of this instruction is to outline the Scope for the Calibration, Service, Maintenance and Repair of Coal Laboratory Equipment with provision of Spares and Consumables and the expectation on both the contractor and employer (Eskom) for the duration of the contract.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- (1) 32-1034 Eskom's Procurement and Supply Chain Management Procedure
- (2) 32-727 Safety, Health, Environment and Quality (SHEQ) Policy

2.2.2 Informative

- (1) NEC3 Term Service Contract
- (2) ISO 9001: Quality Management Systems
- (3) ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories.
- (4) SANS 10378 General requirements for the competence of verification laboratories

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2.3 Definitions

Not applicable.

2.4 Abbreviations

Abbreviation	Explanation
ISO	International Organisation for Standardization
NEC TSC	New Engineering Contract Term Service Contract
OEM	Original Equipment Manufacturer
QC	Quality Control
PPE	Personal Protective Equipment
SABS	South African Bureau Standards
SANAS	South African National Accreditation system
SHEQ	Safety, Health, Environment and Quality
SOW	Scope of work
TSC	Term Service Contract

2.5 Roles and Responsibilities

Role	Responsibility
Employer	It is the responsibility of the employer to ensure that the contractor adhere to the requirements as stated in the SOW
Contractor	It is the responsibility of the contractor to ensure that the scope outlined in this instruction is adhered to throughout the contract period.

2.6 Process for Monitoring

Regular reviews and audits shall be conducted to ensure compliance to the content of this document. The SAP Plant Maintenance Management System shall be used to track or assess the Calibration of Instruments.

2.7 Related/Supporting Documents

Not applicable.

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3 Scope of work

Calibration, Service, Maintenance and Repair of Coal Laboratory Equipment with provision of Spares and Consumables

3.1 Executive Overview

Calibrate, service, maintain and repair Coal Laboratory Equipment for a period of 60 months (5 years), including provision of spares and consumables at Hendrina Power Station.

3.2 Employer's requirements for the service

- a) The contractor shall have expertise, experience, and necessary resources to be able to provide the service for all laboratory equipment.
- b) The laboratory equipment shall be serviced, calibrated, and maintained in accordance with frequency specified
- c) The spares and consumables shall be obtained from OEM and shall be readily available.
- d) Laboratory equipment repairs shall have a turnaround response time of 48 hours.
- e) Ensure Calibration Laboratories are SANAS 17025 Accredited.
- f) Supplier to provide proof that the instrument used to calibrate the laboratory equipment is calibrated and calibration is traceable to NIST.
- g) Ensure calibration and verification tools are calibrated and proof of the tool calibration to be provided.
- h) Records to demonstrate the assurance of the calibration results i.e., participation in inter-laboratory comparisons or proficiency testing.
- i) Documented requirements for environmental condition that could influence the quality of calibration results.

3.3 The scope of calibration, service and maintenance (where applicable)

- Instrument cleaning
- Check of the instrument and ambient conditions
- Check or test hardware
- QC pass hardware
- All hardware to be replaced if broken and not functional
- Check or test software
- QC pass software
- All software to be replaced if broken and not functional

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- Check electronics
- Check and test sensor functionality where applicable
- Check and replacement of instrument components and consumables e.g., probe, lamp, lens
- Replacement of normal wear parts
- Inspection of critical components
- Adjustments as needed
- Calibration of instrument components
- Run calibration standards on the instrument, followed by QC standard
- Record the values and the measured deviation to the calibration and QC standard/s
- Calibration standard or kit to be provided after use.
- The calibration standard or kit must be valid for a period of twelve months before expiry date
- Provide Calibration Certificate
- Provide Calibration Report/certificate (the report must contain minimum information as follows):
 - √ Name of requester,
 - √ Unique number of the certificate,
 - √ address of requester and supplier,
 - √ supplier company name,
 - √ accreditation number where applicable,
 - √ Serial number of instruments being calibrated,
 - √ Summary of status,
 - √ Results,
 - √ Uncertainty of measurements,
 - √ Environmental conditions at the time of calibration,
 - √ Date calibrated,
 - √ Name and signature of the technician calibrated the instrument.
- Provide a calibration sticker on the instrument which must include date calibrated and the next service date
 - Performance Verification of the instrument to be done
 - Performance Verification Report
 - Recommendations to optimize performance
 - Maintenance Report
 - Bring own calibration standard, quality control standard and any other applicable standard

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- Replace lamp
- Replace lens
- All calibration standards to be tested and QC passed.
- Remaining standards after calibration to be left behind.

NB: The scope of calibration, service and maintenance is not limited to the above stated points.

3.3.1 Calibration, Service and Maintenance frequency

3.3.1.1 Six monthly calibrations and services

Test Instrument	Number of Analysers
Analytical balance	10
Top pan balance	5
Floor scale	1

3.3.1.2 Yearly calibrations and services

Test Instrument	Number of Analysers
Group 1	
Mass Pieces for balance verification	10
Thermo-Hygrometer	2
Digital thermometer with 2 probes	2
Stopwatch/ Timer	2
Ovens	5
Furnaces	3
CAL3K-A Oxygen Bomb Calorimeter with 2 coolers & filling station	1
GROUP 2	
Service of LECO S832 Sulphur Instrument	1
Service of LECO AC600 Calorimeter	1
Service of Hardgrove Grindability Index Machine	2
Service of shakers	2
Service of Roller Mill	1
Service of Crushers (Rolls and Jaw)	2
Service of pulveriser	2
Service of rotary sample divider	1

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3.4 Other requirements

Supplier to include the following on the quotation where applicable

- Labour rate per hour (certified technician)
- Travel rate per km
- Travel time per hour
- Delivery Charge
- Accommodation

3.5 Repairs

Repairs shall be handled on a call out basis.

Response turnaround time shall be 72 hours.

Loan unit to be provided where repairs might take longer than 1 week.

3.5.1 Equipment for repairs

All equipment under 3.3.1

3.6 Training

- a) The contractor shall ensure their personnel is properly and adequately trained to calibrate, service, maintain and repair all equipment mentioned in this SOW.
- b) Provide training programme for Chemistry personnel where necessary.
- c) Provide training (classroom and on-job) to Chemistry personnel where necessary.
- d) All Assessments (Written, Oral, Panel, Troubleshooting) needs to be documented.

4 SHEQR requirements

SHEQR requirements that cover the total holistic approach to all potential risks includes the following legal obligation:

Safety

- The Contractor will supply his safety file and plan for ensuring compliance to all safety requirements of OHSA and Regulations.
- The Contractor shall ensure that all employees wear the required PPE when coming to site to perform service, calibration, maintenance or repairs of the equipment.
- The Contractor shall attend the compulsory monthly Partnership Managerial Safety meetings.
- The Contractor shall ensure that Life Saving Rules are adhered to at all times.

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- The SHEQ personnel shall keep the company's contract safety file updated for Audit purposes.

Environmental

- The contractor will be required to adhere to all the environmental requirements as outlined in the Supplier Environmental Management Specification (HSSSPA/105).
- The contractor will be required to adhere to the requirements of the Hendrina Power Station Environmental Management System and have in place an environmental file to ensure adherence to all requirements, which must be approved by the Environmental Department before any work can commence on site.
- Waste management should be done in accordance with the documented procedure as highlighted in the Hendrina Power Station Waste Management Procedure HSPPIN003.

Quality

- The Contractor will provide a quality assurance plan on how compliance with the statutory requirements will be monitored and ensured. This will include a quality control programme on service, calibration, and maintenance of the equipment.
- The contractor shall be SANAS accredited as a calibration lab and where applicable.
- The contractor shall adhere to the service, calibration and maintenance frequency of all the equipment.
- The supplier shall use accredited reference material on the equipment.

5 Records to be kept

- All contractual communications will be in the form of properly compiled letters or forms attached to e-mails and not as a message in the e-mail itself.
- Every document or report should have the contract number.
- Task order and invoice should have both contract number and order number
- The person representing the Employer at Hendrina Power Station will issue each Task Order to the Supplier. Each Task Order will be submitted at least one week prior to the starting date.

6 Notes / Forms / Appendices / Annexures

Not applicable.

7 Acceptance

This document has been seen and accepted by:

Name	Designation
	Assistant Officer Document Management
	Senior Chemist Chemistry

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Name	Designation
	Senior Technologist Engineer
	Officer Environmental Management
	Officer Safety Health and Environment

8 Revisions

Date	Rev.	Compiler	Remarks
July 2024	0		

9 Development Team

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