

	SCOPE OF WORK	Grootvie Power Station
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Equipment Calibration and Repair
Scope of Work**

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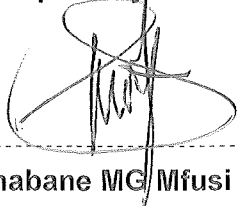
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1. Introduction

The test equipment mentioned in this scope is used on plant equipment for certification and analysis. It is imperative that this test equipment be calibrated, serviced, and repaired by accredited service providers at the appropriate intervals. This is essential to ensure the accuracy of the instruments and to meet the requirements of ISO 9001:2025 standards. For Grootvlei Power Station, calibration of test equipment shall be outsourced to suitably qualified, experienced, and well-established service providers.

Additionally, Grootvlei Power Station requires accurate and reliable measurements to ensure efficient and safe operations. Handheld instruments are widely used across various sections of the power plant for routine measurements. The calibration will cover instruments used by P&T. These instruments require regular calibration to maintain their accuracy and reliability. The objective of this contract is to calibrate all handheld instruments used throughout Grootvlei Power Station to ensure their accuracy and reliability. The benefits of this contract include:

Improved Accuracy and Reliability: Ensuring measurements are accurate and reliable, thereby reducing errors and minimizing downtime.

Regulatory Compliance: Meeting regulatory requirements for instrument calibration.

Extended Instrument Lifespan: Regular calibration can prolong the life, reducing maintenance and replacement costs.

Enhanced Safety: Accurate measurements help reduce the risk of accidents and injuries.

Furthermore, monitoring and performing plant performance tests offer several benefits:

of handheld instruments
Maximized Plant Efficiency and Performance: Identifying shortfalls in efficiency and providing recommendations for recovery and improvements.

- **Cost Reduction:** Minimizing operating costs by early detection of inefficiencies.
- **Early Detection of Malfunctions:** Identifying incorrect plant parameters and malfunctioning instruments early to prevent potential failures.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this documents is to define a scope of work based on which a service contract will be established between Eskom Grootvie Power Station and the instrument Calibration Service Provider.

2.1.2 Applicability

This document is applicable to Groot vie Power Station only.

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2.1.3 Effective date

The Scope of work will be effective from the date it is authorized and documented at the document management centre.

2.2 Normative/Informative References

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

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems.
- [2] ISO 14001 Safety Management Systems.

2.2.2 Informative

- [3] ISO/IEC 17025:2008 General requirements for the competence of testing and calibration laboratories.
- [4] SANS 10378:2012 General requirements for the competence of verification laboratories.

2.3 Definitions

Term	Definition
Accuracy	The degree of correctness with which the result of a measurement represents the true value of a quantity usually expressed in term of error.
Accredited Supplier	Process ensures that new and existing suppliers and contractors of an organization are compliant in meeting specific minimum criteria, standards, and organization requirements to be registered, eligible and approved to conduct business and provide services.
Calibration	A comparison between a process calibration equipment item and a measuring standard of higher accuracy to detect, correlate, adjust and document the accuracy of the item being compared .
Contractor	Service provider or legal entity contracted to provides any service/s to Eskom for compensation.
ISO 17025	An international standard (published by the international requirements for the competence to conduct tests and / or calibration.
Tender	An offer to do or perform an act which the party offering is bound to perform for the party to whom the offer is made.
Test Equipment	Measuring instruments and standard used to check the operation of process measuring instruments under test condition.

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2.4 Abbreviations

Abbreviation	Explanation
C&I	Control & Instrumentation
H ₂	Hydrogen
IR	Infrared
ISO	International Standard Organisation
K-Type	Chromel – Alumel Type
Kpa	Kilo Pascal
O ₂	Oxygen
OEM	Original Equipment Manufacture
PF	Pulverized Fuel
P&T	Performance and Testing
SANAS	South African National Accreditation Standards
SANS	South African National Standards
SAP	System Applications Product
Snr	Senior
SOW	Scope of work
Tech	Technical
URS	User Requirement Specification

2.5 Roles and Responsibilities

Roles	Responsibilities
Performance and testing	1) To compile the scope of work for test equipment calibration at Groot vie power station. 2) To provide adequate description and quantities for the planning and procurement of business needs within the sphere of responsibility in performance and testing. 3) To provide a quick response to any request for clarification or though the relevant procurement department. 4) To issue an order to the service provider when the equipment is due for calibration 5) Performance and Testing: To manage the Groot vie Power Station assets on behalf of the Employer.

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Procurement	1) To ensure that execution of the agreed commercial strategy is commercially, technically legally and financially sound. 2) To Co-ordinate cross functional teams.
The Contractor shall have the following functions	1) Collect the instruments and submits to the OEM for calibrations. 2) For all maintenance activities including repairs and replacements, the Employer shall be informed by the Contractor prior to commence those activities so that the Employer shall do their own assessment. 3) The Contractor shall ensure frequent communication to the Employer and provide the status of all equipment that are sent out for calibrations so that the Employer will be able to determine how long the risk will be mitigated. 4) The Contractor is responsible for calibration of the instruments shall make sure that instruments are returned at a serviceable condition, make sure no missing parts and instruments are cleaned.

2.6 Process for Monitoring

- Regular reviews and audit shall be conducted to ensure compliance to the content of this document. The SAP plant maintenance management system shall be used to tract or assess the calibration of equipment.
- SAP PM will be used as a process for monitoring.

2.7 Related/Supporting Documents

N/A

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3. Scope of work

3.1 Requirements

3.1.1 Adherence to Eskom General Policies & Standards

The employees of the service provider shall comply with Eskom's policies and regulation.

3.1.2 Quality Standard

The contractor shall provide a Complete Quality Assurance plan in accordance with the requirements of ISO 9001:2015 to employer for approval. This plan must ensure an integrated quality service as part of the contract. Execution of all quality related activities, including inspection and test plans compilation and execution, store material quality inspections and all quality related record keeping is part of the contractor's scope of work.

3.1.3 International Standard (ISO/IEC)

The service provider shall be accredited in accordance with the requirements of the ISO 17025:2017 Standard.

3.1.4 South African National Accreditation system standard (SANAS)

The service provider shall be accredited in accordance with the requirements of the SANAS regulatory standards.

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3.1.4.1 Calibration Procedures

- a) The service provider shall only use approved calibration procedure for calibrations which has been accredited in accordance with the requirements of the SANAS standards.
- b) The service provider shall supply Grootvie power station with the approved calibration procedures used for test equipment calibration.
- c) The service provider shall notify Grootvie power station of any revision changes of these approved calibration procedures and supply the latest version .

3.1.4.2 Calibration Certificates

- a) The service provider shall only use and supply approved calibration certificates in accordance with the requirements of SANAS standards for each test equipment calibration.
- b) The service provider shall only provide SANAS accredited calibration certificates for each calibration done on test equipment.
- c) The calibration certificates shall carry the logo of SANAS accreditation.
- d) The calibration certificates shall be recorded in writing and carry the initials, surname and signature of the person conducted the test calibration and the date of calibration.
- e) The calibration certificates shall record the “as found” and as “left values “ , including the error and error tolerance of the test equipment.
- f) Test equipment which operates outside the acceptable err tolerances shall be recorded in the calibration certificate.

3.1.4.3 Calibration Labels

- a) the service provider shall after each calibration label to the test equipment with the words: “due for calibration....” And a date which will indicate to the user when the test equipment must be returned to the calibration facility for re-calibration.
- b) the calibration labels shall be off a printed format and carry the calibration certificate reference number, signature of the person conducting the test calibration and date of calibration .

3.1.4.4 Sealing Device

the service provider shall after each calibration apply a sealing device to each test equipment's which provide an indication of unauthorised interference or adjustments. The sealing device applied shall be for the approval of the employer. If the sealing device is broken before installation the test equipment shall be regarded as faulty, withdraw from the service, and returned to the calibration facility for re-calibration.

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3.1.4.5 Calibration Reports and Records

- a) The service provider shall provide Grootvie Power station performance and testing department with detailed reports of each test equipment calibration performance and including the environmental condition of the calibration.
- b) The service provider shall keep detailed records(report and certificates) in a databased of each test equipment calibration for future reference in the event of loss of original report and certificates.

3.1.4.6 Calibration Turnaround Time

The service provider shall commit towards a specified turnaround time schedule indicating, the calibration, verification, or repairs on all test equipment within a specified timeframe as agreed upon between the Grootvie power station performance and testing department and the service provider.

3.1.4.7 Defective Test Equipment

Test equipment which has been found defective or operates outside the acceptable error tolerance ranges shall be identified, marked as defective, the cost to repair shall be sent to Eskom before they may be returned to Grootvie power station at performance and testing department for disposal.

3.2 Manpower

3.2.1 Competent personnel

- a) The service provider shall make use of competent laboratory personnel which has been accredited in accordance with the requirements of the SANAS standard to perform calibrations on the test equipment.
- b) The competent laboratory personnel shall be fully trained and authorised to provide the calibration service as stipulated in the scope of work.
- c) The service provider shall apply Grootvie power station with valid documentation as proof regarding the competency of their laboratory personnel.

3.3 Site Facilities and service and service provided by the service provider

3.3.1 Calibration Location Option 1 at the laboratory

The service provider shall be required to make use of an approved calibration laboratory which has been accredited in accordance with the requirements of SANAS regulatory standard.

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3.3.2 Calibration Location option 2 on-site

The service provider shall be required to make use of an approved on-site calibration laboratory (building/mobile) which has been accredited in accordance with the requirements of the SANAS regulatory standards.

3.3.3 Handling of Test Calibration Equipment

- a) The service provider shall refer to the OEM instruction manual if any equipment specific procedure is not available.
- b) The service provider shall handle test calibration equipment by carrying it in the supplied protective housing , holder, bag, or container to protect it against internal and external damage caused by dropping, bumping. Falling or breakages.
- c) The service provider shall report whenever damage occurs caused by dropping, bumping, falling, or breaking of any test calibration equipment to Grootvie power station.

3.3.4 Storage of Test Calibration Equipment

- a) The service provider shall refer to the OEM instruction manual before any test calibration equipment is stored in allocation/area if any equipment specific procedure is not available.
- b) The service provider shall ensure the test calibration equipment is not being stacked flat on top of one another but separate to ensure that no damage is caused due to falling and overload.

3.3.5 Transportation of Test Calibration Equipment

- a) The service provider shall transport test calibration equipment with due regard to the sensitivity of the test equipment, which should not be subjected to rough handling, vibration, humidity and abnormal temperature or abuse.
- b) The service provider shall ensure that all test calibration equipment is securely packed and protected against damages from being bumped or drooped when transported to Grootvie Power station.
- c) the service provider shall ensure whenever transport couriers are used the company must be informed to the nature of the content of the packages and instructed to handle the packages with care. Labels must be attached to indicate the fragile nature of the items.

3.3.6 Transportation of Personnel, Testing Equipment and Tools

The service provider shall make use of their own vehicles for the transporting of personnel, test calibration equipment and tools into and off from Grootvie power station site .

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3.4 Tender requirements

- a) A proposal is to submit by the tenderers for the mentioned scope of work.
- b) Hereafter a contract shall be negotiated with the successful service provider.
- c) The appointment of the successful service provider is at Eskom (Employer) sole discretion taking into account the factors which Eskom considers relevant.

3.5 Scope of work information for performance and testing

3.5.1 Test Equipment Calibration

The service provider shall perform functional, calibrations repairs and verification tests on the following test equipment in accordance with requirements of the original equipment manufacturer specifications.

List :

Item	Description	Unit	Frequency Note	Note
1	Helium Sniffer (Inficon UL1000)	1	Annually	
2	Particle counter (SBSS-C)	1	Annually	Calibration to be done onsite at Grootvlei PS
3	Karl Fisher	1	Annually	Calibration to be done onsite at Grootvlei PS
4	Testo 350 O2 analyser	4	Annually	
5	Testo 340 O2 analyser	4	Annually	
6	Optima 7 O2 analyser	2	Annually	
7	Digima manometer 20 Mbar	2	Annually	
2	Strobe light	1	Annually	
8	Infrared thermometer	2	Annually	
9	Major tech wind meter	2	Annually	
10	PMC barometer	1	Annually	
11	Tacho meter	1	Annually	
12	Pyrometer gun	1	Annually	
13	Fluke thermal imager	1	Annually	
14	Memocal	1	Annually	
15	Ultrasonic thickness meter	2	Annually	
16	PF sampler machine	2	Annually	
17	Lab oven	1	Annually	
18	Karlfischer	1	Annually	
19	Hydrogen leak detector	1	Annually	
20	Thermal image camera	1	Annually	
21	H2 purity analyzer	1	Annually	
22	Thermometer Fluke	1	Annually	
23	Dital Manometer	1	Annually	
24	Balance scale	2	Annually	
25	PF sampler machine service	2	Annually	
26	Pf sampling Shake	2	Annually	
27	Digima manometer 200 Mbar	2	Annually	
29	Pitot Tube 4M L-Type	4	Annually	
30	Pf sampling Pitot	2	Annually	
31	Pitot tube 1 L-type	4	Annually	

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4. Acceptance

This document has been seen and accepted by:

Name	Designation
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5. Revisions

Date	Rev.	Compiler	Remarks
August 2025	1	TM Mfusi	Original Document

6. Development Team

The following people were involved in the development of this document:

- a. Penuel Fakude

7. Acknowledgements

N/A

APPENDIX A

MANDATORY STEPS FOR EQUIPMENT CALIBRATION:

- a) Come to the station and collect the instruments.
- b) Register all received instruments.
- c) Mark each component of every machine that requires servicing.
- d) Inform P&T personnel of your intention to inspect the instruments, including the date and time.
- e) P&T personnel must witness the opening and stripping of all instruments prior to stripping.
- f) Open and inspect each instrument for parts that require service.
- g) Inform P&T personnel of your findings during the inspection.
- h) P&T personnel must approve before proceeding to replace any components.
- i) Keep all removed parts and return them to the P&T department.
- j) Once an agreement is reached, the service provider will replace the old or defective components.
- k) Repairs must be performed only by qualified or certified personnel.

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- l) After repairs, the service provider will reassemble, test, and verify that the instruments are in a serviceable condition.
- m) Return all instruments to the station where they were collected.
- n) P&T personnel will test, clean, and ensure all instruments are in a serviceable condition and have a valid calibration certificate.
- o) All instruments must be marked to indicate the next due date for service.
- p) The calibration certificate must be issued by a SANS-accredited supplier or an equivalent accredited supplier.

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