

Title: **Scope of Work for conducting parallel and correlation test**

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CONTROLLED DISCLOSURE

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1. INTRODUCTION

Conducting full correlations (PM) and parallel (QAL2) measurements or tests on both Hendrina's North and South stacks as per the Air Emissions License (AEL) no. 17/4/AEL/MP312/11/16.

2. SUPPORTING CLAUSES

2.1 SCOPE

Conducting full correlations (PM) and parallel (QAL2) measurements or tests on both Hendrina's North and South stacks as per the Air Emissions License (AEL) no. 17/4/AEL/MP312/11/16. The scope will be executed as an when required by the station.

2.1.1 Purpose

Conducting full correlations (PM) and parallel (QAL2) measurements or tests on both Hendrina's North and South stacks as per the Air Emissions License (AEL) no. 17/4/AEL/MP312/11/16.

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] 240-48929482: Tender Technical Evaluation Procedure
- [2] ISO 9001 Quality Management Systems

2.2.2 Informative

- [3] South African Air Quality Act No. 39 of 2004.
- [4] ISO 9096 Stationary source emission – Manual Determination of mass concentration of particulate matter.
- [5] ISO 12141 Stationary source emission – Determination of concentration of particulate matter (Dust) at low concentrations – Manual gravimetric method.
- [6] ISO 10155 Stationary source emissions – Automated monitoring of mass concentrations of particles – Performance characteristics, test Methods and specifications.
- [7] 20-56242363 ESKOM Standard for Emission Monitoring and Reporting – All relevant standards are in this document.

2.3 DEFINITIONS

Term	Definition
Contractor	Service provider contracted for supplying a specific service to Eskom Hendrina Power Station. Used interchangeably with the term <i>Supplier</i> .
Employer	The organization (Eskom) to which the supplier will be contracted for this tender and contracts that may result therefrom
Employer's Premises	Hendrina Power Station
Industrial Storage Facility	Physical space suitable for the storage of the items specified in the scope of work
Returnable	Document submitted by tenderer for evaluation in support of tender bid

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2.3.1 Classification

Controlled Disclosure: Controlled Disclosure to external parties (either enforced by law, or discretionary).

2.4 ABBREVIATIONS

Abbreviation	Description
Gx Eng.	Generation Engineering
kPa	Kilo Pascal
m	meter
m/s	Meters per second
m ²	Square meter
mg/Nm ³	Milligrams per standard cubic meter (at 0 °C, 101.3 KPa, normalised to 1% O ₂ , Dry)
°C	Degrees Celsius
Am ³ /s	Actual cubic meter per seconds
CFD	Computation Fluid Dynamics
dtex	Decitex
CEMS	Continuous Emission Monitoring System
g/m ²	Gram per square meter
AMS	Automated Measuring System
g/Sm ³	Grams per standard cubic meter (at 0 °C and 101.3 KPa)

2.5 ROLES AND RESPONSIBILITIES

2.5.1 The Employer

The responsibilities of the employer include the following:

- Place orders for the service request when required.

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- b) Conduct quality checks on the material certificates of the instruments that will be used by the contractor before test commence.

2.5.2 Contractor

The responsibilities of the employer include the following:

- a) Comply with the employer's environmental, health, and safety standards, policies, and procedures.
- b) Inform the employer's representative at least 48 hours prior to any hold points that may require the employer.

2.6 PROCESS FOR MONITORING

N/A

2.7 RELATED/SUPPORTING DOCUMENTS

N/A

3. SCOPE OF WORK

Scope: North and South Stacks	
Activity	Responsible person
Ensure a QCP is in place and signed by engineering before any work commence	Contractor
<u>General Scope Requirements:</u>	
The supplier must conduct: - Dust Monitor Correlation Test (Isokinetic Sampling) - Gas Monitor Parallel Verification Test (QAL2) - Biannual Isokinetic Sampling - Spot Checks - as and when required. NB. All tests will be conducted by SANAS accredited labs or labs accredited by similar foreign authorities.	Contractor
<u>Dust Monitor Correlations Test (PM):</u>	
Particulate emissions correlation tests shall be conducted every two years unless more frequent checks are required by the power station's AEL. The Minimum Emission Standards (MES) requires that continuous emission monitoring systems must be audited by a SANAS accredited laboratory at least once every two (2) years. While the SANAS accreditation process is still being developed, this requirement will be satisfied by the bi-annual correlation tests and spot checks conducted by independent consultants. Once the SANAS accreditation process is finalized, a SANAS accredited provider must be used to perform the correlation tests and spot checks. Frequency of test – Each dust monitor shall be correlated at least once every two years. Spot checks – a spot check will be conducted on each monitor to confirm the readings and is done as and when required. Estimating two spot checks per year.	Contractor

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<u>Parallel (QAL2) Verification Test (VT) Requirements for Gas Monitors:</u>	Contractor
The Verification Tests is a procedure which is used to evaluate whether the measured values obtained from the AMS still meet the required uncertainty criteria – as demonstrated in the previous QAL2 test. It also determines whether the calibration function obtained during the previous QAL2 test is still valid. The validity of the measured values obtained with the AMS is checked by means of a series of functional tests as well as by the performance of a limited number of parallel measurements using an appropriate SRM. Frequency of test – Verification Test on each gas monitor shall be conducted at least once every two years. Spot checks – a spot check will be conducted on each monitor to confirm the readings and is done as and when required. Estimating two spot checks per year. Gas flows verifications- Gas flows to be verified as when required.	Contractor
<u>Biannual Isokinetic Sampling:</u>	
Biannual Isokinetic Sampling to be conducted as per Annexure A of GN 893 22 November 2013. This is a requirement as per Hendrina Power Station AEL No: 17/AEL/MP312/11/16. Frequency of sampling – Isokinetic sampling of pollutants (PM, SO₂ and NO_x) to be conducted once every two years.	Contractor
<u>Spot Checks:</u>	
Spot check will be conducted on each monitor to confirm the readings and is done as and when required. The Spot check comprises isokinetic traverses that will compare measured emission to that predicted by the correlation. The Spot check will be done at normal operating conditions, most experienced. If these points fall outside the 95% confidence bands, then a full correlation is required as a continuation of the Spot check tests or as soon as practically possible after the Spot check tests. Frequency of spot check – As and when required. Estimating two spot checks per year.	Contractor

3.1 EFFECTIVE DATE

This document will be effective from the date that the contract is authorised.

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4. AUTHORISATION

This document has been seen and accepted by:

5. REVISIONS

6. DEVELOPMENT TEAM

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

7. ACKNOWLEDGEMENTS

N/A

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