

	Scope of Work	Grootvlei Power Station
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To supply, deliver, install benchtop ash fusion temperature instrument then train staff on how to use it at Grootvlei power station coal laboratory. Service instrument for period of 60 months.

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1. INTRODUCTION

Grootvlei Power Station consists of 3 wet cooled units which produce 200MW each at full load, during the process of electricity generation, the station uses coal results from Ash Fusion Temperature instrument to determine Initial Deformation Temperature (DT), Softening Temperature (ST), Hemispherical Temperature (HT), Flow Temperature (FT). These stages mark the progression from initial softening to complete liquefaction of the ash, with the specific temperatures depending on the coal's unique ash composition and the surrounding combustion atmosphere. Understanding these stages is crucial for predicting and preventing ash-related problems like slagging and fouling in the combustion boiler. Grootvlei power station require this instrument to be able to perform the necessary coal monitoring.

ISO 9001 quality management system (QMS) states that all the instruments used for testing to be serviced and calibrated for reliable results. Grootvlei Power Station, Chemical Services will require the supplied instrument to be serviced for period of 60 months on as and when required basis to comply with ISO 9001 QMS

2. SUPPORTING CLAUSES

2.1 Scope

The scope of work is outline below:

Grootvlei power station require Ash Fusion Temperature instrument for analysis of coal, to be supplied and installed then training of staff. The instrument requires service and maintenance as per ISO 9001 Quality management on a yearly basis and as and when service is required during breakdowns. The supplier must supply us with consumables (as per price list) to run the instrument for a period of 60 months and must be available during callouts as per clause X17 appendix A.

Supply instrument as per below specification

- a) Temperature range: 500oC to 1500oC
- b) Temperature precision: approximately +5oC and -5oC of known material
- c) Must be able to ramp temperature between 4 to 20oC/Min
- d) Must display temperature in oC as minimum display
- e) Must be able to load six or more samples per analysis
- f) Must be able to determine Ash fusibility automatically and manually
- g) Analysis time should be 4 to 6 hours per sample
- h) Must be able to collect images up to 20 frames per minute
- i) Must have image resolution of 1280 x1024 pixels
- j) Gas requirements: Nitrogen for purging, Air for oxidizing and mixture of carbon monoxide with carbon dioxide
- k) Must have built in ventilation
- l) Must have built in carbon monoxide monitor for safety of employees
- m) Physical dimensions: max of 100cm Hight, 35cm Width and 85cm Depth. Min: 70cm Hight, 28cm Width and 75cm Depth.
- n) Electrical requirements 50Hz and 240v, single phase, 30A

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- o) Weight of instrument should be between 80 to 120kg
- p) Must be able to operate in an environmental temperature between 15 to 35oC
- q) It must be benchtop

Scope of Service.

Service of Ash Fusion Temperature determinator.

- ☐ Ensure flow of gases is sufficient to the instrument.
- ☐ Ensure the sample monitoring is occurring according to design.
- ☐ Ensure Carbon Monoxide monitoring is working and reliable.
- ☐ Ensure instrument is producing required results by running standards.
- ☐ Ensure temperature is monitored correctly.
- ☐ Ensure all the deviations are corrected.
- ☐ Change spares that are due for replacements.
- ☐ Supply spares as per price list in this NEC document.
- ☐ Ensure instrument is running optimally
- ☐ Image resolution still within acceptable pixels 1280 x1024.
- ☐ Provide calibration certificates.
- ☐ Provide calibration and service report detailing all work done.
- ☐ Provide sticker on the side of the instrument indicating date serviced, next service date and signature of service engineer.
- ☐ Perform detailed service of the instrument to check all the components that should be checked on annual service.

Applicability

This document shall apply to Eskom Grootvlei Powe Station, Chemical Services, Coal Laboratory.

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] ISO 9001: 2015 – Quality Management Systems requirements.

2.2.2 Informative

- [1] Not applicable

2.3 Definitions

- [1] Not applicable

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Abbreviation	Description
QMS	Quality Management System
AFT	Ash Fusion Temperature

2.4 Roles and Responsibilities

It is the responsibility of Chemical Services supervisor to ensure the instrument supplied is of correct specification, serviced and calibrated.

2.5 Process for Monitoring

- The process for monitoring will be governed by calibration and service schedules.

2.6 Related/Supporting Documents

- Calibration certificates

3. EMPLOYERS OBJECTIVES AND PURPOSE OF THE WORKS.

To ensure the instrument is serviced, calibrated and is reliable to conduct test as per ISO 9001 QMS.

3.1 SCOPE OF WORK Price List

Item nr	Description	Unit	Expected Quantity	Rate	Price
1	Supply, Deliver and Install Benchtop Ash Fusion Temperature Instrument.				
1.1	Supply of new Ash Fusion Temperature instrument (Including delivery and installation), Package includes: <ul style="list-style-type: none">• Gold standard and Nickel standard.• AF700 with single furnace.• Windows-based operating software.• External PC Tower, keyboard, and mouse, 19".• Operating supplies.• 230VAC, 50/60Hz, 30Amps.	EA	1		
1.2	KIT REGULATOR PRESS 2 STAGE FLAMMABLE CGA350 QTV	Sum	1		

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1.3	KIT REGULATO PRESS 2 STAGE CGA580 QTV	Sum	1		
Total					R
2	Service AFT Instrument and Supply Consumables				
1	Service of AFT instrument	Year	5		
2	Service labour	Hr	80		
3	Travelling cost	Km	1000		
4	SHE file	Sum	1		
5	Medicals	EA	10		
Total					R
3	Consumables to run instrument for 5 years				
1	Calibration standards (Included Elsewhere)	Ea	1		
2	Dextrin solution 100ml (Included elsewhere)	Ea	1		
3	Adhesive solution (Adhesive ceramic-Alumina 2Oz)	Ea	3		
4	Tube Alumina 2.2250x2.500x22.20	Ea	2		
5	Cable alum braid 50 AMP 9.20 LG	Ea	10		
6	Cable alum braid 50 AMP 7.5 LG	Ea	4		
7	Window Boros 50MM DIA x 3.3mm	Ea	2		
8	O-ring 334 2.625x 2.00 X.125A	Ea	2		
9	O-Ring 202.25X .500x.125A	Ea	6		
10	O-Ring 224 1.750X 2.00 X.125A	Ea	4		
11	Tube CER insert DEE FURN 22.1 Machined	Ea	1		
12	Element Heating 19mm 6 PC SET	Ea	1		
13	Clamp Element heating .75 IN	Ea	24		

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4. AUTHORISATION

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

- Mpho Netshidzati

5. ACKNOWLEDGEMENTS

Not applicable.

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