PART 3: SCOPE OF WORK

Document reference	Supply, delivery of Ash Fusion Temperature instrument, install instrument, train staff on how to use it and service the supplied instrument, supply spares and consumables for period of 60 months on as and when required basis.	No of pages
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C3.1: EMPLOYER'S SERVICE INFORMATION

Contents

1 Description of the *service*

1.1 Executive overview

Supply, delivery, and installation of Ash Fusion Temperature (AFT) analyser, that automatically determines the ash cone Deformation Temperatures (DT), Softening Temperature (ST), Hemispherical Temperature (HT), Fluid in coal ash. The instrument uses purge gas, oxidizing gas and reducing gas. Instrument has software to operate the instrument and computer that has screen. The staff should be trained on how to use the instrument.

The instrument service and supply of consumables for a period of 60 months on an as and when required basis.

The instrument (Ash fusion temperature analyser) should use gases to maintain furnace temperature and to purge. It must have desktop computer, with 19-inch screen. The software of the instrument should be installed in the computer to operate the instrument. Instrument must be able to operate in temperature ranging from 400 degree Celsius to 1500 degree Celsius or more with temperature precision of 99.5% or higher. The instrument must be able to change temperature ramping rate ranging between 5 to 20 degrees Celsius per minute.

Instrument must be able to load six samples or more per analysis and must be able to determine Initial deformation Temperature, Softening Temperature, Hemisphere Temperature, Fluid Temperature automatically. Must have analysis time of not more than 5 hours. Must be able to collect images not less than 18 frames/Min with resolution of 1280 x 1024 pixels or better.

Gas requirements:

Nitrogen 99.5% for purging
Air for oxidizing
Carbon monoxide and Carbon dioxide mixtures as reducing

Exhaust must be going outside of the building

Instrument must have built in carbon monoxide (CO) monitor with alarm and must be able to stop operation or gas flow automatically when the alarm goes off.

Electrical requirements- 220v

1.2 *Employer*'s requirements for the *service*

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: 500^{o}C to 1500^{o}C
b) Temperature precision: approximately +5^{o}C and -5^{o}C of known material
c) Must be able to ramp temperature between 4 to 20^{o}C/Min
d) Must display temperature in ^{o}C 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
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.

1.3 Interpretation and terminology

The following abbreviations are used in this Service Information:

Abbreviation	Meaning given to the abbreviation
AFT	Ash Fusion Temperature
ISO	International Organisation for Standardization.
DT	Deformation Temperatures
ST	Softening Temperature
HT	Hemispherical Temperature

2 Management strategy and start up.

2.1 The *Contractor*'s plan for the *service*

The contractor to supply, deliver, install the instrument then service instrument for period of 60 Months, ensuring the instrument is reliable to the employer. Supply of consumables of the instrument for the period of 60 months.

The contractor will carry out the service activities:

a. All work to be performed by competent /skilled or trained personnel employed by the contractor.
b. Work execution will comply with occupational Health and Safety Act.

c. The contractor will carry out service activities on the instrument as stated by scope of work.
d. All works as stipulated in the task order.
e. Complying with the Employer's administration program.
f. The contractor will be called and respond according to X17 appendix A in this contract.
g. During call outs, the contractor should be readily available to respond within prescribed time as stated under X17 appendix A.
h. After service, the contractor will test the instrument by running a known concentration of standard and see the results.
i. The employer will process for payment when the instrument is in good working condition and standard used reading within acceptable limits (Repeatability and reproducibility.

2.2 Contractors Qualification and Experience

The contractor's employee who is conducting service must have qualification as follows:

a) Diploma or higher in Electrical Engineering or
b) Diploma or higher in Chemical Engineering or
c) Diploma or higher in Analytical Chemistry or
d) Relevant NQF level 6 or higer qualification.

2.3 Management meetings

Regular meetings of a general nature may be convened and chaired by the *Supply Manager* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Overall contract progress and feedback	Yearly, discussing Service that is planned. An Ad hoc meeting can be arranged should there be an urgent discussion required.	Teams	*Employer*, *Contractor*

2.4 Documentation control

The employer to issue task order then the contractor to do work. The contractor is then required to provide service report to the employer detailing the compliance of instrument to be used. The contractor attach sticker on instrument confirming service done date, next service date and names of service engineer with signature.

2.5 Invoicing and payment

Within one week of receiving a payment certificate from the *Service Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Service Manager*'s payment certificate.

The *Contractor* shall address the tax invoice to
Eskom Grootvlei power station
and include on each invoice the following information:

- Name and address of the *Contractor* and the *Service Manager;*
- The contract number and title;
- *Contractor*'s VAT registration number;

- The *Employer*'s VAT registration number 4740101508;
- Description of service provided for each item invoiced based on the Price List;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- (add other as required)

Add procedures for invoice submission and payment (e. g. electronic payment instructions)

2.6 Training workshops and technology transfer

The supplier will perform on job training during instrument installation and servicing.

2.7 Design and supply of Equipment

The instrument (Ash fusion temperature analyser) should use gases to maintain furnace temperature and to purge. It must have desktop computer, with 19-inch screen. The software of the instrument should be installed in the computer to operate the instrument. Instrument must be able to operate in temperature ranging from 400 degree Celsius to 1500 degree Celsius or more with temperature precision of 99.5% or higher. The instrument must be able to change temperature ramping rate ranging between 5 to 20 degrees Celsius per minute.

Instrument must be able to load six samples or more per analysis and must be able to determine Initial deformation Temperature, Softening Temperature, Hemisphere Temperature, Fluid Temperature automatically. Must have analysis time of not more than 5 hours. Must be able to collect images not less than 18 frames/Min with resolution of 1280 x 1024 pixels or better.

Gas requirements:

Nitrogen 99.5% for purging
Air for oxidizing
Carbon monoxide and Carbon dioxide mixtures as reducing

Exhaust must be going outside of the building (Drilling of wall is needed)

Instrument must have built in carbon monoxide (CO) monitor with alarm and must be able to stop operation or gas flow automatically when the alarm goes off.

2.8 Things provided at the end of the *service period* for the *Employer*'s use

2.8.1 Equipment

The AFT equipment is the asset of the employer, and it will remain the asset of employer at the end of contract.

2.9 Management of work done by Task Order

The task order must be sent to the contractor and the contractor will do the work then send invoice for payment after completion of work.

3 Health and safety, the environment and quality assurance

3.1 Health and safety risk management

a. The Contractor provides own personal protective equipment and clothing for the employee's safety.

b. The Contractor 's supervisor who oversees the contractor's employees, will make sure that the contractors' employees have their PPE on, at all times during working hours.
c. The Contractor must ensure that the works complies with the OHS Act 85 1993. b) The Contractor will provide all SABS approved personal protective Equipment to its employee's as identified in the Risk Assessment.
d. The contractor is responsible for procurement of PPE and equipment in accordance with the OHS act and the site-specific requirements, including the use thereof as necessary.
e. The Contractor shall provide and demonstrate to the Employer a suitable and sufficiently documented health and safety plan, based on the Employer's documented health and safety specifications, which shall be applied from the date of commencement of and for the duration of the construction work. The plans will be approved within 14 days from date of contract awards. No access will be granted to site if the required documents safety file is not submitted.

The *Contractor* shall comply with the health and safety requirements contained in Annexure B to this Service Information.

3.2 Environmental constraints and management

3.2.1 Policy, Leadership and Commitment

a) The contractor shall comply with all Eskom Grootvlei Power Station environmental requirements such as policies, standards and procedures (work instructions).
b) The contractor shall appoint personnel in writing with basic Environmental knowledge who will have the responsibilities of implementing all environmental/SHE requirements on a specific contract.
c) Station Waste Management Procedure and color coding shall be adhered to at all times.
d) Ensure that all Environmental Requirements are communicated to relevant employees.

3.2.2 Legal and Other Requirements

a. Adherence to the 'Duty of Care' as stipulated in section 28 of the National Environmental Management Act 107 of 2008.
b. Adherence to applicable Environmental legislations, licences and permits and other requirements.
c. A letter from top management guaranteeing the protection of workers refusing to do environmentally hazardous work in terms of section 29 of NEMA 107, of 1998.

3.2.3 Aspects, Impacts, Objectives and Targets

a. The contractor shall ensure that all aspects and impacts that can result in negative impacts on the environmental through their operations are identified and documented.
b. Objectives and targets shall be established for aspects and impacts that are deemed to be significant. These objectives and targets will need to be documented and conveyed to all contractor personnel.

3.2.4 Incident Reporting and Investigation

a. All incidents shall be managed according to Eskom Environmental incident management procedure-**240-133087117.**
b. Polluter pays principles shall apply to all *Contractors*. It is the responsibility of the polluter to clean all spillages and for the rehabilitation of the polluted land and the cost associated with that.

3.2.5 Monitoring and Review

a. Client personnel will conduct regular environmental audits. Contractors are expected to participate and ensure that corrective actions are executed.
b. Eskom Grootvlei Power Station shall issue non-conformances where there are deviations from Grootvlei Power Station Procedures and any other environmental requirements.
c. All environmental system documentation, records, reports etc. shall be made available for review when requested.

The *Contractor* shall comply with the environmental criteria and constraints stated in Annexure A

3.3 Quality assurance requirements

The Contractor shall be required to demonstrate by means of a Contract Quality Plan (CQP) that this organization is so structured that all the requirements of the specification will be properly monitored and controlled. The Contract Quality Plan (CQP), which must include the Quality Control Plan (QCP), is to be drafted in accordance with (240-105658000) and the Supplier Contract Quality Requirement Specification (240-105658000).

No work may commence unless the Contract Quality Plan and Quality Control Plan documents have been approved in writing and a copy submitted to the Employers Representative. The Contractor, in conjunction with the Employers Representative must sign off all Quality Control documents after completing all work as per the agreed scope.

The Contractor shall be required to read and fully understand the contents of the Supplier Contract Quality Requirement Specification (240-10565800) and a copy is to be kept in possession or on premises. The Contractor shall be subjected to scheduled assessments/audits if Eskom deems it necessary.

The Supplier Contract Quality Requirement Specification (240-105658000) shall remain applicable in the event of the contract being extended or modified for reasons permitted.
By signature and acceptance of this contract the Contractor acknowledges and agrees to comply with and adhere to Eskom's policies and procedures (current and/or latest revisions) including the Supplier Contract Quality Requirement Specification (240-105658000).

4 Procurement

4.1 People

4.1.1 Minimum requirements of people employed

Contractor provides only one service engineer who is qualified to conduct Service as stated above under point 2.2.

4.2 Plant and Materials

4.2.1 Specifications

Supply of new Ash Fusion Temperature instrument and install the instrument. The supplied instrument should comply to above information under 1.1 Executive overview. The instrument must be serviced annually and supplied with spare parts stated under price list, for period of 60 months on as and when required basis.

4.2.2 Correction of defects

The newly delivered instrument will be covered by warrant. Service and defects are covered by clause X17 Appendix A, under data by employer in this contract.

4.2.3 Contractor's procurement of Plant and Materials

The contractor will procure the required instrument and transport it to Eskom Grootvlei power station coal laboratory. The instrument must be under warrant. The contractor then arranges a date to install instrument

and train staff on how to use instrument. The supplier is responsible of ensuring instrument is working and reliable. Call out will be initiated for contractor to come during emergency breakdowns.

4.2.4 Plant & Materials provided "free issue" by the *Employer*

All the items that the supplier will bring are mentioned under Option A list. The asset of the employer remains the same at the employer address which is Grootvlei power station.

5 Working on the Affected Property

5.1 *Employer*'s site entry and security control, permits, and site regulations

Contractor representative arrives at Grootvlei power station and attends a safety induction; the end-user will sign in the contractor representative. The contractor representative must have a valid police clearance certificate.

5.2 People restrictions, hours of work, conduct and records

Supplier's employee must come to work at Grootvlei power station on Monday to Thursday between 7h15 and 16h30. Fridays between 07h15 and 12h15 when there is work to be done.

5.3 Health and safety facilities on the Affected Property

First aid box is situated less than 5meters away from the affected area the instrument will be placed. The emergency exit routes are clearly marked in case of emergency.

5.4 Records of *Contractor*'s Equipment

All the contractor equipment's entering site will be recorded at the security gate, all the registered equipment's will be allowed to be taken out of the gate.

5.5 Site services and facilities

5.5.1 Provided by the *Employer*

The employer will provide ablution, water, lightning, and equipment's availability during the agreed service date.

5.5.2 Provided by the *Contractor*

Equipment's to be used during service is the instrument being procured. The installation tools to ensure the instrument is installed according to its design.

5.6 Control of noise, dust, water and waste

The employer to ensure the site provide the surrounding employees with noise and dust protection PPE if needs be. Water and waste will be covered by employer.

5.7 Tests and inspections

5.7.1 Description of tests and inspections

Instrument being procured will be inspected and tested if it does comply to required analysis. Certified Reference Material will be used.

5.7.2 Materials facilities and samples for tests and inspections

Grootvlei power station will provide samples for testing. The inspection will be completed by the supplier and instrument will be declared complying to use by the supplier.