Eskom	Works Information	Kendal Power Station

Title: **Unit 3 SOW for Primary Air Heaters Tubes Supply, Delivery, and off-loading at Kendal Power Station.**

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Content

1. INTRODUCTION

Draft group forms an essential part of combustion in power generation division worldwide. In Kendal power station, draft group is divided into left- and right-hand side. Each side consists of the following major components; primary air fan, primary air heater of tubular type, force draft fan, rotary regenerative air heater of the Ljungstrom type, and induced fan.

The focal component in this works information is the two tubular air heaters divided into bottom and upper banks. Primary air heater is a heat exchanger, containing 100 rows of 52 tubes, which is dedicated to pulverizers (mills). At 60% fan load, two heaters are capable of supplying about 200 kg/s of hot air to the four mills to produce 686 MW of electricity. While at 100% fan load one heater is capable of running three mills that is half draft group.

Several years ago, investigations were made on the primary air heater tubes to check their conditions, the outcomes were the tubes are dilapidated, corroded, eroded, sheared, etc and the major cause was cold end corrosion. The effect of cold end corrosion was eminent on the first 26 rows. The current dominating failure as per test conducted on unit 3 is wear.

1.1 Scope

The works is the procurement, fabrication, supply, delivery to site, and off-loading of 12000 Primary air heater tubes for Kendal Power Station, Unit 3 L/H and R/H Primary air heater tubes according to the specifications detailed in the Works Information.

General

- Item 1: 12000 tubes x 16 meters long

The works includes

- Supply of tube sample and material certificate to the Employer by request during enquiry process and delivery with Tender documents at Tender Box.
- Supply of tube material certificate on delivery of Tubes
- Access to works and tubes by Employer’s third-party representative during manufacturing and before delivery.
- Quality management
- Planning and documentation

Works Excluded

- Installation of the tubes

- All work normally included in the Kendal General Overhaul scope is also excluded from the works

1.1.1 Purpose

The purpose of this document is to provide the scope of *works* for the procurement, fabrication, supply, delivery to site, off-loading, of Primary air heater tubes to Kendal Power Station.

1.1.2 Applicability

This document shall apply only for unit 3 Kendal Power Station.

1.1.3 Effective date

This document is effective from the date of authorization.

1.2 Normative/Informative References

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

1.2.1 Normative

[1] ISO 9001 - Quality Management Systems

[2] 240-51544462 - Employer's Quality Requirements of as specified in Eskom QM58 document

1.2.2 Informative

[1] ISO 14001:2004 - Environmental Management Systems

[3] ISO 900:2008 - Quality Management Systems – Fundamentals and Vocabulary

[4] 32-95 - Procedure manual for Perform occupation Health and Safety

[5] NEC3 - National engineering Contract

[6] *1017401 - Integrated Risk Management Procedure

1.3 Definitions

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

1.4 Abbreviations

Abbreviation	Description
ASME	American Society of Mechanical Engineers
GO	General Outage
ISO	International Organization for Standardization
LDE	Lead Discipline Engineer
NCR	Non Conformance Report
OEM	Original Equipment Manufacturer
PEIC	Production Engineering Integration Coal
PAH	Primary Air Heater
PQR	Pre-Qualification Record
PF	Pulverise Fuel
PS	Power station
RT&D	Research testing and development
SAT	Site acceptance test

1.5 Roles and Responsibilities

The *Contractor* is responsible for the entire *works* as prescribed in this Works Information.

The *Employer* is responsible to provide the design requirements as well as the scope of the *works.*

1.6 Process for Monitoring

N/A

1.7 Related/Supporting Documents

Refer to the arrangement assembly picture below:

2. Employer's Scope

1) Procures, supplies, delivers, and off-loads the Primary air heater tubes to Kendal.

3. The *Contractor's* Scope

3.1 General Requirements for the *Works*

1) The *Contractor* procures, supplies, delivers, and off-loads the Primary air heater tubes to Kendal.

3.2 Detailed Scope of Work

3.2.1 General

The number of tubes to be supplied is 12000 of 16m tubes (i.e.5200 tubes each side of the air heater) only.

Table 1: PAH Tube Specifications

Primary air heater tube specifications

Material:	Carbon steel ASTM A-106 grade B
Outside diameter:	63.5 mm
Tube wall thickness:	From 2.03 mm
Type of tube	Seamless
Tube length	16m
Number of tubes to be supplied	12000 tubes x 16 meters long
Corrosion Protection	The tubes shall be protected against weather elements refer to Protective coating standard.

3.3 Codes and Standards

The design codes and standards which need to be adhered to are given below.

Governing

(1) OHS Act - Operational Health and Safety Act No.85 of 1993

(2) 240-51544462 - Integrated Demand Management Supplier Contract Quality Requirements Specification

Corrosion protection

(1) **36-681 Eskom Protective Coating Standard:** the tubes shall be protected against weather elements for a minimum of 12 months refer to Protective coating standard

Configuration management:

(1) **240-76992014** - Project/Plant specific technical documents and records management work instruction

Mechanical:

(1) Piping/Flanges

3.2.4 Drawings

N/A.

3.5 Tender Returnable

3.5.1 Gate keepers

a) 2 Samples of 30 cm long (Carbon steel ASTM A-106 grade B, Seamless and according to the given specification)

3.5.2 Qualitative Returnable

Refer to technical evaluation Criteria.

4. Manufacture & fabrication

The suppliers to fabrication Primary air heater tubes according to the specifications detail in the work Works Information.

4.1 Inspection and testing at the Suppliers work

The Purchaser reserves the right to appoint a representative or representatives to inspect all parts during manufacture and to be present at any of the inspections specified. Such witnessing of tests by Purchase does not relieve the Supplier of his responsibilities if the Purchaser chooses to waive the witnessing of an tests.

5. Supply Requirements

The Supply Requirements for this contract are in an Annexure A to the Contract Data provided by the *Purchaser*.

Additional to Annexure A

a) The transportation mechanism must comply will all legal requirements for the type of material
b) The lifting slings must have valid certificates
c) The operator of the crane must have the proof of the competency

d) Warrants that the goods are fit for the purpose stated in the Goods Information or , if not stated, fit for the purpose to which goods similar to the goods are used in the final destination and other locations stated in the Goods Information.
e) The supplier transports, insures, and passes risk of loss and damage to the Purchaser in accordance with the terms of Delivery. The cost of the Supplier obligations for transport, insurance and delivery is included in the Price.
f) The Supplier provides the documentation listed in the contract data at the time of delivery

6. Constraints on how the *Supplier* Provides the Goods

6.1 Programming constraints

a) No delivery will be made without a purchase order (45….)
b) Wrong deliveries will not be accepted and will be returned to the supplier
c) All deliveries should be made to Kendal Power Station in Projects Department, Monday to Thursday from 07h30 to 16h00, Friday from 07h30 to 11h30

6.2 Work to be done by the Delivery Date

The works is deemed complete when the tubes are delivered on site on the Delivery date in full accordance with the Works Information.

a) The supplier ensures that final products is packed in such a way that damage and corrosion are minimised during transportation handling and storage. To be packed in manner that is designed to prevent damage or deterioration during transit to the final destination.
b) The supplier packs the goods taking account of rough handling, exposure to extreme temperatures, salt, precipitation during transit, open storage, the final destination and the absence of heavy handing facilities at certain points in transit or on arrival
c) Tubes to be packed on wooden pallets and must be covered with a rain cover that will protect the tubes from rain and any adverse conditions.
d) Tubes to be packed at the correct place and neatly.
e) It is the Suppliers responsibility to organise a forklift truck/mobile crane, own equipment/s, manpower and driver for the offloading of the tubes on site.
f) The Purchaser will be notified at least a week before delivery to verify availability of access to Kendal site.
g) It is the Purchase responsibility to allocate the area for off-loading of all material.
h) The Supplier must demarcate areas after the off-loading of all material. Danger tape for barricading will not be accepted.
i) The supplier to ensure that the housekeeping is done before the project is handed over to the Purchaser representative.

j) During handing over two files to be submitted to the Purchaser; the files shall include but not limited to: data package material certificates(the suppler submits material certificate for acceptance according to EN 1020431, the certificate must be written strictly in English), quality management (final inspection reports/ qcp etc; the supplier ensures that hold point and test certificates are signed by the Purchaser representative as per QCP), planning and documentation, method statement, Test plan, images of loading, delivery, off-loading and stacking of tubes, visual inspections of damages tubes and report for the number of tubes damaged, calibration certificates, qualifications of supervisor, riggers, welders, drivers, etc.

k) The Supplier does not deliver any goods which the Good Information states are to be tested or inspected before delivery until the Purchaser representative has notified the Supplier that the goods have passed the test or inspection.

l) Acceptance of the goods by the Purchaser at the time delivery is also subject to inspection by the Purchaser for loss and damage to the goods unless instructed otherwise by the Purchaser, the supplier promptly replaces loss of and repairs damage to the goods arising from the inspection

6.3 Marking the *goods*

a) Batch of Tubes to be marked in such way that can be easily identified and counted by the Purchaser during delivery to site.

6.4 Constraints at the delivery place and place of use

a) The *Contractor* ensures that his workforce is trained and competent to perform their respective duties and that a formal health and safety induction training programme is provided.

b) The *Contractor*'s inspection personnel familiarise themselves with the content of the Works Information and the *Contractor* ensure consistency in interpretation and decision making.

c) Any new foremen/supervisors appointed by the *Contractor* after the *starting date* or during the project are fully conversant with the details of the *Contractor*'s methodology and communication process in use, prior to accessing the *working areas*.

d) The *Contractor* ensures that the rigging personnel are qualified with operating the chain blocks and handling of other related lifting equipment to ensure personnel safety, productivity and prevention of plant damage.

e) *Employer* working hours: Monday to Thursday 07h15 to 16h30 and Fridays 07h15 to 12h15.

f) Abnormal working hours are pre-arranged with the *Project Manager*.

g) Kendal emergency preparedness (e.g. evacuation, etc.) procedures are obtained from the Project Manager and adherence by the Contractor and his employees is mandatory.

h) No recruiting of casual labour is done on the *Employer*'s premises, including the area outside the Kendal Power Station Security gate

i) The Purchaser will be notified at least a week before delivery to verify availability of access to Kendal site.

6.5 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:
Kick off meeting prior execution commence	09 to 10hoo	Kendal Lulutho Boardroom/ MS Team	Project Manager, Contractor, Engineer, Supervisor, Planner, Quality Controller, Safety officer,
Project Progress/Technical Feedback meeting	Monthly at 10h00 morning	Kendal Lulutho Boardroom/MS Team	Project Manager, Contractor, Engineer, Supervisor, Planner, Quality Controller, Safety officer,

Risk register and compensation events	Anytime when the risk arises	Kendal Lulutho Boardroom/MS Team	Project Manager, Contractor, Engineer, Supervisor, Planner, Quality Controller and Buyer

Meetings of a specialist nature may be convened as specified elsewhere in this Goods Information, the nature and the progress of the manufacture of the *goods*. Records of these meetings shall be submitted to the *Supply Manager* by the person convening the meeting within five days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.

6.6 Documentation control

a) All communication is routed via the *Project Manager*. All contractual documentation bears the contract number. Email is accepted as a means of communication but all contractual communications are in the form of properly compiled NEC letters or forms attached to emails and not as a message in the email itself.

b) All correspondence between the *Contractor* and the *Project Manager* follows the following rules:

1) All letters bears the sender's signature.

2) Letters follows the numbering scheme described in point 8.

3) Correspondence sent via E-mail:

1.2 Sender

1.1.1. The letter is saved in PDF format and send as an attachment to the receiver.

1.1.2. The email Subject field contains only the doc reference number as described in point 8.

1.1.3. The e-mail body may contain informal text but is not contractually binding.

1.1.4. Only the letter saved in PDF format is regarded as formal communication and legally binding

1.2. Receiver

1.2.1. The receiver replies to the e-mail received, ensuring that the complete message from the sender is included in the message as an attachment. This attachment includes the Letter in PDF format.

1.2.2. In his reply the receiver includes the following text on the first line of the Message Body: "Acknowledgement of receipt". This acknowledgement of receipt is Contractually binding and serves as proof that the letter was delivered to the receiver's address (Core Clause 13.2).

1.2.3. When a reply to a letter is required, e.g. "Acceptance of documentation" the receiver now becomes the sender and the procedure under for 3.1 and 3.2 is followed with the receiver writing a new letter with a new reference number as described under point 8

4) Correspondence delivered by hand:

4.1. Sender - The sender prepares the letter with a space for the receiver to sign and date acknowledgement of acceptance. The sender signs the letter and prepares two copies of the letter for delivery.

4.2. Receiver - The receiver signs both copies of the letter upon receipt and returns a signed and dated copy to the sender.

5) Correspondence by fax:

5.1. Sender – The sender prepares the letter with a space for the receiver to sign and date acknowledgement of acceptance. The sender signs the letter and sends it to the receiver by fax.

5.2. Receiver - Upon receipt, the receiver signs and dates the letter and returns it to the sender by fax, acknowledging receipt.

6) Drawings and other technical document transmittals

6.1. Transmittals are numbered as described in point 8.

6.2. The same procedure as for letters described under point 4 is followed for transmittals

7) All correspondence not transmitted with one of the methods described above will be deemed as informal communication and not contractually binding. Only when a correspondence has been acknowledged for receipt by the receiver by way of points 3.2, 4.2 or 5.2 will it be deemed contractually binding.

8) Correspondence numbering scheme.

8.1. Project Manager - The numbering of all formal correspondence from the Project Manager starts with a prefix K0XXX-B-E followed by the correspondence number 0001, 0002……etc. Example: K0XXX-B-E0021.

8.2. Contractor - The numbering of all formal correspondence from the Contractor starts with a prefix K0XXX-B-C followed by the correspondence number 0001, 0002……etc. Example: K0XXX-B-C0021.

8.3. During the project kick-off meeting the *Project Manager* informs the *Contractor* of the numbering to be used to substitute the XXX in the numbering K0XXX-B- mentioned in 8.1 and 8.2.

6.7 Health and safety risk management

The *Supplier* shall comply with the health and safety requirements as outlined on

- SHE specification document
- Contractor Health and Safety requirement
- Occupational Health and Safety Incident Management Procedure
- Occupational Health and Safety Risk assessment Procedure
- Vehicle and Drive Safety Management Procedure

6.8 Environmental constraints and management

The *Supplier* shall comply with the environmental criteria and constraints as outline on

- Eskom SHE Policy (Doc 32-727)

- Kendal Power Station Environmental Management system/ISO 14001 2015 requirements
- Kendal Power Station Waste and Recycle Management Work Instruction (*1024102)
- Application Environmental Legal and other requirements

Contractors must also comply with the following requirements as while onsite:

- National Environmental Management Act (Act 107 of 1998)
- Kendal Environmental Aspect and Impact Identification, Rating and Management Procedure (*1015586)
- Kendal Environmental Communication work instruction (*1015692)
- Kendal Emergency Preparedness Plan (*1015702)

6.9 Quality

- The supplier shall comply with ISO 9001 2015 Quality Management System and, Purchase's Quality Requirements of as specified in the Eskom QM58 document.

6.10 Invoicing and payment

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

The *Supplier* shall address the tax invoice to *Purchaser* and include on each invoice the following information

- Name and address of the *Supplier* and the *Supply Manager;*
- The contract number and title;
- *Supplier*'s VAT registration number;
- The *Purchaser*'s VAT registration number.
- Description of *goods* and *service*s provided for each item invoiced based on the Price Schedule;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- (add other as required)

6.11 Provision of bonds and guarantees

See separate attachment of C1.3 SC3 Proforma Guarantees

The *Purchaser* may withhold payment of amounts due to the *Supplier* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Supplier* by the *Supply Manager* to receive and accept such bond or guarantee. Such withholding of payment due to the *Supplier* does not affect the *Purchaser*'s right to termination stated in this contract.

7. Authorisation

This document has been seen and accepted by:

Name	Designation
Thengi Molotsi	Draught Group System Engineer
Tendani Rasivhetshele	Boiler Engineering Manager
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8. Revisions

Date	Rev.	Compiler	Remarks
November 2023	0.0	T.Q. Molotsi	

9. Development Team

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

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