Eskom	Work Instruction	Medupi Power Station

Title: **Medupi Power Station Scope of work –Procurement and Refurbishment of Deashing system components.**

Document Identifier: **241-20221388**

Alternative Reference Number:

Area of Applicability: **Medupi Power Station**

Functional Area: **Materials Management**

Revision: **1**

Total Pages: **14**

Next Review Date: **N/A**

Disclosure Classification: **Controlled Disclosure**

Compiled by	Supported by	Functional Responsibility	Authorized by
Chrisprior Madonsela	**Kgabo Choshi**	**Tshimangadzo Tshifhango**	**Mosekami Mokgala**
Senior Engineer	**Boiler Maintenance Manager**	**Acting Materials Manager**	**Middle Manager Procurement**
Date:2025/10/13	Date: 2025/10/14	Date: 2025/10/15	Date: 15/10/2025

Content

Figures

Tables

1. Introduction

The reliability and availability of the Boiler Plant in general, is a concern for Medupi Power station due to unplanned downtime of the deashing system, and it has contributed too many production losses which affects the Energy Availability Factor (EAF) of the power station. Initiatives to improve the reliability and availability of the deashing plant amongst others includes, placing contracts to ensure availability and reliability of the deashing system at the Medupi Power Station. The deashing system's main components are rotary feeders, a hydrovac, a slurry conveyer (launder), and heavy-duty slurry pumps. The rotary feeders are located under the ash hoppers. The Rotary Feeder's function is to control the ash flowrate into the hydrovac system. The Hydrovac combines the ash and water and discharges the mixture into a launder. The launder then coveys the slurry into the Submerged Scrapper Conveyor (SSC). The heavy-duty slurry pumps are used to increase the pressure of the makeup water and supply it to the hydrovac.

Fly ash is the by-product of the combustion process and it's contained in the flue gas. The flue gas then flows through the boiler elements and eventually through the gas air heater (GAH). Before the inlet of the GAH there are ash hoppers which are meant to remove some of the coarser ash particles on the flue gas prior to the flue gas entering the GAH as shown in figure 1. The course ash particles tend to be collected in the hoppers. When the hoppers are full the course ash particles tend to fall off into the gas air heater periphery as shown in figure 1. The function of the deashing system is to empty the ash hoppers and prevent the course ash particles from falling into the GAH mainly into the outer ring of the gas air heater heating elements. The outer rings of the air heater experience the lowest flue gas flow, the coarse ash on the outer rings tends to stick on the heating elements thus increasing the ash loading on the GAH which ultimately result in GAH blockages and ash carryover. The ash that has been carried over to the secondary and primary sectors tends to be blown out by high velocity primary air and eventually causing erosion in the gas air heater casing, sealing system, expansion sleave etc as shown in figure 2. The unavailability of the deashing system (ETG) will result in the ash hoppers above the GAH to be filled with coarse ash and eventually the ash will fall into the GAH element packs resulting in erosion and GAH blockages.

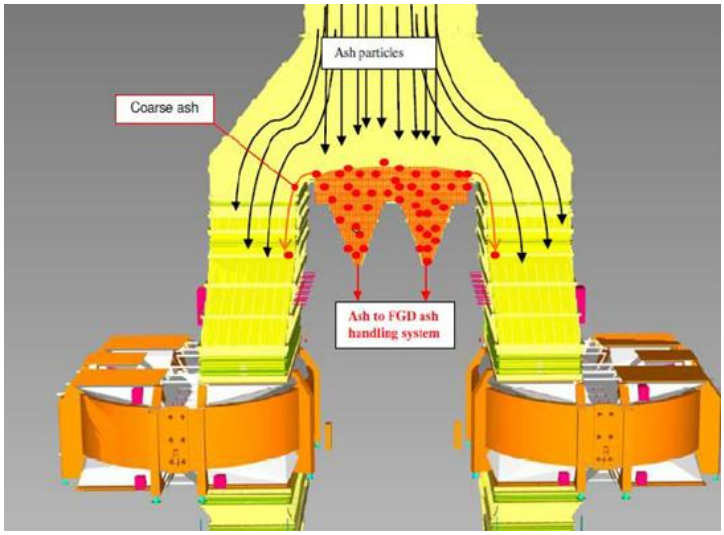

Figure 1: Flue gas Ash hoppers

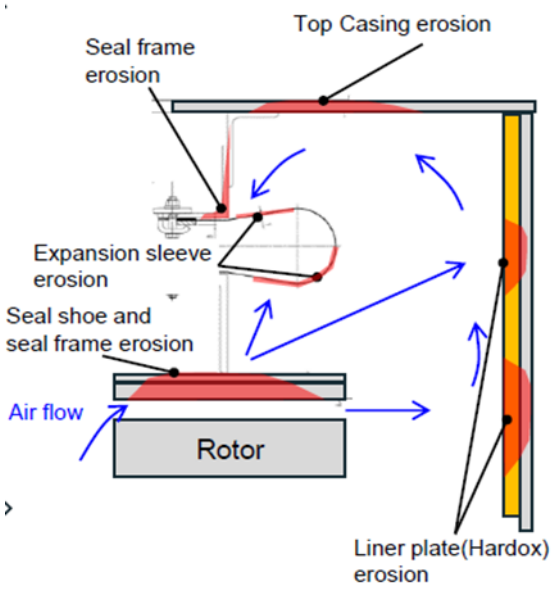

Figure 2: GAH erosion schematic.

2. Supporting Clauses

2.1 Scope

This document will cover the requirements for the Supply, delivery, and refurbishment of the deashing system components.

2.1.1 Purpose

The purpose of this document is to provide the SOW for the purpose of developing a long-term contract.

2.1.2 Applicability

This document shall apply to the procurement, delivery, and refurbishment of the deashing system for Medupi Power Station.

2.1.3 Effective date

The document will be effective from the date of authorisation.

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] ESKOM SHEQ Policy 32-727

[2] Life Saving-Rules – 240-62196227 Medupi Power Station - SHE File Evaluation Checklist - 240-97661287

2.2.2 Informative

N/A

2.3 Definitions

Definition	Explanation
Contractor	Service provider contracted for the supply of spares and various services on the machines
Employer	Eskom Medupi Power Station

2.4 Abbreviations

Abbreviation	Explanation
SHE	Safety Health and Environmental
SHEQ	Safety Health Environmental and Quality
EAF	Energy Availability Factor
QCP	Quality Control Plan
SOW	Scope of Work

2.5 Roles and Responsibilities

Maintenance – Materials Management is responsible and accountable for ensuring that the Service is provided as per the SOW. Maintenance – Materials Management will also be managing the contract.

Engineering will be involved in documentation review and will be part of quality control and attend to intervention points as per approved QCP's.

The commercial will be part of the contract placement process and communication with the contractor until contract award.

Employer Responsibilities.

- To submit a scope of work for the supply and refurbishment of deashing system with technical specification to the supplier.
- To grant access to a potential supplier who may wish to see the installed deashing system on site.
- Providing technical personnel who will observe when repairable items are stripped and assessed at the contractor's premises.
- To release Purchase orders to the contractor for the required spares and refurbishment of damaged components.
- Perform quality check of all spares and repaired items on delivery at the employer's premises.
- Holding regular meetings to assess the performance of the appointed contractor.
- To issue non-compliance report to a contractor who fails to meet agreed lead times or who deliver low standard of services.

Contractor Responsibility

- To supply and deliver of the deashing system spares to Medupi power station as and when required, according to the specifications and technical requirements on this document.
- Not to make any early delivery of deashing system spares except when is at Eskom's request.
- To notify the employer of any deashing spares that are / to be discontinued and offer alternatives thereof.
- To inform the employer about any damage to the spares that occurred during the loading or offloading of the material.
- To collect from the employer, the material items that did not pass quality check or were reject due to incorrect specification.
- The Contractor will be issued a "strip-and-quote" order for the deashing system components requiring refurbishment or repairs.
- The Contractor will be required to collect the deashing system components from Medupi Power Station for assessment and for delivery after completion of works
- To invite Eskom's technical personnel to come to observe the strip & assess process of the components booked for repair.
- A quote as well as full assessment report (failure report) shall be submitted to the Employer within 10 working days after the issuing of the order for "strip-and-quote"
- The assessment/failure report should include proof (photos) of all components requiring replacement as well as any additional requirements, to enable the deashing system to be restored to its original condition.
- The supplier will be issued with an order to repair deashing system only after a quotation, assessment report & QCP has been accepted by the employer.
- Upon delivery of the repaired components, a full Databook must be submitted to Eskom.

2.6 Process for Monitoring

N/A

2.7 Related/Supporting Documents

N/A

3. Scope of Work

This SOW will cover the requirements for the Supply, delivery, and refurbishment of the deashing system components as detailed in section 3.1 below.

3.1 Supply of Spares

The scope of this contract also includes the supply, delivery, and refreshment of deashing system components as follows. The table below shows the stock number, long description of each spare. The refurbishment component will be the pump and the rotary feeder.

Table 1:List of spares with material numbers

STOCK NUMBER	**SAP long description**	**Short description**
771233	ASSEMBLY: TYPE: HYDROVAC CONE; APPLICATION: DEASHING SYSTEM; DIMENSIONS: OD 320 X LG460 MM; MATERIAL: STEEL; COMPRISING: WEAR RESISTANT TILING AND FLANGE; HYDROVAC FOR THE DEASHING SYSTEM, WITH FLANGE THICKNESS OF 10MM, OUTSIDE DIAMETER OF 320MM AND OUTLET DIAMETER OF 110MM.THE INSIDE OF THE CONE COMPRISE OF TILING.	Hydrovac cone
771194	KIT: TYPE: ROTARY FEEDER; APPLICATION: DEASHING SYSTEM; COMPRISING: O RING, SPROCKET, TAPPER LOCK; IMPELLER SHAFT, SEAL SOG 105110-25-45, SEAL SOG 101114-30-40, SPROCKET 2B1-17T1610, SPROCKET TAPPER LOCK 1210 - 30, TAPPER LOCK 1610- 25, BEARING 6205- 2RSH, CHAIN 12B, PACKING 10 MM, ORING, CHAIN LINKS 12B.	Rotary Feeder kit
771209	ASSEMBLY: TYPE: CYCLONE; APPLICATION: DEASHING SYSTEM; DIMENSIONS: OD 490 X ID 235 X LG 365 MM; MATERIAL: STEEL; DRAWING NO: B114106-03-09-IC02-00004-AF	Cyclone

771212	ASSEMBLY: TYPE: LAUNDER; APPLICATION: DEASHING SYSTEM; DIMENSIONS: WD 353 X HT 259 MM; MATERIAL: WEAR RESISTANT LINING; DRAWING NO: B114106-03-09-IC02-00004-AF; OUTLET DIAMETER 160 MM AND INLET WIDTH 315 MM	Launder
771210	ASSEMBLY: TYPE: ROTARY FEEDER; APPLICATION: DEASHING SYSTEM; DIMENSIONS: OD 320 X OD 285 MM; MATERIAL: STEEL; DRAWING NO: B114106-03-99-ID32-00002-00; OUTLET OUTSIDE DIAMETER 285 MM AND INLET OUTSIDE DIAMETER 320 MM. ROTARY FEEDER MUST HANDLE ASH MASS FLOW RATE OF 10 TON PER HOUR (10 T/H). THE ASH IN THE ROTARY FEEDERS IS AT TEMPERATURES OF APPROXIMATELY 400°C.	Rotary Feeder
744541	ASSEMBLY: TYPE: HYDROVAC; APPLICATION: DE ASHING SYSTEM; DIMENSIONS: 490 MM; MATERIAL: METAL; OEM P/N: HYD-101; DRAWING NO: HYD-101-00 REV 00; CAPACITY 10T/H; TOTAL WEIGHT 79 KG, PRESSURE 620 KPA, VOLUME FLOW RATE 40 M3/H,MASS FLOW ARET 10-12 T/H; SPECIFICATION: TOTAL WEIGHT 79KG,PRESSURE 620KPA,VOLUME FLOW RATE 40M3/H,MASS FLOW ARET 10-12T/H	Hydrovac
730711	BELT, V: TYPE: 16N SPB; INSIDE CIRCUMFERENCE: 1650 MM; OUTSIDE CIRCUMFERENCE: 1650 MM; TOP WIDTH: 16 MM; MATERIAL: ANTI STATIC; THICKNESS: 1 MM; PROFILE: 2A; OEM P/N: 16N SPB 1650; AN	V belt
621683	KIT, PUMP REPAIR: TYPE: CENTRIFUGAL; APPLICATION: HEAVY DUTY SLURRY PUMP; COMPRISING: O-RINGS; SEALS; SUPPL P/N: HM75-EHC-S C4; ADDITIONAL COMPONENTS TO BE ADDED TO THE ORIGINAL REPAIR KIT ARE: O RINGS ORIGINAL REPAIR KIT RECOMMENDED BY THE OEM MUST ALSO INCLUDE ADDITIONAL ITEMS AS SPECIFIED; SUPPLIER TO PROVIDE MATERIAL DATASHEET	Pump Kit
725118	PUMP, CENTRIFUGAL: NPSH: 2.5 M; CAPACITY: 60 M3/HR; TOTAL HEAD: 10.7 M; SIZE: IMPELLER DIA 250 4 VANES; SPEED: 2246 RPM; STAGE: 1; DRIVER: V-BELT MOTOR 18.5KW; IEC 180MM; 4 POLE; 400V; 50HZ; TYPE: HM75 EHC-S C4 HEAVY DUTY SLURRY; SPECIFICATION: 5 BAR; MOUNT: V-BELT DRIVE; SHAFT DIAMETER: 50 MM; FLANGE INLET DN75; PN16; OUTLET DN50 MM; SUPPL P/N: PDWC2141200; MATERIAL IMPELLER AND LINER HIGH CHROME; PUMP MUST BE DELIVERED WITH PERFORMANCE CURVE AND MATERIAL DATASHEET	Pump

3.2 The Bill of Quantities

The estimated quantities are as per section 3.1 above and over and the above we will also include the refurbishment of pumps and rotary feeder. This value will be used with other estimates to determine the overall contract value. There will also be a Miscellaneous sum on the contract to cover other unforeseen issues.

Table 2:Bill of Quantities

STOCK NUMBER	SAP long description	Short description	UOM	QTY
771233	ASSEMBLY: TYPE: HYDROVAC CONE; APPLICATION: DEASHING SYSTEM; DIMENSIONS: OD 320 X LG460 MM; MATERIAL: STEEL; COMPRISING: WEAR RESISTANT TILING AND FLANGE; HYDROVAC FOR THE DEASHING SYSTEM, WITH FLANGE THICKNESS OF 10MM, OUTSIDE DIAMETER OF 320MM AND OUTLET DIAMETER OF 110MM.THE INSIDE OF THE CONE COMPRISE OF TILING.	Hydrovac cone	EA	20
771194	KIT: TYPE: ROTARY FEEDER; APPLICATION: DEASHING SYSTEM; COMPRISING: O RING, SPROCKET, TAPPER LOCK; IMPELLER SHAFT, SEAL SOG 105110-25-45, SEAL SOG 101114-30-40, SPROCKET 2B1-17T1610, SPROCKET TAPPER LOCK 1210 - 30, TAPPER LOCK 1610- 25, BEARING 6205-2RSH, CHAIN 12B, PACKING 10 MM, ORING, CHAIN LINKS 12B.	Rotary Feeder kit	EA	100
771209	ASSEMBLY: TYPE: CYCLONE; APPLICATION: DEASHING SYSTEM; DIMENSIONS: OD 490 X ID 235 X LG 365 MM; MATERIAL: STEEL; DRAWING NO: B114106-03-09-IC02-00004-AF	Cyclone	EA	20
771212	ASSEMBLY: TYPE: LAUNDER; APPLICATION: DEASHING SYSTEM; DIMENSIONS: WD 353 X HT 259 MM; MATERIAL: WEAR RESISTANT LINING; DRAWING NO: B114106-03-09-IC02-00004-AF; OUTLET DIAMETER 160 MM AND INLET WIDTH 315 MM	Launder	EA	20

771210	ASSEMBLY: TYPE: ROTARY FEEDER; APPLICATION: DEASHING SYSTEM; DIMENSIONS: OD 320 X OD 285 MM; MATERIAL: STEEL; DRAWING NO: B114106-03-99-ID32-00002-00; OUTLET OUTSIDE DIAMETER 285 MM AND INLET OUTSIDE DIAMETER 320 MM. ROTARY FEEDER MUST HANDLE ASH MASS FLOW RATE OF 10 TON PER HOUR (10 T/H). THE ASH IN THE ROTARY FEEDERS IS AT TEMPERATURES OF APPROXIMATELY 400°C.	Rotary Feeder	EA	24
744541	ASSEMBLY: TYPE: HYDROVAC; APPLICATION: DE ASHING SYSTEM; DIMENSIONS: 490 MM; MATERIAL: METAL; OEM P/N: HYD-101; DRAWING NO: HYD-101-00 REV 00; CAPACITY 10T/H; TOTAL WEIGHT 79 KG,PRESSURE 620 KPA,VOLUME FLOW RATE 40 M3/H,MASS FLOW ARET 10-12 T/H; SPECIFICATION: TOTAL WEIGHT 79KG,PRESSURE 620KPA,VOLUME FLOW RATE 40M3/H,MASS FLOW ARET 10-12T/H	Hydrovac	EA	12
730711	BELT, V: TYPE: 16N SPB; INSIDE CIRCUMFERENCE: 1650 MM; OUTSIDE CIRCUMFERENCE: 1650 MM; TOP WIDTH: 16 MM; MATERIAL: ANTI STATIC; THICKNESS: 1 MM; PROFILE: 2A; OEM P/N: 16N SPB 1650; AN	V belt	EA	150
621683	KIT, PUMP REPAIR: TYPE: CENTRIFUGAL; APPLICATION: HEAVY DUTY SLURRY PUMP; COMPRISING: O-RINGS; SEALS; SUPPL P/N: HM75-EHC-S C4; ADDITIONAL COMPONENTS TO BE ADDED TO THE ORIGINAL REPAIR KIT ARE: O RINGS ORIGINAL REPAIR KIT RECOMMENDED BY THE OEM MUST ALSO INCLUDE ADDITIONAL ITEMS AS SPECIFIED; SUPPLIER TO PROVIDE MATERIAL DATASHEET	Pump Kit	EA	50

725118	PUMP, CENTRIFUGAL: NPSH: 2.5 M; CAPACITY: 60 M3/HR; TOTAL HEAD: 10.7 M; SIZE: IMPELLER DIA 250 4 VANES; SPEED: 2246 RPM; STAGE: 1; DRIVER: V-BELT MOTOR 18.5KW; IEC 180MM; 4 POLE; 400V; 50HZ; TYPE: HM75 EHC-S C4 HEAVY DUTY SLURRY; SPECIFICATION: 5 BAR; MOUNT: V-BELT DRIVE; SHAFT DIAMETER: 50 MM; FLANGE INLET DN75; PN16; OUTLET DN50 MM; SUPPL P/N: PDWC2141200; MATERIAL IMPELLER AND LINER HIGH CHROME; PUMP MUST BE DELIVERED WITH PERFORMANCE CURVE AND MATERIAL DATASHEET	Pump	EA	12
Service 1	Pump service	Pump	EA	50
Service 2	Rotary feeder service	Rotary feeder	EA	50
Miscellaneous expense	Other unforeseen expenses relating to spares and refurbishment	15% (total budget)	EA	

1. The spares and components will be supplied to the “goods receiving” section of the Medupi main store where they will be received by the material management section. The spares will be delivered with all of the required data books and certificates, where required.

Medupi Stores Working Times:	Monday – Thursdays:	07h00 – 16h00
	Fridays:	07H00 – 12h00

2. Only once the spares have passed the Quality control checks and are booked into the system can payment be affected.

3. The new and refurbished spare has to be the same in all respects when compared to the original equipment, supplied to Eskom by OEM under contract. This includes all aspects such as design, materials and material specifications, manufacturing, including manufacturing processes and acceptance testing. Where spares offered deviate from the original in any respect, it should be indicated to the Employer.

4. It is the *Contractor*’s responsibility to ensure that correct spares are delivered. If the incorrect spares are delivered, the spares will have to be replaced with the correct spares at the *Contractor* cost. This includes transport and delivery.
5. The Delivery and Transport Costs (including off-loading items) must be included in the quotation.

The following packaging requirements should be adhered to:

a) The Goods are to be packaged in such a manner that they can be transported and stored for an extended period of time without resulting in damage to the goods.
b) This includes damage due to moisture ingress, corrosion, vibration from the power station etc.
c) Where lifting gear is utilised to move the goods, the packaging should allow the lifting operation and ensure that the goods are not damaged in any way during the process.
d) It will also not be necessary to open packaging for any lifting or transport operation.
e) Where eyebolts are fitted to move the goods, these eyebolts should be fitted in such a way that they can be easily removed and replaced with the Purchaser's eyebolts, ensuring that the packaging stays intact.
f) The different types of spare types to be packaged separately in such a way that each type can be stored separately.
g) Packaging and labelling of spares should ensure that the spare can be identified without opening the packaging.
h) Where possible the packaging should ensure that parts can be positively identified through the packaging. Where this is not possible, the packaging should allow opening and closing of the packaging and still maintain the packaging integrity afterwards.
i) Delivery packaging to have the following details as a minimum requirement (removable adhesive sticker if possible):
    - Order number,
    - A short description of the component
    - The stock number if applicable
    - Manufacturing certificates/datasheet
    - Manufacturing date, where possible

4. Acceptance

This document has been seen and accepted by:

Name	**Designation**
Bernard Matanda	Boiler Engineering manager (Acting)
Mosekami Mokgala	Middle Manager Procurement
Kgabo Choshi	Maintenance Manager Boiler
Thapedi Ramokgoname	Officer Refurbishment

5. Revisions

Date	Rev.	Compiler	Remarks
August 2025	1	Chrisprior Madonsela	Omit motors from the scope

6. Development Team

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

Name	Designation
Chrisprior Madonsela	Senior Engineer Boiler

Appendix A – Eskom Document Hierarchy

A.1 N/A