	<b>Specification</b>	<b>Kusile Power Station</b>
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### **CONTROLLED DISCLOSURE**

## **1. Introduction**

A layer of lime hydrated protects the bags from chemical attacks (acid attacks) and prevents plugging due to crack of sticky particulates contained in the flue gas of the combustion process. It has been proven that the pre-coating has favourable effect on the service life of the bags.

Lime coating is necessary if the unit has been off for 2 or more days.

A silo truck with on board compressor is connected to a coating line. Permission to coat will be given after plant conditions for precoating have been met. Pre coating is achieved when the predetermined quantity of hydrated lime is injected to filter bags at a pressure of up to 2.5 bar.

## **2. Supporting Clauses**

### **2.1 Scope**

This user requirements for specification for bulk dehydrated lime involves among other things the chemical requirement concerning impurity limitations on Hydrated Lime that will be used during PJFF precoating for a period of three (03) years on an "as and when required basis".

#### **2.1.1 Purpose**

The purpose of this document is to outline the requirement and specification of the Hydrated Lime needed for PJFF coating.

#### **2.1.2 Applicability**

This document is applicable to Kusile Power Station Generation and the Supplier.

#### **2.1.3 Effective Date**

This 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] ISO 9001 Quality Management Systems
- [2] Operating Instruction Doc no: D0078489-B, Project: S/210-02030.

#### **2.2.2 Informative**

- [3] Operating Instruction Doc no: D0078489-B, Project: S/210-02030.

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## 2.3 Definitions

Definition	Explanation
Contractor	Service provider contracted to provide a specific service to Eskom, Kusile Power Station.
Employee	Person employed by Eskom, Kusile Power Station or the Contractor
Employer	Eskom, or Eskom Kusile Power Station or representative
Site	All plant and equipment installed in the boundary fences of Kusile Power Station

## 2.4 Abbreviations

Abbreviation	Description
Al <sub>2</sub> O <sub>3</sub>	Aluminium oxide
Ca(OH) <sub>2</sub>	Calcium Hydroxide
CaCO <sub>3</sub>	Calcium Carbonate
CaSO <sub>4</sub>	Calcium Sulphate
CO <sub>2</sub>	Carbon dioxide
COA	Certificate of analysis
C&I	Control and instrumentation
Fe <sub>2</sub> O <sub>3</sub>	Iron oxide
ISO	Internal standard organisation
MgO	Magnesium Oxide
Mn <sub>2</sub> O <sub>3</sub>	Manganese Oxide
MSDS	Material Safety Data Sheet
NEC	New Engineering Contract
PO	Purchase Order
Ppm	Parts per million
SAP	System application and products
SiO <sub>2</sub>	Silica Oxide
SO <sub>3</sub>	Sulphur trioxide

## 2.5 Roles and Responsibilities

Table 1 outlines the line of responsibility, accountability, and relevant stakeholders to be consulted and informed.

Roles	Responsibilities
System Engineer	Specify system requirements

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<b>C&amp;I Engineer</b>	Verifying C&I requirements
<b>Ops personnel</b>	Perform pre coating activities

## 2.6 Process for Monitoring

Not applicable

## 2.7 Related/Supporting Documents

None

## 3. Scope of Work

### 3.1 Delivery Requirements

- a) The contractor shall supply and deliver the Hydrated Lime to the premises timely as per the request and must make emergency deliveries within 24 hours after the official order has been made.
- b) Proper performance shall require delivery personnel's constant inspection and observation of unloading operations and knowledgeable response to problems and emergencies.
- c) Eskom reserves the right to refuse, and all deliveries made with equipment that is poorly maintained and/or leaking.
  - i.) Delivery of all Hydrated Lime shall be as per the Eskom's request only.
  - ii.) The Supplier as well as Eskom employee shall ensure that the product delivered is within the agreed specification.
  - iii.) Supplier to issue all the necessary operating manual(s) as well as handling procedures to Eskom.
  - iv.) The Contractor shall furnish the Purchaser with the approved, leak free connection device between the trailer and the Purchaser's intake receptacle. The Contractor shall observe the entire filling operation at each delivery site and shall immediately report any spills caused during the pre-coating operations.

### 3.2 Delivery Locations

Deliveries shall be made to:

Kusile Power Station  
Generation Division  
Farm Haartebeesfontein  
R537 Balmoral Road

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Delmas

### 3.3 Quantity and Payments

Eskom Kusile power Station Generation division will use the weight bridge on-site to weigh the tanker before and after the deliveries in the presence of the driver. The quantity reflecting on the supplier's weigh bridge slip will be used for payment purpose provided the percentage difference between the supplier and Eskom weight is 3% or less. Should the difference be above 3%, the matter should be investigated. The Contractor will be provided with a Purchase Order with 16,5 ton to be delivered.

### 3.4 Limestone Quality and Traceability Prior to Offloading.

For quality control and traceability, the supplier shall supply a chemical together with their MSDS and COA corresponding to the specific batch number of a chemical.

If the chemical received does not meet the specifications through accepted and indicate compliance in COA, Eskom shall return the product back to the supplier to exchange and get a new batch.

### 3.5 Orders and Purchases

- a) Deliveries will be done after an official order is sent to the supplier, indicating required quantity.
- b) The Eskom employee shall sign on the chemical sample received form in Annexure B and file the necessary documents.
- c) Expected offloading time is 5 hours, however Eskom might experience plant challenges which may lead to delays for offloading the tankers.

### 3.6 Tanker Contamination

- a) The tanker shall be clean and free of residue that may contaminate the Contractor's product or impede the offloading process. It is the Contractor's responsibility to verify the cleanliness of the transporting equipment before loading. All valves, pumps and discharge hoses used for delivery of Hydrated Lime shall be supplied by the Contractor and shall be clean and free from contaminating material. The Purchaser may reject a load if the equipment is not properly cleaned.
- b) The Contractor shall take immediate and appropriate actions to clean up any spilled Hydrated Lime and if the spill is not cleaned up, the Purchaser will hire a certified hazardous material handling company to clean up the spill, and the cost of such services will be charged to the Contractor and deducted from the amount due to the Contractor. If the Purchaser's unloading equipment such as pipe, valve or level indication and alarms should fail and spillage is not the fault of the Contractor or its subcontractor, the Contractor shall be relieved of the clean-up of the spill.

### 3.7 Documentation

The contractor shall be authorised and signed by responsible people between the supplier/contractor and Eskom.

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### 3.8 Hydrated Lime Specification

#### 3.8.1 Hydrated Lime

Description: Pale brown in powder form

Other names: Slaked lime, Calcium hydroxide

Chemical formula:  $\text{Ca(OH)}_2$

Chemical parameters

$\text{Ca(OH)}_2$  (equivalent  $\text{CaO}$ ) > 90% (68%)

$\text{SiO}_2$  < 2%

$\text{MgO}$  < 2

$\text{Fe}_2\text{O}_3$  < 0.5%

$\text{Al}_2\text{O}_3$  < 0.5%

$\text{Mn}_2\text{O}_3$  < 0.1%

$\text{CO}_2(\text{CaCO}_3)$  < 1% (< 2%)

$\text{SO}_3(\text{CaSO}_4)$  200 ppm (340 ppm)

$\text{P}_2\text{O}_5$  160 ppm

1000 °C ignition loss 23.0%

Acid insoluble 1.6%

Free moisture 0.5%

Non Slakeables approx. 8%

#### 3.8.2 Physical Parameters

Particle size range 1 µm min – 115 µm max

< 5 µm 36%

< 40 µm 86%

Bulk density: 0.350 – 0.40 kg/dm<sup>3</sup>

Surface: 15 – 20 m<sup>2</sup>/g

#### 3.8.3 Silo Truck

Product to be supplied and delivered in 2 Silo truck of 17 Tons capacity each equipped with on-board compressor connecting coupling DN100.

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### **3.9 Safety**

#### **3.9.1 Health and Safety regulation**

All contractors shall comply with the Kusile health and safety policy, some of the key requirements of which are attached as Annexure B.

#### **3.9.2 Task Risk Assessment**

It must be conducted jointly by the Employer and Contractor.

#### **3.9.3 First Aid Centre**

Medical ambulance and first aid facilities are provided on site by Eskom. Kusile emergency number (084 686 4692)

### **3.10 Technical support**

The contractor shall advise Eskom on storage and handling of the products supplied.

### **3.11 Communication and correspondences**

- a) The contractor shall communicate with the contract supervisor and the buyer if there are any changes on the orders or product. The communication shall be professionally via e mail.
- b) The correspondence shall include the following:
  - i.) Kusile Power Station
  - ii.) Eskom Contract number
  - iii.) Contract description
  - iv.) Correspondence subject matter
  - v.) Contractor contract details
  - vi.) Date
  - vii.) Signatures of responsible person

### **3.12 Tender Requirements**

- a) The Contract shall supply a pricelist and tender documents
- b) Kusile Power Station shall evaluate the tender according to Eskom policy on the issuing of the contract and the contract shall be discussed.

### **3.13 Common site service and conditions**

#### **3.13.1 Roles Vehicles**

- a) All traffic is limited to using existing roads

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- b) All roads' signs and traffic law/regulations on site will be adhered to.
- c) Damages cause to underground services, structures, etc, such as a result of the Contractor not using prescribed routes will be recovered from The Contractor.
- d) All contractors shall comply with Eskom Vehicle and Driver Procedure 32-93 and Construction Site Vehicle requirements

### 3.13.2 Security

#### Site access and departure

All vehicles and persons entering or leaving site will be subjected to Security checks and or search. This includes but not limited to briefcases and toolboxes. Personal tools need to be listed and acknowledged by the security when brought on site. This will be used for verification when the tools are removed from site.

### 3.14 Eskom Safety Principles

- a) No operating condition, or surgency of service can justify endangering the life of anyone or cause injury.
- b) Conduct business with respect and care for people and the environment and ensure that adequate resources are available for SHE management.
- c) Entrench the belief that all injuries are preventable.
- d) All employees and contractor are responsible for their own and that of their colleague's safety.
- e) The Contractor commits to employ only people who have been duly authorised in terms thereof and who have received sufficient training to ensure that can comply therewith.
- f) Furthermore, no amendments to the Act of Regulations or reasonable amendment to Eskom's Safety and Operating procedure will entitle the Contractor to claim any additional costs incurred in complying the therewith from Eskom.

## 4. Acceptance

This document has been seen and accepted by:

Name	Designation
Dumi Gama	Middle Manager Operating
Jabu Dinku	Operating Support Manager
Lungisani Tsiwana	System Engineer
Nontobeko Moyo	System Engineer
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## 5. Revisions

Date	Rev.	Compiler	Remarks
May 2024	4	E Mphuthi	4 <sup>th</sup> Issue
July 2022	3	R Phaswana	3 <sup>rd</sup> Issue
August 2019	2	R Phaswana	2nd issue
June 2018	1	R Phaswana	First issue

## 6. Development Team

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

- N/A

## 7. Acknowledgements

N/A

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## Appendix A – Hydrated Lime

### A.1 Estimated Hydrated Lime Usage (NB: figures might change)

Estimate	<u>Tons/year</u>		<u>As 90% Ca(OH)</u>
Year	Estimated usage (Tons/year)	Safety Margin Buffer	Total Lime usage/yr
2022	850	10%	935
2023	1020		1122
2024	1020		1122
2025	17640		19404
2026	17640		19404
2027	17640		19404

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