	Scope of Works	Eskom Rotek Industries
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Title: **Scope of work for the supply of manufacturing services (medium to heavy engineering) to repair MD Pump Vessels and T-Boxes at Kusile Power Station Unit 6 Dust Handling Plant**

Unique Identifier: **ERI-SCP-002**

Alternative Reference Number: **N/A**

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
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1. INTRODUCTION

Eskom Rotek Industries, a wholly subsidiary of Eskom Holdings is contracted to Eskom Kusile to complete works on Unit 6 Dust Handling Plant as per scope of works 366-299036.

The unit 6 dust handling plant MD pump vessels have been standing unattended for a prolonged period without any maintenance/preservation on them. They have been exposed to various elements that may have damaged or compromised their integrity. As a result, these vessels need to be sent off site for inspection, possible repair and refurbishment to ensure that they are still fit for purpose.

On the t-Boxes, It has been established, via 2D Survey Analysis of the MD Pump and T- Box installation (see attached Appendix A), that there are offsets in the top flange orientation on the T-boxes. The average offset of the 28 No. of T-boxes is 1.5 °. This in turn makes it difficult to install and align the vessels and the interconnecting piping. Hence there is a need to correct this top flange mis-orientation.

This scope of work, depicts the works that needs to

2. SUPPORTING CLAUSES

2.1 SCOPE

The scope of work entails the supply of manufacturing services (Medium to heavy engineering) to refurbish MD Pump Vessels and T-Boxes at Unit 6 Dust Handling Plant at Kusile Power Station.

2.1.1 Purpose

The purpose of this document is to provide the requirements for the supply of manufacturing services (Medium to Heavy Engineering) to refurbish MD Pump Vessels and T-Boxes at Unit 6 Dust Handling Plant at Kusile Power Station.

2.1.2 Applicability

This document shall apply to Kusile Power Station, Unit 6 Dust Handling Plant.

2.2 NORMATIVE/INFORMATIVE REFERENCES

2.2.1 Normative

The applicable reference documents are listed below. These documents (latest revision) form part of this specification to the extent as specified in this specification. In the event of a conflict between the text of this specification and the applicable parts of the Eskom documents listed below, the text of this specification takes precedence. However, this specification does not supersede applicable laws and regulations (including the SANS standards), unless a specific exemption has been obtained from the relevant authorities.

- [1] 240-53665024: Engineering Quality Manual.
- [2] ISO 9001:2015 Quality Management Systems.
- [3] 240-1065658000 – Supplier Quality Management Specification.
- [4] 240-83539994 – Eskom Kusile NDT requirements.
- [5] PD 5500 – EN ISO 9606.
- [6] PD 5500 – EN ISO 15614 – 1.
- [7] SSZ 45-17 – Eskom Corrosion Protection Specification

2.2.2 Informative

- [8] SANS 347 – 2012.
- [9] Pressure Equipment Regulations.

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2.3 DEFINITIONS

Definition	Description
Contractor	The appointed person to perform the works.
Piping	Pipes, tubes or flexible pressure hose elements intended for the transport or distribution of any fluid.
Fittings	Any part joined to a pipe; elbows, bends, tees etc.
System	An integrated set of constituent pieces that are combined in an operational or support environment
Valve	A device for shutting-off or controlling the flow of a fluid through a pipe or duct.
Pipework	Pipes and fittings used for the conveyance of fluids
Fly Ash	Pulverised Fuel Ash.

2.3.1 Disclosure Classification

Controlled Disclosure: Controlled Disclosure to external parties (either enforced by law, or discretionary)

2.4 ABBREVIATIONS

Abbreviation	Description
DHP	Dust Handling Plant
U 6	Unit 6
CM	Configuration Management
SANAS	South African National Accreditation System
SANS	South African National Standards
QMS	Quality Management System
SANS	South African National Standards
NDE	Non Destructive Examination
OHS	Occupational Health and Safety Act
SANS 62	South African National Standard

2.5 ROLES AND RESPONSIBILITIES

2.5.1 Eskom Rotek Industries

- Ensure that supplier has the relevant capacity and capability to perform the works to applicable standards and specifications.
- Ensure that the supplier receives the items (MD pump vessels and T-Boxes) in a timeous manner.
- Free issue the transport to the supplier for both collection and delivery.
- Avail timeously, the responsible Quality/Mechanical Engineer to observe and **sign off on all and any** interventions during the fabrication repair process.
- Ensure that the supplier has the facility and capacity (human (engineers/welders) and capital resources (factory)) to carry out the works.

2.5.2 Eskom Rotek Industries – Mechanical Engineer & Quality Inspector.

- Ensure that all documentation and a signed ECN are in place before commencement of the works.

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- Ensure that they sign off on all the applicable ITP intervention points during execution of the works.
- Ensure that they witness any tests on completion of the works. (Pressure Test/Non-Destructive Testing).

2.5.3 Supplier

- Ensure that they have a facility and capacity (human and capital resource) to carry out the works.
- Ensure that they produce the required **Welding Procedure Specification** applicable for the works.
- Ensure that Manufacturing/H1 Data Packs with all relevant documentation (ITPs, Method Statements, Material Certificates, WPS, NDT Test, Inspection Reports etc.) are produced upon completion and delivery of equipment to site. The Data Packs to be in both Soft and Hard Copies.
- Ensure that they produce As-Built drawings after works completion.
- Ensure that they appoint an independent AIA who will sign off on all the works.
- Ensure timely execution and delivery of the equipment to site.

2.6 PROCESS FOR MONITORING

The schedule and target delivery date of all items will be communicated by the **supplier**, in writing to Eskom Rotek Industries after order placement with **fixed and firm dates**.

2.7 RELATED/SUPPORTING DOCUMENTS

3. WORKS INFORMATION: SUPPLY OF MANUFACTURING SERVICES (MEDIUM TO HEAVY) TO REPAIR THE MD PUMP VESSELS AND T-BOXES AT UNIT 6 DUST HANDLING PLANT KUSILE POWER STATION.

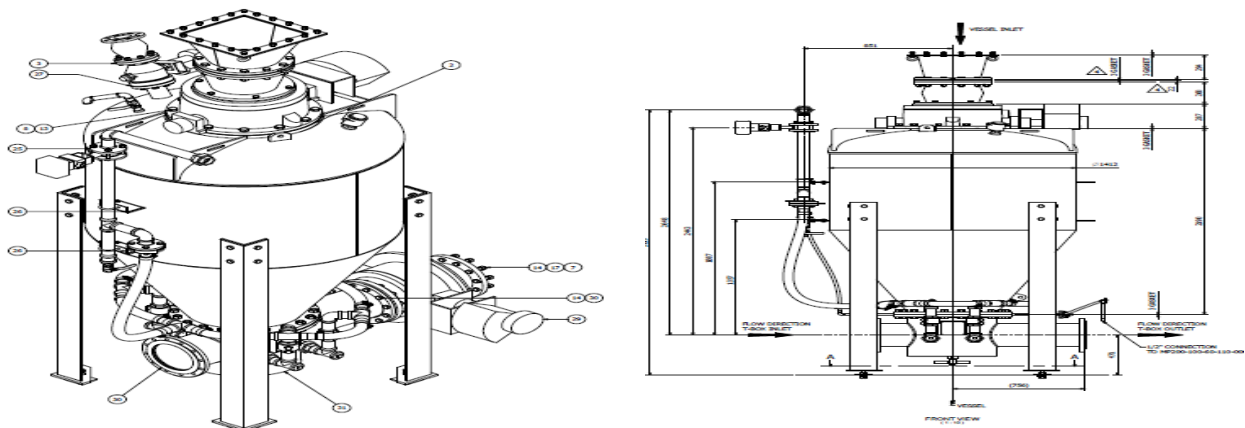


Figure 1: MD PUMP VESSELS

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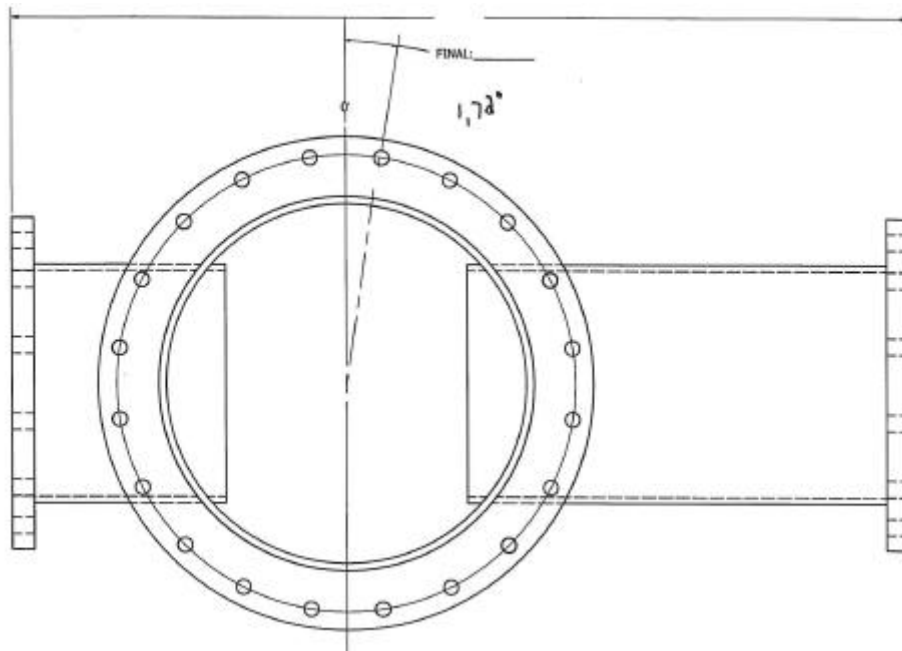


Figure 2: T-BOX MIS ORIENTATION (TO VIEW)

3.1 GENERAL

The following are the general requirements for the supply of manufacturing services to refurbish the MD pump vessels at Dust Handling Plant:

- 3.1.1 Supplier to receive the 28 number of MD-pump vessels and 28 number of T-Boxes at their workshop.
- 3.1.2 Vessels and T-Boxes to be blasted clean with name tags adequately protected.
- 3.1.3 Qualified QC and AIA to conduct visual inspection of all vessel and T-Box welds.
- 3.1.4 The Supplier to compile and submit all NDT procedures to obtain Eskom Kusile and ERI approval. The supplier to appoint an NDT service provider with the required Kusile Eskom Approval
- 3.1.5 The Supplier to ensure that documentation is produced (MS, ITP, PQR/WPS, Hydro Test Procedure and Corrosion Protection Procedures) and approved by Eskom Rotek as well as Kusile Eskom Team before **works commences**.

THE WORKS-PART 1: MD VESSELS

- 3.1.6 Vessels to be blasted clean with name tags protected.
- 3.1.7 Qualified QC and AIA to conduct visual inspection of all vessel welds.
- 3.1.8 Surface NDT inspections on the welds to follow.
- 3.1.9 Visual Inspection as per Visual Inspection procedure.
 - 10% Spot RT on all vessel welds (follow up 100% RT on welds that fail on the spot checks)
 - 100% MPI on all nozzle and attachment welds.
 - Spot check wall thickness test on all welds & identified areas of the vessel surface with excessive rust development visible.
- 3.1.10 Compile and approve PQR/WPS for any required weld repairs.
- 3.1.11 Test and certify welders to the procedures.
- 3.1.12 Repair the welding defects identified on visual and NDT inspections.
- 3.1.13 Final NDTs on repaired areas as follows.
 - 100 % MPI on all weld repairs followed with 100% RT of the repaired area
- 3.1.14 Assemble all vessel supports legs (nuts, bolts, washers, gaskets etc.)
- 3.1.15 Compile hydro test procedure (supply all items for the hydro test kit – gaskets, washers, nuts, flanges etc.)

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- 3.1.16 Hydro test the vessels to approved procedure.
- 3.1.17 Full corrosion protection on the MD Pump vessel as per Eskom specification SSZ 45-17.
- 3.1.18 Vessels to be released to site.
- 3.1.19 Data Books to be signed off and archived.

THE WORKS-PART 2: T-BOXES

- 3.1.20 Shot blast entire T- Piece (Cover flange faces, Name plate and Threads).
- 3.1.21 Surface NDT inspections on the welds to follow.
Visual Inspection as per Visual Inspection procedure.
 - 10% Spot RT on seem weld (follow up 100% RT on welds that fail on the spot checks)
 - 100% MPI on all nozzle and attachment welds.
- Spot check wall thickness test on all welds & identified areas of the T-box surface with excessive rust development visible
- 3.1.22 Compile and approve PQR/WPS for any required weld repairs.
- 3.1.23 Test and certify welders to the procedures.
- 3.1.24 Repair the welding defects identified on visual and NDT inspections.
- 3.1.25 Final NDTs on repaired areas as follows.
 - 100 % MPI on all weld repairs followed with 100% RT of the repaired area of a seem weld
- 3.1.26 Establish and scribe the 0 mark on the T – box. This should be clearly visible.
- 3.1.27 The top flange is to be removed by gouging the fillet.
- 3.1.28 Visual Inspection as per Visual Inspection procedure.
- 3.1.29 Fit up the flange to the correct orientation as per the 2D Survey Results.
- 3.1.30 Tack weld and inspect the dimension of the T-box.
- 3.1.31 Full weld the top flange in the correct orientation.
- 3.1.32 Visual inspection of the full weld.
- 3.1.33 Repair the welding defects identified on visual and NDT inspections
- 3.1.34 Full NDT on the full weld (100% MPI) by independent and qualified NDE Examiner.
- 3.1.35 Shop pressure testing (hydro) of the T- boxes to specified test pressure as per Hydro Test Procedure.
- 3.1.36 Full corrosion protection on the T-boxes as per SSZ 45-17 – Eskom corrosion protection specification.
- 3.1.37 T-boxes to be released and transported to Kusile Power Station.
- 3.1.28 Data Books to be signed off and archived.

3.2 QUALITY REQUIREMENTS

- All documents shall be compiled to the requirements of Kusile Project Quality Specification.
- ITP intervention points shall be signed off during manufacturing by all stake holders (Client, End User, and Supplier).
- Manufacturing Data Pack to be supplied upon works completion. (MD Vessels and T-Boxes).

3.3 CONFORMANCE

- PD 5500 EN-ISO 9606.
- PD 5500 EN-ISO 15614 -1.
- PRESSURE EQUIPMENT REGULATIONS.

4. AUTHORIZATION

This document has been seen and accepted by:

- Dewald Denton.
- Khomotso Mothata.

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- Tshidiso Lekalakala.

5. REVISIONS

Date	Rev.	Compiler	Remarks
14/07/2022	00	K Mothata	First Draft

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