 Eskom	Work Instructions	Operating Department
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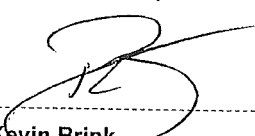
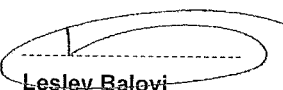
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## **1. Introduction**

Medupi Power Station Utilises a Pulse Jet Fabric Filter Plant and Air conveying system to process fly ash from the combustion processes. When critical components on these plants fail or require periodical maintenance, vacuum trucks are utilised to assist in maintaining lower hopper levels. This allows the unit to be loaded to a higher load factor for the duration of the repairs. Vacuum trucks also assist in water management on the site, as well as recovery from spillages. Due to ash leakages and spillages locking of drains by ash slurry is experienced, the combi unit truck will be utilised in maintaining clean drains on the power station.

## **Supporting Clauses**

### **1.1 Scope**

Procedure 4 vacuum trucks of the following specifications

1. 2 X Vacuum truck Dry Bulk Material handling unit.
2. 2 X vacuum truck – combi unit.

#### **1.1.1 Purpose**

To provide the requirements and specifications of the equipment required to be procured for Medupi Power Station for supply and delivery contract.

#### **1.1.2 Applicability**

This document shall apply to Eskom, or Medupi Power Station.

#### **1.1.3 Effective date**

This document will be effective from the date of authorisation, indicated on the cover page.

## **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] ISO14001 Environmental Management
- [3] 32-1033 Eskom Procurement and Supply Chain Management Policy
- [4] 32-1034 Eskom Procurement and Supply Chain Management Procedure

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### **1.2.2 Informative**

- [5] Insert informative document references here.
- [6] 240-101861550 Medupi Power Station Waste Management.
- [7] 240-89878683 Medupi Power Station Spill Response and clean Up
- [8] 240-97020108 Rev 5 Medupi Power Station Contracts User Requirement Specification
- [9] 240-89880251 Medupi Power Station Storage and Handling of Hazardous Chemical Substances

### **1.3 Definitions**

- [1] Employer - Eskom Medupi Power Station
- [2] Contractor – Service provider in terms of the services referred to in this document
- [3] Service Manager – The Employers representative in regard to this agreement
- [4] Contract Manager – The Contractors representative in regard to this document
- [5] Consumable – Means Air filters, Vacuum pump drive belts, Dry bulk material filters, pollen filters and equipment seals.

#### **1.3.1 Document:**

##### **General Requirements**

1. Contractor is to provide confirmation on the initiation of each vehicle construction.
2. Contractor to provide weekly feedback on the supply schedule of each piece of equipment.
3. Contractor to provide access to the employer for works inspection.
4. Employer to inspect equipment during the construction process.
5. Contractor to provide employer with an acceptance test prior to hand over of equipment.
6. Contractor is to include all special tools required for operation of the vehicle and equipment.
7. All contractor personnel are to comply with Eskom policies, procedures, on site regulations and Eskom lifesaving rules while on Eskom premises.
8. The employer and contractor shall mutually agree and schedule all applicable activities relating to this scope of work document.
9. Where possible onsite inspections and servicing should be provided.

### **1.4 Abbreviations**

Abbreviation	Explanation
etc	etcetera
N/A	Not Applicable
PTO	Power Take Off
EDPM	Ethylene Propylene Diene Monomer
ADR	SANS 1518 2011 South African Standard

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Abbreviation	Explanation
Lpm	Litres Per Minute
SABS	South African Bureau of Standards

### 1.5 Roles and Responsibilities

Contractor - Shall comply with the specification of the Works Information, procurement process and other Eskom regulations.

Procurement – Procurement will use the approved document and related documents to initiate the invitation to tender processes to the market

Operating Support – will ensure the services requested are procured as per the technical standards set out in this document and will oversee the operation of the equipment.

### 1.6 Process for Monitoring

Weekly progress reports will be shared by the contractor, detailing progress vs schedule.

Regular inspections will be performed by the employer.

The relative documents, including quality assurance documents, should be provided in terms of materials used and processes conducted as per the specifications in the document.

### 1.7 Related/Supporting Documents

N/A

## 2. Document Content

Provision of vacuum trucks.

### 2.1 Technical specifications

#### 2.1.1. HPVR-1000Combi.

Job Description	<b>Vacuum truck to be used in the power station for cleaning and storm water, sewage and line maintenance</b>
Vacuum Tank	The vacuum tank has a 9000/5000 litter capacity, is of 304L stainless steel construction with a 4 and 6mm shell and 6% toro-spherical dished-ends, Rolled channel rings are installed for extra reinforcing to ensure structural integrity and long life.
	Tank-in-tank construction so weight distribution remains even
	Tank tips hydraulically with a 14 ton tipping cylinder, up to 50 degree tipping angle. A burst valve protection.
	Protection bars for all peripheral extrusions like valves, manholes, etc.
	The tank features a full opening rear door with hydraulic opening and adjustable hinges, the door fastens to prevent accidental opening while driving. The door is secured in the opening position by a mechanical safety hook to prevent accidental closing during tank cleaning and maintenance procedures

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	<p>The tank door seals with a heavy duty EPDM seal that is corrosion resistant and offers high mechanical wear resistance</p> <p>The tank is fitted with D150 PN 16 ball valves at the back for suction and liquid discharge operations, fitted with Perrot-type couplings, blanks with 12mm drain valve an 90 degree elbow</p> <p>Twin cyclone filtration system to trap carry-overs and excess material during over filling. Knock-out boxes for easy inspection and material removal</p> <p>The tank doors is fitted with swing ball floating level indicator indicating full and empty tank levels</p> <p>The tank is fitted with flared spillage chutes at the back to limit spillage during dumping.</p> <p>Two revolving strobe lights fitted on tank for night time visibility with a work light at the back for night time operation.</p> <p>The tank is fitted with primary float ball knock out and material deflector on internal suction port</p> <p>Pneumatic tank isolation valve with automatic operation to isolate tank during driving to prevent on-road spillage.</p> <p>Self-aligning vacuum tie-in pipe for low maintenance and to prevent leakage.</p> <p>Easy and safe access ladder with full length walkway and non-slip, corrosion resistant surfaces. Hamess attachment points where working-at-heights is required</p> <p>NDT, 10 x-ray, water fill and pressure test are to be performed before tank delivery</p>
Hydraulic System	<p>Low volume 30lpm system</p> <p>70 Litre hydraulic tank</p> <p>Automated system for clamp, door and safety hook operation (1 button push control)</p> <p>Push button so that the door can only be opened from appropriate operator positions to prevent the chance of injury in case of spillage</p> <p>Lock-out when system not in use to protect against unintended movements of system</p> <p>PTO drive lock-out system to prevent operation during driving</p>
Accessories and auxiliaries	<p>The truck must be fitted with steel mudguards</p> <p>Two steel tool boxes to be fitted for storage of PPE, material and fittings</p> <p>SABS tested underrun bumper with chevron and lights</p> <p>A muck box is to installed to store dirty fittings and PPE</p> <p>An 8mm static earth line cable with clamp is fitted on a self-retracting hose reel, Cable length to be 10 metres</p>
Pump drives	<p>Drive to the high pressure pump and vacuum pump is via a dual output split shaft gearbox</p> <p>138 kW dual output drive</p> <p>1:1.26 output ratio</p> <p>1080 Nm output torque</p> <p>25 Nm drive through torque (35kN intermittent drive through torque)</p> <p>Hot shift pneumatic clutch for emergency stop</p> <p>Pneumatic in-cab switching with lock-out protection to prevent accidental switch over</p> <p>Fast reacting emergency stop</p>
Vacuum: Drive	<p>Auto tensioning pulley and belt system for pump protection</p> <p>Bolt-on belt guard for easy access</p> <p>louver for inspection and ventilation for belt drive system</p>
Vacuum: Liquid ring vacuum pump	<p>1200 CFM free air flow volume and up to - 70 Kpa (Gauge) continuous pressure</p> <p>Aluminium construction for weight saving (172kg)</p>

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	Adjustable cell aeration system with check valve
	Silencer for cell aeration system
	Side mount for low centre of gravity and weight distribution
	Screened scrubber box to protect pump against accidental carry-over damage
Vacuum: Filtration	Heavy duty dual cyclone filtration unit with discharge boxes for material removal and inspection.
	Flanged pipe connections for easy cleaning and maintenance
Vacuum: Service liquid tank	2000 litter capacity
	4mm mild steel construction
	Anti-corrosive coating inside
	Perrot style exhaust coupling for vapour removal when required
	Heavy duty poly carbonate level viewing glass in steel casing
	500mm manhole with seal and fastening device
	Easy and safe access ladders with full length walkways and non-slip, corrosion resistant surfaces. Hamess attachment points where working-at-heights is required
	50mm camlock filling port
	75mm drain valve with rear-end discharge
	Flanged pipe connections for easy cleaning and maintenance
Jetting System	Pratisolli MK 55 jetting pump, 240 lpm at 200 bar
	5000 liter water capacity
	Tank inlet and outlet filtration
	Hydraulically opening and winding hose reel to prevent injuries
	120 meter 25 mm jetting hose
	3 off nossles
	Pressure regulating valve
	Pre-set safety valve for 220 bar, balanced seat
	Stainless steel hose swivel
	Pressure gauges on pump and rear panel
	RPM control from rear panel
Suction boom	150 mm suction port with telescopic extending
	Hydraulic up/down, slewing and extension
	Isolation valve
	Remote control with Machine on/off, Vacuum stop/start, RPM control, Slewing ring control, hose reel control
	In cab charger for remote battery
	2 batteries included
	Protection again unintended movements for remote system
Truck	Vehicle power output of 460 HP or more
Safety	Fast reacting pneumatic e-stops for vacuum operation
	Mechanical safety hook to secure door in open position when cleaning or maintenance is required
	Mechanical locking door clamps to prevent accidental door opening when travelling
	Lock-out gearbox switch mechanism to prevent accidental gearbox switch-over when driving

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	Walkways with harness attachment points for where working-at-heights are required
	Automatic PTO lockout when driving
	Automatic tank isolation valve when driving
	Detailed decals to indicate component locations
	Warning decals where necessary
Legal	Homologated for on road use in Southern Africa
	Training include with unit
	12 month warranty on defects and workmanship
	Illustrated maintenance and operations manual
	Maintenance plane on unit
Back-up alarm	Yes
National service agents	YES
Warranty period in month	12 Month
Model:	At least 10 units built and in service in South Africa (Please provide proof)
Service dealer network	To be Specify
Delivery	Lead time
National service Agents	Original Equipment Manufacturer (OEM) and or registered dealer (Service supplier)
Dealer network	Specify
OEM Service Level Agreement	Specify
Warranty on structure	12 Month
Warranty on hydraulics	12 Month
Unit to be register to drive on road	Must comply to Traffic Act and Regulations

### 2.1.2. HPVR1000 PDB - Positive Displacement Blower.

Job Description	<b><u>Vacuum truck to be used for extracting dry ash on power stations</u></b>
Vacuum Tank	<p>The vacuum tank has a 12500 litter capacity, is of 316L stainless steel construction with a 6mm shell and 6% toro-spherical dished-ends, Rolled channel rings are installed for extra reinforcing to ensure structural integrity and long life.</p> <p>Tank tips hydraulically with a 14 ton tipping cylinder, up to 50 degree tipping angle. A burst valve protection.</p> <p>Protection bars for all peripheral extrusions like valves, manholes, etc.</p> <p>The tank features a full opening rear door with hydraulic opening and adjustable hinges, the door fastens to prevent accidental opening while driving. The door is secured in the opening position by a mechanical safety hook to prevent accidental closing during tank cleaning and maintenance procedures</p> <p>The tank door seals with a heavy duty EPDM seal that is corrosion resistant and offers high mechanical wear resistance</p>

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	<p>The tank is fitted with D150 PN 16 ball valves at the back for suction and liquid discharge operations, fitted with Perrot-type couplings, blanks with 12mm drain valve an 90 degree elbow</p> <p>The tank doors is fitted with swing ball floating level indicator indicating full and empty tank levels</p> <p>The tank is fitted with flared spillage chutes at the back to limit spillage during dumping.</p> <p>Two revolving strobe lights fitted on tank for night time visibility with a work light at the back for night time operation.</p> <p>The tank is fitted with primary float ball knock out and material deflector on internal suction port</p> <p>Pneumatic tank isolation valve with automatic operation to isolate tank during driving to prevent on-road spillage.</p> <p>Self-aligning vacuum tie-in pipe for low maintenance and to prevent leakage.</p> <p>Easy and safe access ladders with full length walkways and non-slip, corrosion resistant surfaces. Harness attachment points where working-at-heights is required</p> <p>ADR certified manhole with pressure relief valve and rupture disc protection</p> <p>NDT, 10 x-ray, water fill and pressure test are to be performed before tank delivery</p>
Hydraulic System	<p>Low volume 30lpm system</p> <p>70 Litre hydraulic tank</p> <p>Automated system for clamp, door and safety hook operation (1 button push control)</p> <p>Push button so that the door can only be opened from appropriate operator positions to prevent the chance of injury in case of spillage</p> <p>Lock-out when system not in use to protect against unintended movements of system</p> <p>PTO drive lock-out system to prevent operation during driving</p>
Accessories and auxiliaries	<p>The truck must be fitted with steel mudguards</p> <p>Two steel tool boxes to be fitted for storage of PPE, material and fittings</p> <p>SABS tested underrun bumper with chevron and lights</p> <p>A muck box is to installed to store dirty fittings and PPE</p> <p>An 8mm static earth line cable with clamp is fitted on a self-retracting hose reel, Cable length to be 10 metres</p>
Pump drives	<p>Drive to the high pressure pump and vacuum pump is via a dual output split shaft gearbox</p> <p>138 kW single output drive</p> <p>1:1.26 output ratio</p> <p>1080 Nm output torque</p> <p>25 Nm drive through torque (35kN intermittent drive through torque)</p> <p>Hot shift pneumatic clutch for emergency stop</p> <p>Pneumatic in-cab switching with lock-out protection to prevent accidental switch over</p> <p>Fast reacting emergency stop</p>
Vacuum: Drive	<p>Auto tensioning pulley and belt system for pump protection</p> <p>Bolt-on belt guard for easy access</p> <p>louver for inspection and ventilation for belt drive system</p>
Vacuum: Positive displacement blower	<p>3850 cmh free air flow volume and up to - 70 kPa (Gauge) continuous pressure</p>

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	Jurop PVT700 trilobe with air injection cooling
	Overheating protection
	Outlet and injection silencers
	Side mount for low centre of gravity and weight distribution
	Screened scrubber box to protect pump against accidental carry-over damage
Vacuum: Filtration	3 stage filtration system
	Stage 1: Dual cyclone filtration unit with discharge boxes for material removal and inspection.
	Stage 2: Dual filter boxes with 104 tube filters, removeable and washeable (Nomex available for hot ash)
	Stage 3: Jurop Aluminium wet/dry filter with stainless steel mesh filter
	Flanged pipe connections for easy cleaning and maintenance
Truck	Vehicle power output of 460 HP or more
Safety	Fast reacting pneumatic e-stops for vacuum operation
	Mechanical safety hook to secure door in open position when cleaning or maintenance is required
	Mechanical locking door clamps to prevent accidental door opening when travelling
	Lock-out gearbox switch mechanism to prevent accidental gearbox switch-over when driving
	Walkways with harness attachment points for where working-at-heights are required
	Automatic PTO lockout when driving
	Automatic tank isolation valve when driving
	Detailed decals to indicate component locations
	Warning decals where necessary
Legal	Homologated for on road use in Southern Africa
	Training include with unit
	12 month warranty on defects and workmanship
	Illustrated maintenance and operations manual
	Maintenance plane on unit
Back-up alarm	Yes
National service agents	YES
Warranty period in month	12 Month
Model:	At least 10 units built and in service in South Africa (Please provide proof)
Service dealer network	To be Specify
Delivery	Lead time
National service Agents	Original Equipment Manufacturer (OEM) and or registered dealer (Service supplier)
Dealer network	Specify
OEM Service Level Agreement	Specify
Warranty on structure	12 Month
Warranty on hydraulics	12 Month
Unit to be register to drive on road	Must comply to Traffic Act and Regulations

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### **3. Acceptance**

This document has been seen and accepted by:

<b>Name</b>	<b>Designation</b>
Lesley Baloyi	Acting Operating Manager
Kevin Brink	Ops Support Manager
Elizabeth Molefe	Snr Technician Operating
Morongwa Nonyane	Snr Technician Operating
Tumelo Mathye	Snr Technician Operating

### **4. Revisions**

<b>Date</b>	<b>Rev.</b>	<b>Compiler</b>	<b>Remarks</b>
August 2021	1	ML Manamela	Station Requirements

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