

Title: **Tender Technical Evaluation Strategy for Refurbishment and Rewind of Medium Voltage Motors**

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Compiled by



**M.H Manqele**  
**System Engineer**

Date: **11/05/2026**

Functional Responsibility



**GT Mthombene**  
**Electrical Engineering Manager**

Date: **13/05/2026**

Authorised by



**R Nelwamondo**  
**Engineering Manager**

Date: **13/05/2026**

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## **1. INTRODUCTION**

The refurbishment and rewind of medium voltage motors at Kriel Power Station is an enquiry which will go out to the open market. The tender documents will be published on the tender bulletin after the scope and technical evaluation criteria are approved. The works include all MV motors used at Kriel Power Station.

The technical requirements for all tenderers are specified in this document. The technical evaluation is in accordance with 32-1033: Eskom Procurement and Supply Chain Management Policy and 32-1034: Eskom Procurement and Supply Management Procedure during the tender process.

## **2. SUPPORTING CLAUSES**

### **2.1 SCOPE**

The scope of the document defines the technical criteria by which tenderers for the refurbishment and repair of MV motors for Kriel Power Station will be evaluated.

#### **2.1.1 Purpose**

The purpose of this tender technical evaluation strategy is to define the Mandatory Evaluation Criteria, Qualitative Evaluation Criteria, TET member responsibilities and identify acceptable/unacceptable risks for tender technical evaluation. The technical evaluation strategy serves as basis for the tender technical evaluation process.

#### **2.1.2 Applicability**

This document is applicable to Kriel Power Station.

### **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] 240-168966153: Generation Tender Technical Evaluation Procedure
- [2] 32-1033: Eskom Procurement and Supply Chain Management Policy
- [3] 32-1034: Eskom Procurement and Supply Management Procedure during the tender process
- [4] SANS 60034: Rotating electrical machines
- [5] 240-89217674: Refurbishment and Repair of Power Station Electric Motors Work Instruction

#### **2.2.2 Informative**

- [6] 474-11604: Electric Motors Group Technology Strategic Report 2024
- [7] GGSS 0526 Eskom specification for the re-metalling (re-lining) of white metal bearings
- [8] 240-161245839 Supply and delivery of mill labyrinth seals - scope of work

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## 2.3 DEFINITIONS

### 2.3.1 Classification

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

## 2.4 ABBREVIATIONS

Abbreviation	Description
DoL	Department of Labour
kW	Kilowatt
MV	Medium Voltage (>1000V)
N/A	Not Applicable
OEM	Original Equipment Manufacturer
OHS Act	Occupational Health & Safety Act
QCP	Quality Control Plan
RPM	Revolutions Per Minute
SANS	South African National Standards
TET	Technical Evaluation Team

## 2.5 ROLES AND RESPONSIBILITIES

As per 240-168966153: Generation Tender Technical Evaluation Procedure for Generation

## 2.6 PROCESS FOR MONITORING

N/A

## 2.7 RELATED/SUPPORTING DOCUMENTS

Insert text here.

[13] 240-53716712: Tender Technical Evaluation Results Form Template

[14] 240-53716726: Tender Technical Evaluation Scoring Form Template

[15] 240-53716746: Tender Technical Evaluation Report Template

[16] 240-53716769: Tender Technical Evaluation Strategy Template

## 3. TENDER TECHNICAL EVALUATION STRATEGY

### 3.1 TECHNICAL EVALUATION THRESHOLD

Mandatory Technical Evaluation Criteria (gatekeepers) are a 'must meet' criteria. These criteria shall not be weighted, or point scored but shall be assessed on a Yes/No basis as to whether the criteria are met unless set otherwise. **An assessment of 'No' against any criterion shall technically disqualify the tenderer and shall not be further evaluated against Qualitative Criteria.**

Qualitative Technical Evaluation Criteria are weighted evaluation criteria used to identify the highest technically ranked tenderer after determining that all the Mandatory Evaluation Criteria have been met. The Qualitative Evaluation Criteria are weighted to reflect the relevant importance of each criterion.

### **CONTROLLED DISCLOSURE**

Tenderers will be subject to a desktop evaluation and a site evaluation. All companies passing the desktop evaluation threshold of 70% will be visited for a site evaluation. **The following must be noted regarding the site evaluation:**

- **3 working days to accept the site inspection invitation.**
- **10 working days to confirm the date of site inspection.**
- **After confirming site inspection date, No cancellation within 48 hours before site inspection date.**

### **3.2 TET MEMBERS**

**Table 1: TET Members**

<b>TET number</b>	<b>TET Member Name</b>	<b>Designation</b>
TET 1	Mhlengi Manqele	System Engineer
TET 2	Nkosi Phetha	System Engineer
TET 3	Raonetene Mahlaku	Senior System Engineer

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**3.3 MANDATORY TECHNICAL EVALUATION CRITERIA**

**Table 2: Mandatory Technical Evaluation Criteria**

	<b>Mandatory Technical Criteria Description</b>	<b>Reference to Technical Specification / Tender Returnable</b>	<b>Motivation for use of Criteria</b>
1.	12 months warranty letter of workmanship	Provision of a valid warranty signed by the GM of the company	To ensure quality services to Eskom
2.	Provide valid SABS certificate in terms of ISO 9001:2015 – Quality Management Systems in respect of MV induction motors repairs	Valid SABS certificate for MV motor repairs in terms of SANS 60034 with valid south African accreditation body	To comply with SABS standards
3.	Registered as Electrical contractor with Department of Labour (DoL)	Provision of a valid and verifiable certification. Certified copied must not be older than 3 months.	Legal requirement for electrical rotating machinery

**3.4 QUALITATIVE TECHNICAL EVALUATION CRITERIA**

**Table 3: Qualitative Technical Evaluation Criteria**

	<b>Qualitative Technical Criteria Description</b>		<b>Reference to Technical Specification / Tender Returnable</b>	<b>Criteria Weighting (%)</b>	<b>Criteria Sub Weighting (%)</b>
<b>1.</b>	<b>Proof of Qualifications</b>			<b>20</b>	
	1.1	<p><b>Senior supervisor (Technologist – Registered with ECSA)</b></p> <ul style="list-style-type: none"> <li>• Qualification certificate and ECSA registration certificate</li> <li>• CV</li> <li>• Indicate years of experience (5 years Minimum)</li> <li>• Written proof (letter) of employment by the company, signed by the GM of the company</li> </ul> <p>5 Years or more = 5                      3 years but less than 5 = 4                      Less than 3 years = 2                      Less than 2 years = 0</p>	SAQA NQF Level 7/8 verifiable certified copy of engineering qualification, CVs, ECSA certificate & attach signed letter as proof of employment from the company tendering.		35
	1.2	<p><b>Qualified Electrician</b></p> <ul style="list-style-type: none"> <li>• Trade test certificate</li> <li>• Test bay operator experience</li> <li>• Indicate amount of years' experience (5 years minimum)</li> <li>• Written proof (letter) that the winder is employed</li> </ul>	SAQA NQF Level 4 verifiable certified copy of qualification, CVs & attach signed letter as proof of employment from the company tendering.		25

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		<p>by the company, signed by the GM of the company</p> <p>5 years or more = 5                      3 years but less than 5 = 4                      2 years = 2                      Less than 2 years = 0</p>			
	1.2	<p><b>Qualified Winder</b></p> <ul style="list-style-type: none"> <li>• Trade test certificate</li> <li>• Indicate amount of years' experience (5 years minimum)</li> <li>• Written proof (letter) that the winder is employed by the company, signed by the GM of the company</li> </ul> <p>5 years or more = 5                      3 years but less than 5 = 4                      2 years = 2                      Less than 2 years = 0</p>	<p>SAQA NQF Level 4 verifiable certified copy of qualification, CVs &amp; attach signed letter as proof of employment from the company tendering.</p>		20
	1.3	<p><b>Qualified Fitter</b></p> <ul style="list-style-type: none"> <li>• Trade test certificate</li> <li>• Indicate amount of years' experience (5 years minimum)</li> <li>• Written proof (letter) that the fitter is employed by the company, signed by the GM of the company</li> </ul>	<p>SAQA NQF Level 4 verifiable certified copy of qualification, CVs &amp; attach signed letter as proof of employment from the company tendering.</p>		20

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		5 years or more = 5 3 years but less than 5 = 4 2 years = 2 Less than 2 years = 0			
<b>2.</b>	<b>Quality</b>			<b>10</b>	
	2.1	<b>Quality Control Plan (QCP) as per scope of work</b>	A quality control plan (QCP) or quality inspection plan (QIP) template is required for electrical and mechanical work within the contract scope.		100
<b>3.</b>	<b>Lead time to execute works</b>		Provision of a detailed project plan including delivery timelines based on the scope of work	<b>30</b>	
	3.1	<ul style="list-style-type: none"> <li>EFP motors – Strip &amp; Assessment failure report and scope of work &lt; 5 days</li> <li>Complete refurbishment &lt;4 Weeks</li> </ul> Scope of work < 5 days and refurbishment < 4 weeks = 5 5 days < Scope of work < 7 days and 4 < refurbishment < 6 weeks = 4 Scope of work > 7 days and refurbishment > 6 weeks = 2 Scope of work > 10 days and refurbishment > 8 weeks = 0			25

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	3.2	<ul style="list-style-type: none"> <li>FD &amp; ID fan motors – Strip &amp; Assessment failure report and scope of work &lt;4 days</li> <li>Complete refurbishment &lt;= 3 Weeks</li> </ul> <p>Scope of work &lt; 4 days and refurbishment &lt;= 3 weeks = 5                      4 days &lt; Scope of work &lt; 7 days and 3 weeks &lt; refurbishment &lt;= 5 weeks = 4                      Scope of work &gt; 7 days and refurbishment &gt; 5 weeks = 2                      Scope of work &gt; 10 days and refurbishment &gt; 8 weeks = 0</p>			20
	3.3	<ul style="list-style-type: none"> <li>CEP motors – Strip &amp; Assessment failure report and scope of work &lt;4 days</li> <li>Complete refurbishment &lt;= 3 Weeks</li> </ul> <p>Scope of work &lt; 4 days and refurbishment &lt; 3 weeks = 5                      4 days &lt; Scope of work &lt; 7 days and 3 weeks &lt; refurbishment &lt; 5 weeks = 4                      Scope of work &gt; 7 days and refurbishment &gt; 5 weeks = 2                      Scope of work &gt; 10 days and refurbishment &gt; 8 weeks = 0</p>			15
	3.4	<ul style="list-style-type: none"> <li>CW pump motors – Strip &amp; Assessment failure report and scope of work &lt;5 days</li> <li>Complete refurbishment &lt;4 Weeks</li> </ul> <p>Scope of work &lt; 5 days and refurbishment &lt; 4 weeks = 5</p>			20

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		<p>5 days &lt; Scope of work &lt; 7 days and 4 weeks &lt; refurbishment &lt; 6 weeks = 4</p> <p>Scope of work &gt; 7 days and refurbishment &gt; 6 weeks = 2</p> <p>Scope of work &gt; 10 days and refurbishment &gt; 8 weeks = 0</p>			
	3.5	<ul style="list-style-type: none"> <li>All other motors – Strip &amp; Assessment failure report and scope of work &lt;3 days</li> <li>Complete refurbishment &lt;3 Weeks</li> </ul> <p>Scope of work &lt; 3 days and refurbishment &lt; 3 weeks = 5</p> <p>3 days &lt; Scope of work &lt; 5 days and 3 &lt; refurbishment &lt; 5 weeks = 4</p> <p>Scope of work &gt; 5 days and refurbishment &gt; 5 weeks = 2</p> <p>Scope of work &gt; 10 days and refurbishment &gt; 8 weeks = 0</p>			20
4	<b>Workshop Inspection</b>		Completion of the workshop inspection based on <b>240-89217674: Refurbishment and Repair of Power Station Electric Motors Work Instruction</b>	<b>40</b>	
	4.1	<p>Completed Electrical Motor Workshop Inspection</p> <p>Compliant 100 % = 5</p> <p>Compliant With Associated Qualifications 80 % = 4</p> <p>Non-Compliant 40 % = 2</p>			100

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		Totally Deficient or Non-Responsive 0 % = 0			
				<b>TOTAL: 100</b>	

**3.5 ELECTRIC MOTOR WORKSHOP INSPECTION**

	<i>Description</i>	<i>Yes/No</i>	<i>Comments</i>
<b>Certification</b>			
1.	Confirmation of ISO9001-2015 original certificate		
2.	Copy of Quality policy & quality plan		
3.	Calibration certificates – Megger, balancing machine, core tester, test bed, torque wrench		
4.	Confirm employment of a qualified supervisor, electrician, winder and fitter and years of experience		
5.	Copy of testing report		
6.	Inspect an example of a job card		
<b>Technical Documentation</b>			
7.	Incoming assessment report – All data recorded (Breakdown report)		
8.	Demonstrate how components are marked during stripping (Job number or serial number)		
9.	Are end shields & frames match marked?		
10.	Are components stored such that they cannot be damaged during storage?		
11.	Is rotor removed using a close-fitting pipe over the rotor shaft?		
12.	Bearing insulation inspected for damage?		
13.	Oil ring condition inspected and recorded? Check		

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	oil rings for roundness, roughness of edges, and, if applicable, tightness of split oil-ring screws		
14.	Is the following noted during rotor removal: location, make, type, size, clearances and orientation of bearings		
15.	Is care taken during rotor removal to ensure that the rotor doesn't touch the stator windings?		
16.	Is the motor leads and lugs inspected, and condition recorded?		
17.	Is the motor insulation inspected for PD and recorded?		
18.	Stator slot wedges and end-winding bracing shall be inspected for looseness, missing and broken parts. Recorded?		
19.	Inspect the stator core laminations for looseness, rubs, localized heating and vent duct blockages. Core clamping fingers and duct spacers shall be checked for looseness and missing parts. Recorded?		
20.	Core flux test performed, and values recorded?		
21.	The rotor core shall be inspected for looseness, overheating, loose, cracked, or missing clamping fingers and vent duct spacers, rubs, localized heating and blocked vent ducts. If overheating is found, inspection for signs of cracked rotor laminations or core migration is required.		
22.	The motor fans shall be visually inspected for cracked or loose blades, and on welds and hubs using the dye penetrant and ultraviolet light method. Looseness between the fan and its hub shall be checked.		
23.	Visually inspect the rotor shaft and spider for cracks using the dye penetrant and ultraviolet light		

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	method.		
24.	Check the straightness of shaft extensions, bearing journals, and rotor body by conducting total run-out measurements as contained in the mechanical checks section.		
25.	Space heaters and the heater wiring shall be functionally and visually checked. If significant corrosion is identified inside the motor, the root cause is to be investigated.		
26.	Bearing temperature detectors shall be functionally and visually checked.		
27.	What is your steam cleaning pressure (Max should be 206kPa)		
28.	What is your max power washer pressure if low pressure steam clean not available (1379Kpa)		
29.	Is the area where motors are being washed clean such that foreign particles cannot be lodged into motor winding insulation?		
<b>Dry out oven</b>			
30.	Is a time stamp trend of recording the temperature of the dry-out oven available? Is the trend recorded automatically?		
31.	At what range are you controlling your oven during dry-out (Should be 100-110°C)		
32.	Is the temperature control automatic? Is air temperature monitoring conducted in different positions in the oven?		
33.	Is hot air circulated by an electric fan or blower?		
<b>Dry out process</b>			
34.	To avoid steam damage, for the first 6 hours the oven temperature shall not exceed the boiling point		

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	for water based in the oven environment, i.e. 94°C in Johannesburg		
35.	After 6-hours, the oven temperature may be raised but shall not exceed the thermal rating of the stator winding insulation system, including the leads, less 10°C, for the remaining duration of the dry out. As an example for Class F insulated machines, the oven temperature shall be set, monitored, recorded and controlled not to exceed 105°C.		
<b>Bearings</b>			
36.	Who is bearing suppliers? (SKF, FAG, RHP or NSK allowed)		
37.	During bearing installation, heating shall be within the tolerances laid down in the relevant bearing manual and shall <u>not exceed 110°C</u> . This takes place using an <u>induction heater with a demagnetizing facility</u> . This is also relevant where bearings are removed with the intention of putting it back in service. <u>The use of used bearings is not permitted unless it has been so instructed by the Employer.</u>		
<b>Motor assembly</b>			
38.	Demonstrate how clean conditions are practiced during assembly of the motor to prevent any material from being left inside the motor		
<b>Painting</b>			
39.	How many coats of primer applied (at least 1)		
40.	How many finishing coats of compatible outdoor paint are applied (At least 2)		
<b>Testing</b>			
41.	Which standards do you comply with in regards with motor testing? ( <b>240-56358854</b> )		

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42.	A balance machine able to balance the rotor at rated speed (maximum 1500 RPM) and a test bay able to test the motor at full voltage no load <b>(largest base to fit: 4250mm x 2420mm)</b>		
<b>Coil Shop</b>			
43.	A coil shop with the ability to rewind all the MV motors as per the scope of work		

**3.6 TET MEMBER RESPONSIBILITIES**

**Table 4: TET Member Responsibilities**

<b>Mandatory Criteria Number</b>	<b>TET 1</b>	<b>TET 2</b>	<b>TET 3</b>
1	X	X	X
2	X	X	X
3	X	X	X
<b>Qualitative Criteria Number</b>	<b>TET 1</b>	<b>TET 2</b>	<b>TET 3</b>
1	X	X	X
2	X	X	X
3	X	X	X
4	X	X	X

**3.7 FORESEEN ACCEPTABLE / UNACCEPTABLE QUALIFICATIONS**

**3.7.1 Risks**

**Table 5: Acceptable Technical Risks**

<b>Risk</b>	<b>Description</b>
1.	If a factory does not have the capability to test the 11kV, 10MW EFP motors but an agreement can be reached to test at an alternative facility (provide letter signed by GM of the facility)
2.	

**Table 6: Unacceptable Technical Risks**

<b>Risk</b>	<b>Description</b>
1.	The tenderer has no facility at which the works can be completed and tested

**3.7.2 Exceptions / Conditions**

**Table 7: Acceptable Technical Exceptions / Conditions**

<b>Risk</b>	<b>Description</b>
1.	If the contractor/service provider does not own the workshop, a <b>service level agreement or lease contract</b> must be provided with the 3 <sup>rd</sup> party that owns the workshop.
1.	

**Table 8: Unacceptable Technical Exceptions / Conditions**

<b>Risk</b>	<b>Description</b>
1.	
2.	

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3.	
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#### **4. AUTHORISATION**

This document has been seen and accepted by:

<b>Name</b>	<b>Designation</b>
GT Mthombene	Electrical Engineering Manager
R Nelwamondo	Engineering Manager
Nkosi Phetha	System Engineer
Raonetene Mahlaku	Senior System Engineer

#### **5. REVISIONS**

<b>Date</b>	<b>Rev.</b>	<b>Compiler</b>	<b>Remarks</b>
December 2021	1	Daan Dreyer	First draught
March 2025	2	M.H Manqele	Revision of the mandatory and qualitative requirements
March 2026	3	M.H Manqele	Revision of the mandatory requirements and TET members
March 2026	4	M.H Manqele	Revision of the workshop requirements

#### **6. DEVELOPMENT TEAM**

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

M.H Manqele

N Phetha

#### **7. ACKNOWLEDGEMENTS**

**N/A**

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