Eskom	Scope Of Work	Generation

Title: **Repair and/or Refurbishment of Medium Voltage Motors at Grootvlei Power Station**

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1. INTRODUCTION

Grootvlei Power Station is faced with UCLF (Unavailability Capability Loss Factor) due to the unavailability of spare Medium Voltage (MV) motors. Therefore, to mitigate this, a decision was taken by the power station management to set up a repair and refurbishment contract for MV motors, to ensure the availability of spare MV motors.

2. SUPPORTING CLAUSES

2.1 SCOPE

The RF motors spares listed in section 3.2.3 of this document, as stock items on an “as and when” required basis for a period of five years to Grootvlei Power Station, Main Stores.

2.1.1 PURPOSE

The purpose of the document is to provide a scope of work for the refurbishment and or replacement and delivery of Low voltage motors, as stock items on an “as and when” required basis for a period of five years to Kriel Power Station, Main Stores and intended to be the input to the NEC Part 3: Scope of Work.

2.1.2 APPLICABILITY

This document is applicable to Grootvlei Power Station, Maintenance, Electrical Engineering and Materials Management Department.

2.2 NORMATIVE/INFORMATIVE REFERENCES

2.2.1 NORMATIVE

All original equipment manufacturer standards are applicable and must be followed when performing any type of task on Grootvlei Power Station MV motors. Furthermore, where applicable, the work instruction 240-89217674 shall be used as a reference guide. It is the responsibility of the Contractor to ensure that all work performed is according to applicable standards, including those that are listed in 240-89217674.

[1] 240-89217674, Refurbishment and Repair of Power Station Electric Motors Work Instruction

2.2.2 INFORMATIVE

Not applicable.

2.3 DEFINITIONS

Definitions	Description
Medium Voltage	Voltage ratings of 1000V and above

Definitions	Description
Refurbishment	The total process of restoring a machine or component that has become inadequate for continued use with normal maintenance, thereby making it suitable for an extended period of service. This may include re–evaluating the service conditions and use of the motor and possible redesigning of the motor to meet the new requirements.
Rewind	The process that includes the removal and replacement of the stator winding system in the motor.
Employer	The Eskom business unit engaging in refurbishing or repairing electrical motors to which this document is applicable
Repairer/ Contractor	Motor Repair Service Provider

2.3.1 DISCLOSURE CLASSIFICATION

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

2.4 ABBREVIATIONS

Abbreviations	Description
EMD	Electrical Maintenance Department
MV	Medium Voltage
NDE	Non-Drive End
NEC	New Engineering Contract
OEM	Original Equipment Manufacture
QC	Quality Control
SOW	Scope Of Work
VPI	Vacuum Pressure Impregnation

2.5 ROLES AND RESPONSIBILITIES

Roles and responsibilities are as follows:

1. Electrical Maintenance, Electrical Engineering and Turbine Engineering Representatives
   - Responsible in ensuring that the quality checks on the repaired MV motors are correct and useable prior to those motors being accepted and delivered.
2. Materials Manager
   - Must ensure that the *Contractor* is managed in line with this scope and the subsequent NEC contract to be developed.
3. Maintenance Manager
   - Must ensure plant spare availability through his/her oversight duties over the EMD Manager and Materials Management Manager.

2.6 PROCESS FOR MONITORING

Quality control on repaired MV motors will be carried out and signed off by the appointed QC personnel, Electrical Engineering, Turbine Engineering and Electrical Maintenance personnel to ensure the quality of the repaired MV motor is in accordance to standards listed in 240-89217674 - Refurbishment and Repair of Power Station Electric Motors Work Instruction.

3. THE *WORKS*

3.1 DESCRIPTION OF THE *WORKS*

The *works* entail collection, dismantling, assessing, repairing, rewinding, overhauling, assembling, painting, testing, delivering of the MV Motors on an "as-and-when required" basis for Grootvlei Power Station for the period of five years. All work performed should be in line with the Eskom standard: 240-89217674: Refurbishment and Repair of Power Station Electric Motors Work Instruction. The *Contractor* is to notify the *Employer* when it becomes uneconomical to repair, rewind or overhaul a motor, i.e. the cost of repair exceeds approximately 60% of the cost of a new motor.

The Contractor will be responsible for collection, repairing and testing of all MV motors installed at Grootvlei Power Station, outside/common plant, and Vaal Dam pump station. All such work will be carried out at the Contractor's premises.

The Contractor is responsible for all aspects of MV motor repair, and this includes, but is not limited to, the following:

- Rewinding and refurbishment of MV motors
- Ensure compliance with legislation and national standards
- Ensure compliance with Eskom policies and procedures

Accessories fitted to motors that form an integral part of a motor such as cooling fans, resistance temperature detectors (RTDs), space heaters, mounting blocks, etc. are included as part of the *works*.

The information contained in this document is the minimum requirements for a repair and/or refurbishment of medium voltage motor contract. The Contractor may suggest alternatives or additions to the scope for the practical implementation of the contract. However, the Contractor must make a detailed submission for the *Employer* to evaluate the proposals/ scope additions. This must also include samples of all documents that will be used, such as failure reports and repair procedures. The *Contractor* must also provide full details of his quality management plan and safety management plan.

3.1.1 SCOPE OF WORK DESCRIPTION

3.1.2 REPAIR OF MOTORS

The *Contractor* undertakes to repair failed or defective MV motors from Grootvlei Power Station and its associated plant. All repair work will, as a minimum, be undertaken in accordance with the standards listed in Section 2.2.1.

When a motor is collected for repair, the *Contractor* will give a program entailing an estimated duration of the repair lead time to the *Employer Representative* within 72 hours of the motor being collected from the station. In the absence of a spare MV motor, the *Contractor* will report the progress of the repair to the *Employe*r Representative on a weekly basis. The expected repair lead time in the case of a breakdown is stated in section 3.1.4.

All motors shall be painted as per section 4.2.3 of **240-89217674**: Refurbishment and Repair of Power Station Electric Motors Work Instruction.

3.1.3 FAILURE REPORTS

The *Contractor* must submit a failure report within 72 hrs to the '*Employer Representative'* for every motor that is collected from the station for repair. The failure report must be available before the repair of that motor is completed.

The *Contractor* must present the proposed failure report outline to the *Employer Representative* for acceptance. The report must, as a minimum, include the following:

- Motor identification (Serial/identification number, type, voltage, rating, etc.)
- Associated driven equipment (e.g. pump or gearbox)
- Description of physical conditions
- Visual inspection (including colour photographs)
- Detailed inspection (where applicable, including colour photographs)
- Conclusions
- Recommendations

The purpose of such a failure report is to determine the root cause of an incident. This information can then be applied to other motors on site to prevent reoccurrence.

3.1.4 BREAKDOWNS

The *Contractor* will provide a 24-hour stand-by service for emergencies for MV motor collection. The MV motors shall be collected from site within 24-hours of being informed of the breakdown.

When Grootvlei power station experiences a breakdown and there is no spare motor onsite, the *Contractor* shall be requested to work the damaged motor 24-hours continuously. The *Contractor* will give an estimate of the repair lead time and program to the *Employer Representative* within 36 hours of the motor being collected from the station.

In addition to the repair of the breakdown, the *Contractor* will also conduct a thorough inspection to determine the cause of the failure. Where necessary, the *Contractor* will recommend corrective actions to the *Employer Representative*.

3.1.5 TRANSPORT

Transportation of motors from where they are installed in the plant to the main store, will be the responsibility of the *Employer*.

Transportation to and from the Grootvlei Power Station main store (or other suitable place) to the *Contractor's* works, will be the responsibility of the *Contractor*. The *Contractor* is required to adhere to the gate release procedures in effect at Grootvlei Power Station. These procedures may change from time to time and the *Contractor* must accommodate such changes. The *Contractor* will also provide adequate insurance cover for damage or loss when motors are in transit and in the *Contractor's* works.

The *Employer Representative* may, at his sole discretion, decide to transport a motor to another location on site if the collection of the motor from that location is more convenient. The *Employer Representative* may also direct the *Contractor* to deliver a motor to a location other than the main store if that location is more convenient for the installation or storage of the motor.

3.1.6 PERFORMANCE MEASURES AND REPORTING

The performance of the *Contractor* will be measured on quarterly basis. The areas of measurement will include the following:

- Equipment breakdown rate- On site failure within guaranteed period of 6 months.
- Repair duration based on the agreed program.
- Response collection time (normal or emergency).
- Data pack submission- delivery of data pack with every repaired or refurbished MV motor.
- NCR issued to the contractor.

The *Contractor*, together with the *Employer Representative* will at the commencement of the contract agree on categories and a target for each category. These measurement categories and targets will be reviewed by the *Contractor* and *Employer Representative* on as and when required basis in the interest of continual improvement.

The *Contractor* will issue a monthly report to the Power Station. The following minimum information must be contained in the report:

- Refurbishment and repairs undertaken
- Performance measures with supporting documents
- A list of all Grootvlei MV motors and the progress reports including the contractor's job number, description of the motor, purchase order number, serial number, repair cost and delivery date.

The *Contractor* will include other items in the report that may be of interest to the Power Station. These reports will form the basis of discussion for performance measurement review meetings. The frequency of these review meetings is at the sole discretion of the *Employer*.

3.1.7 ENVIRONMENTAL POLICIES AND PROCEDURES

The *Contractor* will ensure that all waste generated during the testing, maintenance and repair of any MV motor is disposed of by the *Contractor* at the *Contractor's* premises in an appropriate manner and in accordance with the policies and procedures of Grootvlei Power Station.

Furthermore, the *Contractor* will be familiar with and comply with Grootvlei Power Station's environmental management policies and procedures.

Motor Register

The attached excel file provides a list of MV motors used at Grootvlei Power Station.

Worksheet in G
Electrical Engineerin

3.1.8 CONFIDENTIALITY

This document in its entirety is for the sole use of the *Employer*. No part of this document may be discussed, distributed, disseminated, copied, or transmitted in any form to any third party without the prior consent of the *Employer*.

4. AUTHORISATION

This document has been seen and accepted by:

Name	Designation
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5. REVISIONS

Date	Rev.	Compiler	Remarks
January 2023	1	Thato Morodi	SOW compilation

6. DEVELOPMENT TEAM

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

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- Thato Morodi