



	SCOPE OF WORK	Kusile Power Station
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Compiled by	Supported by	Functional Responsibility	Authorized by
			
Marakeng Madigoe Snr Supervisor	Nzuzo Ndlovu C&I System Engineer	Stanley Mathye C&I Manager	Abel Vuma Maintenance Group Manager
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Content

	Page
1. Introduction.....	3
2. Supporting Clauses	3
2.1 Scope.....	3
2.1.1 Purpose.....	3
2.1.2 Applicability	3
2.1.3 Effective date.....	3
2.2 Normative/Informative References	3
2.2.1 Normative.....	3
2.2.2 Informative.....	3
2.3 Definitions	4
2.3.1 Document:.....	4
2.4 Abbreviations	4
2.5 Roles and Responsibilities	5
2.6 Process for Monitoring.....	6
2.7 Related/Supporting Documents.....	6
3. Document Content.....	6
3.1 Subheading	7
3.2 Subheading	7
4. Acceptance.....	8
5. Revisions.....	8
6. Development Team	9
7. Acknowledgements	Error! Bookmark not defined.
Appendix A – Eskom Document Hierarchy.....	10

Figures

Figure 1: Figure Example (Delete if not required).....	Error! Bookmark not defined.
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Tables

Table 1: Table Example (Delete if not required).....	Error! Bookmark not defined.
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CONTROLLED DISCLOSURE

1. Introduction

Kusile Power Station management intends to establish a partnership with a suitably qualified, experienced, and well-established *Contractor* for the installation and commissioning of Aux Steam(LBG) & Cold Reheat System (LBC) and replacement of cables. This document describes the details of the requirements, standards, scope of work and the terms and conditions of the maintenance partnership.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to define the scope of this document encompasses the replacement of Aux Steam(LBG) & Cold Reheat System (LBC) RTD temperature sensor with thermocouples. Replacement of the existing Thermowells. Installation and termination of the compensation cable from the junction box to sensor. Configuration change of the TTR200 temperature transmitter from RTD to the thermocouple. Commissioning of the temperature Loop signal.

It is therefore imperative that the successful and suitably qualified partner aligns their organisation fully to these specified scope activities and processes laid down in this document.

2.1.2 Applicability

This document is applicable to Kusile Power Station Generation.

2.1.3 Effective date

This document is effective from the date of authorisation (last signature) until its succeeding document has been authorised.

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] 414 - 32 Rev 0: Kusile Maintenance User Requirement Specification
- [3] GGR 0992: Plant Safety Regulations
- [4] 240-56355731: Environmental Conditions for Process Control Equipment at Power Stations.
- [5] 240 – 56227443: Requirements for Control and Power cable for Power Stations Standard

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- [6] 240-56355754 Field Equipment Installation Standard
- [7] 240-56355815 Control & Instrumentation Field Enclosures and Cable Termination Standard
- [8] 240-132042241 Power Plant Controls & Instrumentation; Control Systems; Distributed Control Systems (DCS); Part 1: General Standard
- [9] 240-105658000 Supplier Quality Management: Specification

2.2.2 Informative

- [1] ISO 9001: Quality Management Systems
- [2] ISO 14001: Environmental management System
- [3] Act No 73 of 1989: The Environment Conservation Act No 107 of 1998: National
- [4] Act No. 107 of 1998: National Environmental Management Act, 1998
- [5] Act No 14 of 2009: The National Environmental Act, 1989
- [6] Act No 102 of 1980: National Key Points Act, 1980

2.3 Definitions

Definition	Explanation
Availability	Period when a system is operating satisfactory when used under specified conditions.
Contractor	Service provider contracted to provide a specific service to Eskom, Kusile Power Station
Employer	Eskom, or Eskom Kusile Power Station or representative

2.3.1 Document:

To add more applicable definitions

2.4 Abbreviations

Abbreviation	Explanation
AP:	Appointed Person
C&I:	Control & Instrumentation
CM	Corrective Maintenance
NEC:	New Engineering Contract
OEM:	Original Equipment Manufacturer
OHS Act:	Occupational Health and Safety Act
PCLF:	Planned Capability Loss Factor
PPE:	Personal Protective Equipment
PM:	Plant Maintenance
PM:	Plant Maintenance

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Abbreviation	Explanation
PSR:	Plant Safety Regulations
PTW:	Permit to Work
QC:	Quality Control
QCP:	Quality Control Plan
QMP:	Quality Management Programme
RP:	Responsible Person
SP	Skilled Person
SAP PM:	SAP Plant Maintenance
SAP:	Systems, Applications, Products (Plant Maintenance, Procurement, Finance and Materials Management) integrated maintenance management system.
SHE:	Safety, Health, Environment
SOW:	Scope of Work
UCF:	Unit Capability Factor
UCLF:	Unplanned Capability Loss Factor
URS:	User Requirement Specification

2.5 Roles and Responsibilities

All parties concerned in this SOW “shall act as stated in this contract and in a spirit of mutual trust and cooperation”.

2.5.1 Employer

- The employer shall provide induction and ensure compliance before commencement of work.
- The employer shall provide a conducive workplace for the *Contractor* during the period of work.
- The employer shall provide required spares for the issued task order.
- The employer shall always determine the cable way and ensure provision of scaffolding where required.
- Provide sectional Managing Supervisors for all *Contractor* employees to supervise and monitor adherence to SOW.
- The employer shall provide PSR RP for each activity.

2.5.2 Contractor

- All *Contractor* employees shall comply with Eskom’s policies and site regulations, adherence to Eskom’s Life Saving Rules, adherence to Generation Occurrence Management Procedure, Smoking Policy, zero tolerance on alcohol usage, etc. These requirements will be detailed during the induction training process. This document will be used in conjunction with the Kusile Maintenance URS.
- The successful *Contractor* shall utilise/provide skilled and suitably qualified staff (in line with Eskom Job specifications) with current experience in the Eskom power plants.

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- c) All staff brought onto site in connection with this SOW should be able to fluently speak, understand and write in English.
- d) Proof of qualification is to be supplied on request by the Employer.
- e) The *Contractor* ensures that all staff being brought to Kusile Power Station site has a valid fitness certificate based on the specified plant man-job specification.
- f) The *Contractor* shall employ in and about the execution of the works only such persons that are careful, competent and efficient in their several trades and callings and the Employer shall be at liberty to object to and require the *Contractor* to remove from the works forthwith any person employed by the *Contractor* in or about the execution of the works who, in the opinion of the Employer, misconduct's himself/herself or is incompetent or negligent in the proper performance of his/her duties and such person shall not be again employed for the works without the written permission of the Employer.
- g) Provide daily supervision of all related plant through trained and competent personnel to ensure that inspections & work activities are conducted daily.
- h) The *Contractor* must also provide knowledge on other plant falling within his field of expertise.
- i) The *Contractor* must ensure daily housekeeping, adherence to safety requirements and that any deviation is reported to the Employer on a required basis.
- j) Ensure logging and marking of all *Contractor* assets used during the contract period.
- k) The *Contractor* shall be held responsible or held liable for any defects arising from poor workmanship performed by their staff or use of inferior spare parts. The guarantee periods shall be:
 - l) Poor workmanship within 24 hours period from the time which the equipment is put into operation.
 - m) Inferior spares within a period of 01 month from time the equipment is put in service.
 - n) The contractor to ensure the housekeeping in the plant is adhere at all time

2.6 Process for Monitoring

This specification will be reviewed every year period from date of initial authorisation or when necessary to conduct assessment on the following:

- a) Understanding processes and/or C&I maintenance as per Employer's instructions, systems (e.g., field instruments, cable, earthing, actuators & any C&I equipment)
- b) Ability to use test equipment e.g., Multimeters, Field Calibrator,
- c) Ability to read cable diagrams, loop drawings.

2.7 Related/Supporting Documents

- a) A daily attendance registers for all contractor employees to be signed by all employees and maintained in a file.

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- b) All drawings or documents developed during the contract period remain the property of Eskom.
- c) Contractor to provide a logbook.

3. Document Content

The scope of this document encompasses the replacement of Aux Steam(LBG) & Cold Reheat System (LBC) RTD temperature sensor with thermocouples. Replacement of the existing Thermowells. Installation and termination of the compensation cable from the junction box to sensor. Configuration change of the TTR200 temperature transmitter from RTD to the thermocouple. Commissioning of the temperature Loop signal in accordance to Eskom Cable Standard 240-56227443, 240-56355815 Control & Instrumentation Field Enclosures and Cable Termination Standard.

The cables associated with C&I are marshalling single-core cable, field multi-core control cable. It shall be required that a suitable service provider is familiar with all types of these cables installation and termination suitable for various plant conditions.

The works shall be but not limited to removing old cables and racks, pulling new cable and racks, termination, marking, crimping.

Reroute the cables in a more secured route and protect them with heat resistance spring-tubes. The spring tubes will protect the cables and prevent damage in future. The activity will prevent failure of positioner controls and feedback to DCS (and C&I cards in the equipment room).

3.1 Installation and Commissioning of C&I Aux Steam(LBG) & Cold Reheat System (LBC)

- a) The works is the replacement, installation and commissioning of all Aux Steam(LBG) & Cold Reheat System (LBC) RTD temperature sensor with thermocouples in the units that are related to Kusile Power Station Gx-C&I Maintenance and its boundaries.
- b) Install cable racks, new cabling, test and repair, complete earthing and perform termination as and when required.
- c) All cable connections at junction boxes, field Instruments and marshalling cabinets shall be made using tension clamp terminals and Cables to be terminated in a crimped bootlace ferrule i.e., preventing numbers from slipping off the cable ends.
- d) Labelling of cables: Cable number tags to identify cable as per requirements and colour coding.
- e) On completion of the work the relevant equipment shall be properly re-commissioned prior to the clearance of the Permit to Work.
- f) Replacement of the existing Thermowells and putting new ones.
- g) Configuration change of the TTR200 temperature transmitter from RTD to the thermocouple.
- h) Commissioning of the temperature Loop signal, field to DCS.

3.2 Contractor provisions

- a) The *Contractor* shall provide cable drum and jacks.

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- b) The *Contractor* shall provide manual mobile lifting equipment where necessary.
- c) The *Contractor* shall provide stepladders and all relevant cabling tools.
- d) The *Contractor* shall continuously provide all relevant PPE (Arc flash, Safety Harness, etc)
- e) The *Contractor* shall provide as and when required a fire-retardant whole sealant in cubicles.
- f) The *Contractor* shall provide calibrated measuring and test equipment.

3.3 Quality and Documentation Control

- a) The *Contractor* shall ensure that all measuring and test equipment provided is calibrated at all times & proof thereof must be readily available.
- b) The *Contractor* shall adhere to all 'Quality References' and 'Standards' applicable to this SOW.
- c) The *Contractor* shall utilise the Employer's quality documentation management system and processes.
- d) The *Contractor* shall comply with QM58, 240-105658000 Supplier Quality Management: Specification Rev 2.

4. Acceptance

This document has been seen and accepted by:

Note: Initials not acceptable

Full Name and Surname	Designation
Nzuzo Ndlovu	C&I Snr Engineer
Khazamula Xivuri	Engineer Prof Engineering
Msizi Mhlongo	C&I Senior Advisor

In the preceding table, list the manager/s of the divisions that will be affected by the content of this document.

5. Revisions

Note: Start with the latest Revision History in the first row and go backwards.

Date	Rev.	Compiler	Remarks
October 2024	01	Marakeng Madigoe	New Document

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6. Development Team

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

Note: To include full name, surname, and designation (nicknames not permitted)

Pieter Bronkhorst	C&I Snr Technologist Engineer
Khazamula Xivuri	Turbine System Engineer
Msizi Mhlongo	C&I Senior Advisor

7. Acknowledgements (if applicable)

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Appendix A – Eskom Document Hierarchy

A.1 Document Hierarchy (an example of a picture /photos /diagram etc.)

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