



Strategy

Engineering

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Diesel Generator Replacement**

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1. INTRODUCTION

Duvha Power Station Unit (1-6) are equipped with two Diesel generators per unit which are connected in parallel per unit for the essential standby supplies and for the full power supply redundancy per unit. Essential supplies maintain a safe shutdown for the unit and also supply the emergency lighting in the plant.

Currently there are couple of diesel generators that are unavailable due to a number of defects which requires the whole diesel units to be replaced. It is therefore essential for these diesel generators to be replaced in order to ensure the 100% redundancy for essential supplies in the event of the main supply failure and also to improve the plant long term availability and reliability status

2. SUPPORTING CLAUSES

2.1 SCOPE

The project scope requires the replacement of station diesel generators and their own associated diesel generator control panels such that the full backup system is restored and the baseline of retaining two diesel generators per unit is maintained.

2.1.1 Purpose

The purpose of this document is to describe the minimum requirements for quality control & assurance, designing, manufacturing, install and commissioning of Diesel Generator at Duvha Power Station.

2.1.2 Applicability

This document is to apply to the Duvha Power Station's diesel generator plant.

2.2 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document are to apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] 240-62772907: Rev 2 Specification for Diesel Generator System
- [2] E1008: Electrical Plant-Unit 380V standby supplies – system description and operations
- [3] 240-56536505: Hazardous location standard
- [4] 240-168966153: Tender Technical Evaluation Procedure
- [5] 240-44682850: PCM - Provide Engineering During Project Sourcing
- [6] 32-1033: Eskom Procurement and Supply Chain Management Policy
- [7] 32-1034: Eskom Procurement and Supply Management Procedure

2.2.2 Informative

- [1] 240-53665024: Engineering Quality Manual
- [2] 240-53114186: Document and record Management Procedure

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[3] ISO 9001 Quality Management Systems.

[4] NEC3 - Maintenance of split casing pumps at Duvha Power Station

2.3 DEFINITIONS

Definition	Description
Acceptance	The <i>Employer</i> accept the condition or design but does not take responsibility from the Contractor
Approval	Written agreement or authorization by <i>Employer</i> . All requests for approval must be submitted in writing and any proposed deviation from specified requirements must be fully justified and agreed by <i>Employer</i> .
Design Authority	Design Authority - When Eskom acts as the Design Authority on a project/package/plant/System/asset, the reviewer(s) are to review the design documentation to ensure that: the design satisfies the design requirements; all relevant COE design standards, procedures and guidelines have been adhered to; the design is suitable and correct (calculations, philosophy, functionality, etc.); best COE practices were applied; the design is integrated by identifying all interfaces with other packages/plant Systems/assets and ensuring that these interfaces are catered for.
<i>Contractor</i>	Refers to the corporation appointed to perform the engineering, procurement, and construction Works required for the project.
Design freeze	Is a binding decision that defines the whole product, its parts or parameters and allows the continuation of the design based on that decision (no further changes can be made to the design, it is cut-off for the engineers)
<i>Employer</i>	Refers to Eskom Holdings State Owned Company
Interface	Interface in these document means either to hard wired or software interaction between the <i>Contractors</i> and/or other Works
Owners Engineer	Owners Engineer - When Eskom acts as the Owners Engineer on a project/package/plant/System/asset, the reviewer(s) are to review the design documentation issued by the Design Authority to ensure that: the design satisfies the stakeholder requirements (i.e. validation of design deliverables against stakeholder requirements). General technical oversight is provided over the design.
Specification	The document/s forming part of the contract in which the methods of executing the various items of work to be done is described, as well as the nature and quality of the materials to be supplied and it includes technical schedules and drawings attached thereto as well as all samples and patterns
System	A set of things working together as parts of a mechanism or network in an organised manner or method such that the requirements of the System are achieved.
The Client	The end user will be Eskom who will be represented by Matla Power Station throughout the duration of the Project.

2.3.1 Classification

- a. **Public domain:** published in any public forum without constraints (either enforced by law, or discretionary).

2.4 ABBREVIATIONS

Abbreviation	Description
DCS	Distributed Control System

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When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

Abbreviation	Description
C&I	Control and Instrumentation
CA	Corrective Action
CD	Compact Disc
DGN	MicroStation CAD drawing, vector format
DIN	Deutsches Institut fur Normung (German Institute for Standardization)
DWG	AutoCAD drawing, vector format
FAT	Factory Acceptance Testing
FRA	Failure Report Analysis
GA	General Arrangement
GO	General Overhaul
GPS	Global Positioning System
GUI	Graphical User Interface
HBS	Hardware Breakdown Structure
ISO	International Organisation for Standardisation
LCC	Life Cycle Cost
LOSS	Limits of Service and Supply
O&M	Operating and Maintenance
OEM	Original Equipment Manufacture
OH&S	Occupational Health and Safety
PBS	Plant Break Down Structure
PFD	Process Flow Diagram
P&ID	Process Instrumentation Diagram
PM	Planned Maintenance/Project Manager
PS	Power Station
QA	Quality Assurance
QC	Quality Control
QCP	Quality Control Procedure
SANS	South African National Standards
VDSS	Vendor Document Supplier Submittals

2.5 ROLES AND RESPONSIBILITIES

- Compiler : The document compiler is responsible for ensuring that this document is up-to-date and that this document is not a duplication of an existing documentation, regarding the document's objectives and content.
- Functional Responsibility : The Functional Responsible Person is to determine if the document is fit for purpose, before the document is submitted for authorisation.
- Authoriser : The document authoriser is a duly delegated person with the responsibility to review the document for alignment to business strategy, policy, objectives

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and requirements. He/she are to authorise the release and application of the document.

2.6 PROCESS FOR MONITORING

The primary process for monitoring will be governed by the Design Review Procedure (240-53113685), this entails assuring that the design achieves the requirements set out in this document. Any changes to this document will be performed as per Project Engineering Change Management Procedure (240-53114026).

2.7 RELATED/SUPPORTING DOCUMENTS

N/A

3. TENDER TECHNICAL EVALUATION STRATEGY

3.1 TECHNICAL EVALUATION THRESHOLD

The minimum weighted final score (threshold) required for a tender to be considered from a technical perspective is 70%.

SCORE	PERCENTAGE (%)	DESCRIPTION
5	100	COMPLIANT <ul style="list-style-type: none">Meet the technical requirement(s) AND,No foreseen technical risk(s) in meeting technical requirements
4	80	COMPLIANT WITH ASSOCIATED QUALIFICATIONS <ul style="list-style-type: none">Meet the technical requirement(s) with,Acceptable technical risks AND/OR;Acceptable exceptions AND/OR;Acceptable conditions
2	40	NON-COMPLIANT <ul style="list-style-type: none">Does not meet the technical requirement(s) AND/OR Unacceptable technical risk(s) AND/OR;Unacceptable exceptions AND/OR;Unacceptable conditions
0	0	TOTALLY DEFICIENT/NON-RESPONSIVE

3.2 TET MEMBERS

Table 1: TET Members

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TET number	TET Member Name	Designation
TET 1	T. Khumalo	System Engineer – Auxiliary Engineering
TET 2	N. Mdlokovana	System Engineer – C&I Engineering
TET 3	M. Nhlengethwa	System Engineer – Electrical Engineering

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3.3 MANADATORY TECHNICAL EVALUATION CRITERIA**Table 2: Mandatory Technical Evaluation Criteria**

	Mandatory Technical Criteria Description	Reference to Technical Specification / Tender Returnable	Motivation for use of Criteria
1.	Professional Engineer (Mechanical ECSA) (Cv and qualification to be provided as per)	ECSA registered certificate with at least 3 years' experience in design	Company must have professional registered personnel to approve all design work for implementation. The Professional Registered Person will take accountability for all the design work

3.4 QUALITATIVE TECHNICAL EVALUATION CRITERIA

Table 3: Qualitative Technical Evaluation Criteria

	Qualitative Technical Criteria Description		Reference to Technical Specification / Tender Returnable	Criteria Weighting (%)	Criteria Sub Weighting (%)
1.	Mechanical Engineering Criteria				
	1.1	SITE ORGANOGRAM Proposed organogram of key personnel for this project which must include the following skill: <ul style="list-style-type: none"> Design Engineer (Cv and qualification to be provided as per the 3.4.1 of this criteria) Supervisor (Cv and qualification to be provided as per the 3.4.1 of this criteria) Artisans x 4 (Cv and qualification to be provided as per the 3.4.1 of this criteria) Quality assurance personnel / technician (Cv and qualification to be provided as per the 3.4.1 of this criteria) 	CV and certificates	60	35
	1.2	QUALITY MANAGEMENT SYSTEM Company to have their own quality control management system detailing the critical task in designing, inspection, assembling and safe handling of the diesel generators..	A detailed quality assurance plan/document		30
	1.3	COMPLETED SIMILAR PROJECTS This covers the experience of the company. The company must have completed at-least 3 project to ensure competency because of the criticality of the scope. The previous completed projects must entail designing, manufacturing, installing and commissioning of Diesel Generators. A completion certificates or reference letter must be submitted which reflects Client name, <ul style="list-style-type: none"> Order number Project description, (details scope of work if description not clear) Project cost, 	Completion Certificate		35

		<ul style="list-style-type: none"> • Project start & end date • Project location • Name, designation and contact number of reference person • Letter head signed <p>In an event where the completion certificated does not have all the above details, the supplier can attached any other supporting document that might contain the information to support the completion certificate (e.g. signed contract or detailed orders)</p>			
2.	C&I Engineering				
	2.1	The Contractor or its Sub-Contractors must be accredited by the respective OEM as an approved installer and system integrator of Siemens DCS (T300) and Substation Automation System (SAS).	Proof of accreditation is to be submitted.	10	50
	2.2	Compliance to interface requirement as stipulated in section 5.2.2, 5.2.3 and 5.2.4 of the Technical Specification.	The main Contractor or Subcontractor shall provide letter of confirmation to undertake full scope of work with full compliance to the stated Employer's standards and specifications. Alternatively, motivate for any deviations.		50
3.	Electrical Engineering				
	3.1	Registration with relevant regulatory/statutory bodies	Submit valid electrical certification (Trade and Wiremen's Licence)	30	40
	3.2	Project execution Approach and Methodology	Submit detailed method explaining how the electrical maintenance service will be provided.		40

			Specific project structure that will be responsible to provide an electrical service. Provide CV and accredited qualification of key employees that will be involved in a contract.		
	3.3	Relevant Facilities Maintenance Experience	Provide contact details of previous Client/ references where similar service was provided.		20
				TOTAL: 100	

3.4.1 Qualitative Technical Evaluation Scoring Criteria

Design Engineer	Points	Score
Mechanical Degree (BSc or BEng)		
No Mechanical Degree	0	2.5
Mechanical Degree from accredited institution	5	
Working years within Designing industry post qualification		
3 year	2	2.5
3 – 4 years	4	
4 – 5 years	5	
SUPERVISOR	Points	Score
Mechanical Trade Test		
No formal trade test	0	2.5
Trade Test from accredited institution	5	

Working years on maintaining pumps post trade test qualification		
2 year	2	2.5
2 – 3years	4	
3 – 5 years	5	
ARTISANS	Points	Score
Mechanical Trade Test		
No formal trade test	0	5
Trade Test from accredited institution	5	
Working years on maintaining pumps post trade test qualification		
2 year	2	10
2 – 3 years	4	
3 – 5 years	5	

QUALITY ASSURANCE PERSONNEL / TECHNICIAN		Score
No DIPLOMA in Mechanical Engineering	0	2.5
DIPLOMA in Mechanical Engineering from accredited institution	5	
Working years post Diploma qualification		
1 year	2	2.5
1 – 2 years	4	
2 – 3 years	5	
QUALITY MANAGEMENT SYSTEM		Score
No quality management system or plan submitted	0	

Quality management system or plan submitted without detailing the critical task and method statement	2	20
Quality management system or plan submitted with detailed critical task and method statement of designing, manufacturing, installation, and commissioning of diesel generators	5	

COMPLETED SIMILAR PROJECTS		Score
Number of projects < 3	2	30
Number of projects 3 < 4	4	
Number of projects > 4	5	
The Contractor or its Sub-Contractors must be accredited by the respective OEM as an approved installer and system integrator of Siemens DCS (T300) and Substation Automation System (SAS).	Points	Score
No proof of accreditation submitted.	0	5
Proof of accreditation submitted.	5	
Compliance to interface requirement as stipulated in section 5.2.2, 5.2.3 and 5.2.4 of the Technical Specification		
The main Contractor or Subcontractor shall provide letter of confirmation to undertake 0 – 39%: scope of work compliance to the stated Employer's standards and specifications. No motivation for any deviations.	0	5
The main Contractor or Subcontractor shall provide letter of confirmation to undertake 40 – 69%: scope of work compliance to the stated Employer's standards and specifications. No motivation for any deviations.	2	

The main Contractor or Subcontractor shall provide letter of confirmation to undertake 70 – 79%: scope of work compliance to the stated Employer's standards and specifications. No motivation for any deviations.	4	
The main Contractor or Subcontractor shall provide letter of confirmation to undertake full scope of work with full compliance to the stated Employer's standards and specifications	5	
Registration with relevant regulatory/statutory bodies	Points	Score
No Submission of valid electrical certification (Trade and Wiremen's Licence)	0	40
Submit valid electrical certification (Trade and Wiremen's Licence)	5	
Project execution Approach and Methodology		
Submit a non-detailed method explaining how the electrical maintenance service will be provided.	0	20
Submit detailed method explaining how the electrical maintenance service will be provided	5	
No Specific project structure that will be responsible to provide an electrical service.	0	10
Specific project structure that will be responsible to provide an electrical service.	5	
No CV and accredited qualification of key employees that will be involved in a contract provided.	0	10
CV and accredited qualification of key employees that will be involved in a contract provided.	5	
Relevant Facilities Maintenance Experience	Point	Score

No contact details of previous Client/ references where similar service was provided.	0	20
Provided contact details of previous Client/ references where similar service was provided.	5	

3.5 TET MEMBER RESPONSIBILITIES

Table 4: TET Member Responsibilities

Mandatory Criteria Number	TET 1	TET 2	TET 3	TET 4	TET 5	TET 6	TET 7	TET n
1	x							
Qualitative Criteria Number	TET 1	TET 2	TET 3	TET 4	TET 5	TET 6	TET 7	TET n
	X	X	X	n/a	n/a	n/a	n/a	n/a

3.6 FORESEEN ACCEPTABLE / UNACCEPTABLE QUALIFICATIONS

3.6.1 Risks

Table 5: Acceptable Technical Risks

Risk	Description
1.	none

Table 6: Unacceptable Technical Risks

Risk	Description
1.	none

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

Risk	Description
1.	

Table 8: Unacceptable Technical Exceptions / Conditions

Risk	Description
1.	none

4. AUTHORISATION

This document has been seen and accepted by:

Name	Designation	Signature
Nelly Hlophe	Auxiliary Engineering Manager	

5. REVISIONS

Date	Rev.	Compiler	Remarks
September 2022	0	T Khumalo	Final document

6. DEVELOPMENT TEAM

N/A

7. ACKNOWLEDGEMENTS

N/A

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