

	Strategy	Kusile Power Station
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Technical Evaluation Strategy LSB
PAUT Dummy Blade Procurement**

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1. Introduction

This document describes the process to be followed in performing the technical evaluation during the tender evaluation for the contract required for the procurement of a set of LP turbine last stage dummy blades. These dummy blades will be used during the development and qualification of Medupi and Kusile LP rotor last stage blade roots PAUT system. This technical evaluation strategy is a high-level consideration of the key aspects that will give direction to the technical evaluation process for the procurement of the dummy blades. The evaluation will assess the tenderer's ability to meet both the mandatory and qualitative technical evaluations criteria.

The Medupi and Kusile's two low pressure turbine rotors each have a dual flow. Each flow consists of six expansion stages. The fifty-three (53) last stage blades (L033K) have a curved axial entry fir tree root design with a total of 3 serrations (hooks). The blades are manufactured from St11NiE material.

The inspection of the LP last stage blades and rotor steeples/serrations of Medupi and Kusile LP turbines is conducted in accordance with the original equipment manufacturer document. The inspection entails full surface non-destructive testing (NDT) on the blade aerofoil, the blade root and rotor last stage steeples. Both the blade root NDT and rotor steeples require blades to be removed (blade-out), inspected and reinstalled at the workshop. This is to be carried out every 50 000 equivalent operating hours (EOHs).

An alternative to blade-out inspection (for access to the root) is in-situ phased array ultrasonic testing (PAUT) of the blade root.

To reduce the risk of long outage durations and likelihood of outage slips related to the blade-out inspections of the LP last stage (also referred to as L-0) blade roots, the PAUT option is a preferred and recommended method.

There is currently no developed and qualified PAUT procedure for the inspection of these blade roots. It is crucial that the project is initiated to ensure that the procedure is developed and qualified to facilitate the inspection of the blade roots without the blades being removed from the rotor. As part of the development process for this inspection system a set of LP turbine last stage dummy blades are required. During development flaws will be introduced into these dummy blades, and the inspection procedure will be evaluated/qualified by the ability to detect these known flaws during open and blind trails.

The objective of this technical evaluation strategy is to outline the criteria for the assessment of the tenders that will be submitted in response to the request for the project to procure a set of dummy blades inserted with electrical discharge machining (EDM) notches on the roots. A separate scope of work and tender technical evaluation strategy will be used to develop and qualify the Medupi and Kusile LP rotor last stage blade roots PAUT system for in-situ inspection.

2. Supporting Clauses

2.1 Scope

This document covers the technical evaluation strategy to be employed for the technical adjudication of the Contractors' submissions to supply and delivery of a set of LP turbine last stage dummy blades including the introduction of the EDM notches on the blade roots.

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2.1.1 Purpose

The purpose of this tender technical evaluation strategy is to define the Mandatory Evaluation Criteria, Qualitative Evaluation Criteria and TET member responsibilities for tender technical evaluation. This document is also aimed at ensuring the transparency and objectivity in the evaluation process to be followed in line with the technical evaluation procedure 240-48929482.

2.1.2 Applicability

This document is applicable to the Medupi and Kusile only.

2.1.3 Effective date

This document shall be effective from the date that it is 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] 240-168966153: Generation Tender Technical Evaluation Procedure (Rev 1)
- [3] 240-87660096 Standard for Non-Destructive Testing Inspection Qualification
- [4] 474-13092: Medupi and Kusile LP Stage 6 (L-0) Inspection Objectives
- [5] 474-12938 Medupi and Kusile LP Stage 6 (L-0) Flaw Specification Report

2.2.2 Informative

- [6] 240-83539994 Standard for Non-Destructive Testing (NDT) on Eskom Plant

2.3 Definitions

Definition	Explanation
NDT system	An NDT system is the interaction between an inspection method's NDT procedure, personnel and equipment to influence the quality of the NDT product (inspection outcome).
Inspection Qualification Agent (IQA)	The entity working under the direct supervision of the IQB and charged with expediting specific qualification tasks.
Non-destructive testing (NDT)	Also known as non-destructive examination (NDE) is the testing/examination of materials and components by various inspection methods without changing or destroying their usefulness

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2.4 Abbreviations

Abbreviation	Explanation
EOH	Equivalent Operating Hours
ERI	Eskom Rotek Industries
IQA	Inspection Qualification Agent
IQB	Inspection Qualification Body
L-0	Last Stage
LP	Low Pressure
NDT	Non-destructive testing
PAUT	Phased Array Ultrasonic Testing
UT	Ultrasonic Testing
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

Not applicable

2.7 Related/Supporting Documents

Not applicable

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%.

3.2 TET Members

TET number	TET Member Name	Designation
TET 1		Senior Engineer - NDT
TET 2		Corporate Specialist – Structural Integrity
TET 3		Corporate Specialist - Turbines
TET 4		Senior Consultant - Turbines

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TET 5		Middle Manager - NDT
TET 6		Senior Technologist - NDT
TET 7		Chief Technologist - Turbines
TET 8		Senior Engineer - Turbines

Table 1: TET Members

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3.3 Mandatory Technical Evaluation Criteria

	Mandatory Technical Criteria Description	Reference to Technical Specification / Tender Returnable	Motivation for use of Criteria
1.	Experience in manufacturing of the turbine last stage blades.	• Records of previous similar work done. • References of organisations for which turbine blades was manufactured for. • Details of manufacturing facility, proving that the capability exists	Due to the challenging nature and the significant work required for the blade manufacturing, Contractor's relevant experience is an essential requirement.
2.	Have the capability and tooling to introduce EDM notches into dummy blades roots	• Records of previous similar work done. • References of organisations for which the EDM notches were inserted on the turbine blades for. • Details of manufacturing facility, proving that the capability exists	Due to the challenging nature and the significant work required for the blade manufacturing, Contractor's relevant experience is an essential requirement.

Table 2: Mandatory Technical Evaluation Criteria

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3.4 Qualitative Technical Evaluation Criteria

	Qualitative Technical Criteria Description		Reference to Technical Specification / Tender Returnable	Criteria Weighting (%)	Criteria Sub Weighting (%)
1.	Experience in manufacturing LP turbine last stage blades.		Section 3 of Scope of work KUS-20250428	100	
	1.1	Minimum of five years' experience in turbine blade manufacturing.			50% (1.....5 points) ≥5 years = 5 <5 years & >2 years = 2 < 2 years = 0
	1.2	Successfully completed a minimum of three similar projects.			50% (1.....5 points) 3 projects = 5 2 projects = 4 1 project = 2 0 projects = 0
				TOTAL: 100	

Table 3: Qualitative Technical Evaluation Criteria

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All TET members shall independently evaluate and score each Qualitative Evaluation Criteria for each tenderer in accordance with the table below:

Score	(%)	Definition
5	100	COMPLIANT Meet technical requirement(s) AND; No foreseen technical risk(s) in meeting technical requirements.
4	80	COMPLIANT WITH ASSOCIATED QUALIFICATIONS Meet technical requirement(s) with; Acceptable technical risk(s) AND/OR; Acceptable exceptions AND/OR; Acceptable conditions.
2	40	NON-COMPLIANT Does not meet technical requirement(s) AND/OR; Unacceptable technical risk(s) AND/OR; Unacceptable exceptions AND/OR; Unacceptable conditions.
0	0	TOTALLY DEFICIENT OR NON-RESPONSIVE

Table 4: Qualitative Evaluation Criteria Scoring Table as captured in the Technical Evaluation Procedure

3.5 Qualitative Technical Evaluation Criteria

Mandatory Criteria Number	TET 1	TET 2	TET 3	TET 4	TET 5	TET 6	TET 7	TET 8
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1.	X	X	X	X	X	X	X	X
2.	X	X	X	X	X	X	X	X
Qualitative Criteria Number	TET 1	TET 2	TET 3	TET 4	TET 5	TET 6	TET 7	TET 8
1.	X	X	X	X	X	X	X	X

Table 5: TET Member Responsibilities

3.6 Qualitative Technical Evaluation Criteria

3.6.1 Risks

Risk	Description
1.	None
2.	
3.	
4.	
5.	
6.	
7.	

Table 6: Acceptable Technical Risks

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Risk	Description
1.	Lack of experience with manufacturing large free standing turbine blades
2.	Lack of or the equipment and capability to introduce EDM notches
3.	
4.	
5.	
6.	
7.	

Table 7: Unacceptable Technical Risks

3.6.2 Exceptions / Conditions

Risk	Description
1.	None
1.	
2.	
3.	
4.	
5.	

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6.	
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Table 8: Acceptable Technical Exceptions / Conditions

Risk	Description
1.	None
2.	
3.	
4.	
5.	
6.	
7.	

Table 9: Unacceptable Technical Exceptions / Conditions

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4. Acceptance

This document has been seen and accepted by:

Note: Initials not acceptable

Full Name and Surname	Designation
	Middle Manager - NDT
	Corporate Specialist - Turbines
	Senior Engineer - Turbines
	Chief Technologist - Turbines
	Senior Consultant - Turbines
	Corporate Specialist – Structural Integrity
	Senior Technologist - NDT
	Senior Engineer - NDT

5. Revisions

Date	Rev.	Compiler	Remarks
May 2025	1		First draft.

6. Development Team

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

7. Acknowledgements

- IQA team members

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