



Eskom

Standard

Technology

Title: **TECHNICAL EVALUATION
CRITERIA FOR WESKUSFLEUR
400KV CABLES PROJECT**

Unique Identifier: **240-171000311**

Alternative Reference Number: **n/a**

Area of Applicability: **Engineering**

Documentation Type: **Scope of Work**

Revision: **1**

Total Pages: **10**

Next Review Date: **n/a**

Disclosure Classification: **Controlled
Disclosure**

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1. Introduction

This document details the technical evaluation criteria for evaluating the tender submissions for the Weskusfleur 400kV cable system and GIL project. This technical evaluation criteria applies to Eskom Transmission division requirements. This document contains both the evaluation criteria used for the documentation evaluation and factory evaluation where applicable.

2. Supporting clauses

2.1 Scope

The document covers the technical criteria for evaluating the tender submissions for Weskusfleur 400kV cable system and GIL project within Eskom Transmission Division. The technical evaluation criteria are in line with project requirements document 240-171000310, Weskusfleur 400kV cable system and GIL project requirements.

2.1.1 Purpose

The document addresses the technical evaluation criteria to be used when evaluating the 240-171000310 Weskusfleur 400kV cable system and GIL project requirements within Eskom Transmission Division.

2.1.2 Applicability

This document shall apply throughout the Eskom Transmission division.

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] 240-171000310 Weskusfleur 400kV cable system and GIL project requirements
- [2] SANS/IEC 62067 Power cables with extruded insulation and their accessories for rated voltages above 150 kV ($U_m = 170$ kV) up to 500 kV ($U_m = 550$ kV) — Test methods and requirements

2.2.2 Informative

None

2.3 Definitions

2.3.1 General

Definition	Description
Eskom Evaluating Representative(s)	The person(s) appointed by Eskom to perform the evaluation of tender submission(s) in line with the Eskom requirements.

2.3.2 Disclosure classification

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

2.4 Abbreviations

Abbreviation	Description
CV	Curriculum Vitae
EHV	Extra High Voltage
SOP	Standard Operating Procedure
XLPE	Cross-Linked Polyethylene

2.5 Roles and responsibilities

All Eskom employees and/or appointed bodies involved in the procurement for the respective project shall ensure that the project deliverable meets the requirements of these technical evaluation criteria. Any deviation from these requirements shall constitute non-conformance.

All suppliers must acquaint themselves with the requirements of this document and shall comply with the requirements.

2.6 Process for monitoring

The technical compliance or qualification shall be based on fully compliant submission of documents and proving manufacturing capability during factory evaluations.

2.7 Related/supporting documents

Refer to clause/ section 2.2.

3. Technical Evaluation Process

This document contains the technical evaluation criteria for document 240-171000310, "Weskusfleur 400kV cable system and GIL project requirements". The evaluation criteria are intended to be employed as part of a tender process. The evaluation methodology consists of two separate parts, namely the documentation evaluation and the factory evaluation. These two evaluation methods can be done in combination(together) or as standalone criteria, as required. A factory evaluation will be done for all products emanating from that same facility.

Where both documentation evaluation and factory evaluation are undertaken as part of a technical evaluation, a weighting of 50% will be assigned to each category, unless determined otherwise prior to the evaluation process. An overall threshold will have to be achieved to qualify technically or meet technical compliance.

3.1 Document Technical Evaluation Criteria

The documentation evaluation consists of two levels. The first level is the mandatory or gatekeeper criteria which consists of confirming key functional requirements as contained in Table 1. If all functional requirements are met, the mandatory requirements are complied with. In this instance full points are awarded with a weighting of 60% towards the final score. If there is a failure to meet any one of the functional requirements, the submission is non-compliant and 0% is scored, leading to technical disqualification. These criteria must be met before proceeding to the next level, level 2 scoring.

At level 2, the individual requirements as stipulated is scored in accordance with Table 2. The score obtained are weighted at 40% of the final score.

The overall threshold to meet technical qualification or compliance is 80%. The final score therefor is the Level 1 percentage weighted score plus the level 2 percentage weighted score and must be equal to or greater than 80%. Where the Tenderer have met the threshold, it will have to fully comply with the deficient criteria as part of further negotiations toward contract award.

3.1.1 Mandatory/Gatekeeper Criteria**Table 1: Mandatory/Gatekeeper criteria**

Level 1 Gatekeeper		Doc ref: 240-171000310	
Item	Criteria	Requirement	Acceptance: Yes/ No
1	Completed Technical Schedules submitted	Submit fully completed Technical Schedules	
2	Copy of successfully passed Prequalification test report submitted	Submit completed prequal test report	
3	Copy of successfully passed Type Test report submitted	Submit completed type test report	
4	Supply and installation history since year 2010 of at least 5 projects where 320kV and above XLPE Cable systems were supplied and installed and client contact details.	Project names, voltage level ,conductor size and client contact details such as email, telephone/mobile numbers provided	
5	Copy of water penetration test report provided	Submit separate water penetration test report if not included in type test report	
6	Cable construction drawing(s) with layer labels and dimensions		
7	Cable ampacity calculations provided		
8	Cable Short Circuit calculations provided		
9	Sheath standing voltage calculations provided		
		Complaint	Yes/No
Level 1 Percentage weighting			60%

3.1.2 Level 2 Scoring Criteria**Table 2: Level 2 Scoring criteria**

Level 2 scoring/rating			
Item	Criteria	Requirement	Score
1	Confirmation of the manufacturing plant locations for EHV cable and accessories.	Signed confirmation letters of plant locations.	2
2	Confirmation that the EHV cable manufacturing facility comply with the following characteristics; <ul style="list-style-type: none"> • True triple head extrusion in a Continuous Vulcanising (CV) line. • Dry curing of XLPE extrusion. • In-production quality monitoring systems employed to monitor curing and scorching characteristics of XLPE compound as well as insulation and screen thickness. • Appropriate ISO class clean room/enclosures for handling of insulation compounds. 	A brief overview of the cable manufacturing processes.	2

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Level 2 scoring/rating			
Item	Criteria	Requirement	Score
3	Method statement for Civil Works encompassing; a) Project plan/schedule for execution of the civil works detailing design engineering and all installation activities.(2 points) b) Civil engineering design, installation, supervisor and project management organisation/project team composition with organogram. (2 points) c) Concept design and drawings of culverts, walled trenches, tunnels and/or joint bays(where applicable) aligned to clause 4 provided.(6 points)	Provide concept proposals for both interconnector and Gen1/Gen2 EHV cables where civil works are of different designs.	10
4	Method statement for GIS/GIL Works encompassing; a) Project plan/schedule for execution of the GIS/GIL works detailing design engineering and all installation activities.(2 points) b) Civil engineering design, installation, supervisor and project management organisation/project team composition with organogram. (2 points) c) Preliminary GIS/GIL outline drawings with dimensions and appropriate labelling of all key components provided. (4 points)		8
5	Method statement for EHV cable works aligned to clause 7 encompassing; a) Project plan/schedule indicating time frames of all related activities. (2 points) b) EHV cable system design, jointers, installation, supervisor and project management organisation/project team composition with organogram. (2 points) c) Designers and jointers have more than 5 years' experience in EHV cable design and installation. Provide CVs. (2 points) d) Cable pulling and installation methods. (2 points) e) Cable layout and configuration in culverts/wall trenches/tunnels. (2 points) f) Sheath bonding arrangement. (2 points) g) After installation testing proposal. (2 points)		14
Level 2 scoring/rating			
Item	Criteria	Comments/Remarks/References	Score
6	GIS termination design detail drawings with dimensions and labels provided		2
7	Link disconnecting design detail drawings with dimensions and labels provided		2
8	SVL link boxes design detail drawings with dimensions and labels provided		2
9	SVL design detail drawings with dimensions and labels provided		2
10	Bonding leads and ECC design detail drawings with dimensions provided		2
11	Straight joint (for spares) design detail drawings with dimensions and labels provided		2
12	DTS and DCR design, supply, installation, commission and testing proposal inclusive of operator training for Gen1 and Gen2 circuits		2
	Total Score		50
Level 2 percentage weighting = (Score obtained/50) x40%			40%

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3.2 Cable Factory Evaluation

Factory evaluations may be required as part of the overall technical evaluation process or for purposes of prequalification or due diligence after tender/contract award.

The cable OEM will be assessed in relation to Table 3, through objective evidence. Where this evaluation forms part of the functional technical requirements, the OEM is required to score a minimum of 90 points (or percent) out of 100 in this evaluation to be deemed technically compliant/qualified.

Should the evaluation be conducted as part of due diligence after contract placement, the scoring is not required. In the latter case, discussions between Eskom and the OEM can pursue to enable conformance of any outstanding technical requirements.

The factory evaluation does not have to be done sequentially and is dependent on the layout of the factory. In this regard, the OEM can provide guidance as to the best sequence of production to follow.

Table 3: Factory evaluation Check list

Item Nr	Item description	Activity assessed	Compliance (yes/no)	Score
1.	Production processes			
	a. Wire drawing process			
		Wire drawing line calibration and maintenance up to date		2
		SOP in place detailing plant setup or configuration, operation, and maintenance requirements		3
		Process monitored and controlled through digital HMI and process control system		2
		Staff trained and competent to operate plant		2
	b. Conductor stranding/manufacturing process			
		Stranding machine calibration and maintenance up to date		2
		SOP in place detailing plant setup or configuration, operation, and maintenance requirements		3
		Able to produce required range of conductor sizes		2
		Processes monitored and controlled through digital HMI and process control system		2
		Staff trained and competent to operate plant		2
	c. Main insulation extrusion line process			
		Continuous Vulcanising(CV) line with triple head extrusion and dry curing.		2
		Insulation extrusion line calibration and maintenance up to date		2

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Item Nr	Item description	Activity assessed	Compliance (yes/no)	Score
		SOP in place detailing plant setup or configuration, operation and maintenance requirements		3
		Process monitored and controlled through digital HMI and process control system for critical extrusion parameters		2
		Staff trained and competent to operate plant		2
	d. Application of tapes and bedding layers			
		Tapes and/or bedding line calibration and maintenance up to date		2
		SOP in place detailing plant setup or configuration, operation, and maintenance requirements		3
		Process monitored and controlled through digital HMI and process control system		2
		Staff trained and competent to operate plant		2
	e. Metal sheathing/wiring process			
		Metal sheathing/wiring line calibration and maintenance up to date		2
		SOP in place detailing plant setup or configuration, operation, and maintenance requirements		3
		Process monitored and controlled through digital HMI and process control system		2
		Staff trained and competent to operate plant		2
	f. Outer sheathing			
		Sheathing extrusion machine calibration and maintenance up to date		2
		SOP in place detailing plant setup or configuration, operation, and maintenance requirements		3
		Process monitored and controlled through digital HMI and process control system		2
		Staff trained and competent to operate plant		2

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Item Nr	Item description	Activity assessed	Compliance (yes/no)	Score
2.	Material handling and storage			
	Inbound raw material handling, control and defects management.	QCP and/or QITP in place		2
	In process material handling, control, and defects management	QCP and/or QITP in place		2
	Design Process			
		Design process, procedures, software and tools are able to translate customer requirements.		2
		Integration of the design process into the production of the product and/or production plan.		2
		Staff trained and competent to perform design functions		2
3.	In process quality control procedures and sample testing			
		Laboratory equipped to perform the sample quality tests required and test equipment calibrated		2
		QCP and/or QITP in place for wire and conductor quality checks		2
		QCP and/or QITP in place for extruded main insulation quality checks		2
		QCP and/or QITP in place for metal sheath and/or wire/armouring quality checks		2
		QCP and/or QITP in place for outer sheath quality checks		2
4.	Routine test requirements			
		Test and measuring equipment are in place and calibrated		2
		Safety measures are in place for HV testing		2
		Voltage test SOP are in place		2
		Partial discharge SOP are in place		2
		Electrical test on outer sheath SOP is in place		2
		Test result management and QCP in place		2
		Factory routine test failure rates in place, traceable and less than 1%		2
		Staff trained and competent to perform testing functions		2

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Item Nr	Item description	Activity assessed	Compliance (yes/no)	Score
	Packaging, marking and transportation			
		Cable marking/ identification SOP and QCP in place		1
		Cable drumming SOP and QCP in place		1
		Transporting and shipping requirements procedures in place		1
5.	Production waste management			
		SOP in place for production waste handling and disposal management		2
		Dedicated isolation/lay-down areas for production waste and defects		1
OEM will be required to score a minimum of 90/100 to be deemed technically responsive/qualified for tender award			Total Score/Percentage	/100

3.3 Conclusion

This report contains the technical evaluation criteria for the Weskusfleur 400kV cable systems. Tenderers will have to meet the respective criteria and threshold to be deemed technically compliant or qualified.

4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
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5. Revisions

Date	Rev.	Compiler	Remarks
Nov 2023	1	F. Witbooi	New document.

6. Development team

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

- F Witbooi Chief Technologist Engineering

7. Acknowledgements

Not applicable.