Eskom	Report	Technology

Title: **TECHNICAL EVALUATION CRITERIA FOR MV XLPE CABLES**

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SCOT Study Committee Number/Name: **Power Cable Systems**

Content

1. Introduction

This document details the technical evaluation criteria to be used when evaluating the tender submissions for medium voltage power cables. 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 the evaluation of the medium voltage cables within Eskom Transmission Division.

2.1.1 Purpose

The document addresses technical evaluation criteria to be used when evaluating the tender submissions for medium voltage cables in line with the Eskom Transmission division requirements.

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] SANS 1339: Cross-linked polyethylene (XLPE) – insulated cables for voltages from 3,8/6,6 kV to 19/33 kV.

[2] 240-171000180: Specification for medium voltage XLPE cables.

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
LOA	Letter of Authorisation
MV	Medium 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 of the MV cables 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 (of the MV Cables) to Eskom must acquaint themselves with the requirements of this document, and shall comply with the requirements.

2.6 Process for monitoring

The MV cables acceptance shall be based on fully compliant submission of documents, the factory testing of the cables, 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 XLPE cables. The evaluation criteria can be employed as part of a tender process or technical prequalification 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. Furthermore, where several unique cable products are required, an individual document evaluation of each unique product will be conducted. 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, an overall 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. The overall threshold provided here serves as a guideline and can be used as is or adapted, prior to the evaluation process, to meet the specific threshold at the time.

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 80% 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 20% of the final score.

The overall threshold to meet technical qualification or compliance is 90%. 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 that 90%. Where the Tenderer have met the threshold, it will have to fully comply with the deficient criteria as part of further negotiations toward contract placement.

3.1.1 Mandatory/Gatekeeper Criteria

Table 1: Mandatory/Gatekeeper criteria

Level 1 Gatekeeper		
Criteria	**Requirements**	**Acceptance: Yes/ No**
Are completed Technical Schedules submitted for unique cable product?		
Are construction and dimensional drawings of cable submitted?		
Does the materials and construction of cable meet the Eskom requirements?	Compliance to clause 3.1.3	
Are the MV cable products certified or have passed certification?	Submission of product certificate or LOA as confirmation	
Are copies of successfully passed type test reports submitted?		
Are the successfully passed water penetration/blocking test report(s) submitted or included in type test report?		
Does the cable contain unique conductor or cable marking/identification?	Drawings or description of marking or identification.	
	Compliant	**Yes/No**
Level 1 Percentage weighting		**80%**

3.1.2 Level 2 Scoring Criteria

Table 2: Level 2 Scoring criteria

Level 2 Scoring			
Criteria	**Requirements**	**Weight**	**Score**
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Are Type testing requirements met in accordance with SANS 1339 or equivalent standard?	All applicable type tests must be done and passed	5	
Does load current and fault current ampacity ratings contain the various installation conditions and configurations and at 70ºC operating temperature submitted as per Eskom specification?	Ratings must reflect the installation conditions and configurations as per spec.	4	
Is the marking of cable conductor in accordance with Eskom specification	Compliance to clause 3.2.2	2	
Is the marking of cable in accordance with Eskom specification?	Compliance to clause 3.2.3	2	
Is the marking of cable outer sheath in accordance with Eskom specification?	Compliance to clause 3.2.4	2	
Are the cable drum requirements, design and marking in accordance with Eskom specification?	Compliance to clause 3.2.5	2	

Drawing details			
Drawing number included		1	
Dimensions included		1	
Cable layers and labelling included		1	
	Total Score	**20**	
Level 2 Percentage weighting = (Obtained score/Total Score) * 20%		**20%**	

3.2 Factory Evaluation

Factory evaluations may be required as part of the overall technical evaluation process or for purposes of prequalification or due diligence before or 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 responsive/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 particular 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
Item Nr	**Item description**	**Activity assessed**	**Compliance**	**Score**

			(yes/no)	
		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			
		Insulation extrusion line calibration and maintenance up to date		2
		Able to produce insulation level required and for conductor size required		2
		SOP in place detailing plant setup or configuration, operation and maintenance requirements		2
		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/armouring process			
		Metal sheathing/wiring/armouring line calibration and maintenance up to date		2
		SOP in place detailing plant setup or configuration, operation, and maintenance requirements		3

Item Nr	Item description	Activity assessed	Compliance (yes/no)	Score
		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
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
3.	**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
4.	**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

Item Nr	Item description	Activity assessed	Compliance (yes/no)	Score
		QCP and/or QITP in place for outer sheath quality checks		2
5.	**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
6.	**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
7.	**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 MV cables to be used in the Eskom Transmission division. Tenderers will have to meet the respective criteria and threshold to be deemed technically compliant for supply of their products.

4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Bheki Ntshangase	Senior Manager: Asset Management SED
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5. Revisions

Date	Rev.	Compiler	Remarks
Sept 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.