| Eskom | Standard | Technology |
|---|---|---|

Title: **TECHNICAL EVALUATION STANDARD FOR LINE INSULATORS**

| | |
|---|---|
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# Content



**Tables**

# 1. Introduction

The document is aimed at setting the standard technical evaluation criteria to be used when evaluating the tender submissions for glass cap and pin, composite longrod, composite post and porcelain insulators for Eskom. This document contains both the evaluation criteria used for desktop evaluation and factory evaluation and was compiled in accordance with [1].

# 2. Supporting clauses

## 2.1 Scope

This document covers the technical evaluation process and criteria for glass cap and pin and composite long rod insulators for systems with nominal voltages up to 765kV, and for porcelain and composite line post insulators for systems up to 400kV within Eskom Holdings SOC (Ltd).

### 2.1.1 Purpose

The document addresses the standard documented technical evaluation criteria to be used when evaluating tender submission for glass cap and pin and composite long rod insulators for systems with nominal voltages up to 765kV, and for porcelain and composite line post insulators for systems up to 400kV, in line with the Eskom Holdings SOC (Ltd) requirement.

### 2.1.2 Applicability

This document shall apply throughout Eskom Holdings Limited Divisions.

## 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] 32-1034 – Eskom procurement and supply chain management

[2] 240-77125772 Specification for Polymeric Longrod Insulators for AC Transmission Voltages of 220kV and above.

[3] 240-77125760 Glass Cap and Pin Insulators for ESKOM Transmission HVAC.

[4] ISO 9001 Quality Management Systems.

[5] 240-75883384- Specification for stay insulators porcelain or equivalent used for medium and low voltage overhead lines

[6] 240-75883174- Specification for outdoor post and long rod insulator for new and refurbished power lines up to 33kV

[7] 240-75883896- Outdoor post and long rod insulators for new and refurbished power lines for 66kV and 132kV

[8] 240–75883900 - Outdoor low voltage insulators for new and refurbished power lines up to 1000 volts

[9] 240-75883140 - Specification for spindles and spindles with collar for distribution lines

[10] 240-75883164 - Hump back split pins for new and refurbished power lines up to 132kV.

[11] 240-131060721 - Standard for Line Post Insulators for 220kV and Above

[12] SANS 17025 - General requirements for the competence of testing and calibration laboratories

### 2.2.2 Informative

[13] 32-9 Definition of Eskom documents.

[14] 32-644 Eskom documentation management standard.

[15] 474-65 Operating Manual of the Steering Committee of Technologies (SCOT).

[16] QM 58 Supplier contract quality requirements specification.

## 2.3 Definitions

### 2.3.1 General

| Definition | Description |
|---|---|
| **Eskom Assessment Representative (s)** | The person(s) appointed by Eskom to perform evaluation of tender/enquiry submission(s) in line with Eskom requirements. |
| **Sliding Scale Points System** | Refers to allocating maximum points to the tenderers whose value in question is higher according to the most superior performance amongst others and proportionally deducting points from those tenderers who are lower than that reference value. |

### 2.3.2 Disclosure classification

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

## 2.4 Abbreviations

| Abbreviation | Description |
|---|---|
| **CAP** | Committee for Accepted Products |
| **DX** | Distribution |
| **GA** | General Arrangement |
| **GM** | General Manager |
| **HV** | High Voltage |
| **LAP** | List of Accepted Products |
| **n/a** | Not Applicable |
| **OEM** | Original Equipment Manufacturer |
| **OU** | Operating Unit |
| **PDE** | Power Delivery Engineering |
| **QC** | Quality Control |
| **TX** | Transmission |

## 2.5 Roles and responsibilities

The Line Insulation Care Group must ensure that this document is updated, renewed and current at all times.

## 2.6 Process for monitoring

Not applicable.

## 2.7 Related/supporting documents

Not Applicable

# 3. Technical tender evaluation procedure

The technical evaluation procedure is specific to each item type. The evaluation method has two main parts: desktop and factory assessment, which are related.

## 3.1 Desktop Evaluation

This evaluation exercise is performed by the Eskom evaluating representatives. This part of the evaluation starts when submissions are opened for the first time. It begins at evaluation of the mandatory criteria (Level 1), then proceeds to the scoring – Level 2, and refers to relevant Annex A Table for each item required.

The Eskom assessment representatives will go through the details of the returnable submissions that are required and will ensure that all Level 1 qualification criteria are met.

Submissions that pass all Level 1 criteria will be allocated 80 points within the framework of the Technical scoring mechanism. Submissions that do not obtain a score of greater than 80% on Level 1 will be considered unacceptable. Scoring in Level 2 consists of discretionary criteria and will be assessed out of 100 points and will be rationalized to a score out of 20 points. Thus the full score attainable will be 100 points if all criteria are met in Levels 1 and 2. An overall score of ≥90% will qualify for the factory assessment phase.

## 3.2 Factory assessment

This document details the procedure to be followed when conducting a factory assessment for insulators.

This assessment is performed on the basis of assessing the supplier's capability to enter into a contract with Eskom with respect to a specific product or service.

The report produced and any actions that are listed or recommended as a result of this assessment, is by no means a confirmation or guarantee that any contract will be entered into by Eskom and the supplier or that post contract performance has been achieved.

Any actions undertaken by the supplier as a consequence of this report is for the suppliers account. Any liability for the said actions undertaken by the supplier is not transferrable to Eskom in any way.

The assessment team has no authority or responsibility in the decision taken by Eskom with respect to contracting for a product or service.

Any statements, intentions and/or actions expressed by the assessment team during the assessment and post the assessment has no effect, and does not constitute any liability to Eskom with regards to contract placement or post contract performance guarantees.

For any outstanding test reports requested by Eskom but not provided at factory evaluation stage, the onus is on the supplier to produce such a report at an agreed date depending on the nature of the test. Failure to do so will disqualify the affected product from being supplied to Eskom.

### 3.2.1 Scope

Eskom will do factory assessments to assess the ability and readiness of the supplier for supplying/manufacturing insulators for Eskom should the need arise. Additionally, if needed, items evaluated in the desktop evaluation may be assessed further at the factory together with any technical information that may have been omitted during the initial evaluation or requested on the part of the evaluating team.

Eskom assessment representative(s) will arrange a visit to the factory that has qualified for factory evaluation.

At the factory, the Eskom assessment representative(s) will conduct the assessment through the use of checklists. The checklists are used to verify capability of the factory to supply the required product and compliance to the equipment specification and tender submission documents. At the end of this exercise, the Eskom assessment representative(s) will list all the deviations on the evaluation document as applicable. The representative will conduct formal discussions of the deviations in line with Eskom's requirements. Herein, the Tenderer and/or their OEM shall indicate whether they agree or disagree to meet Eskom requirements upon contract award. At the end, Eskom, the Tenderer and OEM representatives will sign the assessment document which continues to be used for concluding the Technical Evaluation report. Where the Tenderer and OEM agreed to meet Eskom requirements, all of these are documented for contract award purpose and verification afterwards.

### 3.2.2 Purpose

Assessments are performed as part of the standard practice within Eskom to determine whether a supplier has the capability and capacity to manufacture the required product, from a business, technical and quality perspective. The assessment also confirms the supplier's compliance to the equipment specification and tender submission documents. This document is intended to formalise the factory assessment procedure followed for the different equipment types being sought.

### 3.2.3 Changing of manufacturing facility or process after evaluation

If a supplier has passed the desktop criteria, and Eskom has evaluated and approved the manufacturing facility or process which the supplier has agreed to supply Eskom from, the supplier is not allowed to supply Eskom from any other facility/process without prior notification and approval. If, for whatever reason, the supplier wishes to supply Eskom with insulators from any facility other than the approved facility/process, additional design and type testing will be required and factory evaluation of the new facility will need to be conducted by Eskom.

### 3.2.4 Confidentiality

All information reviewed, observed, recorded during and reported as a result of this assessment will be treated as, and remains highly confidential. The procurement team and the supplier team will be the only parties included in the distribution list.

### 3.2.5 Assessment Methodology

The assessment will follow a documented supplier capability and capacity assessment criteria as shown in Annexure B. These criteria are intended to assess the technical capabilities of the supplier and the product offered for tender to ensure it meets the tender requirements. During the assessment the following areas are evaluated in detail:

- Manufacturing Methods
- Design and Type Test Reports Verification
- Workshop Practices
- Design Practices and Application
- Testing Facility and Practices
- Raw material Procurement, Storage and Sub-contractor practices
- Site and Other Services
- Factory Performance (incl. on-time delivery and factory failure rate)

The factory will be scored according to the criteria outlined in the table below.

| | |
|---|---|
| <80% | Total non-compliance to the agreed requirements |
| 80%≤Score<90% | Major deviation to the agreed requirements |
| 90%≤Score<100% | Minor deviation to the agreed requirements |
| 100% | No deviation to the agreed requirements / fully compliant |

All deviations and non-compliance to agreed requirements will need to be rectified for the factory to be approved by ESKOM.

## 4. Authorization

This document has been seen and accepted by:

| Name and surname | Designation |
|---|---|
| Gavin Strelec | Chief Engineer – Research, Testing and Development |
| Nishal Mahatho | Senior Consultant – Research, Testing and Development |
| Fernando Witbooi | Chief Technologist – Group Technology, HV Plant Engineering |
| Jason Blaauw | Senior Engineer – Distribution |
| Thavenesen Govender | Chief Engineer – Group Technology, HV Plant Engineering |
| Sanjay Narain | Chief Engineer – Group Technology, Line Engineering Services |
| Amish Roopnarain | Electrical Engineer - Group Technology, Line Engineering Services |
| Sifiso Zikhali | Electrical Engineer - Group Technology, Line Engineering Services |

## 5. Revisions

| Date | Rev | Compiler | Remarks |
|---|---|---|---|
| Aug 2018 | 3 | K Ramharak | Table A1 weights and score adjusted<br>Evidence of corona gradient at both live & dead ends ≤ 0.42kV/mm moved from Level 1 to Level 2 requirement<br>Transmission Post insulator spec to be added in the references and relevant Annex Table<br>Minor formatting changes<br>Design and Type Test Reports Verification at factory assessment stage |
| April 2016 | 2 | S Zikhali | Including 1000hr or 5000hr Test as a mandatory requirement.<br>Changed the evaluation criteria to 100point and that can be attained from the 80 points Level1 and 20 points Level 2 |
| Oct 2014 | 1 | R Nel | New document required for latest specification |

## 6. Development team

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

- K. Ramharak
- S. Narain
- Roopnarain.

## 7. Acknowledgements

The Line Insulation Care Group members are acknowledged for their input in compiling this document.

# Annex A – : Insulator(s) technical evaluation criteria for initial evaluation

**Table A.1: Composite Insulator(s) (220kV and above) technical evaluation criteria for desktop exercise**

| | |
|---|---|
| Specification Referred to | [2] 240-77125772 Specification for Polymeric Longrod Insulators for AC Transmission Voltages of 220kV and above. |
| **Voltage Class Referred to** | All items |

**1. Level-1 Basic Compliance: Tender Deliverables and Mandatory Technical Requirements (Weight 80 points)**

| Activity | Clause in [2] | Compliance | Qualification Criteria |
|---|---|---|---|
| 1.1.1 Is the completed Technical Schedule correctly submitted? | Annex A Schedule A | 16 | Level 1 |
| 1.1.2 Is the test report matrix completed, relevant and submitted? | Annex A Schedule B i.e. for each specific items | 16 | Level 1 |
| 1.1.3 Proof that all required Design and Type testing has been performed at an accredited test facility [12] been submitted?<br>1.1.4 OR<br>1.1.5 At the factory and witnessed by an accredited body and supporting information supplied? | Annex A Schedule B i.e. for each specific items | 16 | Level 1 |
| 1.1.6 Product meets ESKOM requirements as stipulated in Technical Schedule. No deviations found or deviations identified during detailed evaluation are considered minor i.e. negligible impact on technical and economic performance for the full product life-cycle and/or considered correctable before contract award? | Annex A Schedule C i.e. for each specific items | 16 | Level 1 |
| 1.1.7 Minimum of 90 percent on Level 2 requirements below | | 16 | Level 1 |

Note:

A) List of deviations and missing information to be made by evaluator for all sections evaluated.

B) If a supplier should provisionally qualify for a factory evaluation, all outstanding information as specified in Normative Reference [2] will be verified at the factory evaluation assessment. All certificates and test reports must be for the item produced in the factory of intended supply.

D) Minimum of 90 percent on Level 2 will only be applicable if all other compliances are met for Level 1

2. **Level 2 – Scoring/Rating on discretionary items (only submission that passes Level 1)** (Weight 20 points)

| Activity | Clause in [2] | Weight | Score |
|---|---|---|---|
| 2.1.1 Proof of 10 years manufacturing experience (at relevant voltages or one class lower) | Sect. 9 (v) | 20 | 20 if > 10 years<br>10 if > 5 years<br>5 if > 2 years |
| 2.1.2 Transport, Handling, Storage and Installation Guidelines | Sect. 9 (vi) | 10 | 0 – No information<br>5 – Acceptable Information<br>10 – Detailed Information |

| Activity | Clause in [2] | Weight | Score |
|---|---|---|---|
| 2.1.3 Ability to provide samples letter | Sect. 9 (viii) | 5 | 0 – No information<br>5 – Acceptable Information |
| 2.1.4 Detailed Drawings provided | Sect. 3.4.2 | 25 | 0 – No drawing<br>10 – Itemised drawing only<br>25 – Itemised drawing and electric field modelling drawings |
| 2.1.5 Production capacity letter | Sect. 9 (x) | 5 | 0 – No information<br>5 – Acceptable Information |
| 2.1.6 Allowance for manufacturing, inspections and witnessing of tests letter | Sect. 9 (xi) | 5 | 0 – No information<br>5 – Acceptable Information |
| 2.1.7 Confirmation that offered product complies fully with IEC 61109 and IEC 62217 requirements, especially Table 1 of IEC 61109. | Sect. 5.1 | 10 | 0 – No information<br>10 - Acceptable Information |
| 2.1.8 Sample of QITP for the routine testing | Sect. 3.4.3 | 5 | 0 – No information<br>5 – Acceptable Information |
| 2.1.9 Delivery schedules adherence letter | Sect. 9 (vii) | 5 | 0 – No information<br>5 – Acceptable Information |
| 2.1.10 Evidence of corona gradient at both live & dead ends ≤ 0.42kV/mm | Annex A, Schedule B Item (7) | 10 | 0 – No information<br>10 – Acceptable Information |

**Table A.2: Glass Insulator(s) technical evaluation criteria for desktop exercise**

| Specification Referred to | [3] 240-77125760 Glass Cap and Pin Insulators for ESKOM Transmission HVAC. |
|---|---|
| **Voltage Class Referred to** | All items |

**3. Level-1 Basic Compliance: Tender Deliverables and Mandatory Technical Requirements (Weight 80 points)**

| Activity | Clause in [3] | Compliance | Qualification Criteria |
|---|---|---|---|
| 3.1.1 Proof of 10 years manufacturing experience | Sect. 9 (d) | 15 | Level 1 |
| 3.1.2 Is completed Technical Schedule submitted? | Annex A i.e. for each specific items | 13 | Level 1 |
| 3.1.3 Is the test report summary sheet completed and submitted together with all the required test reports and other requested information? | Annex A Schedule B i.e. for each specific items | 13 | Level 1 |
| 3.1.4 Proof of Failure rate Failure rate of <1 per 10000 pieces from 5 referees | Sect. 8 (f) | 13 | Level 1 |
| 3.1.5 Proof that all required Design and Type testing has been performed at an accredited test facility [12] been submitted?<br>3.1.6 OR<br>3.1.7 At the factory and witnessed by an accredited body and supporting information supplied? | Sect. 8 (l) | 13 | Level 1 |

| Activity | Clause in [3] | Compliance | Qualification Criteria |
|---|---|---|---|
| 3.1.8 Product meets ESKOM requirements as stipulated in Technical Schedule. No deviations found or deviations identified during detailed evaluation are considered minor i.e. negligible impact on technical and economic performance for the full product life-cycle and/or considered correctable before contract award? | Annex A Schedule C i.e. for each specific items | 13 | Level 1 |
| 3.1.9 Minimum of 90 percent on Level 2 requirements below | | 13 | Level 1 |

Note:

A) List of deviations and missing information to be made by evaluator for all sections evaluated.

B) Should a supplier provisionally qualify for a factory evaluation, all outstanding information as specified in [3] may be requested. The information must be supplied within 5 working days. Information supplied will be evaluated and must be found to be correct and fully meeting expectations before any further evaluation can be undertaken.

C) Minimum of 90 percent on Level 2 will only be applicable if all other compliance is met for Level 1

4. **Level 2 – Scoring/Rating on discretionary items (only submission that passes Level 1) (Weight 20 points)**

| Activity | Clause in [2] | Weight | Score |
|---|---|---|---|
| 4.1.1 Certificates of origin of raw materials | Sect. 8 (h) | 20 | 20 – full range of raw material covered<br>10 – partial coverage<br>0 – no information |
| 4.1.2 Transport, Handling, Storage and Installation Guidelines | Sect. 8 (i) | 10 | 0 – No information<br>5 – Acceptable Information<br>10 – Detailed Information |
| 4.1.3 Ability to provide samples letter | Sect. 8 (m) | 5 | 0 – No information<br>5 – Acceptable Information |
| 4.1.4 Detailed Drawings provided | Sect. 5 | 25 | 0 – No drawing<br>10 – Itemised drawing incomplete<br>25 – Itemised drawing complete |
| 4.1.5 Production capacity letter | Sect. 8 (x) | 5 | 0 – No information<br>5 – Acceptable Information |
| 4.1.6 Allowance for manufacturing, inspections and witnessing of tests letter | Sect. 8 (xi) | 5 | 0 – No information<br>5 – Acceptable Information |
| 4.1.7 Supplied Type tests certificates | Sect. 4.1 | 10 | 10 if tests < 5 years<br>8 if tests = 6 years<br>6 if tests = 7 years<br>4 if tests = 8 years<br>2 if tests = 10 years<br>0 if tests > 10 years |

**Table A.3: Composite Line Post Insulator(s) technical evaluation criteria for desktop exercise**

| | |
|---|---|
| Specification Referred to | [11] 240-86601391- Standard for Line Post Insulators for 220kV and Above |
| **Voltage Class Referred to** | 220kV and above |

**5. Level-1 Basic Compliance: Tender Deliverables and Mandatory Technical Requirements (Weight 80 points)**

| Activity | Clause in [11] | Points | Qualification Criteria |
|---|---|---|---|
| 5.1.1 Is the completed Technical Schedule correctly submitted? | Annex A Schedule C | 16 | Level 1 |
| 5.1.2 Is the test report matrix completed, relevant and submitted? | Annex A Schedule B i.e. for each specific items | 16 | Level 1 |
| 5.1.3 Proof that all required Design and Type testing has been performed at an accredited test facility [12] been submitted?<br>5.1.4 OR<br>5.1.5 At the factory and witnessed by an accredited body and supporting information supplied? | Sect. 4.1.3 | 16 | Level 1 |
| 5.1.6 Product meets ESKOM requirements as stipulated in Technical Schedule. No deviations found or deviations identified during detailed evaluation are considered minor i.e. negligible impact on technical and economic performance for the full product life-cycle and/or considered correctable before contract award? | Annex A Schedule A i.e. for each specific items | 16 | Level 1 |
| 5.1.7 Minimum of 90 percent on Level 2 requirements below | | 16 | Level 1 |

Note:

A) List of deviations and missing information to be made by evaluator for all sections evaluated.

B) If a supplier should provisionally qualify for a factory evaluation, all outstanding information as specified in Normative Reference [2] will be verified at the factory evaluation assessment. All certificates and test reports must be for the item produced in the factory of intended supply.

D) Minimum of 90 percent on Level 2 will only be applicable if all other compliances are met for Level 1

6. **Level 2 – Scoring/Rating on discretionary items (only submission that passes Level 1)** (Weight 20 points)

| Activity | Clause in [2] | Weight | Score |
|---|---|---|---|
| 6.1.1 Proof of 10 years manufacturing experience (at relevant voltages or one class lower) | Sect. 4.1.5 | 20 | 20 if > 10 years<br>10 if > 5 years<br>5 if > 2 years |
| 6.1.2 Transport, Handling, Storage and Installation Guidelines | Sect. 7 | 10 | 0 – No information<br>5 – Acceptable Information<br>10 – Detailed Information |
| 6.1.3 Ability to provide samples letter | | 5 | 0 – No information<br>5 – Acceptable Information |
| 6.1.4 Detailed Drawings provided | Sect. 4.1.2 | 25 | 0 – No drawing<br>10 – Itemised drawing only<br>25 – Itemised drawing and electric field modelling drawings |

| Activity | Clause in [2] | Weight | Score |
|---|---|---|---|
| 6.1.5 Production capacity letter | Sect. 3.2 | 5 | 0 – No information<br>5 – Acceptable Information |
| 6.1.6 Allowance for manufacturing, inspections and witnessing of tests letter | | 5 | 0 – No information<br>5 – Acceptable Information |
| 6.1.7 Confirmation that offered product complies fully with IEC 61952 and IEC 62217 requirements, especially Table 1 of IEC 61952. | Sect. 4.1.3 | 10 | 0 – No information<br>10 - Acceptable Information |
| 6.1.8 Sample of QITP for the routine testing | | 5 | 0 – No information<br>5 – Acceptable Information |
| 6.1.9 Delivery schedules adherence letter | | 5 | 0 – No information<br>5 – Acceptable Information |
| 6.1.10 Evidence of corona gradient at both live & dead ends ≤ 0.42kV/mm | Annex A, Schedule A Item (3.23) | 10 | 0 – No information<br>10 – Acceptable Information |

**Table A.4: Porcelain Insulator(s) technical evaluation criteria for desktop exercise**

| | |
|---|---|
| Specification Referred to | [5] 240-75883384- Specification for stay insulators porcelain or equivalent used for medium and low voltage overhead lines<br>[6] 240-75883174- Specification for outdoor post and long rod insulator for new and refurbished power lines up to 33kV<br>[8] 240–75883900 - Outdoor low voltage insulators for new and refurbished power lines up to 1000 volts |
| **Voltage Class Referred to** | Up to and including 33kV |

**7. Level-1 Basic Compliance: Tender Deliverables and Mandatory Technical Requirements (Weight 80 points)**

| Activity | Clause in [6] | Compliance | Qualification Criteria |
|---|---|---|---|
| 7.1.1 Is completed Technical Schedule submitted? | Annex B | 20 | Level 1 |
| 7.1.2 Is the Design and type test submitted? | Annex B | 20 | Level 1 |
| 7.1.3 Has the drawing for item submitted? | 4.6 | 20 | Level 1 |
| 7.1.4 Is all required information (test certificates) submitted in English? | 5.1.3 | 20 | Level 1 |

8. Level 2 – Scoring/Rating on discretionary items (only submission that passes Level 1) **(Weight 20 points)**

| Activity | Clause in [6] | Weight | Score |
|---|---|---|---|
| 8.1.1 Acceptable design and Type tests certificates and Characteristic curves | 5.2 | 70 | 0 – No information<br>70 – Detailed Information |
| 8.1.2 Packaging, Transport and Storage information | 4.15 and 4.16 | 10 | 0 – No information<br>10 – Detailed Information |

**Table A.5: Composite Insulator(s) (132kV and below) technical evaluation criteria for desktop exercise**

| | |
|---|---|
| Specification Referred to | [6] 240-75883174- Specification for outdoor post and long rod insulator for new and refurbished power lines up to 33kV |
| **Voltage Class Referred to** | Up to and including 44kV |

| **9. Level-1 Basic Compliance: Tender Deliverables and Mandatory Technical Requirements (Weight 80 points)** | | | |
|---|---|---|---|
| **Activity** | **Clause in [5]** | **Compliance** | **Qualification Criteria** |
| 9.1.1 Is completed Technical Schedule submitted? | Annex B | 20 | Level 1 |
| 9.1.2 Is the Design and type test submitted? | Annex B | 20 | Level 1 |
| 9.1.3 Has the drawing for item submitted? | 4.6 | 20 | Level 1 |
| 9.1.4 Is all required information submitted in English? | 5.1.3 | 20 | Level 1 |

| 10. Level 2 – Scoring/Rating on discretionary items (only submission that passes Level 1) **(Weight 20 points)** | | | |
|---|---|---|---|
| **Activity** | **Clause in [5]** | **Weight** | **Score** |
| 10.1.1 Acceptable design and Type tests certificates and Characteristic curves | 5.2 | 70 | 0 – No information<br>70 – Detailed Information |
| 10.1.2 Packaging, Transport and Storage information | 4.15 and 4.16 | 10 | 0 – No information<br>10 – Detailed Information |

**Table A.6: Composite Line Post Insulator(s) technical evaluation criteria for desktop exercise**

| | |
|---|---|
| Specification Referred to | [7] 240-75883896- Outdoor post and long rod insulators for new and refurbished power lines for 66kV and 132kV |
| **Voltage Class Referred to** | 132kV and Below |

| **11. Level-1 Basic Compliance: Tender Deliverables and Mandatory Technical Requirements (Weight 80 points)** | | | |
|---|---|---|---|
| **Activity** | **Clause in [5]** | **Compliance** | **Qualification Criteria** |
| 11.1.1 Is completed Technical Schedule submitted? | Annex B | 20 | Level 1 |
| 11.1.2 Is the Design and type test submitted? | Annex B | 20 | Level 1 |
| 11.1.3 Has the drawing for item submitted? | 4.6 | 20 | Level 1 |
| 11.1.4 Is all required information submitted in English? | 5.1.3 | 20 | Level 1 |

| 12. Level 2 – Scoring/Rating on discretionary items (only submission that passes Level 1) **(Weight 20 points)** | | | |
|---|---|---|---|
| **Activity** | **Clause in [5]** | **Weight** | **Score** |
| 12.1.1 Acceptable design and Type tests certificates and Characteristic curves | 5.2 | 70 | 0 – No information<br>70 – Detailed Information |
| 12.1.2 Packaging, Transport and Storage information | 4.15 and 4.16 | 10 | 0 – No information<br>10 – Detailed Information |

## Annex B – Generic Factory evaluation criteria

| No: | Technical Questions | Score | Criteria | Evidence and comments |
|---|---|---|---|---|
| **1** | **Work Systems** | **-30** | | |
| 1.1 | Works procedures and instructions:<br>a. What work procedures are in place?<br>b. What ISO standards are used | | If both in place and documents are traceable then = 0<br>Both in place, but non-traceable documents = -2<br>If either 'a' or 'b' are omitted = -4<br>None = -6 | |
| 1.2 | Continuous improvement and International compliance:<br>Do they comply fully to the normative/governing IEC/SANS/IEEE standards and any additional requirements as stipulated in the applicable Eskom Specification for each equipment being assessed. | | Full Compliance = 0<br>Minor deviation = -2<br>Major deviation/non-compliance = -4<br>Non-compliance to Eskom specs and governing standards = -6 | |
| 1.3 | Quality control plans and systems (PQPs)<br>(choose one of each) | | QCP's and PQP's in place and traceable = 0<br>QCP's and PQP's in place = -2<br>Some QCP's and PQP's in place = -4<br>None in place = -6 | |
| 1.4 | Inspections, audits and reviews<br>(choose one of each) | | All inspections, audits and reviews in place, up to date and traceable = 0<br>All inspections, audits and reviews in place = -2<br>Some inspections, audits and reviews in place = -4<br>None in place = -6 | |
| 1.5 | Staff training and accreditation systems and controls<br>What training do they offer their staff?<br>Who are they accredited with?<br>(choose minimum 2 random staff members) | | Staff trained and accredited, and traceable = 0<br>Staff trained and traceable = -2<br>Staff trained = -4<br>Staff not trained = -6 | |

| | | | | |
|---|---|---|---|---|
| **2** | **Operation – Manufacturing methods** | **-78** | | |
| 2.1 | What base materials are used, and how is it checked? | | All base material quality checked, handled, stored and catalogued correctly, and is traceable = 0<br>All base material quality checked, stored and catalogued correctly = -2<br>Some of the above checks not done = -4<br>No tracing of base material, or stored incorrectly = -6 | |
| 2.2 | For components/materials manufactured in-house- How is quality controlled? | | All manufactured materials- quality checked, handled, stored and catalogued correctly, and is traceable = 0<br>All manufactured materials, stored and catalogued correctly = -2<br>Some of the above checks not done = -4<br>No tracing of manufactured materials, or stored incorrectly = -6 | |
| 2.3 | If corona rings used, and how is it checked?<br>Are installation guides supplied for corona rings?<br>Please include kA/s ratings. | | All corona rings quality checked, handled, stored and catalogued correctly, and is traceable = 0<br>All corona rings quality checked, stored and catalogued correctly = -2<br>Some of the above checks not done = -4<br>No tracing of corona rings, or stored incorrectly = -6 | |
| 2.4 | Which metallic parts are used, and how is it checked? | | All metallic parts quality checked, handled, stored and catalogued correctly, and is traceable = 0<br>All metallic parts quality checked, stored and catalogued correctly = -2<br>Some of the above checks not done = -4<br>No tracing of metallic parts, or stored incorrectly = -6 | |

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| 2.5 | Is the test bay area closed off? | | Yes = 0<br>Partially closed off = -3<br>Not closed off = -6 | |
| 2.6 | What is the quality and availability of test reports? | | Test certificate has all relevant data, easy to read and understand, signed off by authorised personnel and is traceable = 0<br>Test certificate has all relevant data, easy to read and understand, signed off by authorised personnel = -2<br>Test certificate has relevant data, not signed off by authorised personnel = -4<br>Test certificates do not display all relevant criteria = -6 | |
| 2.7 | Clean conditions in workshop | | Clean-room environment (dust-free, static-free) = 0<br>Workshop is clean overall = -2<br>Workshop is fairly clean = -4<br>Workshop not clean = -6 | |
| 2.8 | What is the supplier's estimate of current capacity limit of the insulator? | | Can meet on time delivery for our unit = 0<br>Some potential delays for the production of our unit = -3<br>Major delays anticipated = -6 | |
| 2.9 | Are there any bottlenecks in the manufacturing process? (e.g., test bay, moulding, baking, etc.) | | Can meet on time delivery for our units = 0<br>Some potential delays for the production of our unit = -3<br>Major delays anticipated = -6 | |
| 2.10 | Does the supplier intend to make use of a substitute factory if capacity increase is required? If so, has it been evaluated for this project? | | Yes, fully accredited = 0<br>Yes, not accredited yet = -6 | |

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| 2.11 | How has the supplier expedited orders if required? | | Adequate process to fast-track orders, and is traceable = 0<br>Adequate process to fast-track orders = -2<br>Process exists, but needs improvement = -4<br>No process = -6 | |
| 2.12 | Plant Capacity: can the factory provide all the equipment, and to Eskom's specification | | Aligns completely to Eskom specifications = 0<br>Partially aligns to Eskom specifications = -3<br>Doesn't align to Eskom specifications = -6 | |
| 2.13 | What are factory failure rates for the last 5 years and how is daily limit managed if exceeded? | | Less than 1%, and traceable = 0<br>Less than 1% = -2<br>Between 1-2% = -4<br>Greater than 2% = -6 | |
| **3** | **Technical Infrastructure** | **-18** | | |
| 3.1 | What manufacturing equipment/tools does the supplier have, who manufactures this equipment, what is the capacity of this equipment? | | Equipment/tools bought from accredited and known manufacturers, and traceable = 0<br>Equipment/tools bought from accredited and known manufacturers = -2<br>Some equipment/tools bought from accredited and known manufacturers = -4<br>Equipment/tools bought from unrecognised manufacturers = -6 | |
| 3.2 | How are supervisors and workers trained on handling equipment? | | Certificate or accreditation, and traceable = 0<br>Certificate or accreditation = -2<br>Some workers accredited, certified = -4<br>No certificate or accreditation = -6 | |

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| 3.3 | What is the maintenance operating model for the production line? | | Complete maintenance records, and traceable = 0<br>Complete maintenance records = -2<br>Incomplete maintenance records, procedures = -4<br>Limited/no maintenance records = -6 | |
| **4** | **Design Practices and Application** | **-72** | | |
| 4.1 | Please describe your design criteria basis and guidelines – Electrical, Mechanical | | Clear tools and software for designs = 0<br>Have tools (software) available, however no clear philosophy on how tools are employed = -2<br>Have tools only = -4<br>No philosophy = -6 | |
| 4.2 | What is the design team's composition/structure, numbers, experience levels? | | Chief engineer has >10 years experience in design, CVs, certifications are current = 0<br>Chief engineer has 5-10 experience in design, CVs and/or certifications are not current = -3<br>No CVs, certifications = -6 | |
| 4.3 | Please provide design process flowchart / systems for similar products | | Up to date flowchart = 0<br>Flowchart not current = -3<br>No flowchart = -6 | |
| 4.4 | How do you ensure internal design verification/ validation as part of your design process? | | Authorised person checks and signs off design = 0<br>No checks, self-release = -6 | |
| 4.5 | What is the process to deal with design change requests (concession), internal or external? | | Formalised design review process that includes customer, internal personnel and design expert, plan and schedule = 0<br>No formalised design review process = -6 | |
| 4.6 | Following final design approval, how is the final design linked to the manufacturing process? | | Approved inspection and test plans includes hold points to verify execution of design = 0<br>No monitoring system = -6 | |

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| 4.7 | What engineering tools are used for the relevant designs? What is the staff's level of experience with these tools? | | Tools are certified and up to date, calibration, software updates – must be of the latest version, user accreditation must be current = 0<br>Some certification of tools, software, user has accreditation but not of latest value = -3<br>No certified tools = -6 | |
| 4.8 | How do you ensure continuous development of staff with respect to design systems and philosophy? (i.e., software and manually) | | Training programme for all involved staff, individual development plans for staff, adequate and up to date learning = 0<br>Training programme exists process not adequate = -3<br>No continuous development = -6 | |
| 4.9 | How does the system flag excursions outside internal design rules? | | Flags excursions, calibration is current = 0<br>Flags some but not all = -3<br>No excursions flagged, not calibrated properly = -6 | |
| 4.10 | As design technology backup, who are your technology partners? | | Partners aligned with Eskom-approved partners = 0<br>Partners not aligned with Eskom-approved partners = -3<br>None = -6 | |
| 4.11 | How do you support/co-ordinate the use of academic/research institutions for technology support, if any? | | Clear functional role and responsibilities, collaboration with universities (i.e., sponsorship of students) = 0<br>No = -6 | |
| 4.12 | How do you support/co-ordinate external partners for component manufacturers, if any? | | Clear functional role and responsibilities, collaboration with manufacturers = 0<br>No = -6 | |

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| **5** | **Testing Facility and Practices** | **-48** | | |
| 5.1 | Please provide proof of calibration of all test equipment | | Calibrated within date, done by accredited person, and traceable = 0<br>Calibrated within date, done by accredited person = -2<br>Calibrated within date = -4<br>Not calibrated = -6 | |
| 5.2 | Test capabilities | | Fully capable of performing type, acceptance and routing tests, and is traceable = 0<br>Fully capable of performing acceptance and routing tests, and is traceable = -2<br>Capable of performing acceptance and routing tests = -4<br>Cannot perform any tests = -6 | |
| 5.3 | Electrical Characteristics | | Within required standards, and traceable = 0<br>Not within required standards = -6 | |
| 5.4 | Mechanical Characteristics | | Within required standards and traceable = 0<br>Not within required standards = -6 | |
| 5.5 | Dimensional Characteristics | | Within required standards, and traceable = 0<br>Not within required standards = -6 | |
| 5.6 | Fixing arrangements | | Within required standards, and traceable (or N/A) = 0<br>Not within required standards = -6 | |
| 5.7 | RIV tests | | Within required standards, and traceable (or N/A) = 0<br>Not within required standards = -6 | |

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| 5.8 | Reports, timeousness, quality thereof | | All test reports produced immediately, checked by accredited person, and is traceable = 0<br>All test reports produced immediately, and is traceable = -2<br>Test reports produced = -4<br>No test report available = -6 | |
| **6** | **Research and Development capabilities** | **-24** | | |
| 6.1 | Do you own your R&D? If not, who are R&D partners? | | Accredited and validation should be current = 0<br>Not accredited and validation is not current = -6 | |
| 6.2 | How is R&D triggered in your organisation? | | Clear triggers for R&D – optimising for performance or cost, continuous improvement (i.e., new Line-to-ground clearance requirements), and traceable = 0<br>Clear triggers for R&D – optimising for performance or cost, continuous improvement = -2<br>R&D supported, but no clear mandate = -4<br>No support or mandate for R&D = -6 | |
| 6.3 | What initiatives are you pursuing to introduce new technology | | Pursuing newest technology actively = 0<br>No research into the new technology = -6 | |
| 6.4 | Do you outsource your designs? How much of your designs are outsourced? What controls are in place | | Do not outsource = 0<br>Outsource, accredited and validation should be current, controls should be in place = -3<br>Outsource but not accredited and validation, no clear controls = -6 | |

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| **7** | **Tendered product validation per product** | **-12** | **Per product evaluated** | |
| 7.1. | Outstanding product information (Design, Type tests etc.) | | All relevant test reports produced as requested=0<br>Outstanding Test reports to be produced by a date stipulated by Eskom depending on the nature of the test = -2<br>Partial test reports produced = -4<br>No test report available = -6 | |
| 7.2. | Product Deviations endorsement | | Deviation endorsed = 0<br>Deviation declined = -6 | |