Eskom	Report	Technology

Title: **POWER ELECTRONICS TENDER TECHNICAL EVALUATION CRITERIA [UPS, PHASE CONTROLLED AND SWITCH MODE CHARGERS]**

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Compiled by	Functional Responsibility	Authorized by
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PCM Reference: **240-45541534**

SCOT Study Committee Number/Name: **DC and Auxiliary Supplies**

Content

Tables

1. Introduction

This report has been developed to set the standard technical evaluation criteria to be used when evaluating tender submissions for Siemens Charger Retrofit, Converters, Inverters, Uninterruptible Power Supplies, Thyristor and high frequency Switch Mode Chargers to be used within the Generation, Transmission or Distribution divisions.

The report defines the 'Mandatory', 'Technical Qualitative', 'Factory Evaluation' and 'Deemed Offer Risk(s)' criteria that will be used to evaluate responses to the enquiry for Siemens Charger Retrofit, Converters, Inverters, Uninterruptible Power Supplies, Thyristor and High Frequency Switch Mode Chargers.

The technical evaluation criteria and scoring are set out in detail within this report.

2. Supporting clauses

2.1 Scope

2.1.1 Purpose

The report provides the technical evaluation criteria relating to a commercial enquiry for the design, manufacture at works, testing, quality assurance, delivery to site or Eskom stores, off-loading, erection, commissioning, decommissioning; installation and disposal of Siemens Charger Retrofit, Converters, Inverters, Uninterruptible Power Supplies, Thyristor and high frequency Switch Mode Chargers to be used within Eskom's Generation, Transmission and Distribution businesses. This document covers the criteria and scoring in terms of how Eskom intends to evaluate the tenders for Siemens Charger Retrofit, Converters, Inverters, Uninterruptible Power Supplies, Thyristor and Switch Mode Battery Chargers.

2.1.2 Applicability

This document shall apply throughout Eskom Holdings SOC Ltd.

2.2 Normative/informative references

2.2.1 Normative

[1] ISO 9001 Quality Management Systems.

[2] 240-53114248: Thyristor and switch mode chargers, AC/DC to DC/AC converters and inverter /uninterruptible power supplies standard.

[3] 240-87040106: Refurbishment of Siemens battery chargers.

[4] PE Enquiry 2022 A&B Schedules Technical Evaluation Spreadsheet.

2.2.2 Informative

None

2.3 Definitions

2.3.1 General

Definition	Description
Cosmetics	Requirements related to visual appearance and technical specifications, where non-compliance can be accepted, based on a waiver of low risk of non-performance of the system.

Definition	Description
End user	The term "end-user" is used to distinguish the person who will actually work with the goods or services from individuals who are involved in other stages of the development, production and distribution
Eskom evaluation team	The persons appointed by Eskom to perform the evaluation of tender submissions in line with Eskom's requirements.
Normative	Documents that shall be read in conjunction with this report and are binding on tenderers.

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
EMC	Electromagnetic compatibility
Eskom	Eskom Holdings SOC (Ltd)
FAT	Factory Acceptance Test
ITP	Inspection Test Procedure
OEM	Original Equipment Manufacturers
RFI	Radio Frequency Interference
SAT	Site Acceptance Test
UPS	Uninterruptible Power Supply

2.5 Roles and responsibilities

It is proposed that:

- Eskom shall utilise this document as the basis for the technical evaluation process.
- Tenderers shall note the evaluation criteria as laid out in this document and submit tenders in compliance to the stipulated requirements.

2.6 Process for monitoring

Eskom will monitor the compliance to this document.

2.7 Related/supporting documents

Not applicable.

3. Tender Technical Evaluation Criteria

The evaluation exercise is performed by the Eskom evaluation team. The following criteria will be used to assess the tenderer's capability to enter into a contract with Eskom with respect to specific products and to meet Eskom's requirements. The evaluation method has four main stages:

a) Mandatory Requirements Evaluation

b) Technical Qualitative Requirements Evaluation

c) Factory Evaluation

d) Deemed Offer Risk(s) Evaluation

Tenderer's offers must achieve at least the threshold for each stage in order to qualify for evaluation under a subsequent stage. Tenderers that do not achieve at least the threshold for a stage will not be evaluated further. The detailed methodologies for scoring in each stage are provided in Sections 3.1 to 3.4 below.

3.1 Mandatory Requirements Evaluation

This part of the evaluation starts when submissions are opened and assessed for the first time. The Eskom evaluation team will go through the details of the returnable submissions that are required and will ensure that all the Mandatory Requirements are met. Submissions that receive a “No” for any of these requirements will not be able to proceed to the ‘Technical Qualitative Requirements Evaluation’ stage and therefore will fail the technical evaluation.

Table 1: Mandatory Technical Requirements Evaluation

#	Mandatory Technical Criteria Description	Reference to Technical Specification / Tender Returnable	Comply	Comments
1.	Is all information supplied in English?		Yes/No	
2.	Tenderer has submitted an OEM letter confirming that the Tenderer is a local agent and is authorized or accredited to perform the following activities: test, commission, maintain, modify, and conduct operating and maintenance training to the end user. *(Clause 4)*	240-90489606 Technical Evaluation Report	Yes/No	
3.	Are completed Technical Schedules A&B on the “PE Enquiry 2022 schedule A and B.xls” submitted separately for each offered Product? [**Offer could be one (1) or more of required products].** *(Clause 4)*	Normative Reference [2] and [3]	Yes/No	
4.	Is compliance to the Referenced Technical Standards, including any deviations, submitted with the associated declaration **signed** by the duly authorised Tenderer’s representative?	Annex D	Yes/No	
5.	Are CVs for key persons that will be involved during the development phase submitted?	Normative Reference [2] and [3]	Yes/No	
Threshold. Should the tenderer fail to meet ANY ONE of the above requirements they will be automatically disqualified.				

3.2 Technical Qualitative Requirements Evaluation

This stage shall comprise of scoring in five sub-categories indicated in Table 2 for each category of product indicated below.

a) Category 1: Evaluation of Phase Controlled Chargers Technical Schedules A&B for Eskom standard [2] 240-53114248

b) Category 2: Evaluation of Switch Mode Chargers Technical Schedules A&B for Eskom standard [2] 240-53114248

c) Category 3: Evaluation of Uninterruptable Power Supplies Technical Schedules A&B for Eskom standard [2] 240-53114248

d) Category 4: Evaluation of Technical Uninterruptable Power Supplies – Modular Schedules A&B for Eskom standard [2] 240-53114248

e) Category 5: Evaluation of Technical Converters Schedules A&B for Eskom standard [2] 240-53114248

f) Category 6: Evaluation of Technical Inverters Schedules A&B for Eskom standard [2] 240-53114248

g) Category 7: Evaluation of Technical Siemens Retrofit Schedules A&B for Eskom standard [3] 240-87040106.

Only submissions that have passed the 'Technical Qualitative Requirements Evaluation' scoring threshold of **80%** for each sub-category (Table 2 (Items 1 to 5)) will proceed to the 'Practical Evaluation' stage.

The Technical Schedules A&B use a default weight of 1 for each scored item. Critical items are assigned higher weights which is either be a 2 or 3. Each item is assigned a score (PE Enquiry 2022 schedules A and B.xls) by the Eskom evaluation team (using Table 3 below), based on the tendered response and cross-checked with the supporting documents provided (where applicable). The score for each item will be multiplied by its weight to obtain the total score per item (Weight x (Score from Table 1)).

Tender responses claiming compliance to an item (e.g., 'Comply') but which are found to be partially compliant or non-compliant during verification will be assigned the corresponding score by the Eskom evaluation team. Items for which compliance is not claimed (e.g., 'Do Not Comply', "Partially Comply"), but which are found to be compliant during verification will be scored as 'Non-compliant' or 'Partially compliant', based on the original response. Items for which no response is provided shall automatically be scored as 'non-compliant'.

Table 2: Technical Qualitative Evaluation Criteria Descriptions and Weighting for Converters, Inverters, Uninterruptible Power Supplies, Thyristor and high frequency Switch Mode Chargers

Item	Qualitative Technical Criteria Description		Reference to Technical Specification / Tender Returnable	Criteria Sub Weighting	Individual Criteria Evaluation Weight	Criteria Weighting	Criteria Evaluation Weight [%]	Pass / Fail Threshold	Pass / Fail
1	**Schedule A and Schedule B**		A&B Schedules Technical Evaluation Spreadsheet			**40**		≥80%	
2	**OEM Type Testing Reports** *(Section 6 below)*		A&B Schedules Technical Evaluation Spreadsheet			**10**		≥80%	
3	**Drawings, Manuals and Training,** *(Section 7 below)*		A&B Schedules Technical Evaluation & Tender Evaluation Spreadsheet.			**10**		≥80%	
	3.1	Equipment manuals (installation, operating and maintenance) and drawings of each category of product offered.		5					
	3.2	Information on local technical support and level of support offered and training.		5					
4	**Life Cycle Costing** *(Section 8 below)***(Mean Time Between Failures, Equipment Reliability Cost, Repair Cost of Equipment, Spares)**		A&B Schedules Technical Evaluation & Tender Evaluation Spreadsheet.			**17**		≥80%	
5	**Deemed Technical Risk** *(Section 3.4)*		A&B Schedules Technical Evaluation & Tender Evaluation Spreadsheet.			**13**		≥80%	

Item	Qualitative Technical Criteria Description	Reference to Technical Specification / Tender Returnable	Criteria Sub Weighting	Individual Criteria Evaluation Weight	Criteria Weighting	Criteria Evaluation Weight [%]	Pass / Fail Threshold	Pass / Fail
6	**Practical Evaluation** *(Section 3.3)*	A&B Schedules Technical Evaluation & Tender Evaluation Spreadsheet.			**10**		≥80%	
				TOTAL:	**100**			

Table 3: Technical Qualitative Evaluation Criteria Descriptions and Weighting for Siemens Charger Retrofit

Item	Qualitative Technical Criteria Description		Reference to Technical Specification / Tender Returnable	Criteria Sub Weighting	Individual Criteria Evaluation Weight	Criteria Weighting	Criteria Evaluation Weight [%]	Pass / Fail Threshold	Pass / Fail
1	**Schedule A and Schedule B**		A&B Schedules Technical Evaluation Spreadsheet			**45**		≥80%	
2	**Drawings, Manuals and Training,** *(Section 7 below)*		A&B Schedules Technical Evaluation & Tender Evaluation Spreadsheet.			**15**		≥80%	
	2.1	Equipment manuals (installation, operating and maintenance) and drawings of each category of product offered.		5					
	2.2	Information on local technical support and level of support offered and training.		5					
3	**Life Cycle Costing** *(Section 8 below)***(Mean Time Between Failures, Equipment Reliability Cost, Repair Cost of Equipment, Spares)**		A&B Schedules Technical Evaluation & Tender Evaluation Spreadsheet.			**17**		≥80%	
4	**Deemed Technical Risk** *(Section 3.4)*		A&B Schedules Technical Evaluation & Tender Evaluation Spreadsheet.			**13**		≥80%	

Item	Qualitative Technical Criteria Description	Reference to Technical Specification / Tender Returnable	Criteria Sub Weighting	Individual Criteria Evaluation Weight	Criteria Weighting	Criteria Evaluation Weight [%]	Pass / Fail Threshold	Pass / Fail
5	**Practical Evaluation** *(Section 3.3)*	A&B Schedules Technical Evaluation & Tender Evaluation Spreadsheet.			**10**		≥80%	
				TOTAL:	**100**			

All scores for the Technical Schedules A&B will be tallied and a percentage shall be calculated based on the maximum possible score. This value will be recorded as the “Score %” in Table 5.

Table 4: Scoring of Items in Technical Schedules A&B and Factory Evaluation Checklist

Criteria	Score
Fully compliant	3
Partially compliant (minor deviation)	1
Non-compliant (major deviation)	0

Table 5: Technical Requirements Evaluation

Criteria	Score %	Threshold	Comments
Compliance with Technical Criteria Description 1 - 5 on Table 2 for Eskom standard 240-53114248 [Phase Controlled Chargers]		**≥80%**	
Compliance with Technical Criteria Description 1 - 5 on Table 2 for Eskom standard 240-53114248 [Switch Mode Chargers]		**≥80%**	
Compliance with Technical Criteria Description 1 - 5 on Table 2 for Eskom standard 240-53114248 [Uninterruptable Power Supplies]		**≥80%**	
Compliance with Technical Criteria Description 1 - 5 on Table 2 for Eskom standard 240-53114248 [Uninterruptable Power Supplies - Modular]		**≥80%**	
Compliance with Technical Criteria Description 1 - 5 on Table 2 for Eskom standard 240-53114248 [Converters]		**≥80%**	
Compliance with Technical Criteria Description 1 - 5 on Table 2 for Eskom standard 240-53114248 [Inverters]		**≥80%**	
Compliance with Technical Criteria Description 1 - 4 on Table 3 for Eskom standard 240-87040106: [Refurbishment of Siemens battery chargers]		**≥80%**	

3.3 Factory Evaluation

This evaluation is performed to assess the tenderer’s capability to design, manufacture at works, testing, quality assurance, delivery to site or Eskom stores, off-loading, erection, commissioning, decommissioning, installation and disposal of the required products. The evaluation will take the form of both a desktop evaluation as well as a visit to the tenderer’s manufacturing premises/factory at which the works are to be undertaken, to confirm the tenderer’s capability in terms of facilities, skills and historical performance. The presentation shall entail an overview of the OEM, local agent and the equipment features which gives the offered equipment an edge (advantage) over other equipment in the market. Tenderer visits shall be conducted during the tender evaluation phase.

The factory evaluation will be based on the Factory Evaluation Checklist provided in Table C.1 (Annex C) of this document. During the factory visit, the tenderer will demonstrate the various items listed. The Eskom evaluation team will score each item, listing their reasoning. Scores assigned by the Eskom evaluation team will not be shared with tenderers during the evaluation.

The Factory Evaluation Checklist uses a default weight of 1 for each scored item. Each item will be assigned a score by the Eskom evaluation team using Table 4. The score for each item will be multiplied by its weight to obtain the total score per item (Weight x (Score from Table 3)).

All scores from Table C.1 will be tallied and shall be calculated based on the maximum possible score. This value will be recorded as the equivalent amount out of a score of 100% in Table 6.

Only submissions that pass the 'Factory Evaluation' scoring threshold of **≥80%** (Table 6) will proceed to the 'Deemed Offer Risk(s) Evaluation' stage.

Table 6: Factory Evaluation

Criteria	Score %	Comments
Evaluation score from Factory Evaluation Checklist (Annex D)		
Threshold	**≥80%**	

3.4 Deemed Offer Risk Evaluation

Eskom's evaluation team shall compile a narrative summarising risk associated with any aspect of the offer:

a) noted during the Technical Qualitative Requirements Evaluation,

b) noted as part of Field Failure Report information,

c) noted during the Factory Evaluation,

d) noted during a review of any pricing anomalies that cannot be acceptably clarified,

e) based on the deviations provided in Table D.1: Deviations to Referenced Technical Standards, and

f) based on the CVs submitted for the key persons.

This narrative shall be used to determine and motivate whether the risk is deemed low / acceptable / high and will serve as input to the recommendation as to whether the offer should be accepted as shown in Table 7 below.

Table 7: Deemed Risk Evaluation

Criteria	Score	Comments
Offer Risk(s)		
Threshold	**≥80%**	

4. OEM Agent Agreement Clarification/Requirements

Eskom requires the detail pertaining to the OEM and agent agreement, indicating the OEM required training, and commitment to support. The OEM shall have a local agent in South Africa. The warrantee to the end user shall be honoured by the OEM. The OEM shall confirm on a signed letter head that the local agent is authorized or accredited to perform the following activities: test, commission, maintain, modify, and conduct operating and maintenance training to the end user. The names of the accredited people (of the local agent), their designation and their level of accreditation shall be listed in this letter and their CVs shall be submitted with the tender documentation.

5. Tender Deliverables

Clarification of the submissions by the tenderer can be requested.

It is required that responses given in the A/B Schedules are substantiated by product brochures and documentation. Product brochures and documentation must be submitted in hardcopy of the official tender submission and electronically, searchable Acrobat (*.pdf) files are preferred for all documentation. Non-compliances and deviations to the standard and schedules must be declared. A comprehensive table of contents for all items submitted shall be provided to enable items to be located quickly. Digital links to material from the table contents to applicable files will be required.

6. Type Testing

The compliance to SANS 62040-1, SANS 62040-2, SANS 62040-3, SANS 1652 and IEC 60146 needs to be indicated as part of the type test report submitted. The Type tests submitted should be in line with the latest IEC and equivalent SANS Standard.

It is required that all type test reports of the offered equipment shall be submitted as part of the tender submission. If the OEM has no type tested products as per the latest Eskom standard 240-53114248: Thyristor and switch mode chargers, AC/DC to DC/AC converters and inverter/uninterruptible power supplies standard, a type test report for a similar product must be submitted as part of the tender submission, with all deviations to the specification or requirements listed. At least one of the largest product ranges must have been type tested by the OEM to the latest IEC 62040/60146 revision in order to prove capability. This will be (required as a tender deliverable.

Eskom requires that the OEM and agents have the capability and facilities to perform FATs (routine tests and operational tests) and type tests at their premises excluding electromagnetic compatibility (EMC) and radio frequency interference (RFI) tests. EMC and RFI testing must be done by a reputable local accredited laboratory. The OEM is also requested to indicate the name of the laboratories used for type test purposes.

It is understood that at present some local test laboratories do not have the capability to perform the required type testing for equipment with a supply current greater than 16A. The tenderer shall indicate how they intend to address this for equipment over this limit by creating the local capacity for these tests.

7. Drawings, Manuals, and Training.

Comprehensive OEM manuals shall be submitted for the equipment on offer. If products, not fully meeting the applicable Eskom standard are not available, but the supplier is committed to meet these requirements, it is required that comprehensive OEM manuals be submitted for similar equipment.

The tenderer must offer training in the Republic of South Africa. The training provided will meet the standard of the OEM and will be authorized by Eskom to conduct all operating and maintenance activities, and major overhauls. The operator training will be provided with the unit being commissioned. The training will be available to any of Eskom's personnel. The person responsible for presenting the training is trained, competent and certified by the OEM. An engineering course will be developed and registered with the Engineering Council of South Africa. A detailed breakdown of training programmes for the particular range of products is submitted in the table below.

Specialized training shall be made available to Eskom's maintenance and engineering personnel. This training shall include the knowledge and skills to enable individuals to adjust the internal parameters of the equipment to meet specific field conditions and to load firmware upgrades as and when required. The necessary configuration tools shall be provided to authorize staff to change these internal parameters. Trained and authorized personal will be issued the required passwords to effect the changes.

All training must be SETA accredited. The training must be available for a period of 10 years following the start of the contract. Following this period all training material must be handed over to Eskom.

Table 8: Training Detail

COURSE DESCRIPTION	DURATION (DAYS)	ACTIVITY COMPETENCY	MINIMUM REQUIREMENTS FOR COURSE ENTRY	COST PER TRAINEE To be provided as part of commercial submission

8. Life Cycle Costing

Life Cycle Costing (LCC) for the product is going to be done by the Employer in accordance with this paragraph.

The tenderer gives a detailed breakdown of all cost components used in the life cycle cost calculations in this paragraph. The failure and repair data may be reviewed with the Contractor prior to contract award to ensure verification, completeness and accuracy. The projected labour and material costs of failures are evaluated.

8.1.1 Total Cost of Ownership

Total Cost of Ownership (A) is given by

A = B + C + D

where B = adjusted present day capital cost of the product (allowing for financial terms, VAT, errors, and omissions etc. in SA Rand),

where C = lifetime cost of energy cost based on efficiency while operated continuously at 50% rated capacity over a 10-year period. The lifetime cost of energy will be omitted because the acceptable efficiencies are stipulated in the technical requirement.

where D = estimated life cycle reliability cost.

8.1.2 Reliability Costs

This evaluation is based on the predicted performance of the product. The failure and repair cost data for the products are based on reliability data supplied by tenderer in the required Table 9 below, and on Eskom's and others' experience with the products. The failure data required by the -Eskom to evaluate and monitor the performance of the product must be reflected in the reliability table. A spares discount offered if the reliability is worse than what was indicated by the tenderer over the 5-year period. While maintenance is performed as indicated in the relevant Eskom Task Manuals.

Table 9: Mean Time Between Failure

MTBF in hours	Spares discount %
MTBF	0
MTBF (over 43800hours = 5 years)	
MTBF	
MTBF <1%	
1%≤ MTBF <5%	
5%≤ MTBF <10%	
10%≤ MTBF <15%	
15%≤ MTBF <20%	
20%≤ MTBF <25%	
25%≤ MTBF <30%	
MTBF >30%	

Table 10: Equipment (List of major spares, list of contingency spares) Reliability and Repair Cost

EQUIPMENT	ITEM	DESCRIPTION	DESCRIPTION REPAIR ACTIVITY	MTBF in hours	MTTR in hours	QUANTITY recommended	TOTAL COST (% of Capital Cost) Detail cost to be provided as part of commercial submission

Table 11: Equipment Field Failure Reports

ITEM	USERNAME ADDRESS CONTACT NAME PHONE NUMBER	NUMBER OF PRODUCTS IN SERVICE	NUMBER OF PRODUCT YEARS	NUMBER OF FAILURES		EST REPAIR TIME (MH)		FAILED SUB-COMPONENT ITEM (REFERENCED TO SPARES LIST)	ACTION TO PREVENT RE-OCCURRENCE	DATE(S) OF RE OCCURRENCE	ADDITIONAL COMMENTS
				MAJOR	MINOR	MAJOR	MINOR				

Notes:

1) Provide additional comments if a failure reporting system have not been in effect over the entire life of the product.

2) A major failure is defined as a failure that will results in the interruption of output supply (the stored energy device (battery) must be excluded) A minor failure is any failure other than a major failure.

3) Repair time (man-hour) estimates are to be based on actual field data where available or alternatively estimated on the basis that all spares recommended in the contract are available and manpower is available during a five-day 40-hour week.

4) The tenderer identifies improvements/replacements if any of components and sub-components after a major or minor failure. Additional comments regarding failure causes are recommended.

5) If the table does not provide for enough space, information is provided elsewhere, and the table are used as a summery sheet. Codes or key words can be used to identify the activities described in detail in another document.

9. Mandatory/Recommended Conditions of Acceptance of the Tenderer's Offer

For tenderer's offers that achieve the threshold for all stages of the technical evaluation, but which are found to have deficiencies regarding certain aspects of the offer (e.g., partial-compliances or non-compliances to requirements):

a) that are deemed critical to the offer and/or core functioning of the solution on the Eskom network, and that are deemed to be non-negotiable for contract award, or
b) whose improvement would enhance the offer and/or performance of the solution, but whose resolution is not mandatory for contract award.

Eskom will include 'Mandatory' or 'Recommended' conditions of acceptance, to be negotiated prior to any contract award, in the technical evaluation report.

10. Authorisation

This document has been seen and accepted by:

Name and surname	Designation
Nelson Luthuli	Senior Manager – PTM&C
Andre De La Guerre	Manager - Protection, DC, Metering and Measurements Technologies - TX
Deon Van Rooi	Manager - Protection, DC, Metering and Measurements Technologies – DX
Thomas Jacobs	Chairman - DC and Auxiliary Supplies Study Committee
Lerato Morife	Manager- Procurement - TX
Manie Van Staden	Senior Consultant Engineering - GX
Bathathu Jonga	DC and Auxiliary Supplies Technology and Support - TX
Refilwe Manamela	Senior Advisor- Procurement - GX
Hamus Lourens	Senior Advisor Maintenance & C&I
Enos Matjie	Senior Advisor, Technical Training, DX
Welman van Niekerk	Senior advisor Maintenance & C&I
Kelebogile Mchunu	Chairperson, Power Electronics Care Group
Ian Kuiler	Electrical Engineer, Gx Peaking
Christine Van Schalkwyk	Senior Engineer, Dx Western Cape OU
Wayne Pringle	Senior Technician – Transmission ET
Alpheus Majozi	Senior Advisor PTM&C
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11. Revisions

Date	Rev	Compiler	Remarks
March 2022	3	B. Jonga	• Re arranged the document, revised the type test tables to be user friendly. • Removed section on tender returnables, to be included on the enquiry letter. • Changed the Authorization list. • Removed tables on acceptable risks and unacceptable risks. • Re-numbered tables. • Inserted “Comply” column on Table 2. • Moved the Functionality Test and Demo paragraph and included on the factory evaluation checklist Annexure C. • Added deemed risk annexures to be signed by tenderers. • Changed heading of paragraph 3.3 to • Product Technical Schedules A&B Evaluation Criteria • Removed information that was not explaining how we are going to evaluate tenders to relevant contract documents like, *Goods information* and information by *Purchaser*.
Nov 2015	2	F Van Wyk	Enquiry for Power Electronics Updated
April 2015	1	F Van Wyk	Enquiry for Power Electronics
May 2022	1	M van Staden	Enquiry for Power Electronics

12. Development team

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

- Manie Van Staden

13. Acknowledgements

- Francois Van Wyk _ Original Document Author

Annex A – Technical Tender Returnable (Instructions to tenderers)

Tenderers shall supply the following information and supporting documentation:

1) Details regarding the make and model numbers of all offered equipment, auxiliary components, software, etc. Tenderers are to use the spreadsheet ".xls" for this purpose.

2) Back-to-back agreement letter between the tenderer and OEM, detailing the support by the OEM to the tenderer with the equipment and technical support for the duration of the contract period and support during design life of the equipment.

3) Completed Technical Schedule A&B for Phase Controlled Chargers as per Eskom standard 240-53114248, including any deviations.

4) Completed Technical Schedule A&B for Uninterruptable Power Supplies as per Eskom standard 240-53114248, including any deviations.

5) Completed Technical Schedule A&B for Switch Mode Chargers as per Eskom standard 240-53114248, including any deviations.

6) Completed Technical Schedule A&B for Uninterruptable Power Supplies (Modular) as per Eskom standard 240-53114248, including any deviations.

7) Compliance to Referenced Technical Standards (Annex B), including any deviations, with the associated declaration signed by the duly authorised Tenderer's representative.

8) Product manuals and data sheets for all products offered.

9) A schedule detailing the guaranteed turnaround time for the repair of faulty equipment.

10) CVs for *Key Resources* that will be involved during the development phase.

11) Details of improvements/firmware upgrades made on all offered equipment in the last 3 years.

Annex B – Method of Response to Technical Schedules A&B

Schedule A & Evidence Required: Purchaser's specific requirements

Schedule B, Evidence in Tender Returnables & Tenderer's Comments: Tenderer's guarantees and technical particulars of equipment offered

Tenderers shall not change the original content of the Technical Schedules A&B.

Tenderers are required to submit responses to all A&B schedule items.

Responses to A&B schedules shall be based on the requirement of Schedule A. "Comply" shall only be acceptable in response to a Schedule A requirement stating "Comply". Tenderers are to indicate 'Comply' in Schedule B where they are fully compliant to the requirement(s). Other items requiring a word, sentence or number response shall be responded to with reference to the actual capability of the equipment offered.

In cases where a product does not fully comply with a Schedule A requirement, the Tenderer shall respond by indicating either "Partially Comply" or "Do Not Comply", as applicable, in Schedule B and shall indicate the product's existing capability and/or reasons for non-compliance/deviations in the "Tenderer's Comments" column.

Note: Where a Schedule A requirement states 'Comply' against the heading of a section from the referenced Eskom standard - this means that compliance is required for all requirements specified under that section heading. In some instances, certain key requirements from or relating to these sections may also be listed separately under the ambit of that heading.

Supporting Documents for Verification

Certain responses to A&B schedule items may require verification by Eskom. Tenderers shall provide evidence for this verification by way of supporting documentation. The Tenderer shall submit a reference, including file name and page number, as well as the file location within the tender pack as to where evidence of the response is to be found. Eskom would prefer that tenderers use Hyperlinks on the A&B schedule excel document for verification of supporting documents.

References shall be made to the file name of the electronic copy of the supporting document, and the page number within that file (not necessarily the same as the page numbers printed on each page of the manual).

Annex C – Factory Evaluation Checklist

The support, facilities and services Checklist defined in this document is intended to assist with ensuring the required levels of support, quality and service can be achieved by the Tenderer through available proper facilities, resources and processes implemented in the routine operations of the Tenderer.

Familiarity with the technical requirements of the referenced documents is assumed, detailed technical requirements are not interrogated here.

Where any activities are contracted out and not handled in-house the contractors are to be evaluated and approved as well by the TET. These contractors will then also be linked to the contract if successful with the tender and as such cannot be changed on an ad hoc basis with prior consultation with Eskom.

The following questions will be evaluated by the Eskom technical evaluation team against the backdrop of this requirement.

Table C.1: Factory Evaluation Checklist

Company Name: …… Evaluator Name: …… Date: ……

Item	Criteria	Eskom Evaluation	Details if not fully compliant	Score
1	**Support, facilities, services and quality (where applicable, would include sub-contractors for metal and/or installation and commissioning)**			
1.1	Tenderer to provide the history of the company (presentation and/or brochures).			
1.2	Tenderer to provide company structure and organogram.			
1.3	Tenderer to provide a list of employees who will be working on the contract and their relevant skills and qualifications.			
1.4	Tenderer to provide previous experience with manufacturing or integration of battery chargers, UPS's or similar type equipment. A table that lists all the projects, customers/companies, project quantities, project costs, types of equipment manufactured, completion date and the details of the project leader/company representative (name and contact number) shall be provided.			
1.5	Tenderer to provide the 'layout' diagram of the manufacturing premises (factory layout). The diagram must use an 'A3' page size or larger.			
1.6	The Tenderer to provide examples of chargers and UPS's or similar type equipment manufactured or supplied. The examples could either be physical equipment or photographic evidence attributable to the Tenderer.			
1.7	In-house assembly and testing: Assembly and test procedures are documented, with required inspection and test results.			
1.8	Tenderer to provide evidence for a similar product for the documentation including evidence of the order, test results, as-built drawings, quality checklist and proof of delivery.			
2	**Mechanical (Tenderer/Steelwork supplier)**			
2.1	Does the Tenderer or Steelwork Supplier have the deemed adequate production facilities?			
3	**Installation and commissioning (Tenderer/sub-Contractor)**			
3.1	Does the Tenderer or sub-Contractor have the deemed adequate experience to install and commission the equipment.			

Item	Criteria	Eskom Evaluation	Details if not fully compliant	Score
4	**Storage, Loading and Transportation**			
4.1	Does the Tenderer have proper loading and off-loading transport with cranes?			
4.2	Goods crating ready to be transported comply with Eskom standards.			
4.3	Storage facilities for incoming goods and material, work in progress and completed stock are acceptable.			
5a	**Functionality test / demonstration commodity, do for each**			
5.1	Password protection			
5.2	Different charge modes (voltage and current range)			
5.3	Operation of different charge modes in line with the standard			
5.4	Current sharing			
5.5	Loss of controller - revert to rectifier settings and continue with uninterrupted operation			
5.6	Calibration of equipment - loss of calibration			
5.7	Remote communications via GSM modem - settings changes & firmware upgrade			
5.8	Blocked fan filter test - check operation			
5.9	Check all alarms			
5.10	Temperature Compensation			
5.11	Hot Pluggability			
5.12	Events Log			
5.13	Statistics Log			
6	**Documentation and Quality Control**			
6.1	Works orders for work in progress are available.			
6.2	Approved working drawings and/or instructions for the work in progress are at hand.			
6.3	Works orders can be traced to customer orders.			
6.4	Stock in hand can be traced customer orders.			
6.5	Delivered items can be traced back to process records and test certificates.			
6.6	Incoming goods inspection is documented for all incoming goods.			
6.7	Specifications for items and materials are to be at hand for use by inspectors as required.			
7	**Non-Conforming goods**			
7.1	Processes are in place to deal with non-conforming goods by rework or disposal.			
7.2	Non-conforming goods are clearly segregated.			
7.3	Records showing the process are available.			

Annex D – Deviations to Referenced Technical Standards

Tenderers are to indicate any deviations by indicating on the table below Yes or No OR No Tender under the deviations Column to the referenced Eskom standards in the 'Deviation's worksheet' of the applicable product on the "PE Enquiry 2022 Schedule A and B.xls".

Table D.1: Deviations to Referenced Technical Standards

	Document No.	Document Title & Revision	Deviations (Yes/No/ No Tender)
1.	240-53114248 Rev 3	Phase Controlled Chargers Technical Schedules A&B on the "PE Enquiry 2022 schedule A and B.xls" submitted?	
2.	240-53114248 Rev 3	Switch Mode Chargers Technical Schedules A&B on the "PE Enquiry 2022 schedule A and B.xls" submitted?	
3.	240-53114248 Rev 3	UPS Technical Schedules A&B on the "PE Enquiry 2022 schedule A and B.xls" submitted?	
4.	240-53114248 Rev 3	UPS Modular Technical Schedules A&B on the "PE Enquiry 2022 schedule A and B.xls" submitted?	
5.	240-53114248 Rev 3	Converters Technical Schedules A&B on the "PE Enquiry 2022 schedule A and B.xls" submitted?	
6.	240-53114248 Rev 3	Inverters Technical Schedules A&B on the "PE Enquiry 2022 schedule A and B.xls" submitted?	

Declaration

The completed Table D.1 Deviations acknowledges that any and all deviations to the referenced Eskom standards have been indicated in the technical schedules and is binding in terms of this proposal.

Signed by_____ Signature_____

Date_____

Annex E – Type Tests Tables

Table E.1: Thyristor charger typed tested range of products

Indicate type tested product by providing date and revision of the following standards, SANS 1652; IEC 60146 and SANS62040				
Thyristor Battery Chargers				
	24V	48V	110V	220V
15A				
30A				
50A				
75A				
100A				
150A				
175A				
200A				
300A				
400A				
500A				
600A				
750A				
1000A				
1250A				
1500A				
1750A				
2000A				

Table E.2: Switch Mode charger typed tested range of products

Indicate type tested product by providing date and revision of the following standards, SANS 1652; IEC 60146 and SANS62040				
Switchmode Battery Chargers				
	24V	48V	110V	220V
15A				
30A				
50A				
75A				
100A				
150A				
175A				
200A				
300A				
400A				
500A				
600A				
750A				
1000A				
1250A				
1500A				
1750A				
2000A				

Table E.3: UPS typed tested range of products

Indicate type tested product by providing date and revision of the following standards SANS 1652, IEC 60146 and SANS62040.					
UPS					
	0.5 hr	1 hr	2 hr	4 hr	6 hr
5 KVA					
10 KVA					
15 KVA					
20 KVA					
30 KVA					
40 KVA					
50 KVA					
60 KVA					
80 KVA					
100 KVA					
120 KVA					
160 KVA					
200 KVA					
300 KVA					

Table E.4: Modular UPS typed tested range of products

Indicate type tested product by providing date and revision of the following standards SANS 1652, IEC 60146 and SANS62040.					
UPS					
	0.5 hr	1 hr	2 hr	4 hr	6 hr
5 KVA					
10 KVA					
15 KVA					
20 KVA					
30 KVA					
40 KVA					
50 KVA					
60 KVA					
80 KVA					
100 KVA					
120 KVA					
160 KVA					
200 KVA					
300 KVA					

Table E.5: Converters and Inverters typed tested range of products

Indicate type tested product by providing date and revision of the following standards, SANS 1652; IEC 60146 and SANS62040					
AC to DC Converters					
	220VAC/12VDC	220VAC/24VDC	220VAC/48VDC	220VAC/110VDC	220VAC/220VDC
10A					
20A					
30A					

Indicate type tested product by providing date and revision of the following standards, SANS 1652; IEC 60146 and SANS62040					
DC to AC Converters					
	12VDC/220VAC	24VDC/220VAC	48VDC/220VAC	110VDC/220VAC	220VDC/220VAC
10A					
20A					
30A					

Indicate type tested product by providing date and revision of the following standards, SANS 1652; IEC 60146 and SANS62040				
DC to DC Converters				
	24VDC/12VDC	48VDC/12VDC	110VDC/12VDC	220VDC/12VDC
10A				
20A				
30A				

Indicate type tested product by providing date and revision of the following standards, SANS 1652; IEC 60146 and SANS62040				
DC to DC Converters				
	110VDC/110VDC	110VDC/24VDC	110VDC/48VDC	220VDC/48VDC
10A				
20A				
30A				

Indicate type tested product by providing date and revision of the following standards, SANS 1652; IEC 60146 and SANS62040				
DC to DC Converters				
	220VDC/110VDC			
10A				
20A				
30A				