



Utility Services Department – Energy and Electricity Division

BID NAME

Tender for the manufacture, testing, supply, delivery and off-loading of miniature sub-stations (MSS), suitable for use in areas accessible to the public: as and when required for 3 year period.

BID NUMBER

(USD EE 08-2021.22)

1. PROJECT SCOPE

1.1 Description of the goods

This specification covers the CoT minimum requirements for the manufacture, testing, supply, delivery and offloading of miniature substations (MSS), suitable for use in areas accessible to the public, on as and when required basis. Tender will be awarded per item.

MSS shall be manufactured in accordance with the requirements of the latest edition of SANS 1029. Only new MSS will be accepted. Each MSS shall be supplied complete with plinth.

The standard transformer power ratings for MSS with copper windings shall be:

- a) Item 1: 315 kVA MSS;
- b) Item 2: 500 kVA MSS;
- c) Item 3: 630 kVA MSS;
- d) Item 4: 800 kVA MSS.

1.2 Procurement Strategy

1.2.1 Programme of delivery

The tenderer's quote must include the cost for the manufacture, testing, supply, delivery and off-loading of the goods. The goods must be delivered in the City of Tshwane stores on as and when required basis.

The delivery period is as follows, taking into account the lead time for manufacturing;

Item 1: Maximum delivery period is 8 weeks after the purchase order is issued.

Item 2, Item 3 and Item 4: Maximum delivery period is 12 weeks after the purchase order is issued.

1.2.2 Tests and Inspection

Test

Bidders must submit certified copies of test reports with the tender documents. Goods must be tested in accordance with the requirements of the following:

1. SANS 1029:2010 Miniature substations for rated A.C voltages up to and including 24kV.

2. SANS 1874:2011 Metal-enclosed ring main units for rated AC voltages above 1kV and up to and including 36kV.

Certified copies of test reports must be submitted with the Returnable Documents of the tender. Test certificates shall have been carried out by a SANAS accredited institute. Failure to comply with these requirements will regard the tender as non-responsive and will lead to tenderer being disqualified.

Inspection

After the contract is awarded, a prototype MSS shall be manufactured and approved by the CoT Test Section before full scale production of MSS can commence.

Annexure C (to be provided upon awarding of tender), must be completed by the manufacturer before testing by CoT test section.

1.2.3 Drawings

Drawings of the locking mechanism of the doors are attached. The Tenderer must supply detail of the offered mechanism. Deviations will only be allowed if stipulated in the Schedule of Deviations.

1.3 Delivery of the goods and shipping instruction

MSS shall be delivered to the City of Tshwane stores as and when required and shall be delivered within the specified period as stipulated in the official purchase order.

The delivery period is as follows, taking into account the lead time for manufacturing;

Item 1: Maximum delivery period is 8 weeks after the purchase order is issued.

Item 2, Item 3 and Item 4: Maximum delivery period is 12 weeks after the purchase order is issued.

Failure to deliver within the stipulated period shall be deemed to be in contravention of the General Condition of Contract.

1.4 Applicable National and International Standards

Latest editions of the following specifications shall apply, test reports must be submitted with the tender, and such reports must show compliance thereto.

- SANS 1029:2010 Miniature substations for rated A.C voltages up to and including 24kV.
- SANS 1874:2011 Metal-enclosed ring main units for rated AC voltages above 1kV and up to and including 36kV.

1.5 Particular / Generic Specification

The requirements of SANS 1029: 2010 shall apply, particularly, but not limited to the clauses in section 4 and section 6 of SANS 1029:2010.

***Note the numbering of the clauses below has been extracted from SANS 1029: 2010 unaltered.**

1.5.1 General Requirements (extracted from SANS 1029:2010 clause 4 unaltered.)

Annexure A forms: Schedule A and B refers to specific requirements.

In Annexure A forms, specific requirements are listed in Schedule A column, tenderers are required to complete Schedule B column for evaluation purposes.

- i. MV switchgear ratings: the requirements of SANS 1874:2011 and Schedule A (Annexure A) apply.
- ii. :The nominal MV voltage of the MSS: 11kV.
- iii. The lightning impulse level: list 2.
- iv. Rated maximum power
 - a) 315 kVA
 - b) 500 kVA
 - c) 630 kVA
 - d) 800 kVA

1.5.1.2 Design and construction requirements:

- i. MSS type B is required.
- ii. MSS dimensions required: Type B, Fig C.5.
- iii. MSS with metering: not required.
- iv. MSS design: modular design.
- v. MSS Base: Removable section required.

1.5.1.3. Materials

- i. Enclosure: mild steel.
- ii. LV Assembly structural parts: mild steel

1.5.1.4. Doors

The requirements are as follows:

a) The three point locking mechanism shall be operated by a round centre disk (refer drawing) fitted with 12mm rods extending into the top and bottom of the enclosure frame. A flat bar of dimensions 30 x 5mm affixed to the rods.

The centre disk shall have a (minimum) thickness of 15mm and a diameter of 100mm. In the locked position the outside handle must be in the correct position to accept a padlock in the standard handle locking mechanism.

b) The night latch shall be installed so that the cylinder assembly tongue shall automatically fit into the disk cut out when the door handle is moved to the closed position.

The cylinder assemblies shall be provided and installed by the MSS manufacturer and must be in accordance with the standard key code of the CoT.

c) Door handle: A lockable padlock cover, (provided with hinges to swivel on top), is required which shall be installed over the cylinder assembly and door handle.

Door handle: Refer to drawings

d) Locking mechanism hinges wind stay: Hinge protection latches which latch behind the kiosk frame shall be installed for when the door is in the closed position. The latches shall prevent the doors from being opened by vandals.

1.5.1.5 Transformer

Compliance: The requirements of Schedule A apply.

1.5.1.6. Protection against corrosion

Mild steel: the treatment, coating and painting shall be specified by the manufacturer in schedule B.

1.5.1.7 Colour: Avocado (C12).

1.5.2. Electrical requirements: (extracted from SANS 1029:2010 clause 6 unaltered.)

1.5.2.1 Earthing

- i. The requirements of Schedule A apply.
- ii. MSS LV assembly: separate LV busbar required.

1.5.2.2 MV Compartment:

Equipment in MV compartment to be mounted: compact RMU.

RMU requirements: refer Annexure A: SANS 1874: Schedule A and B.

(i) Clause 4.3.5.1 applies. (Integral cable test facilities accessible from the front of the RMU and independent of the cable termination enclosure shall be provided for the two SD).

(ii) Where removable short-circuiting connections are provided for cable earthing (e.g. a removable star point connection), the re-instatement of these connections following cable testing shall not require the use of tools and/or the application of specific torque settings. This implies that no bolted connections are accepted. It

shall not be possible to close the cable test facility if the short-circuit connections have not been re-instated. It shall not be possible to physically remove the short-circuiting connections from the switchgear. Consideration should be given to measures intended to prevent theft of the short-circuiting connections.

(iii) Where test probes are required in order to carry out cable testing, a complete set of three test probes shall be supplied with each ring main unit and securely mounted at a readily accessible location on the inside of the kiosk or access door.

(iv) The RMU shall be supplied complete with unscreened separable connectors (USC) on the SD and screened separable connectors SSC on the CB comprising of a cable plug with bolted contact.

1.5.2.3 Termination of MV cables

- i. Cable sizes, 70-150 3C.
- ii. Cable support clamps: Termination of MV cables: Provision shall be made for the support (clamping) of two incoming (ring) cables in the MV compartment. Two (hexagon) adjustable cable clamps, manufactured from HDPE suitable for clamping cable sizes up to one 150 mm² 3-core PILC cables (refer figure C.12 (b) SANS 876.

1.5.2.4 Internal MV connections and terminations

The type of cable offered shall be stated in Schedule B.

1.5.2.5 Earth fault indicators: EFI shall be provided.

1.5.2.6 Internal arc classification: IAC shall be IAB-AB

1.5.2.7 LV Compartment: Internal LV connections and terminations (RMU and TX)

Please note the following requirements for internal connections.

The connections between the RMU and transformer shall be without phase cross or with phase cross as outlined below (if so specified in the order):

a) The terminal marked A or Red on the ring main unit must be connected to the terminal marked C on the primary side of the MSS transformer and be marked as the red phase.

b) The terminal marked B or White on the main ring unit must be connected to the terminal marked B on the primary side of the MSS transformer and be marked as the white phase.

c) The terminal marked C or Blue on the ring main unit must be connected to the terminal marked A on the primary side of the MSS transformer and be marked as the blue phase.

The low-voltage terminals of the MSS transformer must be connected to the main LV circuit-breaker by means of conductors without phase crossover or as follows:

- i) Terminal A - Blue phase.
- ii) Terminal B - White phase.
- iii) Terminal C - Red phase.
- iv) Terminal N - Neutral (black).

LV Assembly: General

- i. Busbars: finishing and colour coding shall be stated in schedule B.
- ii. Provision must be made to accommodate eight outgoing feeder bays suitable for 225A (JSO-type) MCCBs, (the MCCBs are not required).
- iii. Separate LV earth bar shall be provided: the requirements of Schedule A apply.
- iv. Gland plate: not required.
- v. V cable support: cable support rail is required. A cable support rail (e.g. uni-strut) shall be provided and fitted for LV cable support.
- vi. Feeder circuits: LV assembly: Provision for mounting eight 225A (type JSO) MCCBs. No MCCBs required.

Clauses 6.3.3.4.5 and 6.3.3.4.6 not required.

1.5.2.9 LV Equipment

- i. LV Indicating- with thermal maximum demand ammeters shall be provided for all three phases.
- ii. Voltmeter: One voltmeter shall be provided with a selector switch.
- iii. Energy meters: not required.
- iv. Clause 6.3.3.5.5 not required.
- v. Main LV MCCB: Required: 315kVA – 500A MCCB; 500kVA- 800A MCCB; 630kVA -1000A and 800kVA -1200A.
- vi. Socket outlet: Not Required.
- vii. LV compartment lamp holder: Not Required.

1.5.2.10 Streetlight compartment

The street lighting control panel shall be located adjacent to the MV kiosk and shall be constructed as follows:

- i) Shall be approximately 400mm in width and 200mm deep;
- ii) Shall have its own door and padlock which shall open from the front of the MSS, Door shall have the same locking mechanism as described above and indicated in the drawing.
- iii) The SL compartment shall be independent from MV and LV compartment.
The following electrical equipment shall be mounted on this panel:
 - a) Three 60A single-phase circuit-breakers (Centurion) and one 60A three-phase (Akasia) circuit-breaker, having breaking capacity of 10kA, shall serve as the main streetlight circuit breaker(s) and shall be labelled "MAIN CIRCUIT BREAKER". These circuit breaker(s) must be connected between the LV busbars via the terminal block to the circuit-breakers and the three-phase contactor.
 - b) Two 5A single-phase circuit breakers with a breaking capacity of 10kA curve1. The first labelled "CONTROL CIRCUIT" used as a main supply for the control circuit, and the second labelled "BYPASS SWITCH" used for switching the streetlights for testing purposes.
 - c) One 60A three-phase contactor with a 230 volt coil for the streetlight control unit.
 - d) Temperature sensing equipment: Not Required.

1.5.2.11 Auxiliary equipment

Clauses 6.3.3.6.1 to 6.3.3.6.11: Requirements of Schedule A apply.

- i. Transformer vector group: Dyn11.
- ii. The MSS transformer bushings shall not be accommodated in the MV RMU compartment.

1.5.3 TESTS (extracted from SANS 1029:2010 clause 7 unaltered.)

INSPECTION AND TESTING OF A MSS" form, Annexure C, must be completed by the manufacturer before testing. CoT Test Section shall conduct routine testing on all MSS.

1.5.3.1 Tests on painted surfaces: Paint thickness to be verified to SANS2808 shall be specified by manufacturer in Schedule B.

1.5.4 Marking, labelling and documentation (extracted from SANS 1029:2010 clause 8 unaltered.)

1.5.4.1 Labels: Method of attaching labels shall be specified by the manufacturer in Schedule B.

Clause 8.2 Nameplates

1.5.4.2 Safety notices and warning signs: Clause 8.3.1 to 8.3.3 apply

1.5.4.3: Specific safety notices: The following safety notices shall be provided:

- i) The main circuit breaker shall have a trafalite plate engraved with: "Alive", mounted on the supply side.
- ii) The LV busbars shall be color-coded in the colours of red, yellow, blue and black by a clearly visible painted-on spot at least 20 mm diameter.
- iv) The MV and LV compartment doors shall be labelled with "MV" and "LV", respectively. Note that "MV" and not "HV" shall be used for the MV compartment doors. The labels shall be clearly and indelibly stencilled on both the inside and outside of all the compartment doors.
- iv) The LV streetlight compartment door shall be labelled with "STREETLIGHT COMPARTMENT". The labels shall be clearly and indelibly stencilled on outside of the streetlight compartment door.
- v) The primary voltage, secondary voltage, 'kVA' rating and vector group shall be marked on the MSS transformer, e.g. "11kV/420V; 500 kVA; Dyn11". The markings shall be black and in characters larger than 50 mm high.
- vi) The MSS nameplate, having dimensions of 50X200mm, manufactured from trafalite, shall be located on the inside of the MV compartment door.

1.5.4.4 Labels

Clauses 8.4.1 to 8.4.13 apply

1.5.4.4 Documentation

The following requirements and Schedule A apply.

i) Schedule B (Annexure A) and the Deviation Schedule (Annexure B) must be completed by the tenderer and submitted with the tender.

ii) The "Inspection and testing of MSS" form, Annexure C, must be completed by the supplier/manufacturer and forwarded to TS before the MSS is permitted to leave the factory.

Safe-keeping of documentation:

iii) Provision shall be made for the safe-keeping of all relevant documentation (i.e. the installation, operating and maintenance instructions for the ring main unit and all routine test certification) on the inside of the MSS MV compartment door.

Clauses 8.6.2 to 8.6.8 apply

1.5.5 Packaging, transport and delivery

Method used to attach and detach supports shall be specified by the manufacturer in Schedule B.

1.5.6 Transport and delivery

The following requirements apply:

i) The MSS shall be delivered and off-loaded complete with plinth to the CoT SCM stores depot.

2 DELIVERABLES

Bidders are required to comply to the following requirements, failure to comply with these requirements will lead to the bidder being disqualified.

1. Bidders must submit certified copy of the test reports of the goods tested from an accredited testing institution.
2. Annexure A, technical schedules A and B which must be completed in full with ink, bidders must not refer to brochures or any attached document. Failure to comply will result in the bidder being disqualified

3 STAGES OF EVALUATION

Stage 1: Administrative Compliance

Stage 2: Pre-Qualification

Stage 3: Local Content Participation

Stage 4: Technical compliance of the goods

Stage 5: Preference Point System

3.1 ADMINISTRATIVE COMPLIANCE

All the bids will be evaluated against the administrative responsiveness requirements as set out in the list of returnable documents.

3.2 LOCAL CONTENT PARTICIPATION

The tenderers will be evaluated on the compliance of the minimum threshold for local production and content for the required goods as per Regulation 8 (1) of the PPPFA, 2017

DESCRIPTION	LOCAL CONTENT %
Steel	100%
Transformers	90%

3.3 TECHNICAL COMPLIANCE OF THE GOODS

- a) In Annexure A forms, the information provided by bidders in schedule B shall be evaluated against the CoT minimum requirements in schedule A. Failure to comply with the requirements as stipulated will result in a bidder being disqualified for the items which there is non-compliance.
- b) The submitted certified copies of the type test report of the goods from an accredited testing facility shall be evaluated for compliance. Failure to comply with the requirements as stipulated will result in a bidder being disqualified for the items which there is non-compliance.

3.4 PREFERENCE POINT SYSTEM

Preferential points to be used will be the 90/20 points system in terms of the Preferential Procurement Policy Framework Act, 2000 (Act 5 of 2000) Regulations 2017.

- 90 points for price
- 10 points for B-BBEE status (service provider to submit the certified copy of the B-BBEE level rating certificate).

4 TYPE OF AGREEMENT REQUIRED

Service Level Agreement

5 VALIDITY PERIOD

The validity period for the tender after closure is 90 days.

6 PRICING SCHEDULE

The tender will be awarded per Item.

ITEM	SHORT DESCRIPTION	UNIT Price VAT Exclusive	VAT	Unit Price VAT inclusive
1	MSS 315KVA with copper windings			
	SAP item number: 100000000628			
2	MSS 500KVA with copper windings			
	SAP item number: 100000000629			
3	MSS 630KVA with copper windings			
	SAP item number: 100000000630			
4	MSS 800KVA with copper windings			
	SAP item number: 100000000631			

7 MARKET ANALYSIS

The city of Tshwane reserves the right to conduct market analysis. Should the city exercise this option, Where a tenderer offers a price that is deemed not to be viable to supply goods or services as required, written confirmation will be made with the tenderer if they will be able to deliver on the price, if a tenderer confirm that they cannot, The tenderer will be disqualified on the basis of being non-responsive. If they confirm that they can deliver, a tight contract to mitigate the risk of non-performance will be entered into with the service provider. Further action on failures by the supplier to deliver will be handled in terms of the contract including performance warnings and listing on the database of restricted suppliers.

The city further reserves the right to negotiate a market related price with a tenderer scoring the highest points. If the tenderer does not agree to a market-related price,

the city reserves the right to negotiate a market-related price with the tenderer scoring the second highest points, if the tenderer scoring the second highest points does not agree to a market-related price, negotiate a market-related price with the tenderer scoring the third highest points. If a market-related price is not agreed, the city reserves the right to cancel the tender.

9. DRAFT SERVICE LEVEL AGREEMENTS

Attached