Specifications for the supply and installation of a Containerised Microgrid at Uitenhage Complex

To be supplied by consultant/contractor:

- 1 x Container, size = 6 m (D-DT-5282 sheets 1A or 1C depending on the soil conditions.)
- Solar PV = 180 x 550 W = 99 kW_{peak} *(Preferably, there should be at least 180 x panels to match the inverter size, such that the inverters can operate at near 100 % capacity from the PV.)*
- Inverter 2 x 50 KW = 100 KW (Three Phase)
- Back-up battery energy storage system, with battery management system as per capacity spec above. Batteries need to be rack mounted for adequate ventilation. Capacity = 240 kWh.
- Automatic change-over switch to accommodate (solar and mains supply)
- DVR/Video Surveillance
- CCTV Surveillance with Intruder Detections as per 240-91190304 Specification
- Corrosion protection shall be applied to the shipping container or any other metallic enclosure according to 240-75655504
- The container shall be earthed as indicated in drawing D-DT-4407 sheet 1D.

Supply and install Fire Detection and Suppression System in the container

The fire detection and suppression system equipment shall comply with the following Standards:

a) SANS 10139 Code of practice for design, installation, commissioning and maintenance of fire detection and alarm systems in non-domestic premises.

b) SANS 14520 Gaseous Fire Extinguishing Systems – Physical Properties & System Design

c) SANS 15779 Condensed Aerosol fire extinguishing systems – General Requirements

Supply and install Air Conditioner in the container

The air conditioning systems shall comply with the requirements of 240-82172806, Standard for Air Conditioning in Distribution Substation Buildings and Telecommunication Sites.

Remote Engineering Access

Supply and install the network equipment as per below:

a) The Microgrid should have a local HMI for local monitoring.

b) The Microgrid should have the ability to be integrated into our existing IT infrastructure.

c) The monitoring system should give the ability to not just monitor and control but also extract various file types for integration into Our existing Architecture.

Site Works Preparation

Consultant/contractor to assess site, supply and install as per works below:

Provide detailed drawings to Eskom of all relevant assemblies and connections, and provide the necessary manuals before commencement of works on site.

The consultant/contractor to identify and expose, where relevant, all existing underground services on site and necessary mitigating actions to be taken.

Site to be prepared as per Eskom civil engineer's instruction before any earthworks are undertaken.

All earthworks to be carried out in accordance with SANS 1200 DA.

The consultant/contractor shall timeously submit field and laboratory test results of relative compaction densities as required to the Eskom civil engineer.

Supply and install the galvanised Steel carport frame to fit the solar panels

Position the container under the steel carport frame to prevent direct sunlight. Otherwise, provide a solid shading, covering the top portion of the container and overlapping the container top portion by at least 400 mm on all four sides.

Connect the the Solar PV cables into the Microgrid

Consultant/contractor to do all the civil works for the Microgrid and the galvanised steel frame .

Earthing, plinth and fencing to be done on site.

Consultant/Contractor to do the PV assembly and connect the cable to the Electric Vehicle (EV) kiosk.

All container foundations must have the same top level.

All PV structure foundations must have the same top level.

PV support structures shall be earthed through the foundations as indicated on D-DT-5240 sheet 6

After the earth grid and earth tails have been installed and after herbicide has been applied, the whole kerbed area shall be covered with 26mm - 38mm crushed stone to a thickness of 100mm (240-108982466).

<u>Structure direct lightning stroke protection</u>

a) As a minimum LPL II direct lightning stroke protection in accordance with SANS 62305 shall be provided for.

b) The air termination system dimensions shall be determined by making use of the rolling spere method.

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Sign: