**Description**:

**Solar System expansion (Specification is attached)**

* Adding three more off grid Hybrid Inverters to the current system which will increase the capacity to Clear 60 KW.
* Adding more 48 Batteries deep cycle heavy duty to the current system with total of 144 (each 2V Batteries 1000Ah), to increase the power supply source of the office which will allow to keep on more ICT devices during the night.
* Adding 110 Solar Panel over the current panel.
* Isolating totally the power room totally and add two more ACs each 1.5 ton (1070 W).
* Redistributing the racks of batteries in the Solar Power room and install new lock for the door (figure print).
* Procure Desktop to be dedicated for monitoring the Solar system.

DESCRIPTION

* Supply, install, test and commission Solar Modules of 400 Wp • Minimum 144 cell configuration with wattage ranging from 400W or moor as per given drawings and engineers instructions.
* Supply, install Solar Panel Base, Site visit is required to identify the

location and Space to exactly specify type of base required

for the solar panels, Sample specs provided here as per given drawings and engineers instructions."

* Supply, install, test and commission the necessary electrical cables to connect solar modules together and to the combiner as well as inverters to have a complete operational circuit, Conduits, cable trays, trucking, earthing system and complete Main Junction Box according to the drawings and engineer's instruction and approval
* Supply, install, test and commission inverter 10KW,3p 400-800 VDC with MPP charge controller 14850w, parallel operation to 6 units.
* Supply, install, test and commission of combiner box as per given drawings, specification and engineers instructions
* Supply, install, test and commission deep cycle 2V Batteries 1000Ah or more (REX-1000 Carbon)) Batteries Manufacture date not older than one Year (preferred 3-6 months). cell batteries as per given drawings and engineers instructions. The price include supply and install hot galvanized steel stand with shelve.
* Supply, install, and commissioning battery protection box.
* Supply, install, and commissioning 120A, 4P Change over switch (ATS) as per engineer's instruction and approval
* Supply, install, and commissioning L.V C. B panel for input and output inverters.
* Air conditioner: Supply, install, operate and testing 2 ACs with all related requirements that includes the following specs:

- 2 Air Conditioners R-410a refrigerant 1.5 ton for power Room

- connected to circuit breaker 16 A two contactors 22 amp 3 poles,

- 1 Timer controller and contactor to control the operating hours of both ACs each to operate 12 hours per a day only,

- automatic operating board included for both ACs, if the power goes off the board will automatically power on the ACs after the power source come back

- item include the outdoor units, cabling of the ACs with installation

- item include all the related civil work required to complete this item as per the standard.

- including all other related requirements according to the technical specifications and instructions the supervising engineer.

- Item include the installation Labelling, documentation, diagramming and testing to ensure that the items is functioning properly. Item included the commissioning of power outlets for ACs".

Other Requirements:

• Offers should include all relate installation requirements and materials for Monitoring & Controlling the solution.

• Offers must include installation plan, Timeframe, Scope-of-work details and presented professionally.

• Detail information about items and materials used (All Items should be approved prior to the implementation).

• Providing installation Diagrams for the solution and AC and DC cables path.

• Other Instructions from UNFPA Electrician must be followed and implement at the time of installation.

• Warranty should be at least 3 years for all procured equipment

• Penalty should implement in case for delay the delivery

• Provide the manual for each items.

Remarks:

* A Site Visit is required to identify the exact requirements, The high of the solar panel’s Base will be according to our needs depends on our engineer recommendation, the high will start from 150 cm and 4 m or up.
* All cables from the solar panels to the MPPT should be of high-performance photovoltaic single core cables approved according to UL Subject 4703 or TÜV 2 PfG 1169/08,2007 standards,
* Important Notes: Cables Length to be calculated by the supplier according to their site visit. , Cables Try Length to be calculated by the supplier according to their site visit.
* The new solar system must be Compatible with the old solar system.