1.0 Transfer of Contract:

1.1 The contract is not transferable on any account whatsoever.

1.2 Any request for transfer of contract shall be treated as non performance or breach of contract and the EMD or SD, as the case may be, shall be liable for forfeiture.

2.0 Taxes and Duties:

2.1 The price finalised for contract shall be NETT, FOR destination basis, i.e. inclusive of GST, P & F charges, Taxes at the rate ruling as on the date of finalization / award of contract.

2.2 Thereafter any variation or introduction of Sales Tax or cess in statutory levies like Excise Duty, Sales Taxes or GST on finished product or the raw material/s during the contract period, the same shall be applicable & come into effect as per Government Notification.

2.3 Any claim of contractor / supplier for revision in respect of Cess, Surcharge on Duty, Taxes & GST should be supported by relevant Govt notification/s order.

3.0 Guarantee on quality of goods :

3.1 The supplier shall have to guarantee the quality of goods supplied, strictly as per specification of contract / purchase orders.

3.2 If the material supplied is found not as per contract / purchase order specification, the material shall be liable for rejection. On intimation from the TUMUL the contractor shall have to arrange replacement material as per specification. If the supplier delays / fails to make arrangement to replace the goods, TUMUL may make arrangement to procure the goods from alternative source. Any extra expenditure incurred on this alternative arrangement shall be debited to the account of supplier under contract.

3.3 If supplier fails to make good this loss, the same shall be recoverable from the pending bills or security deposit.

3.4 The Contractor shall not indulge in supplying the rejected / returned materials. If the contractor is found indulging such practice the Contract shall be liable for cancellation, forfeiture of security deposit and black listing of firm.

4.0 Indemnity:

4.1 The contractor shall have to indemnify and also keep indemnified the TUMUL against any or all damages or losses etc., caused to TUMUL, arising from any omission or commission defaults of contractor / supplier, for which TUMUL shall not be responsible in any manner whatsoever.

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SECTION V: SCHEDULE OF REQUIREMENTS

(To be inserted in the Tender Documents by the Purchaser, as applicable. The Schedule should cover, at a minimum, the required items, quantities, services, delivery period(s) and earnest money deposit (EMD)

Sl. No.	Brief Description	Unit	Quantity	EMD Rs.	Sec. Deposit Rs.
1	**Supply, Installation, Testing And Commissioning of Solar Power Pack For Various Co-Operative Milk Societies In Tumkur Milk Union As Per Our Terms And Technical Specification**	**Unit**	**10**	**8,750-00**	**5% of the order value**

Note:

1. The work should be completed within 60 days from the date of issuing of work order.
2. The bidder should be quote price inclusive of all taxes, duties, packing forwarding, loading, unloading, transportation, installation and commissioning to F.O.R destination.

PAYMENT TERMS:-

1. **60%** payment will be made after satisfactory supply of material to the site.
2. **30%** payment will be made after successful installation and duly certified by the concerned section of the union and after making necessary stock entry at Stores of the Union.
3. Balance **10**% payment will be made only after submission of performance Bank Guarantee of any Nationalized Bank **valid for the warrantee period plus three months from the date of successful installation and commissioning** of the unit, which is equal to balance amount of **10 %.**

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Supply, Installation, Testing And Commissioning of Solar Power Pack For Various Co-Operative Milk Societies In Tumkur Milk Union As Per Our Terms And Technical Specification

1. Location

The proposed solar power packs are needs to be installed at various woman co-operative Milk producers societies situated across Tumkur District.

2. Objectives & Requirements

To ensure uninterrupted power supply during milk procurement secessions at various woman co-operative Milk societies, where grid power supply interruption is too high there by necessitating need for consistent power supply during the periods of interruptions and also with an objective to utilize abundantly available non-conventional sources (solar energy) of energy. KMF Proposed to install the Solar Power Packs for the below specified load requirement.

Sr No.	Load Requirement	Capacity	Power Back up period
1	A E M T	85W x 1 No.	3 Hrs Per Day
2	Electronic Weighing Machine	6 W x 1 No.	3 Hrs Per Day
3	LED Light	7 W x 1	3 Hrs Per Day
4	LED Light	5 W x 1	3 Hrs Per Day
5	Battery Backup	3 Days of Autonomy	

3. Scope of the Work :

The scope is including Design, Supply, Installation and Commissioning of Solar Power Pack which as follows:

- Supply of Solar Power system comprising SPV panel with mounting structure, Battery & battery stand, charge controller, inverter Junction boxes, cables etc.,
- Installation, testing & Commissioning of Power system with necessary mounting arrangements for solar Panel.

4. Design Basis :

The Solar Power pack system shall be designed based on following factors:

- The Power system shall be designed to mount on roof top / space available on / near the existing society building to the connected load for the proposed system.
- The power pack system shall work with Solar (SPV) panel & battery
- The battery shall be for SPV Application 12VDC, 110AH, C-10 Rated.

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- The average Sun shine of 5 Peak hours a day – the data published by any Government agencies or reputed institutions about the Sun Shine hours and sun radiation levels across Karnataka shall be considered.
- The wind velocity of 150 km per hour and above, shall be considered while designing the Solar panel mounting arrangement (mounting - fixed type angle system) and associated equipments placed on the roof top to ensure trouble free operation.

5. **TECHNICAL SPECIFICATIONS**

The solar power pack system shall consist some of the following main components/accessories:

1	Solar Photovoltaic Panel with mounting bracket and GI Pole	100Wp	01 Set
2	Charge Controller	15Amps	01 No.
3	Inverter	300 Watts	01 No.
4	Battery with mounting trolley /stand	110AH	01 No.
5	Instrument cum Switch Board comprising the following 1. 2 Nos DC Switches for Lighting, 2. 1 DC Socket 3. 1AC Socket 4. 1 AC Switch etc. and internal wiring.	Size350x350x 120mm	01 set.
6	LED Luminary with Light	DC 12 Volts, 7 Watts	01 No.
7	LED Luminary with Light	DC 12 Volts, 5 Watts	01 No.
8	PV Cable	2.5 Sqmm	01 Lot
9	Other accessories such as PVC Conduits, saddles junctions boxes etc. Complete for one unit.	std	01 Lot

5.1 Solar Photo Voltaic Panel (SPV panel) with mounting arrangement:

The SPV Panel shall be made up of Multi crystalline Silicon cells and designed to withstand tough environment conditions, and by employing lamination technology using established polymer (EVA) as back sheet.

The module shall be made of high transmissivity front glass to give high encapsulation gain and silicon rubber edge sealant for module protection, mechanical support and moisture proofing. Which shall be as per MNRE standards and must have certificate of testing confirming to IEC 61215 edition 2/BIS 14286 from an NABL or IECQ accredited laboratory.

The module frame shall be made of anodized aluminum for corrosion resistance. The capacity of the SPV panel shall be minimum 100 Watts peak and above and its conversion efficiency should be equal to or greater than 15% at an average Sun shine of 5 Peak hours a day

Appropriate capacity as per the standard design with 24 Volts and keeping in mind of the voltage surge necessary suitably rated bypass diodes shall be provided. The SPV panel shall be fitted with Junction box and cable leads for connecting to the charge controller for supplying the controlled voltage to the Battery, and load etc complete.

The SPV module shall be provided with RF identification tag (RFID) which shall be as per JNNSM – MNRE guide lines and shall withstand harsh environment conditions.

SPV module manufacturers and certifications including - Name of the Manufacturer of the SPV module, month and year of manufacture ring, country of origin, I-V curve for the module, peak wattage, Im, Vm and FF for the module, Unique serial number and model number of the module, date & year of obtaining IEC PV modules qualification certificates, name of the test laboratory issuing IEC certificate etc shall be attached.

Make: TATA BP/BHEL/EMVEE /KOTAK or Equivalent make with type test certificate for similar type, capacity issued by reputed Government/National / International agencies to ensure the specified parameters.

Panel mounting frame and GI Pipe

The mounting frame shall be made of hot dip galvanized MS angles fixed with GI Pipe of size not less than 50 mm x 50 mm x 6 mm size and above, All nuts & bolts shall be made zinc passiviated. The SPV panel to be positioned at the specified angle based on sun light radiation.

The frame shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time it will withstand wind speed minimum 150 km per hour as per IS 875.

5.2 Charge Controller

The charge controller shall be suitable designed to meet the SPV capacity and shall be incorporated with maximum power point tracker to maximize energy drawn from the Solar PV panel and have the following features .

- Terminals for dc Voltage form SPV, Battery and Lighting and other loads
- Indications Sun, Battery & Load.
- Protections from over load, over charging, surges, etc..

The MPPT shall be microprocessor based or appropriate type suitable for the said application to minimize power losses.

The charge controller should be designed for charge regulation of storage battery and safeguard the battery against over charge and deep discharging the voltage cut off (end cell voltage) should be up to 75 – 80 % of the fully charged battery capacity.

The lower limit of the cut off voltage should not be less than 11.4 V, the charge controller should reconnect the load when the battery gets fully charged the difference in this two voltage set point should be neither too small nor too large to avoid the relay chattering. A reverse blocking diode shall be provided to prevent the discharge of the battery in rainy season and in night.

The various functions should be displayed through LED indicator, indicating the operations being carried out by the controller such as low battery, warning sign (Yellow), load current off (Red), Battery charge (Green), the light indicator of lower voltage should be lower at 11.6 V. The indicator should be fixed on the front side of the charge controller.

The charge controller shall be fitted with protection against short circuit, lighting, reverse polarity surge etc. along with a switch fuse protection. The PCB of the controller should be coated with the glassy epoxy and all the connector indicator should be covered with transparent hard plastic sheet screened properly. Adequate protection is to be incorporated under no load condition too.

5.3 Inverter:

Inverter technology shall be Pulse width modulation technology using MOSFET/IGBT power devices For Maximum Power Efficiency. Inverter should capable for supply AC Supply at 50HZ by taking 12 VDC

- POWER -300Watts
- Input -12Volts DC
- Output -230Volts AC, 50Hz,
- With all necessary protection and indications.

5.4 BATTERY

The battery shall be lead acid type, tubular and it should confirm to latest BIS/ International standards. The capacity of the battery shall be 110AH with C/10 rating 12Volts DC, The battery shall be suitable to charge from the voltage generated out of SPV panel fed through MPPT/ controller. While sizing the end cell voltage, VAH value, DOD and temperature de-rating factors shall be considered.

The Battery shall be placed in a suitably designed MS fabricated, Powder coated, painted, rack or trolley having required space for DC voltage cable connections, maintenance of battery etc.,

Make: EXIDE/AMARON/ ROCKET / Equivalent

5.5 Instrument cum Switch Board

MS fabricated, Powder coated box of Size 350x350x 120mm to having protections from Dust, dirt, moisture etc.. suitable to house the following provisions

a) Charge controller-01 No.
b) Inverter -- 01No.
c) 1No. of DC Output socket with switch
d) 2Nos of switches for Controlling of DC LED Lights
e) 2Nos of AC Output sockets with switches
f) Internal wiring.

5.6 LED Luminary

Single lamp, Chip set type White LED luminary shall be provided with necessary electronic protections and with proper heat sink to dissipate heat generated by LED lamp. The Colour temperature of the W- LED should be in the range of 5500 – 6500 K. The minimum LUX level is when measured at the periphery of 4 meter diameter from a height of 4 meter is 15 LUX and the illumination should be uniform without dark bands or abrupt variations and soothing to the eye. The LED light should not emit Ultra Violet light.

The voltage of LED light is minimum 7& 5 watts and the luminous individual performance of LED used should not be less than 110 lumen per Watt when measured Luminaire as whole. The light output from the White LED light source should be constant throughout the duty cycle. The LED lamp should be housed in an assembly suitable for indoor use. The temperature of the LED should increase not more than 15^0 above ambient temperature. This condition should be compiled even after 2 hours of operation at its maximum operating voltage the white LED should be of high quality and should stands for minimum 50,000 hours of operation. If the luminary fails the whole should be replaced with the new one within guarantee period. The lumen output of W-LED should remain same throughout the warranty period and LM – 80 certificate shall be provided.

Make; HAVELLS/WIPRO/PHILIPS/CROMPTON GREAVES/AYANA

5.7 Cables and accessories

All the cables shall be supplied conforming to IS 1554 / 694 Part 1 of 1988 & shall be of 650 V/ 1.1 kV grade as per requirement. Only polyethylene copper cables shall be used. The size of the cables between array interconnections, array to junction boxes, junction boxes to charge controller / inverter etc shall be so selected to keep the voltage drop and losses to the minimum.

Cables shall be of either polycab/havells/ Finolex make. Scope of the work also includes cable/wiring in a suitable pvc conduits, jumction boxes with necessary bends saddles etc.. as per standard electrical practice.

6. **Erection & Commissioning**:

The Solar power system should be installed at various woman cooperative societies. All wiring should be in proper conduit or capping case and ensure that wires should not be hanging loose.

If any minor item which is not included in the scope of supply but required for proper installation and efficient operation of the power system shall be provided and should be considered as the part of the job.

7. **WARRANTY**

- All the components and parts used in the Solar power systems should conform to the latest BIS or IEC specifications,
- The warranty card to be supplied with the system must contain the details of the system.
- Batteries will be warranted for a period of 3 years from the date of supply.
- SPV modules will be warranted for a period of 15 years from the date of supply.

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8. **Notes to the Bidder:-**

1. The tenderer/ bidder to carry out Shadow Analysis at the site so that optimal usage of sun energy could be planned.
2. The bidder shall submit the detailed technical specifications of Solar power system as compliance report including consideration SPV panels, Battery, charge controller, inverter etc., complete as against our technical specifications and bidder shall also mention if any deviations to be carried out and reason there of.
3. Any deviation in the technical specification has to be clearly mentioned and it is the decision of KMF to accept OR reject.
4. The successful bidder shall have to complete the work within 2 months after receiving a firm Work Order.
5. The bidders have to provide warranty services for a period of one years after acceptance by KMF.
6. A tender, not complying with any of the above conditions is liable to rejection. Incomplete proposal is liable to be rejected.
7. The tenderers are requested to go through the Terms and Conditions, detailed in this document, before filling out the tender.
8. The Subsidy if any from MNRE/KREDL or any other central or state Government agencies shall be claimed by the bidder. The total percentage of subsidy & its amount shall be clearly mentioned in the tender and shall be enclosed to the commercial bid.
9. While unloading the equipments, Erection of Solar power system and commissioning all the issues related to safety of men, machinery and material shall be in the scope of the contractor. The work shall be properly planned and executed in engineered manner. So all the necessary tools and tackles shall be arranged and used.
10. Documentation one set of user manual shall be supplied along with the each power plant. The manual shall include complete system details such as schematic of the system, charges controller, inverter details, working principle etc. Step by step maintenance and troubleshooting procedures shall be given in the manuals.
11. The tender/ bidder should submit one sample set of solar power pack along with the technical tender. The sample submitted shall meet the technical specifications as per the tender otherwise such tender shall be rejected.
12. Payment Terms.

    60% Payment after satisfactory supply of the material to the site (WDCS).

    30% After Installation and satisfactory functioning of the unit.

    10% Against the performance guarantee.

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SECTION VII : QUALIFICATION CRITERIA
(Referred to in Clause 11.2(b) of ITT)

1 The tenderer should be a manufacturer / dealer who must have manufactured, tested and supplied to the co-operative sector, large scale industries the equipment(s) similar to the type specified in the 'Schedule of Requirements'. The equipments offered for supply must be of the most recent series models incorporating the latest improvements in design and be in satisfactory operation for 3 months as on date of tender opening.

2. Tenders of tenderers quoting as authorized representative of a manufacturer, meeting with the above requirement in full, can also be considered provided:

3. The manufacturer furnishes authorization in the prescribed format assuring full guarantee and warranty obligations as per GCC and SCC;

4. They should be in the business for a minimum period of one year and should have supplied and commissioned successfully such equipments to well established organizations.

5. Proof of having supplied such equipments as indicated above shall be furnished along with the Technical Tender Part-I.

6. The supplier should submit annual turnover certificate.

7. The tenderer shall have the financial, technical and production capability to perform the contract.

8. Details of experience and past performance of the tenderer on equipments offered and on those of similar nature and details of current contract in hand shall be furnished.

9. The tenderer must have employed qualified service engineers to support service operation

10. The tenderer should furnish the information on all past supplies and satisfactory performance for both (1) and (2) above, in proforma under Section XII.

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