

**THE KERALA AGRO INDUSTRIES CORPORATION LTD  
(A Government Undertaking)**



**TENDER DOCUMENT FOR THE SUPPLY OF SOLAR SYSTEM COMPONENTS FOR  
ASSEMBLING UNIT AT TRIVANDRUM AND INSTALLATION OF ASSEMBLED UNIT AT  
VARIOUS DESTINATIONS ALL OVER KERALA.**

**TENDER NO. KAIC/HO/TECH/TVM/2016-17 DATED: 17.03.2017**

**THE KERALA AGRO INDUSTRIES CORPORATION LIMITED  
REGISTERED OFFICE; 'KISSAN JYOTHI', FORT,  
THIRUVANANTHAPURAM – 695 023  
Phone: 0471 – 2471343, 44, 45.  
Fax 0471 – 2463188  
e-mail: kaicohotech@gmail.com  
website: www.keralaagro.com**

**THE KERALA AGRO INDUSTRIES CORPORATION LIMITED**  
(A Government Undertaking)  
**‘KISSAN JYOTHI’, FORT, THIRUVANANTHAPURAM-695 023**  
Phone: 0471-2471343, 44, 45. Fax: 0471-2463188  
E-mail: [kaicohotech@gmail.com](mailto:kaicohotech@gmail.com)

**NOTICE INVITING TENDER**

Competitive tenders are invited only from empanelled contractors of KAICO (empanelled for supply of solar equipments) for providing Solar System Components required at Assembling Unit at Trivandrum as per the schedule and installation of the assembled unit at various destinations all over Kerala.

No	Description	Supply of Solar System Components For Assembling Unit at Trivandrum And Installation of Assembled Unit At Various Destinations All Over Kerala.
1	Tender No.	No. KAIC/HO/TECH/TVM/2016-17 Dated : 17/03/2017
2	Description of the item	Providing Solar System Components for Assembling Unit at Trivandrum And Installation Of Assembled Unit At Various Destinations All Over Kerala
3	Approximate Quantity	Details attached in the work schedule
4	Cost of tender documents	Rs. 25,000/-+VAT
5	EMD	Rs.12,50,000
6	Tender document download start date	<b>18.03.2017, 11 AM</b>
7	Tender document download end date	<b>25.03.2017, 3PM</b>
8	Bid submission start date	<b>18.03.2017, 12PM</b>
9	Bid submission end date	<b>25.03.2017, 4PM</b>
10	Date and time for opening the Technical Bid tender	<b>25.03.2017, 5PM</b>

Tender Forms can be downloaded from the website [www.keralaagro.com](http://www.keralaagro.com). Managing Director, The Kerala Agro Industries Corporation Ltd reserves the right to reject any or all Tenders without assigning any reason thereof. Details can be obtained from office of the Managing Director, The Kerala Agro Industries Corporation Ltd., “Kissan Jyothi”, Fort, Thiruvananthapuram-695023 during working days from 18.03.2017 to 25.03.2017 (Ph: 0471 2471343 – 45. Fax no. 04712463188)

Thiruvananthapuram-17.03.2017

**MANAGING DIRECTOR**

**THE KERALA AGRO INDUSTRIES CORPORATION LIMITED**

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**REGISTERED OFFICE; 'KISSAN JYOTHI', FORT,  
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ASSEMBLING UNIT AT TRIVANDRUM AND INSTALLATION OF ASSEMBLED UNIT AT  
VARIOUS DESTINATIONS ALL OVER KERALA.**

**Scope of Work**

The scope of the obligations and various operations to be carried out by successful bidder in terms of this contract shall include but not be limited to the following:

- a. The bidder shall supply the materials as per the specifications enclosed herewith and directions of Engineers of the Kerala Agro Industries Corporation Limited at the time of supply. PV modules of the bidder should have valid qualification test certificate as per prevailing standards.
- b. Installation of assembled unit at various destinations described as per list.
- c. The tenderer should be completed the above works within 3 months after issuing work order. However 20% of work should be completed within 15 days from the date of issuing work order.
- d. Shall provide performance guarantee for the supplied items for 24 months from the date of completion of supply and necessary service and maintenance support as required by the Corporation free of cost.
- e. Provide Power output warranty of 90% for 10 years and 80% at 25 years of minimum rated power output. Provide warranty of 5 years for Electronic systems and battery bank, from the date of delivery.
- f. The work should be completed satisfactory at the agreed time. However 20% of work should be completed within 15 days from the date of issuing work order.
- g. Supply of manual for Operation and Maintenance of all the system in English.
- h. Training to the user for operation and maintenance of the system after Installation and commissioning.
- i. Loading, Transportation, Unloading of all equipments from Works to Site.
- j. The scope of supply shall also include comprehensive insurance, storage & in-transit transportation.

- k. Any additional works not covered above, but necessary for the functioning of the system and required as per specification incorporated. The terms of minor nature, which are not mentioned, shall be incorporated by the bidder.

### **Content of Tender Documents:**

Tender offers should be submitted in the prescribed tender form only. It should be super scribed as **“Tender for the supply of solar system components for assembling unit at Trivandrum and installation of assembled unit at various destinations all over Kerala”** and addressed to the Managing Director, The Kerala Agro Industries Corporation Ltd., Kissan Jyothi, Fort P.O, Thiruvananthapuram-695 023.

**Tenders should be submitted for Technical Bid and Price Bid in separate sealed covers clearly super scribing as “Technical Bid” and “Price Bid”.**

Technical Bid should contain all the following documents.

- a. Copy of duly signed and sealed Tender form, preliminary agreement executed in Kerala stamp paper worth Rs. 200/- in the prescribed Performa and duly signed and sealed declaration form.
- b. Copy of catalogues and certifications like ISO.
- c. Copy of duly filled Schedule A & B.
- d. Copy of Test certificate/Report received from testing centre authorized by Government of India
- e. Copy of Address proof of the Registered Office of the Company & PAN & TIN details.
- f. Copy of Memorandum and Articles of Association.
- g. Copy of list of materials supplied in similar type of works giving satisfactory performance with proof, details of the services extended, list of tools to be supplied along with the system.
- g. Copy of records showing the soundness of the financial position of the tenderer (Balance sheet of last three financial year).
- h. List of technical staff in their employment and their qualification.
- i. Complete list of tools & machineries and equipment owned by the tenderer.

j. Copy of dealership certificate issued from the manufacturer for supplied materials( In the case of approved dealer)

k.The period, terms and conditions of free service, warranty/guarantee

l. DD for EMD, cost of tender document .

The other cover should be superscribed “Price Bid” and should contain the rate quoted in the prescribed form.

Tenders should be submitted in sealed covers only. Covers which are sealed properly affixing seals on sealing wax and tape only will be treated as sealed covers. Covers, which are closed by staplers without seal, will not be considered and will be rejected.

### **Eligibility Criteria:**

Tenders are to be submitted only by the contractors who are empanelled by the Kerala Agro Industries Corporation for the supply of solar equipments and having prior experience in the relevant field.

### **Documents Establishing Tender’s Eligibility:**

- a. Copy of records showing the soundness of the financial position of the tenderer (Balance sheet of last three financial year).
- b. Copies of Supply Order’s and completion / satisfactory report in support of the prior experience in the relevant field.
- c. Copy of list of materials already supplied giving satisfactory performance with proof, details of the services extended.
- d. If the tenderer is the manufacturer, then scanned copy of proof showing the same should be submitted.
- d. If the tenderer is the authorized dealer of a manufacturer, then the scanned copy of Dealership certificate issued by the manufacturer for the supply and installation of work, should be submitted

### **Cost of Tender Document :**

Tenderer shall remit Rs. 25,000+ VAT as cost of the tender document by way of DD drawn infavour of Managing Director, The Kerala Agro Industries Corporation Limited and payable at Thiruvananthapuram and **submit along with the Technical Bid Tender** . The cost of the tender document is not refundable.

**Earnest Money Deposit (EMD) :**

Tenderer shall remit Rs. 12,50,000/- by way of DD drawn infavour of Managing Director, The Kerala Agro Industries Corporation Limited and payable at Thiruvananthapuram and **submit along with the Technical Bid Tender ..**

Tenders without EMD or Tender fee or preliminary agreement will be rejected.

The EMD will be forfeited to Corporation in case after submitting the tender, the tenderer withdraws his offer or fails to execute the agreement when called for to do so.

The EMD of the tenders who have not qualified in the bid will be refunded after finalizing the contract.

EMD shall not bear any interest.

**Deadline for submission of Bids :**

The tenders should be reached office of the Managing Director, The Kerala Agro Industries Corporation Ltd., “Kissan Jyothi”, Fort, Thiruvananthapuram-695023 and the cost of the tender document and EMD shall be submitted along with on or before **25.03.2017** at **4.00 PM** ie.bid submission end date .Any Tender reached after the due time on this date will be rejected.

**Opening of Tender:**

The tender will be opened, evaluated and shortlisted as per the eligibility and technical and financial competency as per specification.

Technical bids would be opened on **25.03.2017**at **5.00 PM**

In case the date of opening of tender happens to be a holiday, it will be opened on the next working day at the same time and place.

Those bidders whose bids conform to the requirements given in the eligibility criteria will be treated as qualified.

The decision of Corporation will be final in this regard.

After evaluation of the Technical Bid those tenderers who qualify will be invited at the time of opening of Price Bid. The price bid of only those tenderers which technically qualify as per specification would be opened. The date of opening of the Price Bid will be intimated to the technically qualified bidder later.

**Clarification on Tender Documents:**

Should the tenderer notice any discrepancy or error in the statement made, or quantities or units shown against items, he shall immediately bring it to the notice of Corporation and obtain the clarification before submitting the tender.

**Amendment of tender documents:**

Corporation may modify the bid documents at its own initiative by an addendum /amendment. Such addendum/amendment will be published in the Corporation's website, and shall be binding upon the tenderers. The bid shall be furnished taking into account the addendum/amendments, if any, issued as mentioned above and any failure in doing so will lead to consequences including rejection of bid for which Corporation will not be responsible. Corporation may extend the last date for the submission of bids at its discretion.

**Validity:**

The Tenders should be valid for 180 days from the date of opening of Financial Bid.

**Security Deposit:**

- The successful tenderers will have to execute agreement in Kerala stamp paper worth Rs.200/- in the prescribed form and in the prescribed manner and furnish a security deposit of 5% of the total value of contract. Any exemption on payment of security deposit would be allowed based only on production of Exemption Certificate by the Government.
- Security Deposit shall not bear any interest.

- **Release of Security Deposit:-** Security deposit unless forfeited to the company in part or in full, will be refunded after the contract has been fulfilled and after meeting all the contractual obligations.

### **Performance Guarantee :**

The successful tenderer will have to provide performance guarantee amounting to 10% of the contract amount, by way of Bank Guarantee/DD covering the period of warranty, subject to a minimum period of 24 months from the date of completion of the work.

### **Warranty & Guarantee:**

- The tenderer shall warrant as per standards for quality that anything to be supplied shall be free from all defects and faults in material, workmanship and manufacture, shall be the highest grade and consistent with established and generally accepted standards for material of the type ordered, shall be in full conformity with the specifications, drawings of samples, if any and shall if operable, operate properly. This warranty shall survive inspection of, payment for and acceptance of the goods.
- In addition to the warranty as already provided, the tenderer shall guarantee satisfactory performance of the equipment and shall be responsible for the period or up to the date specified in the specification hereof after the equipment has been accepted by the Engineer to the extent for any defects that may develop under the conditions provided for by the contract and under proper use and shall remedy such defects at his own cost when called upon to do so by the Corporation in writing in what respect the equipment faulty.
- The tenderer shall also, during the warranty period, assume all responsibilities for direct damages covering personal injury, or property damage caused by manufacturing defects resulting on the failure of the equipment being supplied.

### **Payment Terms:**

- a. 50% of the cost of the items supplied after the receipt of the items in good quality as per specification.
- b. 30% of the cost of the items supplied will be paid after installation, commissioning and trial run.



- c. 10% of the cost of the items supplied three months of successful functioning of the plant
- d. The balance 10% after completion of the warranty of 24 months from the date of successful trial run.
- e. An advance payment of maximum 20% of the contract value may be considered to the supplier against Bank Guarantee for the same amount. This advance amount will be adjusted in the first installment.

**Installation, Testing, Commissioning and Safety:**

The installation of the PV arrays, Inverters and other components should be as per the prevailing IEC standard. After completion of installation work, the installed system shall be on trial runs for a 10 clear sunny days to test smooth functioning of system in every aspect. Only after satisfactory inspection by a Technical Committee, the system shall be assumed as commissioned.

**Documentation:**

The following documents should be submitted to the Corporation by the successful bidder.

- One set of operation manuals complete with drawing, parts list (with part codes) circuit diagrams with list ratings of components and list of do's and don'ts for the main equipment as well as the sub-systems.
- One set of maintenance manuals with full information on drawings, circuit diagrams, list and suppliers addresses for bought out parts, troubleshooting charts, programs of built in controllers etc. for the main equipments as well as for the sub-system.
- These manuals should be in the form of hard (printed) copy in English Language
- A certificate for the adequacy of the manuals should be obtained and provided with the manuals. Such certificate must be signed by the QA engineer of the manufacturer.

**Submission of bills/invoices:**

Bills addressed to Managing Director, Kerala Agro Industries Corporation, Thiruvananthapuram-23, are to be submitted in triplicate to the Consignee along with all documents, advance stamped receipt etc.

**Refusal to accept the items supplied:**

In case the materials supplied are of lower quality than the specified, the Corporation shall have the right to reject such materials. In such cases, the successful tenderer will have to remove the items immediately at their own expenses and materials conforming to the specification

should be supplied afresh. Supply of lower quality items will also be entailed as sufficient reason to terminate the contract and blacklist the firm.

### **Right to Accept Or Reject The Tender:**

The right to accept the tender in full or in part/parts will rest with Corporation. Tenders not accompanied with prescribed information or are incomplete in any respect, and/or not meeting prescribed conditions, shall be considered as nonresponsive and are liable to be rejected. Corporation reserves the right to accept or reject any bid or a part of the bid or to annul the bidding process and reject all bids, at any time prior to award of contract without assigning any reason whatsoever. If the bidder gives wrong information in his tender, the Corporation reserves the right to reject such tender at any stage or to cancel the contract.

Corporation reserves the right to reject any or all the tenders in part or full without assigning any reason whatsoever. Corporation does not bind itself to accept the lowest tender. The Corporation reserves the right to award the work to a single party or split the work amongst two or more parties as deemed necessary without assigning any reason thereof. The Contractor is bound to accept the part work as offered by Corporation after split up at the quoted/negotiated rates

### **General Conditions:**

- A. Work should be completed within three months from the date of issuing work order.
- B. The quantity tendered is as per estimate. However, the Corporation reserves the right to alter the quantity at the time of execution.
- C. Corporation reserves the right to reject any or all the tenders in part or full without assigning any reason whatsoever. Corporation does not bind itself to accept the lowest tender. The Corporation reserves the right to award the work to a single party or split the work amongst two or more parties as deemed necessary without assigning any reason thereof. The Contractor is bound to accept the part work as offered by Corporation after split up at the quoted/negotiated rates

The tenderer should sign the tender form each page at the end in token of the acceptance of all the terms & conditions of the tender.

- D. The tenderer shall furnish free of charge all labour, tools and materials required for inspection and measurement of the materials supplied from time to time by the Corporation in default whereof the costs and expenses in such inspection or measurement shall be to the account of the tenderer.
- E. The Corporation will have the full right to reject any or all the tenders without assigning any reason whatsoever and is not bound to accept the lowest tender. The Corporation also reserves the right to award the contract to more than one contractor.
- F. Any disputes arising out of or in any way connected with this Tender shall be deemed to have arisen in Kerala and only Courts in Thiruvananthapuram shall have jurisdiction to determine the same.

For THE KERALA AGRO INDUSTRIES CORPORATION LTD.

MANAGING DIRECTOR

**Signature of the Tenderer**

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**TECHNICAL SPECIFICATION OF SOLAR PV SYSTEM WITH BATTERY**

System shall be with battery backup. Above system operation shall be as below.

During the day time, when the sun is available in plenty the load will be fed by the solar system and the batteries also will get charged by the solar supply. When the sun shine in less/not available, then the load will be fed by the EB supply. When the EB supply is not available load will be fed by the battery.

The settings /options can be selected in two ways as given below

- a. Solar – Grid – Battery
- b. Solar – Battery – Grid

The above option can be selected by user as per the requirements, based on the critical nature of the load. In case, the load is more than the capacity of solar system, excess load shall be supported by the grid.

**TECHNICAL SPECIFICATIONS**

**1. SPV MODULES:**

Type and Quality

The total Solar PV Array Capacity for SPV Power Plants shall be 5KWp/10KWp. Polycrystalline type solar modules of desired nominal voltage or peak power rating which meet specifications are considered appropriate for inclusion in this offer. Modules will be supplied with a warranty that fabrication is in compliance with the standards approved by MNRE. 200/220/240/250WP or any other capacity modules which have the IEC Certification shall be

used. Solar cells / modules used have a proven record for the performance in actual field conditions.

Make	: PV Power Tech /Radiant/Other MNRE approved Indian make
Type	: 250 or above wattage
Peak Power Output(STC)	: 250 or above wattage
Maximum Current(STC)	: 8.31/8.32A DC
Maximum voltage(STC)	: 30.06V/37.1V DC
Dimension in mm	: 1987x989x50MM(65.2”x38.97”x1.65’)
Type of Cell used	: Polycrystalline Silicon.
Maximum System voltage	: 1000/600V

**Preferred Makes Include: SMA, DELTA, REFUSOL, STURDER, Optimal Power, or Equivalent.**

### **ARRAY SUPPORT STRUCTURE**

Modules shall be mounted on a non-corrosive support structure suitable for site conditions. The inclination angle of the array support structure shall be in accordance with the latitude of the place of installation. No provision for adjusting inclination angle is required. The array structure is made out of hot dipped galvanized steel for protection from /resting . The Structure shall be constructed on the top, car parking area and the solar modules will be facing the south direction. Structural fabrication shall be such a way that to with stand the wind load of 150 Km/h and will be capable of withstanding a weight of 60/kg/sq m.

## **POWER CONDITIONER UNIT(PCU)**

The power conditioning unit will convert DC power produced by SPV array into AC power. The capacity of PCU for 5KWp,10KWp Power Plant shall be 5KVA, 10KVA respectively.

Protections:

The following protections shall be provided:

- Inverter continuous overload protection
- Inverter peak current (short circuit) protection
- Heat sink over temperature protection
- Over/ under voltage AC voltage protection
- Over/under frequency protection
- Over/under battery voltage protection

## **DC DISTRIBUTION BOARD**

5KWp,10KWp SPV Power plant shall has the DC Distribution Board which receives the Dc output from SPV array through Junction Boxes, which shall be terminated on copper bus bars of suitable capacity MCB shall be provided for controlling DC power output from PV array.

## **AC DISTRIBUTION BOARD**

5KWp,10KWp SPV Power plant shall has the DC Distribution Board which controls the AC power from PCU to loads. Suitable rating MCB's shall be provided to control various load points.

## **JUNCTION BOXES**

The junction boxes shall be provided in PV array field in each plant for termination of connections from various arrays:

Features:

- Made of FRP

- Dust and vermin proof
- Suitable MOV's shall be provided for high voltage surge
- Copper bus bars of suitable rating

## **CABLES**

- Cabling in each plant will be carried out as per IE rules.
- Cable Marking: All cables/wires shall be marked with good quality ferule for cable identification.
- Cable Ends: All connections shall be made through suitable cable lugs/tags crimped properly and with the use of cable glands.

All cables shall be :

- Multi stand ,annealed high conductivity copper/aluminium conductor
- Overall PVC insulation for UV protection
- Armored cables for underground laying
- All cable shall conform BIS Standards

## **BATTERY**

The battery to be offered shall fully comply with the following standards with five year warranty:

1. Solar C10 Tubular battery
2. BS EN 50272-2:2001 (Safety requirement for secondary batteries and battery installations. Stationary batteries)
3. ISO 9001 (quality ) and ISO 14001 (environmental management)

Make : Exide/ Southern/ Any other MNRE approved batteries

Suitable battery bank shall be provided for backup of AC load

- Modules are proposed to be installed on ground or terrace over a structure at suitable height.
- The design and detailed layout of the module mounting structures should be submitted with the technical bid.

- The support structure and the foundation shall be designed to withstand wind speed up to 200kmph.
- The clearance of the lowest part of the module structure & the developed ground level shall be 1 meter.
- The module alignment & tilt angle shall be calculated to provide the maximum annual energy output. This shall be decided based on the location of array installation and vendor shall clearly indicate the details in the Technical bid.
  - All fasteners (nuts and bolts) should be made of stainless steel only.
- PCU/inverter shall be capable of complete automatic operation including wake-up, to monitor plant performance
- The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard IEC codes
- The PCU/ inverters should be tested from the MNRE approved test centers / NABL /BIS accredited testing- calibration laboratories.
- In case of imported power conditioning units, these should be approved by international test houses.
- Module Technologies where +ve or -ve grounding is required needs to be identified by bidder and accordingly selection of PCU needs to be done by bidder

### **Cables for carrying Power and Control**

- The power cable shall be stranded copper/ aluminum conductor, UV resistant (for outdoors) PVC type. The cables shall, in general conform to IS-1554 Part-I & other relevant standards.
- Control Cables: The cable shall be 1.1kV grades, heavy duty, stranded copper conductor, PVC type A insulated, galvanized steel wire/strip armored, flame retardant low smoke (FRLS) extruded PVC type ST-1 outer sheathed. The cables shall, in general conform to IS-1554 Part-I & other relevant standards.
- The permissible voltage drop from the SPV Generator to the PCU shall not be more than 2% of peak power voltage of the SPV power source (generating system). In the light of this fact the cross-sectional area of the cable chosen is such that the voltage drop introduced by it shall be within 2% of the system voltage at peak power.



- All connections should be properly terminated from outdoor and indoor elements. Relevant codes and operating manuals must be followed. Extensive wiring and terminations (connection points) for all PV components is needed along with electrical connection to lighting loads.

### **Earthing Material**

- The system should be provided with adequate earthing points. This includes earthing for lightning, system grounding, separately for DC and AC active points. The frame of the PV module array should be earthed at multiple points.
- To prevent the damage due to lightning, one terminal of the lightning protection arrangement by way of proper earthing is to be provided. The provision for lightning & surge protection of the SPV power source is separately earthed.
- In case the SPV Array installed in the field separate earth has to be provided for SPV array and System at closer points of the array and the equipment respectively. It shall be ensured that all the earthing are bonded together to prevent the development of potential difference between any two earthing.
- The earthing conductor shall be rated for the maximum short circuit current. & shall be 1.56 times the short circuit current. The area of cross-section shall not be less than 1.6 sq mm in any case.
- The array structure of the PV modules shall be grounded properly using adequate numbers of earthing pits. All metal casing/ shielding of the plant shall be thoroughly grounded to ensure safety of the personal and power plant.
- Automatic ground fault protection circuits to be installed to monitor any unwanted current flow to the ground and should active to prevent any damage.
- The SPV Power Plant should be provided with lightning and over voltage protection. The principal aim in this protection is to reduce the over voltage to a tolerable value before it reaches the PV or other sub-systems components. The source of over voltage can be lightning or any other atmospheric disturbance. The Lighting Arrestor (LA) is to be made on the basis of the necessary meteorological data of the location of the projects. Necessary foundation for holding the LA is to be arranged keeping in view the wind speed of the site and flexibility in maintenance in future. Latest grounding equipment should be used for this

purpose. Each LA shall have to be earthed through suitable size earth bus with earth pits.  
The earthing pit shall have to be made as per IS standards.

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**DESTINATION OF THE SPV PLANT TO BE INSTALLED AND THE CAPACITY REQUIRED**

<b>SL NO</b>	<b>INSITUATION</b>	<b>SITE ADDRESS</b>	<b>PROPOSED SYSTEM</b>	<b>ESTIMATED AMOUNT(RS)</b>
1	ITI	Govt ITI, Kanjirmkulam Neyattinkara	3 KWP Solar Plant With battery	478,050
2	ITI	Govt ITI, Kulakkada kollam	3 KWP Solar Plant With battery	478,050
3	ITI	Govt ITI, mariyappuram Neyattinkara	3 KWP Solar Plant With battery	478,050
4	ITI	Govt ITI, manakkad trivandrum	3 KWP Solar Plant With battery	478,050
5	ITI	Govt ITI, Panthalam Pathanamthitta	3 KWP Solar Plant With battery	478,050
6	ITI	Govt ITI, Palarivattam Ernakulam	3 KWP Solar Plant With battery	478,050
7	ITI	Govt ITI, mavelikkara Alappuzha	3 KWP Solar Plant With battery	478,050
8	ITI	Govt ITI, Madappally kottayam	3 KWP Solar Plant With battery	478,050

9	ITI	Govt ITI, mathuravelly kottayam	3 KWP Solar Plant With battery	478,050
10	ITI	Govt ITI, ochira Kollam	3 KWP Solar Plant With battery	478,050
11	ITI	Govt ITI, Haripad, alappuzha	3 KWP Solar Plant With battery	478,050
12	ITI	Govt ITI, vettykavala, kottarakkara	3 KWP Solar Plant With battery	478,050
13	ITI	Govt ITI, Koduman, Pathanamthitta	3 KWP Solar Plant With battery	478,050
14	ITI	Govt ITI, Kanakappalam kottayam	3 KWP Solar Plant With battery	478,050
15	ITI	Govt ITI, Muttapalam, varkala	3 KWP Solar Plant With battery	478,050
16	ITI	Govt ITI, kurichy, sachivothamapuram	3 KWP Solar Plant With battery	478,050
17	ITI	Govt ITI, madayi	3 KWP Solar Plant With battery	478,050
18	ITI	Govt ITI, Thuneri	3 KWP Solar Plant With battery	478,050
19	ITI	Govt ITI, Kuravanad	3 KWP Solar Plant With battery	478,050
20	ITI	Govt ITI, elathur	3 KWP Solar Plant With battery	478,050
21	ITI	Govt ITI, Pandikkad	3 KWP Solar Plant With battery	478,050
22	ITI	Govt ITI, Keraladheeswrampuram	3 KWP Solar Plant With battery	478,050
23	ITI	Govt ITI, pathiyikkara	3 KWP Solar Plant With battery	478,050
24	ITI	Govt ITI, palappuram	3 KWP Solar Plant With battery	478,050

25	ITI	Govt ITI, chittur	3 KWP Solar Plant With battery	478,050
26	ITI	Govt ITI, mangalam	3 KWP Solar Plant With battery	478,050
27	ITI	Govt ITI, Mayannur	3 KWP Solar Plant With battery	478,050
28	ITI	Govt ITI, enkakkad	3 KWP Solar Plant With battery	478,050
29	ITI	Govt ITI, pullot	3 KWP Solar Plant With battery	478,050
30	ITI	Govt ITI, Edathuruthi	3 KWP Solar Plant With battery	478,050
31	ITI	Govt ITI, nadathara	3 KWP Solar Plant With battery	478,050
32	ITI	Govt ITI, VR puram	3 KWP Solar Plant With battery	478,050
33	ITI	Govt ITI, herbert nagar	3 KWP Solar Plant With battery	478,050
34	ITI	Govt ITI, Erumapetty	3 KWP Solar Plant With battery	478,050
35	ITI	Govt ITI, cheruvathur	3 KWP Solar Plant With battery	478,050

SL NO	INSITUTION	SITE ADDRESS	PROPOSED SYSTEM	ESTIMATED AMOUNT(Rs)
1	Pre- Metric hostel	puliyoor, chengannur, alappuzha	5 KWP Solar Plant With battery	796,750
2	Pre- Metric hostel	chelakkara, thrissur	5 KWP Solar Plant With battery	796,750

3	Pre- Metric hostel	alathur, palakkad	5 KWP Solar Plant With battery	796,750
4	Pre- Metric hostel	kottai, palakkad	5 KWP Solar Plant With battery	796,750
5	Pre- Metric hostel	vaikom. Kottayam	5 KWP Solar Plant With battery	796,750
6	Pre- Metric hostel	perumbavoor, ernakulam	5 KWP Solar Plant With battery	796,750
7	Pre- Metric hostel	thalassery, kannur	5 KWP Solar Plant With battery	796,750
8	Pre- Metric hostel	thiruvalla, pathanathitta	5 KWP Solar Plant With battery	796,750
9	Pre- Metric hostel	shornur, palakkad	5 KWP Solar Plant With battery	796,750
10	Pre- Metric hostel	mayil, kannur	5 KWP Solar Plant With battery	796,750
11	Pre- Metric hostel	ambalapuzha, alappuzha	5 KWP Solar Plant With battery	796,750
12	Pre- Metric hostel	bandhiaduk, kasargode	5 KWP Solar Plant With battery	796,750
13	Pre- Metric hostel	rajappuram, kasargode	5 KWP Solar Plant With battery	796,750
14	Pre- Metric hostel	agali, attappadi, palakkad	5 KWP Solar Plant With battery	796,750
15	Pre- Metric hostel	parappanagadi, malappuram	5 KWP Solar Plant With battery	796,750
16	Pre- Metric hostel	mavoor, kozhikode	5 KWP Solar Plant With battery	796,750

17	Pre- Metric hostel	cheruthuruthi, thrissur	5 KWP Solar Plant With battery	796,750
18	Pre- Metric hostel	elathur, chellanur, kozhikode	5 KWP Solar Plant With battery	796,750
19	Pre- Metric hostel	north paravur, ernakulam	5 KWP Solar Plant With battery	796,750
20	Pre- Metric hostel	Engandiyoor, thrissur	5 KWP Solar Plant With battery	796,750
21	Pre- Metric hostel	vadakanchery, palakkad	5 KWP Solar Plant With battery	796,750
22	Pre- Metric hostel	kozhinjapara, palakkad	5 KWP Solar Plant With battery	796,750
23	Pre- Metric hostel	mundur (Girls), palakkad	5 KWP Solar Plant With battery	796,750
24	Pre- Metric hostel	Manjeri, Malappuram	5 KWP Solar Plant With battery	796,750
25	Pre- Metric hostel	Avidanallur(Male), Kozhikode	5 KWP Solar Plant With battery	796,750
26	Pre- Metric hostel	Sasthamkotta, Kollam	5 KWP Solar Plant With battery	796,750
27	Pre- Metric hostel	Pazhayangadi(Boys) , Payannur, Kannur	5 KWP Solar Plant With battery	796,750
28	Pre- Metric hostel	Karduk(Boys), Kasargode	5 KWP Solar Plant With battery	796,750
29	Pre- Metric hostel	Bankallam(Boys)Ka njamkaud, Kasargode	5 KWP Solar Plant With battery	796,750
30	Pre- Metric hostel	Kanjhankaud(Girls), Kanjhankaud, Kasargode	5 KWP Solar Plant With battery	796,750

31	Pre- Metric hostel	Manissery, Palakkad	5 KWP Solar Plant With battery	796,750
32	Pre- Metric hostel	Allanalur(Girls), Mannarcaud, Palakkadu	5 KWP Solar Plant With battery	796,750
33	Pre- Metric hostel	Chellanur(Female), Kozhikode	5 KWP Solar Plant With battery	796,750
34	Pre- Metric hostel	Kattappana(Girls), Idukki	5 KWP Solar Plant With battery	796,750
35	Pre- Metric hostel	Kunnathur,Kollam	5 KWP Solar Plant With battery	796,750
36	Pre- Metric hostel	Nedumangad, Trivandrum	5 KWP Solar Plant With battery	796,750
37	Pre- Metric hostel	Puthoor(Males), Kollam	5 KWP Solar Plant With battery	796,750
38	Pre- Metric hostel	Poruvazhy, Kollam	5 KWP Solar Plant With battery	796,750
39	Pre- Metric hostel	Kattanam, Alappuzha	5 KWP Solar Plant With battery	796,750
40	Pre- Metric hostel	Pala, Kottayam	5 KWP Solar Plant With battery	796,750
41	Pre- Metric hostel	Kuvapalli, Thodupuzha, Idukki	5 KWP Solar Plant With battery	796,750
42	Pre- Metric hostel	Munar(Girls), Idukki	5 KWP Solar Plant With battery	796,750
43	Pre- Metric hostel	Karimannoor(Girls), Idukki	5 KWP Solar Plant With battery	796,750
44	Post- Metric hostel	Amruthakulam Boys, Ernakulam	10 KWP Solar Plant With battery	1,276,500

45	Post- Metric hostel	Kannyannur Boys, Ernakulam	10 KWP Solar Plant With battery	1,276,500
46	Post- Metric hostel	Changanassery, Kottayam	10 KWP Solar Plant With battery	1,276,750



**THE KERALA AGRO INDUSTRIES CORPORATION LIMITED**  
(A Government Undertaking)  
REGISTERED OFFICE; „KISSAN JYOTHI“, FORT,  
THIRUVANANTHAPURAM-695 023

**TENDER NO. KAIC/HO/TECH/TVM/2016-17 DATED: 16.03.2017**

**TENDER DOCUMENT FOR THE SUPPLY OF SOLAR SYSTEM COMPONENTS FOR ASSEMBLING UNIT AT TRIVANDRUM AND INSTALLATION OF ASSEMBLED UNIT AT VARIOUS DESTINATIONS ALL OVER KERALA**

**PRELIMINARY AGREEMENT**

Articles of agreement executed on this the .....day of .....two thousand ..... BETWEEN the Kerala Agro Industries Corporation Ltd. (hereinafter referred to as “the Corporation”) of the one part and .....(T.H.E. name and address of the tenderer) (hereinafter referred to as “the bounden”) of the other part.

WHEREAS in response to the Notification No.....dated.....the bounden has submitted to the Corporation a tender for the ..... specified therein subject to the terms and conditions contained in the said tender.

WHEREAS the bounden has also deposited with the Corporation a sum of Rs.....as earnest money for execution of an agreement undertaking the due fulfillment of the contract in case his tender is accepted by the Corporation.

Now THESE PRESENTS WITNESS and is hereby mutually agreed as follows:

1. In case the tender submitted by the bounden is accepted by the Corporation and the contract for .....is awarded to the bounden, the bounden shall within.....days of acceptance of his tender execute an agreement with the Corporation incorporating all the terms and conditions under which the Corporation accepts his tender.

**Signature of the Tenderer**

2. In case the bounden fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, the Corporation shall have power and authority to recover from the bounden any loss or damage caused to the Corporation by such breach as may be determined by the Corporation by appropriating the earnest money deposited by the bounden and if the earnest money is found to be inadequate the deficit amount may be recovered from the bounden and his properties movable and immovable in the manner hereinafter contained.

3. All sums found to the Corporation under or by virtue of this agreement shall be recoverable from the bounden and his properties movable and immovable under time provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and in such other manner as the Corporation may deem fit.

In witness whereof Shri.....(T.H.E. name and designation) for and on behalf of the Corporation and Shri.....the bounden have hereunto set their hands the day and year shown against their respective signatures.

Signed by Shri.....(date).....

In the presence of witnesses:

1.

2.

Signed by Shri.....(date).....

**Signature of the Tenderer**

**THE KERALA AGRO INDUSTRIES CORPORATION LIMITED**

(A Government Undertaking)

REGISTERED OFFICE; „KISSAN JYOTHI“, FORT,  
THIRUVANANTHAPURAM-695 023

**TENDER NO. KAIC/HO/TECH/TVM/2016-17 DATED: 16.03.2017**

**TENDER DOCUMENT FOR THE SUPPLY OF SOLAR SYSTEM COMPONENTS  
FOR ASSEMBLING UNIT AT TRIVANDRUM AND INSTALLATION OF  
ASSEMBLED UNIT AT VARIOUS DESTINATIONS ALL OVER KERALA**

**DECLARATION**

1. I/We hereby tender to supply for the Kerala Agro Industries Corporation Ltd. the above mentioned description of item in accordance with the specifications and instructions contained in tender notification No..... as or as may be given by the Managing Director of the Kerala Agro Industries Corporation or his representatives in consideration of payment being made the quantity of the items supplied at the rate specified in the schedule enclosed therewith.
2. Should this tender be accepted, I/We agree to abide by and fulfill all the terms and conditions as outlined in the tender notice and to enter in formal agreement with the company in due course. Till such time, acceptance of this shall be deemed to be the contract.
3. The earnest money deposit given in the Notice Inviting Tender remitted by me, as the full value of which will be absolutely forfeited to the said Kerala Agro Industries Corporation Ltd or his successors in office without prejudice to any other rights or remedies of the said Kerala Agro Industries Corporation Ltd. or his successors in office should I/We withdraw this tender before final acceptance of successful tenders or in the event of its acceptance fails to pay the security deposit and to execute the agreement within the due date. I/We will not claim interests on this sum while it is in the custody of the Managing Director, The Kerala Agro Industries Corporation Ltd., “Kissan Jyothi”, Fort, Thiruvananthapuram-695 023.

**Signature of the Tenderer**

4. I/We also agree that the decision of the Managing Director, The Kerala Agro Industries Corporation Ltd., “Kissan Jyothi”, Fort, Thiruvananthapuram-695 023 regarding meanings and effects of this tender shall be final and legally binding.

5. I/We also certify that I/We have read and understood all the terms and conditions set in the Tender No. ....and I/We will be abide by all the terms and conditions set therein.

(Seal)

Signature of Tenderer with date

Name & Address

Signature of witness:

Name & Address :

**THE KERALA AGRO INDUSTRIES CORPORATION LIMITED**

(A Government Undertaking)

REGISTERED OFFICE; 'KISSAN JYOTHI', FORT,  
THIRUVANANTHAPURAM-695 023

**SCHEDULE "A" (TECHNICAL BID)**

1. Name and address of the Tenderer .....
2. Details of Certification if any .....
3. Annual Turnover .....
4. Details of services extended (Attach separately) .....
5. List of accessories / tools supplied .....
6. Service stations in Kerala .....
7. Warranty (attach warranty Scheme) .....
8. Income Tax account No. of the tenderer .....
9. Particulars of remittance of EMD .....

Date:

(Seal)

Signature of the Tenderer

**Signature of the Tenderer**

**THE KERALA AGRO INDUSTRIES CORPORATION LIMITED**

(A Government Undertaking)

REGISTERED OFFICE; 'KISSAN JYOTHI', FORT,

THIRUVANANTHAPURAM-695 023

**SCHEDULE "B" (TECHNICAL BID)**

**TECHNICAL SPECIFICATION**

**PV MODULE**

S	Parameter	Specification
1	Minimum PV Module Capacity	
2	Make	
3	No. of PV cells Per Module	
4	Power output tolerance	
5	Module Efficiency Mono-crystalline:	
6	Module Performance : Power Output Guarantee	
7	Fill Factor	
8	PV Module Type	
9	Temperature coefficient for power output	
10	Mounting arrangement for PV Module	
11	Cable gland at module junction Box	

12	Max Temperature rise of cell over ambient temperature	
13	Standards Certification	
14	Junction Box	
15	Front Glass	
16	Module frame	
17	Wind load withstand	
18	Module warrantee	

**POWER CONDITIONING UNIT(PCU)**

<b>SPP Capacity</b>	<b>Nominal PCU Output Rating</b>	<b>Nominal Battery Voltage</b>	<b>AC Output With 50 Hz frequency</b>	<b>Integrated MPPT Solar Regulator</b>
<b>Hybrid PCU for Battery Back-up Systems</b>				
PV array size 100kWp				
Output Regulation				
Surge Rating				
Minimum Efficiency above				

30% of load, Type of Loads	
Cooling	
Protections	

Control Type	
Nominal Capacity	
Acceptable Operating Range	
Certifications	
Communication Interface	



Operating Temperature Range				
Humidity				
Makes				
<b>SPP Capacity</b>	<b>Nomina I PCU Output Rating</b>	<b>MPPT Voltage Range</b>	<b>AC Output With 50 Hz frequency</b>	<b>Integrated MPPT Solar Regulator</b>
<b>For Grid Tied Systems</b>				
For 100kWp				
Minimum Efficiency above 30% input power				
Accuracy of AC voltage control				
Accuracy of frequency control				
Grid Frequency Synchronization range				
Maximum Input DC Voltage				
Ambient temperature considered				
Humidity				
Protection of Enclosure				

**Signature of the Tenderer**

## BATTERY

The bidder shall give the manufacturer's technical data with offer including the following

Model No and country of origin	
No.of poles per cell	
Charge, discharge characteristics and values for boost, float, equalization modes	
Maximum internal resistance of the battery	
The cycle life with DOD( depth of discharge ) characteristics	
Temperature effects on performance and capacity	
Self-discharge characteristics	
Storage conditions and relationship curves between remaining capacity and storage with different capacity at different temperature	
Relationship curves between OCV and DOD	
Warranty details of the battery offered	

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**TENDER NO. KAIC/HO/TECH/TVM/2016-17 DATED: 17.03.2017**

**TENDER DOCUMENT FOR THE SUPPLY OF SOLAR SYSTEM  
COMPONENTS FOR ASSEMBLING UNIT AT TRIVANDRUM AND INSTALLATION  
OF ASSEMBLED UNIT AT VARIOUS DESTINATIONS ALL OVER KERALA  
SCHEDULE "C" (PRICE BID)**

1. Name and address of tenderer :  
(Manufacturer/ authorized firm)
2. Tender No. :
3. Description of stores supplied :  
List of spares, tools etc.
4. Amount quoted

The price quoted shall be inclusive of all taxes, duties, loading and unloading charges, F.O.R destination basis and inclusive of cost of material and trial run charges including the cost of consumables.

Date: (Seal) Signature

N.B. To be submitted in sealed cover separately superscribing "Price Bid" with  
Tender No.

**Signature of the Tenderer**

**THE KERALA AGRO INDUSTRIES CORPORATION LIMITED**

(A Government Undertaking)

REGISTERED OFFICE; 'KISSAN JYOTHI', FORT,

THIRUVANANTHAPURAM-695 023

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COMPONENTS FOR ASSEMBLING UNIT AT TRIVANDRUM AND INSTALLATION  
OF ASSEMBLED UNIT AT VARIOUS DESTINATIONS ALL OVER KERALA**

**SCHEDULE "C" (PRICE BID)**

1. Name and address of tenderer :

(Manufacturer/ authorized firm)

2. Tender No.

3. Amount quoted

:

SI No.	ITEM	UNIT RATE QUOTED (Rs)
1	<b>For the supply of all components required for satisfactory functioning 3 KWP Solar Plant With backup battery as per specification and terms and conditions of this tender</b>  (Split up of price should be attached in a separate sheet)	
2	<b>For the supply of all components required for satisfactory functioning of 5 KWP Solar Plant With backup battery as per specification and terms and conditions of this tender</b>  (Split up of price should be attached in a separate sheet)	
3	<b>For the supply of all components required for satisfactory functioning of 10 KWP Solar Plant With backup battery as per specification and terms and conditions of this tender</b>	

	(Split up of price should be attached in a separate sheet)	
<b>4</b>	<b>For the successful installation , testing , commissioning and trial run of 3 KWP Solar Plant With backup battery at the destinations specified as per specification and terms and conditions of this tender</b>  (Split up of price should be attached in a separate sheet)	
<b>5</b>	<b>For the successful installation , testing , commissioning and trial run of 5 KWP Solar Plant With backup battery at the destinations specified as per specification and terms and conditions of this tender</b>  (Split up of price should be attached in a separate sheet)	
<b>6</b>	<b>For the successful installation , testing , commissioning and trial run of 10KWP Solar Plant With backup battery at the destinations specified as per specification and terms and conditions of this tender</b>  (Split up of price should be attached in a separate sheet)	

(Split up of price should be attached in a separate sheet)

The price quoted shall be inclusive of all taxes, duties, loading and unloading charges, F.O.R destination basis and inclusive of cost of material and trial run charges including the cost of consumables.

Date:

(Seal)

Signature

N.B. To be submitted in sealed cover separately superscribing "Price Bid" with

Tender No.

**Signature of the Tenderer**