



TRAVANCORE TITANIUM PRODUCTS LIMITED

Kochuveli, Thiruvananthapuram 695 021

email: contract@ttpltd.in / purchasettp@gmail.com

CD/CN/KV-51/ SITC solar power inverter /21-22

18.11.2021

Sealed tenders are invited from registered/experienced Contractors in prescribed format for **SITC solar power inverter**. The Tender Form can be had from the office of the undersigned between 10:00a.m. and 3.00 p.m. on all working days except Saturdays on remitting the Tender Form cost of Rs.900 + GST @ 18% (Total Rs.1062/-). Tender document can also be downloaded from our website www.travancoretitanium.com and shall submit the Tender along with DD against the Tender Form cost & EMD in favour of Travancore Titanium Products Limited payable at Thiruvananthapuram. The bids will be opened at the date and time given below in the presence of the tenderers present at that time.

The tender shall be enclosed in an envelope, sealed and superscripted with **“TenderNo.& date, due date and the name of work**. The same shall then be forwarded to the **“Manager (Commercial), Travancore Titanium Products Limited, Kochuveli P.O, Thiruvananthapuram, Kerala, Pin.695 021”**.

EMD: Rs.6,750/- (refundable)

Sealed Tenders will be received at our office on all working days and the due date of submitting the same is on 03.12.2021 at 12.00 noon. Tenders received after the due date & time will not be accepted. Fax/email offers also will not be accepted.

The bids will be opened at 2.00 pm on 03.12.2021 in the presence of the Tenderers present at the time.

For TRAVANCORE TITANIUM PRODUCTS LTD.

Manager (Commercial)

Signature of the bidder

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TRAVANCORE TITANIUM PRODUCTS LIMITED
Kochuveli, Thiruvananthapuram 695 021
Phone: 0471 2502163 email: contract@ttpltd.in,
purchasettp@gmail.com

Tender Notice

CD/CN/KV-51/ SITC solar power inverter /21-22

18.11.2021

Name of Work:“SITC solar power inverter”

1.Scope of work:

1. Supply, transportation & storage at site, erection, Installation, Testing, Commissioning (SITC) of two no:s of 12 kW solar inverter (minimum required specification is attached as **Annexure A**) suitable for our existing solar panels of capacity 22KWp. & SITC of two solar PV panels .The solar panel specification is attached as **Annexure B**. The inverter make shall be of either polycab/ABB/Delta/Luminous. The PV units supplies shall be suitable for combining with the existing PV units such that all the units shall work together to produce maximum power of 22kWp.
2. The unit shall be commissioned such as the whole PV panels shall be wired to make it as four strings circuit and each two string shall be wired to a single DCDB unit (such that a total of two DCDB units have to be wired). From this DCDB circuit wiring shall be done towards the inverter circuit.
3. All the above described work shall be under the scope of contractor including supply of DC cables (in required runs & length), two no:s of DCDB units (with DC switches, DC SPD, DC MCBs , DC fuses and other accessories etc) & required number of MC4 connectors. The DCDB unit shall be assembled in polycarbonate transparent enclosure. The DCDB units and inverter shall be positioned in control room.
4. The DC cables shall be of 1000V grade, double sheathed /double insulated , 4 sqmm copper cable of make: APAR/Siechem. The approximate distance between PV module location and control room is 25 meter. The cables shall be laid through PVC conduit of suitable size.
5. The inverter supplied shall be suitable to extract the maximum possible power generated from the solar panel.
6. All DC cable connections, junction boxes, and each solar panel shall be tested individually before connecting to the inverter.

2. Terms and Conditions :

1. Interested parties shall visit the site and understand the quantum of job before participating in the tender on working days between 10 am to 3 p.m.
2. All works / materials required for the successful completion of work shall be completely under the scope of contractor.
3. All works shall meet the specification and requirement of Kerala state electrical inspectorate .

Signature of the Bidder:

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4. Approval shall be accorded from TTPL before commencement of any extra work, not mentioned in the work order but necessary for the successful completion of the work.
5. The contractor shall complete the work in a neat workmanship manner and get aligned systematically.
6. All the equipments / tools required for the measurement of various parameters required for the study shall be under the scope of the bidder.
7. TTPL's decision on any matter regarding enlistment of vendors shall be final and binding.
8. The TTP shall have the right to inspect / witness the tests on the equipment or any part thereof at various stages of fabrication, manufacture, sub-assembly, assembly and testing. Inspection/tests shall be carried out at the contractor's works / his sub contractor's works. Inspection of equipment by TTP shall be only with a view to ensure that the equipment is fabricated / manufactured, assembled, tested, as per approved drawings and prescribed specifications. Power will be supplied by TTPL free of cost from the nearby available source.
9. Inspection by TTP shall in no way relieve the contractor of his responsibility as per the contract and shall be in no way binding on the TTP. The contractor shall not dispatch any materials from his works until they have been inspected and accepted by the TTP by issuing a provisional acceptance certificate.
10. The contractor should strictly abide by all the safety rules and regulations prevailing at M/s T.T.P.L .All the work men of the contractor should wear safety equipments while on work .M/s T.T.P.L will not be responsible for any mishap during the tenure of the work.
11. Any additional works or deviation shall be executed on written statements. The same shall be carried out on mutually agreed rates. The contractor shall determine the rates for such additional work by mutual negotiations, however prior to commencement of extra work. Payments for such work shall be made in the final bills.
12. Work should be carried out by experienced workers without obstructing or causing any damage to the administrative office building.

3. Pre-Qualification Criteria:

- a. The bidder should possess experience of having successfully completed similar works, SITC of solar power plant of capacity not less than 5 KWp. within the last **three years**
- b. In support of Clause 3(a) , tenderer should submit the **copy of work orders along with satisfactory completion certificates.**

4. Payment Terms

1. 90% of the total amount will be paid after successful and satisfactory commissioning of the system with the recommendation of officer in charge
2. 10% of total amount will be treated as retention amount for performance guarantee and the same shall be released against the bank guarantee of equal amount for a period of one year.

5. Work completion period

The work shall be completed within 1 month from the date of issue of Work Order

6. Guarantee

The whole unit shall be guaranteed for a minimum period of **10 Years (up to 20 years on extendable basis also acceptable)** including site service. The cost for extending the warranty shall be included in the offer

7. GENERAL TERMS AND CONDITIONS:

1. Details of ESI & PF registration

- i) ESI Registration number:
- ii) PF Registration number.....

*** The bidder not having valid ESI and PF registration is not eligible for participating in the tender.**

- 2. The bidder shall submit Tender document duly filled and signed along with the enclosures mentioned in the tender document within the time stipulated in the tender notice. Bids should bear the signature of the bidder in all pages. Otherwise bid will be rejected.
- 3. The bidder shall remit the tender form cost and EMD as given in the tender document. The bids without remitting tender form cost and EMD will be rejected.
- 4. The rate quoted shall be exclusive of GST and the GST applicable should be mentioned at the space provided in the Price format. If the bidder is below the threshold limit of GST that should be mentioned in the price format and a self declaration shall be submitted with the tender.
- 5. The tender must be firm for a period of three months from the date of opening of the tender or till the tender is decided, whichever is earlier during which period the bidder will not be free to withdraw the tender. Any such withdrawal will entail forfeiture of the Earnest Money Deposit(EMD) and also result in the tenderer being made liable for the losses and damages sustained by the company in rearranging the work.
- 6. It is no binding on the company to accept the lowest offer. The company reserves the right to cancel/postpone the tender or to reject any or all offers without assigning any reason.
- 7. The tenderer should remit the Earnest Money Deposit (EMD) mentioned in this document in cash/DD and proof of thereof should be enclosed along with the tender. Other mode of remittance will not be accepted.
- 8. If any irregularity or fraudulent behavior is noticed on part of the contractor / his agents / representatives or the crew of the vehicle engaged by the contractor for the performance of the contract, the company reserves the right to take all suitable action deemed fit against the contractor and those concerned.
- 9. The Contractor will be responsible for meeting all the requirements of the various labour enactments applicable from time to time and should indemnify and keep indemnified the company against all losses and damages sustained by the company in this regard at all times.
- 10. The Contractor should comply with all relevant formalities under contract labour (Regulation and Abolition) Act 1971, such as display of rate of wages, date, place and time of payment of wages, date of payment of unpaid wages etc. they should also intimate the time, date and place of disbursement of wages to the supervisory Officer nominated under the above act for certification of payment to contract workers.
- 11. The Contractor should strictly adhere to the Safety Rules prevailing in the company failing which penalty are decided will be imposed. Company will provide safety gloves to the workers engaged. All other required safety protective

Signature of the Bidder:

equipment is under the scope of Contractor. The Company is in no way responsible for any injury, disability or death of contractor's workmen due to non-compliance of safety regulations.

12. The workers engaged by the contractor shall wear the ID cards provided from the Main gate Security persons and displayed same while on work.
13. The Contractor should fix a display board on the materials of their own kept within the Company premises indicating the names of the contractor and Work Order No.
14. The work should be completed within the time limit given by the Officer in charge of the work.
15. The contractor shall not indulge in any operation which could interfere the working of the company. If any damage or loss is caused by the employee's or the property of the company, company reserves the right to recover such losses or damages or claim from any amount due to the contractor including the advance made/to be made by the contractor as the EMD/SD.
16. The Company reserves the right to cancel the work order forfeiting security deposit if the work is not started within 10 days from the date of receipt of work order and also to terminate the contract at any time if the work is not done with proportionate progress to the satisfaction of the company officials and in all such cases the company will be at liberty to get the work done in any manner that the company thinks fits and all losses and damage sustain by the company in this regard will be recovered from contractor and his assets.
17. All the waste materials should be removed and cleared the work site immediately after the completion of the work.
18. Company reserve the right to accept/reject any of the tender after evaluation with or without assigning reason no matter whether a Tenderer has quoted the lowest rate. All questions/disputes arising out or in connection with this shall be decided by the Managing Director of the company and his decision thereof shall be final and binding to all tenderers.
19. **Jurisdiction:** Any dispute or questions relating to or arising out of the finalization of this tender, if remains, shall be subject to the executive jurisdiction of the courts at Thiruvananthapuram.
20. **Agreement:** The liability of contractor/bidder under this contract will commence on the date specified in the letter of Intent/ Work order. The successful bidder shall be required to execute an agreement with TTPL if the contract value is above Rupees One lakh immediately from the date of issue of work order for carrying out the work according to the terms and conditions of the contract given along with work order. The agreement shall be executed on Rs. 200/-Stamp paper and shall be in the proforma as specified by TTP. The provision contained in tender papers and other documents exchanged between the Bidder and TTP shall form part of the contract. The Earnest Money Deposit is liable to be forfeited in case the contractor fails to execute the Agreement within the stipulated period as mentioned above.
21. **Security deposit:** Security Deposit equal to 3% of the contract value shall be remitted immediately from the date of issue of work order for the due performance of the contract by means of Demand Draft payable at Thiruvananthapuram. The Security deposit shall not bear any interest and shall be released only after the successful completion of all contractual obligations.
22. **Liquidated damages:**In case of any delay in the execution of the Order beyond the stipulated date of work schedule including any extension permitted in writing, the TTPL reserves right to recover from the contractor a sum equivalent to 0.5% of the total value of the delay for each week of delay and part thereof subject to a

maximum of 10% of the total value of the Order. Alternatively, the Company reserves the right to execute the work from elsewhere at the sole risk and cost of the contractor and recover all such extra cost incurred by the company in execution of work by the above procedure.

23. **Validity of rates:** The quoted rate must be valid for a period for 90 days from the date of opening of the tender and till the completion of the work if the contract is awarded.
24. Bids should bear the signature of the bidder in all pages.
25. All workers engaged with the work shall have Police Clearance Certificate (PCC) and other formalities insisted by Security Department of TTPL.
26. Canteen charges will be deducted from the contractors bill as fixed by the canteen authorities.
27. If the Contractor fails to remit SD and execute agreement within the stipulated period, Company have the right to cancel the work order awarded to the successful bidder and the work will either be executed by L2 bidder or any other source at the risk and cost of the successful bidder.
28. Bids without remitting EMD /Tender cost or both will be rejected.
29. **Tender Form Cost: Rs. 900/- + GST @ 18% (Total Rs.1062/-)**
30. **Earnest Money Deposit (EMD): Rs. 6,750/- (refundable)**
31. **Exemption in Tender Form Cost and EMD is as per Govt. rules.**
32. **Due date of Submission of tender : 03.12.2021 upto 12.00 noon and will be opened at 2.00 p.m.** on the same day in the presence of those tenderers who are present at that time.
33. Conditional tenders will not be acceptable
34. **Documents to be submitted along with the tender**
 1. **Tender Document duly filled and signed in all pages**
 2. **Proof of experience as per Clause 3 (a) and (b)**
 3. **Proof of Tender cost and EMD remittance**
 4. **Copy of ESI,PF,GST and MSME registration (if applicable)**
 5. **Copy of KSEI license(if applicable)**
35. Evaluation of bids: The evaluation of the bids will be based only on the documents Submitted.
37. Deductions: All statutory deductions will be made from the contractor's bill as per rules. The contractor shall remit ESI and PF amount and the proof of remittance shall be furnished when ever company insists.

for TRAVANCORE TITANIUM PRODUCTS LIMITED



Manager(Commercial)

PARTICULARS OF TENDERER

1. Name of the Bidder:
2. (a) Registered office address of the Bidder:

(b) Address for correspondence:
3. Mobile Nos.:
4. E-mail address:
5. Status of the tenderer (Individual, Prop. firm, Partnership, Ltd. Company,
6. Registration No.:
7. Year of establishment:
8. Permanent Account No. (PAN issued by Income Tax Dept.):
9. GST Registration No.
10. ESI Registration No.
12. PF Registration No.
13. MSME No. (if applicable)
13. Name and address of Proprietor/ Partners/ Directors:

Declaration

We confirm that we have read and understood all tender conditions and we accept all tender conditions in its entirety.

Date:

Signature:

Name of Person signing:

Tenderer's Name and address with seal:

Signature of the Bidder:

PRICE PERFORMA

Name of work:“ **SITC solar power inverter**”

Tender No: **CD/CN/KV-51/SITC Solar power inverter /21-22 dated 18.11.2021**

I have read and understood all the tender conditions and work schedule the tender in its entirety and **My lowest rate** for the above work: **Rs.....**(In figures)

Rupees..... (in words)

I. Please tick (a or b) whichever is applicable

a. The above rates are inclusive of GST

b. The above rates are exclusive of GST

II. If exclusive of GST, % of GST.....

III. If not mentioned the % of GST, the rate will be considered as inclusive of GST.

Please mention GST amount in the space provided. If not mentioned, the rate will be considered as inclusive of GST. Also if the bidder is within the threshold limit of GST the same shall be mentioned in the price performa.

Tender cost remittance details:

EMDremittance details:

Signature of the Bidder:

Name & Address:

Registration Number:

Mobile No:

E Mail:

Signature of the Bidder:

ANNEXURE –A
SPECIFICATION OF SOLAR STRING INVERTER

RATING	12KW
INPUT DC	
Max.DC Input Power(KW)	14.5KW or greater
Max.DC Input voltage(V)	1000V
Start-up Voltage(V)	>180V
MPPT voltage range(V)	150-850
Max.Input Current(A)	22+22
Max.Short circuit current (for each MPPT)	34.3+34.4
MPPT Number/No of strings per MPPT	2/2
OUTPUT AC (pure sine wave)	
Rated output Power(KW)	12
Maximum Apparent Output power(KVA)	13
Max.Output Power(KW)	13
Rated Grid Voltage(V)	400
Grid voltage range(V)	313-470 (Adjustable)
Rated Grid Frequency(Hz)	50
Grid Frequency Range(Hz)	47-52
Operation Phase	Three phase ,4 wire
Rated Grid Output Current(A)	17
Max.Output Current(A)	18
Power factor (at rated Output Power)	0.8 leading-1-0.8 lagging
THD-I (at rated output power)	<2%
DC Injection Current(mA)	<0.5In
EFFICIENCY	
Max.Efficiency	>98%
EU Efficiency	>98%
MPPT Efficiency	>99%
PROTECTIONS	
Built-in Protections	DC Reverse Polarity,Short circuit,Output over current,Output Over voltage, Insulation ResistanceMonitoring, Residual Current Protection,MOVs for surge protection on DC&AC sides,Grid Monitoring, Islanding protection and Temperature protection,over/under frequency protection, Heat sink over temperature protection.

Integrated DC Switch	Needed
GENERAL DATA	
Topology	Transformerless
Self Consumption(Watt)	<1(Night)
Operating Ambient Temperature range	0 C to 60deg C
Relative Humidity	0~100%
Ingress protection	IP65
Noise Emmission(typical)	<30dBA
Cooling Concept	Intelligent Fan Cooling

FEATURES

DC Connection	MC-4 Combatible
AC Connection	IP67 Rated Plug or Combatible
Display	LCD2x20Z
Communication/Monitoring Interface	RS485;WiFi/GPRS/LAN
Warranty	10 Years (shall be Extendable up to 20Years)

IEC CERTIFICATES

Grid Connection	IEC 61727
Anti Islanding Protection	IEC62116
Environment Testing	IEC 60068-2(1-2-14-27-30-64)
Safety	IEC 62109-1,IEC 62109-2,EN62109-1,EN 62109-2 IEC 61000,EN 61000-6-1,EN 61000-6-2, EN 61000-6-3,EN 61000-6-4

EMC

Efficiency Measurement	IEC 61683,EN50530
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PROTECTION DC SIDE

HRC FUSE	yes
DC SWITCH	ON positive & Negative leads
MOV	For positive & Negtative Terminals to Earth
Terminals	Two channel DC boutputs

PROTECTION AC SIDE

MCB	Independent 3PH MCB for individual Inverters
SPD	R+Y+B+N to Earth
Combiner	DPL or equivalent

ON-LINE Monitoring

Inverter performance monitoring	WiFi logger and Application software needed
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Antony Netto.L
Dy Manager(Ele)

ANNEXURE-B

SPECIFICATION OF SOLAR PANELS (Existing)

1. Make: Shan solar pvt Ltd.
2. Model Type: Ruby 60-245
3. Photo voltaic module -246.35W, Polycrystalline
4. No: of Modules: 92
5. Modules connected in string -23
6. No: of strings -4
7. Maximum Current – 8.05A /module
8. Max voltage -30.6V
9. Open circuit Voltage- 37.3V
10. Short circuit current- 8.52A
11. Fuse rating- 17A
12. Dimension- 1660*990*42mm

AJB (Array Junction Box) - 4 in , 4 out