Government College of Technology
(Autonomous Institution Affiliated to Anna University)
Thadagam Road, Coimbatore- 641013 Tamil Nadu, India
Tel: 0422-2455230 email: profvlp@gct.ac.in

TEQIP PHASE II

PROCUREMENT FILE

TN / TN2G01 / 148

Supply and Installation of 20 kW Grid Connected Roof Top Solar Power Generating System

COMPARATIVE STATEMENT FOR THE PURCHASE OF Supply and Installation of 20 kW Grid Connected Roof Top Solar Power Generating System
Ref: TEQIP-II / 2014 / TN2G01 / Shopping / 148 Dt 04-09-2014 Due : 19.09.2014

Description of Item		M.R.Sons, 127 B, V.K.Road, B.R.Puram, Peelamedu Coimbatore – 641 004.	Sothern Power solutions, No: 1, CIBI Complex, Kamaraj Road, Ramanujam Nagar, Peelamedu, Coimbatore – 641004.	Kumaran Enterprises 60, Arunachalam street West , Near Kennedy Theatre, R.S. Puram, Coimbatore -641002	Swelect Energy Systems Limited, New No: 748/1 Old No: 1054, Gowtham center Annex, Avinashi road, Coimbatore - 641018
Specification	Qty				
Supply and Installation of 20 kW Grid connected Roof Top Solar Power Generation System. a) 20 kW Roof Top Solar Panels Solar Pancls: Multi/Poly Crystalline Nominal Power : 250Wp Open Circuit Voltage: 37V+3% Short Circuit Current: 8A+5% Max. System Voltage: 1000V Module Efficiency >13% Compliance with standards and codes -IEC 61215/IS 14286 -IEC 61730 Part 1 and 2 b) GI Structure materials GI Structure materials for mounting Photo Voltaic (PV) modules on roof. c) PV Array junction box	80 Nos. 1 lot. 2 Nos.	a) Multi Crystalline solar panels 250 Wp x 80 No.s Specifications: Rated power : 250 W Open Circuit Voltage: 37.55V Short Circuit Current: 8.71A, Max. System Voltage: 1000V Module Efficiency : 15.53% Compliance with the following standard: IEC61215/61730 b) As per site conditions c) Junction box: As per standard	a) Multi Crystalline solar panels 250 Wp x 80 No.s Specifications: Rated power : 250 W Open Circuit Voltage: 37.10V Short Circuit Current: 8.6A, Max. System Voltage: 1000V Module Efficiency : 15.35% b) Anodised Aluminium. Locking : Corner Key type. c) Junction box: Tyco(IP65)/Huber + Suhner (IP67)	a) Multi Crystalline solar panels 250 Wp x 80 No.s Specifications: Rated power : 250 W Open Circuit Voltage: 36.78V Short Circuit Current: 8.75A, Max. System Voltage: 1000V Module Efficiency : 15.20% Compliance with the following standard: IEC61215 Ed.2, & IEC61730. b) Frame : Anodised Aluminium. c) Junction box: Plastic Protection class : IP65	a) Poly Crystalline solar panels 250 Wp x 80 No.s Specifications: Rated power : 250 W Open Circuit Voltage: 37.62V Short Circuit Current: 8.74A, Max. System Voltage: 1000V Module Efficiency : 15.40% Compliance with the following standard: IEC61215 b) Anodised / Electropharetic Aluminium Powder coated MS Galvanised Mechanical Structure. c) Junction box: PPE material from Japan, Polyamide 66 material. IP 65/67 protections As per SWEES standard

Solar Grid Tied String Inverters (10 kW) with MPPT Charge Controllers **DC Input:** Nominal DC Voltage: 640V MPPT Range: 320V-720V DC Working range: 200-800V DC No. of Tracker: 3 Nos. **AC Output:** Output Power: 10 kW Max. Power: 11 kW Operating Voltage:400Vx3-15%+10% Operating Frequency: 50Hz THD< 3% Max. System Efficiency: 96% **Protection:** Over Temperature and Short Circuit Protection **Accessories:** DC cables between Module and PCU AC cables between PCU and Grid supply Earthing protection Lightning arrester Digital LCD Display in inverters Data logger with communication cables	2 Nos.	**DC Input:** Nominal DC Voltage: 600V MPPT Range: 280V-550V DC Working range: 200-600V DC **AC Output:** Output Power: 10 kW Operating Voltage: 480 V Operating Frequency: 60Hz THD< 5% Max. System Efficiency: 97% **Protection:** Over current Protection **Accessories:** DC and AC cables as per standard Earthing protection as per standard Lightning arrester as per standard Local Monitoring system Data logger with communication cables as per the standard	**DC Input:** Nominal DC Voltage: 600V MPPT Range: 425V-800V DC Working range: 420-900V DC MPPT charge controller -2 Nos **AC Output:** Apparent Power: 11 kVA Operating Voltage:400Vx3 +18%-20% Operating Frequency: 50Hz±5Hz THD< 5% Max. System Efficiency: 96.8% **Protection:** **Protection degree: IP65/IP54.** Safety class : I Overload behavior : Current and Power Limitation. **Accessories:** Inner connection DC and AC cables – as per site requirement Earthing protection kit available Lightning arrester available Local Monitoring system available	**DC Input:** Nominal DC Voltage: 600V MPPT Range: 425V-800V DC Working range: 420-900V DC MPPT charge controller -2 Nos **AC Output:** Apparent Power: 11 kVA Operating Voltage:400Vx3 +18%-20% Operating Frequency: 50Hz±5Hz THD< 5% Max. System Efficiency: 96.8% **Protection:** **Protection degree: IP65/54.** Safety class : I Overload behavior : Current and Power Limitation. **Accessories:** DC cables between Module and PCU – As per standard AC cables between PCU and Grid - As per standard Earthing protection as per standard Lightning arrester as per standard Digital LCD Display in inverters (Local Monitoring system) with data logger as per standard	**DC Input:** Nominal DC Voltage: 640V MPPT Range: 320V-720V DC Working range: 200-800V DC No. of Tracker: 3 Nos. **AC Output:** Output Power: 10 kW Max. Power: 11 kW Operating Voltage:400Vx3 -15%+10% Operating Frequency: 50Hz THD = 3% Max. System Efficiency: 96.5% **Protection:** Short Circuit Protection **Accessories:** DC cables between Module and PCU as per SWEES std. AC cables between PCU and Grid supply as per SWEES std. Earthing protection (OBO/Galaxy) Lightning arrester(OBO/Galaxy) Digital LCD Display in inverters Data logger with communication cables (RS485)
Solar Panels : Make / Model		Vikram solar /ELDORA-250P	HHV Solar	EMMVEE Diamond	SERAPHIM / SRP-250-6PB
Inverter : Make / Model		KACO / XP10U-H4	Delta / SOLIVIA 11 EU G4 TR	Delta / SOLIVIA 11 EU G4 TR	SWEES / GI10000
Total (Rs)		16,85,714.00	17,02,500.00	17,00,000.00	16,82,990.00
Terms and conditions					
VAT /CST		@5 % = 84,285.70	@5% = 85,125.00	@5% = 85,000.00	@5%= 84,149.50
Validity		50 days	50 days	50 days	50 days

Payment terms	As per the terms in the invitation letter	As per the terms in the invitation letter	As per the terms in the invitation letter	As per the terms in the invitation letter
Delivery Period	As per our terms	As per our terms	As per our terms	As per our terms
Warranty	Solar panels: 10 Years Inverter : 10 Years	Solar panels: 10 Years Inverter : 10 Years	Solar panels: 10 Years Inverter : 10 Years	Solar panels: 12 Years Inverter : 10 Years
Training, Testing and Installation	As per our terms	As per our terms	As per our terms	As per our terms
Cost for Installation & commissioning	Rs. 3,13,000.00	3,11,000.00	3,10,000.00	2,75,000.00
Service Tax @ 12.36% for Installation and Commissioning	-	-	-	33,990.00
Total Price (Rounded off)	20,83,000.00	20,98,625.00	20,95,000.00	20,76,129.00

MITTED TO THE PRINCIPAL:-

Quotations were called from 5 firms for the purchase of 20 kW Grid Connected Roof Top Solar Power Generating System for CoE-AER. Only 4 firms have d their rates. Among them, M/s SWELECT ENERGY SYSTEMS LIMITED, New No: 748/1 Old No: 1054 / 1, Gowtham center Annex, Avinashi road, ibatore – 641018 has quoted the lowest rate satisfying to our specifications, terms and conditions. Hence permission is requested to place an order on the e said firm for the supply of mentioned items at a total cost of Rs. 20,76,129.00/- (Rupees Twenty Lakh Seventy Six Thousand and One ndred and Twenty Nine only), under the Head of TEQIP - II CoE-AER– Procurement – Equipment.

APEE

PROF/E.E.E.

chase Committee Members:

Kandasamy
Civil

R. Satya
Prof.R.Satyabama
Prof/ECE

Dr.V.Manikandan
Prof./EEE/CIT

V. Geetha
Dr.V.Geetha
TEQIP Assoc. Prof./EEE

M/s. Swelect Energy Systems Ltd, ... - 20,76,129/-

curement N.O

Coordinator / CoE-AER

FORM OF SANCTION FOR THE PURCHASE OF STORE

ENQUIRY NO: TEQIP II/

DUE DATE -

1.	Name of the Department	-	EEE
2.	Name and Description of stores proposed To be Purchased / Maintenance	-	20kW Grid Connected Roof Top Solar Power Generating System
3.	Quantity required	-	1 set
4.	Rate per Unit.	-	1682990
5.	Total cost of stores required	-	20,76,129.
6.	Stock in hand	-	-
7.	Finance Committee approval received	-	✓ YES / NO
8.	Board of Governors approval received	-	✓ YES / NO
9.	Purchase Committee approval received	-	Yes.
10.	Quotation called	-	5 No. of Firms.
11.	Quotation responded firms	-	4 No. of Firms.
12.	Least rate	-	M/S. Swelect Energy [illegible] Coimbatore.
13.	Total cost	-	Rs. 1682990.
	Tax 5%	-	Rs. 84149.50.
	Freight charges	-	Rs.
	with Install.		20,76,129
14.	Head of account under which the Expenditure is debitable		TEQIP PHASE-II (CoE-AEP).

2076129

-10-14

Head of the Department

Sm310/No4/Sanction form blank/B1/stores2012/TEQIP/P1

Government College of Technology
(Autonomous Institution Affiliated to Anna University)
Thadagam Road, Coimbatore- 641013 Tamil Nadu, India
Tel: 0422-2455230 email: profvlp@gct.ac.in

PURCHASE ORDER

Reference No: TEQIP-II/2014/TN2G01/Shopping/148

Date of Issue: 09-Oct-2014

Subject: Supply and Installation of 20kW Grid connected Roof Top Solar Power Generating System

Purchaser: Government College of Technology, Coimbatore

Supplier Name: SWELECT ENERGY SYSTEMS LIMITED

New No:748/1,Old No:1054/1,Gowtham Center Annex, Avinashi Road,
Coimbatore-641018
Tamilnadu.

With reference to our correspondence, **Government College of Technology, Coimbatore** is pleased to award this detailed Purchase Order to **SWELECT ENERGY SYSTEMS LIMITED** for supply of items as per the details given below at a total cost of **2076129.00** (Rupees. Twenty lakhs seventy six thousand one hundred and twenty nine only):

Sr. No	Item Name	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)	Delivery Period
1	Supply and Installation of 20kW Grid connected Roof Top Solar Power Generating System	1	1682990	1682990	35

Total price (without taxes)	:	Rs. 1682990.00
Total applicable taxes	:	VAT 5% for Equipment and Accessories+ Service Tax 12.36% for Cost for installation and Commissioning
Total price (with taxes)	:	Rs. 2076129.00

Delivery	:	Government College of Technology, Coimbatore
Testing/Installation Clause (if any)	:	required
Training Clause (if any)	:	required
Technical Specifications	:	As per Annexure - 1
Delivery Period	:	As specified for each item from date of issue of confirmed purchase order or as early as possible.
Warranty	:	24
Payment Terms	:	Delivery and Installation - 0% of total cost Satisfactory Acceptance - 100% of total cost

For

Government College of Technology, Coimbatore

(Authorized Signatory)

Name & Designation

Principal
Government College of Technology
Coimbatore-641 013.

Accepted by

Signature

Date 9/10/2014

Address

CDE - 18

Annexure I

Sr. NO	Item Name	Specifications			
1	Supply and Installation of 20kW Grid connected Roof Top Solar Power Generating System	Sl.No.	Particulars	Specifications	Quantity
		I	a) 20 KW Roof Top Solar Panels	Solar Panels: Multi/Poly Cry Silicon Nominal Power : 250Wp Open Circuit Voltage: 37V+3% Short Circuit Current: 8A +5% Max. System Voltage: 1000V Module Efficiency >13% Compliance with standards and codes -IEC 61215/IS 14286 -IEC 61730 Part 1 and 2	20 Nos.
			b) GI Structure materials	GI Structure materials for mounting Photo Voltaic (PV) modules on roof.	1 lot
			c) PV Array junction box	------	2 Nos.
		II	Solar Grid Tied String Inverters (10 kW) with MPPT Charge Controllers	**DC Input:** Nominal DC Voltage: 640V MPPT Range: 320V-720V DC Working range: 200-800V DC No. of Tracker: 3 Nos. **AC Output:** Output Power: 10 kW Max. Power: 11 kW Operating Voltage:400Vx3-15%+10% Operating Frequency: 50Hz THD< 3% Max. System Efficiency: 96% **Protection:** Over Temperature and Short Circuit Protection **Accessories:** DC cables between Module and PCU AC cables between PCU and Grid supply Earthing protection Lightning arrester Digital LCD Display in inverters Data logger with communication cables	2 Nos.

SWELECT ENERGY SYSTEMS LIMITED
S.No 56/3 NACHIYUR,
SALEM MAIN ROAD,IDAPPADI
SALEM - 637105.
Phone No : 04283-223155, Fax : 04283-224055

TOTAL WEIGHT: 3525 KGS

PACKING SLIP

Address:

GOVERNMENT COLLEGE OF TECHNOLOGY
THADAGAM ROAD
COIMBATORE - 641013
PH NO: 0422-2455230

Invoice No : 1900014700
Date : 01.11.2014

PO TEQIP-II/2014/TN2G01/shopping/148 DT 09.10.2014

Sl.No	Description	Quantity	No.Of Pkgs.
	20 KWp SOLAR POWER GENERATING SYSTEM (SL NO.SP140800136) KNOCKED DOWN & PACKED AS		
1	SOLAR PV MODULE 12V 250WP	80	4
2	SOLAR HYBRID UPS 10 KW GRID INVERTER SL NO.1308T0000B,T00019	2	2
3	SOLAR MODULE MOUNTING STRUCTURE	1 SET	84
4	EARTH KIT	4 SET	1
5	MOISTER BOOSTER (25KG,12.5 KG)	4	6
6	ACDB BOX	1	1
7	ACCESSORIES BOX	1	1
8	LIGHTNING BASE	1	1
9	CABLE	3	3
10	GI STRIP	200	3
11	DATA LOGER	1	1
	TOTAL NO. OF PACKAGES :		107

☑ Installation Certificate ☑ User Manual ☐ Battery Links ☐ Test Report

Packed By: Verified By: Manager:

PPC/FMT/03

Goods Received Note/Receipt

Received with thanks from SWELECT ENERGY SYSTEMS LIMITED on dated 03/11/2014 the following items.

DATE OF SUPPLY	DESCRIPTION	QUANTITY	UNIT PRICE	VALUE
03/11/2014	Supply and Installation of 20kW Grid connected Roof Top Solar Power Generating System	1	1,682,990.00	1682990

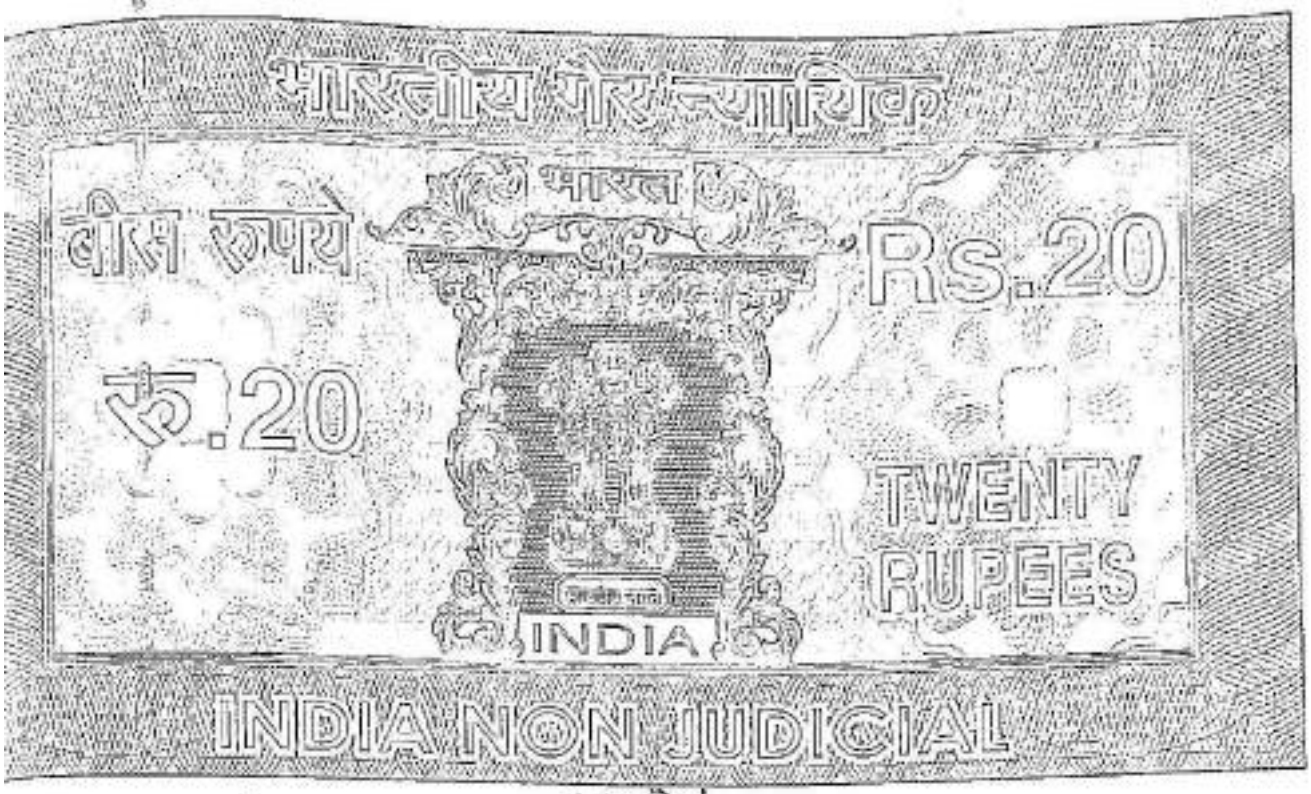
1682990

GOODS HAVE BEEN CERTIFIED AS CORRECT RECEIPTS.

Name of receiving Officer. Dr.K.Kalaivanan Signature Date. 3/11/2014.

Certified by Dr.N.Devarajan Signature Date. 3.11.14.

The Report has been generated through PMSS.



தமிழ்நாடு तमिलनाडु TAMIL NADU

12AB 748706

S. MURUGANANTHAM
STAMP VENDOR.
R.O. PARTY SHED.
CBE 18. TAMIL NA
REF NO: 4914/B1/

Swelect Energy Systems Ltd

This Agreement made on this *18th November 2014* at Coimbatore by and between **SWELECT ENERGY SYSTEMS LIMITED, New No. 748/1, Old No. 1054/1, Gowtham Center Annex, Avinashi Road, Coimbatore** (hereinafter) called the "Contractor" of the one part and the GOVERNOR OF TAMILNADU, representing through **The Principal, Govt College of Technology, Thadagam Road, Coimbatore – 641013,** hereinafter called "Purchaser" of the other part.

SWELECT ENERGY SYSTEMS LTD * CBE - 18

PRINCIPAL
Government College of Technology
COIMBATORE-641 013

WHEREAS the contractor has agreed with purchaser to supply such quantities of the machinery and equipments specified and described in the schedule hereto annexed.

NOW THESE PRESENT WITNESS that for carrying the said agreement into execution, the contractor on the one part for himself, his heirs, executors, administrators and legal representatives, and the purchaser on the other part for himself, his successors and assignees mutually covenant declare contract and agree in the manner following (that is to say).

1. The contractor hereby agrees to supply the Principal, Government College of Technology, Coimbatore (hereinafter) called "The Principal" Machinery and equipment of the quality, specification, quantity and at the rates mentioned in the schedule hereunder and as per the conditions of the order Indent No. ***TEQIP-II/2014/TN2G01/Shopping/148, Dated: 09.10.2014*** *immediately* from this date of within such extended time as the Principal may in his absolute discretion grant. The machinery and equipment are to be delivered at Government College of Technology, Coimbatore and at the contractor's risk to the Principal or his duly authorized representative.

2. All machinery and equipment supplied by the contractor shall be subject to inspection and acceptance or rejection by the Principal or such other person as the said Principal shall from time to time name and appoint to that duty or for that purpose (and which said person to be so named and appointed as aforesaid is hereinafter referred to as the Inspection officer).

3. All machinery and equipment supplied by the contractor which in the opinion of the Principal or the Inspection officer are in bad order, unsound, unmarketable, inferior in quality or description or otherwise faulty or unfit for use or not in accordance with the specification mentioned in the schedule hereunder shall and may be rejected by the Principal or Inspecting Officer and his opinion and rejection shall in all respects be final conclusive and altogether operative and binding upon the contractor and shall not be open or subject to question or dispute by the contractor upon any ground whatsoever.

PRINCIPAL
Government College of Technology
COIMBATORE-641 013

4. All machinery and equipment supplied by the contractor which shall be rejected by the Principal or the Inspecting officer shall be removed by the contractor at his own expenses within seven days after such rejection shall have been notified to the contractor by the Principal or the Inspection officer and to failure by the contractor to so remove the said machinery and equipment the Principal or the Inspecting officer may have them removed at the risk of the contractor and the expenses of such removal shall be paid to the purchaser by the contractor within fifteen days of the same having been demanded from him.

5. In lieu of any machinery and equipment which shall have been rejected by the Principal or the Inspecting officer under the provisions herein before contained, the contractor shall and will effect replacement within such reasonable time as the :Principal may in his discretion allow for the purpose. Any representation made by the contractor in the matter will be taken note by the Principal. But the decision of the Principal shall be accepted by the contractor as final.

6. All machinery and equipment supplied in lieu of or in substitution for the rejected machinery and equipment shall be in like manner subject to such inspection, rejection and removal as aforesaid as often as the Principal or the Inspecting officer shall consider necessary.

7. In case of any neglect or refusal on the part of contractor to supply and deliver any of the said machinery and equipment which the said Principal shall require the contractors to supply and deliver and of such approved quality and at such time or times and in such manner as herein before provided or in the case of his failure to send invoices in duplicate at the time of the delivery of the articles and so after as any such as failure, neglect or refusal shall happen, it shall be lawful for the Principal or any person by him thereunto authorized to purchase elsewhere and from any other person or persons whomsoever such quantities of the said machinery and equipment as shall not have been duly supplied and delivered by the contractor, or as shall be required in lieu of any of the said machinery and equipment which shall have been so rejected as aforesaid and to charge the difference (if any) between the price or prices of the machinery and equipment which may be so purchased or the moneys which may have been paid for the same and the price or prices payable under this contract for such machinery and equipment against the contractor.

Government College of Technology
COIMBATORE-641 013

8. The contractor shall pay and reimburse to the Purchaser, such difference in price as aforesaid within fifteen days after the same shall have been demanded from him by or on behalf of the purchaser.

9. The contractor shall and will on every occasion when machinery and equipment are delivered under this contract submit invoices in duplicate to the person to whom the goods are tendered for delivery and on his failure to do so it shall be lawful for the person to whom the machinery and equipment are tendered to refuse or accept the same.

10. The contractor shall and will submit and deliver to the said Principal immediately after the delivery of the machinery and equipment specified bill or bills in the usual and proper form for all the machinery and equipment supplied under this contract. Such bill or bills shall state the total quantity of the machinery and equipment supplied and the total cost payable calculated at the rates given in the schedule hereto. In calculating the amount due under such bills fractions of less than half a rupee shall be disregarded and a half rupee or more shall be taken as a rupee where the total of the bills amounts to be accurate unless the Principal shall within one month from the receipt thereof give to the contractor a written notice stating the items as to which objection is taken and the grounds of such objection and the purchaser shall within two weeks from the date of delivery of such bill or bills pay to the contractor the price of all machinery and equipment included therein save in so far as the claim in respect of any machinery and equipment shall have been disputed as aforesaid.

11. The contractor shall not assign or make over this contract directly or indirectly to any person or persons, whomsoever, on permit any persons whomsoever to interfere in the management or performance thereof, either under power of attorney granted by the contractor or otherwise without the consent in writing of the said Principal.

12. The contractor shall, at all times during the continuance of this contract carry out in all things, the orders, instructions and directions of the Principal and of all officers and servants acting under his orders and by him authorized to act in all or any of the matters and things herein contained.

PRINCIPAL
Government College of Technology

13. The contractor shall guarantee for the satisfactory working condition of all the machinery and equipment supplied by him for a period of *24 months Warranty* from the date of receipt of such machinery and equipment by the purchaser.

14. Any notice to the contractor shall be deemed to be sufficiently served if given or left in writing at his usual or last known place of the above or business.

15. In case the contractor shall fail or neglect or refuse to serve, perform, fulfill and keep all or any or more any part of any one or more of the covenants, stipulations and provisions herein contained, it shall be lawful for the said Principal (if he shall think fit so to do) without prejudices and in addition to all and every other remedies herein before contained on behalf of the purchaser on any failure, neglect or refusal as aforesaid, by any writing under his hand to put an end to this contract so far as regards the purchaser and thereupon every articles, clause or thing on his part herein contained shall cause and be void in case of any money damages, losses, expenses, or difference in price, shall then or at any time during the continuance of this contract be due from, or payable by the contractor to the purchaser, it shall be lawful for the said Principal from and out of any moneys then in the hands of the said Principal and payable or to become payable to the contractor, to reimburse to the purchaser all such moneys, damages, losses, expenses and differences in price as the purchaser shall have sustained, or been put to or be entitled to by reason of the contractor, having been guilty of any such failure, neglect or refusal as aforesaid or other break in the performance of this contract, or as shall for the time being be due and owing from or payable by the contractor to the purchaser, and if such moneys, as aforesaid shall be insufficient to pay and satisfy the whole or such moneys, damages, losses, expenses and difference in price as aforesaid then, and in that case it shall be lawful for the purchaser, to recover the residue thereof by legal proceedings against the contractor upon the covenants and agreements herein contained.

SWELECT ENERGY SYSTEMS LTD CBE - 13

Government College of Technology
COIMBATORE-641 013

16. All, orders that may be given and action taken by the Principal under these presents may be given or taken by the Principal for the time being of the contract provided, however that action may be taken under clause 15 of these presented only by the Principal.

For the purpose of all disputes, law suits arising out of this contract, Coimbatore only shall be deemed as the place, where the contract has been signed and delivered as signing of this contract by the agent or delivery of machinery and equipment or actual payment at any other place will not affect the jurisdiction at Coimbatore.

IN WITNESS thereof the said *MR. K. SRINIVASAN, MANAGER – MARKETING, SWELECT ENERGY SYSTEMS LIMITED,* New No. 748/1, Old No. 1054/1, Gowtham Center Annex, Avinashi Road, Coimbatore (Name of the executor form) and Dr. V. LAKSHMI PRABHA (The Principal, Government College of Technology, Coimbatore) acting for and on behalf of the order and direction of the GOVERNOR OF TAMILNADU have hereunto set their respective hands, the day and the year first above mentioned.

SWELECT ENERGY SYSTEMS LTD. CBE - 18

PRINCIPAL
Government College of Technology
COIMBATORE-641 013

SCHEDULE

DESCRIPTION OF THE GOODS	DELIVERY PERIOD	QUANTITY	RATE
Supply and Installation of 20Kw Grid Connected Roof top Solar Power Generating System	*35 days*	*1*	*1682990*

Excise Duty @16.32% : Exempted

Sales Tax @ 5% : 84149.50

Installation Charges : 274999.00
Service Tax @ 12.36% : 33990.00
Total Cost of the Equipment : 20,76,129.00

Warranty Period: 24 months from the date of installation.

Signed by the above named:

Signature of Suppliers

SELECT ENERGY SYSTEMS LTD * CBE - 18

In the presence of:

1. G. Nalendran / G. Maheswari/o V.K. Gopal
86A, Mecnikar Road
R.S. Puram
Coimbatore-641002

2. R. Sudy . R. Arunkumar/o Rathinasamy .
41, Premier Nagar
Othakalmandapam
Coimbatore-32

Signed by the above named:

In the presence of:

1. , Dr. K. Ramesh kumar, AP, EEE, GCT, CBE-13

2. Yasoda.K, AP/EEE, GCT, CBE-13

The agreement is in order and accepted.

Prof / GCE

NOT FOR CENVAT

SWELECT ENERGY SYSTEMS LIMITED

S.No. 58 / 3, 14D/1 NACHIYUR, SALEM MAIN ROAD, VEERAPANIPALAYAM (PO),
IDAPPADI SALEM- 637 103
Phone No: 04283- 223155 FAX : 04283224655

Invoice cum Delivery Delivery Challan

Issue of invoice under Rule 11 of Central Excise Rules, 2002

...ial Address of Buyer: ...MENT COLLEGE OF TECHNOLOGY ...GAM ROAD ...ATORE - 641013 ...: 0422 - 2456230	Name and address of Consignee: GOVERNMENT COLLEGE OF TECHNOLOGY THADAGAM ROAD COIMBATORE - 641013 PH NO : 0422 - 2456230
	INV NO 1909014730 C.E. Invoice No 1009014711 DATE : 01.11.2014 PORef : TEQIP-II/2014/TN2G01/SHOPPING/148
...Of Debit Entry For PLA/RG23 : EXEMPTED ...me Of Removal : 01.11.2014 : 18:34 : 14	C.E Tariff Heading No : 85023990 C.E Notification No : 12/2012 DT 17.03.2012 S NO.332 LIST 8 Mode Of Transport : By Road

...No.	Description of Goods	Total Qty	Assessable value per Unit	Assessable value Rs	Excise Duty @ 10 %	Total Amount Rs
1	SOLAR POWER GENERATING SYSTEM 20 KW/P (SL NO.SP140800136)	1	1682990	1682990.00	0.00	1682990.00
	Total No of Packages 107		Sub total	1682990.00	0.00	1682990.00
				Edu Cess @ 2% ON BED		0.00
				Sec Edu Cess @ 1% ON BED		0.00
				Sub total		1682990.00
				VAT 5%		84149.50
				INSTALLATION CHARGE		274999.00
				SERVICE TAX @ 12%		33000.00
				ECESS @ 2%		660.00
				SEC ECESS @ 1%		330.00
...ble : NIL (EXEMPTED) ...se : NIL (EXEMPTED) ...U.Cess NIL (EXEMPTED)						
					TOTAL	2076120.50
					Rounded off to	2,076,129.00

...ount :
RUPEES TWENTY LAKH SEVENTY SIX THOUSAND ONE HUNDRED TWENTY NINE ONLY

...stration No : AAACN2366FXM007	RANGE : METTUR I
... 33560700851	DIVISION : SALEM II DIVISION
... 654929 / 07.10.1994	COMMISSIONERATE : SALEM
...mber : AAACN2366 F	Covered under Marine Transit Policy No 71090321140200000002
...Tax Regn No.AAACN2366FST009	VALID UPTO 11/07/2015, with NEW INDIA ASSURANCE CO.LTD

...I that the particulars given above are true and correct and the amount indicated Represents the price actually charged and ...r is no flow additional consideration directly or indirectly from the buyer.

...OF SALE
...under takes to submit the applicable Tax forms / Certificates
...reby declare that our registration certificate under TNVAT act 2006 is in force on the date of which sale of the goods specified in this invoice ...d to SALEM jurisdiction only

For SWELECT ENERGY SYSTEMS LTD

IDAPPADI SALEM

Authorised Signatory

...T: "Numeric House", 3 rd Floor, No. 5 , Sir P.S.Sivasamy Salai , Mylapore, Chennai-600004. Tel 044-24993266 Fax 044-24995179

Certified ... mentioned ... conditions ... overleaf have ... articles and that the quality ... the are found to be ... purchase order specifications ... and tested and ... the ... therein. Certified the ... overleaf have been put ... they are working ... entered in Page No. 17 ... 2 – I ... Department/Common ... Consumable Stock Register. The ... passed for payment for Rs. 20,76,129/-

Rupees Twenty lakhs seventy six thousand one hundred Twenty nine only.

Date 9/12/14 Prof ...

TEQIP-II / GCC-RSE-AG ...

TEQIP/Supdt

9/12/14

DUPLICATE / PROCUREMEN...

Passed for Rs. 20,76,12...

(Rupees Twenty lakh seventy s...

– thousand one hundred and

– twenty nine only)

10/12/14

PRINCIPAL
Government College of Technology
COIMBATORE-641 013

10/12/14

Che. NO: 543248
dt: 11.12.14
For Rs. 2076129/-

PRINCIPAL
Govt. College of Technology
Coimbatore - 641 013

11/12/14

NOT FOR CENVAT

SWELECT ENERGY SYSTEMS LIMITED

S.No. 58 / 3, 14D/1 NACHIYUR, SALEM MAIN ROAD, VEERAPAM/PALAYAM (PO),
IDAPPADI SALEM- 637 105
Phone No: 04283- 223155 FAX : 04283224056

Invoice cum Delivery Delivery Challan

Issue of Invoice under Rule 11 of Central Excise Rules, 2002

nd Address of Buyer:	Name and address of Consignee:	
NMENT COLLEGE OF TECHNOLOGY GAM ROAD ATORE - 641013 : 0422 - 2455230	GOVERNMENT COLLEGE OF TECHNOLOGY THADAGAM ROAD COIMBATORE - 641013 PH NO : 0422 - 2455230	INV NO 1600014790 C.E. Invoice No 1009014711 DATE : 01.11.2014 PORef : TEQIP-II/2014/TN2G01/SHOPPING/148

of Debit Entry For PLA/RG23 : EXEMPTED	C.E Tariff Heading No :	85023990	
ime Of Removal : 01.11.2014 : 16:34 : 14	C E Notification No :	12/2012 DT 17.03.2012 S NO.332 LIST 8	
	Mode Of Transport :	By Road	

...ss.	Description of Goods	Total Qty	Assessable value per Unit	Assessable value Rs	Excise Duty @ 10 %	Total Amount Rs
1	SOLAR POWER GENERATING SYSTEM 20 KWP (SL NO.SP140800136)	1	1682990	1682990.00	0.00	1682990.00
	Total No of Packages 107		Sub total	1682990.00	0.00	1682990.00

Edu Cess @ 2% ON BED	0.00
Sec Edu Cess @ 1% ON BED	0.00
Sub total	1682990.00
VAT 5%	84149.50
INSTALLATION CHARGE	274999.00
SERVICE TAX @ 12%	33000.00
ECESS @ 2%	660.00
SEC ECESS @ 1%	330.00
TOTAL	2076128.50
Rounded off to	2,076,129.00

...ble : NIL (EXEMPTED)
...ss : NIL (EXEMPTED)
...l.Cess NIL (EXEMPTED)

...ount : RUPEES TWENTY LAKH SEVENTY SIX THOUSAND ONE HUNDRED TWENTY NINE ONLY

...stration No : AAACN2366FXM007	RANGE : METTUR I
... : 33560700851	DIVISION : SALEM II DIVISION
... 654629 / 07.10.1994	COMMISSIONERATE : SALEM
...ber : AAACN2366 F	Covered under Marine Transit Policy No 71080321140200000002
...tax Regn No.AAACN2366FST003	VALID UPTO 11/07/2015, with NEW INDIA ASSURANCE CO.LTD

...That the particulars given above are true and correct and the amount indicated Represents the price actually charged and ...r is no flow additional consideration directly or indirectly from the buyer.

...OF SALE
...under takes to submit the applicable Tax forms / Certificates
...ebly declare that our registration certificate under TNVAT act 2006 is in force on the date of which sale of the goods specified in this invoice
...to SALEM jurisdiction only

For SWELECT ENERGY SYSTEMS LTD

Authorised Signatory

...: "Numatic House", 3 rd Floor, No. 5 , Sir P.S.Sivasamy Salai , Mylapore, Chennai-600004.Tel 044-24993266 Fax 044-24995179

100% Payment Certificate

Certified that the articles mentioned overleaf have been received in good condition and that the quantity and quality of the articles are found to be in accordance to the specifications mentioned in the purchase order on the subsequent amendments if any issued thereir. Certified that the articles mentioned overleaf have been put to beneficial use and that they are working satisfactorily. They have been entered in Page No. 17 Vol-I of EEE/EIE Department/Common Computer Cent.e. Non Consumable Stock Register. The bill may be passed for payment for Rs 20,76,129/- (Rupees Twenty lakh seventy six thousand, One hundred and twenty nine only.

Date 9/12/14

Prof. of Electrical EEE

ORI TRIPLICATE/ PROCUREM

Passed for Rs. 20,76,12

(rupees Twenty lakh Seventy

- thousand one hundred and

- twenty nine only)

10/12

PRINCIPAL

Government College of Technolo

COIMBATORE-641 013

10/12/14

Cle-No: 543248

dt: 11.12.14

For Rs. 20,76,129/-

10/12

PRINCIPAL

Govt. College of Technology

Coimbatore - 641 013

11/12/14

11/12/14

OFFICE OF THE PRINCIPAL:GOVT. COLLEGE OF TECHNOLOGY:COIMBATORE-13

PRESENT- Dr. V. LAKSHMI PRABHA, PRINCIPAL

PROCEEDINGS NO.TEQIP-II/B1/2014, DATED-10.12.2014

Sub: PURCHASE – TEQIP-Stores purchase – Govt. College of Technology,Coimbatore-13 – Financial Sanction – Accorded.

Ref: 1. G.O.Ms.No. 133, Hr.Edn.(C2) Dept. dt. 18.04.2006
2. G.O.Ms.No.391/Hr.Edn. (C2) Dept., Dt-16.12.2010
3.Purchase Order No.TEQIP-II/2013/TN2G01/Shopping/148 Dated-09.10.2014.

******

ORDER:

Under Items (4) of Appendix 5 of the T.N.F.C. Volume II read with the powers delegated in the G.Os. cited, sanction is hereby accorded for the payment of a sum of **Rs. 20,76,129/- (RUPEES TWENTY LAKH SEVENTY SIX THOUSAND ONE HUNDRED TWENTY NINE ONLY)** payable to the firm mentioned below towards the cost of Machinery & Equipment purchased from the firm for the use of **ELECTRICAL AND ELECTORONICS ENGINEERING DEPARTMENT** of this Institution, as detailed below:

Sl. No.	Name of the Firm	Details of the bill	Amount Rs.
1	M/S. SWELECT ENERGY SYSTEMS LTD. SALEM 637 105.	NO.1900014790 DATED-01.11.2014	2076129
TOTAL			2076129

Rs.20,76,129/- (RUPEES TWENTY LAKH SEVENTY SIX THOUSAND ONE HUNDRED AND TWENTY NINE ONLY)

The above expenditure is debitable to the following Head of Account:

"2203 Technical Education-112 Engineering/Technical Colleges & Institutes-Schemes in the Tenth Five year Plan-II State Plan-PA Technical Education Quality Improvement Programme."
"TEQIP PHASE-II- PROCUREMENT "

Sd/-V. LAKSHMI PRABHA
PRINCIPAL

11/12/14
PA TO PRINCIPAL
OFFICER COMPETENT TO COMMUNICATE THE SANCTION

To
TEQIP Phase II /CoE-AER - Nodal Officer

11/12/14

Copy to-

1) Professor of EEE
2) "B1" Stock File.
3) TEQIP Office.

17-12-2014

Stamp Receipt

We received with thanks from The Principal, Government College of Technology, Thadagam Road, Coimbatore-641013 of Rs.20,76,129 (Rupees Twenty Lakhs Seventy Six Thousand One Hundred and Twenty Nine Only) vide DD Ch. no: 662473 DT 12.12.2014 drawn on State Bank of India, GCT Branch Towards supply and installation of 20Kw Grid Connected Roof top solar power generating system.

For Swelect Energy Systems Limited

G. Valuswamy

Authorised Signatory

SWELECT ENERGY SYSTEMS LTD * CBE - 18

SWELECT ENERGY SYSTEMS LIMITED
S.No 58/3 NACHIYUR,
SALEM MAIN ROAD,IDAPPADI
SALEM - 637105.
Phone No : 04283-223155, Fax : 04283-224055

TOTAL WEIGHT: 3525 KGS

PACKING SLIP

Address:

GOVERNMENT COLLEGE OF TECHNOLOGY
THADAGAM ROAD
COIMBATORE - 641013
PH NO: 0422-2455230

Invoice No : 1900014790
Date : 01.11.2014

PO TEQIP-II/2014/TN2G01/shopping/148 DT 09.10.2014

Sl.No	Description	Quantity	No.Of Pkgs.
	20 KWp SOLAR POWER GENERATING SYSTEM (SL NO.SP140800136) KNOCKED DOWN & PACKED AS		
1	SOLAR PV MODULE 12V 250WP	80	4
2	SOLAR HYBRID UPS 10 KW GRID INVERTER SL NO.1308T00008,T00019	2	2
3	SOLAR MODULE MOUNTING STRUCTURE	1 SET	84
4	EARTH KIT	4 SET	1
5	MOISTER BOOSTER (25KG,12.5 KG)	4	6
6	ACDB BOX	1	1
7	ACCESSORIES BOX	1	1
8	LIGHTNING BASE	1	1
9	CABLE	3	3
10	GI STRIP	200	3
11	DATA LOGER	1	1
	TOTAL NO. OF PACKAGES :		107

☑ Installation Certificate ☑ User Manual ☐ Battery Links ☐ Test Report

Verified By :

Manager :

Packed By:

PPC/FMT/03

SWELECT ENERGY SYSTEMS LTD

INSTALLATION / WARRANTY CERTIFICATE No :

er Name, City & State :GOVERNMENT COLLEGE OF TECHNOLOGY
ner Name, City & State :GOVERNMENT COLLEGE OF TECHNOLOGY

Address :
ENT COLLEGE OF TECHNOLOGY
OUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY)
ROAD,
E-641013

Dr.(Dr N.DEVARAJAN (PROFESSOR OF ELECTRICAL ENGINEER)
94432-45163 / 0422-2432221

Installation Site Address :
GOVERNMENT COLLEGE OF TECHNOLOGY
(AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY)
THADAGAM ROAD,
COIMBATORE-641013

Contact Person:Dr N.DEVARAJAN (PROFESSOR OF ELECTRICAL ENGINEER)
Phone No: 94432-45163 / 0422-2432221

pe : DIRECT CUSTOMER / OEM / RD | DAN No :103213 | Date: 10.10.2014 | Invoice No : 1800014790 | Date :01-11-2014

guration : Stand alone / Solar Inverter / Solar Hybrid UPS / Grid Inverter / Grid Interactive | Type of Load :GRID

DESCRIPTION	RATING	QTY	MODEL
	250 WP	60 NO'S	SERAPHIM
V BOX		2 NO'S	SWBES
RID SW INVERTER	10KVA	2 NO'S	GI10000
N TRANSFORMER		NA	
		NA	
NG DEVICE		YES	
ION DEVICES		LA,EARTH ELECTRODES	
E ARRESTOR	YES ☑	NO ☐	
	YES ☑	NO ☐	
PLIED BY	SWELECT ☑	CUSTOMER ☐	
SUPPLIED BY	SWELECT ☐	CUSTOMER ☐	

DATE : 03-11-2014 INSTALLATION DATE: 18/11/2014

SYSTEM DETAILS

PV Panel Make : SERAPHIM Type :MULTI CRYSTALLINE
Pmax : 250 Panels in series 16 SERIES
Voc : 37.1V Panels in parallel 5 PARALLEL
Vmp : 29.9V String voltage 460 Array voltage 460
Isc : 8.62A
Imp : 8.35A String current 4 Array current 4

Weather Condition during installation : Bright sunlight / Partial cloudy / Cloudy / Rainy
If no. of strings and arrays are more, please specify the details at backside
Mounting Structures : Permanent / Removable (Civil work type)
Tracking System : YES ☐ NO ☑
Single Axis Tracking ☐ Double Axis Tracking ☐

WARRANTY : AS PER PO Months from the Delivery Date OR AS PER PO Months from the Installation Date whichever is earlier
NTY ** : 24 MONTHS Months from the Delivery Date OR 24 MONTHS Months from the Installation Date whichever is earlier
RRANTY ** : NA Months from the Delivery Date OR NA Months from the Installation Date whichever is earlier

** Batteries are not installed within 90 days from the date of invoice, then the warranty for the Batteries is null and void

The above equipment are Installed and Commissioned in good condition and to our satisfaction

:

ENERGY SYSTEMS LTD
Date 18/11/2014
V.Vijayalakshmi
Service Engg
Coimbatore

SWELECT ENERGY SYSTEMS LTD CBE - 18

COMMENTS:

18-11-14

CUSTOMER SIGNATURE WITH OFFICE SEAL
Signature & Date :
Name :
Designation :
Location :

Dr. N. DEVARAJAN M.E., Ph.D.,
Professor and Head
Department of Electrical Engineering
Government College of Technology
Coimbatore - 641 013

CONTACT DETAILS : SWELECT ENERGY SYSTEMS LTD

Center Ph No: 9543771440	HELP DESK No:18004259600
Mobile No:8144035720	HO Service Ph No:044-24993286(Extn:9510/20)
er Ph No:9382606547	HO Service Mobile No:8144035720
@swelectes.com	HO Service Email ID :ho.service@swelectes.com

JUNCTION BOX DETAILS

Junction Box	Sl.Nos	Qty	Surge protection devices	Cable Length in M
String Junction Box (SJB or SCB)		2		
Array Junction Box (AJB)				
Main Junction Box				

PCU Serial Numbers

Solar Charge Controller	NA	Battery Batch / Serial Nos : NA
SPI / BDI / SWI Inverter	SR NO:1308T00019 & SR NO:1308T00008	
UPS / Inverter	NA	
Isolation Transformer	NA	

Solar Panels

93112714131217209 2	93112714131217194 4	93112714131217221 8
93112714131217215 8	93112714131217192 0	93112714131217208 1
93112714131217216 3	93112714131217195 2	93112714131217174 9
93112714131217218 2	93112714131217176 9	93112714131217177 5
93112714131217206 1	93112714131217174 2	93112714131217190 5
93112714131217207 5	93112714131217134 6	93112714131217190 8
93112714131217219 7	93112714131217172 0	93112714131217196 5
93112714131217209 1	93112714131217170 6	93112714131217166 7
93112714131217217 0	93112714131217151 6	93112714131217195 5
93112714131217213 6	93112714131217177 2	93112714131217196 2
93112714131217205 7	93112714131217178 0	93112714131217193 6
93112714131217214 5	93112714131217176 8	93112714131217173 7
93112714131217213 2	93112714131217176 4	93112714131217173 2
93112714131217206 5	93112714131217173 6	93112714131217192 9
93112714131217215 6	93112714131217159 2	93112714131217174 8
93112714131217217 6	93112714131217163 5	93112714131217189 4
93112714131217202 6	93112714131217124 9	93112714131217151 8
93112714131217203 8	93112714131217174 9	93112714131217160 9
93112714131217211 9	93112714131217195 6	93112714131217176 2
93112714131217196 0	93112714131217199 0	93112714131217164 7
93112714131217159 8	93112714131217219 2	93112714131215128 5
93112714131217195 1	93112714131217216 0	93112714131215121 6
93112714131217193 2		
93112714131217186 4		
93112714131217193 7		
93112714131217192 5		
93112714131217195 7		
93112714131217197 2		

Other details if any :

SWELECT ENERGY SYSTEMS LTD

swelect

SERVICE CALL REPORT

Registered Office : 3rd Floor, No : 5, Sir P.S.Sivasamy Salai, Mylapore, Chennai 600 004, Fax : 044 2499 5179, E mail : info@swelectes.com

CUSTOMER NAME & ADDRESS : Government College of Technology, Thadagam Road, Coimbatore

SERVICE CALL REPORT NO : 13347

DATE :

CONTACT PERSON NAME : Dr. N. Devarajan

SERVICE BRANCH NAME : Coimbatore

TELEPHONE / MOBILE No : 94432 ... 52

SERVICE BRANCH CONTACT No :

SERVICE BRANCH EMAIL ID : Cbe - Sales@swelect...

SITE CATEGORY : LOCAL ☑ OUTSTATION ☐

Call Received on ______ at ______ hrs; Call Registration No : ______

Call Assigned on 6/11/14 at ______ hrs; Call Attended on 8/11/14 at ______ hrs; Call Completed on 20/11/14 at ______ hrs

Customer Category	Direct ✓	Channel	OEM	SCC / Inv Model :	
				Panel Make :	
Customer Status	UW ✓	AMC	UP	PCB	Panel Type :
				Maximum Power Pmax :	
Call Type	Major ✓		Minor	Open Circuit Voltage Voc :	
				Max. Power Voltage Vmp :	
UPS / INV Rating	10 KVA			Max. Power Current Imp :	
Sl.No	2057000019 / 1305700007			Short Circuit Current Isc :	
SCU Rating Kw		DC Volts / Amps			
PCU CONFIGURATION		SCC / INV Sl.No	2057000019 / 1305700007		
Hybrid	Grid Tied	Grid Interactive			
SERVO STABILIZER / ISOLATION		KVA		Sl.No :	

TYPE OF CALLS

Installation		Software Installation		Standby Unit / Ball	
Re-Installation		Disconnection		Battery Backup	
Observation		Modification		Battery Replacement	
P.M - Minor		Breakdown Call		Battery Order	
P.M - Major		Repeat BD Call		Buyback	
Battery P.M		Pending Call		AMC Related	
Site Inspection		Discussion		Training / Demo	
Battery AH		Battery Make :		Battery Type :	
Battery Volts		Battery Batch/ Sl.Nos :			
Battery Qty					
No. of Sets					

PROBLEM REPORTED BY CUSTOMER : 20kw Solar System with 10KW Grid inverter pre commissioning and commissioning

ROOT CAUSE OF FAILURE (ENGG OBSERVATION) : Today 20kw Grid Solar System completely precommissioning and 2x10 Grid inverter commissioning

ACTION TAKEN : Completed. Inverter was good running

CONCLUSION OF FAILURE :

DETAILS OF FAILED AND REPLACED SPARE PARTS

Material Code	Material Description	Actual Failed Qty	Actual Failed Sl.No / Part no.	Replaced Qty	Replaced Sl.No / Part no	Remarks

UPS / INV PARAMETERS		BATTERY PARAMETERS		SITE PARAMETERS	
I/P Volts (V)		DC Volts W/O Mains (V)		Power Failure duration / Day	
O/P Volts (V)		Battery condition - O.K		No.of Power Failure / Day	
O/P Volts W/O Battery (V)		Battery condition - Weak		Input power variation	
O/P Volts With Battery (V)		Distilled Water Level		Genset availability	
Charging Current (I)		Specific Gravity		Dedicated earth availability	
Current (I)		Cell Voltage (V)		Room Temperature (C)	
Neutral to Earth Volts (V)		DC Low Cut-off Voltage		A.C / Room Ventilation	

SYSTEM DETAILS

Panels in Series		PCU O/P Volts (V)	
Panels in Parallel		Neutral to Earth Volts (V)	
String Voltage (V)		SCC to Batt Amps (I)	
String Current (I)		SCC to Inv Amps (I)	
Array Voltage (V)		SCC Total O/P Amps (I)	
Array Current (I)		Batt to Inverter Amps (I)	
PCU I/P Volts (V)		Type of Load:	

CURRENT STATUS : Working Satisfactorily ☐ RWF ☐ Down ☐

Weather Condition : Bright sunlight / Partial cloudy / Cloudy / Rainy

Service Engineer's Remarks / Suggestion :

Name : Vijayakumar S

Sign & Designation : Service Engineer

Quality Service Mgr / Follow-up for completion

Date :

Customer Comments :

20-11-14

Dr. N. DEVARAJAN M.E., Ph.D.,
Professor and Head
Department of Electrical Engineering
Government College of Technology
Coimbatore

Customer Signature with Seal

Off. use : Data Entry Done Sign. / Date :

Customer Copy

SER/05

PANTECH SOLUTIONS
Technology Beyond The Dreams

INVOICE

Pantech Prolabs India Pvt Ltd., #41, Rajeswari Street, Santosh Nagar, Chennai - 600 096, Tamil Nadu, India ph: +91 44 64524445/46/47 TIN:33080928192 CST:1127117	***Invoice No.*** PS/A/30	***Invoice Date*** 28-Nov-14
	Other Reference(s)	***Buyer's order Date*** 28-Mar-14
	Buyer's order No. **TEQIP-II/2013/TN2G01/SHOPPING/106 DT:28-3-2014**	
Buyer GOVERNMENT COLLEGE OF TECHNOLOGY COIMBATORE-13	***Despatch Document N*** 190/A	***Despatch Date*** **18/11/2014**
	Terms of Payment IMMEDIATE	

S.No	*Description of Goods*	*Quantity IN NOS*	*Unit Price (INR)*	*Amount (INR)*
1	5KW SOLAR PV PANELS(THIN FILM) AND POWER CONDITIONING UNIT WITH BATTERY BANK	1	950,952.40	950952.40
	TOTAL	1		950,952.40
	SUB TOTAL			950,952.40
	TAX 5%			47,547.62
	GRAND TOTAL			998,500.02
	Amt Chargeable(in words)(INR)		Round off	**998,500.00**

NINE LAKH NINTY EIGHT THOUSAND FIVE HUNDRED RUPEES ONLY

Signature & Date

For Pantech Prolabs India Pvt Ltd.,

PANTECH PROLABS INDIA PVT LTD CHENNAI-96

Authorised Signatory

We declare that this invoice shows the actual price of the goods described & all are true and correct

SO-4

Government College of Technology
(Autonomous Institution Affiliated to Anna University)
Thadagam Road, Coimbatore- 641013 Tamil Nadu, India
Tel: 0422-2455230 email: profvlp@gct.ac.in

PURCHASE ORDER

Reference No:	TEQIP-II/2013/TN2G01/Shopping/106
Date of Issue:	29-Mar-2014
Subject:	5KW solar PV panels(Thin film) and power conditioning unit
Purchaser:	Government College of Technology, Coimbatore
Supplier Name:	PANTECH PROLABS INDIA PVT LTD 841, RAJESWARI STREET, SANTHOSH NAGAR, KANDANCHAVADI, Chennai, Tamilnadu, 600096

With reference to our correspondence, **Government College of Technology, Coimbatore** is please to award this detailed Purchase Order to **PANTECH PROLABS INDIA PVT LTD** for supply of items as p the details given below at a total cost of **998500.00 (Rupees Nine Lakh Ninety Eight thousand ar Five Hundred only)**

Sr. No	Item Name	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)	Delive Perio
1	5KW solar PV panels(Thin film) and power conditioning unit	1	950952.4	950952.4	90

53

Total price (without taxes)	:	Rs. 950952.40
Total applicable taxes	:	5 %
Total price (with taxes)	:	Rs. 998500.00

Delivery	:	**Government College of Technology, Coimbatore**
Testing/Installation Clause (if any)	:	**Required**
Training Clause (if any)	:	**Required**
Technical Specifications	:	As per Annexure - 1
Delivery Period	:	As specified for each item from date of issue of confirm purchase order or as early as possible.
Warranty	:	**24 Months**
Payment Terms	:	**Delivery and Installation - 0% of total cost** **Satisfactory Acceptance - 100% of total cost**

For

Government College of Technology, Coimbatore

25/3/14

(Authorized Signatory)

Name & Designation **Dr. V. LAKSHMI PRABHA**
Principal
Government College of Technology
Coimbatore - 641 013.

Accepted by

Signature

Date 10-4-14

Address Pantech Polabs India Pvt ltd
A1, Rajeswari St, Santhosh nagar, Kundanchavadi
Chennai - 96

PANTECH POLABS (I) PVT. LTD.

804.

Annexure I

Sr. No	Item Name	Specifications	Qty
1	5KW solar PV panels(Thin film) and power conditioning unit	SPECIFICATION FOR 5KW SOLAR (Thin Film) BASED SINGLE PHASE AC SOURCE • 5KW (5000Watts) Thin Film solar panel. Nominal Power : 100 W Open circuit Voltage : 50.5V Short Circuit Current : 3.3 A Max. Power Voltage (Vmp) : 37.5V Maximum Power Current : 2.66 A • 5KW Power conditioner Unit (PCU) (With MPPT charge controller) with battery backup. 12V, 150AH, C-10 Battery – 10 Nos. with Battery stand. Over load, Over temperature, Over discharge, and Short circuit protection. Digital LCD display indicating Battery capacity status, Working power and Output power. • DC cables between module & PCU and PCU & Battery bank. • AC cables between PCU & Grid supply and PCU & loads. • Steel structure materials for mounting Photo Voltaic (PV) modules on roof. • PV array combiner box, Junction Box. • All cables should be copper. With Complete installation, Commissioning and training	1Set

Department of Electrical and Electronics Engineerin
Government College of Technology, Coimbatore -1
Date : 16-02-201

Submitted to the Principal:

Sub: Requisition for 2 Nos of Balance of System – MNRE / GIZ Solar PVT Demonstration Project – Justification Submitted - reg.

Ref: 1. MNRE Lr. No. 05/14/2012-13/ST Dated: 02.06.2017
2. Annexure-I, from GIZ – List of Potential Sites

With reference to the above letters, MNRE, India and GIZ, Germany communicated th it would consider GCT, Coimbatore as a potential site for installation of a latest technology Solar Photovoltaic Thermal (SPVT) system. The initial allotment was supposed to be 10kV but later identifying our shade free roof top with potential thermal consumers, the allotme was revised to 20kW.

It is proposed to install them as two separate 10KW systems one on the top Amaravathi Girls Hostel and one on the top of Bhavani Illam Boys hostel. The list of items be supplied by GIZ, Germany is enclosed herewith.

Based on the understanding with MNRE and GIZ, from the point of thermal generati and dc electrical generation, GCT has to take care of the Balance of Systems (BoS) for t systems for effective utilization of generated energy. Initially permission was obtained installation of BoS for a single 10 kW system. Now, an additional 10 kW system has be permitted by MNRE and the total capacity allotted for GCT is 20kW.

Hence it is requested that, permission please be granted to purchase Two numb of Balance of Systems, One each, for the separate 10 kW SPVT systems to be instal at Amaravathy Illam and Bhavani Illam roof tops at GCT, Coimbatore.

The advantages of having two separate systems are:

- Effective utilization of the hot water which can be used by Students for bathing
- Load distribution into two separate buildings
- From research point of view for the same geographical location, for the si ambience conditions data can be analyzed for different parameter variations.
- For each site at GCT, a separate PV panel of same rating has also b provided to compare the PV and PVT panel efficiencies.
- Similarly provision is available to acquire data of all the five systems to installed in India, thereby a societal need based research can be done.
- Effective extension of the research can be developing an indigenous sys which can find potential consumers like hotel industries where currently Solar thermal generation or Solar PV for electric generation is done.

Professor & Head / EEE

Coimbatore
16.02.2018

Enclosure:

1. MNRE Lr. No. 05/14/2012-13/ST Dated: 02.06.2017
2. Annexure – I. List of Potential Site and Installation details from GIZ, Germ
3. List of Equipment to be supplied by GIZ, free of cost to GCT, Coimbatore
4. Specification of BoS for 10kW System.

Government College of Technology
(Autonomous Institution Affiliated to Anna University)
Thadagam Road, Coimbatore- 641013. Tamil Nadu, India
Tel: 0422-2455230 email: principal@gct.ac.in

PURCHASE ORDER

Reference No: TEQIP-III/2018/gctc/Shopping/19

Date of Issue: 11-May-2018

Subject: Balance of Sytem for 10kW Solar PVT

Purchaser: Government College of Technology
Thadagam Road Coimbatore

Supplier Name: M/s.MANGLA SMART ENERGY SOLUTIONS
PRIVATE LIMITED
69, PERUMAL KOIL STREET, TIRUPUR- 641604

With reference to our correspondence, **Government College of Technology Thadagam Road Coimbatore** is pleased to award this detailed Purchase Order to **M/s.MANGLA SMART ENERGY SOLUTIONS PRIVATE LIMITED** for supply of items as per the details given below at a total cost of Rs.**17,77,230.00** (Rupees Seventeen Lakhs Seventy Seven Thousand Two Hundred and Thirty only):

Sr. No	Item Name	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)	Delivery Period
1	Balance of Sytem for 10kW Solar PVT	2	846300	1692600	35

Total price (without taxes) : Rs. **1692600.00**

Total applicable taxes : **5 %**

Total price (with taxes) : Rs. **1777230.00**

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Delivery	:	**Government College of Technology Thadagam Road Coimbatore**
Testing/Installation Clause (if any)	:	**needed**
Training Clause (if any)	:	**required**
Technical Specifications	:	As per Annexure - 1
Delivery Period	:	As specified for each item from date of issue of confirmed purchase order or as early as possible.
Warranty	:	**24 Months**
Payment Terms	:	**Delivery and Installation - 0% of total cost** **Satisfactory Acceptance - 100% of total cost**

For
Government College of Technology
Thadagam Road Coimbatore

11.5.18

(Authorized Signatory)

Name & Designation

PRINCIPAL
Govt. College of Technology
Coimbatore - 641 013

Accepted by For MANGLA SMART ENERGY SOLUTIONS (P) LTD

Signature

Date 03/07/2018 Director

Address MANGLA SMART ENERGY SOLUTIONS (P) LTD
69, Perumal Koil Street,
Tirupur - 641 6[illegible].
TAMILNADU, INDIA.

Annexure I

Sr. No	Item Name	Component	Details	Quantity Required
1	Balance of System for 10kW Solar PVT	(a) Solar Grid Tied String Inverter - 10 kWp with MPPT Charge Controllers	**Switching Device: MOSFET** **Control: DSP Based** **DC Input:** Normal DC Voltage: 500V MPPT Range: 250 to 600V **AC Output:** Output Power: 10 kW Max. Power: 11 kW Operating Voltage: 400 , 3 phase, -10% to +10% Operating Frequency: 50 Hz Grid Frequency Synchronization range +/- 5 Hz Ambient temperature considered -20° C to 50° C Humidity 95 % Non-condensing No-load losses Less than 1% of rated power Inverter efficiency greater than 93% THD less than 3% PF greater than 0.9 **Protection:** Inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown. The output of power factor of Inverter is suitable for all voltage ranges or sink of reactive power. Anti-islanding (Protection against Islanding of grid): The Inverter shall have anti islanding protection in conformity to IEEE 1547/UL 1741/ IEC 62116 or equivalent BIS standard. The Inverter generated harmonics flicker, DC Injection limits, Voltage Range, Frequency Range and Anti-islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines. The Inverter should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2 (1,2,14,30)/ Equivalent BIS Std. The PV module structure components shall be	2 Nos

			electrically interconnected and shall be grounded. Earthing shall be done in accordance with IS 3043-1986. DC side and AC side earthing should be separate.
		(b) Mounting Structure for 34 No PVT Panels + 1 PV Monitoring Module	Hot dip galvanized MS / Aluminium mounting structures may be used for mounting the modules/ panels/arrays. Each structure should have angle of inclination as per the site conditions to take maximum insolation. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels. The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where the PVT and PV system is proposed to be installed. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed. The fasteners used should be made up of stainless steel.
		(c) DCDB & ACDB FOR 10 kWp	**DC Distribution Box** A DC distribution box shall be mounted close to the solar grid inverter. The DC distribution box shall be of the thermo-plastic IP65 DIN-rail mounting type and shall comprise the following components and cable terminations: - Incoming positive and negative DC cables from the DC Combiner Box; - DC circuit breaker, 2 pole (the cables from the DC Combiner Box will be connected to this circuit breaker on the incoming side); - DC surge protection device (SPD), class 2 as per IEC 60364-5-53; - Outgoing positive and negative DC cables to the solar grid inverter. **AC Distribution Box** An AC distribution box shall be mounted close to the solar grid inverter. The AC distribution box shall be of the thermo plastic IP65 DIN rail mounting type and shall comprise the

			following components and cable terminations: - Incoming cable from the solar grid inverter - AC circuit breaker - AC surge protection device (SPD), class 2 as per IEC 60364-5-53 - Outgoing cable to the building electrical distribution board - Connection to the Building Electrical System. All the electrical cables shall be supplied conforming to IEC 60227/ IS 694 & IEC 60502/ IS 1554. For the DC cabling, Solar cables with multi stranded copper conductors XLPE or XLPO insulated and sheathed with the voltage rating of 1500 V DC or higher UV stabilised single core flexible copper cables shall be used. For the AC cabling, PVC or XLPE insulated and PVC sheathed single or multi-core flexible copper cables shall be used. The DC cables from the SPV module array shall run through PVC conduit pipe of adequate diameter. Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers. All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with clamps.	
		(d) Primary / Solar Circuit - Fluid, Hot Water Pipes, Fittings & Accessories	• The dimension of the pipe has to be minimum 1 ¼" (DN32). • Installation should not affect the hot water installation because of galvanic corrosion. • The pipe material should withstand stagnation temperature of 84 ° C.	
		(e) Hot Water Storage Tank, Stand, Hot Water Pipes, Fittings & Accessories	• Total Capacity of the Tank 2000 Litres • Hot water Pipeline from Solar Tank to User Points	
		(f) Cold Water Storage Tank	• Total Capacity of the Tank 2000 Litres • Water Pipeline from Source to Cold Water tank • Water Pipeline from Cold Water Tank to Hot Water tank	

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		& Structure Cold Water Pipes, Fittings & Accessories **(g)** Lightning protection **(h)** Fire Extinguisher	• Lightning protection as per IS 2309 "Protection of Buildings and Allied structures against Lightning – code of practice" (second revision) (1989) shall be provided. The Fire fighting system for the proposed power plant shall consist of One portable fire extinguisher near control panel for probable fire caused by electrical short circuit and one sand bucket.

From,
P. IMMANUEL JOHN SAMUEL. Register No: 1314369177
PhD Research scholar (Full Time),
Department of Electrical Engineering,
Government College of Technology,
Coimbatore – 641 013

A committee with supervisor and experts be formulated and approved. Budget amount can be released in phased manner with completion approval
19/11/14

To,
The Principal,
Government College of Technology,
Coimbatore - 641 013

Through HOD Electrical Engineering.

Sub: Project of Sensor less Dual axis solar panel tracking complete arrangement for Agriculture irrigation purpose – Financial Assistance – Centre of Excellence (AES) -Requested - Regarding

Dear Sir,

I am doing research in renewable energy like alternative energy from solar for irrigation application, already I had selected in one of over 100 projects in world from M/s Phoenix Contact German -Xplore New automation award 2015. They sponsored 3000 Euro for their own control components, now I need financial support for monocrystalline solar panel 250watts -25Nos, complete structure mechanical arrangement, dual axis driving motors for daily and monthly motion, wiring accessories, 5kW Solar Inverter. Herewith I enclosed brief details and estimation for your perusal.

I kindly request you to grant the project cost, to develop the complete dual axis solar panel tracking system, it will help to research the difference in MPPT for fixed panel and dual axis moving panel, now I am selecting monocrystalline panel already we have thin film panel and polycrystalline panel to find the maximum power yield, voltage &current Vs sun irradiation, wind for cooling the panel at same location. Now I am choosing dual 3phase motor (poly phase) to analysis the harmonic's and running torque.

If I have done the above work, it will supply continues power to run our GCT submersible pump (7.5HP) at day time to save the EB power. This project is very much useful for the Agriculture Irrigation purpose by solar power, hence the conversion power is saved.

Thanking you,
Yours faithfully,

IMMANUEL JOHN SAMUEL .P

Date : 19-11-2014

From

Dr. N. Deverajan (Convener)
Professor of Electrical Engg
Government College of Technology
Coimbatore – 641 013

To

Dr. V. Gopalakrishnan –Associate Professor & Supervisor (Member)
Government College of Technology,
Coimbatore – 641 013

Sir,

Sub: First Committee Meeting – Project of Sensor Less Dual axis solar panel tracking Complete arrangement for Agriculture irrigation purpose - regarding

Ref: Committee formation letter, dated 20-11-2014

With reference to the above, the first expert committee meeting for Project of Sensor less dual axis solar panel tracking complete arrangement for agriculture irrigation purpose of the full time research scholar P. IMMANUEL JOHN SAMUEL, Register No. 1314369177 is schedule to be held on 24-11-2014 at 3pm in EEE seminar Hall, you are requested to attend the meeting.

Thanking you

21.11.14

Professor of Electrical Engg

Place: Coimbatore – 13

Date: 21-11-2014

Copy to: Favour the Principal to information submission.

From

Dr. N. Devarajan
Professor of Electrical Engg
Government College of Technology
Coimbatore -641 013

To

The Principal
Government College of Technology
Coimbatore -641 013

Sub: TEQIP II- COE(AEE)- Expert Committee for Project of sensor less Dual axis solar panel tracking Complete arrangement for Agriculture irrigation purpose – regarding

Ref : Research scholar's application submitted to Principal dated:19.11.14

With reference to the application of the full time research scholar P. IMMANUEL JOHN SAMUEL, Register No: 1314369177 cited above and Principal's direction the following expert committee is constituted to supervise the project " Sensor less Dual axis solar panel tracking Complete arrangement for Agriculture irrigation purpose"

1. Dr.N. Deverajan – Professor & HOD of Electrical Engineering(Convener)
2. Dr.K.S.Amirthagadeswaran - Professor & HOD of Mechanical Engineering(Member)
3. Dr.V.Gopalakrishnan - Associate Professor & Supervisor of Research Scholar(Member)

The committee will meet periodically to approve the project and the budget amount will be released in a phased manner.

Thanking you

Place: Coimbatore – 13
Date: 20.11.14

20/11/14
Professor of Electrical Engg

Copy to all the committee members

Department of Electrical Engineering
Centre of Excellence (AER)
Government College of Technology
Coimbatore -614 013

Submitted to the Principal

Minutes of the Expert committee meeting

IMMANUEL JOHN SAMUEL. P Full time research scholar under the guidance of Dr.V.Gopalakrishnan explained the complete overview and objective of the project. The expert committee had suggested the following points

1. To increase the FOS (Factor of Safety) ~~to~~ of the structure from 2 to 3
2. To plan to provide the space (gap) between the adjacent sides of PV panel to avoid the abnormal wind force.

The expert committee had approved the above project and suggest to release the Ist phase work approximate amount Rs465000/- (Rupees Four Lakhs sixty five thousand only)

Dr. V. Gopalakrishnan (Member)
Associate Professor

Dr. K. S. Amirthagadeswaran (Member)
Professor & HOD of Mechanical Engineering

Dr. N. Deverajan (Convener)
Professor of HOD of Electrical Engineering

Place: Coimbatore -13
Date: 25-11-2014

Ist Phase work - Required Materials & Approximate cost					
Sl.No	Description	Qty	UOM	Price/Qty	Amount in INR
1	Supply and Erection of fabricated structure for Dual axis complete panel arrangement with structure to coat by hot dipped gavanizing and middle frame assembly coat by PU paints	1	Set	360000	360000
2	12" Enclosed Slewing Drive Ratio 78:1, Right Hand Mounting 24V BLDC Motor, 0.05 rpmwith hallsensor	1	No	75000	75000
3	3" Enclosed Slewing Drive Ratio 78:1, Right Hand Mounting 24V BLDC Motor, 0.05 Rpmwith Hallsensor	1	No	30000	30000
	Total cost of I st Phase work				465000

IInd Phase work - Required Materials & Approximate cost					
Sl.No	Description	Qty	UOM	Price/Qty	Amount in INR
1	Moncrystalline panel 250watts, Diamensions 1639 x 989 x 30 mm, Cell efficiency 17.3, open circuit voltage 37.38V, Short circuit current 8.58A, IP 65	25	No	14100	352500
2	Inverter 5KW, CG VSU48-013 CNB	1	No	36000	36000
3	IP 67 Polymer panel with surge protector, suitable wires and connectors	1	Set	5500	5500
4	Earthing - 2mts copper rod with chemical earthi	2	Set	5000	10000
5	Concrete foundation with an anchor	1	Set	5000	3000
	Total cost of IInd phase work				407000
	Total cost of project				872000

GOVERNMENT COLLEGE OF TECHNOLOGY, COIMBATORE-641 013

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CENTER OF EXCELLENCE ON ALTERNATE ENERGY RESEARCH

ADVISORY COMMITTEE MEETING-II

ANNEXURE -II

Date: 02.01.2015

The following proposals are approved by the Advisory Committee for Interdisciplinary research under CoE-AER.

Interdisciplinary Research:

Sl.no	Title of the Project	Approximate Budget(Rupees)
1	Improvement of solar cell efficiency by using special material	30,000
2	Energy storage materials from nano composites of activated carbon	1,00,000
3	Improvement of aerodynamic efficiency by wind turbine blade design	5,00,000
4	Melanised bio-solar cell	1,35,000

Department Research: (UG & PG)

Sl.no	Title of the Project	Approximate Budget(Rupees)
1	Sensor less Dual axis solar panel tracking complete arrangement for Agriculture irrigation purpose - PG	9,00,000
2	PWM switching Circuit which can reduce the power consumption of LED - PG	21,500
3	Design of Charge Controller Circuit - PG	21,500
4	Design of control circuit, which dims the LED when there is sufficient amount of natural light - PG	21,500
5	BE - EEE - VIII Sem (2014 - 2015) Projects related to Alternate Energy research.	1,76,660

Signature:

Dr. N. DEVARAJAN M.E., Ph.D.,
Professor and Head
Department of Electrical Engineerir
Government College of Technolog
Coimbatore - 641 013

Dr. K.K.Sasi

Er. A.D. Thirumoorthy

Mr. B.Hariram

Mr. A.K.Unnikrishnan

OFFICE OF THE PRINCIPAL GOVT COLLEGE OF TECHNOLOGY
COIMBATORE

PRESENT: Dr. V. LAKSHMI PRABHA, Ph.D., PRINCIPAL

PROCEEDINGS NO: 04/TEQIP/ PHASE II/CoE-AER / 2015 DATED :27.01.15

Sub: Technical Education- Government College of Technology. Coimbatore-13. Research Grant for Phd. Research scholor Financial sanctioned – Accorded.

Ref: Second Advisory Committee Meeting Dated. 02.01.15

****

Sanction is hereby accorded for the drawal of a sum of Rs. 4,65,000/- (Rupees Four Lakh sixty five thousand Only) towards the payment of Advance payable to Thiru. Immanuel John Samuel full time Phd. Scholor towards the Research Project as detailed below.

Sl.No.	Name of the Project	Name of the Student	Amount Rs.
1	Sensor less Dual axis Solar Panel Tracking complete Arrangement for agriculture Irrigation pump.	P.Immanuel John Samuel, full time Phd. scholor	4,65,000/-

(Rupees Four Lakh sixty five thousand only)

The advance sanctioned through this proceedings will be adjusted by presenting a detailed Vouchers to the TEQIP OFFICE after completion of the Project.

The expenditure is debitable to the following Head of Account

2205-00- Technical Education 112 Engineering/ Technical Colleges and Institutes -- Schemes in the Twelfth Five Year Plan-VI Schemes shared between State and Centre UA Technical Education Quality Improvement Programme Phase II. Centre of Excellence in AER. "Research & Development Programme".

PRINCIPAL

To

Thiru. P.Immanuel John Samuel
Phd. Scholor
Thro' HOD/EEE.

Copy to:

HOD/EEE
Dr. K.S.Amirthagadeswaran, HOD/Mechanical engg.(Member)
Dr. V.Gopalakrishnan, Asso.Prof & Supervisor of Research scholor (Member)

From
P. IMMANUEL JOHN SAMUEL, Register No: 1314369177
Ph.D. Research Scholar (Full Time),
Department of Electrical Engineering,
Government College of Technology,
Coimbatore – 641 013

To
The Principal
Government College of Technology,
Coimbatore – 641 041

Through HOD Electrical Engineering.

Sub: Completion of I[st] Phase Project work - Sensor Less Dual Axis Solar Panel Tracking Complete Arrangement for Agriculture Irrigation Purpose.

Ref: Proceedings No: 04/TEQIP/PHASE II /CoE-AER/2015 dated 27-01-2015

Dear Sir,

Thanking you for your continuous support & appreciation, I have completed the I[st] Phase work with your financial assistance from TEQIP/Phase II /CoE(AER). Herewith I have attached the complete Materials & Labour bills for your perusal. I regret for delay to execute the I[st] Phase work.

Thanking you,

Yours faithfully,

P. IMMANUEL JOHN SAMUEL

Place: Coimbatore - 13
Date: 10-09-2015

Submit Head to the Principal

11/9/15
Dr.V. GOPALAKRISHNAN
Associate Professor/EEE/GCT/CBE

From
P.IMMANUEL JOHN SAMUEL, Register No: 1314369177
Ph.D. Research Scholar (Full Time),
Department of Electrical Engineering,
Government College of Technology,
Coimbatore - 641 013

TEQIP - AER
Permitted
16/9/15

To
The Principal,
Government College of Technology,
Coimbatore - 641 013

Through HOD Electrical Engineering.

Respected Madam,

Sub: Ph.D. Programme- Sensor less Dual axis Solar Panel Tracking Complete Arrangement for Agriculture Irrigation Pump - Financial Assistance - Centre of Excellence (AER) requested for IInd Phase work.

Ref: 1. Proposal approved -Centre of Excellence on Alternate Energy Research Advisory Committee meeting - II (Annexure -II) dated on 02-01-2015
Ref: 2. Proceeding No: 04/TEQIP/Phase-II/ CoE - AER /2015 Dated 27-01-2015

With reference to the letter Ref-1 cited above, the advisory committee had sanctioned the amount Rs900000/- (Rupees Nine Lakhs only) for the Project Titled " Sensor less Dual axis solar panel tracking complete arrangement for Agriculture Irrigation pump".

With reference to the letter Ref-2, they had released the amount Rs465000/- (Rupees four Lakhs sixty five thousand only) for I Phase work. I have completed the I Phase work and submitted the bills for the amount of Rs558274/- (Rupees Five Lakhs fifty eight thousand two hundred and seventy four only).

Now I am ready to start the II Phase work. I request you to arrange the balance amount of Rs435000/-(Rupees Four lakhs thirty five thousand only) for the II Phase work.

Thanking you,

Yours faithfully,

IMMANUEL JOHN SAMUEL .P

Place: Coimbatore,
Date: 14-09-2015

Submitted to the principal

14/9/15

14/9/15

PEG

Ist Phase work - Required Materials & Approximate cost					
Sl.No	Description	Qty	UOM	Price/Qty	Amount in INR
1	Supply and Erection of fabricated structure for Dual axis complete panel arrangement with structure to coat by hot dipped gavanizing and middle frame assembly coat by PU paints	1	Set	360000	360000
2	12" Enclosed Slewing Drive Ratio 78:1, Right Hand Mounting 24V BLDC Motor, 0.05 rpmwith hallsensor	1	No	75000	75000
3	3" Enclosed Slewing Drive Ratio 78:1, Right Hand Mounting 24V BLDC Motor, 0.05 Rpmwith Hallsensor	1	No	30000	30000
	Total cost of I st Phase work				465000

IInd Phase work - Required Materials & Approximate cost					
Sl.No	Description	Qty	UOM	Price/Qty	Amount in INR
1	Moncrystalline panel 250watts, Diamensions 1639 x 989 x 30 mm, Cell efficiency 17.3, open circuit voltage 37.38V, Short circuit current 8.58A, IP 65	25	No	14100	352500
2	Inverter 5KW, CG VSU48-013 CNB ✓	1	No	36000	36000
3	IP 67 Polymer panel with surge protector, suitable wires and connectors ✓	1	Set	5500	5500
4	Earthing - 2mts copper rod with chemical earthi	2	Set	5000	10000
5	Concrete foundation with an anchor	1	Set	5000	5000
	Total cost of IInd phase work				407000
	Total cost of project				872000

P. IMMANUEL
Signature of Full Time Scholar

Dr. V. Gopalakrishnan
Project guide

Signature of HOD

OFFICE OF THE GOVERNMENT COLLEGE OF TECHNOLOGY, COIMBATORE

PRESENT: Dr. V. LAKSHMI PRABHA, Ph.D., PRINCIPAL.

PROCEEDINGS NO: 04/TEQIP II/CoE – AER/2015 DATED: .09.15

SUB: Technical Education, Government College of Technology, Coimbatore – 13 Research Grant for Phd. Research Scholar Financial Sanction – Accorded.

Ref: This office Proceedings of even No. dated.27.01.15.

****

Sanction is hereby accorded for the drawal of a sum of Rs. 3,26,000/- (Rupees Three Lacs twenty six thousand only) towards the payment of Advance Phase II payable to Thiru. P.Immanuel John Samuel, Phd. Scholar, the Research Project as detailed below.

Sl.No.	Name of the Project	Name of the Student	Amount Rs.
1	Sensor less Dual axis Solar Panel Tracking complete Arrangement for agriculture Irrigation Pump.	P.Immanuel John Samuel.	326000/-

Rs. 3,26,000/- (Rupees Three lacs twenty six thousand only)

The Advance sanctioned through the proceedings will be adjusted by presenting a detailed Vouchers to the TEQIP OFFICE after completion the Project.

The expenditure is debitable in the following Head of Account.

2203-00- Technical Education 112 Engineering / Technical colleges and Institute Schemes in the TWELFTH FIVE YEAR PLAN – VI Schemes shared between State and Centre UA Technical Education Quality Improvement Programme Phase II.

"RESEARCH AND DEVELOPMANT PROGRAMME".

PRINCIPAL

TO

Thiru. P. Immanuel John Samuel
Thro' HOD/E.E.E

Copy to:

Prof/Electrical and electronics Engg.
Dr. K.S.Amirthagadeswaran, HOD/Mechanical Engg. (Member)
Dr. V.Gopalakrishnan, Asso.Prof & Supervisor of Research Scholor(Member)

,IMMANUEL JOHN SAMUEL, Register No: 1314369177
Ph.D. Research Scholar (Full Time),
Department of Electrical Engineering,
Government College of Technology,
Coimbatore -641013

To
The Principal
Government College of Technology,
Coimbatore - 641 013

Through HOD Electrical Engineering

Respected Madam,

Sub: Completion of IInd Phase Project Installation work - Sensor Less Dual Axis Solar Panel Tracking Complete Arrangement for Agriculture Irrigation Purpose.
Ref-1: Proceeding No: 04/TEQIP/PHASE II/CoE-AER/2015 Dated 27-01-2015
Ref-2: Proceeding No: 04/TEQIP II/CoE -AER/2015 Dated 21-09-2015

Thanking you for your continuous support. I have completed the IInd Phase Installation work with your financial assistance from TEQIP / Phase II / CoE-AER.

Ist Phase Expenditure Amount Rs 5,58,325/- The received amount details as below
Cheque No 543281, Dated 28-01-2015, Amount Rs 4,65,000/- for Ist Phase work
Cheque No 447834, Dated 16-09-2015, Amount Rs 93,325/- for Ist Phase work balance amount,

IInd Phase Expenditure Amount Rs 4, 37,808/- The received amount details as below
Cheque No 447838, Dated 22-09-2015, Amount Rs 3,26,000/- for IInd Phase work.
The difference in Amount is Rs 1,11,808/-

Kindly arrange to release the difference in Amount Rs 1,11,808/- do the needful.
Herewith I have attached the complete Materials & Labour bills for your perusal.

Thanking you,

Yours faithfully,

P. IMMANUEL JOHN SAMUEL

Place: Coimbatore - 13
Date: 04-05-2016

Enclosed: II Phase work for Actual materials & Labour bill details.

Submitted to the Principal

Dr. V. Gopalakrishnan
Supervisor

(HOD/EEE)