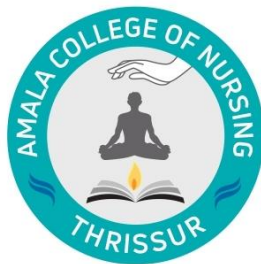




**Amala**  
COLLEGE OF NURSING  
ACCREDITED BY NAAC WITH A GRADE

# AMALA COLLEGE OF NURSING

## AQAR (2022-2023)



### CRITERION 7 – INSTITUTIONAL VALUES AND BEST PRACTICES

#### Key Indicator 7.1– Institutional Values and Social Responsibilities

**Metric No. 7.1.3 The Institution has facilities for alternate sources of energy and energy conservation devices**

**SUBMITTED TO**



**National Assessment and Accreditation Council**

# INSTALLATION BILLS



# Amala COLLEGE OF NURSING

(An undertaking of Amala Cancer Hospital Society)

Amala Nagar, Thrissur – 680 555, Kerala

First Nursing College accredited by NAAC with A grade in the first cycle (RAF)

Affiliated to Kerala University of Health Sciences and recognized by Kerala Nurses and Midwives Council & Indian Nursing Council  
(Certificate No. 18-16/2893-INC)

## INSTALLATION RECEIPT OF BIOGAS PLANT

**OXIRA BIOENERGY SYSTEM**

NO. 107, IIND FLOOR, SOORYAKANTHI  
KALYANAMANDAPAM, KOZHIKODE - 2  
Tel: 9447300630, 8943547979  
www.bioenergy.com | nascobioogas@yahoo.com

Kerala State Energy Conservation Award Winner

RENOVATION & RECOMMISSIONING  
OF COM<sup>3</sup> BIO GAS PLANT. ✓

To

Dr. Shibu Puthenpurackal C.M.I  
Associate Director  
Amala Institute & Medical Science  
Amala Nagar, Thrissur.



Cheque No. 113023  
Cheque Date 12/11/21  
Cheque amount 90,000  
Bank Acc. 11023

\* MAINTENANCE  
Civil & Environmental

By M  
12/11/21  
10-95

Through Jijo Lazarus T, Civil & Environmental Engineer

Sir,

Sub: Repairing of existing biogas plant at Hospital premises.  
Ref: Work order No. ....

I am glad to inform you that all jobs entrusted to me in the above connections have been completed. The plant is now functioning at its optimal level generating gas at the expected level.

There are no water or air leakages and all repairing undertaken by me are entirely satisfactory.

Hence I request you to kindly release the balance payment due to me

Agreed amount  
Received amount  
Balance amount

Payment structure

Rs. 450,000/-  
Rs. 350,000/-  
Rs. 1,00,000/- Rupees One Lakh Only

Note:

Total Amount - Rs. 4,50,000/-

Deduction:-

part payment paid on-

23/10/2021 - Rs. 2,00,000/-

03/11/2021 - Rs. 1,50,000/-

Total Deduction - Rs. 3,50,000/-

Balance Amount to be given

Rs. 1,00,000/-

one lakh only.

Thanking you,  
Yours faithfully

Nazir V K



24/204 Aykara Building-4, Pala, Kottayam, Kerala - 686 575  
PIN: U41000102019PTC059659, info@olsolution.in, www.olsolution.in  
Ph: +91 8547695471, +91 9605860505

Be Professional Partner for your Bio-Energy needs LAZARUS

Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555



Prof. Dr. RAJEE REGHUNATH  
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## INSTALLATION RECEIPT OF SENSOR LIGHT

### PHOTOMAN Gift Mart

(PHOTOGRAPHY & VIDEOGRAPHY)

Photoman Arcade, Near Over Bridge, Athani, Thrissur - 680 581

9447054079, 9446554079, 7902804079 e-mail: photomancolorlab@gmail.com

No **1068**

**INVOICE**

Date: **12/10/2021**

Name: **Amala college of Nursing**

Address: **Amalanagar**

**Thrissur - 680555**

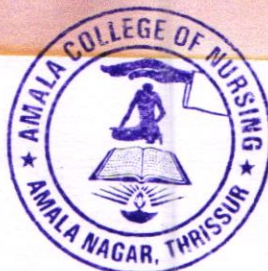
Sl.No	Description	Qty	Amount Rs.	Pts.
1	SENSOR Light	-	500 00	

**PHOTOMAN GIFT MART**  
Photoman Arcade  
Athani, Thrissur-680 581  
Mob : 9447054079

Rs. **five hundred only** Total

**500/-**

For PHOTOMAN Gift Mart



Prot. Dr. RAJEE REGHUNATH  
PRINCIPAL

AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555





# Amala COLLEGE OF NURSING




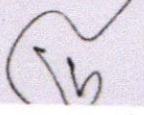
(An undertaking of Amala Cancer Hospital Society)

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(Certificate No. 18-16/2893-INC)

## INSTALLATION RECEIPT OF SENSOR BASED CONTACTLESS WATER PURIFIER CUM COOLER

	<b>CONWAY WATER PURIFIER PRIVATE LIMITED</b> NO: 4/124-B, AGARWAL SCHOOL ROAD 2ND RIGHT, KNG PUDUR, THADAGAM ROAD KANUVAR(P.O.), COIMBATORE-641108 GSTIN/UIN: 33AAHCC1529JLZT State Name : Tamil Nadu, Code : 33 Contact : 9626647475 E-Mail : info@conwaywater.com www.conwaywater.com		MEMBER 		
	IRN No : e7abc61733a124dfd2027f410d2d1e6aa0ee39e402412b0e5bcb5cf62bda96e Ack. No. : 152313641602484 Ack. Date: 7-Jan-23 e-WAY No: 5614 5209 6020 e-WAY Date: 7-Jan-23				
<b>TAX INVOICE CUM DELIVERY CHALLAN</b>			Original - Buyer Duplicate - Supplier Triplicate - Transporter		
PURCHASE ORDER NO : SALES PERSON : S. Santhosh Kumar		INVOICE NO : M-0000001055 DATE : 7-1-2023			
Billing to : Amala Cancer Hospital Society Div: Nursing college(Medical College) Amala Nagar, Thrissur- 680 555 Ph:0487-2304116, 2304278 GSTIN : 32AAATA4065B1ZH		Delivered to : Amala Cancer Hospital Society Div: Nursing college(Medical College) Amala Nagar, Thrissur- 680 555 Ph:0487-2304116, 2304278 GSTIN : 32AAATA4065B1ZH			
Sl.No.	Description of Goods / Products	No. of Pkg/s	Quantity	Unit Rate	Amount
1	IR Sensor Based Contactless Water Purifier Cum Cool Model : CONWAY CP 100 NHC Sl. No : C-10102 HSN Code : 84186920	1	1 Nos	60,170.00	60,170.00
RO filters and membranes are consumable, Hence not covered under Warranty					Total 60,170.00
					Total 60,170.00
					Output IGST @ 18% 10,830.60
					Total 71,000.60
INR Seventy One Thousand and Sixty paise Only					
<b>Bank Account Details</b>					
Account Name : CONWAY WATER PURIFIER PRIVATE LIMITED					
Bank Name : HDFC Bank A/c No: 59209894747475					
Bank Address : No: 553&554, Thadagam Road, Somayampalayam, Coimbatore – 641108					
Account No. : 59209894747475					
IFSC Code : HDFC0004186					
RTGS Code : 641240021					
Certified that the particulars given in this invoice are true and correct and the amount indicated represents the price actually charged and that there is no flow of additional consideration directly or indirectly from the buyer.					
		Received the goods in good condition		For CONWAY WATER PURIFIER PRIVATE LIMITED	
		Customer signature with seal			
		Note: Goods once sold cannot be taken back.			



Prof. Dr. RAJEE REGHUNATH  
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## INSTALLATION RECEIPT OF SOLAR PLANT

**sunsenz** GREEN LIFE  
Corp. Off Bldg No. 27159, Smart Tower, Muttom Aluva 683 106, Ernakulam, Kerala, India  
Tel: +91 484 2625383, Mob: 09946788881 - 86  
www.sunsenz.com E-mail: contact@sunsenz.in

**Moopens** Energy Solutions Pvt. Ltd.

GSTIN: 32AAICM1406F1Z1

TAX INVOICE							
Invoice No.		SUNSENZ-167		SUNSENZ		Original for Recipient	
Invoice Date		25.03.2019		Date of supply		25.03.2019	
State & State Code		KERALA 32		Place of supply		THRISSUR	
Details of Recipient				Details of Supplier			
Name				Name			
AMALA CANCER HOSPITAL SOCIETY				AMALA CANCER HOSPITAL SOCIETY			
Address				Address			
AMALA CANCER HOSPITAL COMPLEX, AMALA NAGAR, THRISSUR				AMALA CANCER HOSPITAL COMPLEX, AMALA NAGAR, THRISSUR			
GSTIN				GSTIN			
32AAATA4065B1ZH				32AAATA4065B1ZH			
State & State Code				State & State Code			
KERALA 32				KERALA 32			
Sr.	Name of Product / Service	HSN	Quantity	Unit	Rate	Taxable Value	5% Total Amount
1	SUNSENZ Solar Power Generating System_350KWP	8541	350	KWp	51,502.12	1,80,757.41	9,36,287.05
Total:						1,80,757.41	9,36,287.05
Bank Details:						Total Invoice Amount in Words:	
Bank Name : SBI						Total Amount including Tax Rs. 1,80,757.41	
Account Number : 06800032784664907						Add : CGST 2.50% Rs. 4,68,143.52	
Branch : ANSHOKAPURAM						Add : SGST 2.50% Rs. 4,68,143.52	
IFSC : SBIN0005596						Add : IGST 5.00% Rs. 0.00	
Pan No : CM1406F						Total Tax Amount : GST Rs. 9,36,287.05	
To: and Condition:						Total Amount including Tax Rs. 1,96,62,928.05	

For, Moopens Energy Solutions Pvt. Ltd.  
Authorized Signatory & Seal

Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555

Received all materials

19.0.19

19.0.19



Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555





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## INSTALLATION RECEIPT OF SOLAR PLANT

**MOOPENS**  
ENERGY SERVICES LLP

Building No.65/10<sup>th</sup>, St. Sebastian road, Kaloor,  
Kochi .Pin - 682017 India.LLP ID : AAK-2307  
Ph.04842347255, 9946788833,9288888844  
E-mail : moopensenergyservices@gmail.com

WIP 131E

GSTIN:32ABGFM5237J1Z

TAX INVOICE									
Invoice No. : SES /19-046		RCM Applicable : NO		Original for Recipient					
Invoice Date : 17-01-2020		Date of Supply : 17-01-2020							
State & State Code : KERALA 32		Place of Supply : THRISSUR							
Details of Recipient					Details of Supply				
Name : AMALA CANCER HOSPITAL SOCIETY					Name : AMALA CANCER HOSPITAL SOCIETY				
Address : AMALA CANCER HOSPITAL COMPLEX,AMALA NAGAR, THRISSUR					Address : AMALA CANCER HOSPITAL COMPLEX,AMALA NAGAR, THRISSUR				
GSTIN : 32AAATA4065B1ZH					GSTIN : 32AAATA4065B1ZH				
State & State Code : KERALA 32					State & State Code : KERALA 32				
Sr. No	Name of Product / Service	SAC	Quantity	MoU	Rate	Taxable Value	GST 18% Amount	Total Amount	
1	SUNSENZ Solar System Installation & Commissioning 350 kWp	9954	44	kWp	₹ 2,815.91	₹ 9,85,569.49	₹ 1,77,402.51	₹ 11,62,972.0	
Total :						₹ 9,85,569.49	₹ 1,77,402.51	₹ 11,62,972.0	
Bank Details :		Total Invoice Amount in Words:-				Total Amount Including Tax			
Bank Name : KOTAK MAHINDRA		#Rupees Eleven lakh Sixty Two Thousand Nine Hundred Seventy One and Ninety Nine Paise Only.				9,85,56			
Account Number : 8512026969						Add : CGST : 9%			
Branch : ALUVA						Add : SGST : 9%			
IFS Code : KKBK0009290						Tax Amount : C + T			
Terms and Conditions :						1,77,40			
						Add :CESS 0%			
						Total Amount After Tax			
						11,62,97			

Confirmed that the particulars given above are true and correct  
PAN:ABGFM5237J

WIP 131E

For, Moopens Energy Services LLP

Authorized Signatory & Seal

Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR, THRISSUR-680 555

PAID

21-01-2020

350 kWp Solar

AMALA COLLEGE OF NURSING  
AMALA NAGAR, THRISSUR

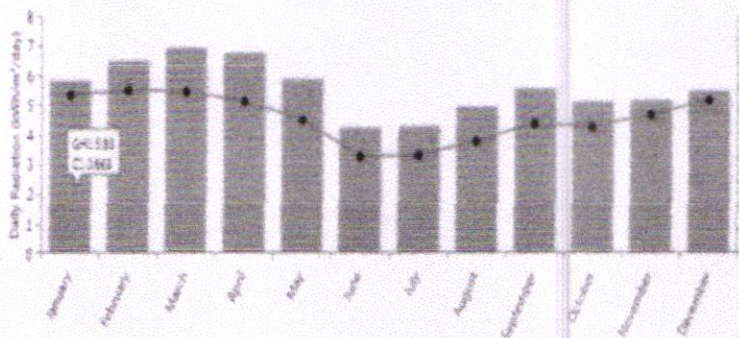
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AMALA NAGAR P.O., THRISSUR-680 555



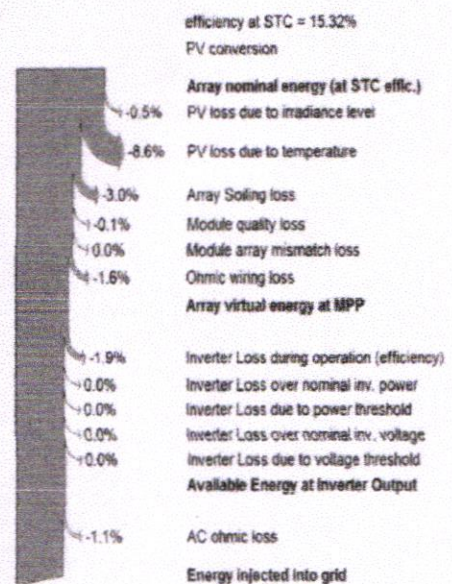
#### 4. DESCRIPTION OF THE PROPOSED ONGRID SOLAR POWER PLANT

1	Project Site	Amala Institute of Medical Sciences
2	Project Place	Po, Amalanagar
3	District Name	Thrissur
4	Type of system	350 kWp Grid-Interactive System
5	Type of PV Modules Considered	POLY PERC Crystalline
6	Solar PV Module Make	REC
7	Proposed PV Capacity	350 kWp
8	Projected Module Area Required	26250 Sq Feet (Approx)
9	Capacity of each Module proposed	330 Wp/335 Wp/340 Wp/345 Wp/350 Wp/355 Wp
10	Inverter Makes	SOLAREEDGE
11	Inverter Capacity	<p>SOLAREEDGE-SE-82.8K x 3 = 248.4 kVA</p> <p>SOLAREEDGE-SE-27.6K x 1 = 27.6 kVA</p> <p>SOLAREEDGE-SE-17K x 1 = 17 kVA</p> <p>Totalling = 293 kVA</p>
12	Projected Energy Production per year	498225 Units(kWh)/per year
13	Solar Project Cost (Including Raised Structure (with Sheet))	<p>Rs.20,125,000/-</p> <p>(Rupees Two Crore One Lakh Twenty Five Thousand Only) (Applicable Taxes Extra)</p>

#### 5. RENEWABLE RESOURCE AVAILABILITY



NASA Surface meteorology and Solar Energy database  
Global horizontal radiation: monthly averaged values over 22 year period (July 1983 - June 2005)  
CellNumber: 101255  
CellDimensions: 1 degree x 1 degree  
CellMidpointLatitude: 11.5  
CellMidpointLongitude: 75.3



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## 6. AIM OF THE DOCUMENT

The aim of this document is to propose Solar PV Grid-Interactive supply to AC power to your grid (i.e. 415V 50Hz 3 phase) load. The document is aimed to propose for engineering, manufacture, supply, and installation, testing and commissioning of 310 kWp Solar PV systems at **Amala Institute of Medical Sciences, Po, Amalanagar.**

## 7. DESIGN OVERVIEW

The system capacity sizing methodology we adopt is as follows: The lowest of the following is usually taken as the limiting factor for the Solar PV Capacity:

1. Shade Free Area & Structural Data for laying the PV Modules
2. Electrical Data

The system capacity that we recommend might entail net export of power to the Electricity Distribution Grid, and Grid Connectivity permission might be needed from the respective Electricity Distribution Licensee etc. This solar power system will feed energy during sunshine hours from Solar PV Modules (DC Power) to your existing AC bus, through solar inverter, which converts the DC power to AC power. The incoming energy from grid will be net of the total energy you consume minus the solar energy generated.

## 8. SATELLITE IMAGERY OF YOUR SITE

The Latitude of the location is 10.561958 N. And the Longitude is 76.166906 E.



## 9. SOLAR IRRADIATION & WEATHER DATA OF YOUR SITE

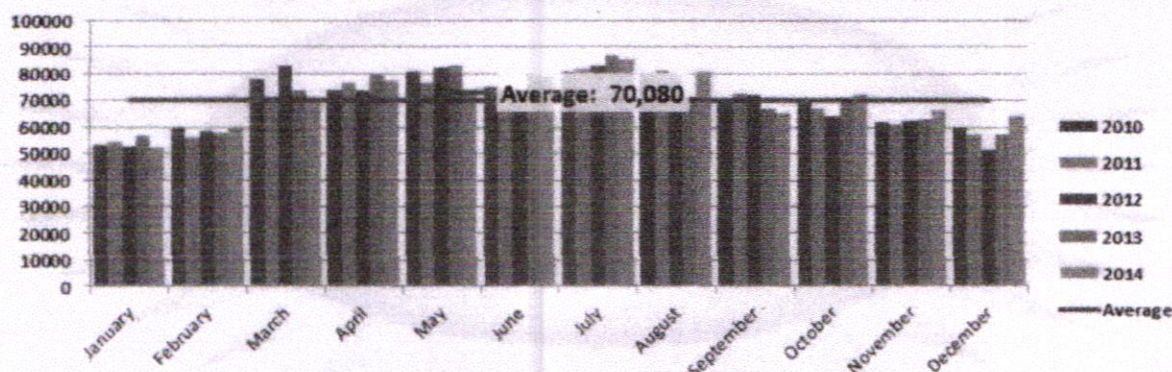
### 9.1. DIRECT NORMAL IRRADIANCE (DNI) OF YOUR SITE

Direct Normal Irradiance (DNI) is the amount of solar radiation received per unit area by a surface that is always held perpendicular (or normal) to the rays that come in a straight line from the direction of the sun at its current position in the sky. Typically, you can maximize the amount of irradiance annually received by a surface by keeping it normal to incoming radiation.





**Diffuse Horizontal Irradiance (Watt/sq.m)**  
**Latitude: 10.561958 Longitude: 76.166906**

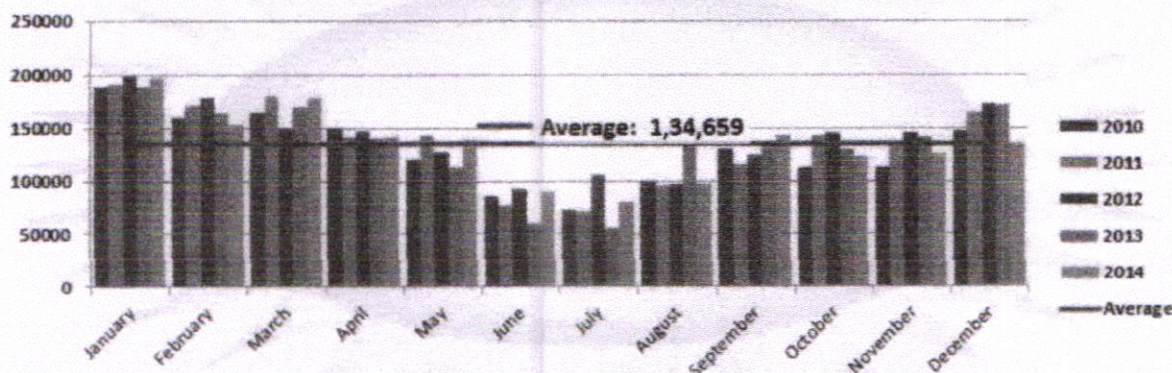


Year: 2010-2014 Source: US Satellite Remote Sensing Data

**9.2. DIFFUSE HORIZONTAL IRRADIANCE (DHI) OF YOUR SITE**

Diffuse Horizontal Irradiance (DHI) is the amount of radiation received per unit area by a surface (not subject to any shade or shadow) that does not arrive on a direct path from the sun, but has been scattered by molecules and particles in the atmosphere and comes equally from all directions.

**Direct Normal Irradiance (Watt/sq.m)**  
**Latitude: 10.561958 Longitude: 76.166906**



Year: 2010-2014 Source: US Satellite Remote Sensing Data

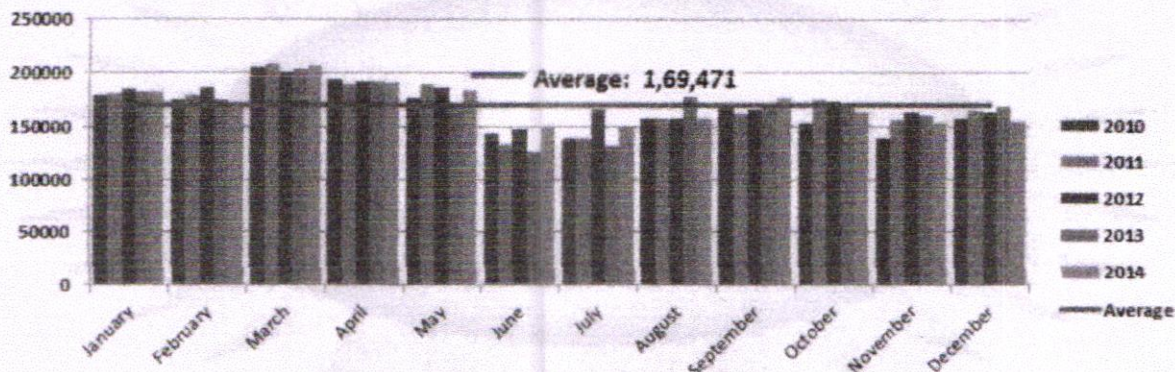
**9.3. GLOBAL HORIZONTAL IRRADIANCE (GHI) OF YOUR SITE**

Global Horizontal Irradiance (GHI) is the total amount of shortwave radiation received from above by a surface horizontal to the ground. This value is of particular interest to photovoltaic installations and includes both Direct Normal Irradiance (DNI) and Diffuse Horizontal Irradiance (DHI).





**Global Horizontal Radiation (Watt/sq.m)**  
**Latitude: 10.561958 Longitude: 76.166906**

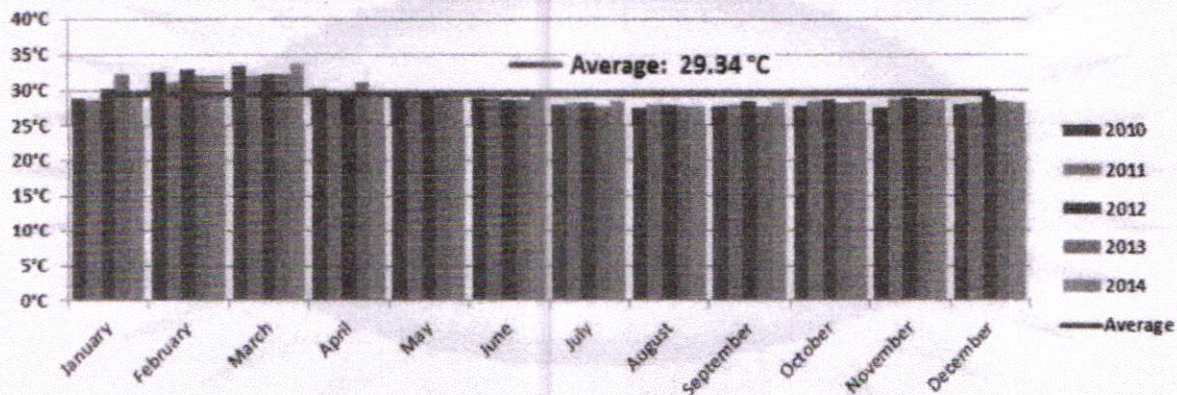


Year: 2010-2014 Source: US Satellite Remote Sensing Data

**9.4. TEMPERATURE OF YOUR SITE**

The efficiency of a solar panel DECREASES with increase in temperature. The impact of temperature on solar panel efficiency is known as the temperature coefficient. If you look at the data sheet provided by your solar panel manufacturer they will refer to a term normally described as the temperature coefficient, Tcoeff of Pmax. This value, which is normally given in the form of negative percentage, reveals the impact of temperature on the panel.

**Temperature (°Celsius)**  
**Latitude: 10.561958 Longitude: 76.166906**



Year: 2010-2014 Source: US Satellite Remote Sensing Data

Solar panels are power tested (STC) at 25°C, so the temperature coefficient percentage illustrates the change in efficiency as it goes up or down by a degree celcius. For example if the temperature coefficient of a particular type of panel is -0.5%, then for every 1°C rise, the panels maximum power will reduce by 0.5%. So on a hot day, when panel temperatures may reach 55°C, a panel with a temperature coefficient of -0.5% would result in a maximum power output reduction of 15%.

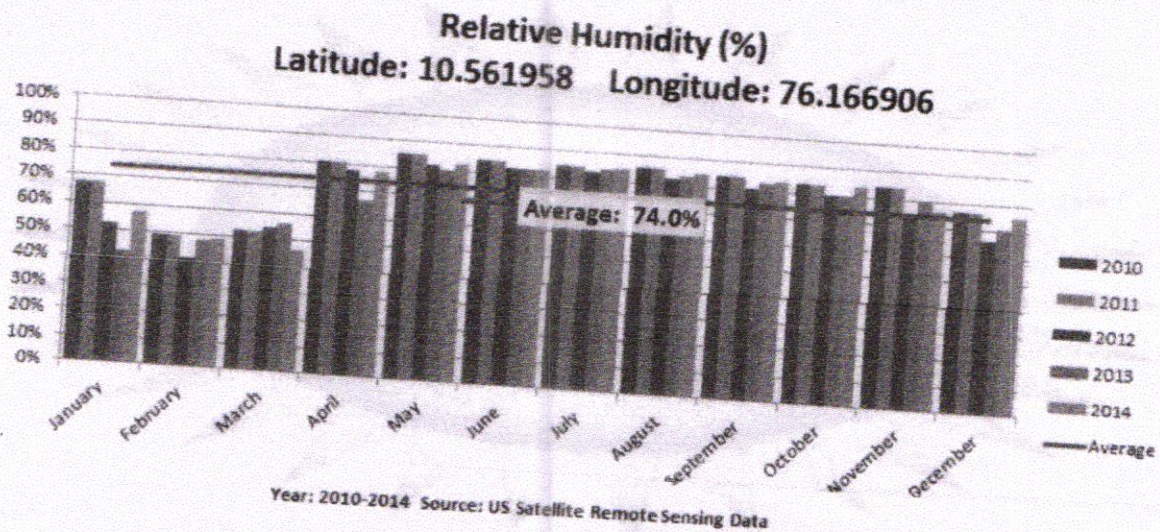






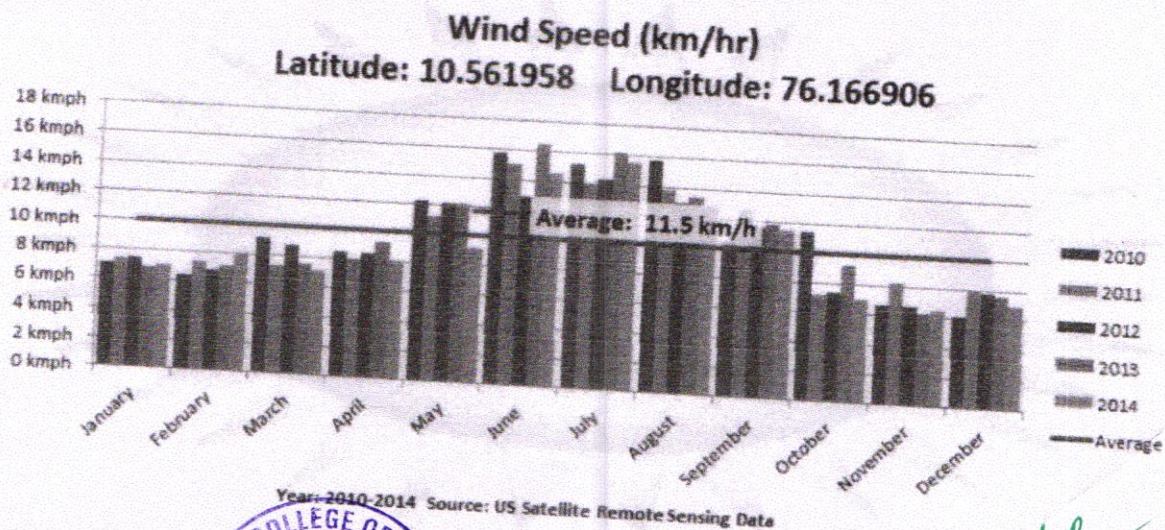
### 9.5. RELATIVE HUMIDITY OF YOUR SITE

Relative humidity affects efficiency of photovoltaic as it affects the current, voltage and power. Result shows that when relative humidity is decreased, the voltage, current and efficiency increased. Also, it is found that Monocrystalline panel has the highest efficiency when relative humidity is decreased with respect to other technologies.



### 9.6. WIND SPEED OF YOUR SITE

As discussed above, the increase in temperature causes the power output of the solar module to decrease. When there is wind flow, convection (which is a form of heat transfer) takes place between the flowing air and the module (which is usually at higher temperatures). And hence it is advised to allow the air flow below the solar panels in order to maintain the temperature of solar panels and keep them cool. Thus, an optimal wind flow increases the power output from the solar modules.

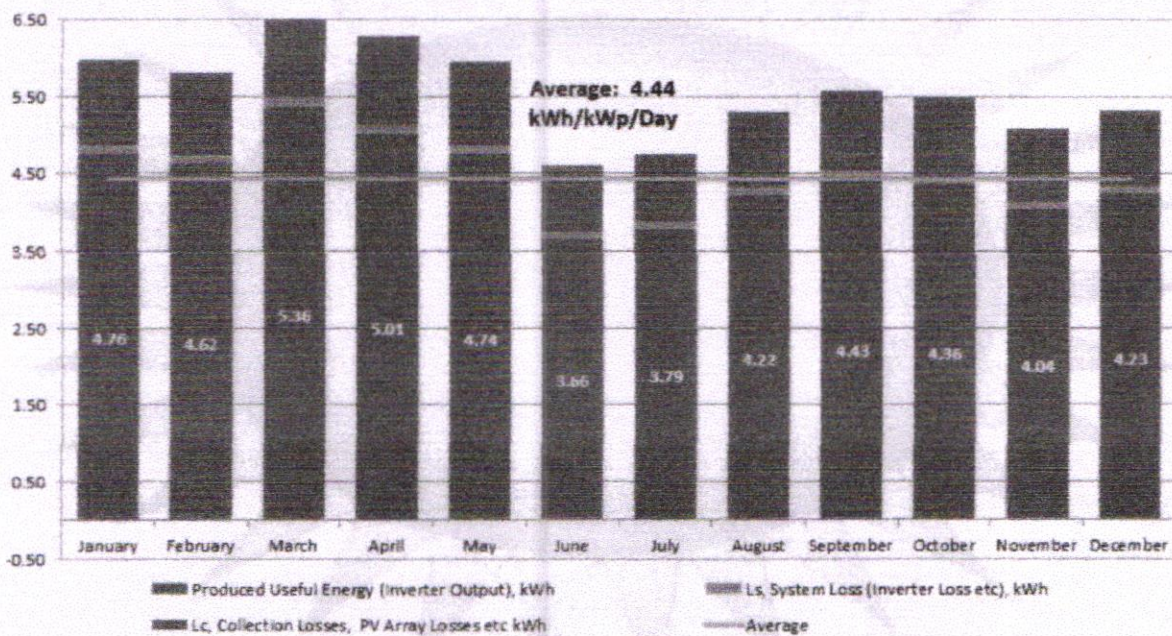




## 10. ADVANCED SIMULATION: PROJECTED ENERGY GENERATION FROM YOUR SITE

Solar is a capital intensive investment. Hence, predicting solar energy yield is very important to make a prudent decision on any solar power plant investment. It is a very complex exercise to predict solar energy generation, because solar energy generation is affected by a wide variety of environmental aspects. The primary aspect affecting the energy yield is Solar Irradiance. The total solar irradiance falling on a solar panel is denoted by the term Global Horizontal Irradiance (GHI). Increasing temperature plays a negative effect on the Solar Energy yield. This is denoted by Temperature coefficient in the datasheet. Wind generally helps reduce temperature on the Solar Panels, thereby having a positive effect on solar energy generation.

### Projected Solar Generation (kWh/kWp/Day) Latitude: 10.561958 Longitude: 76.166906



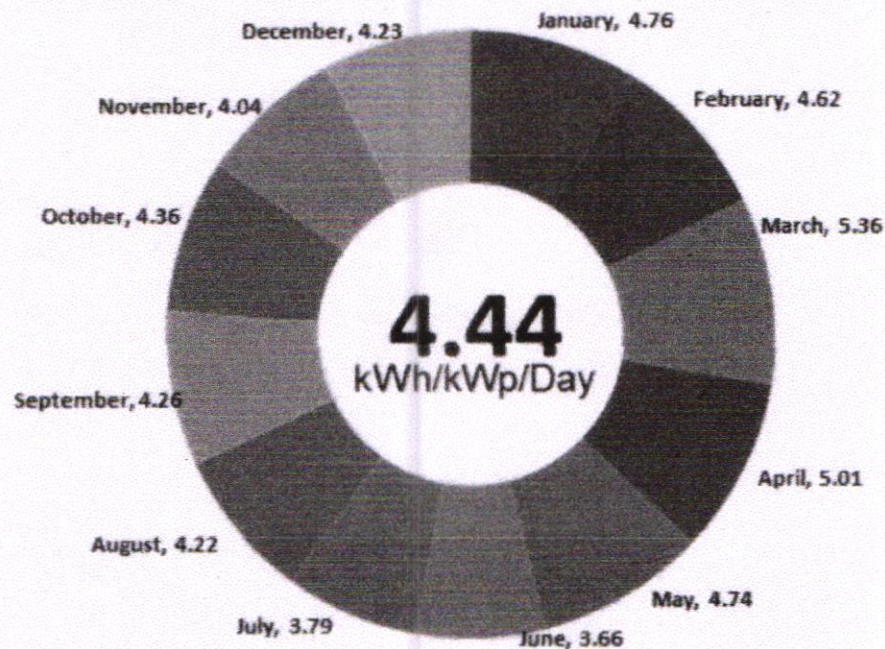
©Sunsenz Simulation : Projection based on US Satellite Remote Sensing Data

With the assumption that High Efficiency PV Modules and Solar Inverters, including excellent quality Balance of Systems (BoS) from renowned leading global manufacturers are used, and based on the historical weather and irradiance data specific to your site determined from your geographic coordinates (as given above), the expected month-wise yield of a solar photovoltaic power plant (kWh/kWp/day) is given in the above chart. This is a projection based on your historical weather and solar irradiance data, and the actual output might vary depending on actual conditions.

The following graph shows the annual average yield you can expect from a Solar Power Plant in your project site, based on the conditions and assumptions mentioned above:







## 11. SYSTEM CONFIGURATION

### 11.1. PV MODULES (SOLAR PANELS)

A photovoltaic module is a packaged interconnected assembly of photovoltaic cells, which converts sunlight into energy. For this project solar module of 330 Wp/335 Wp/340 Wp/345 Wp/350 Wp/355 Wp, which meet all international standards, is considered. 350 Wp module technical specification is provided:

PARAMETERS	SPECIFICATIONS
PV Module Rating	350
PV module Make & country	REC
PV Module type	Multi crystalline
No. of PV cells per Module	144
Module dimensions	2005mm x 1001mm x 30mm
Max power voltage (Vmp)	38.9V
Peak Power current (Imp)	9.00A
Open circuit voltage (Voc)	46.7V
Short circuit current (Isc)	9.40A
Weight of each module	22 kgs
Certificates / Standards	IEC 61215, IEC 61730 & UL 1703. IEC 62804, IEC 61701, IEC 62716, ISO 11925-2, UNI 8457/9174, ISO 9001:2015, ISO 14001
Operating Temperature	-40°C to +85°C



\*Exact Model (Wp Rating) of the Solar Panels could vary (without affecting the total Wp of the Project) depending on the Product Availability and Final System Specifications.





### 11.2. POWER CONDITIONING UNIT (SOLAR INVERTER)

The PCU consists of in-built charge controller and bi-directional inverter to supply continuous power to the load with support to the load coming either from the solar array, Grid Power in order of preference. Appropriate numbers of SOLAREEDGE On-Grid Inverters are considered for this project.

PARAMETERS	SPECIFICATIONS
INVERTER MAKE	SOLAR EDGE
INVERTER RATING	82.8K
<b>Input (DC)</b>	
Max. DC power	111750 W
Max. input Voltage	1000 V
Nominal DC Input Voltage	750
Max. current (A)	120
Number of Units	2
<b>Output (AC)</b>	
Max. apparent AC power	82800VA
AC Output Voltage	380/220 ; 400/230
AC Output Voltage  Line to Line Range / Line to Neutral Range	304 - 437 / 176 - 253 ; 320 - 460 / 184 - 264.5
AC Frequency	50/60 $\pm$ 5
Grids Supported  Three Phase	3 / N / PE (WYE with Neutral)
<b>Efficiency</b>	
Maximum Inverter Efficiency	98.3/98%
<b>General Data</b>	
Dimensions (W / H / D)	Primary Unit: 940 x 315 x 260; Secondary Unit: 540 x 315 x 260
Weight	Primary Unit: 48; Secondary Unit: 45
Operating temperature range	--40 to +60
Cooling concept	Fan (user replaceable)
<b>Safety</b>	
safety	IEC-62109, AS3100
Functional safety	Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds

\*Exact make and Model of the Solar Inverters could vary depending on the Product Availability and Final System Specifications.



*[Handwritten signature]*

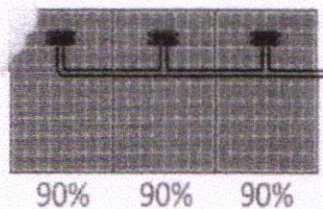
Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555



## SolarEdge Solar Inverters

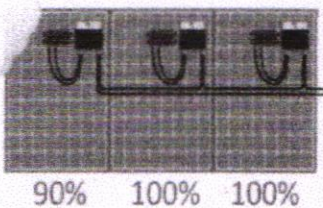
**solarEdge**  
architects of energy™

SolarEdge is a global leader, with 5 GW of shipments globally, in smart energy technology. Established in 2006, SolarEdge developed the DC optimized inverter solution that changed the way power is harvested and managed in photovoltaic (PV) systems. The SolarEdge intelligent inverter solution maximizes power generation while lowering the cost of energy produced by the PV system, for improved RoI.



### Traditional Inverter

- > Weak panels reduce the performance of all panels in the string or are bypassed
- > Power losses due to panel mismatch



### SolarEdge System

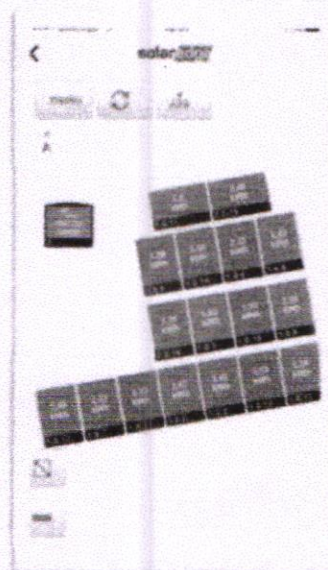
- > Maximum power produced and tracked from each panel individually
- > 2%-10% more energy from the PV system

### Benefits of Power Optimizers

1. Higher energy harvest
2. Safety
3. Module-level monitoring
4. Design flexibility
5. Greater module compatibility and no power clipping
6. Higher energy yield through wider mppt range
7. Higher reliability
8. Higher efficiency
9. Superior communication (dc power line)
10. Compliance with advanced grid codes
11. Lower system cost, faster roi
12. System scalability

## Module-Level PV Monitoring

The web-based SolarEdge monitoring portal provides enhanced PV performance monitoring and yield assurance through immediate fault detection and alerts at module level, string level and system level.





### 11.3. MODULE MOUNTING STRUCTURE

The module mounting structure is designed for holding suitable number of modules in series. The Module mounting structure is designed in such a way that it will occupy minimum space without sacrificing the output from solar modules.

Structure Technical Specification	
Parameters	Specifications
Type	Fixed Roof Mounted Type
Location	Roof / Ground mounting
Material	GP Tubes / Aluminium
Overall dimension	As per design
Coating	Epoxy Painting
Fasteners	Stainless Steel for nut & bolt, Hot Dip Galvanized /Anti Corrosive for self-drilling screws & other screws

### 11.4. COPPER CABLES

Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire power plant to the minimum. They are suitable for outdoor and for 1000VDC application.

Cable Technical Specification	
Parameters	Specifications
Type	PVC /XLPE
Make	LAPP, Germany(for 4 sq mm DC Cables)/Polycab/E-FAB/Uniflex/Equivalent
Material	Copper
Working voltage	Up to 1100 V
Test voltage	650V/1.1kV
Temperature	-15 Deg C to +70 Deg C

### 11.5. JUNCTION BOXES

In the Junction boxes, individual module strings are bundled and safely routed to the inverter. Junction boxes will have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables. These junction boxes are weather proof outdoor suitable and are IP 65 rated, making it ideal for long-term use in PV systems.

### 11.6. EARTHING & LIGHTNING PROTECTION

**Earthing:** The array structure of the PV yard will be grounded properly using adequate number of earthing kits. All metal casing / shielding of the plant shall be thoroughly grounded to ensure safety of the power plant. Lightning protection will be provided as per applicable standards and as is mandatory.



*[Handwritten signature]*

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AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555



## 12. BILL OF MATERIALS / SCOPE OF SUPPLY

Sl No.	Description & Specifications	Quantity	Unit of Measurement
1	Solar photo voltaic module 330 Wp/335 Wp/340 Wp/345 Wp/350 Wp/355 Wp	Totalling 350 kWp	No.
2	Solar PCU - SOLAREEDGE-SE-82.8K, SOLAREEDGE-SE-27.6K, SOLAREEDGE-SE-17K / Equivalent	Totalling 280 kVA	No.
3	Module mounting structure	Set	No.
4	Cable & Wires & Earthing & Lightning Protection	Set	Set
5	DC Array Junction Boxes (DC String Combiner Boxes)	No.	No.
6	Solar AC DB	1	No.
7	Installation Accessories	1	No.

NOTE: The above mentioned qty. may vary depending on the actual site condition.

## 13. PROJECT COST

In estimating the cost, the maximum care is taken for quality and reliability while keeping in mind that the price should be competitive. The cost estimated in this section is the complete cost of supply, installation and commissioning, transportation; based on the present market price of various components;

### A. Cost Estimate of 350 kWp Grid Tie Solar PV Power Plant

Sl. No	Description of Items	Rates For site (Rs.)
1	Supply of appropriate nos of 330 Wp/335 Wp/340 Wp/345 Wp/350 Wp/355 Wp poly/mono crystalline modules (Totalling 350 kWp) with module mounting structure (If Applicable). Supply of <del>400 VAC</del> of 400 VAC, SOLAREEDGE-SE-82.8K, SOLAREEDGE-SE-27.6K, SOLAREEDGE-SE-17K / Equivalent On-Grid Inverters totalling 280 kVA AC capacity. Supply of Junction boxes, Distribution boxes, Cables, and other Hardwares etc. All product Supply by Moopens Energy Solutions Pvt Ltd.	20602968.75 Product Supply Cost: Rs. 19,621,875/- 5%
2	Design and Fixing of Solar PV Modules, Integration and Installation of various equipments & components and Installation & commissioning of the 350 kWp ongrid plant. Optional: All Services provided by Moopens Energy Services LLP, and are optional for customers.	Installation, Commissioning & Service Rs. 503,125/- 18%
3	<b>SOLAR PROJECT COST</b> (Including Raised Structure (with Sheet)) :	<b>SOLAR PROJECT COST : Rs.20,125,000/-</b> 2,11,96,656 (Rupees Two Crore One Lakh Twenty Five Thousand Only) (Applicable Taxes Extra) 21,19,56

☒ Taxes: GST will be Extra : GST 5% for the product Supply component, GST 18% for the service Component. Any changes in taxes, basic customs duties/import duties (for imported items) or tax structure etc from time to time would be payable at actual.

☒ Basic customs duty, antidumping duty and Safeguard duty are included in the basic costing.

☒ Validity of the Offer: 3 Weeks

☒ Payment Terms: 50% advance payment against Purchase Order, 20% advance payment against delivery of solar panels (For Imported Solar Panels, Materials Delivery Payment will be due 10 days before materials arrive in the port against perfoma invoice), 10 % advance payment against delivery of inverters , 10% against complete installation and commissioning, 10 % payment shall be done



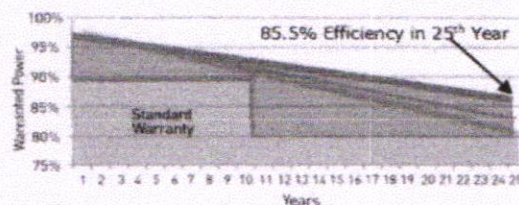


one month after ready to charge to grid (successful test run). There could be delays in getting various necessary statutory approvals and licences, and under no circumstances will any of the payments be linked to any such approvals or licences, and our complete scope of Supply & Work ends when the system is delivered, installed and ready for testing.

#### 14. WARRANTIES

##### Solar Panels

**REC: 20 years + 5 years extra (for Moopens Customers only)** product manufacturing warranty. At least 97.5% output guaranteed during the first year of performance. Maximum 0.5% degradation in power output per year till 25 years. 85.5% Output warranted in 25th Year. All under Standard Test Conditions.



**Solar PCU (Inverters): SolarEdge:** 12 Years Product Manufacturing Warranty

All other brands: 5 Years Product Manufacturing Warranty.

**Complete System:** 5 Year limited warranty for the complete system. **Moopens Energy Solutions** will extend all manufacturer warranties for a period of five years from the date of system commission. If any equipment fails due to manufacturing defect during this five year period, **Moopens Energy Solutions** will replace or repair at no cost to the Customer. For details, please refer to detailed Terms and Conditions in the next page.

- ❑ All product supply payments must be made to Moopens Energy Solutions Pvt. Ltd. and our account details are : State bank of India, Aluva Branch, A/c No: 32784064907, IFSC: SBIN0008596. GST Number: 32AAICM1406F1Z
- ❑ Supply, Delivery & Installation: 20 - 24 Weeks from the date of receipt of your firm & technically clear Purchase Order & advance, and subject to adherence of payment terms mentioned above.
- ❑ Limited Liability: Our liability is limited to the scope of manufacture and keeps it ready for dispatch, Installation & Commissioning.
- ❑ A raised Solar Structure with sheets is considered in the basic costing. Any additional scope of work, if agreed, is quoted extra as additional structure cost. Any Civil work is in the scope of the Customer.
- ❑ Approvals: Inspectorate Approval is excluded in the Scope and Pricing. However, we offer to support the client in obtaining all necessary approvals, permissions, & Licenses. Any statutory/license fee for approvals, permissions, & licenses from KSEB or inspectorate will be in the scope of the customer. Customer agrees to support Moopens Energy Solutions Pvt Ltd with all necessary documentations (Such as copies of Land Title Deeds etc) for availing Concessional Customs Duty Certificate (CCDC).
- ❑ Annual Maintenance Contract: After the warranty expires, Annual maintenance contract expenses would be charged extra.



*Legit*

Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555



Solar Project - Amala Hospital - REC Solar Panels(350 kWp) + Solar Edge inverter				
Section	Sq. Ft.	No. Of Solar Panels	Solar Capacity (kWp)	Total Project Cost including Structure
Devamatha Hostel	7475 + 650 (Structure only)	329	115	Rs. 6,612,500
Chavara Hostel	6500	286	100	Rs. 5,750,000
Nursing College	8775	385	135	Rs. 7,762,500
<b>Total</b>	<b>23400</b>	<b>1000</b>	<b>350</b>	<b>Rs. 20,125,000</b>

- \* GST will be Extra : GST 5% for the product Supply component, GST 18% for the service Component.
- \* Basic customs duty, anti dumping duty and Safeguard duty are included in the basic costing.
- \* 350 Wp REC panel considered for calculations and drawings.
- \* Any Statutory Fees/registration fees for KSEB & Inspectorate approval etc is extra, and has to be borne by the customer.

**Payment Terms:** 50% advance payment against Purchase Order, 20% advance payment against delivery of solar panels (For Imported Solar Panels, Materials Delivery Payment will be due 10 days before materials arrive in the port against performa invoice), 10 % advance payment against delivery of inverters , 10% against complete installation and commissioning, 10 % payment shall be done one month after ready to charge to grid (successful test run). There could be delays in getting various necessary statutory approvals and licences, and under no circumstances will any of the payments be linked to any such approvals or licences, and our complete scope of Supply & Work ends when the system is delivered, installed and ready for testing.

**Warranty Terms:**

**REC: 20 years + 5 years extra (for Moopens Customers only)** product manufacturing warranty. At least 97.5% output guaranteed during the first year of performance. Maximum 0.5% degradation in power output per year till 25 years. 85.5% Output warrantied in 25th Year. All under Standard Test Conditions.

**Solar PCU (Inverters): SolarEdge:** 12 Years Product Manufacturing Warranty

**CAMC :** Sixth year onwards CAMC Rs. 70,000/- per year till the end of 15th year. Then 25% increase in CAMC (Rs. 87,500 per year) till the end of 25th year.

**Response Time for complaints :** 24 hours . Normal situation rectification time : 3days (other than inverter).

**Replacement :** 7 days from complaint identification. If not following the terms then 10 % of lost solar production cost per day will be deducted from the next year CAMC amount.

**Additional Support :** Automatic sprinkler system for 590 kWp solar power plant.

Muttom, Aluva  
22-01-19

For Moopens Energy Solutions Pvt. Ltd.



Mohammed Fayaz Salam  
CEO & Director

Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555





# Amala COLLEGE OF NURSING

(An undertaking of Amala Cancer Hospital Society)

Amala Nagar, Thrissur – 680 555, Kerala

First Nursing College accredited by NAAC with A grade in the first cycle (RAF)

Affiliated to Kerala University of Health Sciences and recognized by Kerala Nurses and Midwives Council & Indian Nursing Council  
(Certificate No. 18-16/2893-INC)

## INSTALLATION RECEIPT OF LED BULBS

### SANJO HOMES

UNITY BUILDINGS, MANNADIAR LANE  
THRISUR - 680001, KERALA

e mail : sanjohomes@gmail.com Phone : 7356676667, 9895076667

State : Kerala State Code: 32

GSTIN : 32AKVP99636H1ZE

Original for Buyer

Invoice No. D 1841	TAX INVOICE - CREDIT	Date: 11-03-2022
TO : AMALA CANCER HOSPITAL SOCIETY, THRISUR HOSPITAL DIVISION, AMALA NAGAR PIN-680 555		Delivery Address
Phone		
State: KERALA		
State Code: 32		
GSTIN : 32AAATA4065B1ZH		
P. Order No. & Date	Sales Man : SKS	
Site	Despatch	
Remarks :		

SI	Description of Goods	HSN Code	Quantity	Price	Disc Amt	Net Value	GST		Total
							%	Amount	
1	LUKER LED SLIM PANEL SQUARE 12W - WHITE	9405	10.000 NOS	543.780	0.00	5,437.50	12.00	652.50	6,090.00
<div>11-3-24 12-09</div> <div>PAID Invoice Amount Advances Balance Payment Terms Signature Date Rs. 6090/- 30 days from month end P</div> <div>PAID 280 5,437.50 652.50 6,090.00</div>									
TOTAL			10.000			5,437.50		652.50	6,090.00



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**SANJO HOMES**

UNITY BUILDINGS, MANNADIAR LANE  
THRISSUR - 680001, KERALA

e.mail : sanjhomestarc@gmail.com Phone : 7356976667, 9895076667

State : KeralaState Code: 32

GSTIN : 32AKVP99636H1ZE

Original for Buyer

Date: 22-10-2021

Invoice No. D 529

TAX INVOICE - CREDIT

TO : AMALA CANCER HOSPITAL SOCIETY, THRISSUR

**Delivery Address**

HOSPITAL DIVISION AMALA NACAR  
PIN-680 555.

Phone

State: KERALA

State Code: 32

OSTIN :32AAATA4065B1ZH

P. Order No. & Date

Site

**Sales Man :**

Despatch

Remarks :

SI	Description of Goods	HSN Code	Quantity	Price	Disc Amt	Net Value	GST		Total
							%	Amount	
1	LUKER LED SLIM PANEL SQUARE 18W - WHITE	9405	6.000 NOS	643.780	0.00	3862.80	12.00	463.80	4328.00
TOTAL				6.000	0.00	3862.80		463.80	4328.00

checked by *[Signature]*  
 22 Jan 21  
 22/1/2021  
 PAYMENT APPROVED  
 Invoice Amount *RS. 4328/-*  
 Advance \_\_\_\_\_  
 Balance \_\_\_\_\_  
 Payment Terms *30 days from receipt*  
 Signature *[Signature]*  
 Date *22/1/20*

Rupess Four Thousand Three Hundred Twenty Six Only

Rupees Four Thousand Three Hundred Twenty Six Only

Sales	Turnover	CGST Amt	SGST Amt
12%	3862.60	231.76	231.75

Round Off	0.00
-----------	------

**Bill Amount**

4,326.00

1. Payment to be made by crossed DD/Cheque
2. Every legal matters relating to this transaction shall come under the jurisdiction of THRISSUR Courts

### Our Bank Details

**HDFC BANK**

**BILROUND NORTH, THRISSUR**  
A/C: 4000010000000000

A/C 3020060294292

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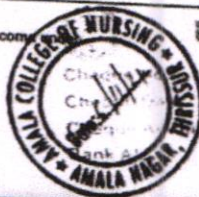
PAID

1113459

164820

For SANJO HOMES

Authorized Signatory



Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL

AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555





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**SANJO HOMES /**  
UNITY BUILDINGS, MANADIAR LANE  
THRISSUR - 680001, KERALA  
e mail : sanjohomes@gmail.com Phone : 7356976667, 9895076667  
State : Kerala State Code: 32  
GSTIN : 32AKVPS9636H1ZE

Original for Buyer

Date: 26-10-2021

Invoice No. D 550 /

TAX INVOICE - CREDIT

TO : AMALA CANCER HOSPITAL SOCIETY, THRISSUR  
HOSPITAL DIVISION, AMALA NAGAR  
PIN-680 555

Phone  
State: KERALA  
State Code: 32  
GSTIN : 32AAATA4065B1ZH

P. Order No. & Date  
Site

Sales Man :  
Despatch :

Remarks :

Sl. No.	Description of Goods	HSN Code	Quantity	Price	Disc Amt	Net Value	GST		Total
							%	Amount	
1	LUKER LED SLIM PANEL SQUARE 15W - WHITE	9405	10.000 NOS	543.750	0.00	5,437.50	12.00	772.50	7,210.00
	LUKER LED SLIM PANEL SQUARE 12W - WHITE	9405	10.000 NOS	543.750	0.00	5,437.50	12.00	662.50	6,099.00
TOTAL			20.000		0.00	11,875.00		1,425.00	13,300.00

Rupees Thirteen Thousand Three Hundred Only

Sales Tax 12% 11875.00 712.50 712.50

Round Off 0.00

Bill Amount 13,300.00

- Payment to be made by crossed DD/Cheque
- Every legal matters relating to this transaction shall be under jurisdiction of THRISSUR Courts

Our Bank Details

HDFC BANK  
BILROUND NORTH, THRISSUR  
IFSC CODE: HDFC0009652

E&OE

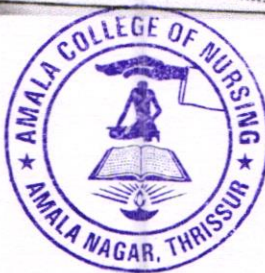


Cheque No.  
Cheque Date  
Cheque Amount  
Bank Acc.

PAID  
1113455  
1642000

For SANJO HOMES

Authorized Signatory



Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555





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## SANJO HOMES

UNITY BUILDINGS, MANNADIAR LANE  
THRISSUR - 680001, KERALA

e mail : sanjohomes@gmail.com Phone : 7356976667, 9895076667

State : Kerala State Code: 32

GSTIN : 32AKVPS9636H1ZE

Original for Buyer

Date: 08-10-2021

Invoice No. D 409

TAX INVOICE - CREDIT

TO : AMALA CANCER HOSPITAL SOCIETY, THRISSUR  
HOSPITAL DIVISION, AMALA NAGAR  
PIN-680 555.

Delivery Address

Phone

State: KERALA

State Code: 32

GSTIN : 32AAATA4065B1ZH

P.Order No. & Date :

Site :

Sales Man :

Despatch :

Remarks :

Sl	Description of Goods	HSN Code	Quantity	Price	Disc Amt	Net Value	GST		Total
							%	Amount	
	LUKER LED SLIM PANEL SQUARE 18W - WHITE	9405	12.000 NOS	737.500	0.00	8,850.00	12.00	1,062.00	9,912.00
TOTAL									
			12.000		0.00	8,850.00		1,062.00	9,912.00

Rupees Nine Thousand Nine Hundred Twelve Only

Sales Tax 12% 8850.00 531.00 531.00

Round Off 0.00

Bill Amount 9,912.00

- Payment to be made by crossed DD/Cheque
- Every legal matters relating to this transaction shall come under jurisdiction of THRISSUR Courts

Our Bank Details

HDFC BANK  
BR.ROUND NORTH,THRISSUR  
A/C:5020066226292  
(IFSC CODE:HDFC0000657)

E&OE

For SANJO HOMES

Authorised Signatory



Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR P.O., THRISSUR-680 555





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(Certificate No. 18-16/2893-INC)

## SANJO HOMES

UNITY BUILDINGS, MANNADIAR LANE  
THRISSUR - 680001, KERALA

e.mail : sanjohomes@gmail.com Phone : 7358976667, 9895075667

State : Kerala State Code: 32

GSTIN : 32AKVPS9636H1ZE

Original for Buyer

Invoice No. D 380	TAX INVOICE - CREDIT	Date: 04-10-2021
TO : AMALA CANCER HOSPITAL SOCIETY, THRISSUR HOSPITAL DIVISION, AMALA NAGAR PIN-680 555.		Delivery Address
Phone State: KERALA State Code: 32 GSTIN : 32AAATA4065B1ZH		
P. Order No. & Date Site	Sales Man : Despatch :	
Remarks :		

S	Description of Goods	HSN Code	Quantity	Price	Disc Amt	Net Value	GST		Total
							%	Amount	
1	LUKER LED SLIM PANEL ROUND 3W - WHITE	9405	10,000 NOS	184.820	0.00	1,848.20	12.00	221.78	2,069.98
2	LUKER LED SLIM PANEL SQUARE 9W - WHITE	9405	14,000 NOS	453.130	0.00	6,343.82	12.00	761.26	7,105.08
3	LUKER LED SLIM PANEL SQUARE 18W - WHITE	9405	10,000 NOS	737.500	0.00	7,375.00	12.00	885.00	8,260.00
4	POLYCARB INTENSO LXS LED BATTEN 1130MM 20W 6500K WH	9405	40,000 NOS	191.960	0.00	7,678.40	12.00	921.40	8,599.80
TOTAL			74,000		0.00	23,245.42		2,789.44	26,034.86

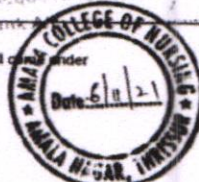
Rupees Twenty Six Thousand Thirty Five Only

Sales Tax	Turnover	CGST Amt	SGST Amt
12%	23245.42	1394.72	1394.72
PAID 113489			
Cheque No. 164820			
Cheque Date			
Cheque Amount			
Bank			
Bill Amount 26,035.00			
Round Off 0.14			

- Payment to be made by crossed DD/Cheque
- Every legal matters relating to this transaction shall come under jurisdiction of THRISSUR Courts

### Our Bank Details

HDFC BANK  
BR.ROUND NORTH, THRISSUR  
A/C 60200060294292  
IFSC CODE: HDFC0009632



For SANJO HOMES  
Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR PO., THRISSUR-680 555



Prof. Dr. RAJEE REGHUNATH  
PRINCIPAL  
AMALA COLLEGE OF NURSING  
AMALA NAGAR PO., THRISSUR-680 555