

### **7.1.2 - Facilities for Alternate Sources of Energy and Energy Conservation Measures**

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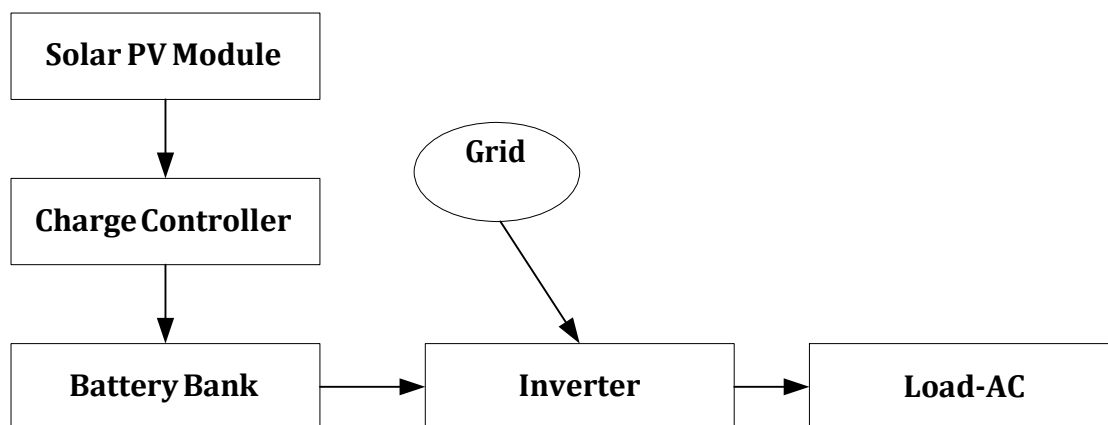
## 1. INDIVIDUAL SOLAR ROOF TYPE POWER PLANT - 1 kW PV system

Modern day educational institutions with contemporary infrastructure requires significant amount of electricity to manage its facilities. With increasing electricity costs, rooftop solar power plants have emerged as an ideal solution to save on these costs. Moreover, educational institutions can play a vital role in creating awareness about solar energy by installing rooftop solar power at its campuses. The installed PV system consists of multi crystalline solar modules with fixed angle mounting systems and the solar inverters with battery backup.



**Installed Solar PV Module in Main Building Roof Top**

### SYSTEM DESCRIPTIONS



**Block Diagram of Installed PV System**



**Photographs of Installed PV System**

**Data sheet of PV Solar module**

S.No.	Particulars	Rating
1.	Rated Power	260W
2.	Open circuit voltage	38.12V
3.	Short circuit current	8.9A
4.	Voltage at maximum power	30.40V
5.	Current at maximum power	8.57A
6.	Maximum system voltage	1000V
7.	Module weight	18.3Kg

# Invoice of PV Solar module

31/03/2019
INV-KCE-Solar.jpg

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CONTROLS

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salesstepupcontrols@gmail.com.GST. No: 33AWYPG8803F1ZA

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INVOICE	
Invoice. No. 03	Date: 12-03-2019
Name & Address  The Principal, Kings College Of Engineering, Punakulam, Gandarvakottai Taluk, Pudukottai District, Tamil Nadu - 613 303.	Customer's Details
	P.O. ref. no. 962
	P.O. date 08/03/2019
	GST NO. URP

Sl No	Item Description	Qty	Unit Price	Total Price
1	Poly Crystalline Solar Panel (260W, Open Circuit Voltage: 32VDC, Full Load Voltage: 24VDC, Full Load Current: 8.1A, Short Circuit Current 14.4A ) Model: GOLDI 60 Series -260Wp(GOLDI260PM(260WP))	04 Nos	11,160.00	44,640.00
	GST 5%			2232.00
	(25 Years of Warranty, If Improper Installation of equipment by third party will make this warranty null and void and The warranty specifically exclude consequential damages )			
<b>NET AMOUNT</b>				<b>46,872.00</b>


  

**ACCOUNT DETAILS**

STEPUP CONTROLS, Bank: AXIS BANK, Acc. No: 918020084006598, IFSC Code: UTIB0001767, KORATTUR Branch, Chennai.

Thanking You  
FOR STEPUP



AUTHORIZED  
KJ TAMIL SELVAN  
Mob: 9944081123

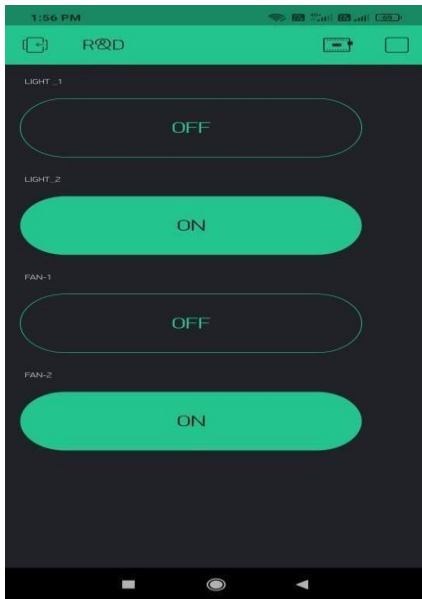
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## 2. IoT BASED ROOM AUTOMATION SYSTEM

Internet of Things (or commonly referred to as IoT) based Room Automation system (RAS), as the name suggests aims to control all the devices of smart room through internet protocols or cloud based computing. The IoT based Room Automation system is of low cost and it functions with the help of wireless technology. The IoT based RAS is installed in Innovation Club laboratory to control two fans and two lights.

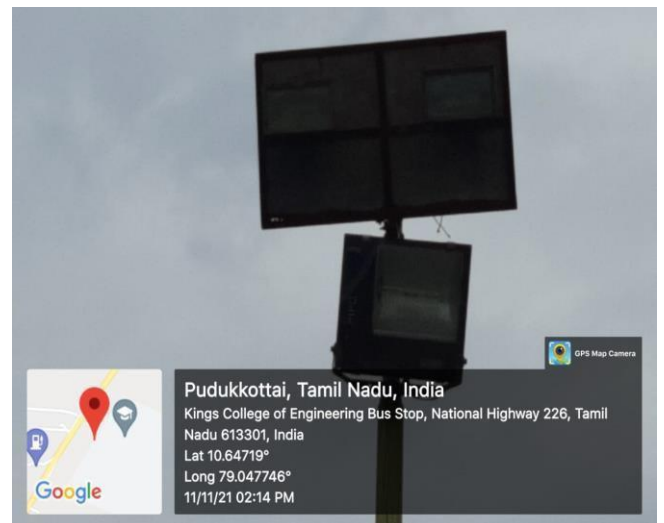


**Photographs of Installed IoT based RAS in Innovation Club Laboratory**



### 3. LED LIGHTING - ENERGY CONSERVATION

The light-emitting diode (LED) is today's most energy-efficient and rapidly- developing lighting technology. Quality LED light bulbs last longer, are more durable, and offer comparable or better light quality than other types of lighting. LED lights installed at various locations are shown below:



**Photographs of Installed LED Lights**

## Locations of LED lights

Room / lab Detail	Specification	Maximum power rating	No. of LED lights
<b>Block I</b>			
Principal room	LED light	40W	04
Secretary room	LED light	40W	06
Optical lab	LED tube light	40W	06
Block I building opposite	LED Street light	55W	10
Block II building opposite	LED Street light	250W	06
<b>Block III</b>			
Ground Floor (Girls)	LED tube light	40W	20
Ground floor (boys)	LED bulb	40W	02
Ground floor (boys)	LED tube light	40W	14
Kitchen	LED light	40W	14
<b>Block IV</b>			
Bath room 1 <sup>st</sup> floor	LED light	40W	04
Varanda 2 <sup>nd</sup> floor	LED light	40W	01
Bath room 2 <sup>nd</sup> floor	LED light	40W	02
<b>Library Block</b>			
Ground floor	LED light	25W	01
Street lights (LED)	Canteen	20W	02
	First year block	20W	01
	Physics lab	20W	01
	Ground side	20W	03
	Girls hostel	20W	03
	Library back	55W	05
	Gate compound	20W	03
	Outside	20W	02

#### 4. MINI BIO GAS PLANT

The biogas plant is designed in such a way that it produces the biogas from vegetable and food waste from canteen. The bio degradable food waste was considered for bio gas production. One month survey was conducted to calculate the food waste generating from the canteen. The vegetables waste and food waste was weighted at end of every day and noted for one month food waste calculation. The required quantity of gas is 9 liters per day to cook the food for average of 500 students. The average generated food waste (22.8kgs/day) generates 5.4 m<sup>3</sup> of biogas.



**Photograph of Installed Mini Bio Gas Plant**