



# JKK MUNIRAJAH INSTITUTE OF HEALTH SCIENCES COLLEGE OF PHARMACY

( Approved by Tamil Nadu Govt. & Pharmacy Council of India - New Delhi, Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai )  
Thookanaickenpalayam, Gobichettipalayam (TK), Erode (DT) - 638506, Tamil Nadu.

## 1. THE INSTITUTION HAS FACILITIES FOR ALTERNATE SOURCES OF ENERGY AND ENERGY CONSERVATION MEASURES

1. Solar energy
2. Biogas plant
3. Sensor-based energy conservation
4. Use of LED bulbs / Power efficient equipment

## 2. SOLAR ENERGY

Solar power is energy from the sun that is converted into thermal or electrical energy. Solar technologies can harness this energy for a variety of uses, including generating electricity, providing light or a comfortable interior environment, and heating water for domestic, commercial, or industrial use. In our college we use solar panel to reduce electricity.

### SOLAR POWER PLANT IN MAIN BUILDING

A 300 Watts poly-crystalline photovoltaic module of 72 cells family of 16 nos.  
300 Watts = 4800 watts (4.8 kW) with 7.5 kVA MPPT charge controller Inverter and tall tubular battery of 200 Ah, c-10 type solar battery fitted with PV module structure.

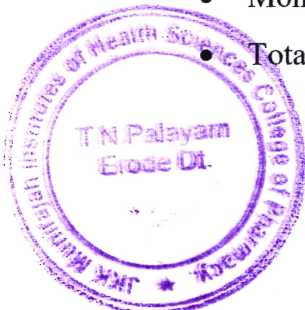
We use 16 such 300-watt solar panels. In our solar plant we produce minimum 40 units of current in a day, 1200 units in a month and 14600 units in a year.

### SOLAR POWERED WATER PUMPING SYSTEM

A 300 Watts poly-crystalline photovoltaic module of 72 cells family of 16 nos.  
300 Watts = 4800 watts (4.8 kW) with 7.5 kVA MPPT charge controller Inverter and tall tubular battery of 200 Ah, c-10 type solar battery fitted with PV module structure.

#### Type: 5 Kw ON Grid Tied power plant

- Installed at main building Roof top, college campus
- Month and year of Installation: September 2015
- Total Cost: Rs. 5,00,000/- (Rupees Five Lakhs only)



  
Principal

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## SOLAR POWER PLANT NEAR BOYS HOSTEL

VA 300 Watts poly-crystalline photovoltaic module of 72 cells family of 16 nos.  
300 Watts = 4800 watts (4.8 kW) with 7.5 kVA MPPT charge controller Inverter and tall tubular battery of 200 Ah, c-10 type solar battery fitted with PV module structure.

### Type: 5 Kw ON Grid Tied power plant

- Installed at main building Roof top, college campus
- Month and year of Installation: September 2021
- Total Cost: Rs. 4,96,200/- (Rupees Four Lakhs ninety-six thousand and two hundred only)

## SOLAR STREET LIGHT

Solar street lighting system uses the photovoltaic (PV) technology to convert the sunlight into DC Electricity through solar cells. The generated electricity can be stored in the batteries for use during night hours.

### SPECIFICATIONS OF SOLAR STREET LIGHT

Totally we are using 40 solar street light of each 0.5 kW, so totally street light alone 2 kW.

## SOLAR WATER HEATER

Solar water heating or SWH is the process of converting sunlight into energy that can then be used for domestic water heating. Solar water heating systems include storage tanks and solar collectors. There are two types of solar water heating systems: active, which have circulating pumps and controls and passive, which don't.

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## ACTIVE SOLAR WATER HEATING SYSTEMS

There are two types of active solar water heating systems:

- **Direct circulation systems**

Pumps circulate household water through the collectors and into the home. They work well in climates where it rarely freezes.

- **Indirect circulation systems**

Pumps circulate a non-freezing, heat-transfer fluid through the collectors and a heat exchanger. This heats the water that then flows into the home. They are popular in climates prone to freezing temperature

## PASSIVE SOLAR WATER HEATING SYSTEMS

Passive solar water heating systems are typically less expensive than active systems, but they're usually not as efficient. However, passive systems can be more reliable and may last longer. There are two basic types of passive systems:

- **Integral collector-storage passive systems**

It consist of a storage tank covered with a transparent material to allow the sun to heat the water. Water from the tank then flows into the plumbing system. These work best in areas where temperatures rarely fall below freezing. They also work well in households with significant daytime and evening hot-water needs.

- **Thermosyphon systems**

Water is heated in a collector on the roof and then flows through the plumbing system when a hot water faucet is opened. The majority of these systems have a 40-gallon capacity.

**We are using Solar Water heater in Boys Hostel and also Girls Hostel.** Use of solar water heater can curtail electricity or fuel bills considerably.

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S. No	DESCRIPTION	CAPACITY
1	Solar power plant in main block	5 kW
2	Solar power plant near boys hostel	5 kW
3	Solar street light (40 x 50 watts)	2 kW
<b>Total</b>		<b>12 kW</b>

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## SOLAR ENERGY

PHOTO OF SOLAR PLANT LOCATED AT OUR COLLEGE MAIN BUILDING ROOF TOP



 **GPS Map Camera**



JKKMIHSCP, Tamil Nadu, India  
Main Block, Talamalai R.F., Tamil Nadu 638506, India  
Lat 11.51942°  
Long 77.395139°  
21/12/23 09:30 AM GMT +05:30

  
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## PHOTO OF SOLAR PANEL AND BATTERY



*Handwritten signature in green ink.*

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## PHOTO OF SOLAR STREET LIGHT IN OUR COLLEGE MAIN BUILDING



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## PHOTO OF SOLAR STREET LIGHT IN SIDE THE COLLEGE



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## 2. BIOGAS PLANT

### INTRODUCTION

Biogas naturally occurring gas that is generated by the breakdown of organic matter by anaerobic bacteria and is used in energy production. Biogas differs from natural gas in that it is a renewable energy source produced biologically through anaerobic digestion rather than a fossil fuel produced by geological processes.

### USES:

The use of biogas is a green technology with environmental benefits. Biogas technology enables the effective use of accumulated animal waste from food production and of municipal solid waste from urbanization. The conversion of organic waste into biogas reduces production of the greenhouse gas methane, as efficient combustion replaces methane with carbon dioxide.

### BIO GAS PLANT IN OUR COLLEGE

A substantial portion of the biodegradable waste is food waste which is used to generate methane. This methane gas is then used by the Hostel mess employees for cooking purposes. The food wastes yield manure which has high nitrogen contents. This manure acts as an excellent soil conditioner. The manure output is about 10% of the total waste processed. In our biogas plant we feed 10kgs food wastage per day. We can get 2 to 3 hours cooking time. No service and maintenance required. No need power. By-product of biogas plant is the slurry can be used as manure for plants.

### BENEFITS

1. Our food wastes 100% recycled in our college only
2. It can be used as cooking fuel alternative for LPG

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## DESIGN BASIS

The Waste Treatment Plant has been designed based on the following parameters.

Waste Type: Food waste

Type of institution: Hostel canteen

Average Waste feed: 10 kg /Day

Burning Time: 1 ½ to 2 Hours Double Burner

Total quantity of waste can be treated: Max 10 kg/day.

**The proposed system consists of following stages:**

### Feeding at the Inlet pre digester

Inlet digester is connected to the anaerobic digester. The feeding process is carried out through inlet. This feed directly enters to the digester where the anaerobic digestion takes place.

### Treatment inside the Digestion chamber

The digester mainly consists of a digestion chamber and pressure dome gasholder. The feed directly enters the digester where the reaction carried out is an anaerobic digestion (in the absence of oxygen). The size of the digester is designed based on type of waste and quantity of waste. Only the waste which completes its HRT (Hydraulic Retention Time) will be coming out of the digester as slurry. As the part of digestion methane gas will be formed which will be collected in the gas holder.

### Slurry pumping at the Outlet tank.

Digester is connected to an outlet tank in which slurry can be collected. This slurry can be directly used or can be connected to drainage or used as manure for garden.

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## BIOGASPLANT



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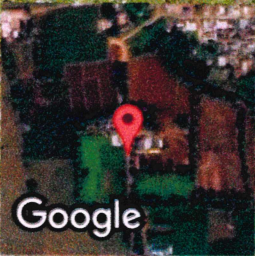


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 **GPS Map Camera**



**JKKMIHSCP, Tamil Nadu, India**

Unnamed Road, Punjaithuraiyampalayam, Tamil Nadu 638506, India

Lat 11.514721°

Long 77.398237°

21/12/23 09:00 AM GMT +05:30

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## USAGE OF BIOGAS IN PANTRY

  
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### 3. SENSOR-BASED ENERGY CONSERVATION

#### Energy conservation

Energy conservation is the effort made to reduce the consumption of energy by using less of an energy service. This can be achieved either by using energy more efficiently (using less energy for a constant service) or by reducing the amount of service used. Energy can be conserved by reducing wastage and losses, improving efficiency through technological upgrades and improved operation and maintenance. On a global level energy use can also be reduced by the stabilization of population growth.

#### Sensor based automatic light

Energy conservation is very important to not only for our country but also to the world. In our campus we use sensor based light with solar panel. It is two in one purpose. One is in a day time it save energy from the sun using solar panel and another one is it glows both day and night time only our people going in front of the sensor-based light. So, we reduce current consumption and also save wastage of electricity.

#### Sensor based Water Doctor and A.C

Water Doctor is India's first and only unique water purifier in built with Dispenser which uses Ozone produced by corona discharge to disinfect micro organisms. It uses batch process to mix ozone with water. The uniqueness of the product lies in creating a compact ozone generator and venturi system to achieve highest levels of Ozone efficiency in water thereby providing rich, pure and safe drinking water.

Air conditioning sensors are components of the system that measure the temperature in the room. These sensors help your air conditioner to regulate the temperature of the air according to the setting on the control panel.

We are using water Doctor in all Floors and Hostels. We are also using A.C most of the laboratories.

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## 4. USES OF LED BULBS

LED is a Light Emitting Diode. LEDs generally consume very low amounts of power. The statistics to look for when comparing the energy efficiency of different lighting solutions are called by one of two terms: luminous efficacy or useful lumens. Use about 80 percent less electricity while providing the same brightness of the incandescent they replace.

## USES OF LED BULBS IN OUR COLLEGE

We are using such kind of LED bulbs in our college class rooms, staff rooms, library, laboratories and also hostels. Using LED bulbs we reduce our usage of electricity and also reduce our electricity bill.

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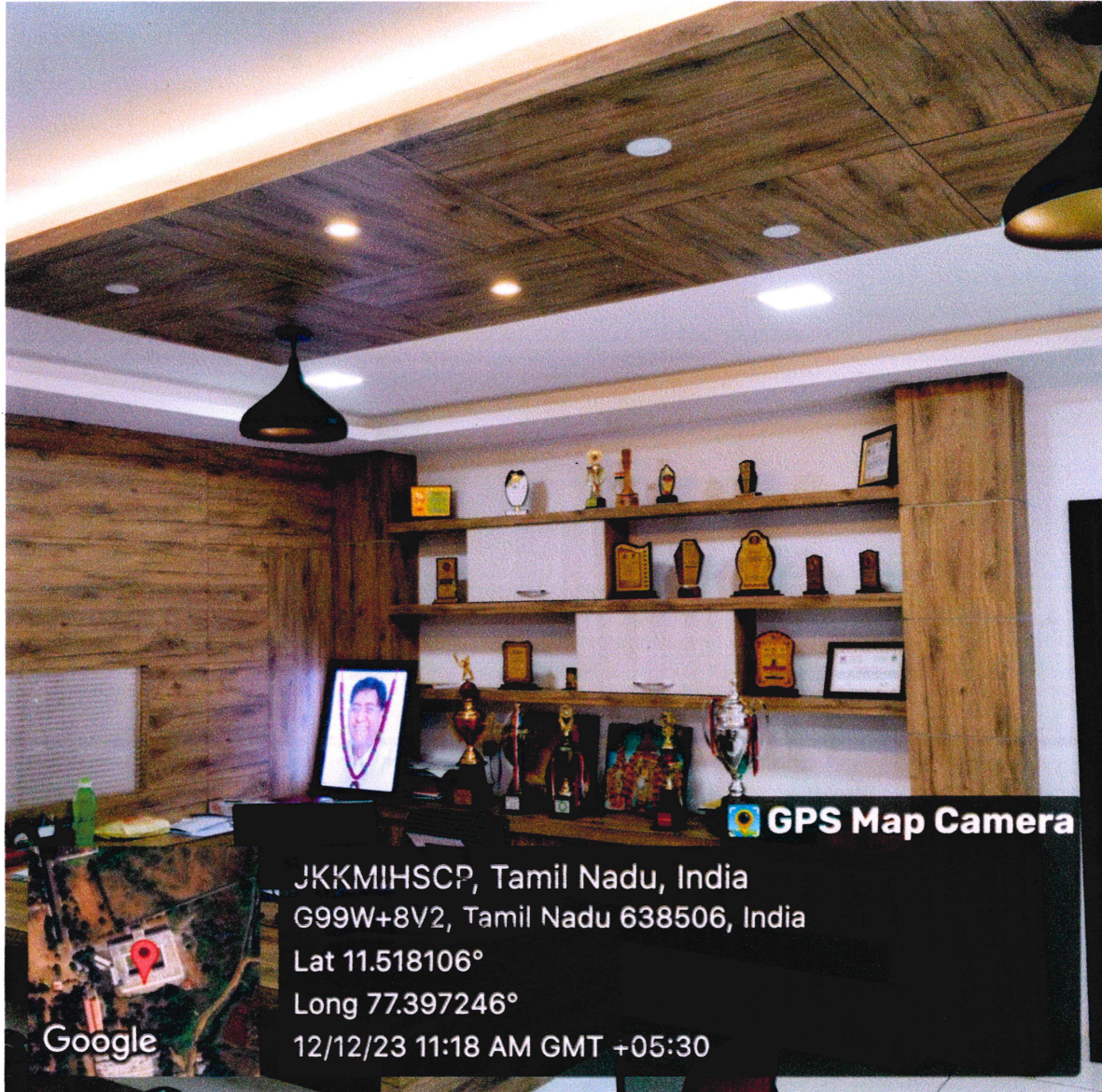
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## PHOTO OF LED BULBS IN PRINCIPAL ROOM



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