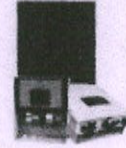




9786769961



- ★ Air Conditioner ★ Refrigerator
- ★ Solar PV Panel ★ Inverter

Boys HS School Opposite – Thirumayam.

Date: 8.8.2018

To

The Principal,
 Sri Bharathi Engineering College for Women,
 Kaikkurichi,
 Pudukkottai – 622 303

Respected Madam,

We received your college consultancy work brochure. We need your faculty member assistance in estimating power rating of solar PV panel for domestic and other purposes for our clients. We would like to receive the proposal for this work.

Forwarded to

C. Palani Samy

[Handwritten signature]

to / EGG

[Handwritten signature]



Dr. S. THILAGAVATHI M.E., Ph.D.,
 PRINCIPAL
 SRI BHARATHI ENGINEERING
 COLLEGE FOR WOMEN
 Kaikkurichi - 622 303, Pudukkottai Dt.

KSP Services, Thirumayam.



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Pudukkottai - Aranthangi Road,
Kaikkurichi, Pudukkottai - 622 303.

Date : 14/8/2018

To,
KSP Services,
Boys GHS School Opposite,
Thirumayam – 622 507.

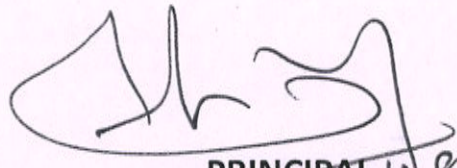
Dear Sir/Madam,

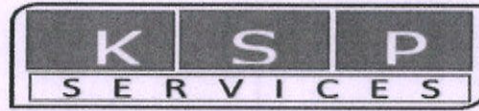
Greetings from, Sri Bharathi Engineering College for Women!

We are delighted to extend our consultancy activities for identifying the rating of solar panel for your clients. Mr. J. Sathyaraj, our faculty from Electrical and Electronics Engineering, Sri Bharathi Engineering College for Women is designated to complete the task promptly. The cost for the proposed work estimation is approximately Rs. 3500. We await your favourable response.

Thanking you


Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 622 303, Pudukkottai Dt.


PRINCIPAL
14/8/18
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT



9786769961



- ★ Air Conditioner
- ★ Refrigerator
- ★ Solar PV Panel
- ★ Inverter

Boys HS School Opposite – Thirumayam.

Date: 23.8.2018

To
The Principal,
Sri Bharathi Engineering College for Women,
Kaikkuruchi
Pudukkottai – 622 303

HOD/EEE
for necessary action
please
23/8/18

Respected Madam,

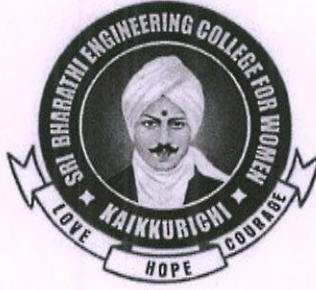
We are satisfied with your quotation for the estimation of PV panel rating and its quantity for our clients and on negotiation we grant Rs. 3000 towards the consultancy work on submission of the proposed work report within 5 to 7 days.

C. Palani Samy


Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkuruchi - 622 303, Pudukkottai Dt.



KSP Services, Thirumayam.



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(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Kaikkurichi, Pudukkottai - 622 303.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CONSULTANCY PROJECT WORK

REPORT

**Estimation of Power Rating and Numbers of Solar PV Panel Require For
Installation in Domestic Appliances**

SUBMITTED

TO

KSP Services,

Boys GHS School Opposite,

Thirumayam – 622 507.

REPORT DATE: 30.8.2018


Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
**SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.**

As requested, /Order by KSP Services, Thirumayam dated 23.8.2018, the following are the details for your kind perusal.

1. Load estimation

Load	Watts	Hour/Day	Number of loads	Watt-Hr
Tube light	45	6	3	810
Fan	60	11	3	1980
TV (21'')	170	7	1	1190
Personal Computer	220	4	1	880
Total Daily Watt-Hour/day or Wh/day	705			4860

1.a. Load Estimation with power factor of 0.8 approximately.

Load	Watts	Hour/Day	Number of loads	Watt-Hr
Tube light	45	6	3	810
Fan	60	11	3	1980
TV (21'')	170	7	1	1190
Personal Computer	220	4	1	880
Total Daily Watt-Hour/day or Wh/day	882			6075

2. Determining the inverter rating:

The require energy is supplied from a battery bank through an inverter. The total load that would be connected to the inverter is around 882 Watt [705 W/0.8].

Then, the inverters power handling capacity should be around 1000 Watt as available in market.

3. Daily energy supplied to the inverter:

The daily energy consumed by the load is 6075 Wh.

The energy input to the inverter with the efficiency of 93%, is $(6075) / (0.93) = 6532.25$ Wh, approximated to 6533 Wh.

4. Deciding the system voltage:

2 Batteries each of 12V connected in series to have typical PV system voltage as 24V.


Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kalkkurohji - 622 303, Pudukkottai Dt.

5. Sizing of batteries:

The required charge capacity = $(6533 \text{ Wh}) / (24 \text{ V}) = 272.20 \text{ Ah}$.

The number of batteries of rating 12V, 100 Ah with Depth of Discharge (DOD) of 70% required is $(272.20 \text{ Ah}) / (100 * 0.70) = 3.88$, so 4 number of batteries can be preferred.

6. Sizing of PV modules:

The energy supplied at the input of battery terminal with battery efficiency of 90% is, $(6075 \text{ Wh}) / (0.90) = 6750 \text{ Wh}$.

The total Ampere hour to be supplied by PV Panel should be, $6750 \text{ Wh} / (24 \text{ V}) = 281.25 \text{ Ah}$.

The total amperes from the PV modules, $(281.25 \text{ Ah}) / (8 \text{ h}) = 35.15 \text{ Ampere}$.

The typical value of voltage and current of 335 W_p module at maximum power point (V_m and I_m) would be about 38.10 V and 8.80 A, respectively.

The number of PV modules required is, $35.15 / 8.80 = 3.99$. Therefore, 4 PV Panels required as per calculation.

Considering various environmental factors and solar efficiency 4 panels of rating 335 W_p is required to deliver Total Daily Watt- Hour/day of 4860.

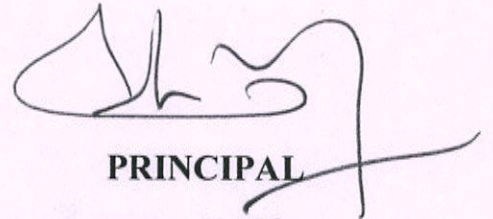
Design Details:

Sl. No	Description	Rating	Quantity
1.	Inverter	1000 Watt	01
2.	Battery	12V, 100 Ah	08
3.	Solar PV Panel	335 W_p , 38.10 V/ 8.80 A	04



PROJECT INVESTIGATOR

[J. SATHYARAJ, AP/EEE]



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SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT



Dr. S. THILAGAVATHI M.E., Ph.D.,

PRINCIPAL

SRI BHARATHI ENGINEERING
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Kaikkurchi - 622 303, Pudukkottai Dt.



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

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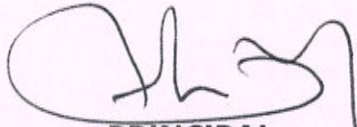
Date : 30/8/2018


Utilization certificate

Certified that the amount of rupees Rs.3000 (Three thousand only) was sanctioned by KSP Services, Thirumayam during the academic year (2018- 2019), in favour of Department of Electrical and Electronics Engineering, Sri Bharathi Engineering College for Women, Kaikkurichi, Pudukkottai has been fully utilized for Estimation of solar PV Panel requirement for your clients. The purpose of amount sanctioned has been fulfilled and delivered as per conditions of grant were satisfied.


PROJECT INVESTIGATOR

[J. SATIYARAM, A)/EEE]


PRINCIPAL
30/8/18


PRINCIPAL
Dr. S. THILAGAVATHI M.E., Ph.D.
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT