

**Date: 20/12/2017**

To,  
The Principal,  
Sapthagiri College of Engineering  
Bangalore-560057

**Sub-** Sanction of Research grant for the research project "Solar Powered LED Streetlight with Intensity Control"

In pursuance of the proceedings of the research committee and approval of the Principal through his letter dated 21/11/2017. The management in its meeting has decided to sanction the research grant. The management is pleased to sanction Rs.18,500 (**Rupees eighteen thousand five hundred only**) for the Electrical & Electronics Engineering department for carrying out the project. "Solar Powered LED Streetlight with Intensity Control". by Prof. Nagaraj.H.P and Prof.Preetha.N.P as per the recommendation of RDECI.

The Principal is directed to facilitate the sanction of the amount and follow all the necessary procedure of the accounts and submit the utilization certificate after securing the same from the researcher.



**Executive Director**  
**Sri G.D. MANOJ**

Executive Director  
Sapthagiri College of Engineering  
BENGALURU - 560 057



Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road,  
Bangalore- 560 057

To,

Date: 21/11/2017

The Executive Director,

Sapthagiri College of Engineering

Bangalore-57

From,

The Principal,

Sapthagiri College of Engineering


Bangalore-57

**Sub- Requisition for research grant for the research project.**

With reference to the above subject, I hereby inform you that RDECI has approved the research project "Solar Powered LED Streetlight with Intensity Control" submitted by Prof. Nagaraj.H.P and Prof.Preetha.N.P of Electrical & Electronics Engineering department after scrutinizing the research proposal.

Therefore, it is requested that an amount of Rs.18,500 (**Rupees eighteen thousand five hundred only**) may please be sanctioned for carrying out the above said research project.

Thanking you,

  
Principal  
Sapthagiri College of Engineering  
#14/5, Chikkasandra, Hesaraghatta Main Road  
Bengaluru - 560057

  
Principal  
Sapthagiri College of Engineering  
#14/5, Chikkasandra, Hesaraghatta Main Road  
Bengaluru - 560057



## Sapthagiri College of Engineering

(Affiliated to Visvesvaraya Technological University, Belagavi & Approved by AICTE, New Delhi)

#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru - 560057

Phone: 080-28372800/1/2

www.sapthagiri.edu.in

Fax: 080-28372797

Date: 21/12/2017

To,

The Convener,

R&D, Entrepreneurship Committee & Incubation Center (RDECI),

Sapthagiri College of Engineering

Bangalore-560057

**Sub- Sanction of Research grant for the research project "Solar Powered LED Streetlight with Intensity Control"**

The management of Sapthagiri college of engineering has sanctioned the Research grant of **Rs.18,500 ( Rupees eighteen thousand five hundred only)** for the research project "Solar Powered LED Streetlight with Intensity Control" to be carried out by the department of Electrical and Electronics Engineering.

Copy To,

All Departments



**Principal**

Principal  
Sapthagiri College of Engineering  
14/5, Chikkasandra, Hesaraghatta Main Road  
Bengaluru - 560057



**Principal**  
Sapthagiri College of Engineering  
14/5, Chikkasandra, Hesaraghatta Main Road  
Bengaluru - 560057

Dated: 19/10 /2017

To,

ThePrincipal  
Sapthagiri Collegeof Engineering  
Bangalore-560057

Through HOD

From

Nagaraj H P  
Preetha.N.P  
DepartmentofElectrical and Electronics Engineering  
Sapthagiri Collegeof Engineering  
Bangalore-560057

Respected Sir,

**Subject:** Requisition for the financial assistance for the project

With respect to above subject, I request your kind self to provide finical assistance to carry out the project entitled "Solar powered LED Street light with auto intensity control". The research proposal and budget split-up has enclosed along with this letter. Kindly consider the requisition and do the need full.

Thanking you  
Your's sincerely

P. the NP


Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Main Road  
Bangalore-560 057

Principal  
Sapthagiri College of Engineering  
14/5, Chikkasandra, Hesaraghatta Main Road  
Bangaluru - 560 057


## RESEARCH PROPOSAL

### A. GENERAL INFORMATION

|          |  |   |  |
|----------|--|---|--|
| <b>1</b> | <b>About the project</b>                     |   |  |
| <b>A</b> | Title of the project                         | : | Solar powered LED Street light with auto intensity control |
| <b>B</b> | Subject area as per instruction              | : | Renewable energy   |
| <b>2</b> | <b>Details of Principal Investigator</b>     |   |  |
| <b>A</b> | Name   | : | Mr.Nagaraj.H.P   |
| <b>B</b> | Qualification                                | : | M.Tech in Electrical Power systems (Ph.D)                  |
| <b>C</b> | Designation                                  | : | Associate Professor  |
| <b>D</b> | Department                                   | : | Electrical and Electronics Engineering                     |
| <b>E</b> | Years of teaching/research experience        | : | 17   |
| <b>F</b> | Email ID                                     | : | nagarajhp@sapthagiri.edu.in                                |
| <b>G</b> | Cell Number                                  | : | 9731689412   |
| <b>H</b> | <b>Details of the Head of the Department</b> |   |  |
| <b>I</b> | Name of the Head of the Department           | : | Dr. K.N.Ravi   |
| <b>J</b> | Email ID                                     | : | hodeee@sapthagiri.edu.in                                   |
| <b>K</b> | Cell Number                                  | : | 9449940873   |

  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraiahatta Road,  
Bangalore-560 057

  
Signature of the Investigator

  
Signature of Head of the Department

PROF & HOD  
Department of Electrical & Electronics Engineering  
Sapthagiri College of Engineering  
Bangalore - 560057.



## B. DETAILS OF THE PROJECT PROPOSAL

|    |   |   |  |
|----|---|---|--|
| 1. | Title of the Project Proposal   | : | Solar powered LED Street light with auto intensity control   |
| 3. | Objectives of the proposal<br>(Not more than six points)  | : | <ol style="list-style-type: none"> <li>1. To provide a better solution to minimize the electrical wastage in operating street lights.</li> <li>2. To provide different intensities at different times of night for saving energy.</li> </ol> |
| 4. | Background of the project   | : | According to previous work, high intensity discharge lamps used cannot control intensity and hence are replaced with LED's.  |
| 5. | Methodology<br>(Please include flowsheet, if required)  | : | To design a solar street light with battery management and lighting control using open source hardware Arduino.  |
| 6. | Milestones with time schedule & work plan   | : | <p>Data collection for solar panel<br/>3 months(Feb 2018-April2018)</p> <p>Design of panel (May 2018-July 2018)</p>  |
| 8. | List of equipment required for Phase-I & Phase-II for Project Implementation<br>(as per the instruction Sl.No.27 under Annexure-II) |   | Up gradation of MI-POWER software<br>Rs.18,500 apprx   |

3

  
**Principal**  
**Sapthagiri College of Engineering**  
**Chikkasandra, Hesaraghatta Road**  
**Bangalore-560 057**

|     |  |   |  |
|-----|--|---|--|
| 9.  | Relevance, importance & application of the project | : | The project has scope to provide lighting in industries, campuses and parking lots of huge shopping malls. It can also be used for surveillance. |
| 10. | Novelty/Uniqueness of the project proposal         | : | It is cost effective, practical, eco friendly and the safest   |

P H<sub>o</sub> NP  
CPoneetha NP

Kari

**PROF & HOD**  
Department of Electrical & Electronics Engineering  
Sapthagiri College of Engineering  
Bangalore - 560057.

Kari

Principal  
**Sapthagiri College of Engineering**  
14/5, Chikkasandra, Hesaraghatta Main Road  
Bangalore - 560 057

Kari

Principal  
**Sapthagiri College of Engineering**  
Chikkasandra, Hesaraghatta Road  
Bangalore-560 057

Date : 05/01/2018

From,

Research and Development cell,  
Sapthagiri College of Engineering  
Bangalore-560057

To,

Principal investigator  
Sapthagiri College of Engineering  
Bangalore-560057

**Subject: Sanction of research grants Reg.,**

The committee hereby informed that following projects have been approved for the academic year. The report and the outcome of the project as to be submitted to the committee after the completion of the project. The utilization certificate shall be given along with the final report.

| Sl. No | Principal Investigator             | Department | Project entitled  | Amount Sanctioned |
|--------|------------------------------------|------------|---|-------------------|
| 1      | Mr. Nagaraj.H.P<br>Mrs.Preetha.N.P | EEE        | Solar powered<br>LED Street light<br>with auto<br>intensity control | 18,500/-          |

**Convener**

  
**Copy To,**

**Principal**

**All Departments**

**IQSC**

  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road.  
Bangalore-560 057



Date :18/01/2018

**To,**

**Principal,**

Sapthagiri College of Engineering

Bangalore-560057

**From**

HOD,

Department of Electrical and Electronics Engineering

Sapthagiri College of Engineering

Bangalore-560057

Through HOD

**Sub: Procurement of Instruments Reg.,**

With reference to the letter received from R& D committee regarding approval of research project, we are here by requesting the procurement of the following equipments/Instruments for the research project entitled "Solar powered LED Street light with auto intensity control" to carry out. Kindly considered and do the need full.

Thanking you,

*Kovi*

  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hosahally Road  
Bangalore-560 057

Date: 20/07/2018

To,

R and D  
Sapthagiri College of Engineering  
Bangalore-560057

From


HOD,  
Department of Electrical and Electronics Engineering  
Sapthagiri College of Engineering  
Bangalore-560057

Sub: Submission of report and utilization details


With reference above cited subjected I am hereby enclosing project report entitled Studies on "Solar powered LED Street light with auto intensity control" and utilization certificate. This for your kind information, please.

| Sl No | Particulars                                     | Quantity | Amount  |
|-------|---|----------|---------|
| 1     | 100 AH Battery, OPTI 12 V                       | 1        | 11661/- |
| 2     | BATTERY BOX                                     | 1        | 1500/-  |
| 3     | Clamps for fixing battery and connection cables | 1        | 400/-   |
|       |   |          | 16002/- |

Thanking You,

  
**PROF & HOD**  
Department of Electrical & Electronics Engineering  
Sapthagiri College of Engineering  
Bangalore - 560057.

11661  
1500  
400  
13561

  
**Principal**  
Sapthagiri College of Engineering  
Chikkasandra, Hosuraghatta  
Bangalore-560057.

(21)

The Principal  
Sapthagiri College of Engineering  
Bangalore-560 057

Date: 10-5-2018

Through: HOD, EEE

Subject: Proposal to install '**SOLAR POWERED LED STREET LIGHT**' in SCE campus.

Respected Sir,

We the following four students of 8<sup>th</sup> semester EEE department would like to submit a proposal of our project '**SOLAR POWERED LED STREET LIGHT WITH AUTO INTENSITY CONTROL**' which will be installed in our college campus.

| SL. No | NAME         | USN        | Signature    |
|--------|--------------|------------|--------------|
| 01     | Pavithra.N.M | 1SG14EE057 | Pavithra.N.M |
| 02     | Sneha.S      | 1SG14EE072 | Sneha.S      |
| 03     | Sumathi.G    | 1SG14EE076 | Sumathi.G    |
| 04     | Sushma.K.P   | 1SG15EE443 | Sushma.K.P   |

In this project, providing solar powered street lighting is one of the most important and expensive responsibilities. It will avoid manual controls which are prone to error and energy wastage. The System uses solar panels for charging batteries by converting the sunlight into electricity. A programmable Microcontroller Atmega328P of Arduino is engaged to provide different functions for saving the energy. Thus, the street lights switch ON and switch OFF at the automatically. The process repeats every day.

For this the estimated budget of the components is as follows:

| SL.NO | COMPONENTS                                 | DISCRIPTION OF THE COMPONENTS  | COST  |
|-------|--|--|-------|
| 01    | Solar panel                                | Converting the sunlight into electricity                             | 6500  |
| 02    | Battery & Battery cabinet                  | Lead acid battery which Stores the electricity 85AH                  | 8500  |
| 03    | LED  | 36 Watt LED For illumination   | 1000  |
| 04    | Arduino UNO                                | Arduino will control the intensity of light at different time slots. | 500   |
| 05    | Miscellaneous components (Control circuit) | Resistors, capacitors, MOSFET, zener diode, etc                      | 2000  |
| TOTAL |  |  | 18500 |

18,500/-

Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesarachatta Road,  
Bangalore-560 057





## SAPTHAGIRI COLLEGE OF ENGINEERING

(Affiliated to VTU, Belagavi, Approved by AICTE, New Delhi)

#14/5, Chikkasandra, Hesaraghatta Main Road,  
Bengaluru-560 057

### Department of Electrical and Electronics Engineering

An amount of Rs. 18,500/- was sanctioned for the project "Solar Powered LED Street Light with Auto Intensity Control". The expenditure of the amount sanctioned is given below.

| Sl.No. | Components        | Description of the Components                   | Cost     |
|--------|-------------------|---|----------|
| 1      | Battery           | 100AH Battery, OPTI 12 V, 100AH                 | 11,661/- |
| 2      | Battery box       | Battery box                                     | 1,500/-  |
| 3      | Clamps and Cables | Clamps for fixing battery and Connecting Cables | 400/-    |
| 4      | Taxes             | Taxes   | 2,441/-  |
| 5      | Miscellaneous     | Fixing of panel, mounting Batteries etc.        | 2,500/-  |
| Total  |                   |   | 18,502/- |

An amount of 18,502/- has been spent. The same has to be reconciled.  
Please Oblige.

  
HOD/EEE  
27-02-2019

  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road,  
Bangalore-560 057

  
PRINCIPAL  
Principal  
Sapthagiri College of Engineering  
14/5, Chikkasandra, Hesaraghatta Main Road,  
Bangalore - 560 057



**NIRVANA  
SOLAR**

23/01/2019

Ref 90008/10/2018

Sapthagiri Engineering College

Contact Number: 09731689412

Site Address: 14/5, Hesaraghatta Main Rd,  
Chikkasandra, Bengaluru, Karnataka, 560090

Per Order for Solar Street Light

**Invoice / Bill**

| Description   | Unit Rate | Quantity | Price               |
|---|-----------|----------|---------------------|
| 100AH Battery, OPTI<br>12V 100AH                      | 11,661    | 1        | 11,661              |
| Battery Box   | 1,500     | 1        | 1,500               |
| Clamps for fixing<br>Battery and<br>Connection cables | 400       |          | 400                 |
| Taxes 18%   |           |          | 2,441               |
| <b>GRAND TOTAL</b>                                    |           |          | <b>Rs. 16,002/-</b> |

In Words: Rupees sixteen thousand and two only

GSTN Number: 29AJHPB8411CIZL

Thank You

**NIRVANA SOLAR**  
For Nirvana Foundation  
No. 925, AGB Layout,  
Hesaraghatta Road,  
BANGALORE-560 090.  
Bengaluru 560090

[www.nirvanafoundation.com](http://www.nirvanafoundation.com)

Ph.: 9916584184

  
**Principal**  
**Sapthagiri College of Engineering**  
14/5, Chikkasandra, Hesaraghatta Main Road  
Bengaluru - 560 057

  
**Principal**  
**Sapthagiri College of Engineering**  
Chikkasandra, Hesaraghatta Road  
Bengaluru-560 057

With the implementation of this project Solar street lights are independent of the utility grid. Hence, the operation costs are minimized so solar street lights require much less maintenance compared to conventional street lights which use electricity. Since external wires are eliminated in solar street lights risk of accidents is minimized. And this is a non-polluting source of electricity.

This will be a model project for the lighting Renewable Energy Sources which will add value to the project. This is a requirement in NAAC assessment.

Hence we here by submit this proposal which will be useful for us and for the college. We look forward for your positive response.

Thanking you

Your's faithfully

Project Guides

  
10/5/18  
NAGARAJ.H.P

  
PREETHA.N.

  
Signature of HOD

  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesarghatta Road,  
Bangalore-560 057



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VISVESVARAYA TECHNOLOGICAL UNIVERSITY  
JNANASANGAMA, BELGAUM-590018



PROJECT REPORT  
ON  
"SOLAR POWERED LED STREET LIGHT WITH AUTO  
INTENSITY CONTROL"

*Submitted in the partial fulfillment for the award of the degree of*

BACHELOR OF ENGINEERING  
IN  
ELECTRICAL AND ELECTRONICS

*Submitted by*


|                 |            |
|-----------------|------------|
| PAVITHRA . N. M | ISG14EE057 |
| SNEHA. S        | ISG14EE072 |
| SUMATHI. G      | ISG13EE076 |
| SUSHMA.K.P      | ISG15EE443 |

*Under the supervision of*

Mr.NAGARAJ.H.P  
Asct. Prof. of EEE

Mrs.PREETHA.N.P  
Asst. Prof. of EEE



  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Ro.  
Bangalore-560 057

For the academic year of  
2017-18

DEPARTMENT OF ELECTRICAL AND ELECTRONICS  
ENGINEERING

SAPTHAGIRI COLLEGE OF ENGINEERING

Chikkasandra, Hesaraghatta Main Road, Bengaluru-560057





Department of  
**ELECTRICAL AND ELECTRONICS ENGINEERING**

**CERTIFICATE**

Certified that the project work entitled "SOLAR POWERED LED STREET LIGHT WITH AUTO INTENSITY" carried out by PAVITHRA.N.M bearing USN [ISG14EE057], SNEHA.S bearing USN [ISG14EE072], SUMATHI .G bearing USN [ISG14EE076], SUSHMA.K.P bearing USN [ISG15EE443], bonafide students of Sapthagiri College Of Engineering in partial fulfillment for the award of Bachelor of Engineering in department of Electrical and Electronics Engineering of Visvesvaraya Technological University, Belagavi during the academic year 2017-2018. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelor of Engineering Degree.

Signature of the Guide

Mr. NAGARAJ.H.P  
Asst. Professor  
(Project Guide)

Signature of the HOD

Dr. K.N.Ravi  
Professor & H.O.D  
(Guide & Head of the Dept.)

Signature of the Principal

Dr. Shivabasappa.K.L  
Principal  
S.C.E Bangalore

Signature of the Guide

Mrs. PRETTA.N.P  
Asst. Professor  
(Project Guide)

Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesarghatta Road,  
Bangalore-560 057

**External Viva**

Name of the examiners

- 1.
- 2.

Signature with date

**UTILIZATION CERTIFICATE**

| Sl No | Particulars       | Quantity     | Amount       |
|-------|-------------------|--------------|--------------|
| 1     | Battery           | 1            | 11661        |
| 2     | Battery box       | 1            | 1500         |
| 3     | Clamps and cables | 1            | 400          |
| 4     | Taxes             |              | 2441         |
| 5     | Miscellaneous     |              | 2500         |
|       |                   | <b>Total</b> | <b>18500</b> |

Certified that Sapthagiri college of Engineering has provided partial financial support of **RS 18500/-** (Eighteen thousand five hundred only) towards Solar Powered Led Streetlight with Intensity Control project conducted by Electrical and Electronics Department of Sapthagiri college of Engineering.

Certified that I have satisfied myself that condition on which the grant in aid sanctioned has been duly fulfilled and that I have excised the following check to see that the money was actually utilized for the purpose for which it was sanctioned.

Kinds of check exercised

1. Bills

Signature of the Principal with seal

Principal  
Sapthagiri College of Engineering  
14/5, Chikkasandra, Hesaraghatta Main Road  
Bengaluru - 560 057

Signature of Auditor with seal



Sapthagiri College of Engineering  
14/5, Chikkasandra, Hesaraghatta Main Road  
Bengaluru - 560 057

Creating Tomorrow